THE RESIDENTIAL SEGREGATION OF

SAME-SEX PARTNERED HOUSEHOLDS FROM HETEROSEXUAL

PARTNERED HOUSEHOLDS: METROPOLITAN STATISTICAL AREAS IN

THE U.S., 2010

A Dissertation

by

XIAODAN DENG

Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTORATE OF PHILOSOPHY

Chair of Committee,	Dudley L. Poston, Jr.
Committee Members,	Alex McIntosh
	Jane Sell
	Rogelio Saenz
Head of Department,	Jane Sell

May 2015

Major Subject: Sociology

ABSTRACT

Reliable data are the key for studying LGBT population, and U.S. census data provides the largest and most geographically representative sample of gay and lesbian families available in the United States. By using census data, this dissertation offers a better understanding of the location and segregation patterns of same-sex couples in metropolitan areas in the U.S. It also fills an important information gap by providing an empirical perspective to the vibrant policy and intellectual debates affecting the lives of gay men and lesbians.

This dissertation seeks to examine the extent to which same-sex partnered households are residentially segregated from heterosexual partnered households in 100 U.S. metropolitan areas. It also answers: Which factors are related to the homosexual-heterosexual segregation in the U.S.? Do gay and lesbian couples voluntarily or involuntarily segregate from heterosexual couples? How might metropolitan areas be expected to vary in their levels of homosexual-heterosexual segregation?

I calculated the segregation index, D-index (conventional version and unbiased version) for 100 U.S. metropolitan areas by using the 2010 census data. Interesting findings emerged from the results: Over all, there was a higher level of homosexual-heterosexual segregation in the 100 U.S. metropolitan areas in 2010. However, the level of homosexual-heterosexual segregation decreased after changing the D-index from the conventional version to the unbiased version. That is to say, within the metropolitan areas, residential segregation between same-sex couples and heterosexual

couples might be partially caused by random segregation, but the levels of segregation were still significant even after controlling for the biases of the conventional D-index.

Results of this dissertation also showed that same-sex male couples tended to be more segregated from heterosexual couples than same-sex female couples; "Gayborhood" and "Lesbianville" might not always be located at the same place, and partnered gays and lesbians did not necessarily follow the same patterns of segregation; Lastly, both gay and lesbian couples tended to be more residentially segregated from married heterosexual partners than they were from unmarried heterosexual partners.

In order to provide explanations for homosexual-heterosexual segregation, I raised my research questions and developed my hypotheses by applying ethnic enclave models in the literature. Three models were developed to test the hypotheses: Voluntary Model, Involuntary Model, and Welcome Model. Finally, the hypotheses were highly confirmed by the multiple regression results, and I had evidence to conclude that the segregation between same-sex couples and heterosexual couples was voluntary, and gay and lesbian couples settled down more often in places that were liberal and friendly.

To Patricia Shuxia Morales, my daughter, in hope that one day

you will understand why I do what I do.

ACKNOWLEDGEMENTS

I would like to express the deepest appreciation to my family, my professors, my colleagues and my friends. I am so lucky to be supported and loved by so many wonderful people.

I would like to thank my committee members. To my advisor and my mentor, Dr. Dudley Poston, you taught me demography and showed me how wonderful it is to be a demographer. I will always have passion for my research just like you. Dr. Rogelio Saenz, Dr. Jane Sell, and Dr. Alex McIntosh, thank you for all your help with this dissertation. I learned a lot from the classes I took from you. Your help made my graduate school life much easier.

My husband, Trinidad Morales III, thank you for your incredible patience and support. You are the one who helped me, listened to me, and supported me. I know you care about me more than you ever said.

A special thank also goes to my great family: my parents, Yingying Deng and Lihe Deng; and for my parents and sister-in-law, Trinidad Morales Jr., Patricia Morales, and Elisa Morales.

Last, but not least, I would like to dedicate this dissertation to my daughter, Patricia Shuxia Morales. You are my little star and my best friend. I am always proud of you.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

Homosexual-Heterosexual Segregation: from the "Harvey Milk High School" to "Gayborhood"

Located on the third floor of a nineteenth-century high-rise building in the East Village, the Harvey Milk High School looks just like most other public high schools in New York City. However, the school is utterly unique. It is an institution based not on academic interests, but on a fundamental building block of human identity: sexual orientation. This makes it different from any other school in New York City, or, indeed, in the world. The Harvey Milk High School is named after assassinated San Francisco city supervisor Harvey Milk, and it is designed for, though not limited to, gay, lesbian, bisexual, and transgender young people, as well as those questioning their sexuality. As the first gay high-school in the U.S., the Harvey Milk High School has undoubtedly received a lot of attention. Among the debates over its right to exist, one of the most controversial questions was is it a good idea to segregate homosexual students from their straight peers?

School officials and supporters think a safety net like the Harvey Milk High School is necessary for gay and lesbian teenagers because they face real dangers in public schools such as harassment and beatings. The Harvey Milk High School allows these students to obtain an education without having to worry about external threats due to their sexual orientation. However, many people argue that removing gay students and

placing them in their own school is not a viable solution. Obviously, an isolated, segregated environment cannot teach both homosexual and heterosexual students to coexist and respect each other. And such a school will create the idea that gay and lesbian students are indeed different, requiring special protection, and that they are unable to stand up for their own rights. More importantly, the segregation of homosexual from straight students is reminiscent of one of the most shameful episodes in American history, when Black students were placed in separate schools from their white peers. Indeed this "separate, but equal" educational system has been criticized for many years.

The great irony of the Harvey Milk High School is that it goes against the teachings of Harvey Milk, who, throughout his life, said that the answer to any challenge based upon sexual orientation was for the person to be open and come "out of the closet"; to speak up and stand up for equal rights. But no one can deny the Harvey Milk High School offers homosexual teenagers protection, albeit temporary, from external danger and discrimination. Indeed, not only do homosexual teenagers in New York City, but all homosexuals in the U.S., have to face this irony. It was precisely Milk's clarion call to "coming out" that helped to create an environment today in which more and more homosexual people feel the freedom and courage to cease hiding their true sexual identification. But in "coming out," they may well open themselves up to hostility and violence from their peers.

It is believed that the U.S. is the country with the largest transgender population in the world. Thailand has many fewer transgender persons but is essentially facing a similar challenge in its schools. Recently, one of the schools in Thailand

offered to build a third gender washroom in order to reduce the uncomfortable feelings of transsexual students using either male or female washrooms. It was estimated that every year between 10% and 20% of boys in this school consider themselves to be transgender boys who would rather be girls. Administrators and teachers believed that building a special toilet in the school would protect transgender students and advance the cause of winning wider acceptance for transsexuals. However, after they graduate from the school, these transgender students will still have to make decisions; should they use women's washroom, or men's washroom? Unfortunately, the "real world" is more complicated than choosing washrooms. Despite their high profile in Thailand, transsexuals are still stigmatized, they can find work easily enough as entertainers, in the beauty industry, the media, or as prostitutes, but it is much harder to become a transgender lawyer or investment banker. And they cannot change their legal status.

Thailand's story brought up the same question again: as the society is becoming more divers in gender and sexuality, what is a good way to protect sexual minorities?

Although the answer is a vexing one, a well-known fact is that in the U.S. many gay male and lesbian couples live separately from their heterosexual peers and cluster in certain areas; much of this segregated living may well be by choice. More and more gay villages, or we can call them "gayborhoods," have appeared in many U.S. cities. These areas often contain a large number of lesbian, gay, bisexual, and transgender people and a number of gay-oriented establishments, such as gay bars and gay pubs, nightclubs, bathhouses, restaurants, and bookstores. In 2004, Oakland,

California even tried to create a gay and lesbian district in a run-down portion of the city in an attempt to divert residents, entertainment, and shopping dollars from neighboring San Francisco. Not only within each city, but also throughout the country, gays and lesbians are not evenly distributed. Using 2000 U.S. Census data, Baumle, Compton, and Poston (2009) showed that there are several areas in the U.S. with a particularly high prevalence of gay men and lesbians. One of the most notable is the San Francisco Bay area and its several "enclaves."

The following cartoon (Figure 1.1) was published widely during the "Don't Ask, Don't Tell" repeal debate: it depicts three coffins dressed in the American flag, with the caption reading, "Which is the gay one?" The idea is that in life and in death, LGBT (lesbian, gay, bisexual, and transgender) persons should strive to be equal, not separate. However, it does not seem to be the case in Atlanta, Georgia. A story published by the Advocate.com (Advocate.com, Editors of Advocate.com, 2011) revealed an Atlanta cemetery's plan to reserve a special section for gay, lesbian, bisexual, and transgender couples and families who want to be buried separately from other people. John Suggs, family services counselor and spokesperson for H.M. Patterson and Son in Atlanta, said, "The idea of having a gay section in a cemetery seemed like a natural progression as gay men and lesbians gather more acceptances in mainstream society. I think it's a good idea because it is about a sense of community, connection and because it's a tradition." (Advocate.com, Editors of Advocate.com, 2011, p. 3)

Figure 1.1 A Cartoon from "Don't Ask, Don't Tell"

Source: http://progressivenation.us/2010/10/06/which-is-the-gay-one/

Whether or not one agrees with John Suggs, we have to admit that today in our society there is a new type of spatial segregation: homosexual-heterosexual segregation. People are not just separated by skin color or by income, but also by their sexual orientation. This segregation is largely related to the progress of the gay rights movement; it is related to the fact that more and more homosexual people are "coming out" and fighting for their public spaces; and it is also related to all the hate and discrimination from heterosexuals. I hope that the empirical analyses that I undertake in this dissertation will assist our enhanced understanding of this relatively new type of residential segregation.

The Goal of This Dissertation: Bing sexual orientation into demography

The increasing acceptance and legitimacy of homosexuality may well be one of the most important changes regarding sexuality in recent decades. In 1973, the American Psychiatric Association removed homosexuality from the Diagnostic and Statistical Manual of Mental Disorders. Accordingly, the illness model of homosexuality that had existed as the basis for so much discrimination is now no longer supported by the psychiatric and psychological establishments (Spitzer, 1981). Until 2011, according to data from the Pew Research Center (Pew Research Center, 2011), "a majority of Americans (58%) say that homosexuality should be accepted, rather than discouraged, by society." Although same-sex marriages are still rare and far from being accepted in many states (although the number of states allowing such marriages are increasing), the increasing acceptance and the growing number of homosexual relationships represent a larger cultural change regarding family life and the freedom for individuals to decide how to organize their lives in society.

This social change calls for new directions in research on homosexuality. Evidently, research regarding gay and lesbians has become much more acceptable in all academic disciplines than ever before. There has been a great increase in published works on homosexuality; more and more departments in universities are specifically devoted to studies of lesbian, gay, and bisexual issues; and a growing number of scholars are working in this field and have made great contributions. As Marianne LaFrance (Branch, 2003), the former chair of the Larry Kramer Initiative for Lesbian and Gay Studies at Yale University, has said, "Now we're asking not just 'What causes

homosexuality?' but also 'What causes heterosexuality?' and 'Why is sexuality so central in some people's perspective? (Branch, 2003, p. 20)

Demography is the scientific study of human populations. It encompasses the study of the size, structure, and distribution of populations, and the three core demographic processes of fertility, mortality, and migration. As an always developing and expanding field, demography overs a wide range of topics such as family and marriage, gender, and labor force. Demography could be very helpful for gay and lesbian studies. For example, demographers can help calculate the costs and benefits of domestic partnership, of the impact of legalizing gay adoption, and of the impact of the US military's "Don't ask, don't tell" policy. More importantly, knowledge of the size of the gay and lesbian population holds promise for helping social scientists understand a wide array of important questions—questions about the general nature of labor market choices, accumulation of human capital, specialization within households, discrimination, and the topic of this dissertation, decisions about geographic location.

However, demography has long suffered from a lack of attention to gay and lesbians. Baumle, Compton, and Poston (2009) conducted a search of all articles published in the last three decades in the population studies journals contained in the JSTOR database, and they found only 69 published articles containing the phrase "sexual orientation," 48 articles containing the world "lesbian," 221 articles containing the word "gay," and 181 including the word "homosexual." They also found that "…at demographic conferences, sessions devoted solely to the examination of the demography

of sexuality have only occurred in the past decade, and quite infrequently." (Baumle, Compton, and Poston, 2009, p.23)

In the analysis presented in their book, Baumle, Compton, and Poston (2009) showed that sexuality affects demographic outcomes in numerous ways. So they encouraged further research to develop the demography of sexual orientation. I hope that the analyses I undertake in this dissertation will follow their lead and help the development of the field of demography of sexual orientation. Specifically, my analysis of homosexual-heterosexual segregation will bring sexuality more directly into the field of residential segregation studies and will provide a valuable test for the application of residential segregation theories and methodologies and the opportunity to adjust them.

Potentials and Difficulties: from Kinsey Reports to the U.S. Census

The demographics of sexual orientation are difficult to establish for a variety of reasons. One of the major reasons is the lack of representative data and samples. Many previous surveys that provided large samples of gays and lesbians utilized "convenience sampling," as in samples drawn from readers of particular magazines or newspapers, or responses solicited from Internet sites or gay bars.

For example, two of the most famous studies of the demographics of human sexual orientation were the books by Dr. Alfred Kinsey and his colleagues, Sexual Behavior in the Human Male (Kinsey et. al., 1948) and Sexual Behavior in the Human Female (Kinsey et. al., 1953). These studies used a seven-point spectrum to define

sexual behavior, from 0 for completely heterosexual to 6 for completely homosexual. Kinsey concluded that a small percentage of the population were to one degree or another bisexual (falling on the scale from 1 to 5). He also reported that 37% of men in the U.S. had achieved orgasm through contact with another male after adolescence and 13% of women had achieved orgasm through contact with another woman. His results, however, have been disputed, especially in 1954 by a team consisting of John Tukey, Frederick Mosteller and William G. Cochran (Cochran et. al, 1954) who noted that much of Kinsey's work was based on convenience samples rather than random samples, and thus was vulnerable to bias.

Critics in the field (e.g., Patterson 2000) have also pointed out that much of the research on the family life of gays and lesbians is based on white, well-educated, middle-class Americans. In addition to sampling problems, the question of how to identify homosexuals has increasingly become the focus of debate. Should respondents be asked to identify themselves, or is it better to measure sexual practice instead, that is, to ask them about the number of lifetime same-sex partners, any such partner within a certain period, the sex of the majority of partners, and so on?

Therefore, reliable data on the size of the gay and lesbian population are needed in the demographic studies of gay and lesbian population. In the 1990s, a number of scholars began to study gay and lesbian population using sizable samples, such as samples drawn from the General Social Survey, the National Health and Social Life Survey, and the U.S. Census. I will discuss these studies and their data sources in the next chapter.

Among most of the data resources for studying gay and lesbian couples, the U.S. census is often preferred mainly because of its very vast size. Before 1990, the U.S. census questionnaire did not distinguish couples living outside marriage in marriage-like relationships from individuals living together as roommates. Demographers, however, noticed an increasing prevalence of the former type of household. Bumpass and Sweet (1989), for example, reported that only 3% of women born between 1940 and 1944 had ever cohabited by age 25; among women born 20 years later, 37% reported cohabiting by age 25. Because of this trend, the U.S. Census Bureau modified slightly in 1990 the survey instrument to allow unmarried partners to be identified separately from roommates.

In the 1990 and 2000 censuses an "unmarried partner" response was added to the other responses (husband, wife, son, grandfather, etc.) to the standard census question about the "relationship to the householder," i.e., the person in the household who is designated as person #1 (Baumle, Compton and Poston, 2009). Person #1 is typically "the member of the household in whose name the home is owned, being bought or rented" (Barrett, 1994: 16). Every person in the household, except for person #1, hence responds to a question about his/her relationship to person #1. The "unmarried partner" response permitted researchers to identify persons in the household who were unrelated to person #1 but who have a "marriage-like" relationship with person #1. Census procedures in 1990 and 2000 allowed respondents to check the "unmarried partner" response irrespective of whether the person's sex was the same as that of person #1.

Researchers have analyzed the quality of the 1990 and 2000 same-sex partnering census data (Baumle, Compton and Poston, 2009; Baumle and Poston, 2011; O'Connell and Gooding, 2006; Black et al., 2000, 2002; Fields and Clark, 1999). Comparisons have been undertaken with nationally representative non-census datasets, and their validity and sampling errors have been assessed. Researchers have pretty much concluded that partnered gay males and partnered lesbians are undercounted in the census data, but that their characteristics and geographic variation in the census data are similar to those reflected in other datasets (Black et al., 2000; O'Connell and Gooding, 2006; Baumle et al., 2009).

As of the year of 2010, "five states (Connecticut, Iowa, Massachusetts, New Hampshire, and Vermont) and the District of Columbia were issuing marriage certificates to same-sex couples. In addition, in May 2008, the California Supreme Court ruled that same-sex couples had a right to marry in California, but that ruling was overturned by a ballot initiative in November 2008. There were also three states that did not perform same-sex marriages but recognized them from other states (Maryland, New York, and Rhode Island)" (O'Connell and Feliz, 2011: 3). Thus the context in the United States with regard to gathering data on same-sex partner households has changed between 2000 and 2010. As a consequence, the 2010 Census was the first decennial census in the U.S. in which census data on same-sex couple households were gathered on the basis of whether the couples reported themselves as living together as spouses, or whether the couples reported themselves as living together as unmarried partners (O'Connell and Feliz, 2011: 3). That is, same-sex couples were enumerated in the 2010

11

Census not only via the "unmarried partner" response on the relationship question, but also via the "husband or wife" response.

Undoubtedly, reliable data are the key for studying the gay and lesbian population, and the U.S. census is considered one of the best data sources for doing so. In this dissertation I will use the 2010 U.S. census data to examine the level of residential segregation between gay male households and heterosexual households, and between partnered lesbian households and heterosexual households in the metropolitan areas of the U.S. I will discuss in chapters 2 and 3 the same-sex partnering data from the 2010 U.S. Census, their biases and problems, and the adjustments researchers have developed to address the problems.

Personal Interests and This Dissertation

My personal interest in homosexual-heterosexual segregation is a long cumulative process with the guidance of my professors, help from friends, and support from my family. I first learned about residential segregation in 2007 in Dr. Dudley Poston's demography course. I then became so interested in the topic that I wrote my master's thesis on the residential segregation in China of the majority Han nationality from each of China's 55 minority nationalities. On the other hand, my good friend Jasmine Lin wrote her M.S. thesis (also under Dr. Poston) on the occupational status of cohabiting lesbians; her research allowed me to learn about analyses focusing on cohabiting gays and lesbians in the U.S. for the first time.

In 2009, I received an opportunity to work with Dr. Poston and Dr. D'Lane Compton on a project examining the residential segregation of same-sex partnered households from heterosexual partnered households. And one year later, I was introduced to the "Fossett and Zhang Unbiased D-index" when I took a readings class with one of the authors, Dr. Mark Fossett. In 2011, I learned how to construct a theory after completing a course of the same name with Dr. Jane Sell. All these experiences made me think more carefully and deliberately about residential segregation, a topic in which I have been interested for many years since beginning graduate school at Texas A&M University. Can we apply the theories of residential segregation to sexual minorities? Should we adjust the traditional Dissimilarity index? Can I construct a theory to explain this new type of segregation? I will hope to answer these questions in this dissertation.

My dissertation will consist of six chapters. Following this introductory chapter, Chapter Two will discuss much of the relevant literature in the areas of residential segregation, homosexuality and space, and empirical studies on gay and lesbian populations. Chapter Three will provide a discussion of the same-sex partnering data from the 2010 U.S. Census, their biases and problems; I will also discuss a method for adjusting the data suggested by Poston and Chang (2013). In Chapter Four I will calculate and discuss both the traditional dissimilarity index and the "unbiased" dissimilarity index for 100 U.S. metropolitan statistical areas. Chapter Five will propose a theoretical perspective for explaining the variation of homosexual-heterosexual segregation among metropolitan areas. Then ordinary least squares (OLS) regression

equations will be estimated, and their results presented and discussed. The final chapter

will summarize the findings and discuss the implications of the analyses.

In the next chapter, I review the literature in the areas of residential

segregation, homosexuality and space, and empirical studies on gay and lesbian

population in the U.S.

CHAPTER II

LITERATURE REVIEW

In Chapter 1, I briefly introduced and discussed a relatively new form of urban residential segregation, Homosexual-Heterosexual Segregation. I followed this with a discussion of its potentials and difficulties. Now I will take one step further and ask, *what do we know about it*? In this second chapter I will discuss the relevant theoretical and empirical literature focusing on both residential segregation and homosexuality. First I will provide a very general introduction to residential segregation and segregation indices. Then I will discuss the dissimilarity index and its problems, followed by an overview of ethnic segregation and income segregation. I will also review prior studies on space and homosexuality and the demography of gays and lesbians. I will conclude with a discussion of the limitations of the literature and the specific areas in which I will be focusing in my dissertation.

Residential Segregation and Segregation Indices

Residential segregation is the physical separation of two or more groups into different neighborhoods, or a form of segregation that "sorts population groups into various neighborhood contexts and shapes the living environment at the neighborhood level" (Massey and Denton, 1988, p.15). It is one of the most important research areas in sociology and demography. For decades, researchers have used several different indices to measure the degree of residential segregation. Duncan and Duncan's (1955) work

showed that all of the various indices could be regarded as functions of a single geometrical construct, the "segregation curve." They also demonstrated that the index of dissimilarity (the D-index) contained almost all the information of the other prevailing indices (Duncan and Duncan, 1955). Ten years later, Taeuber and Taeuber (1965) used the dissimilarity index in their major work on residential segregation and neighborhood change. After that, the dissimilarity index has served as the standard metric for the measurement of spatial segregation between social groups.

But in the 1970s, a torrent of papers began to appear that considered a variety of definitions and measures of segregation once again. For example, Cortese and his colleagues (1976) were concerned with the limitations of the dissimilarity index. In their article, they explored the difficulties in the use and interpretation of the index of dissimilarity, demonstrated some of the systematic biases resulting from these inadequacies, and provided a mathematical refinement that overcame some of the major problems inherent in the use of the index (Cortese, 1976). All the while, the debate on the definitions and measures of segregation continued.

Undoubtedly, before Massey and Denton (1988) published their major paper, there was some theoretical and methodological disarray in the field of segregation studies. Researchers seldom agreed about which measure of segregation was best to use and under what circumstances. After decades of lively debate, however, Massy and Denton ushered in a long era of peace by designating residential segregation as a multidimensional phenomenon varying along five distinct axes of measurement. In their article, twenty

indices of segregation were surveyed and related conceptually to one of the five main dimensions. They used residential data for a large number of U.S. metropolitan areas, and the indices were intercorrelated and factor analyzed. Based on the factor analysis and other information, one index was chosen to represent each of the five dimensions, and these selections were confirmed with a principal components factor analysis. Massey and Denton recommended adopting these five indices as standard indicators in future studies of segregation.

According to Massey and Denton's (1988) research, residential segregation is a global construct that subsumes five underlying dimensions of measurement, each corresponding to a different aspect of spatial variation: evenness, exposure, concentration, centralization, and clustering. Among them, evenness refers to the differential distribution of two social groups among areal units in a city. A minority group is said to be segregated if it is unevenly distributed over areal units (Blau 1977). Although the debate on the relative merits of the dissimilarity index has continued since 1976, Massey and Denton still stated it was the most useful measure of evenness. "It has been the mainstay of segregation research for thirty years, and its further use would preserve continuity in the research literature" (Massey and Denton, 1988, p.14).

Another important dimension is exposure which refers to the degree of potential contact, or the possibility of interaction, between minority and majority group members within geographic areas of a city. And the so-called P* indices (exposure index) are the preferred measures of exposure since they have the simple and straightforward

interpretations. Therefore the dissimilarity index and the exposure index are the two main indices used to measure evenness and exposure.

The Dissimilarity index focuses more on the differential distribution of two groups among areal units. If a minority group is unevenly distributed from the majority group over the areal units, the group is said to be segregated in terms of evenness. The indices of exposure measure the extent to which minority and majority members physically confront one another by virtue of sharing a common residential area. So rather than measuring segregation as departure from some abstract ideal of "evenness," as in the Dissimilarity index, exposure indices measure the actual experience of segregation as felt by the average minority or majority member. And also indices of exposure are conceptually distinct from indices of evenness because the former depend on the relative size of the groups being compared, while the latter do not. This dissertation will focus on measuring evenness by using the Dissimilarity index. In the next section I will consider in greater detail the D-index and its problems.

The Dissimilarity Index and Problems

Over several decades, methodological studies have examined various aspects around the issue of segregation index bias, most often in relation to the dissimilarity index. Several conclusions have emerged from the debate and discussion on this topic.

First of all, the Dissimilarity index is subject to bias in the sense that its expected value under random distribution is not zero. That is to say, the zero value of the

D-index, the value that signals the absence of segregation defined in relation to an exact even distribution, does not necessarily obtain under random distribution (Cortese, Falk, and Cohen 1976; Winship 1977). This bias may lead investigators to draw incorrect conclusions about the levels and variation of an uneven distribution, particularly when addressing questions of whether race or other social characteristics play a role in segregation; the conventional D-index cannot distinguish random allocation and systematic group segregation. Also, the magnitude of the bias in D varies with circumstance. And the bias can be large and non-negligible in some circumstances (Winship, 1977).

Further, methodological studies have established that the magnitude of bias in the D-index varies as a complex function of some basic factors: the average total population per areal unit, and the relative size of the two groups in the segregation comparison (Cortese, Falk, and Cohen 1976; Winship 1977; Farley and Johnson 1985; Boisso, Hayes, Hirschberg, and Silber 1994; Carrington and Troske 1997; Ransom 2000; Allen, Burgess, and Windmeijer 2009; Fossett and Zhang 2011). All else equal, bias tends to increase at an increasing rate as the average total population per areal unit becomes smaller; all else equal, bias tends to increase at an increasing rate as the relative size of the two groups falls from balanced. In addition, the bias may be also affected by two more factors: the relative size of population groups other than the two groups being compared, and the degree of segregation of these other groups from the two groups being compared (Fossett and Zhang, 2011).

Contemporary segregation studies have routinely adopted a variety of "rule-of-thumb" practices to deal with concerns relating to the bias of the D-index. Some researchers adopt restrictions on study designs to avoid situations where index bias can complicate interpretations and comparisons of conventional index scores. Fossett and Zhang (2011, p.3) argued that "these practices have had a pervasive, but largely unappreciated adverse influence on the literature; they have caused researchers to restrict the scope of segregation studies and to limit the kinds of questions they seek to answer."

In their paper, Fosset and Zhang (2011) introduced a new version of the D-index that they referred to as the "unbiased D-index." The unbiased D-index has the desirable characteristic, as noted in its name, of being unbiased. That is, under random distribution the unbiased D-index has expected values of zero. Instead of using complicated techniques to adjust or test, Fossett and Zhang show how to obtain the unbiased D-index with a revised computing formula which eliminates the root source of bias in the conventional formulation of the D-index.

Basically, they show that all popular indices of uneven distribution can be formulated as simple differences of group means on scores based on group exposure (Pi) calculated from area population counts. In the case of the D-index, for example, if one were to use it to measure the residential segregation between blacks and whites in cities, the value of the D-index usually is interpreted as the percentage of black people who have to move to certain other areal units, such as census tracts, in order for there to be an even distribution between blacks and whites. However, there is another interpretation of the D-

index as mentioned by Becker, McPartland and Thomas (1978). Although this interpretation is rarely mentioned in methodological and empirical studies, it clearly shows the source of the bias of the conventional D-index. According to the alternative interpretation, the value of the D-index can be described as the white-black difference in the proportion of each group residing in areas where exposure to whites (Pi) exceeds the proportion white in the city (P).

Based on the new formula, Fossett and Zhang (2011) have noted that the bias of the conventional D-index is caused by the calculation of group exposure (Pi). Actually, the group exposure in the conventional D-index is calculated from area population counts. That is to say, the exposure calculations for individual households include the household itself, which is biased in opposing directions for the two groups in the comparison, and the resulting difference produces the bias in the index score. Finally, the unbiased D-index is developed based on the fact that bias in the conventional D-index can be eliminated by the simple adjustment of calculating exposure based on counts of neighbors instead of counts for the area population.

Owing to these arguments and discussions, I hold that it would not be prudent for me to only use the conventional D-index in my dissertation to measure residential segregation between homosexual couples and heterosexual couples; the major reason is that the population sizes of the two groups in the segregation comparison are far from equal. Obviously, there are many more heterosexual partners than same-sex partners in each of the cities. For example, in 2000 in New York City, only 1.17% of the households

were occupied by gay couples and 0.85% by lesbian couples. And also we cannot overlook the effects of "other groups." For example, when calculating the conventional D-index between gay male partners with lesbian partners, there are a large number of heterosexual partners in the same areas. As a result, we have reason to believe that the amount of segregation measured by the conventional dissimilarity index between homosexual couples and heterosexual couples might be random segregation and not caused by discrimination or any other socioeconomic factors.

To sum, the unbiased D-index developed by Fossett and Zhang (2011) is free of bias and brings many benefits. I will construct both the conventional and "unbiased" D-indices to examine the unevenness between Same-Sex households and Opposite-Sex households in their residential distributions in the 100 largest metropolitan areas of the U.S. in 2010.

Residential Segregation, Race/Ethnicity, and Income

Residential segregation has traditionally been associated with racial or ethnic segregation. Prior research has indicated that differences in the degree of residential segregation between groups were mainly the result of differences in socioeconomic variables such as income, education, and occupation (Burgess, 1923; Park, 1926). Beginning in the 1950s several studies focused on the persistent and high degree of black residential segregation in U.S. metropolitan areas (Duncan and Duncan, 1955; Taeuber and Taeuber, 1965; Sorensen, Taeuber, and Hollingsworth, 1975; Farley 1977, Harrison and Weinberg 1992).

The high level of segregation of the black population was shown to be problematic because segregation tends to isolate blacks from amenities, opportunities, and resources which affect social and economic well-being (Logan 1978; Schneider and Logan 1982). Additional attention has also focused on the segregation of Hispanics from whites (Grebler, 1970; Kantrowitz, 1973; Massey, 1979), but the bulk of the studies have dealt with black-white segregation.

In the past few decades, residential segregation in U.S. cities has remained high, although slightly decreasing. Iceland's 2004 study indicated that segregation has been decreasing, due mainly to declines in African American versus white segregation. At the same time, however, there has been little change (or even slight increases) in Asian and Hispanic segregation. For Hispanics and Asians, it was the growth in Hispanic and Asian and Pacific Islander populations, respectively, that were associated with increases in segregation.

It is clear that ethnic residential segregation is not limited to the U.S. Studies have been carried out in other countries. Darroch (1971) employed census data for Toronto in 1961 to determine the patterns of residential segregation in Canada. Klaff (1973) carried out a study of ethnic residential segregation in the three largest cities in Israel. Despite the different demographic, topographical and functional characteristics of the three cities, fairly similar patterns of ethnic segregation were found in the final analysis. Aside from these, many other studies on ethnic residential segregation have been conducted in different countries by Jones (1969) in Melbourne, Australia; Warwick (1966) in

Singapore; Musil (1968) in Prague, and Mehta (1968) in Poona, India. More recently, Edward E. Telles (1992) examined residential segregation by skin color in 35 of the largest metropolitan areas in Brazil, using census tract data from the 1980 Brazilian census. He showed that in Brazil's metropolitan areas, white-black dissimilarity is the highest, followed by brown-black and then white-brown dissimilarity.

Demographers have also devoted considerable attention to investigating the population of China's minority populations. For instance, Emily Hannum (1998) explored rising occupational stratification by ethnicity in the Xinjiang Autonomous Region. Pyong Min (1992) demonstrated that compared to Korean Japanese, Koreans in China have maintained high levels of ethnic autonomy and positive ethnic identity. Rong Ma (1991) suggested that there is to a certain extent both residential and school segregation between Han people and Tibetans in Lhasa. Ethnic residential segregation exists among both permanent and temporary residents. Using data from the 1982 census of China, Poston and Shu (1987) developed socioeconomic and compositional variables for each of several minority groups on characteristics dealing with age, education and literacy, fertility, occupation and industry, and geographic differentiation. In another research paper, Poston and Micklin (1994) calculated segregation scores for the 55 minority groups using data from the 1982 census. My Master's Thesis (Deng, 2010) followed and updated their work and their methodology using data from the 2000 census of China.

While usually connected to race or ethnicity, residential segregation may also be structured by income disparity. A study of income segregation that used data from the

National Survey of America's Families (Massey, 2009) shows that income segregation grew between 1970 and 1990. In this period, the Index of Dissimilarity between the affluent and the poor increased from .29 to .43. Poor families were shown as becoming more isolated. Whereas in 1970 only 14 percent of poor families lived in predominantly poor areas, this number increased to 28 percent in 1990 and continues to rise. Most low-income people live in the suburbs or central cities.

Looking at areas classified as "high-poverty" or "low-poverty" in 2000 Turner (2009) showed that about 14% of low-income families live in high-poverty areas and 35% live in low-poverty areas. More than half of all low-income working families are racial minorities. Over 60% of all low-income families lived in majority white neighborhoods in 2000 (Turner, 2009). However, these data mainly describe the settlement patterns of white low-income people. Black and Hispanic low-income families, the two most racially segregated groups, rarely live in predominantly white or majority-white neighborhoods. A very small portion of low-income white families lives in high-poverty areas. One in three black low-income families live in high-poverty areas while one of every five Hispanic low-income families lives in high-poverty areas.

Homosexuality and Space

Aldrich (Aldrich, 2001) has mentioned in his article, "Homosexuality and the City: An Historical Overview", that there is an inseparable relationship between land and people, where people are constantly shaping the landscape. Today partnered gay males and

lesbians live virtually everywhere in the U.S., in all the states and, metropolitan areas, and in most of the counties. Metropolitan areas where gay males and lesbians settled have become, according to O'Reilly and Webster (1998), "gay spaces" with political force and activism. These "gay spaces" have created a new model of spatial segregation in many cities or metropolitan areas around the world. But this is sometimes overlooked in research on both residential segregation and homosexuality. In fact, there has been very little attention in literature to the role of sexual minorities in spatial segregation, although the work of sociologists has long been concerned with the relationship between urbanization and sexuality.

Identification of 'vice areas' and, 'gay villages' has been a stock in trade of urban sociology since at least the time of the Chicago School. In fact, the origins of the term "Sexuality and Space" can be traced back to the early 1990s. In 1990, Knopp (Knopp, 1990) published her article in the *Geographical Magazine*. This was apparently the first time that "Gay Geography" was presented to a wider audience. In 1992 Beatriz Colomina's (Colomina, 1996) article on "Sexuality and Space" was published. The paper goes on to discuss the sexual psychology of color and other design elements.

Arguably, the most influential book-publication to study sexuality and space was *Mapping Desire* (Bell and Valentine, 1995), an edited collection by David Bell and Gill Valentine. Bell and Valentine provide a critical review of the history of geographical works on sexuality and set an agenda for further research. They are especially critical of the earliest sexual geographies written during the 1970s and 1980s in the U.K. and in

North America. In contrast to the 'dots on maps' approach of the 1970s and 1980s, *Mapping Desire* represents an attempt to map the geographies of homosexuality, transsexuality, bisexuality, sadomasochism and butch-femme lesbian identities. This represented an important landmark in geographer's engagement with, and development of, queer theory. Subsequent research has developed this work, with an increasing focus on transnational LGBT activism; the intersections of nationhood and sexuality and questions of LGBT citizenship and sexual politics at scales from the body to the global.

Following this increased attention in the 1990s to the geographies of gay and lesbians, more and more research has focused on the relationship between place, space and homosexuality. New phenomena and issues are being explore, for example, in the research of Dereka Rushbrook (Rushbrook, 2002) where he points out that some of the secondary cities in the U.S., such as Portland, Oregon and Austin, Texas have seen the Gay villages in their cities as something that represents the modernism and diversity of their cites.

Overall, the studies of sexuality and space have been primarily cultural for a long time. Much of this work is being informed by a politics intended to oppose homophobia and heterosexism, inform sexual health, and promote more inclusive forms of sexual citizenship. Methodologically, much of this work has been qualitative in orientation, rejecting traditional 'straight' methodologies. There has not been as much attention in the literature to quantitative assessments of the gay male and lesbian populations in the U.S. I hold that such analyses are particularly relevant today given the

active discussions in the political, religious, and social arenas with regard to homosexual marriage, the adoption of children by gays and lesbians, and other issues involving sexual orientation. The available social science data sources are giving researchers more and more opportunities to conduct systematic quantitative studies.

The National Health and Social Life Survey (NHSLS) served as the basis for two well-known books, *Sex in America: A Definitive Study* (Michael et al. 1994) and *The Social Organization of Sex: Sexual Practices in the United States* (Laumann el al. 1994). The latter book features a chapter (Chapter 8) on gays and lesbians that focuses on the definition of homosexuality and the prevalence of gay, lesbian, and bisexual behavior in the United States. One of the main issues addressed by Laumann and his colleagues is how varying definitions of homosexuality affect the measured incidence rates.

Badgett's (1995) study of earnings and sexual orientation, based on pooled data from the 1989-1991 General Social Surveys (GSS) was the first work exploiting the GSS to systematically compare gays and lesbians with heterosexual counterparts. In most of her analysis, Badgett (1995) defines lesbians, gays, and bisexuals as individuals having more same-sex sexual partners than opposite-sex sexual partners since age 18. Using this definition and conditioning on a variety of characteristics, she finds that gay men earn 28% less than heterosexual men, but that sexual orientation has no statistically significant effect on women's earnings. Black and his colleagues (1998) conducted a similar analysis using GSS data from 1988-1991, 1993, 1994, and 1996. They found that the effect of sexual orientation on earnings depends to some degree on the definition of sexual

orientation that is used. Using data from the 2000 U.S. Census and employing multilevel analyses, Baumle and Poston (2011) found out that partnered gay men experience a 12.5 percent earnings penalty compared to married heterosexual men, and a statistically insignificant earnings penalty compared to partnered heterosexual men, when both individual- and state-level characteristics are taken into account. Partnered lesbians experience about a 3.5 percent earnings advantage compared to married heterosexual women, and a 9 percent earnings advantage compared to partnered heterosexual women.

Since 1990, as mentioned earlier, the census instrument allows household heads to report an unmarried partnership regardless of the partner's sex. The 1990 census data were first used to study a group of gays and lesbians by Lisa Krieger (1993), a reporter for the *San Francisco.* Following her primarily descriptive portrayal, census data have been used in many academic studies. Black and his colleagues (1997) examined the effects of sexual orientation on men's wages. They found that men in gay couples earn substantially less than other men, with controls for earnings-related characteristics such as potential experience, education, and demographic traits (e.g., race). Klawitter (1997) studied the effects of sexual orientation on earnings among women. She found that women in lesbian couples earn substantially more than other women, but that much of this difference is attributable to differences in earnings-related characteristics. Black and colleagues (1999), studies the geographic distribution of gay men, arguing that gay men are more willing to pay for amenities not related to children, and providing evidence that this trait influences gay men to locate in unusually attractive locations. Jepsen (1998) and

Jepsen (1999) studied assortative mating and labor market specialization of gay and lesbian couples.

Although these papers constitute a useful and significant advance in understanding gays and lesbians in the United States, the reliability of their principal data source has not been investigated systematically. Black and colleagues (2000) provided an overview of standard social science data sources related to gay and lesbian population including the General Social Survey, the National Health and Social Life Survey, and the U.S. Census. Their concern was that because gays and lesbians constitute a relatively small fraction of the population, modest measurement problems could lead to serious errors in inference.

In the 2010 Census, Census Bureau researchers ("Census Bureau Releases Estimates of Same-Sex Married Couples," 2011) "discovered an inconsistency in the responses in the 2010 Census summary file statistics that artificially inflated the number of same-sex couples … the wrong box may have been checked for the sex of a small percentage of opposite-sex spouses and unmarried partners." Because the population of opposite-sex married couples is large and the population of same-sex married couples in particular is small, an error of this type tends to artificially inflate the number of same-sex married partners. After discovering the inconsistency, Census Bureau staff developed another set of estimates to provide a more accurate way to measure same-sex couple households. The revised figures were developed by using an index of names (first names) to re-estimate the number of same-sex married and unmarried partners by the sex

commonly associated with the person's first name. After making this adjustment, the total number of same-sex couples was found to have declined from 901,997 to 646,464 or by 28 percent. The unmarried partner component declined by 7 percent while the spousal component declined by 62 percent" (O'Connell and Feliz, 2011: 27). The Census Bureau noted in a "News Release" ("Census Bureau Releases Estimates of Same-Sex Married Couples," 2011) that they distributed their "preferred" estimates to several non-Census Bureau researchers for peer-review; the Bureau stated that "these experts concluded the methodology behind these revised estimates was sound."

However, "preferred" estimates for 2010 were only developed by the Census Bureau for the 50 states of the U.S. and for the District of Columbia. Therefore, researchers developed their own algorithms to estimate the revised numbers for lower levels of geography. For example, Gary Gates (2012) developed a procedure for estimating the numbers of same-sex partners for counties. Poston and Chang (2013) adjusted the Gates approach by not applying the adjusted proportion of same-sex male couples to the preferred estimates of same-sex male couples for the county-level. I will provide more discussion of these algorithms in Chapter 3.

Using the 1990 and 2000 United States decennial census enumerations along with data from the 2002 through 2006 American Community Surveys, Gates and associates (2013) provided a very clear picture of geographic trends among same-sex couples in the U.S. They found that the number of same-sex couples reporting themselves as "unmarried partners" has quintupled since 1990 from 145,000 to nearly 780,000. The

biggest increases from 1990 to 2006 were in Southern and Mountain states. The top 10 rankings of states and cities by the concentration of same-sex couples (same-sex couples per 1,000 households) have remained quite stable comparing over the time periods studied. And same-sex couples appear to be moving to the suburbs in some cities. They believed that "coming out" represents an important factor in explaining the increases in same-sex couples in all regions of the country.

Over the years, researchers have made great progress on understanding gay and lesbian populations by conducting symmetrical studies using sizable samples. But there remain a number of challenging questions still unanswered. Fifty years ago, the Census categorized people's race based on the Census enumerator looking at skin color. Today, individuals are free to define their racial and ethnic identities separate from how they look. We consider this to be an advance in how we think about race and ethnicity in our society. In the gay and lesbian framework, we might ask, is it correct to impose an identity based on the observation of particular behaviors rather than on personal affiliation? And how do the varying frameworks of conceptualizing sexual orientation affect our measurements on gay and lesbian population size?

My dissertation will not be able to answer all these questions, and discussions about who we should count as gay or lesbian will continue. But as Gates (2012, p.18) has pointed out, "today, the size of the LGBT community is less important than understanding the daily lives and struggles of this still-stigmatized population and informing crucial policy debates with facts rather than stereotype and anecdote." Although this issue is not

easy to address in a full and sufficient manner, in this dissertation I will make an attempt to draw attention to this matter by measuring and endeavoring to better understand the patterns of residential segregation of same-sex couples from hetero-sexual couples in metropolitan areas in the U.S.

Conclusion

In this chapter I have reviewed some of the key theoretical and empirical literature focusing primarily on residential segregation and homosexuality. I have also emphasized what I believe to be some important voids in the literature. The specific issues that I will address in my dissertation will hopefully extend the research in this area by examining residential segregation in the context of gay and lesbian population in the U.S. In the next chapter, I will describe and discuss the 2010 Census data on same-sex households which will be the principal data to be used in my analyses.

CHAPTER III

DATA, DATA PROBLEMS, AND DATA ESTIMATES

Following the theoretical and empirical literature review in the previous chapter, this

chapter discusses data, data problems, and data estimates. In this chapter, I first discuss

the same-sex partnering data from the 2010 U.S. Census, their biases and problems, and

the adjusted − and alternate − same-sex data developed by Census Bureau researchers.

Next, I introduce methods and estimates developed by Gary Gates, Dudley L. Poston, Jr.

and Yuting Chang. Finally, I develop my own estimates of same-sex couple households

at the level of the Census Tract using the Poston-Chang method.

Data and Data Problems: 2010 Census Same-Sex Couple Household Data

As already noted, reliable data are the key for studying the gay and lesbian population,

and census data are considered as one of the best sources. The 2010 Census marked the

first time that decennial census data were provided for same-sex couple households by

whether the couples reported themselves as living together as spouses or as unmarried

partners. According to the 2010 Census, the total number of same-sex couple

households was 901,997, which was an increase of 52 percent in the number of same-sex

couple households over the past ten years. However, in September 2011, the Census

Bureau announced that more than one-in-four same-sex couples counted in the 2010

Census was likely an opposite-sex couple (Cohn, 2011).

On the other hand, the American Community Survey (ACS) is the Nation's primary annual source of intercensal population and housing data for sub-national geographical areas. The Census Bureau had published estimates of both same-sex couple unmarried partner and spousal households from this survey since it expanded its sample to 3 million households in 2005. However, the comparisons between the 2010 Census and the 2010 American Community Survey counts indicated the 2010 Census number of same-sex couple households was 52 percent higher than the ACS estimate. The state-level numbers of same-sex couple households for the 2010 Census were greater than the 2010 ACS data for all states with the exception of Minnesota, North Dakota and Rhode Island.

What could account for this difference of 52 percent in the count of same-sex couple households between these two data sources in 2010? After analyzing the data, Census Bureau researchers pointed out the likely answer for the difference could be "the forms being used for the follow-up phase for non-respondents to the mail-out/mail-back questionnaires" (O'Connell and Feliz, 2011: 11). The so-called "matrix" form used in the Non-Response Follow-Up (NRFU) operation had a confusing layout that required census-takers to enter data for the same person on two different pages. As a result, thousands of people were likely assigned the wrong gender.

Clearly, the classification of households relies both on the accuracy of the responses to the household relationship item—either as a spouse or unmarried partner (Figure 3.1, Question 2)—and to the gender item (Figure 3.1, Question 3). And because

the number of same-sex couple households was relatively small, minor errors in the gender item made by opposite-sex couple households could have a substantial impact on the estimates of same-sex couple households. "Errors in the marking of the sex item on 2010 census forms created significant numbers of falsely reported same-sex couples," claimed Martin O'Connell, the then chief of the Census Bureau's Fertility and Family Statistics Branch (Cohn, Pew Research, 2011:3).

Without having information from a detailed content re-interview concerning the accuracy of the joint reporting of the gender and relationship items for same-sex couple households from the 2010 Census, the Bureau researchers decided to use an indirect method that used the consistency of the first names reported on the forms and the data recorded for the gender item. This new estimate provided a more accurate way to measure same-sex couple households. The result showed approximately 10 same-sex couple households were incorrectly generated by data capture errors for every 1,000 opposite-sex households interviewed with NRFU forms compared with approximately 3 for every 1,000 opposite-sex households from mail forms (O'Connell and Feliz, 2011).

Figure 3.1 Segment of Questionnaire, 2010 Census of Population, United States

Source: http://2010.census.gov/2010census/pdf/2010_Questionnaire_Info.pdf

In 2011, the Census bureau released a set of revised estimates of same-sex couple households from the 2010 Census, known as the "preferred" data, indicated that in 2010 there was a total of 646,464 same-sex couple households, comprised of 131,729 same-sex couple households where the persons identified themselves as spouses, and 514,735 same-sex couple households where the persons identified themselves as unmarried partners. The "preferred" data from the 2010 Census were much closer to the results of the 2010 American Community Survey (ACS) (Figure 3.2). Therefore, the Census bureau encouraged researchers to use the preferred same-sex couple household data for analysis at the national or state levels for 2010.

Figure 3.2 Percent of Household Reporting as Same-Sex Couple Household by State

Percent

—Census summary file counts   —Census preferred estimates   —ACS 2010
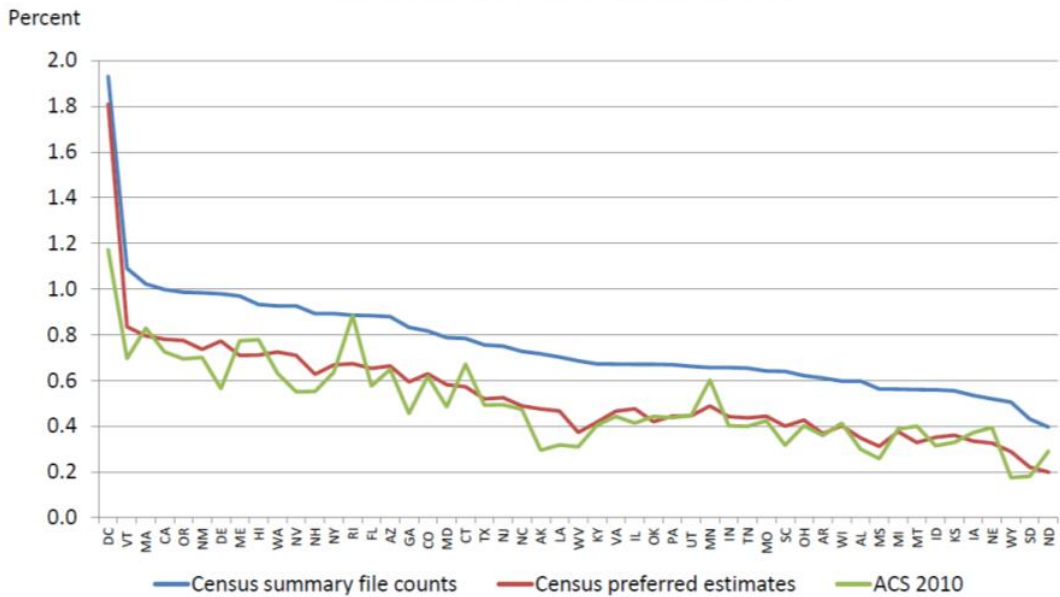
Note: States ordered from highest to lowest based on 2010 Census summary file percents.

Source: http://www.census.gov/hhes/samesex/files/ss-figures-and-maps.pdf

Table 3.1 presents the Census preferred estimates. The table presents the

descriptive statistics of the percent of all same-sex couple households among the 55

states and District of Columbia in 2010. According to Table 3.1, the average percent of

all same-sex couple households at the state level was 0.54% (same-sex unmarried

partners, 0.43%, same-sex spouses, 0.11%). As of the year of 2010, the District of

Columbia had the highest percent of all same-sex couple household (1.81%), while

North Dakota had the lowest percent (0.20%). Table 3.2 shows the ten states with the

highest or lowest percentages of same-sex couple households. Interestingly, the top four

states (DC, Vermont, Massachusetts, and California) with the highest percent of same-

sex couple households were issuing or had issued marriage certificates to same-sex

couples in 2010.

Table 3.1
Means, Standard Deviations (SD), and Minimum and Maximum Values:
Preferred Estimates of the Percent of Households that are Same-sex Couple
Households:
50 States and DC, by Household Type, 2010

Rate	Mean	SD	Minimum value	Maximum value
All same-sex couples	0.55	0.24	0.20	1.81
Same-sex unmarried partners	0.43	0.21	0.15	1.53
Same-sex spouses	0.11	0.06	0.05	0.35

Table 3.2
Ten Highest and Ten Lowest States according to
Percent of Households that are Same-sex Couple Households,
Using Preferred Estimates:
50 States and DC, USA, 2010

	10 Highest Percent of All same-sex couples	
1	**District of Columbia**	**1.81**
2	**Vermont**	**0.84**
3	**Massachusetts**	**0.80**
4	**California**	**0.78**
5	Oregon	0.78
6	Delaware	0.77
7	New Mexico	0.74
8	Washington	0.73
9	Hawaii	0.71
10	Maine	0.71

Table 3.2 Continued

10 Lowest Percent of Same-sex unmarried partners		
1	North Dakota	0.20
2	South Dakota	0.22
3	Wyoming	0.29
4	Mississippi	0.31
5	Nebraska	0.33
6	Montana	0.33
7	Iowa	0.34
8	Alabama	0.35
9	Idaho	0.35
10	Kansas	0.36

Other Estimates: "Gates" Method and "Poston-Chang" Method

However, the Census bureau did not re-tabulate a set of preferred estimates for the 2010 Census tables for sub-state geographical areas. In order to address this issue, some scholars developed their own method to generate sub-state estimates. I now discuss a method developed by Gary Gates and a method developed by Dudley L. Poston, Jr. and Yuting Chang in this section.

Gary Gates is a recognized expert on the demography of the lesbian, gay, bisexual, and transgender (LGBT) population. He has published extensively on the demographic, geographic, and economic characteristics of the LGBT population. Many national and international media outlets regularly feature his work. He has developed a four-step procedure for estimating the numbers of same-sex couple households at the county level and lower levels of geography, e.g., the census tract level, using the Census preferred estimates as a base (Gates, 2013).

Later, Poston and Chang used Gates' four-step procedure, referring to it as the "Gates method" in their research (Poston and Chang, 2013: 8). Using the Gates method, Poston and Chang developed estimates of same-sex couples, same-sex male couples and same-sex female couples for each county for the year of 2010. Then they used these their county-level estimates and developed for preferred estimates of same-sex couples, same-sex male couples, and same-sex female couples for each of the 366 metropolitan areas of the U.S. in 2010 (Poston and Chang, 2013: 11).

However, when using the Gates method, Poston and Chang (2013: 12) found that "the Gates adjustment method ends up producing many estimates of zero for same-sex male couples among the counties, thus producing estimates of zero for same-sex male couples in 36 of the 366 metropolitan areas." Therefore, they adjusted the Gates method by not applying the adjusted proportion of same-sex male couples to the preferred estimates of same-sex male couples for the county level. Instead they used the numbers of official same-sex male couples and same-sex female couples in the county to recalculate the proportions of same-sex male couples and same-sex female couples in each county. Poston and Chang presented the detailed calculations in their paper. I will refer to it as the "Poston-Chang" method in this dissertation. After adjusting the Gates method, Poston and Chang also developed the estimates of same-sex couples, same-sex male couples, and same-sex female couples at both the county and the MSA levels (Poston and Chang, 2013: 13).

Thanks to Gary Gates, Dudley L. Poston, Jr., and Yuting Chang, researchers now are able to conduct more comprehensive analyses of same-sex couples across all

metropolitan areas and counties in the U.S. Their estimates certainly make a good contribution to our understanding of the place of gay and lesbian couples within American society. I now discuss several important findings from the Poston-Chang estimates.

First of all, the Poston-Chang estimates provide the empirical confirmation that gay and lesbian couples lived in nearly every American community in 2010. Their estimates indicate that in 2010, same-sex couple households were present in more than 98 percent of all counties in the United States. Among the total 3,143 counties, only 52 had estimates of zero same-sex couples.

Secondly, the Poston-Chang estimates show that in 2010 the average number of same-sex couple households for the total 3,143 counties was 205 (Table 3.3). There were slightly more gay male couples than lesbian couples in the "average" county. Five states — California, New York, Florida, Texas, Illinois — held positions in the five states with the largest number of same-sex couple households in 2010. The top ten counties with the largest number of same-sex male couples or same-sex female couples are listed in Table 3.4. Interestingly, Los Angeles County, CA had the most gay male couple households (14,604) and lesbian couple households (11,660). Comparing the top ten counties of gay male couples and lesbian couples, we can conclude that in 2010, counties with higher numbers of gay male couple household also had higher numbers of lesbian couple household.

Table 3.3
Means, Standard Deviations (SD), And Minimum and Maximum Values of
Poston-Chang Estimates of Same-sex Couple Households:
3,143 Counties, 2010

Rate	Mean	SD	Minimum value	Maximum value
All same-sex couples	205	881.0	0	26,263
Same-sex male couples	98	495.1	0	14,604
Same-sex female couple	107	400.3	0	11,660

Table 3.4
Ten Counties with the Highest Total Counts of Gay Male Couples, Lesbian
Couples:
3,143 Counties, USA, 2010

10 Highest Total Counts of Gay Male Couples

1	Los Angeles County, CA	14,604
2	New York County, NY	9,542
3	Cook County, IL	7,729
4	San Francisco County, CA	7,673
5	Broward County, FL	5,151
6	Maricopa County, AZ	5,046
7	King County, WA	4,988
8	San Diego County, CA	4,739
9	Harris County, TX	4,541
10	Riverside County, CA	4,450

10 Highest Total Counts of Lesbian Couples

1	Los Angeles County, CA	11,660
2	Cook County, IL	5,944
3	Maricopa County, AZ	5,078
4	King County, WA	4,522
5	Harris County, TX	4,290
6	San Diego County, CA	4,106
7	Alameda County, CA	3,794
8	Kings County, NY	3,570
9	New York County, NY	3,176
10	Dallas County, TX	3,064

Using the Poston-Chang estimates, I created maps to show the county-level geographic distributions of total same-sex couple households, same-sex male couple households, and same-sex female couple households in 2010 (Figure 3.3, Figure 3.4, and Figure 3.5). Combining the three maps, an interesting pattern emerges: there were still more same-sex couple households along the Pacific Coast and the East Coast of the United States in 2010. Similar patterns can also be found among gay male couples and lesbian couples. It is true that those areas had a longer history of acceptance of the gay male and lesbian population. However, the maps also show that a sizable proportion of same-sex couple households were located in those socially conservative regions of the West South Central, South Atlantic, and Mountain. Part of the explanation could be that the lesbian, gay and bisexual community had followed the migration trends in the United States since 1990 which was marked by population shifts to the more conservative southern and mountain states. But other LGBT studies (e.g. Gates, 2007) also indicate that "coming out" represents an important factor in explaining the increases in same-sex couples in the socially conservative regions. Researchers have pointed out that "these same-sex couples were coming out and identifying themselves in government surveys at higher rates in parts of the country where they had been historically least accepted, suggesting that these areas had become more hospitable and welcoming of this often stigmatized population" (Gates, 2007:14). This hypothesis will be examined later in this dissertation.

Figure 3.3 The Number of Same-Sex Couple Households:
3,143 Counties, Poston-Chang Estimates, 2010
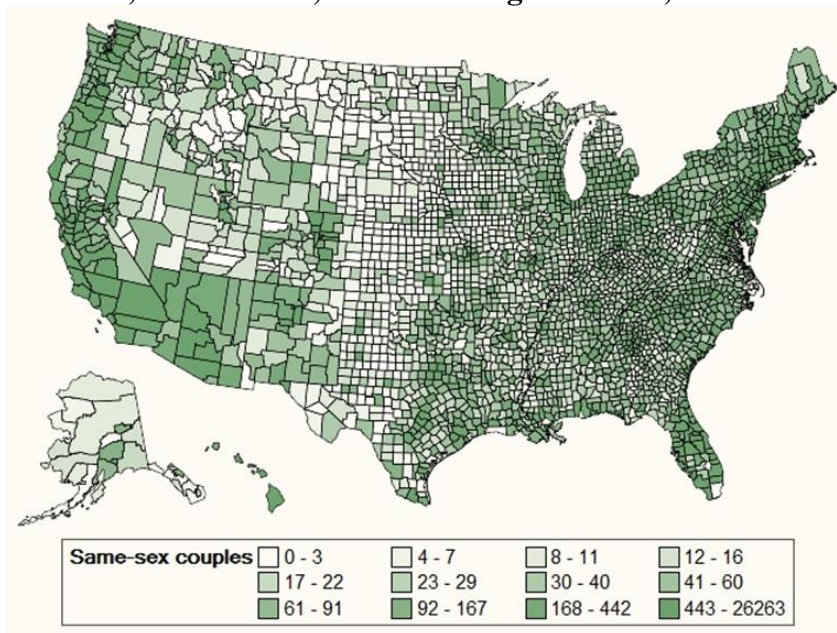
Figure 3.4 The Number of Same-Sex Male Couple Household:
3,143 Counties, Poston-Chang Estimates
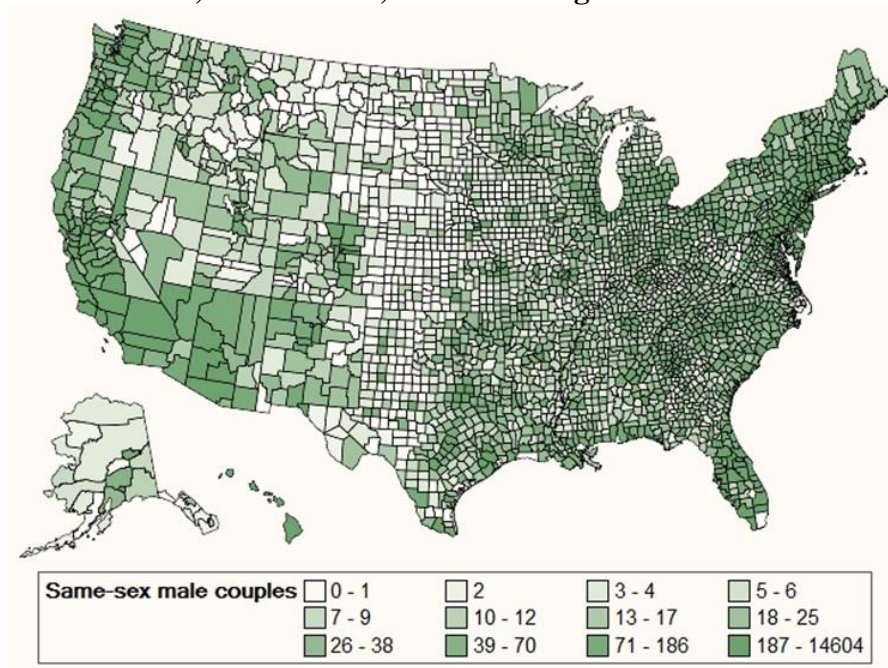
Figure 3.5 The Number of Same-Sex Female Couple Households:
3,143 Counties, Poston-Chang Estimates, 2010
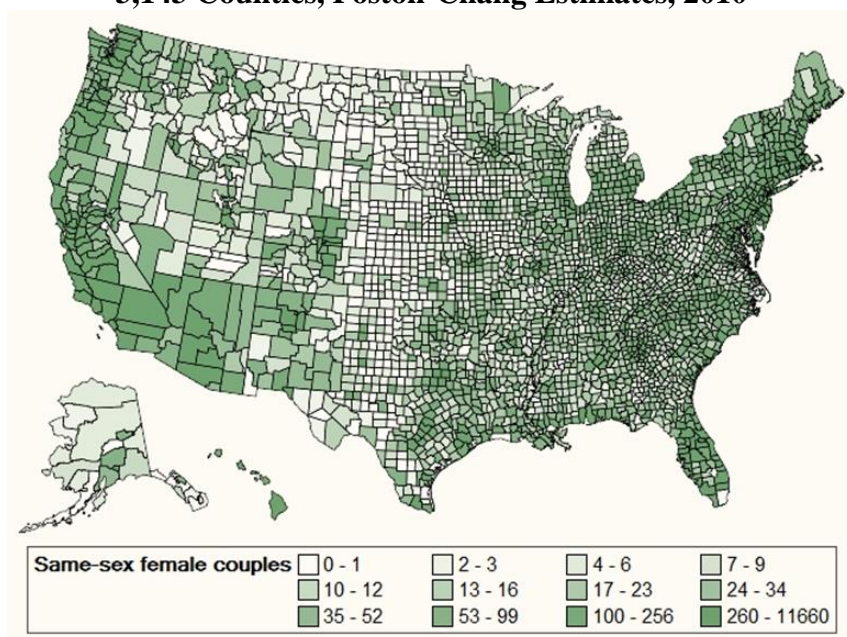
Finally, Poston and Chang developed a household-based index of gay male partnering and a household-based index of lesbian partnering for each of the 366 metropolitan areas of the U.S. Their results show that "in the 'average' metropolitan area, gay male couples were 31 percent less likely to settle there than would be a couple from a randomly selected metropolitan household; and that a lesbian couple would 14 percent less likely to settle there than would be a couple from a randomly selected household." (Poston and Chang, 2013: 14) According to Poston and Chang's calculation, the San Francisco-Oakland-Fremont, CA metropolitan area had the highest gay male couple ratio value, 2.78, and the Ithaca, NY metropolitan area had the highest lesbian couple index ratio, 2.97.

Poston and Chang's estimates and analysis certainly provided a clear picture of the prevalence and geographic distribution of partnered gay male households and partnered lesbian households among the metropolitan areas of the U.S. in 2010. But much more needs to be done. I want to take one step further to explore geographic distributions and location patterns of same-sex couple households within each metropolitan area.

For example, the following maps show the geographic distributions of same-sex couple households, same-sex male couple households, and same-sex female couple households within Houston-The Woodlands, TX metropolitan area (Figure 3.6, Figure 3.7, and Figure 3.8,). They are based on the Poston-Chang estimates at county level. Visibly, same-sex couples were not evenly distributed within the metropolitan area. According to the map, same-sex couples were more likely to locate in the central part of the MSA (Harris County, Montgomery County, and Galveston County), and less likely to locate in the two "surrounding" counties (Austin County and Chambers County). Similar patterns were also found among gay male couples and lesbian couples. But besides Harris County and Montgomery County, gay male couples were more likely to locate in Galveston County, while lesbian couples were more likely to locate in Fort Bend County.

Figure 3.6 The Number of Same-Sex Couple Households:
Houston-The Woodlands, TX MSA, Poston-Chang Estimates, 2010

Same-sex couples ☐ 34 - 40 ☐ 46 - 80 ☐ 397 - 567 ■ 576 - 8831
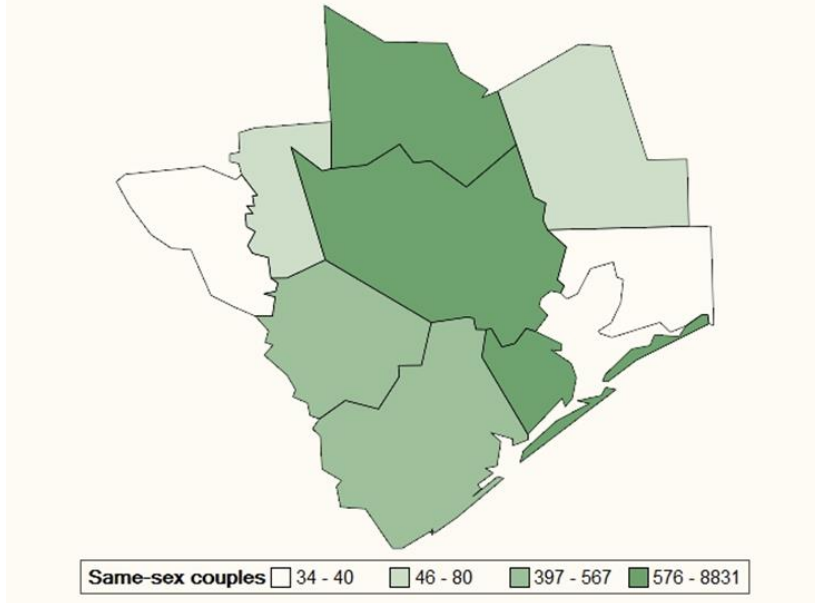
Figure 3.7 The Number of Same-Sex Male Couple Household:
Houston-The Woodlands, TX MSA, Poston-Chang Estimates, 2010

Same-sex male couples ☐ 12 - 16 ☐ 20 - 32 ☐ 167 - 248 ■ 259 - 4541
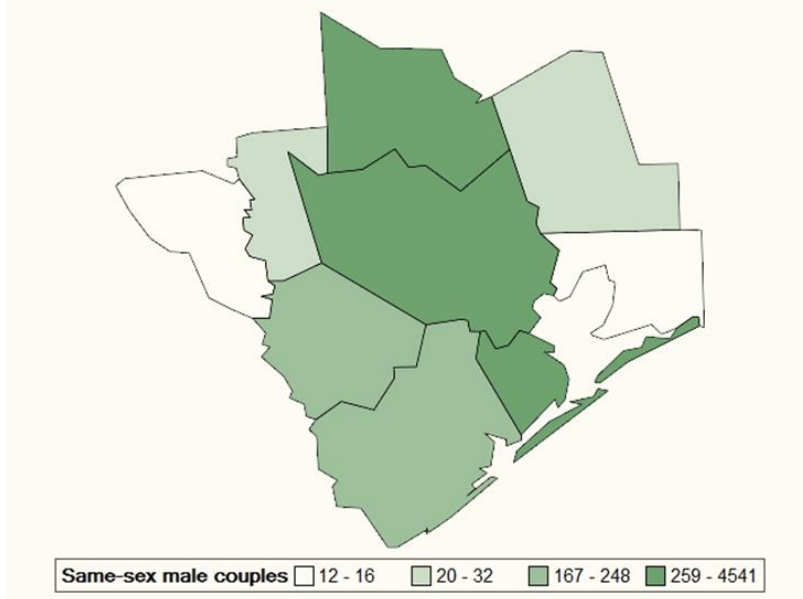
Figure 3.8 The Number of Same-Sex Female Couple Households:
Houston-The Woodlands, TX MSA, Poston-Chang Estimates, 2010

Same-sex female couples ☐ 18 - 26   ☐ 28 - 48   ☐ 230 - 304   ■ 319 - 4290
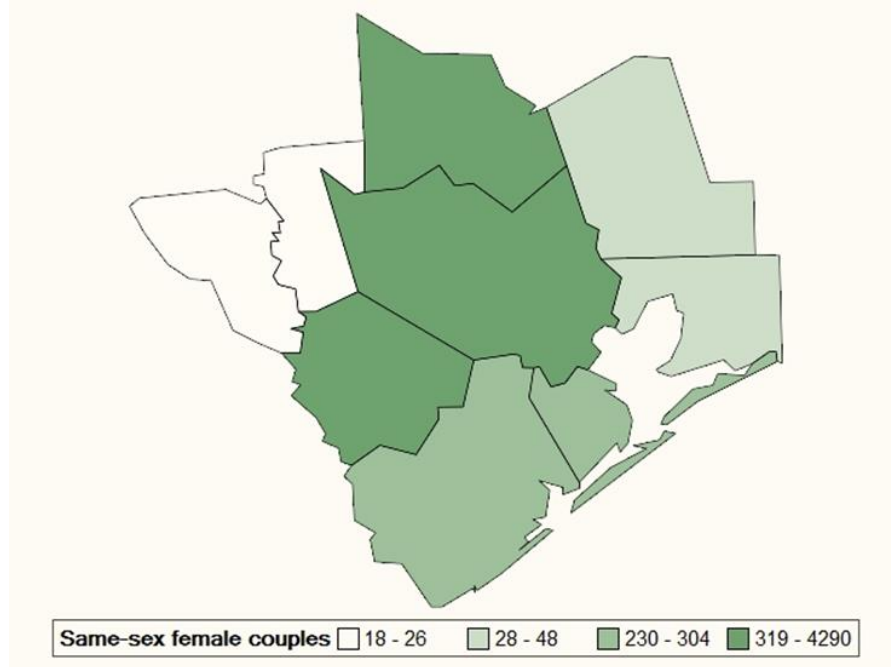
As described, the maps show an uneven geographic distribution of same-sex couples in Houston-The Woodlands MSA, TX. Now I want to take one additional step and ask if there was a certain level of segregation of same-sex couples in this MSA or any of the other MSAs in 2010. In order to answer this question, I need to measure the level of residential segregation between same-sex couples and heterosexual couples by calculating one of the segregation indices (D-index) for each of the metropolitan area. Therefore, estimates of same-sex couple households at the census tract level are needed. Thus the analyses in the next section applies the Poston-Chang method to develop the estimates of same-sex couples, same-sex male couples, and same-sex female couples for census tracks.

Estimates at Census Track Level

I use one census tract (Census Tract 1.01) of Travis County, Texas as an example to show how I developed preferred numbers for census tracts applying the Poston-Change method. Table 3.5 shows the numbers of Census Tract 1.01 and Travis County needed for the calculation.

Here are the calculations:

1. Apply the mail-in rate, 0.73, to estimate an error rate for Census Tract 1.01 of Travis County, Texas:

$$error_{Tract1.01} = (0.003 \times 0.73) + [0.01 \times (1 - 0.73)] = 0.00489$$

Table 3.5
The numbers of Census Tract 1.01 and Travis County

$Mailinpect_{Tract1.01}$	0.73
$SSM_{Tract1.01}$	9
$SSF_{Tract1.01}$	14
$DSMARM_{Tract1.01}$	525
$DSUMPM_{Tract1.01}$	46
$DSMARF_{Tract1.01}$	141
$DSUMPF_{Tract1.01}$	51

Where:

$Mailinpect_{Tract1.01}$: The percentage for the county, in which Tract1.01 is located, of 2010 census questionnaires that were returned by mail.

$SSM_{Tract1.01}$: Temporary number of Same-sex male couples in Tract1.01.

$SSF_{Tract1.01}$: Temporary number of Same-sex female couples in Tract1.01.

$DSMARM_{Tract1.01}$: Official number of different-sex married couples with male householder in Tract1.01.

$DSUMPM_{Tract1.01}$: Official number of different-sex unmarried couples with male householder in Tract1.01.

$DSMARF_{Tract1.01}$: Official number of different-sex married couples with female householder in Tract1.01.

$DSUMPF_{Tract1.01}$: Official number of different-sex unmarried couples with female householder in Tract1.01.

2. Apply the error rate to develop a temporary number of same-sex male and female couples for Census Tract 1.01 of Travis County, Texas:

$$SSMt_{Tract1.01} = 9 - [0.00489 \times (525 + 46)] = 6.2078$$

$$SSFt_{Tract1.01} = 14 - [0.00489 \times (141 + 51)] = 13.0611$$

3. Apply the two temporary variables to create adjusted proportions of same-sex couples and same-sex male couples for Census Tract 1.01 of Travis County, Texas:

$$pSS_{Texas}^{Travis} = \frac{6.2078 + 13.0611}{\sum_g (SSMt_{Travis}^g + SSFt_{Travis}^g)} = 0.004672401$$

4. Apply the proportions to the Travis County, Texas preferred estimates (the "Gates Estimates") of same-sex couples so to be able to develop same-sex estimates for Census Tract 1.01 of Travis County, Texas:

$$SS_{preferred}^{Tract1.01} = 0.004672401 \times 4483 \cong 21$$

5. The official census numbers of same-sex male couples and same-sex female couples for Census 1.01 of Travis County, Texas are 9 and 14, respectively. Therefore, the proportions of same-sex male couples and same-sex female couples in this Census Tract are 9/ (9+14) and 14/ (9+14), i.e., 0.391 and 0.609. I then applied these proportions to the preferred estimate of same-sex couples for Census Tract 1.01, namely, 21, and thus obtained a count of 8 same-sex male couples and 13 same-sex female couples in Census Tract 1.01.

6. Apply the same methodology to all census tracts in Travis County, Texas to develop estimates of the number of same-sex couples, same-sex male couples, and same-sex female couples for the 217 census tracts in Travis County, Texas. Figures3.9, Figure 3.10 and Figure 3.11 show that my estimates are lower than the official census numbers of Same-sex couples, same-sex male couples, and same-sex female couples, but the variances across the census tracts are consistent.

7. Finally I develop Census Tract level preferred estimates of same-sex couples, same-sex male couples, and same-sex female couples for the census tracts of each of the 100 metropolitan areas with the largest total counts of same-sex couple households in the U.S. in 2010. The estimates will be used to calculate the D-index (next chapter).

Figure 3.9 Number of Same-Sex Couple Households by Census Tract, Census Data and Estimates, 217 Census Tracts, Travis County, TX, 2010
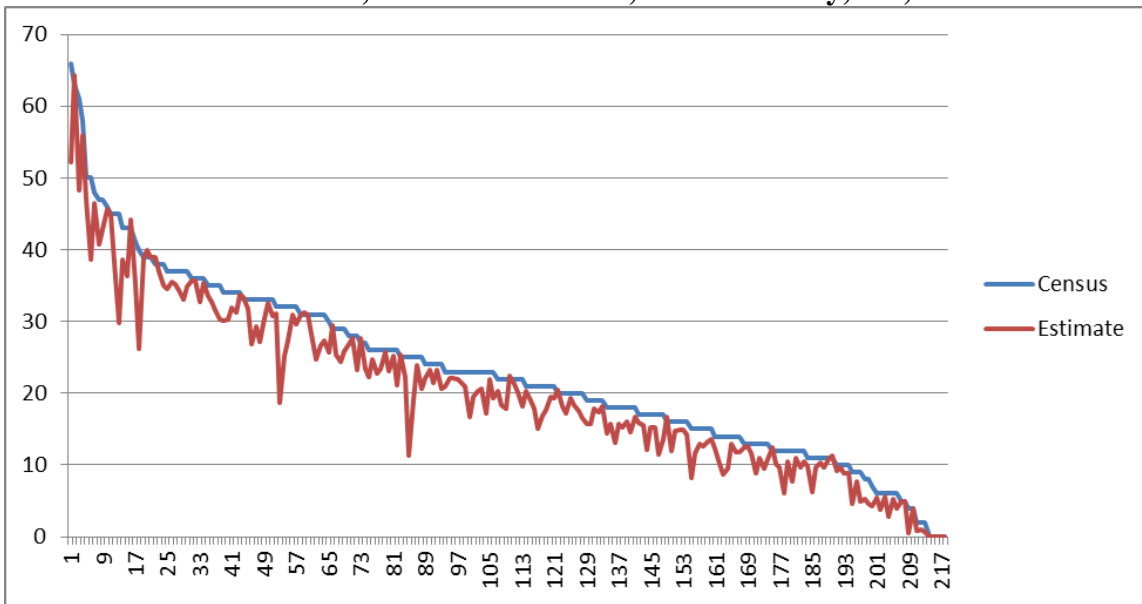
Figure 3.10 Number of Same-Sex Male Couple Household by Census Tract, Census Data and Estimates, 217 Census Tracts, Travis County, TX, 2010
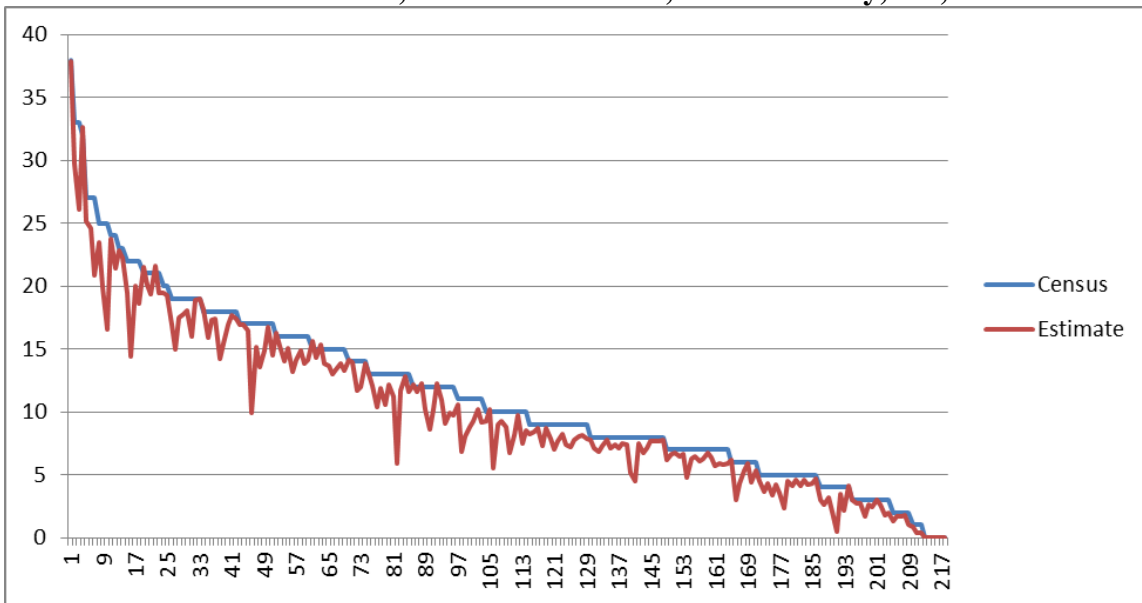
Figure 3.11 Number of Same-Sex Female Couple Household by Census Tract, Census Data and Estimates, 217 Census Tracts, Travis County, TX, 2010
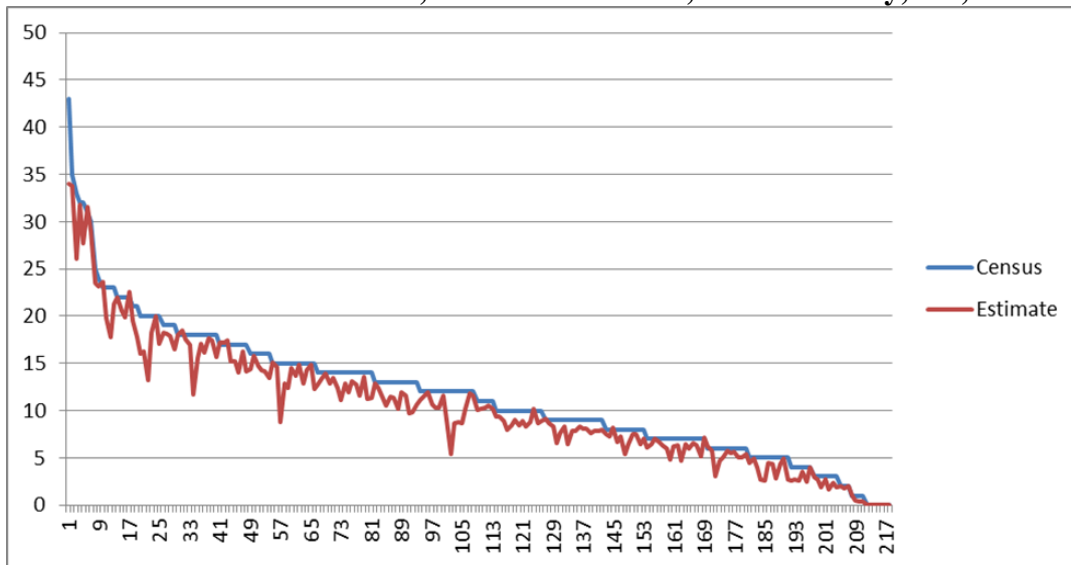
Conclusion

The research of Gates and Poston and Chang's work mark the beginning of an exploration of the 2010 census data to describe the prevalence and location patterns of gay and lesbian couples in geographies below the state-level, especially, among the metropolitan areas in the United States. I believe such analyses of more detailed data would offer myriad opportunities to construct a rich portrait of the geographic characteristics of the gay and lesbian community. Therefore, this dissertation will hopefully fill an important information gap by examining the residential segregation between sample-sex couple households and heterosexual couple households in American metropolitan areas.

In this chapter, I examined the complete count data on same-sex partnering as reported in the 2010 U.S. Census. I also introduced the alternate, i.e. "preferred" data developed by the Census Bureau researchers and estimates developed by other researchers. After discussing the biases and other problems of the 2010 Census data, I used the Poston-Chang method to develop my own estimates of same-sex couple households for the Census Tracks of the 100 Metropolitan Statistical Areas in the U.S. with the largest numbers in 2010 of same-sex couple households. In the next chapter, I will use these data estimates to measure the level of residential segregation between same-sex couple households and heterosexual partnered households in these 100 U.S. Metropolitan Statistical Areas.

CHAPTER IV

MEASURING HOMOSEXUAL-HETEROSEXUAL SEGREGATION

In the previous chapter, I introduced methods and estimates developed by Gary Gates,

Dudley L. Poston, Jr. and Yuting Chang. I developed my own estimates of same-sex

couple households for Census Tracts by applying Poston-Chang method. In this chapter,

I will measure homosexual-heterosexual segregation at both the county level and the

MSA level by calculating both the conventional and unbiased dissimilarity indexes.

Measurement, D-index, and the "Unbiased" D-Index

Residential segregation is the physical separation of two or more groups in different

neighborhoods, and it is one of the most important research areas in sociology and

demography. There are many ways to conceptualize and measure residential segregation

(Massey and Denton 1988). As discussed, the index of dissimilarity (D-index) is one of

the more popular and regularly used indices in the literatures. In this chapter, I use the

D-index to present the degree of unevenness in the patterns of residential distribution of

same-sex couple households and heterosexual couple household in the United States in

2010.

The traditional or conventional D-index has a theoretical range from 0,

indicating the perfectly even residential distributions of the two groups, to 100,

representing the completely uneven residential distributions of the two groups. Its value

reflects the percentage of homosexuals (or heterosexuals) that would have to move their

residence to certain other areal units for their percentage residential distribution to be the same as that of the heterosexual population. The higher the value of the D-index, the more uneven the homosexual group's residential distribution from that of the heterosexual group, and, therefore, the greater its degree of residential segregation from the heterosexual population.

The D-index can be defined as:

$$D = (\frac{1}{2}\sum_{i}^{n} |(HOM_i / HOM) - (HET_i / HET)|)*100$$

where HOM_i and HET_i are, respectively, the numbers of partnered gays (or lesbians) and heterosexuals living in the ith areal unite, and HOM and HET are, respectively, the total numbers of partnered gays (or lesbians) and heterosexuals in the area. One-half of the absolute differences between HOM_i/HOM and HET_i/HET are summed over all unites of the area, and multiplied by 100 to yield a percentage score.

However, the D-index, like all other segregation indices, is inherently biased. Specifically, as Mark Fossett and his colleagues, e.g., Fossett and Zhang (2011) have noted, under random assignment the standard version of the index has an expected value above zero, and this bias is rooted in the basic formulation. The magnitude of the bias varies with circumstances; the bias can be non-negligible in many research situations, and in other situations it can be negligible.

As discussed in chapter two, Fosset and Zhang (2011) introduced a new version of the D-index that they referred to as the "unbiased" D-index. Under random distribution the unbiased D-index has expected values of zero. In their paper, Fossett and Zhang (2011) also showed how to obtain the unbiased D-index with a revised computing formula which eliminates the root source of bias in the conventional formulation of the D-index. In sum, calculating the D-index based on counts for areal population is intrinsically biased because counting households as exposed to themselves biases the mean on exposure up for gay or lesbian couples and down for heterosexual couples. In contrast, calculating the D-index based on counts for neighbors is unbiased because in the long run random draws of neighbors are the same for same-sex couples and heterosexual couples.

My goal in this chapter is to measure the level of homosexual-heterosexual segregation in the U.S. in 2010. To accomplish this, I use the estimates of the counts of same-sex households in 2010 to calculate two sets of dissimilarity indices: one set of three for gay male couple households, and another set of three for lesbian couple households. The three dissimilarity indices for gay men compare their residential distributions with 1) married heterosexual cohabiters, 2) unmarried heterosexual cohabiters, and 3) all heterosexual cohabiters—both married and unmarried. A similar set of three D indices is constructed for lesbians. In addition, I calculate a seventh D-index that compares the residential distribution of gay male partners with lesbian partners. Moreover, in order to eliminate the possible bias, I calculate both conventional and unbiased versions of D-index.

Homosexual-Heterosexual Segregation across Counties

Current studies of residential segregation in the U.S. have continued the tradition of examining the residential patterns of groups in metropolitan areas (for a discussion of the history of such studies, see Massey 1988). And the data used to measure geographic segregation in these studies are almost always based at the Census Tract or at the Block level. However, as Rogelio Saenz and Jaime Vinas (1990) have argued, the emphasis on metropolitan areas led to a lack of information about the residential segregation patterns across larger areal units (e.g. states), and previous research failed to show the full spectrum of the geographic dispersal of ethnic groups. Therefore, Saenz and Vinas examined the geographic segregation patterns of Chicanos from Anglos across counties in 50 states using data from the 1980 Census. But other than the research of Saenz and Vinas, few studies of residential segregation in the U.S. focus on the population distributions across counties.

When studying the residential segregation of minority populations in China in 2000 in my Master's thesis research (Deng, 2010), I examined the residential segregation of each of the Chinese minorities from the Han majority at the provincial and the county levels across the whole country. In my thesis, I also argued that "given the unique pattern of ethnic segregation in China, it is much more important to know the extent to which minority and majority groups share similar physical environments in areas more diverse than metropolitan areas" (Deng, 2010: 14).

Studies of homosexual-heterosexual segregation experience the same problem. As few analyses have been conducted on this new research area, the whole

picture of the geographic segregation patterns of same-sex couple households from heterosexual couple household across the country is still blurred. Therefore, this dissertation attempts to fill the gap by first exploring the homosexual-heterosexual segregation in the context of larger areal unites (counties).

Table 4.1 presents descriptive information. Some scholars of residential segregation use a benchmark value of 30 percent as the threshold for a meaningful level of residential segregation (Alba and Nee 2003: 87). Therefore, the data in these tables illustrate that on average, there was no obvious residential segregation between same-sex couple households and heterosexual couple households across counties within each of the fifty states in the United States in 2010.

For example, the average segregation score between gay male partners and married heterosexual couples across the fifty states was 22 percent (Table 4.1). This value may be interpreted as follows: in the year of 2010, on average 22 percent of gay male couples would have to move their residence to certain other counties for their percentage residential distribution across the counties to be the same as that of the married heterosexual population across the fifty states in the U.S. Among the fifty states, the scores range from a low of 4 percent in New Hampshire (nearly even distribution) to a high of 41 percent (sizable segregation) in Minnesota. Other states with sizable residential segregation between gay partners and married heterosexual partners were Georgia (41%), Colorado (34%), Illinois (34%), and New York (34%).

Table 4.1
Means, Standard Deviations, and Minimum and Maximum Scores:
Traditional Dissimilarity Indices of Homosexual-Heterosexual Segregation,
50 States of the U.S., 2010

Variable	Mean	Std. Dev.	Minimum	Maximum
Indexes of Dissimilarity				
Gays vs. All Heterosexuals	22%	0.08	4% (New Hampshire)	41% (Minnesota)
Lesbians vs. All Heterosexuals	17%	0.06	5% (New Hampshire)	33% (Minnesota)
Gays vs. Married Heterosexuals	22%	0.08	4% (New Hampshire)	42% (Minnesota)
Gays vs. Unmarried Heterosexuals	18%	0.07	2% (Hawaii)	37% (Georgia)
Lesbians vs. Married Heterosexuals	18%	0.06	5% (New Hampshire)	33% (Minnesota)
Lesbians vs. Unmarried Heterosexuals	13%	0.05	2% (Rhode Island)	29% (Minnesota)
Gays vs. Lesbians	10%	0.04	3% (Hawaii)	23% (New York)

Table 4.2 presents descriptive information of the seven unbiased dissimilarity indices for each of the fifty states in the year of 2010. All average values of the unbiased indices were slightly lower than the conventional indices (Figure 4.1). States with high scores on the traditional D-index also showed high scores on the unbiased D-indices (e.g., Minnesota, New York). That is to say, the county-level homosexual-heterosexual segregation I measured was robust. It was not caused in a major way by the biases of the traditional dissimilarity index, i.e., random segregation.

Table 4.2
Means, Standard Deviations, and Minimum and Maximum Scores:
Unbiased Dissimilarity Indices of Homosexual-Heterosexual Segregation,
50 States of the U.S., 2010

Variable	Mean	Std. Dev.	Minimum	Maximum
Indexes of Dissimilarity				
Gays vs. All Heterosexuals	21%	0.08	0.03% (New Hampshire)	41% (Minnesota)
Lesbians vs. All Heterosexuals	16%	0.07	0.06% (North Dakota)	33% (Minnesota)
Gays vs. Married Heterosexuals	21%	0.08	0.04% (Connecticut)	42% (Minnesota)
Gays vs. Unmarried Heterosexuals	16%	0.08	0.05% (New Hampshire)	36% (Minnesota)
Lesbians vs. Married Heterosexuals	16%	0.07	0.02% (Wyoming)	34% (Minnesota)
Lesbians vs. Unmarried Heterosexuals	11%	0.06	0.02% (Rhode Island)	28% (Minnesota)
Gays vs. Lesbians	7%	0.06	0.00% (Nebraska)	23% (New York)

Figure 4.1
Average Scores of Dissimilarity Index, Traditional and Unbiased,
50 States of the U.S., 2010
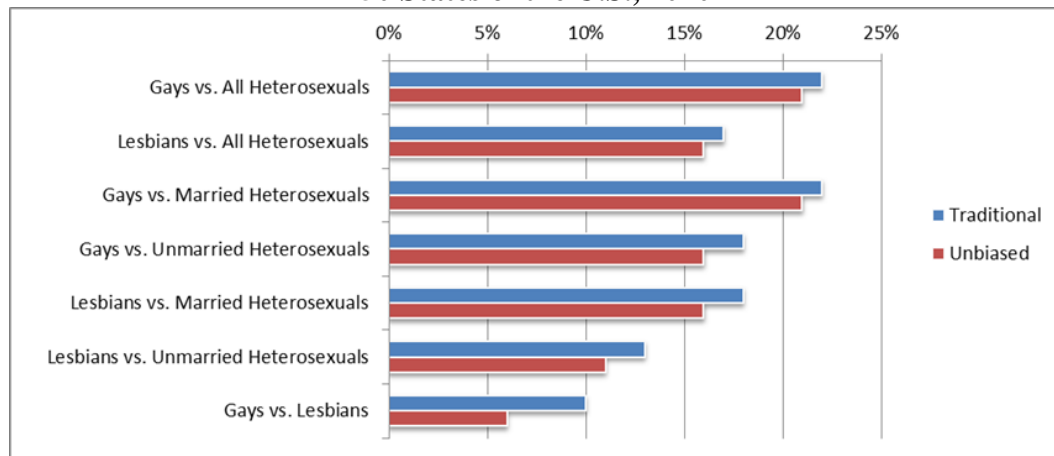
To summarize, assessing segregation at a larger spatial scale (e.g., the county) has an obvious value because it can potentially detect segregation that might otherwise be missed. However, the results in this section show that in 2010 there was no high level of homosexual-heterosexual segregation across the counties in each of the states of the United States. But we cannot overlook the fact that the homosexual-heterosexual segregation may exit at lower spatial scales and not be evident when assessing it at larger spatial scales such as counties. So the next step is to examine the patterns of homosexual-heterosexual segregation in metropolitan areas by using census tract as the spatial scale.

Homosexual-Heterosexual Segregation in Metropolitan Areas

As discussed in Chapter three, I have already developed estimates of the counts of same-sex couple households at census tract level by using the Poston-Chang method. In this section, I use these data estimates to calculate the dissimilarity index for the 100 Metropolitan Statistical Areas which had the largest total number of same-sex couple households in 2010. For each of the metropolitan areas, I calculate seven dissimilarity indices using each of two D-indexes, namely, the conventional and the unbiased versions: one set of three for gay male couple households, another set of three for lesbian couple households, and a seventh dissimilarity index that compares the residential distribution of gay male partners with lesbian partners.

Table 4.3 presents descriptive data for the seven traditional dissimilarity indices among the 100 metropolitan areas in 2010. Table 4.4 presents descriptive information for the seven unbiased dissimilarity indices.

Table 4.3
Means, Standard Deviations, and Minimum and Maximum Scores:
Traditional Dissimilarity Indices of Homosexual-Heterosexual Segregation,
**100 MSAs of the U.S., 2010**

Variable	Mean	Std. Dev.	Minimum	Maximum
Indexes of Dissimilarity				
Gays vs. All Heterosexuals	38%	0.08	22%	57%
Lesbians vs. All Heterosexuals	30%	0.04	20%	42%
Gays vs. Married Heterosexuals	39%	0.08	24%	57%
Gays vs. Unmarried Heterosexuals	32%	0.07	19%	56%
Lesbians vs. Married Heterosexuals	32%	0.05	22%	43%
Lesbians vs. Unmarried Heterosexuals	26%	0.04	18%	42%
Gays vs. Lesbians	28%	0.04	20%	46%

Several interesting patterns emerge from these results.

First of all, compared with my previous analyses of the patterns among the fifty states, I observe a higher level of homosexual-heterosexual segregation in the 100 metropolitan areas in 2010 (Figure 4.2). All average values of D-indices were below 30% at the state level, but five of them were around or above 30% at the MSA level. The average value of the D-index between gay couples and heterosexual couples across the 100 metropolitan areas was 38% and was 30% between lesbian couples and heterosexual

couples. That is to say, in the year of 2010, on average, 38 percent of gay couples would

have to move their residence to certain other census tracts for their percentage residential

distribution across the census tracts to be the same as that of the heterosexual population

in the 100 metropolitan areas in the U.S.; and that 30 percent lesbian couples would have

to move to other census tracts.

Table 4.4
Means, Standard Deviations, and Minimum and Maximum Scores:
Unbiased Dissimilarity Indices of Homosexual-Heterosexual Segregation,
100 MSAs of the U.S., 2010

Variable	Mean	Std. Dev.	Minimum	Maximum
Indexes of Dissimilarity				
Gays vs. All Heterosexuals	28%	0.11	4%	55%
Lesbians vs. All Heterosexuals	21%	0.06	5%	36%
Gays vs. Married Heterosexuals	30%	0.11	5%	54%
Gays vs. Unmarried Heterosexuals	21%	0.10	1%	54%
Lesbians vs. Married Heterosexuals	33%	0.05	20%	44%
Lesbians vs. Unmarried Heterosexuals	14%	0.06	1%	41%
Gays vs. Lesbians	8%	0.07	0%	36%

However, the level of homosexual-heterosexual segregation decreased

rapidly after changing the D-index from the conventional version to the unbiased

version. Figure 4.3 shows that all average values of the seven D-indices dropped below

30% except for the index for lesbian couples and for married heterosexual couples.

Specifically, when using the traditional D-index, 88 metropolitan areas had index scores

above or equal to 30%, but the number dropped to 54 when using unbiased D-index. Similar patterns were found among the other D-indices, except for the D-index of lesbian couples and married heterosexual couples. Actually after using the unbiased D-index, the number of metropolitan areas with 30% or higher index scores increased from 69 to 74. At the same time, MSAs with high values on the traditional D-indices also tended to have high values on the unbiased D-indices. Overall we can conclude that within the 100 metropolitan areas, residential segregation between same-sex couples and heterosexual couples may be partially caused by random segregation, but the levels of segregation were still significant even after controlling for the biases of the conventional D-index.

Figure 4.2 Average Values of D-Indices, 50 States and 100 MSAs, 2010
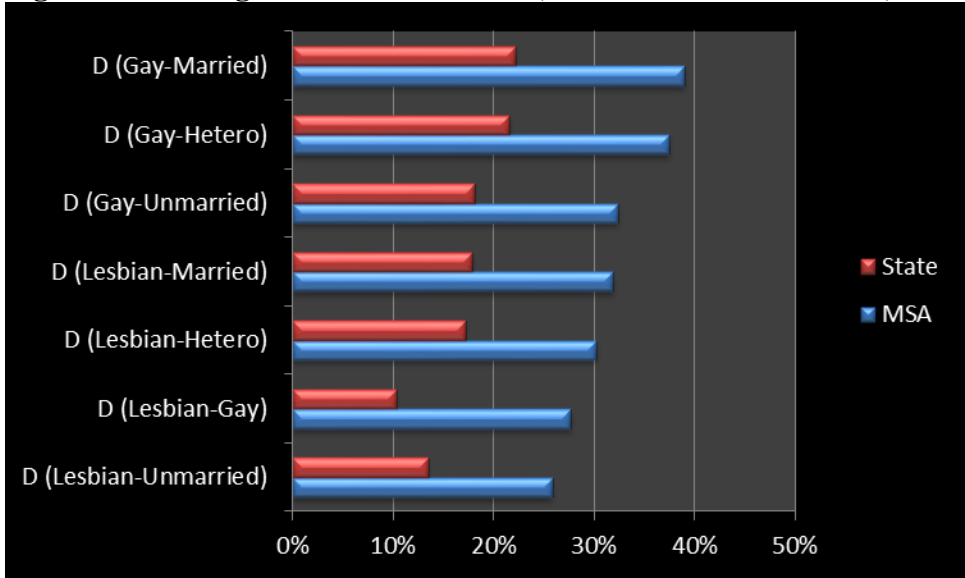
Figure 4.3
Average Scores of Dissimilarity Index, Traditional and Unbiased,
100 MSAs of the U.S., 2010
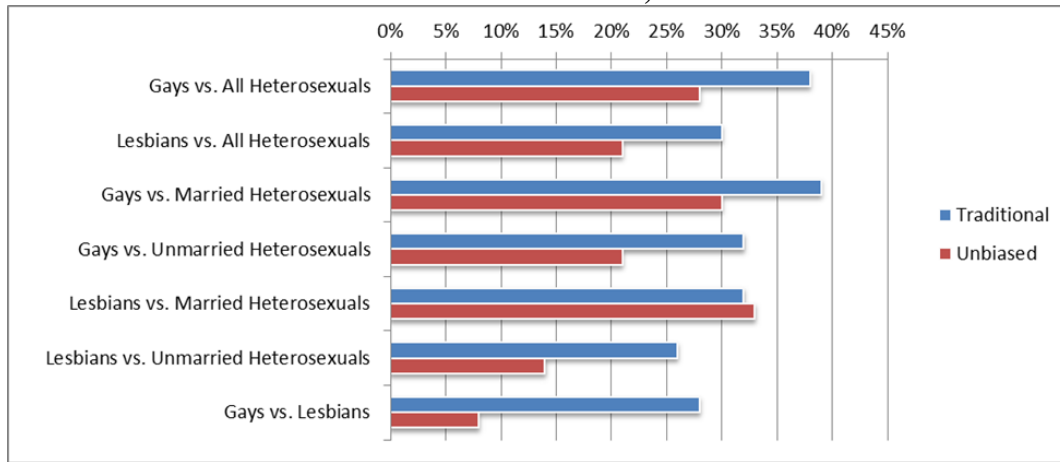
Secondly, same-sex male couples tend to be more segregated from heterosexual couples than same-sex female couples. As shown in Table 4.3, across the 100 metropolitan areas, same-sex male couples had higher mean segregation scores in all three comparisons than partnered lesbians. In only eight of the 100 MSAs were same-sex female couples more segregated from heterosexual couples than were same-sex male couples. The possible explanations why lesbians were less segregated from heterosexuals than were gays are that more lesbian households contain young children than do gay households, and that lesbian households tend to have lower earnings than gay households.

Further, we have evidence to believe "Gayborhood" and "Lesbianville" may not always be located at the same place. In 2010 in the U.S., the most segregated

metropolitan areas between gay couples and heterosexual couples were Riverside-San Bernardino-Ontario (CA, 55%), San Francisco-Oakland-Hayward (CA, 51%), Chicago-Naperville-Elgin (IL-IN-WI, 48%), Minneapolis-St. Paul-Bloomington (MN-WI, 48%), and Washington-Arlington-Alexandria (DC-VA-MD-WV, 48%). On the other hand, the most segregated metropolitan areas between lesbian couples and heterosexual couples were Minneapolis-St. Paul-Bloomington (MN-WI, 36%), Springfield (MA, 36%), San Francisco-Oakland-Hayward (CA, 35%), Madison (WI, 33%), Portland-Vancouver-Hillsboro (OR-WA, 33%), and Seattle-Tacoma-Bellevue (WA, 33%). Interestingly, besides the San Francisco-Oakland-Hayward area, most Lesbianvilles were located in Northern areas close to Universities.

Gay partners tend to be segregated from lesbian partners with an average dissimilarity index of 28 percent and a range from 20 percent in Portland-South Portland, ME to 46 percent in Riverside-San Bernardino-Ontario, CA. However this range in the segregation scores was greatly reduced after controlling for the bias of the D-index.

Partnered gays and lesbians do not necessarily follow the same patterns of segregation. A similar study was also found by urban planning researchers. A recent study published in the *Journal of the American Planning Association* (Michael Smart, of Rutgers, and Nicholas Klein, 2014) found that people living in a gayborhood take shorter work and non-work trips. However, they did not find similar results for lesbians.

And lastly, the results indicate that both gay and lesbian couples tend to be more residentially segregated from married heterosexual partners than they are from

unmarried heterosexual partners. Gay partners tend to be segregated from married heterosexual partners with an average dissimilarity index of 39 percent, but from unmarried heterosexual partners with an average Dissimilarity index of 32 percent. The difference was even larger among lesbian couples. Lesbian partners were segregated from married heterosexual partners with an average dissimilarity index of 32 percent, but from unmarried heterosexual partners with an average Dissimilarity index of 26 percent. The presence of children and the differences in income between the groups may be contributing factors for this differential. On average, unmarried partner households, heterosexual and homosexual, earn less per year than married households (Smith and Gates 2001). This could affect not only where one chooses to reside, but also where one is able to reside (Smith and Gates 2001). Also, Black and his associates argue that unmarried partners may be less likely to have children which would allow them to have more free income due to the fewer demands placed on resources for children (Black et al. 2000). This could result in more of an ability to live in the inner city than is the case for married individuals (Black et al. 2000). In addition, differences in social values held by or toward unmarried cohabiters, whether heterosexual or homosexual, may also be affecting where certain groups reside. For instance, it is feasible that unmarried partners may be less conservative or traditional if they are willing to cohabit prior to or instead of marriage, in which case they may seek a less conservative residential area.

Discussion and Conclusion: Voluntary or Involuntary

One of the challenges confronted when studying homosexual-heterosexual segregation is the issue of whether the segregation is more voluntary than involuntary. Do homosexual couples tend to seek to live near others like themselves, or are they being avoided and shunned by heterosexuals? Analyses in this chapter provide several interesting examples.

The first example is the state of Minnesota. As showed in Table 4.1 and Table 4.2, the state of Minnesota had the highest scores for most of the Dissimilarity indices among the fifty states. In the year of 2010, 42 percent of gay couples in Minnesota would have to move their residence to certain other counties for their percentage residential distribution across the counties in Minnesota to be the same as that of the married heterosexual population; and 33 percent of lesbian couples would have to change their residence to have the same residential distribution as married heterosexual couples in Minnesota (Table 4.1). Given that most states had a relatively balanced residential distribution between same-sex couple households and heterosexual couple household across the counties in 2010, the high level of homosexual-heterosexual segregation in Minnesota may seem surprising.

In fact, Figure 4.4 and Figure 4.5 show that gay couples and lesbian couples were not evenly distributed across the counties of Minnesota. They were concentrated in the Minneapolis–Saint Paul area

Figure 4.4 Geographic Distribution of Same-Sex Male Couples, Minnesota, 2010
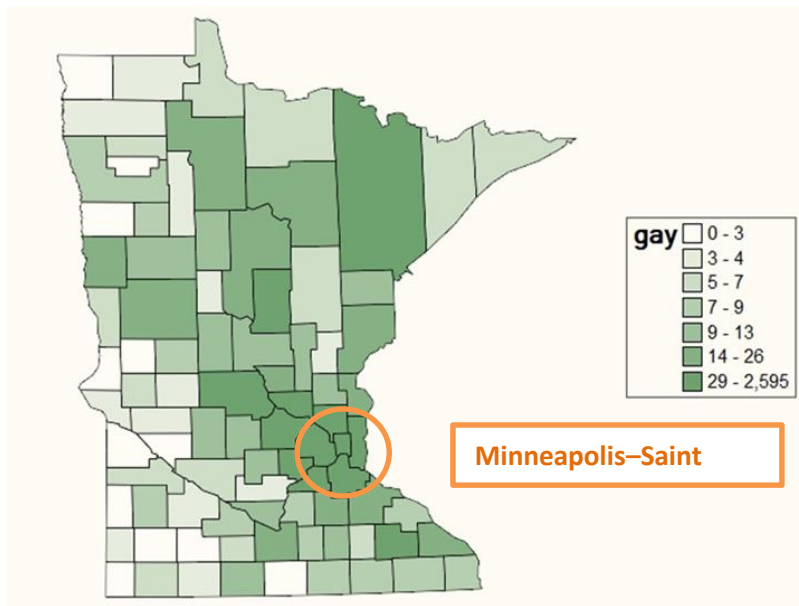
Figure 4.5 Geographic Distribution of Same-Sex Female Couples, Minnesota, 2010
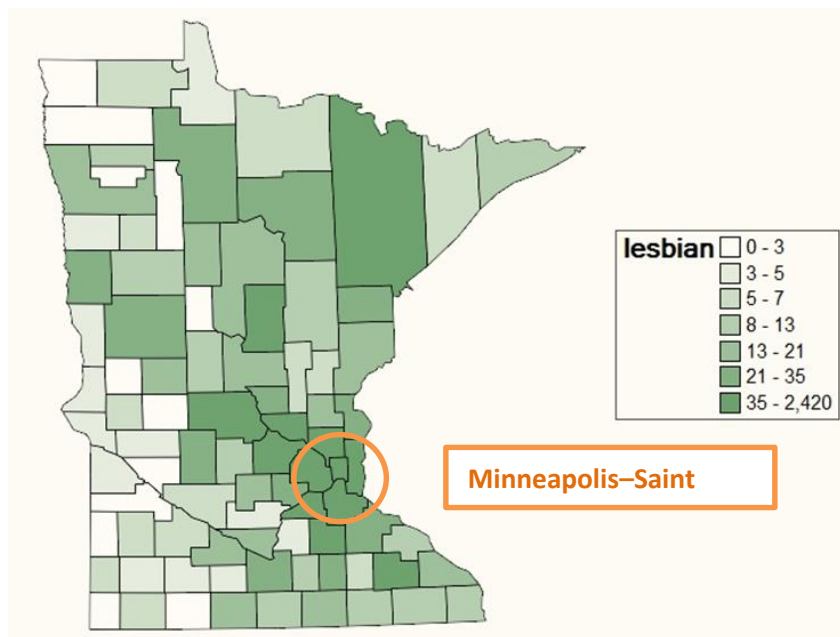
Minneapolis–Saint Paul is the most populous urban area in the state of Minnesota. The area is also nicknamed the Twin Cities for its two largest cities, Minneapolis, with the highest population, and Saint Paul, the state capital. For many years, the Twin Cities were ranked by "Advocate," a popular LGBT magazine as one of the top LGBT friendly cities. According to the magazine, Minneapolis has become the gay magnet city of the Midwest.

"People here are no-nonsense, practical, and don't deal well with hypocrites. This is where the Evangelical Lutheran Church in America took a historic leap forward and voted to accept gay and lesbian pastors, including the Reverend Mary Albing, the denomination's first openly lesbian pastor. And Minnesota senator Al Franken introduced the Student Non-Discrimination Act to protect LGBT youth from school bullies. (Albo, 2011, p.1)*"*

On the other hand, "Campus Pride," a nationally recognized organization dedicated to making campuses more LGBT-friendly, developed an annual "Campus Pride Index" based on a set of 50 questions that correspond to eight different LGBT-friendly factors. According to the "Campus Pride Index," twenty-five schools were selected as top "LGBT friendly" Universities (Pires, "BuzzFeed", 2014). Interestingly, three of those universities were located in the Minneapolis–Saint Paul area (University of Minnesota – Twin Cities, Carleton College, and Macalester College).

According to Campus Pride, these three universities were very LGBT inclusive. For example, the University of Minnesota Twin Cities had an LGBT International Student Drop-In Center that invited students to stop by and talk with fellow international LGBT students. In Macalester College, all single-stall restrooms on campus were converted to all-gender restrooms. Undoubtedly, all of these efforts made the universities and surrounding communities attractive to the LGBT population.

"One of the things that made me really realize how supportive Mac (Macalester College) was about the LGBTQ community was on my first day here when we gathered with our hall to have our first hall meeting and talk about things. One of the questions they asked of everyone was preferred gender pronoun." —Macalester College student (Pires, 2014, P.2)

"For me, as an administrator, I think that what celebrates the LGBTQ community are the number of administrators and faculty who are out on campus. Sometimes it jokingly seems that like everyone is queer on campus, and for me, I think that's really important for students because students get to see different types of queer people and they just get to see how normal it really is and abnormal it really is too." —Christopher Macdonald-Dennis, Dean of Multicultural Life at Macalester College (Pires, 2014, P.3)

Another example is one of the metropolitan areas in California. As the year of 2010, gay couples were highly segregated from married heterosexual couples, unmarried

heterosexual couples, and lesbian couples in the Riverside-San Bernardino-Ontario, CA metropolitan area.

The Riverside-San Bernardino-Ontario metropolitan area covers more than 27,000 square miles and consists of Riverside County and San Bernardino County. Since the 1950s, the area has evolved from a rural to a suburban environment. The region now comprises numerous cities, known as bedroom communities that are suburban cities to Los Angeles. Again, one of the Universities in the Riverside-San Bernardino-Ontario metropolitan area was also ranked as one of the most LGBT friendly campus by Campus Pride, namely, the University of California, Riverside (Pires, 2014).

"At UCR, LGBT Resource Center makes an immense effort to help support and build spaces that make the campus safer and more comfortable for students who identify along the LGBTQIA spectrum." (Pires, 2014, P.8)

The final example is the Springfield, MA metropolitan areas. Different from most other metropolitan areas, Springfield MA had a more segregated lesbian community than its gay community. The value of the D-index between lesbians and heterosexuals was 40% (32% for gays). In fact, a major city in this area, Northampton, has one of the largest lesbian communities among the major cities in the United States. It is also considered as one of the most "lesbianish" cities in the U.S.

The main point from the above three examples should not be surprising*: same-sex couples tend to settle down more often in places that welcome them*. The vast majority of the academic literature concerning residential segregation has been based on

one of two models: the spatial assimilation model or the place stratification model. The

spatial assimilation model is generally based on the experiences of European immigrants

between 1880 and 1910. They initially concentrated themselves in ethnic neighborhoods

or enclaves to receive social and economic support. Over time, these immigrants learned

English and moved out from their ethnic neighborhoods.

The place stratification model was developed because the traditional ethnic

enclave model could not explain the residential segregation experience of Blacks

migrating to the industrial Northeast and Midwest after World War I. The model states

that African Americans have been involuntarily segregated into African American

neighborhoods with little opportunity to pursue the American dream.

Unfortunately neither of the two models adequately explains homosexual-

heterosexual segregation. Different from ethnic segregation, homosexual-heterosexual

segregation is more likely to be caused by "coming out" from the closet rather than

discrimination or assimilation. Taking into account the fact that forming a household

with a same-sex partner is a fairly visible and public act, we can assume that same-sex

couples are more likely to locate to a safe and friendly place. This hypothesis will be

tested more formally in the next chapter.

In this chapter, I used estimated counts of the numbers of same-sex couple

households to measure the level of residential segregation between same-sex couple

households and heterosexual partnered households in the 50 states and 100 Metropolitan

Statistical Areas in the U.S. in 2010. In the next chapter, my analysis will focus on

estimating regression models to better understand statistically the variation in

homosexual-heterosexual segregation in the U.S. in 2010.

CHAPTER V

UNDERSTANDING HOMOSEXUAL-HETEROSEXUAL SEGREGATION

In earlier chapters of this dissertation I provided empirical evidence of the existence of homosexual-heterosexual segregation in U.S. metropolitan areas in 2010. In this chapter, I inquire about explanations of this type of residential segregation. I first raise my research questions; then I develop my hypotheses and models about homosexual-heterosexual segregation by applying the ethnic enclave model that is so prominent in the sociological and demographic literature; then I estimate multiple regression equations to test the hypotheses.

 "Today, the size of the LGBT community is less important than understanding the daily lives and struggles of this still-stigmatized population and informing crucial policy debates with facts rather than stereotype and anecdote."
Gates (2013, p.18)

Research Questions: Is the segregation voluntary or involuntary?

Residential segregation is not a problem if the society was separate but equal. However, much of the United States society is inherently unequal. Residential segregation becomes a problem when it is rooted in inequality and prejudice because it tends to build structural barriers that concentrate poverty and limits residents' social and economic opportunities.

Several interesting examples from Chapter Four of this dissertation show that same-sex couples often tend to settle down in places that welcome them. How much is this pattern related to social inequality and sexual prejudice? Do we have enough evidence to say that homosexual-heterosexual segregation is more voluntary than involuntary? Overall, the question I want to be able to address in this dissertation is do homosexual couples tend to seek to live near others like themselves, or are they being avoided and shunned by heterosexuals.

In order to provide a systematical answer to those questions, I have to revisit the concept I discussed at the beginning of the dissertation, namely, "gayborhood," and I must also rethink the development of ethnic enclaves in American history. In the next section, I will propose my three major hypotheses.

Hypotheses: Ethnic Enclaves and Gayborhoods

Early European Immigrants and Ethnic Enclaves

The development of the ethnic enclave model began in the 1920's by sociologists at the University of Chicago, the so-called Chicago School of sociology. Sociologists Robert Park and Earnest Burgess (1925) built the urban ecology model based on their observations of Southern, Eastern and Central (SEC) European immigrants in the neighborhoods of Chicago. Their model tried to explain the spatial organization of urban areas based on the settlement patterns of newly arriving immigrants. Park and Burgess stated that poorer immigrants tended to build their own communities in older

neighborhoods surrounding manufacturing plants, and that wealth tended to increase as they moved further from these industrial areas (Park, Burgess, 1925, P.20). Their concentric zones model showed that as immigrants gained wealth they moved out of their ethnic neighborhoods.

The phenomenon of Southern, Eastern and Central European immigrants building ethnic enclave communities provides the most frequently cited example of the ecological process of ethnic enclave building and ethnic assimilation as it relates to residential segregation. Immigrants came to America with different languages, dresses and folkways. Upon their arrival, they took up residence in ethnic enclaves. These enclaves provided social and cultural support mechanisms for newly arriving immigrants (Lieberson, 1980). This self-segregation helped immigrants survive in a new and often inhospitable environment. Although some immigrants experienced unequal treatment in housing opportunities outside of the enclave and in the larger society, residential segregation was a function of the acculturation process, population size, and socioeconomic status, and not of any structural inequality of intentional discrimination.

The early settlement process of same-sex couples in the U.S., I believe, was very similar to that of European immigrants building their ethnic enclave communities. Actually early gay neighborhoods were in a state of hiding, where gay men and women met in secret bars out of fear of being discovered and persecuted. The later, gay culture evolved from hiding in the shadows; it encouraged gay men and women to "come out" as an early form of activism. During this time, the gayborhood evolved to be more open,

a welcoming beacon offering a safe-haven for the community in an otherwise hostile social environment.

A comparison of gayborhoods with ethnic enclave leads me to propose the first hypothesis: homosexual-heterosexual segregation tends to be voluntary. This self-segregation provides social and cultural support for gay and lesbian couples and helps them survive in hostile social environments.

"Great Migration" and Black Communities

The Great Migration had a huge impact on urban life in the United States. From 1916 to 1970 it relocated more than six million African Americans from the rural South to the cities of the North, Midwest and West. Many African Americans moved from their homes to the North, where they took advantage of the need for industrial workers that first arose during the First World War. As Chicago, New York and other cities saw their black populations expand exponentially, migrants were forced to deal with poor working conditions and competition for living spaces, as well as confronting widespread racism and prejudice. During the Great Migration, African Americans began to build a new place for themselves in public life, actively confronting economic, political and social challenges.

Even though African Americans built their ethnic enclaves in a way similar to that of SEC European immigrants, their segregation was still different from the experience of European immigrants. In fact, the residential segregation between Blacks and Whites was not a voluntary segregation; rather it was imposed on Blacks by the majority society. Lieberson (1980) used the isolation index applied to Anglos to

illustrate the point that the newly arriving Blacks were limited to housing opportunities within the newly designated Black areas. After 1910, Black segregation skyrocketed to levels that were far above those ever witnessed by SEC Europeans. As Black occupational status in the north moved to factory labor and their numbers greatly increased, Anglo residential homogeneity was threatened. In order to keep Anglo neighborhoods homogeneous, newly arriving Blacks were forced by local residents to live in certain parts of the towns.

To maintain Anglo residential homogeneity, Anglos also turned to institutional measures to ensure homogeneity; these institutional practices severely limited where Blacks could live. For example, exclusionary zoning laws and restrictive covenants denied Blacks the opportunity to live outside traditionally Black areas. Government programs also assisted in segregating the housing market for Blacks. The Federal Housing Administration (FHA) which still sets the standards for housing finance policy in the United States declared certain neighborhoods "risky" investments and restricted their lending accordingly. In other worlds, racism has kept black spatially isolated regardless of economic status (Lieberson, 1980; Jackson, 1985; Massey and Denton, 1993; Squires, 1994).

Overall, involuntary segregation can be defined as the segregation "maintained through a network of individual and community actions and institutional practices and was often supported by government services and programs" (Massey and Denton, 1993). That is to say, some factors can be used to identify the involuntary segregation including individual actions, institutional practices or government programs.

I am assuming that homosexual-heterosexual segregation is not involuntary. I do not believe that it is not caused by individual homophobic action or institutional discrimination (Hypothesis Two).

The Continued Evolution of Gayborhoods

Even though gayborhoods share some similarities with early ethnic enclaves, they still have their own peculiarities. As discussed, gayborhoods are greatly related to the "Coming Out" process from the closet. "Coming out" made the very existence of gay men and women, and the gayborhood itself, a statement that they are here to stay in the face of a society that viewed the community as subversive and immoral. The gayborhood became home base for this new liberation, in which the LGBT community began to view their sexuality as a defining aspect of who they were and the gayborhoods reflected that mentality in the physical world.

Being gay today is much more acceptable than it was 50 years ago (Jones, 2013). As success in the gay rights movement has marched forward, the movement has also changed. Many of those who began as young gay advocates fighting for equality are now older, open, and successful. Many of their needs, tastes, and preferences have changed. They are increasingly assimilated into mainstream culture looking to spend money on a new home, to raise a family, to maintain their health, to travel, and to enjoy new restaurants; these behaviors are similar to those of their heterosexual counterparts.

Many young gay men and women are growing up in a society increasingly tolerant of the LGBT community. The options for a safe haven are far more plentiful now than in the past. A young gay man 40 years ago may have sought out the Castro

District of San Francisco for shelter and acceptance. Now, the same young gay man may simply seek out the nearest major city. "Twenty years ago, if you were gay and lived in rural Kansas, you went to San Francisco or New York. Now you can just go to Kansas City." (Gates, New York Times, 2007)

For this new generation in an increasingly less hostile society, the traditional gayborhood and all its unique amenities are not as important as simply identifying a location that is tolerant and affordable. Therefore, many neighborhoods once seen as hostile to the LGBT community are now luring young gays with cheaper housing costs and social tolerance. Many gay people are moving to traditionally straight neighborhoods, with small enclaves forming around select school districts.

A new study, led by sociologist Amin Ghaziani (2014) of the University of British Columbia, finds that U.S. districts like the Castro in San Francisco, Boystown in Chicago, and Chelsea in New York have fewer same-sex couples than a decade ago. Ghaziani's statistics show an eight percent decrease in gay men and a 13 percent decrease in lesbians in these locations over this time (Ghaziani, 2014, P.35-40). The research also demonstrates a rise in the number of heterosexual households in traditionally gay locales, which Ghaziani attributes to gentrification as well as to the rising acceptance of gays and lesbians across the country.

Because of this new change of gayborhood, I hypothesize that same-sex couples will tend to settle down more often in places that are liberal and that welcome them. (Hypothesis Three)

To summarize, I have developed three major hypotheses to test in this dissertation. First of all, I hypothesize homosexual-heterosexual segregation tends to be more voluntary than involuntary. It provides social and cultural support for gay and lesbian couples. Secondly, I hypothesize that homosexual-heterosexual segregation is not involuntary. It is not caused by individual homophobic actions or institutional discrimination. And lastly, I hypothesize that the level of homosexual-heterosexual segregation tends to be greater in places that are liberal and friendly. In the next section, I will develop models to test each of the hypotheses: a *Voluntary Model, an Involuntary Model, and a Welcome Model.*

Model Construction: Independent Variables

1. Voluntary Model

The purpose of the first model is to test the first hypothesis that homosexual-heterosexual segregation is voluntary. Homosexual-heterosexual segregation provides social and cultural support for gay and lesbian couples.

In Chapter four, I calculated both traditional and unbiased D-indices for 100 U.S. Metropolitan Statistical Areas which had the largest total number of same-sex couple households in 2010. In this model, I will use the unbiased D-index between gay couples and heterosexual couples (gay D-index) and the unbiased D-index between lesbian couples and heterosexual couples (lesbian D-index) as two dependent variables.

Three independent variables are included in this model. They are measures of

the size and the prevalence of the homosexual population in each of the 100

metropolitan areas: the gay prevalence index, the lesbian prevalence index, and the

absolute number of total partnered homosexuals in the MSA (Table 5.1). Prior research

on the prevalence of gay male partners and lesbian partners in the U.S. has used different

kinds of rates and ratios to measure the degree of prevalence. In Poston and Chang's

paper (2013), they developed a household-based index of gay male partnering and a

household-based index of lesbian partnering. I use these two indices to measure the

prevalence of gay and lesbian couples in the 100 metropolitan areas in the U.S.

Table 5.1
Means, Standard Deviations (SD),
and Minimum and Maximum Values:
Independent Variables for "Voluntary Model"

Rate	Mean	SD	Maximum value	Minimum value
Gay Prevalence Index	0.70	0.28	1.72	0.28
Lesbian Prevalence Index	0.89	0.35	2.12	0.38
Total Number Of Same-Sex Couple Households	4,842	6,759	48,030	972

Specifically, I hypothesize that the size of the homosexual community and

the prevalence of gay male partners and lesbian partners should be positively associated

with the amount of segregation of homosexuals (gay couples and lesbian couples) from

heterosexuals. That is to say, in 2010 among the 100 U.S. metropolitan areas, the higher the scores of the gay/lesbian prevalence indexes, the higher the scores of the gay/lesbian D-index; also, the higher the total number of same-sex couple households, the higher the scores of the gay/lesbian D-indexes. I will estimate two ordinary least squares multiple regressions to test the hypotheses in the next section.

Involuntary Model

I use this model to test my second hypothesis, namely, that homosexual-heterosexual segregation is not involuntary. I hold that it is not the result of individual homophobic action or institutional discrimination.

Three independent variables are used in this model. They are the number of "Incidents of Hate Crime" for each metropolitan area reported by FBI in 2010; the "Poverty Rate" for each metropolitan area, defined as the percent of persons below the poverty level in 2010; and whether or not the MSA is in a state that has sodomy laws against homosexuals. I used "Incidents of Hate Crime" to capture homophobic action and the "Poverty Rate" and the presence of "Sodomy Laws" to measure institutional discrimination. The two dependent variables are the unbiased D-index between gay couples and heterosexual couples (gay D-index) and the unbiased D-index between lesbian couples and heterosexual couples (lesbian D-index).

The Hate Crime Statistics Program of the FBI's Uniform Crime Reporting (UCR) Program collects data regarding criminal offenses that are motivated by the offender's bias against a race, religion, sexual orientation, ethnicity/national origin, or

disability. In 2010, among all reported hate crime incidents, around 19% were motivated by sexual-orientation bias (Hate Crime Statistics, FBI).

I hypothesize that homosexual-heterosexual segregation is not involuntary. It is not caused by individual homophobic action or institutional discrimination. That is to say, I expect that the three independent variables in this model will not be significantly associated with the two D-indices (gay D-index and lesbian D-index).

Welcome Model

The purpose of the Welcome Model is to test the third hypothesis: the level of homosexual-heterosexual segregation tends to be higher in places that are liberal and friendly. Three independent variables are included in this model: an "Opposite-sex Cohabiting" index, "Median Age," and the percentage of "Renter Occupied" Housing. The two dependent variables are the unbiased D-index between gay couples and heterosexual couples (gay D-index) and the unbiased D-index between lesbian couples and heterosexual couples (lesbian D-index).

The three independent variables are used to measure the degree to which the social and political climates of a metropolitan area are open and friendly to same-sex couples. I am assuming that same-sex couples are more acceptable in places with higher levels of heterosexual cohabitation. Given that older populations tend to be more conservative than younger populations, I expect the median age of the population in the MSA to be negatively associated with the levels of the homosexual-heterosexual segregation. Finally, rental housing tends to be more associated with younger and more mobile and dynamic populations that would be more receptive to same-sex partnering

than populations characterized by high levels of owner-occupied housing, which are typically more permanent and perhaps staid (Hawley, 1950; Poston and Frisbie, 1998; 2005). I hypothesize that the higher the percentage of households that are renter occupied, the higher the level of homosexual-heterosexual segregation in the MSA.

In the next section, I discuss the results of my OLS multiple regression models.

Multiple Regression: Testing Hypotheses

Multiple OLS Regressions and Results

As discussed, I have two dependent variables, the gay D-index and the lesbian D-index. Given that both of the dependent variables are linear, I use multiple ordinary least squares (OLS) regressions for the analysis. In each of the models, the regression parameters are estimated by the least squares principle, and the dependent variable is viewed as a linear function of the independent variables.

Prior to running the regression models, I will also examine the tolerances of the independent variables in each model because multicollinearity can potentially be problematic for any analysis. Multicollinearity is best detected by calculating the tolerance values for each of the independent variables in the model. In case of my data, including all the variables in the models results in very high tolerance values (above 0.6 which means that over 60% of the variation in each of the variables in the regressions is

independent of the other predictors). Thus, I conclude that when estimating my regression models, multicollinearity should pose any major problems.

When estimating the OLS regression models, I use a "step by step" approach as shown in Table 5.2. I first include only the three independent variables of the "voluntary model." Then in the second step, I only include the independent variables from the "involuntary model" and in the third step, I only include the independent variables from the "welcome model." In the last step I include all the independent variables from the three models. This way of estimating the models allows me to test each of the models separately and also to examine whether the potentially significant associations between each of the models and the level of segregation are maintained after introducing the other predictors. I maintain a consistent number of cases (100 MSAs) across all the steps of the model estimation.

Now I discuss the results of the OLS multiple regressions models. Firstly, in the "voluntary model, the six coefficients are statistically significant. For the gay prevalence index, for example, the coefficient for gay D-index is around 0.006 indicating that across the 100 MSAs, for every one unit increase in the gay prevalence index there is on average a 0.006 percent increase in the D-index value between same-sex male couples and heterosexual couples when the other two predictors are controlled. And the relationship is obviously significant (P<0.05). The coefficient for the lesbian prevalence index is also positively and significantly associated with the lesbian D-index. And the coefficients for the total number of same-sex couple households are positive and statistically significant for both the gay D-index and the lesbian D-index.

In the "involuntary model," none of the coefficients is significant. There are apparently no statistically significant associations between the three involuntary variables of "hate crime," the "poverty rate," and "sodomy laws" and both the gay D-index and the lesbian D-index.

Table 5.2
Standardized Regression Coefficients from Eight Multiple Regression Equations of Gay D-index and Lesbian D-index,
On Nine Independent Variables:
100 Metropolitan Areas of the U.S., 2010

Variables	Step 1		Step 2		Step 3		Step 4	
	Gay	Lesbian	Gay	Lesbian	Gay	Lesbian	Gay	Lesbian
Voluntary Model								
Gay Prevalence Index	0.00632**	0.00443					0.00612*	0.00339
Lesbian Prevalence Index	0.00422	0.00453**					0.00329	0.00278*
Same-Sex Couple Households	0.382***	0.279***					0.402**	0.312**
Involuntary Model								
Hate Crime			-0.0003	-0.0001			-0.0002	-0.0001
Poverty Rate			0.012	0.005			0.024	0.003
Sodomy Laws			-0.027	-0.030			-0.013	-0.022
Welcome Model								
Opposite-sex Cohabiting					0.156**	0.127**	0.126*	0.098*
Median Age					0.323	0.278	0.288	0.126
Renter Occupied					0.342*	0.321*	0.325	0.237
Adj. R2	0.298	0.211	0.156	0.114	0.239	0.195	0.302	0.293

***Coefficient statistically significant at p<.01
** Coefficient statistically significant at p<.05
* Coefficient statistically significant at p<.1

Further, most of coefficients in the "welcome model" are significant. For instance, the coefficient of opposite-sex cohabiting with the gay D-index is 0.156 and is statistically significant (P<0.05). And the coefficients of the "Renter Occupied" variable are positive and significant for both the gay D-index and the lesbian D-index.

In the last step, I entered all the independent variables into the model; I find that most of my key independent variables retain their statistical significance; moreover, the three involuntary variables are still not statistically significant.

Testing Hypotheses

The results of the regression analyses suggest that my three major hypotheses are confirmed. Specifically, the regression results of the voluntary model show that in 2010 among the 100 metropolitan areas, the higher the gay male/lesbian partnering ratio, the higher the level of homosexual-heterosexual segregation in the metropolitan area; and the larger the total number of same-sex couple households, the higher the level of homosexual-heterosexual segregation. I have provided empirical evidence suggesting that the segregation of gay and lesbian couples from heterosexual couples may well be more voluntary than involuntary. These patterns would appear to be similar to those of the early European immigrants to the U.S., Their residential segregation from heterosexual couples appears to provide them social and cultural support.

On the other hand, the three independent variables in "involuntary model" are not significantly associated with the gay/lesbian D-indexes. These results would suggest that the residential segregation between same-sex couple households and heterosexual couple households is apparently not related to MSA characteristics pertaining to

homophobic action or institutional discrimination. In short, homosexual-heterosexual segregation does not appear to be involuntary. The phenomenon of homosexual-heterosexual residential segregation may well be behaving in a different manner that racial residential segregation between Blacks and Whites.

Lastly, the "welcome model" shows that the higher the prevalence of unmarried cohabitation, the higher level of homosexual-heterosexual segregation. The higher the percentage of households that are renter occupied the higher level of homosexual-heterosexual segregation. These results partly confirm my hypothesis that same-sex couples tend to settle down more often in places that are liberal and friendly. The high prevalence of unmarried cohabitation and the high percentage of renter housing indicate to me that the social and political climate of the area is more liberal than conservative, and thus that the residents of the area may well be more open and comfortable to homosexual cohabitation.

Conclusion

In Chapter four, I calculated both traditional and unbiased D-indices for the 100 U.S. metropolitan areas in 2010. In this chapter I wanted to understand why residential segregation between same-sex couples and heterosexual couples varied among the metropolitan areas in the U.S. I wondered if homosexual-heterosexual segregation is more voluntary than involuntary. Do homosexual couples tend to seek to live near others like themselves, or they are being avoided and shunned by heterosexuals?

My three main hypotheses were 1. Homosexual-heterosexual is voluntary because it provides social and cultural support for gay and lesbian couples. 2. Homosexual-heterosexual segregation is not involuntary; it does not appear to be a function of homophobic action and institutional discrimination. 3. The level of homosexual-heterosexual segregation tends to be higher in places that are liberal and friendly. My hypotheses were then tested with multiple regression models, and for the most part they were confirmed.

In the next and last chapter of my dissertation, I will examine some of the implications of my research. I will also appraise my general findings and note the direction of possible future research in this area of study.

CHAPTER VI

CONCLUSIONS AND FUTURE RESEARCH

Breaking News on "Monday"

Working on and writing this dissertation has been a long cumulative process with the guidance of my professors, help from friends, and support from my family. I first became interested in this topic in 2007. Seven years later, as I am getting closer to finish writing the dissertation, I deeply inspired again by the incredible victory in the American gay rights movement. On the very special Monday, October 6[th,] 2014, the U.S. Supreme Court declined to hear appeals from five states (Indiana, Oklahoma, Utah, Virginia and Wisconsin) challenging lower-court rulings that legalized same-sex marriage (ABC News, October 8th, 2014, http://abcnews.go.com/US/wireStory/today-gay-marriage-26048459). This decision signaled that the court agreed with the lower courts' rulings that restrictions on gay marriage were unconstitutional. That means couples in those five states can now marry, and couples in six other states covered by the same circuit courts (Colorado, Kansas, North Carolina, South Carolina, West Virginia and Wyoming) will soon be able to walk down the aisle.

On October 8th 2014, Supreme Court Justice Anthony Kennedy allowed same-sex marriage to begin in Nevada, clarifying that an earlier order temporarily blocking gay unions applies only to Idaho. On October 10th 2014, same-sex marriage became legal in North Carolina. On October 17th 2014, Federal judge John Sedwick had ruled that Arizona's ban on same-sex marriage was unconstitutional. The same day,

Attorney General Eric Holder announced that federal legal recognition of same-sex marriages extended to Indiana, Oklahoma, Utah, Virginia and Wisconsin. On October 23rd 2014, a federal judge ruled same-sex marriage was legal in Wyoming. On November 4th 2014, a federal judge ruled that Kansas' ban on same-sex marriage was unconstitutional. On November 6th 2014, the U.S. Court of Appealed for the Sixth Circuit upheld bans on same-sex marriages in Michigan, Ohio, Kentucky and Tennessee. On November 19th 2014, a federal judge overturned Montana's same-sex marriage ban. On December 15th 2014, Florida Attorney General Pam Bondi asked the U.S. Supreme Court to extend the stay on same-sex marriages that was set to expire in early January 2015 (ABC News, 2014).

Although the trend toward the greater acceptance of same-sex marriages has been evident for some time in the U.S., the speed with which it has become the law of the land is striking. I have prepared a map (Figure 6.1) showing where gay couples can and cannot get married, as of December, 2014. For the first time, same-sex marriage is legal for the majority of the U.S. population.

Over the past few years, the gay rights movement has witnessed wins that an earlier generation would not have thought possible. As the struggle for the legal equality of the gay and lesbian populations continues to advance in this country, the movement will likely face more questions. The society certainly needs a more precise understanding of the location patterns and demographic characteristics of the gay and lesbian populations. Unfortunately, until now a lot of high-profile political debates are

marked by an astonishing lack of data. Without empirical data, it is difficult to assess the

potential impacts of policies related to the gay and lesbian populations.

Figure 6.1 Map of Same-Sex Marriage

Source: http://www.freedomtomarry.org/states/
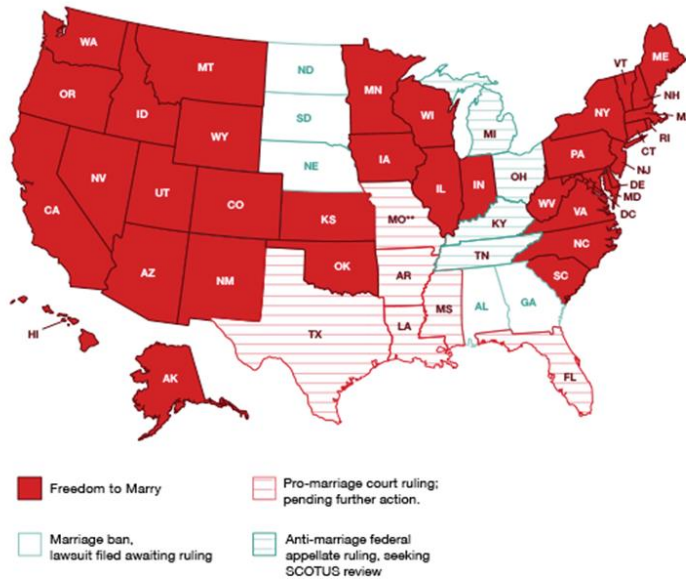
Census data provide the largest and most geographically representative

sample of gay and lesbian families available in the United States today. These data make

it possible to describe the characteristics of gay and lesbian families in the United States.

This dissertation tries to fill an important information gap by providing an empirical

perspective to the vibrant policy and intellectual debates affecting the lives of gay men

and lesbians across the county. I also hope the demographic and geographic analyses contained in this dissertation will offer a better understanding of the location and segregation patterns of gay and lesbian couples which goes beyond simply acknowledging that "they are everywhere."

Main Findings

This dissertation introduced and discussed a form of urban residential segregation that has received only minimal attention in past years, namely, Homosexual-Heterosexual Segregation. The goal of my dissertation was to bring Sexual Orientation into Demography because it is my view that demography has long suffered from a lack of attention to gay and lesbians. Reliable data are the key for studying the gay and lesbian populations, and census data are considered as one of the better sources. The 2010 Census marked the first time that decennial census data were provided for same-sex couple households by whether the couples reported themselves as living together as spouses or as unmarried partners. However, the Census Bureau announced that more than one-in-four same-sex couples counted in the 2010 Census was likely an opposite-sex couple, which made the 2010 Census number of same-sex couple households 52 percent higher than the American Community Survey estimate. Later, the Census Bureau released a set of revised estimates of same-sex couple households from the 2010 Census, known as the "preferred" data. Unfortunately, the Census bureau did not re-tabulate a set of preferred estimates for sub-state geographical areas.

Gary Gates developed a four-step procedure for estimating the numbers of same-sex couple households at lower levels of geography. Poston and Chang adjusted Gates' four-step procedure to better account for zero entries; they then developed estimates of same-sex couples, same-sex male couples and same-sex female couples for the 366 metropolitan areas of the U.S. in 2010.

After mapping and reanalyzing Poston and Chang's estimates, I found some interesting results: First, same-sex couple households were present in more than 98 percent of all the counties in the United States. Second, there were slightly more gay male couples than lesbian couples in the "average" county. Third, there were more same-sex couple households along the Pacific Coast and the East Coast of the United States in 2010. Fourth, a sizable proportion of same-sex couple households were located in those socially conservative regions of the West South Central, South Atlantic, and Mountain.

Using the method proposed by Gates and as adjusted by Poston and Chang , I also developed Census Tract level estimates of the numbers of same-sex couples, same-sex male couples, and same-sex female couples for the census tracts of each of the 100 metropolitan areas of the U.S. in 2010 with the largest total counts of same-sex couple households. Then I calculated two sets of dissimilarity indices: one set of three for gay male couple households, and another set of three for lesbian couple households. The three dissimilarity indices for gay men compare their residential distributions with 1) married heterosexual cohabiters, 2) unmarried heterosexual cohabiters, and 3) all heterosexual cohabiters—both married and unmarried. A similar set of three D indices

was constructed for lesbians. In addition, I calculated a seventh D-index that compares the residential distribution of gay male partners with lesbian partners. Moreover, in order to eliminate possible bias in the indexes, I calculated both the conventional D-index and the unbiased D-index as developed earlier by Mark Fossett.

I first examined the D-indices at the county level, and the results showed that there was no obvious residential segregation between same-sex couple households and heterosexual couple households across the counties within each of the fifty states in the United States in 2010. All average values of the unbiased indices were slightly lower than the conventional indices.

Several interesting findings emerged after I calculated the D-indices among the MSAs. Over all, there was a higher level of homosexual-heterosexual segregation in the 100 metropolitan areas in 2010. However, the level of homosexual-heterosexual segregation decreased rapidly after changing the D-index from the conventional version to the unbiased version. That is to say, within the 100 metropolitan areas, residential segregation between same-sex couples and heterosexual couples might be partially caused by random segregation, but the levels of segregation were still significant even after controlling for the biases in the conventional D-index.

Further, my results also showed that same-sex male couples tended to be more segregated from heterosexual couples than did same-sex female couples. "Gayborhoods" and "Lesbianvilles" might not always be located at the same place, and partnered gays and lesbians do not necessarily follow the same patterns of segregation.

And lastly, my results indicated that both gay and lesbian couples tended to be more residentially segregated from married heterosexual partners than they are from unmarried heterosexual partners.

In order to suggest reasons for the variability in the levels of homosexual-heterosexual segregation across the metropolitan areas, I developed several hypotheses based on the ethnic enclave models in the sociological literature. After reviewing the history and development of gayborhoods and comparing them with ethnic enclaves, I proposed the following: First, Homosexual-heterosexual is voluptuary; this self-segregation provides social and cultural support for gay and lesbian couples and helps them survive in a hostile social environment. Second, Homosexual-heterosexual segregation is not involuntary; it is not caused by individual homophobic actions or institutional discrimination. And third, Same-sex couples tend to settle down more often in places that are liberal and welcome them.

Three models were developed to test these hypotheses. In the Voluntary Model, I assumed the size of the homosexual community and the prevalence of gay male partners and lesbian partners should be positively associated with the amount of segregation of homosexuals (gay couples and lesbian couples) from heterosexuals. That is to say, in 2010 among the 100 U.S. metropolitan areas, the higher the scores of gay/lesbian prevalence index, the higher the scores of gay/lesbian D-index; the higher total number of same-sex couple households, the higher scores of gay/lesbian D-index.

For the involuntary Model, I hypothesized that homosexual-heterosexual segregation is not involuntary. It is not caused by individual homophobic actions or institutional discrimination. The three independent variables I used in the model, namely, Incidents of Hate Crime, Poverty Rate, and whether or not the MSA is in a state that has sodomy laws, should not be significantly associated with the two D-indices (gay D-index and lesbian D-index).

For the so-called Welcome Model, I assumed that same-sex couples were more acceptable in places with higher levels of heterosexual cohabitation. I expected the median age of the population in the MSA to be negatively associated with the levels of homosexual-heterosexual segregation. And the higher the percentage of households that are renter occupied, the higher the level of homosexual-heterosexual segregation in the MSA.

I then estimated multiple regression equations; the results by and large provided support for my hypotheses. The results suggested that the segregation between same-sex couples and heterosexual couples was voluntary, and that gay and lesbian couples tend to settle down more often in places that were liberal and friendly.

Future Gayborhoods and Future Research

Residential segregation and homosexuality is and will continue to be one of my most important research interests. I hope my future research in this area will expand. I plan first to extend the analyses of this dissertation by including more MSAs, by comparing

segregation patterns in metropolitan areas with segregation patterns in rural areas, and by exploring and using other segregation indices. If this dissertation is a beginning of the exploration of homosexual-heterosexual segregation, my next step will be examining this new type of residential segregation over years in the United States. If this dissertation makes a contribution by showing that the way people understand sexuality affects people's location choices, I am interested in continuing studying if the way Americans view sexuality has been changing and how that affects the patterns of homosexual-heterosexual segregation. In fact studies show that some major American gayborhoods such as San Francisco's Castro district, New York's Chelsea district, and Chicago's Boystown are changing as growing numbers of heterosexual households are moving in and more gay men and women are leaving for suburbs and smaller cities (Ghaziani, 2014). More empirical studies will be needed in the future to better capture this changing pattern of homosexual-heterosexual segregation in the United States. Above all, I am looking forward to extending my dissertation to a longitudinal study of residential segregation between same-sex couples and heterosexual couples in the U.S.

REFERENCES

Alba, R.D., J.R. Logan, and K. Crowder. 1997. "White Ethnic Neighborhoods and Assimilation: The Greater New York Region, 1980-1990." *Social Forces* 75: 883-909.

Albo, Mike. 2011 "Gayest Cities in America." *Advocate* (http://www.advocate.com/travel/2011/01/12/gayest-cities-america-february-2011?page=full)

Abrahamson, M. 2002. *Urban Enclaves: Identity and Place in America*. New York: St. Martin Press.

Advocate.com 2011. *Gay Cemetery Planned for Atlanta*. (http://www.advocate.com/news/daily- news/2011/04/05/gay-cemetery-planned-atlanta)

Aldrich, R. and G. Wotherspoon. 2001. *Who's Who in Contemporary Gay & Lesbian History: From World War II to the Present Day*. New York: Routledge.

Allen, R., S. Burgess, and F. Windmeijer. 2009. "More Reliable Inference for Segregation Indices." CMPO working paper Pp. 09/216.

Badgett, M.V.L. 1995. "The Wage Effects of Sexual Orientation Discrimination." *Industrial and Labor Relations Review* 48: 726-39.

Baumle, A.K., D.R. Compton, and D.L. Poston, Jr. 2009. *Same Sex Partners: The Demography of Sexual Orientation.* Albany, NY: SUNY Press.

Baumle, A. K. and D. L. Poston, Jr. 2011. "The Economic Cost of Homosexuality: Multilevel Models." *Social Forces* 89: 1005-1032.

Becker, H.J., J. McPartland, and G. Thomas. 1978. *The Measurement of Segregation: The Dissimilarity Index and Coleman's Segregation Index Compared*. Pp. 349-353 in the Proceedings of the Social Statistics Section of the American Statistical Association.Washington, D.C.: American Statistical Association.

Bell, D. and G. Valentine (eds) 1995. *Mapping Desire: Geographies of Sexualities*. London: Routledge.

Black, D.A., G. Gates, S.G. Sanders, and L.J. Taylor. 2000. "Demographics of the Gay and Lesbian Population in the United States: Evidence from Available Systematic Data Sources." *Demography* 37: 139-154.

Black, D.A., G. Gates, S.G. Sanders, and L.J. Taylor. 2002. "Why Do Gay Men Live in San Francisco?" *Journal of Urban Economics* 51: 54-76.

Blau, P.M. 1977. "Macrosociological Theory of Social Structure." *The American Journal of Sociology* 83(1): 26-54.

Boisso, D., K. Hayes, J. Hirschberg, and J. Silber. 1994. "Occupational Segregation in the Multidimensional Case: Decomposition and Tests of Significance." *Journal of Econometrics* 61 (1):161-171.

Branch, M.A. 2003. *Back in the Fold*. Yale Alumni Magazine. YaleAlumniMagazine.com. (Retrieved June 4, 2009).

Bumpass, L.L. and J. Sweet. 1989. "National Estimates of Cohabitation." *Demography* 26:(6)15-25.

Burgess, E. 1923. *The Growth of the City: An Introduction to a Research Projec*t.Pp. 57-85 in Proceedings of the American Sociological Society, vol. 18. Chicago: University of Chicago Press.

Carrington, W.J. and K.R. Troske. 1997. "On Measuring Segregation in Samples with Small Units." *Journal of Business and Economic Statistics* 15:402-409.

Cochran, W.G., F. Mosteller, and J.W. Tukey. 1954. *Statistical Problems of the Kinsey Report on Sexual Behavior in the Human Male.* Washington: Amer. Statist. Assoc.

Cohn, D. 2011. *Census Bureau: Flaws in Same-Sex Couple Data*. Pew Research (http://www.pewsocialtrends.org/2011/09/27/census-bureau-flaws-in-same-sex-couple-data)

Colomina, B. 1996. *Sexuality & Space*. Princeton Architectural Press (4th ed. Edition).

Cortese, C., R.F. Falk, and J. Cohen. 1976. "Further Considerations on the Methodological Analysis of Segregation Indices*." American Sociological Review* 41: 630-637.

Darroch, A.G. and W.G. Marston. 1971. "The Social Class Basis of Ethnic Residential Segregation: The Canadian Case." *American Journal of Sociology* 3:491-510.

Deng, D.X. 2010. *Residential Segregation of China's Minority Nationalities from the Han, 2000*. Master Thesis. Texas A&M University.

Duncan, O.D. and B. Duncan. 1955. "A Methodological Analysis of Segregation Indices." *American Sociological Review* 20:210-217.

Farley, R. 1977. "Residential Segregation in Urbanized Areas of the United States in 1970: An Analysis of Social Class and Racial Differences." *Demography* 14: 497-529.

Farley, R. and R. Johnson. 1985. *On the Statistical Significance of the Index of Dissimilarity*. Unpublished paper presented at American Statistical Association meetings, Washington, D.C.

Fields, J. and C. L. Clark. 1999. "Unbinding the Ties: Edit Effects of Marital Status on Same Gender Couples." Population Division Working Paper No. 34, Fertility and Family Statistics Branch. Washington, DC: U.S. Census Bureau.

Fossett, M.A. and W. Zhang. 2011. "Unbiased Indices of Uneven Distribution and Exposure: New Alternatives for Segregation Analysis." Unpublished paper presented at the 2011 annual meeting of Population Association of America, DC.

Gates, G.J. 2007. "Geographic Trends among Same-sex Couples in the U.S. census and the American community survey." Los Angeles: The Williams Institute.

Gates, G.J. 2007. "Gay Enclaves Face Prospect of Being Passé." *New York Times* 2007-10-30

Gates, G.J. 2013. "Geography of the LGBT Population." Pp. 229-242 in Amanda K. Baumle (ed.), *International Handbook on the Demography of Sexuality*. New York, NY: Springer.

Gates, G.J. 2013. "Geography of the LGBT Population." Pp. 229-242 in Amanda K. Baumle (ed.), *International Handbook on the Demography of Sexuality*. New York, NY: Springer.

Ghaziani, A. 2014. *There Goes the Gayborhood?* New Jersey, Princeton University Press.

Grebler, L., J. W. Moore, and R. C. Guzman 1970. *The Mexican American People: The Nation's Second Largest Minority*. New York: Free Press.

Hanum, E. and Y. Xie. 1998. "Ethnic Stratification in Northwest China: Occupational Differences between Han Chinese and National Minorities in Xinjiang, 1982-1990." *Demography* 35(3):323-333.

Harrison, R. J. and D. H. Weinberg. 1992. "Changes in Racial and Ethnic Residential Segregation, 1980-1990." Paper prepared for the American Statistical Association meetings, August.

Hawley, A. H. 1950. *Human Ecology: A Theory of Community Structure*. New York: Ronald Press.

Head, J. 2008. *Thai School Offers Transsexual Toilet*. BBC News (http://news.bbc.co.uk/2/hi/asia-pacific/7529227.stm)

Iceland, J. 2004. "Beyond Black and White Metropolitan Residential Segregation in multi-ethnic America." *Social Science Research* 33:248-271.

Jackson, K. T. 1985. *Crabgrass Frontier: The Suburbanization of the United States*. New York: Oxford University Press.

Jones, F.L. 1969. *Dimensions of Urban Social Structure: The Social Areas of Melbourne. Toronto*. Canada: University of Toronto Press.

Jones, J.M. 2013. "Same-Sex Marriage Support Solidifies Above 50% in U.S." Gallup Report (http://www.gallup.com/poll/162398/sex-marriage-support-solidifies-above.aspx)

Kantrowitz, N. 1973. *Ethnic and Racial Segregation in the New York Metropolis*. New York: Praeger.

Kinsey, A., W.B. Pomeroy, and C.E. Martin. 1948. *Sexual Behavior in the Human Male*. Philadelphia: Saunders.

Kinsey, A., W.B. Pomeroy, C.E. Martin, and P. Gebhard. 1953. *Sexual Behavior in the Human Female*. Philadelphia: Saunders.

Klaff, V. Z. 1973. "Ethnic Segregation in Urban Israel." *Demography* 10:161-184.

Knopp, L. 1990. "Social Consequences of Homosexuality." *Geographical Magazine* 5: 20–25

Laumann, E.O., J.H. Gagnon, R.T. Michael, and S. Michaels. 1994. *The Social Organization of Sexuality: Sexual Practices in the United States*. Chicago: University of Chicago Press.

Lieberson, S. 1980. *A Piece of the Pie: Black and White Immigrants since 1880.* Berkeley: University of California Press.

Logan, J.R. 1978. "Growth, Politics, and the Stratification of Places." *American Journal of Sociology* 84:404-416.

Ma, R. 1991. "Han and Tibet Residential Patterns in Lhasa." *The China Quarterly* 128(1):814-835.

Massey, D.S. 1979. "Effects of Socioeconomic Factors on the Residential Segregation of Black and Spanish Americans in U.S. Urbanized Areas." *American Sociological Review* 44(6):1015-1022.

Massey, D.S. and N.A. Denton. 1988. "The Dimensions of Residential Segregation." *Social Forces* 67 (2): 281–315.

Massey, D.S., and N.A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass.* Cambridge: Harvard University Press.

Massey, D. S., J. Rothwell, and T. Domina. 2009. *The Changing Bases of Segregation in the United States*. The ANNALS of the American Academy of Political and Social Science 626: 74–90.

Meta, S.K. 1968. *Patterns of Residence in Poona (India) by Income, Education, and Occupation*. American Journal of Sociology 73: 496-508.

Michael, R.T., J.H. Gagnon, E.O. Laumann, and G. Kolat. 1994. *Sex in America: A Definitive Study. Boston: Little Brown*.

Min, P. G. 1992. *A Comparison of Korean Minorities in China and Japan*. International Migration Review 26(1):4-21.

Musil, G. 1968. *The Development of Prague's Ecological Structure*. Pp.232-259 in Readings in Urban Sociology, edited by Raymond E. Pahl. New York: Pergamon Press.

O'Connell, M. and G. Gooding. 2006. "The Use of First Names to Evaluate Reports of Gender and Its Effect on the Distribution of Married and Unmarried Couple Households." Paper presented at Population Association of America Annual Meeting, March 30-April 1.

O'Connell, M. and S. Feliz. 2011. "Same-sex Couple Household Statistics from the 2010 Census." Working Paper Number 2011-26. Washington, DC: U.S. Census Bureau, Social, Economic and Housing Statistics Division

Office of Management and Budget. 2010. 2010 Standards for Delineating Metropolitan and Micropolitan Statistical Areas; Notice. Washington, D.C. : Government Printing Office.

O'Reilly, K. and G. R. Webster. 1998. "A Sociodemographic and Partisan Analysis of Voting in Three Anti-Gay Rights Referenda in Oregon." Professional Geographer 50(4): 498-515.

Park, R. E., E.W. Burgess, and R.D. McKenzie. 1925. *The city*. Chicago, Illinois: The University of Chicago Press.

Park, R.E. 1926. *The Urban Community as a Spatial Pattern and a Moral Order*. Pp. 3-18 in The Urban Community, edited by E. W. Burgess. Chicago: University of Chicago Press.

Patterson, C. 2000. *Family Relationships of Lesbians and Gay Men.* Journal of Marriage and the Family 62:1052-69.

Pew Research Center. 2011. *Beyond Red vs. Blue: The Political Typology*. (http://www.people-press.org/2011/05/04/beyond-red-vs-blue-the-political-typology/)

Pires, Claire. 2014. "The 25 Best Colleges And Universities For LGBT Students." *BuzzFeed* (http://www.buzzfeed.com/clairepires/the-25-best-colleges-and-universities-for-lgbt-students)

Poston, D.L., Jr. and J. Shu. 1987. *The Demographic and Socioeconomic Composition of China's Ethnic Minorities*. Population and Development Review 13: 703-722.

Poston, D.L., Jr., and W.P. Frisbie. 1998. "Human Ecology, Sociology, and Demography." Chapter 2 in M. Micklin and D.L. Poston, Jr. (editors), *Continuities in Sociological Human Ecology*. New York: Plenum Press.

Poston, D.L., Jr. and M. Micklin. 1993. "Spatial Segregation and Social Differentiation of the Minority Nationalities from the Han Majority in the People's Republic of China." *Sociological Inquiry* 63:150-165.

Poston, D.L., Jr., and W.P. Frisbie. 2005. "Ecological Demography." Chapter 20 in D. L. Poston, Jr. and M. Micklin (editors). *Handbook of Population. New York*, NY: Springer Publishers.

Poston, D.L., Jr. and Y. Chang. 2013. "Patterns of Gay Male and Lesbian Partnering in the Metropolitan Areas of the United States in 2010." *Sociological Inquiry* 63:150-165. Paper presented at Population Association of America Annual Meeting, April 11-April 13.

Ransom, M. 2000. "Sampling Distributions of Segregation Indexes." *Sociological Methods and Research* 28(4): 454-75.

Rushbrook, D. 2002. "Cities, Queer Space, and the Cosmopolitan Tourist." *GLQ: A Journal of Lesbian and Gay Studies* 8(1-2):183-206.

Saenz, R. and J. Vinas. 1990. "Chicano Geographic Segregation: A Human Ecological Approach." *Sociological Perspectives* 33(4)465-481.

Schneider, M., and J.R. Logan. 1982. "Suburban Racial Segregation and Black Access to Local Public Resources." *Social Science Quarterly* 63:762-770.

Soresen, A., K. E. Taeuber, and L. J. Hollingsworth, Jr. 1975. "Indexes of Racial Residential Segregation for 109 Cities in the United States, 1940-1970." *Sociological Focus* 8:125-142.

Spitzer, R.L. 1981. "The Diagnostic Status of Homosexuality in DSM-III: A Reformulation of the Issues." *Am J Psychiatry* 138 (2): 210–215.

Squires, G.D. 1994. *Capital and Communities in Black and White: The Intersections of Race, Class, and Uneven Development*. Albany: State University of New York Press.

Taeuber, K.E. and A.F. Taeuber. 1965. *Negroes in Cities: Residential Segregation and Neighborhood Change*. Chicago: Aldine Publishing.

Tate, R. 2004. *Oakland makes gay play*. San Francisco Business Times, Afternoon Edition (http://www.bizjournals.com/sanfrancisco/stories/2004/03/22/story2.html?page=all)

Telles, E.Ed. 1992. "Residential Segregation by Skin Color in Brazil." *American Sociological Review* 57(2):186-197.

Turner, M.A. and K. Fortuny. 2009. "Residential Segregation and Low-Income Working Families. Urban Institute." Retrieved: October 12, 2011

Warwick, N. 1966. "Singapore: Ethnic Diversity and Its Implications." *Annals of the Association of American Geographers* 56:236-253.

Winship, C. 1977. "A Re-evaluation of Indices of Residential Segregation." *Social Forces* 55:1058-1066.