"Same-sex and Opposite-sex Educational Assortative Matching Patterns in an Era of Marriage Equality"

Abstract: Educational assortative mating is important given recent increasing returns to education and rising income inequality in the United States in the last several decades. I examine educational assortative mating patterns among same-sex and opposite-sex couples, focusing on individuals aged 19-39 who were of target marrying age and are a generation most immediately affected after federal marriage legalization through Obergefell v. Hodges (2015). Analysis over this period allowed me to explore how a form of equality—marriage equality—may or may not contribute to rising income inequality in the United States within the last several decades. My research suggests that, unlike opposite-sex couples who tend to sort into educationally homogamous marriages, same-sex couples tend to be less likely to sort into educationally homogamous marriages—not because they have thinner marriage "markets" than opposite-sex couples, but because they hold different preferences for partners concerning education than people seeking opposite-sex marriages. I found that on average, same-sex couples are more likely than opposite-sex couples to exhibit educational difference and that same-sex couples are nearly twice as likely as opposite-sex couples to exhibit perfect educational heterogamy. Further, I conclude that same-sex male couples are more likely to exhibit an educational distance than same-sex female couples and, correspondingly, that same-sex female couples are more likely than male same-sex couples to exhibit perfect educational homogamy. My results suggest that marriage equality does not seem to contribute to rising income inequality through this mechanism, specifically.

Keywords: assortative mating, education, marriage, same-sex couples

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I. Introduction

When finding a long-term mate, people take many factors into consideration beyond physical attraction. There are various ways to find a mate—from meeting someone in university to online dating through a plethora of apps. Regardless of how people meet, education is an important dimension in mate selection. Education matters partly because it affects and reflects socioeconomic status, which can affect one's attractiveness in the marriage market (Shafer and Qian 2010). Education can also determine what geographical places you are in and therefore what potential partners you meet (Smith and Powell 1990; Tamborini et al. 2015).

Higher levels of educational attainment are associated with higher earnings (Tamborini et al. 2015). Increases in returns to education—the increase in earnings due to an additional year of school—from the 1960s to the 2010s serve as a factor behind the rise of household income inequality within the United States (Eika et al. 2017; Schwartz 2010). Because married couples typically share income, higher earnings are an attractive feature in a mate. Because both members of a couple who are seeking to maximize income will seek the most educated partner (with the best earnings potential) who will be interested in them in return, couples will tend to have the same level of education (Mare 1991). Thus, educational homogamy—when two people have the same level of educational attainment—is common (Eika et al. 2017; Greenwood et al. 2014). For example, a couple has perfect educational homogamy if both individuals have exactly a bachelor's degree. In contrast, educational heterogamy occurs when the individuals in a couple have disparate levels of educational attainment (Appendix A). The number of marriages between men and women who are educationally homogamous has increased in the last three decades (Greenwood et al. 2014; Shafer and Qian 2010). Other studies show evidence that people with low levels of education are increasingly sorting into homogenous marriages as well (Chiappori et al. 2020; Eika et al. 2017). This sorting is a partial driver of household income inequality

(Chiappori et al. 2020; Eika et al. 2017). Consequently, educational sorting plays a role in understanding income inequality.

Most of the literature on the characteristics that drive matching in the marriage market, and specifically the literature on educational homogamy, have been developed using data on opposite-sex couples. This can mainly be attributed to the lack of data on same-sex couples (Verbakel and Kalmijn 2014). The institution of marriage in the United States only recognized opposite-sex couple unions until 2015. There is now an increased share of people who get married, due to the rise in same-sex couples in the United States following marriage legalization through Obergefell v. Hodges (2015), enabling people in same-sex couples to marry under the law like opposite-sex couples. Obergefell v. Hodges (2015) and, more generally, improved social attitudes towards lesbian, gay, bisexual, transgender, queer, etc. (LGBTQ+) people, prompted more same-sex couples to marry (Schneider 2020). Because same-sex couples have only been recognized for six years, research on same-sex married couples has been limited. Much about same-sex marriage patterns are still not well-understood.

In this thesis, I aim to develop our understanding of these patterns by examining educational sorting in the marriage market among same-sex couples and comparing it to patterns among opposite-sex couples. Further, I investigate whether the patterns for same-sex couples vary between female same-sex couples and male same-sex couples[1]. I test whether lower homogamy among same-sex couples is simply due to fewer options in same-sex dating markets (since individuals seeking same-sex partners are a minority of the population, as recorded in Morales (2021)), in which case homogamy should increase as these markets grow, or whether it

[1] There are data limitations for exploring gender and sexual orientation. Gender and sexual orientation are non-binary and intersecting entities, and the American Community Survey, used here, does not measure them. Instead, I explore self-reported sex and sex of partner to infer information about gay (same-sex males) and lesbian (same-sex females) presenting partnerships.

is instead due to different preferences among people seeking same-sex partnerships, in which case homogamy in same-sex couples will not change much in larger markets. I use the population of the geographic area in which a person lives as a proxy for the size of their dating market[2].

Understanding educational homogamy, particularly among same-sex couples, is important for understanding larger economic issues including income inequality. The number of marriages between men and women who are educationally homogamous has increased in the last three decades (Greenwood et al. 2014; Shafer and Qian 2010); other studies show evidence that people with low levels of education are increasingly sorting into homogenous marriages as well (Chiappori et al. 2020; Eika et al. 2017). This sorting is a partial driver of household income inequality (Chiappori et al. 2020; Eika et al. 2017). Thus, in the six years after Obergefell v. Hodges (2015), newly available data enables an opportunity to expand limited research on assortative mating patterns of same-sex couples. Traditional marriages between high-earning men and homemaker women reduced aggregate income inequality because women were "elevated" in class due to her marriage. As more women achieve more education, and men marry women with higher levels of education, aggregate income inequality increases (Cheremukhin 2020). As an era of marriage equality ushered in by Obergefell v. Hodges (2015) generally reduced inequality by granting marital privileges to people seeking same-sex marriages, are people in same-sex marriages contributing to household inequality by matching into educationally homogamous marriages as opposite-sex couples traditionally have? Will this outcome drive more income inequality given increased educational sorting, increased returns to

[2] Schmidt et al. (2014) similarly used population size of varying geographic areas to proxy for dating market size. Marriages are identified using IPUMS' attached characteristic "Spouse" to each variable (Minnesota Population Center). Spouses do not necessarily live in the same household.

education, and growing same-sex dating markets? Understanding whether lower educational homogamy among same-sex couples is due to a smaller marriage market or due to different preferences helps contextualize these questions.

My paper contributes to the literature in two ways. First, I provide a detailed description of the extent of educational assortative mating among same-sex couples. Second, I use the size of local marriage markets to understand how both same-sex and opposite-sex couples' homogamy changes based on the number of available partners, to identify how, as more people identify as queer and same-sex dating markets grow, same-sex educational homogamy is likely to change and to affect macro inequality. Thus, this paper aims to not only understand how educational assortative mating patterns differ by couple-type and partner market size, but also to draw dynamic social implications.

II. Literature Review

Below, I detail literature in three categories that help inform my approach to the question of educational assortative mating among same-sex couples: sorting patterns in the opposite-sex marriage market, evidence from exogenous shocks to the size of opposite-sex marriage markets, and the migration patterns of LGBTQ+ people towards urban areas with larger implied dating pools. Within marriage market sorting, I explore assortative mating, educational assortative mating, and educational homogamy.

Assortative mating

Assortative mating can be positive, resulting in a homogamous partnership, or negative, resulting in a heterogamous partnership. For example, positive assortative mating could occur if a tall person partners with another tall person, producing a height homogamous partnership; negative assortative mating could occur if a person who likes to talk pairs with a person who prefers to listen. Partnerships can be examined along a variety of dimensions, from height to earnings. Previous assortative mating literature examines earnings and age. For instance, mating by labor-market characteristics (ex: hourly earnings) is weaker than mating by non-labor market characteristics (ex: age or education) for same- and opposite-sex couples (Jepsen and Jepsen 2002). Sorting by earnings power between men and women was negative in the mid-century U.S., with men marrying lower-earning women (Becker 1973); this trend is less persistent today (Schwartz 2013; Shafer and Qian 2010). Positive assortative mating factors include education (Eika et al. 2017), weight (Jepsen and Jepsen 2002), and physical attractiveness (Stevens et al. 1990); in opposite-sex unions, men want younger women and women want slightly older men but in same-sex unions, men want young partners and women don't have a preference (Hayes 1995; Jepsen and Jepsen 2002). My research focuses on education because increased returns to education—the increase in income from one more year of school–mean that income can be strongly predicted by education level. Understanding educational assortative mating, and same-sex couples' contributions to it, is thus essential to fully understanding increased income inequality within the United States (Saez 2013).

Positive assortative mating produces homogamy; homogamy can occur from two separate mate preference combinations (Schwartz 2013). In the first, both people prefer partners who share similar characteristics, reflecting a matching hypothesis (ex: religiosity). In the second, both people prefer partners who exhibit more of a characteristic (ex: higher earnings, attractiveness). Both result in homogamy: in the first scenario, people seek out similar people; in the second scenario, nobody is willing to match down, so they match with a person who is nearly similar to themselves. Schwartz (2013) demonstrated that heterogamy can be modeled through exchange theory (Davis 1941; Merton 1941) across different characteristics that partners prefer more of. For example, a highly educated man from a disadvantaged background can exchange his high level of education to marry a woman from an advantaged class background with lower educational attainment.

Established literature offers that men and women do not weigh education with equal importance as an attribute by which people mate. Stevens et al. (1990) illustrated that education is emphasized more by straight women than by straight men in assessing the strengths of prospective partners because, traditionally, there has been more emphasis on men's earnings potential (DiMaggio and Moh 1985, Leslie 1982; Nock and Rossi 1978). These same preferences appear to hold for female same-sex couples too. Same-sex lesbian couples are more likely to have educational homogamy than same-sex male couples and are about as likely to have educational homogamy as straight couples (Verbakel and Kalmijn 2014). Shafer and Qian (2010) concluded that more-educated women are more likely to find and marry similarly (higher) educated partners than less-educated women are to find and marry similarly (lower) educated partners, consistent with Levy (1987), Lichter et al. (1992), Oppenheimer et al. (1997) and Oppenheimer (2003). I might expect that females seeking same-sex partnerships will have more educationally homogamous partnerships than males seeking same-sex partnerships, and at the least, partnerships that are no less homogamous than opposite-sex couples.

Identifying assortative matching trends is important because it can lend insight into how people make decisions about life partners. Further insight comes from understanding these trends over time as potential drivers of collective social and economic trends. Shafer and Qian (2010) noted that increases in educational homogamy among opposite-sex couples can be attributed to women's improved economic positioning (McLanahan and Casper (1995), Goldstein and Kenney, 2001; Rose, 2004), changes in partner preferences (Sweene and Cancian, 2004), stronger social barriers between socioeconomic groups (England, 2004; Gottschalk, 1997; Rose, 2004), and increased social stratification (Clarkberg, 1999; Kalmijn and Flapp, 2001; Loughran, 2002).

More education leads to higher earnings. Studies by Smith and Powell (1990) and Tamborini et al. (2015), including the papers cited in Tamborini et al., demonstrate this relationship. Further, Mare (1991) examined changes in assortative matching trends over fifty years and opposite-sex couples' educational attainment. Mare noted that the proportion of marriages in which spouses had the same educational attainment declined among marriage groups during the first half of the twentieth century and increased slightly between 1950-1970. Since the 1970s, income inequality has steadily increased in the United States (Saez 2013). Schwartz (2013) noted that several studies found a higher likelihood of educational homogamy in countries with greater income inequality and returns to education. Thus, focusing on the contemporary United States means examining a particularly salient moment, as both income inequality and returns to education are currently at historically high levels.

There is robust literature about opposite-sex marriage markets, coined first by Becker (1973). Becker predicts that men will marry women with whom they share similar traits, such as physical capital, education, intelligence, height, and race. Becker (1991) notes that benefits of marriage occur from the ability to exploit differences in household specialization (traditionally, males generate market earnings and females execute household labor). The pattern of men marrying women with whom they share similarities underlies my hypothesis that individuals seek mates of similar education levels.

Becker’s theory does not easily extend to same-sex couples, as his argument considers the comparative advantages of mates in opposite-sex marriages. Specifically, males traditionally specialize in generating household earnings as the breadwinner while women traditionally specialize as homemakers. Filling in a gap that Becker left, Antecol and Steinberger (2013) explore household labor specialization in lesbian couples when examining labor supply differences between heterosexual married women and partnered lesbians, who could not yet legally wed. Consistent with a traditional division of labor (i.e., married men act as primary earners and married women as secondary earners), they reported three findings: married women's labor supply is positively related to their wages, negatively related to their spouse's wages and non-labor income, and negatively related to children in the household. Becker's assumptions can be adapted to fit same-sex couples; the benefits of marriage (or more generalized cohabiting partnership, as there were no significant differences between cohabiting and married couples per Verbakel and Kalmijn (2014)) reveal that an earner's primary or secondary status matters more than one's sex. However, specialization for same-sex couples might be less beneficial (Verbakel and Kalmijn 2014). One reason this might be true is that individuals in same-sex couples were socialized with the same gender roles as individuals in opposite-sex couples (Verbakel and Kalmijn 2014) and may thus exhibit similar preferences around specialization. The similarity in education would further obscure obvious sorting into different roles, as it would suggest that neither partner would have a clear relative advantage in the labor market.

Further, while household incomes provide context for aggregate income inequality instead of serving as a focus in this paper, previous scholars such as Klawitter and Flatt (1998) studied household incomes of same-sex and opposite-sex couples. Their research yielded the highest and lowest incomes by couple type in this order: male same-sex couples, opposite-sex married couples, female same-sex couples, and unmarried opposite-sex couples. So, it is not only valuable but important to segment same-sex male couples and same-sex female couples, as males earn roughly twice as much as females and thus experience a double benefit of their male earnings potential and females a double lack of benefit (Institute for Women's Policy Research).

Exogenous shocks

One reason that matching may look different among same-sex couples compared to opposite-sex couples is that fewer people are seeking a same-sex partner, and therefore it is less likely that a given person will find a partner who matches them on all characteristics. While there has been little previous literature on this possibility, several papers have examined exogenous shocks in the number of available partners in heterosexual marriage markets, which can serve as useful reference points to understand how the size of marriage markets affects sorting. Two useful papers in this realm include Abramitzky (2008) and Brodeur and Haddad (2018). Abramitzky (2008) examined the role of a change in sex ratio (drop in the male population) because of World War I and the consequential effect on assortative matching. They found that a reduction in males changes the rate at which single people meet, reducing the total number of meetings between all singles and leading to a reduction of meetings for single women specifically. Thus, women became less selective and accepted men of lower "quality." Abramitzky defines quality as a threshold (m_1) marking the attractiveness of an individual based upon socioeconomic class. Abramitzky also concluded that before World War I, assortative matching by social class was common—for example, higher-status people would match with other high-status people. However, post-World War I, the sex ratio imbalance enabled men to marry women of higher class, displaying a previously uncommon matching pattern. Implications might include that smaller, uneven marriage markets lead to individuals choosing people who are less similar to themselves. In the context of this paper, rural marriage markets and same-sex couple markets are two types of smaller, compromised markets, in which individuals may be more likely to be open to partners who differ from them. These outcomes drive both my hypothesis that opposite-sex couples are more educationally homogamous than either male or female same-sex couples and my hypothesis that couples in more urban areas will be more educationally homogamous than couples in rural areas.

California's nineteenth-century Gold Rushes served as another exogenous shock. Brodeur and Haddad (2018) examined how the California Gold Rushes affected the spatial distribution of the LGBT population in the United States. They examined Gold Rush and non-Gold Rush counties: Gold Rush counties were more rural and lacked formal institutions, and they found that 10 to 15% more same-sex couples resided in counties that discovered gold than counties that did not. Non-Gold Rush counties, with more formal institutions, had heavier church presences, and the authors hypothesize that Gold Rush counties likely witnessed more same-sex couples because of the lack of religious institutions. The United States geography has evolved since the Gold Rush, but the observation of LGBTQ+ people moving towards LGBTQ+-friendlier locations persists today, in that LGBTQ+ people now disproportionately reside in urban areas (Black et al. 2000), perhaps because cities also do not typically have a dominating religious presence. Brodeur and Haddad do not examine education; I build on their findings to understand the current geography and educational homogamy of same-sex couples today.

Migratory Patterns

As noted above, research has demonstrated LGBTQ+ people migrating toward LGBTQ+-friendly areas. Drawing from the National Longitudinal Survey of Youth data from 1979, Shafer and Qian (2010) noted regional differences in assortative mating among opposite-sex couples as a function of population, economic structure, and educational composition, all of which vary by place (U.S. Census Bureau, 2007). They found that unmarried men and women in urban areas achieve more homogamous matches because they have more potential spouses, more people, and more balanced sex ratios (Shafer and Qian 2010). They, however, excluded same-sex couples. It is valuable then to measure differences in assortative mating by region for same-sex couples, and I hypothesize that educational sorting will be stronger in urban than in rural areas for these couples just as it is for opposite-sex couples.

Further, same-sex couples are more likely to have higher levels of geographic mobility than same-race couples (Rosenfeld and Kim 2005). Rosenfeld and Kim examined a century of Integrated Public Use Microdata Series (IPUMS) census data from 1900-2000 to examine geographic mobility patterns among people in interracial unions and same-sex couples to understand the independence of young adults, proxied by geographic mobility (Rosenfeld and Kim 2005). Rosenfeld and Kim found that same-sex couples are more geographically mobile and more urban than same-race married couples, indicating that non-traditional couples are more mobile after individual (ex: age, education, living in a city) and community (ex: racial distribution of potential spouses or partners) characteristics are factored in (Rosenfeld and Kim 2005). Extending Rosenfeld and Kim, Schwartz and Graf (2009) draw upon Rosenfeld and Kim and others to show that same-sex couples are not as likely to be homogamous as opposite-sex couples, focusing on race, age, and education. Schwartz and Graf (2009) use 5% sample data from the United States 1990-2000 census to compare same- and opposite-sex couples. Leveraging IPUMS, they use the "unmarried partner" category to identify four types of couples who live together: same-sex cohabiting males, same-sex cohabiting females, opposite-sex cohabiting couples, and opposite-sex married couples. Three conclusions from Schwartz and Graf (2009) include observations about the living habits of same-sex couples. First, Schwartz and Graf use findings from Rosenfeld and Kim (2005) that same-sex couples have more geographic mobility than same-race married couples to contextualize their discoveries that same-sex couples are less likely to resemble each other than opposite-sex couples; second, relative to opposite-sex couples, same-sex couples are more likely to form relationships across social boundaries such as age, racial, ethnic, or educational groups; third, that same-sex couples are more likely than opposite-sex couples to live in urban neighborhoods. The fact that same-sex couples are more likely to form relationships across social boundaries informs my hypothesis that more opposite-sex couples are in educationally homogamous relationships than same-sex couples.

The first year in which people could identify a cohabiting, unmarried partner within the relationship category occurred in the 1990 Census. One limitation of this approach is that it cannot detect where single LGBTQ+ people move to or live. Examining twenty cities with large numbers of gay male couples, which are home to less than 26% of the US population, Black et al. (2000) found that those cities contain nearly 60% of their sample of gay men (their data are drawn from the General Social Survey, the National Health and Social Life Survey—from which surveyed individuals self-report the sex of their intimate partners to extrapolate one's sexuality—and the 1990 Census). Black et al. included that gay men are more concentrated in urban areas than lesbian women, who are less geographically concentrated; unfortunately, they do not discuss why. Accordingly, it will be useful for my research to segment the differences between same-sex male and same-sex female couples. Moreover, Black et al. (2000) find a concentration of gay and lesbian couples in smaller cities, particularly in college towns like Ann Arbor, Michigan and Madison, Wisconsin. They do not discuss why and introduce an inference limitation due to the small sample size. The finding of a concentration of gay and lesbian couples in smaller cities provides insight into how my research will segment by geographic area, particularly with the goal of understanding why.

Employment protections contribute to LGBTQ+ urban migratory patterns. As disclosed in Klawitter and Flatt (1998), these migratory patterns are partly driven by people moving to places that already have anti-discrimination policies. Klawitter and Flatt (1998) use 5% PUMS 1990 Census data to estimate the effects of LGBTQ+ anti-discrimination policies (both state and local) on individual and household earnings, examining individual and location characteristics. To measure the effects of antidiscrimination policies, they used multivariate regressions of the natural log earnings for individuals and household income, and test whether LGBTQ+ people are willing to accept lower wages to move to an area with an anti-discrimination policy that would provide job security. Unsurprisingly, they found that a larger proportion of same-sex couples live in areas that have antidiscrimination protections in private employment.

Schmidt et al. (1987) used geographic variation in population density to reveal that mate choice is compromised in small populations. They reached this conclusion by studying how one's rural or urban origin, among other factors like height, age, and eye color, influences assortative mating in the Romanian population by examining 820 couples. Schmidt et al. tested whether observed differences between urban and rural couples—though both somewhat homogamous across measured factors—could be attributed to a smaller population size at the time of mate selection or to different mentalities of urban and rural people. They did so by creating three rural subgroups: small, average, and large villages. They concluded that choice is difficult in small villages—which explains why correlation coefficients between mates are much lower in small villages than in other areas. This drives my hypothesis that couples' educational homogamy in rural areas will be lower than couples' educational homogamy in urban areas.

Moreover, Shafer and Qian (2010) revealed that the workplace is segregated by occupational class, and matches made at work occur often between educationally similar people (Kalmijn and Flap 2001). Urban environments tend to attract scientists, technicians, engineers, and executives while machinists, makers, and laborers are over-represented in rural areas (Abel 2012). These findings further motivate my hypothesis that urban areas will have a higher proportion of couples with higher educational levels than rural areas.

III. Hypotheses

To understand the relationship between educational homogamy and place, I test five hypotheses about the differences between opposite-sex couples and same-sex couples, male same-sex couples and female same-sex couples, and rural areas and metropolitan areas:

First, I hypothesize opposite-sex couples are more educationally homogamous than both male and female same-sex couples. I anticipate this because I expect people to seek partners who are similar to themselves across a variety of dimensions (Greenwood et al. 2014; Schwartz 2013). Given people's preference for mates who are similar to themselves combined with the reality that more people are looking for opposite-sex partnerships than same-sex partnerships, people seeking opposite-sex partners participate in a larger marriage market than people seeking same-sex partners, thus resulting in opposite-sex couples presenting more homogamy than same-sex couples. Moreover, same-sex couples are more likely to have egalitarian preferences than opposite-sex couples (Verbakel and Kalmijn 2014).

Second, I aim to add clarification to homogamy hypotheses on female and male same-sex couples. Schwartz and Graf (2009) revealed that same-sex male couples are more likely to match across social dimensions than female same-sex and opposite-sex couples, implying that same-sex male partnerships are less homogamous than female same-sex couples. Further, Verbakel and

Kalmijn (2014) found that male same-sex couples were less homogamous than opposite-sex couples; and that female same-sex and opposite-sex couples were equally homogamous with respect to education. In contrast, Weisberg et al. (2011) found females are more open-minded than males, and Blumstein and Schwartz (1983) concluded that lesbian couples have stronger egalitarian preferences than gay couples, implying that female same-sex couples may end up being less homogamous than male same-sex couples. As the previous literature is split on this question, my research seeks to add clarification.

Third, I hypothesize that same- or opposite-sex couples in urban areas will have more educational homogamy than same- or opposite-sex couples in less urban areas, and this effect will increase monotonically from rural areas to the largest cities towards perfect homogamy. I hypothesize this because of the observed increase in assortative mating by education among married opposite-sex partners in larger versus smaller areas (Shafer and Qian 2010). Further, urban areas tend to include a higher concentration of possible spouses, are more populated, and exhibit more balanced sex ratios than rural areas (Shafer and Qian 2010). I hypothesize that the above monotonically increasing pattern is also true for same-sex couples since I do not have reason to believe that there is a difference between same- and opposite-sex couples given thicker marriage markets. For example, I predict that it will be most likely for couples in the most metropolitan areas to have perfect homogamy because people will have the most choice in larger dating markets and I expect that people will seek individuals with the same level of education as themselves; in contrast, I predict that perfect heterogamy will be most common (although still relatively uncommon) among couples in the most rural areas because I think that people's choice will be limited by smaller dating markets that exist in rural areas[3].

Fourth, same-sex couples will have more educational homogamy in more urban areas than they do in rural areas. I predict this pattern will emerge because I observe that more urban areas have larger pools of potential mates, numerically. Secondly, given the choice, gays and lesbians have preferences similar to straight people's for choosing the most educated partner they can, which means that once they have more choice, they will choose to end up with someone with the same level of education as themselves.

Fifth, to further refine the above hypothesis: same-sex female couples in rural areas will have the lowest levels of homogamy while same-sex females in more urban areas will have relatively more homogamy, and homogamy will increase monotonically with city size; same-sex male couples in rural areas will have low levels of homogamy (not lower than female same-sex couples) and same-sex males in more urban areas will have relatively more homogamy, also rising monotonically. For example, I predict that, compared to all other couple types in all other areas, females in rural areas will be most likely to have heterogamous partnerships. Two factors drive this hypothesis: first, the size of the market for females seeking female partners is small, particularly in rural areas; second, females tend to be more open-minded than males, as Weisberg et al. (2011) established that females obtained higher raw and residual scores on factors that indicate openness. This is relevant because I hypothesize that, like heterosexual women in an imbalanced marriage market, LGBTQ+ people in rural areas will be forced to be less selective and end up in more heterogamous matches; this finding underlies my fifth hypothesis.

[3] Rural areas may be more educationally homogeneous than more urban areas, which would contrast my hypothesis that couples in rural areas are more likely to exhibit educational heterogamy and instead result in a higher number of educationally homogamous couples than expected.

IV. Data

The analysis derives from the United States Integrated Public Use Microdata Series (IPUMS) collected from the Census and the American Community Survey (ACS). IPUMS is a large-scale survey representative of the United States that tracks a consistent set of measures over time. This paper uses the 2019 ACS five-year data, the most recent five-year dataset available. Five-year data is helpful because it reports data collected over sixty months from 2015 to 2019, which increases statistical reliability for less-populous areas. This feature was particularly important because it enables me to analyze data from both urban metropolitan areas and less-populated rural non-metropolitan areas. Within the 2019 ACS five-year data, my research focuses on individuals aged 19-39 (N=3,999,225). This allows me to focus on individuals that were of prime marrying age in 2015 when the marriage equality act Obergefell v. Hodges (2015) was decided, and to focus on the generation most immediately affected by this change in federal policy.

Due to the way the Census collects information, this paper deals with mutually exclusive gender and sexuality categorizations. These categorizations are inferred from survey indicators for the sex of the respondent and their spouse or partner (if they have one), and the combination of own and partner sex is used to infer the sexuality of the individuals. However, it is important to note that sexual orientation is not self-reported. Similarly, individuals' gender is not reported—only sex. Gender identity is not collected by the Census.

Among variables available in the 2019 ACS five-year data, my research relies on individual and household variables, including age, detailed educational attainment, gender, household type, sex, metropolitan area, recent migration, and spouse-specific variables, including the age and educational attainment of the respondent's spouse. I use educational attainment of the household head and their spouse or partner to develop an educational homogamy framework (Appendix A).

A quick summary of the data (Appendix B): there are 3.99 million observations of individuals who are household heads born between 1976 and 1996 in the sample. There are 2.02 million males (50.55%) and 1.97 million females (49.45%) in the sample. 2.2 million (55%) people are single and have no spouse or partner link. 1.4 million (37%) people are married with a spouse present in the household. 18,525 households report a same-sex married couple (0.46%). 8,306 same-sex couples are male (44.84%) and 10,219 same-sex couples are female (55.16%). 3.05 million people (75.91%) live in the same home they had lived in the year before; 753,150 people had moved within their state in the past year (18.83%) and 170,387 people (4.26%) moved between states within the last year.

Using the data provided in IPUMS, I create educational variables in five categories: less than high school, high school graduate (including GED equivalent), some college (including Associate's degrees), college graduate (only Bachelor's degrees), and graduate degree (Appendix C). 7.57%, 20.23%, 30.78%, 26.53%, and 14.88% of all partnered household heads have these respective levels of educational attainment. 7.72%, 20.52%, 30.72%, 26.18%, and 14.85% of the spouses of partnered household heads have respective levels of educational attainment. To examine heterogamy, I define "educational distance" for each couple by assigning a number to each householder's educational level and their spouse's educational level—their difference is the numerical difference between them. For example, a couple with a household head with a master's degree (coded numerically as 5) and a spouse with a bachelor's degree (coded numerically as 4) would have an educational distance of 1. I observe an educational distance on a scale of 0 - 4 in magnitude. 45% of couples in the data have an educational distance of 0.

Confirming the existence of educational assortative mating, the data reveal that over 85% of couples have the same (educational distance of 0) or one-degree separation. 12% have two degrees of separation, 2% have three degrees of separation, and 0.29% have four degrees of separation.

Next, I examine educational distance separately for same-sex and opposite-sex couples (Appendix D). Across both groups, educational homogamy (0 or 1 degree of separation) is most common— above 80%. 45.39% of opposite-sex couples have the same level of educational attainment while 40.11% have a one-degree separation of educational attainment. Only 2.31% have three degrees of separation and 0.28% have four degrees of separation—the maximum—of educational attainment. Similarly, 43.09% of same-sex couples have the same level of educational attainment; 39.77% have a one-degree separation of educational attainment—leaving approximately 83% of same-sex couples to have the same educational attainment or a one-degree separation of educational attainment. Only 2.76% have three degrees of separation and 0.55% have four degrees—the maximum—of educational attainment separation. Despite these broad similarities, however, the share of same-sex couples with educational homogamy is lower, and the share with 2 or more degrees of educational difference is greater than among opposite-sex couples. Further, same-sex couples are nearly twice as likely as opposite-sex couples to have a maximum educational distance (perfect heterogamy), and the difference is statistically significant ($p<.0001$ for diff $\neq 0$) (Appendix G I).

Metropolitan areas include regions with urban centers and surrounding areas with high levels of social and economic integration. The variable “met2013” identifies metropolitan areas of residence using 2013 metropolitan statistical areas (MSAs) (Minnesota Population Center). MSAs were created from the Office of Management and Budget (OMB) delineations using 2010

Census data. Locations appear with a unique numeric code and label, such as Asheville, North Carolina. I first sort metropolitan areas to create a variable called "pop" that attaches the total population of individuals in that location born between 1976 and 1996 to each observation—I extrapolate the observation to the population by setting frequency weight equivalent to the person weight, a variable created by the Census to reflect that some individuals in the data "represent" more individuals in the population than do others. Using the summary statistics of metropolitan areas, I can group metropolitan areas by their percentile rank to create four categories, $<25^{th}$, 25^{th}-50^{th}, 50^{th}-75^{th}, and $>75^{th}$ percentiles, that represent varying levels of urbanization. For example, big cities include Chicago, Dallas-Fort Worth, Houston, Los Angeles-Long Beach-Anaheim, New York-Newark-Jersey City, and Washington DC-Arlington-Alexandria. These population groupings include rural (less than 10,445 population in the relevant age group), small cities (10,445 – 32,377), mid-sized cities (32,378 – 70,838) and big cities (70,839 and above).

Of my sample of 3.99 million household heads, 42.13% are in rural areas, 19.62% are in small cities, 18.69% are in mid-sized cities and 19.56% are in big cities (Appendix E). 42.16% of opposite-sex couples are in rural areas, 19.62% are in small cities, 18.67% are in mid-sized cities, and 19.55% are in big cities (Appendix D). Of the 18,525 household heads who are in a same-sex couple, 6,463 (34.88%) are located in a rural area, 3,526 (19.03%) are located in a small city, 4,369 (23.58%) are located in a mid-sized city, and 4,167 (22.49%) are located in a big city (Appendix D).

IPUMS contains variables that track migration patterns. “Migration within the last year” tracks whether the household head and spouse have moved within the state or between states in the last year. "Moved in" tracks the number of years since the household head and spouse have moved residences, on a scale of 1 (twelve months or less) to 9 (always lived there). Interestingly, same-sex and opposite sex-couples show similar patterns for moving into their residence within the last year: 17% of same-sex married couples moved into their residence in the last year and 16% of opposite-sex couples moved in the last year. However, examinations for moving into a residence in the last three years show a higher proportion of same-sex couples, which is consistent with the finding from Schwartz and Graf (2009) that same-sex couples have higher levels of mobility: 20% of same-sex married couples moved into their residence in the last three years and 17% of straight couples moved in last three years. However, examining migration shows that a higher proportion of opposite-sex couples than same-sex couples have moved within and between states. 82% of female same-sex couples and 82% of male same-sex couples have lived in the same house since last year. 14% of female same-sex couples and 13% of male same-sex couples have moved within the state within the last year. 12% of female same-sex couples and 9% of male same-sex couples moved into their residence within the last twelve months. 13% of female same-sex couples and 11% of male same-sex couples have moved into their residence within the last three years.

I use the “Migration within the last year” variable to create a variable called “mover” that is true (coded as 1) if the household head has moved houses between counties, between states, or lived abroad within the last year. “Mover” is false (coded as 0)—the household head is not considered someone who moved—if the household head has stayed in the same house or moved houses within the same county in the last year. 438,203 household heads (10.96%) are considered movers and 3,561,022 (89.04%) of households are not considered movers in this dataset.

V. Methods

To conduct analyses, I nine variables: educational attainment, education categories, educational distance, non-zero educational distance, educational distance indicators, same-sex couples, same-sex male couples, location type (rural, small city, medium-sized city, large city), and movers. These variables are then used in Stata I/C to run a t-test (to see if there is a significant difference between the means of two groups) and multiple linear regression (to model a linear relationship between a dependent variable and multiple explanatory variables) analyses. Specifically, two-sample independent group t-tests with equal variances to compare mean values by group and basic multiple linear regressions in which the person weight equals the analytic weight to examine which independent variables are associated with a statistically meaningful change in the probability of attaining a certain outcome. In other words, a t-test will help me see if same-sex couples are more or less likely than opposite-sex couples to exhibit educational distance, for example. Linear regression will help me see if living in a particular area (proxying for choice in a small or large dating market) will increase the likelihood of same-sex couples exhibiting educational distance, as another example.

All t-tests test analyses are conducted with the null hypothesis $H_0: mean(group\ x) - mean\ (group\ y) = 0$ with the alternative hypothesis $H_a: mean(group\ x) - mean\ (group\ y) \neq 0$. Mean values of variables “educational distance,” “non-zero educational distance,” “minimum educational distance indicator,” and “maximum educational distance indicator” are tested by groups of binary variables “same-sex” and “same-sex male” set equal to 1 (if true) or 0 (if false).

In my analyses, the t statistic—which measures how extreme a statistical estimate is—can be modeled as:

$$t = \frac{(\bar{x} - \bar{y}) - (\mu_x - \mu_y)}{s\sqrt{\frac{1}{n_x} + \frac{1}{n_y}}}$$

where $\bar{x}$ is the sample mean and μ_x is the population mean of one group of size n_x and $\bar{y}$ is the sample mean and μ_y is the population mean of the other group of size n_y; s is the pooled sample standard deviations s_x and s_y with the pooled variance, $s^2 = \frac{(n_x-1)s_x^2+(n_y-1)s_y^2}{(n_x-1)+(n_y-1)}$ where s_x^2 is the sample variance of group x and s_y^2 is the sample variance of group y. Next, Stata calculates the degrees of freedom (the number of values in the t-statistic that can vary) by summing the sample populations of groups x and y and subtracting 2 to adjust for two estimated parameters: $n_x + n_y - 2$. Using the degrees of freedom and a confidence level of 95%, Stata then calculates p-values, which represent the probability of reaching the results at least as extreme as the observed result assuming the null hypothesis (that the means of the two groups are equal) is true. The 95% confidence interval (one can be 95% sure that this interval contains the true population mean) for each group x and y is built by:

$$\overline{x_x} \pm t_x * \frac{s_x}{\sqrt{n_x}} \text{ and } \overline{x_y} \pm t_y * \frac{s_y}{\sqrt{n_y}}$$

where the means for the above variables of each group x and y are then reported.

The basic regression equations are formulated such that:

$$outcome_i = rural_i + small\ city_i X_1 + mid\ city_i X_2 + big\ city_i X_3$$

where i outcome can equal educational distance, large educational distance, or educational distance indicators 1 (representing perfect educational homogamy because both individuals have the same level of education) or 5 (representing perfect educational heterogamy because one individual has the lowest level of measured educational attainment and the other individual has the highest level of measured educational attainment). I run these regressions separately for opposite-sex couples, same-sex couples, same-sex male, and same-sex female couples. All observations are weighted by the person-weight supplied by IPUMS.

I create a variable that details educational attainment categories from IPUMS' detailed education variable. There are 24 detailed outcomes of an individual's education; examples include pre-school and grade 7. For my research, I only need five levels of educational attainment. So, I create five binary variables that take on values of 1 if it is true that the variable corresponds to less than high school, high school graduate, some college, college graduate, or graduate degree. For example, someone has less than a high school degree if their detailed educational attainment was greater than 1 or less than 62, the no-label numeric codes for "no education" and a cutoff for "12th grade no diploma" in the IPUMS' detailed education variable. Educational attainment is calculated for both household heads and spouses.

I calculate levels of educational distance within a partnership by calculating the absolute value difference between two people. Educational distance values range from 0 (perfect homogamy—both individuals have the same level of educational attainment) to 4 (perfect heterogamy—an individual with less than a high school degree and an individual who has a graduate degree). First, I create an educational count variable that takes on values 1 through 5 that correspond to less than high school, high school graduate, some college, college graduate, or graduate degree; educational count exists for household heads and spouses. I can now calculate educational distance by creating a variable that is equal to the absolute value distance between the household head's educational count and the spouse's educational count. For example, a couple where one person has a bachelor's degree (educational count = 4) and the other a graduate degree (educational count = 5) would be 1. I then generate educational distance indicators that correspond from 1 to 5, with 1 being perfect homogamy and 5 being perfect heterogamy.

I specifically create a variable “notzeroeddist” to measure a non-zero educational distance between a couple, since educational distance includes a value of 0 which is perfect homogamy. I generated “notzeroeddist” by dropping values of 0 (814,536 entries were dropped or 45% of educational distance entries) from educational distance, leaving “notzeroeddist” to take on values 1-4. It contains no missing values.

I also create a variable to measure large educational distance, which I define as an educational distance greater than 1 and not equal to missing values—otherwise defined as educational distances of 2, 3, or 4. This is helpful because a small percentage of my sample has the most extreme distances: 2.31% of couples have an educational distance of 3 and 0.29% of couples have an educational distance of 4 (Appendix B). 14.51% of people who are not single have a large educational distance as I define it (Appendix B).

Same-sex couples are recorded with a binary variable that is 1 if a couple is a same-sex couple and 0 if it is opposite-sex. This indicator variable is generated from IPUMS' same-sex married couple binary variable, which takes on 1 if a household has a same-sex married couple and 0 if it does not. Same-sex male and female couples are recorded through a variable called “same-sex male,” which is a binary variable that takes on the value of 1 if sex equals 1 (male) and same-sex equals 1. Thus, same-sex male is 1 for same-sex male couples and same-sex male is 0 for same-sex female couples.

Location is generated from IPUMS’ metropolitan 2013 “met2013” variable. It represents regions with urban centers and surrounding areas with high levels of social and economic integration. “met2013” identifies metropolitan areas of residence using 2013 metropolitan statistical areas (MSAs) (Minnesota Population Center). MSAs were created from the Office of Management and Budget (OMB) delineations using 2010 Census data. Locations appear with a unique five-digit numeric code and label. For example, 11700 is Asheville, North Carolina. I first sort metropolitan areas to create a variable called "pop," set equal to _N which is the total number of observations for that metro, to attach the current population numbers to each observation. I extrapolate the observation to the population by setting the frequency weight equivalent to the person weight. This is crucial because each observation represents a different number of the actual population, allowing me to use metropolitan areas to approximate different marriage market sizes.

After sorting and attaching the current population number to each observation, I create cutoffs within the metropolitan 2013 variable data at the 25th, 50th, and 75th percentiles, with adjustments for equating the person weight equal to the frequency weight as done above. Cutoffs are made if the metropolitan 2013 variable is not equal to the numeric code 0 or labeled "not in an identifiable area," which represents many observations from very small areas that are not identifiable. For example, this could include five observations from X very rural area and four observations from Y incredibly rural area, such that the areas are so small in the dataset that it is not possible to distinguish between X and Y rural areas without providing potentially identifiable information about the respondents. Other areas in "met2013" include locations like Washington, D.C., or Yakima, WA. Thus, to ensure that non-identifiable areas are not coded like actual locations like Washington D.C. or Yakima, I exclude them from my percentiles—otherwise, the percentile thresholds would be skewed higher than the actual thresholds. To solve this, I add all non-identifiable observations manually to rural.

I use these delineations to generate four classification variables: rural, small city, medium-sized city, and big city from the pop variable generated above. Rural is equivalent to a population of less than 10,445 (the 25th percentile) or observations that are classified as a non-identifiable area. A small city is equivalent to a population greater than 10,444 and less than 32,378—between the 25th and 50th percentiles. A medium-sized city is equivalent to a population greater than 32,377 and less than 70,839—between the 50th and 75th percentiles. Lastly, a big city is equivalent to a population greater than 70,838—between the 75th and 100th percentile—and is not equal to missing values or equal to 0, the non-identifiable areas.

I create a binary variable called "mover" that takes on the value of 0 if the household head has not moved within the last year and 1 if the household has moved within the last year. "Mover" draws from IPUMS' detailed migration variable within the last year—unfortunately, the detailed migration variable within the last five years was not available and would have been preferable. However, one-year migration data is still helpful. "Mover" = 0 includes household heads who have lived in the same house or have moved to a different house within the same county. "Mover" = 1 includes household heads who have moved to a different house between counties, moved between contiguous and non-contiguous states, or were abroad one year ago.

VI. Results

Conducting a two-sample t-test with equal variances to test if the population mean of a non-zero educational distance is the same for same-sex couples as opposite-sex couples showed that on average, 31.79% of opposite-sex couples and 36.90% of same-sex couples have a non-zero educational level difference; these results are significant ($p < .0001$ for difference $\neq 0$) (Appendix G I). Correspondingly, opposite-sex couples are more likely to have the same level of education than same-sex couples. Conducting a two-sample t-test with equal variances to test if the population mean of perfect homogamy (an educational distance of zero) is the same for same-sex couples and opposite-sex couples yielded 45.39% of opposite-sex couples and 43.1% of same-sex couples who have identical levels of education; these results are significantly different from each other ($p < .0000$ difference $\neq 0$) (Appendix G I).

Further, same-sex couples are nearly twice as likely as opposite-sex couples to have perfect educational heterogamy—the most disparate levels of measured educational distance—within the partnership. To test if the population mean of an educational distance of four is the same for opposite-sex and same-sex couples revealed that 0.55% of same-sex couples have a maximum education distance, of four, and that 0.28% of opposite-sex couples have a maximum education distance of four; these results are significantly different from each other ($p < .0001$ for difference $\neq 0$) and I can reject the null hypothesis that the share of couples who exhibit a maximum educational distance are the same for same- and opposite-sex couples (Appendix G I).

Same-sex male couples are more likely to have an educational distance than same-sex female couples. A two-sample t-test comparing the mean non-zero educational distance between same-sex male and female couples showed that 41.67% of same-sex males and 33.17% of same-sex females have an educational distance; these results are significantly different from each other ($p < .0001$ for difference $\neq 0$) (Appendix G II). Interestingly, male same-sex couples are twice as likely as female same-sex couples to have the maximum educational distance (a distance of 4). A two-sample t-test comparing the maximum educational distance between male and female same-sex couples showed that 0.79% of males and 0.37% of females have an educational distance of 4 (Appendix G II). These results are significantly different from each other ($p =.0004$ for difference $\neq 0$). Regarding perfect educational homogamy, female same-sex couples are more likely—around 10% more likely—than male same-sex couples to have an educational distance of zero. To explore perfect homogamy, a two-sample t-test comparing the share of male and female same-sex couples with a minimum educational distance (a distance of 0) showed that 40.92% of males and 44.67% of females have no educational distance (Appendix G II). These results are significantly different from each other ($p < .0001$ for difference $\neq 0$). Unsurprisingly, relative to opposite-sex couples, female same-sex couples on average are more likely to exhibit higher educational distance. A t-test comparing non-zero educational distance between female same-sex couples and opposite-sex couples revealed that on average, 33.17% of female same-sex couples and 31.79% of opposite-sex couples have an educational distance; results are not significant ($p=0.0961$ for difference $\neq 0$) (Appendix G III).

Regressing metropolitan area size (small to big cities with rural as the constant) on educational distance confirmed my hypothesis that there is more educational homogamy for couples overall in urban areas; this relationship incrementally increases from small to big cities (Appendix H I (1)). Living in a small city relative to living in a rural area is associated with a decrease in the probability of exhibiting an educational distance by 1.13%. Similarly, living in a medium-sized city relative to living in a rural area is associated with a decrease in the probability of exhibiting an educational distance by 1.71%. Living in a big city relative to a rural area is associated with a decrease in the probability of exhibiting an educational distance by 2.08%. All results were significant as $p <.0001$ across all city sizes. Thus, a pattern is that as metropolitan areas get bigger, there is a greater decrease in educational distance—meaning that couples tend to show more educational homogamy in more urban areas.

Further, running the above regression for opposite-sex couples shows a similar pattern as the above regressions for couples overall (Appendix H I (2)). Living in a small city, relative to a rural area, for opposite-sex couples is associated with a decrease in the probability of exhibiting an educational distance by 0.87%. Similarly, living in a medium-sized city relative to a rural area is associated with a decrease in the probability of exhibiting an educational distance by 1.45%. Living in a large city relative to a rural area is associated with a decrease in the probability of exhibiting an educational distance by 1.84%. All three results were statistically significant at $p < .0000$. Thus, for straight couples, more metropolitan areas are associated with a meaningful, decrease in educational distance. In other words, opposite-sex couples living in more urban areas are more likely to be homogamous.

In contrast to the result for opposite-sex couples, regressing metropolitan areas on educational distance for same-sex couples showed no statistically significant results (Appendix H I (3)). Living in a small city relative to a rural area for same-sex couples is associated with an *increase* in the probability of an educational distance by 3.03%; this is not significant, however, as $p=0.110$. For same-sex couples, living in a medium-sized city is associated with an increase in the probability of exhibiting an educational distance by 0.91%, however, this is not statistically significant as $p=0.601$. For same-sex couples, living in a large city is associated with an increase in the probability of exhibiting an educational distance by 1.78%, however, this is also not statistically significant as $p=0.321$. Because these results are not statistically significant and are in the opposite direction of estimates for opposite-sex couples, for same-sex couples, it appears that metropolitan area size is not necessarily associated with an increase in educational distance. Thus, results show that for same-sex couples, there is no meaningful difference in educational distance in any sized cities relative to rural areas.

Still, this can be further examined to understand the dynamics within same-sex couples for same-sex males and same-sex females. Regressing metropolitan area size on educational distance for same-sex females and males showed that relative to rural areas, living in any sized city is not associated with any statistically significant difference in the probability of exhibiting an educational distance (Appendix H I (4) for females and (Appendix H I (5)) for males). All coefficients for both regressions were in the unexpected direction with p-values between 0.2 and 0.6.

Another question to pursue extends beyond educational distance—on average, are couples in larger metropolitan areas more or less likely to exhibit the highest level (distance of 4) of educational distance? Regressing metropolitan areas on the maximum educational distance showed that living in a larger metropolitan area is associated with a statistically significant increase in the likelihood of maximum educational distances (Appendix H II (1)). Living in a small city relative to a rural area is associated with an increase in the probability of maximum educational distance of 0.05% ($p < .000$). Living in a medium-sized city is associated with an increase in the probability of maximum educational distance of 0.09% ($p < .0000$). Living in a large city is associated with an increase in the probability of maximum educational distance of 0.19% ($p <.0000$). Thus, couples in big cities are about twice as likely as those in medium cities to exhibit maximum educational distance and nearly four times as likely to be exhibit maximum educational distance as those in small cities. Surprisingly, data seem to show that couples in larger metropolitan areas are more likely to exhibit maximum educational distances.

Analysis can be narrowed further to opposite-sex and same-sex couples. I observed that opposite-sex couples in larger metropolitan areas more commonly exhibit maximum educational distance (Appendix H II (2)). Relative to living in a rural area, living in a small city is associated with an increase in the probability of maximum educational distance of 0.03% ($p=0.002$). Living in a medium-sized city is associated with an increase in the probability of maximum educational distance of 0.08% ($p < .0000$). Lastly, living in a big city is associated with an increase in the probability of maximum educational distance of 0.15% (p <. 0000). Thus, opposite-sex couples living in a big city are nearly twice as likely as opposite-sex couples living in a medium-sized city to exhibit maximum educational distance.

For same-sex couples, living in a big city is positively and significantly related to the likelihood of exhibiting maximum educational distance (Appendix H II (3)). Living in a medium-sized city relative to a rural area is associated with an increase in the probability of exhibiting a maximum educational distance of 0.31% (significant at the 5% level as p=0.034). Living in a big city relative to a rural area is associated with an increase in the probability of maximum educational distance of 0.66% (p < .0000). Thus, same-sex couples living in a big city are twice as likely as same-sex couples in medium-sized cities to exhibit a maximum educational distance, which is much larger than estimates for opposite-sex couples.

Analysis can be further narrowed to same-sex male couples and same-sex female couples. For same-sex female couples living in more urban areas, there is no statistically meaningful increase in the probability of exhibiting maximum educational distance (Appendix H II). For same-sex male couples, relative to rural areas, only living in big cities was statistically significant (Appendix H II (5)). Living in a big city relative to a rural area for same-sex male couples is associated with an increase in the likelihood of maximum educational distance by 1.1% (p < .0000). Thus, for same-sex female couples, there is no relationship between living in more urban areas and the probability they exhibit maximum educational distance (Appendix H II (4)). However, same-sex male couples in big cities are more likely to have a maximum educational distance.

While maximum educational distance is intriguing, it is rare: only 0.29% of partnered people have a maximum educational distance (Appendix C). Consequently, a large educational distance is defined as people in partnerships with educational distances equaling two, three, and four. For example, this could be a couple in which one person has a doctorate and the other has some college. 14.51% of partnered people have an educational distance between two and four (Appendix C). Regressing a large educational distance on varying city sizes relative to rural areas reveals that living in a city is associated with a decrease in the probability of a large educational distance (Appendix H III (1)). Living in a small city is associated with a decrease in the probability of a large educational distance by 0.38% ($p < .0000$). Living in a medium-sized city is associated with a decrease in the probability of a large educational distance by 0.42% ($p < .0000$). Living in a large city is associated with a decrease in a large educational distance by 0.25% ($p=0.001$). Thus, any couple living in a medium-sized city is associated with a decrease in the probability of a large educational distance by a factor of 1.5x in comparison to living in a big city.

Running this regression for opposite-sex and same-sex couples reveals statistically insignificant results. For opposite-sex couples, living in cities is associated with a decrease in the probability of a large educational distance (Appendix H III (2)). For same-sex couples living in cities is associated with an increase in the probability of a large educational distance (Appendix H III (3)). Though not statistically significant, directionally this is consistent with my other findings.

To understand this dynamic within same-sex couples, this regression reveals only marginally statistically significant results for same-sex female couples in small cities (Appendix H III (4)). For female same-sex couples, living in a small city relative to a rural area is associated with an increase in the probability of a large educational distance of 1.77% ($p=0.098$). Living in a medium-sized city is associated with an increase in the probability of a large educational distance of 0.46%, however, this is insignificant (p=0.652). Living in a big city is associated with an increase in the probability of a large educational distance of 2.1% (p=0.050). Interestingly, for same-sex female couples, living in small or big cities, particularly big cities, is associated with an increase in the probability of a large educational distance.

Though these results were statistically insignificant, directionally it is interesting: same-sex male couples living in small- and medium-sized cities showed an associated increase in the probability of a large educational distance while same-sex male couples living in big cities showed an associated decrease in the probability of a large educational distance (Appendix H III (5)).

Interestingly, same-sex couples living in a small city—not a rural area—were most likely to have a large educational distance. I would have expected same-sex couples living in a rural area to be most likely to have a large educational distance than same-sex couples living in other areas because of limited partner selection, numerically by population size and concerning the number of people seeking same-sex partners. To check if this result could have been driven by same-sex couples meeting in more urban areas (like large or medium cities) and then moving to small cities, a regression for same-sex couples who were not movers showed fairly similar results to same-sex couples excluding the mover categorization. For example, same-sex couples who were not movers living in a small city had a 2.44% higher probability of a large educational distance than same-sex couples who were movers; this was not significant (p=0.007) (Appendix H III (6)). For same-sex couples (excluding mover categorization), living in a small city was associated with a 2.2% increase in the probability of a large educational distance, also significant (p=0.011) (Appendix H III (3)).

VII. Discussion

In this dataset, 3.9 million household heads were in opposite-sex couples while 18,525 household heads were in same-sex couples over the period of 2015-2019. Within my data, partnered same-sex couples are approximately 0.5% of partnered opposite-sex couples. Results showed that hypotheses for opposite-sex and same-sex couples' educational homogamy held true, while more specific hypotheses for female or male same-sex couples' educational homogamy did not.

On average, same-sex couples are more likely to have higher levels of educational difference and opposite-sex couples are more likely to have the same level of education than same-sex couples. Both findings confirm my hypothesis that opposite-sex couples are more homogamous than same-sex couples. This result is consistent with Schwartz and Graf (2009) and Verbakel and Kalmijn (2014) in that same-sex couples are open-minded, as seen in a higher proportion of same-sex couples having a greater average educational distance. My hypothesis is reinforced by the fact that same-sex couples are nearly twice as likely as opposite-sex couples to have the most disparate levels of education within the partnership. For same-sex couples, my results showed that living in a mid- and large-sized city relative to a rural area was associated with a statistically significant increase in the probability of exhibiting maximum education distance—of being perfectly heterogamous. So, I conclude that when individuals seeking same-sex partnerships are presented with a thicker dating market (represented by mid-sized and large cities), they choose partners with different levels of education and seem to have a stronger preference for heterogamy than opposite-sex couples. In fact, they are more likely to have the most disparate levels in big cities. Thus, results suggest that same-sex couples have stronger preferences for heterogamy than opposite-sex couples that are distinct from opposite-sex couples.

In clarification of my hypothesis about anticipated homogamy among female and male same-sex couples, results show that same-sex male couples are more likely to have a non-zero educational distance than same-sex female couples. In other words, male same-sex couples exhibit less educational homogamy than female same-sex couples. This is consistent with Schwartz and Graf (2009) and Verbakel and Kalmijn (2014). With education, this result suggests that males in same-sex partnerships seem to have weaker tastes for educational homogamy than females in same-sex partnerships as males in same-sex couples have more disparate levels of educational homogamy. Thus, females in same-sex couples sort more similarly, in regard to education, to opposite-sex couples, which is consistent with Verbakel and Kalmijn (2014). In fact, male same-sex couples are twice as likely as female same-sex couples to have a maximum educational distance. This reinforces the fact that males are more open-minded about education as a factor by which they sort and suggests that males in same-sex partnerships are more likely to prioritize another dimension that is not education.

However, unsurprisingly, relative to opposite-sex couples, female same-sex couples on average have a slightly higher educational distance. This result was marginally significant and directionally consistent with my hypothesis that opposite-sex couples are more homogamous than both male and female same-sex couples. Moreover, as the size of the marriage market increased, the likelihood that opposite-sex couples exhibited an educational distance decreased, showing that given more choices, opposite-sex couples more often chose individuals of similar educational levels. In contrast, as the size of the marriage market increased for female same-sex couples, there was no statistically meaningful relationship between marriage market size and the likelihood of educational distance, suggesting that female same-sex couples are not limited by a thinner dating market; rather, that females seeking same-sex partners hold difference preferences than people seeking opposite-sex partners.

As metropolitan areas get bigger, couples overall show a greater decrease in educational distance—meaning that couples tend to show more educational homogamy in more urban areas. This confirmed my hypothesis that couples in urban areas are more likely to exhibit educational homogamy than couples in less urban areas. Results showed an incrementally increasing relationship between small to big cities, further strengthening my hypothesis.

Concerning metropolitan areas, I observed that overall, couples in larger metropolitan areas have smaller educational distances on average. This is consistent with my hypothesis that couples in more urban areas will have matches closer to perfect educational homogamy (an educational distance of zero because each partner has the same level). However, for same-sex couples, only living in a small city—not a medium or large city—relative to a rural area showed a significant difference in educational distance. There is only a meaningful difference in educational distance between rural areas and small cities. This is surprising because I hypothesized that living in the most metropolitan areas, such as medium and large cities, would result in a monotonical increase in educational homogamy in larger cities. This could be happening because females seeking same-sex partnerships in different sized-cities have different priorities, in that females seeking female partners in medium and large cities do not weigh education as highly as females in small cities, thus there is only a significant difference for people between rural areas and small cities. This reveals that same-sex couples have other parameters besides education that prove more important to them. However, a constellation of other factors in different city sizes relating to varying costs of living or ability to pay rent may also be at play[4].

Relative to rural areas, living in any sized city has no relationship to the likelihood of a male or female same-sex couple exhibiting educational distance. This is surprising and contradicts my hypotheses that same-sex females in rural levels will have the lowest levels of homogamy while same-sex females in more urban areas will have relatively more homogamy and that same-sex males in rural areas will have low levels of homogamy and that same-sex males in more urban areas will have relatively more homogamy. These results suggest that people seeking same-sex partnerships are not necessarily limited by a smaller marriage market size in regard to educational homogamy and that people seeking same-sex partnership sort by other parameters besides education.

Living in a larger metropolitan area is associated with a statistically significant increase in the probability of a maximum educational distance for any couple. In fact, couples in large cities are nearly twice as likely as couples in medium cities to exhibit maximum educational distance and nearly four times as likely to exhibit maximum educational distance as couples in small cities. This is surprising, as I hypothesized that couples living in more urban areas will trend towards perfect educational homogamy—in that more urban areas are more likely to have couples with more homogamy. But the results conflict as couples in large cities are most likely to have the most disparate, heterogamous partnership. This suggests that couples in more metropolitan areas are more likely than those in rural areas to prioritize other factors besides education.

[4] Suggestion from Amber Chong.

In fact, it is observed that opposite-sex couples in larger metropolitan areas are more likely to exhibit maximum educational distance. Again, this conflicts with my hypothesis that more urban areas will have couples in more educationally homogamous partnerships. Given that people looking for opposite-sex partners in the largest metropolitan areas are physically the largest marriage market possible, these results suggest that when given more choice, people do not necessarily choose people with the same level of education. Or, perhaps people in bigger cities are more open-minded about partners who have different educational levels than themselves.

Further, same-sex couples living in big cities are nearly twice as likely as same-sex couples in medium cities to have a maximum educational distance. This conflicts with my hypothesis that same-sex couples will have more educational homogamy in more urban areas. These results suggest that same-sex couples, too, in most urban areas do not have to choose partners with the same level of education and imply that other factors are priorities for people in more urban areas. A further implication might be that education as a matching parameter matters less to all couples in markets with more choice, however, it could just be that people in bigger cities have different preferences.

In a further breakdown of same-sex couples, for same-sex female couples, there is no relationship between living in more urban areas and the probability of exhibiting maximum educational distance. However, same-sex male couples in big cities are more likely to have a maximum educational distance. Both results conflict with my hypothesis that same-sex couples will have more educational homogamy in more urban areas. For female same-sex couples, the lack of relationship suggests that other parameters are of greater importance. For male same-sex couples, the positive relationship between big cities and educational heterogamy—so, given more choice in thicker marriage markets males seem to choose people with different levels of education—suggests that education is not as important to males seeking same-sex partners as to people in other couple types. Overall, this suggests that same-sex male and female couples have somewhat different priorities than opposite-sex couples.

However, the relationship changed when examining the relationship between metropolitan areas and a couple's probability of exhibiting large educational distances (distances between 2-3) in contrast to maximum educational distances (a distance of 4). Living in a city is associated with a decrease in the probability of exhibiting a large educational distance for any couple. This supports my hypothesis that any couple in urban areas will have more educational homogamy than any couple in less urban areas. However, the results refute my hypothesis that there is an incremental relationship by city size: living in a medium-sized city is associated with a decrease in the probability of a large educational distance by a factor of 1.5x in comparison to living in a big city. Thus, couples in medium-sized cities have more educational homogamy than couples in big cities.

Interestingly, for same-sex female couples, living in small or big cities (particularly big cities), is associated with an increase in the probability of a large educational distance. My hypothesis that same-sex couples will have more educational homogamy in more urban areas and my hypothesis that same-sex females in rural areas will have the lowest levels of homogamy while same-sex females in more urban areas will have relatively more homogamy, following a monotonical relationship, is disproven by this result. However, female couples in small and big cities are more likely to have a large educational distance. One reason for this pattern could be that females seeking female partners in big cities partake in different relationship formations than females in more rural areas. An example might be that females in big cities participate in wider social networks, which could and would allow people to prioritize social "capital" over education "capital." However, this is just speculation.

I checked whether the result that same-sex couples living in a small city—not a rural area—were most likely to have a large educational distance result was driven by same-sex couples meeting in urban areas like large or medium cities and then moving to small cities by running a regression for same-sex couples who were not movers and compared it to same-sex couples who were movers. The results were fairly similar, as same-sex couples in small cities for folks who weren't movers or excluding the category only showed a 0.23% difference than folks who were categorized as movers. However, another potential driver of this result might be that, generally, there are lower levels of educational attainment in rural areas so there is a smaller chance of a large spread in the educational distance.

VIII. Conclusion

This paper examined educational assortative mating patterns among same-sex and opposite-sex couples throughout 2015-2019, focusing on individuals aged 19-39 who were of target marrying age and are a generation most immediately affected after federal legalization of marriage through Obergefell v. Hodges (2015). Educational assortative mating is important given recent increasing returns to education and rising income inequality in the United States in the last several decades. Given the relative lack of available data collected on same-sex couples in comparison to opposite-sex couples, this thesis contributes to a growing body of literature on the habits of same-sex couples in the United States, focusing on their sorting preferences with respect to marriage. Analysis over this period allowed me to explore how a form of equality—marriage equality—may or may not contribute to rising income inequality in the United States within the last several decades. My research suggests that, unlike opposite-sex couples who sort into more educationally homogamous marriages when they face larger marriage markets, same-sex couples do not—suggesting that their higher rates of heterogamy occur not because they have thinner marriage "markets" than opposite-sex couples, but because they hold different preferences for partners regarding education than people seeking opposite-sex marriages. Thus, an expansion of marriage equality is not likely to further income inequality through this mechanism.

I reach these conclusions by testing whether opposite-sex, same-sex, female same-sex, and male same-sex couple populations were more or less likely to exhibit educational distances, non-zero educational distances, perfect homogamy, perfect heterogamy, and large educational distances (of 2-4 degrees). I found that on average, same-sex couples are more likely to exhibit an educational distance and that same-sex couples are nearly twice as likely as same-sex couples to exhibit perfect educational heterogamy. Further, I conclude that same-sex male couples are more likely to exhibit an educational distance and a non-educational distance than same-sex female couples and, correspondingly, that same-sex female couples are more likely than male same-sex couples to exhibit perfect educational homogamy.

I discern that same-sex couples have different dating preferences concerning education as opposite-sex couples by regressing different marriage market sizes, proxied through four different metropolitan area sizes, on outcomes including educational distance, perfect homogamy, perfect heterogamy, and large educational distance. I drew conclusions in three realms—likelihood of exhibiting educational difference, perfect heterogamy, and a large educational distance.

First, regression analysis revealed that overall, couples living in more urban areas are more likely to be educationally homogamous. As the size of the marriage market increased, opposite-sex couples were more likely to sort into homogamous marriages. In contrast, there was no relationship between increased marriage market size and the probability of same-sex couples exhibiting educational homogamy.

Second, relative to couples in rural areas overall, couples in a big city are overall more likely to exhibit perfect heterogamy. Opposite-sex and same-sex couples living in big cities were more likely to be perfectly heterogamous than respective couples in rural areas; this outcome may be due to the smaller number of people with very high levels of education in rural areas. Notably, male same-sex couples are twice as likely as female same-sex couples to exhibit perfect heterogamy, reinforcing the possibility that males are more open-minded with education as a factor by which they sort and suggesting that males in same-sex partnerships are more likely to prioritize dimensions other than education than are other couple types.

Third, any couple living in a medium-sized city is 1.5x less likely than any couple living in a big city to exhibit a large educational distance. However, further examination revealed no significant patterns for opposite-sex or same-sex couples regarding their likelihood to exhibit a large educational distance as the size of the marriage market increases. Similarly, among male and female same-sex couples, only results for same-sex female couples proved statistically significant. Same-sex female couples living in big cities are more likely to exhibit a large educational distance than same-sex female couples in rural areas, the opposite of what I predicted.

Individuals who enter same-sex unions continue to see hard-won benefits of legal and social change. The recent passage of the Equality Act (2021) extends federal civil rights protections to LGBTQ+ people from discrimination in employment, housing, credit, jury service, public spaces, and federally funded programs (like health and education) (Santos 2021). Positive attitudes within the United States towards LGBTQ+ people are at all-time highs, particularly from traditionally intolerant groups like Republicans and white evangelical Protestants (Skelley 2021). Patterns among the LGBTQ+ community could be further understood by focusing on the trans community. Educational assortative mating literature continues to develop too. Eika et al. (2014) discovered that educational homogamy among people with high levels of educational attainment (college graduates) is declining while individuals with lower levels of educational attainment are sorting into internally homogamous marriages, providing another area to examine for people in same-sex couples. Moreover, while this paper observes racial matching, it does not analyze racial matching by couple or location. The opportunity for further research remains plentiful.

IX. Appendix

A. Education categorization matrix

	Less than High School	**High School Graduate**	**Some College**	**College Graduate**	**Advanced degree**
Less than High School	Homogamy	Homogamy	Heterogamy	Heterogamy	Heterogamy
High School Graduate	Homogamy	Homogamy	Homogamy	Heterogamy	Heterogamy
Some College	Heterogamy	Homogamy	Homogamy	Homogamy	Heterogamy
College Graduate	Heterogamy	Heterogamy	Homogamy	Homogamy	Homogamy
Advanced degree	Heterogamy	Heterogamy	Heterogamy	Homogamy	Homogamy

Figure 1: Visualizing educational homogamy. A darker shade of green indicates higher-education level educational homogamy while a lighter shade of green indicates lower-education level educational homogamy.

B. Table 1: Individual summary statistics of baseline data.

	Individuals (# and %)	
Sex	Individual (#)	Individual (%)
Male	2,021,628	51%
Female	1,977,597	49%
Total	3,999,225	100%
Spouse / partner link		
Single (no spouse or partner link)	2,204,158	55%
Spouse /partner (a spouse or partner link)	1,795,067	45%
Total	3,999,225	100%
Marital status		
Married, spouse present	1,410,715	35%
Never married or single	2,246,110	56%
Other	342,400	9%
Total	3,999,225	100%
Same-sex married couple (SSMC)		
Households with a SSMC	18,525	0.46%
Households without a SSMC	3,980,700	99.54%
Total	3,999,225	100%
SSMC by sex		
Households with a male SSMC	8,306	45%
Households with a female SSMC	10,219	55%
Total	18,525	100%
Migrate in the last 1 year		
Same house	3,035,790	76%
Moved within state	753,150	19%
Moved between state	170,387	4%
Abroad one year ago	39,898	1%
Total	3,999,225	100%

Source: Census 2019 ACS 5-year data for household heads ages 19-39.

C. Table 2: Educational attainment and distance for partners, spouses, and the couples they form.

	(A) Partnered household heads		**(B) Partnered household heads' partners**	
Educational attainment	Partners (#)	Partners (%)	Spouses (#)	Spouses (#)
Less than HS	135,894	8%	138,628	8%
HS grad	363,211	20%	368,261	21%
Some college	552,586	31%	551,506	31%
College graduate	476,244	27%	469,988	26%
Graduate Degree	267,132	15%	266,684	15%
Total	1,795,067	100%	1,795,067	100%
	All couples (A + B)			
Educational distance	Couples (#)	Couples (%)		
0	814,536	45%		
1	720,104	40%		
2	213,804	12%		
3	41,494	2%		
4	5,129	0.29%		
Total	1,795,067	100%		
Large educational distance				
TRUE	260,427	15%		
FALSE	1,534,640	85%		
Total	1,795,067	100%		

Source: Census 2019 ACS 5-year data for household heads who are partnered, ages 19-39. “Educational distance” and “Large educational distance” are constructed from IPUMS’ “educd” and “educd_sp” variables.

D. Table 3: Couple summary statistics for location, educational attainment, and distance.

	Couple (# and %)							
	Opposite-sex (#)	Opposite-sex (%)	Same-sex (#)	Same-sex (%)	Male same-sex (#)	Male same-sex (%)	Female same-sex (#)	Female same-sex (%)
Educational attainment								
Less than HS	353,942	9%	1,139	6%	532	6%	607	6%
HS grad	978,255	25%	3,469	19%	1,631	20%	1,838	18%
Some college	1,408,796	35%	5,838	32%	2,475	30%	3,363	33%
College graduate	852,777	21%	4,646	25%	2,152	26%	2,494	24%
Graduate Degree	386,930	10%	3,433	19%	1,516	18%	1,917	19%
Total	3,980,700	100%	18,525	100%	8,306	100%	10,219	100%
Educational distance								
0	808,005	45%	6,531	43%	2,620	41%	3,911	45%
1	714,076	40%	6,028	40%	2,527	39%	3,501	40%
2	211,708	12%	2,096	14%	985	15%	1,111	13%
3	41,075	2%	419	3%	219	3%	200	2%
4	5,046	0.28%	83	0.55%	51	0.80%	32	0.37%
Total	1,779,910	100%	15,157	100%	6,402	100%	8,755	100%
Location								
Rural	1,678,260	42%	6,463	35%	2,561	31%	3,902	38%
Small city	781,006	20%	3,526	19%	1,529	18%	1,997	20%
Mid city	743,185	19%	4,369	24%	2,072	25%	2,297	22%
Big city	778,279	20%	4,167	22%	2,144	26%	2,023	20%
Total	3,980,730	100%	18,525	100%	8,306	100%	10,219	100%

Source: Census 2019 ACS 5-year data for household heads who are partnered, ages 19-39. “Educational attainment” and “Educational distance” is constructed from IPUMS’ “educd” and “educd_sp” variables. “Location” variables proxy marriage market thickness; they’re constructed from IPUMS’ “met2013” variable using 25 / 50 / 75 / 100% cutoffs and setting the frequency weight equal to the person weight. “Opposite-sex” and “Same-sex” variables are constructed from IPUMS “same-sex married couple (SSMC)” binary indicator variable. “Male same-sex” and “Female same-sex” couples are identified within same-sex couples if male or female, respectively.

E. Table 4: Individual summary statistics: location and educational attainment.

	Individual (# and %)	
	Individuals (#)	Individuals (%)
Location		
Rural	1,684,873	42%
Small city	784,648	20%
Mid city	747,455	19%
Big city	782,248	20%
Total	3,999,225	100%
Educational attainment		
Less than HS	355,131	9%
HS grad	981,810	25%
Some college	1,414,526	35%
College graduate	857,434	21%
Graduate Degree	390,324	10%
Total	3,999,225	100%

Source: Census 2019 ACS 5-year data for household heads who are partnered, ages 19-39. “Educational distance” and “Large educational distance” are constructed from IPUMS’ “educd” and “educd_sp” variables. “Location” variables proxy marriage market thickness; they’re constructed from IPUMS’ “met2013” variable using 25 / 50 / 75 / 100% cutoffs and setting the frequency weight equal to the person weight.

F. Table 5: Educational distance by couple and by location.

	Couples (# and %)							
Educational Distance	Opposite-sex (#)	Opposite-sex (%)	Same-sex (#)	Same-sex (%)	Male same-sex	Male same-sex (%)	Female same-sex (#)	Female same-sex (%)
Rural areas								
0	345,121	44%	2,345	44%	814	42%	1,531	45%
1	318,034	41%	2,160	40%	758	39%	1,402	41%
2	95,728	12%	710	13%	291	15%	419	12%
3	16,788	2%	138	3%	65	3%	73	2%
4	1,747	0.22%	15	0.28%	7	0.36%	8	0.23%
Total	777,418	100%	5,368	100%	1,935	100%	3,433	100%
Small city								
0	161,108	45%	1,198	41%	445	37%	753	44%
1	143,193	40%	1,169	40%	486	41%	683	40%
2	41,722	12%	457	16%	221	19%	236	14%
3	8,070	2%	59	2%	31	3%	28	2%
4	960	0.27%	13	0.45%	5	0.42%	8	0.47%
Total	355,053	100%	2,896	100%	1,188	100%	1,708	100%
Mid city								
0	152,006	46%	1,529	43%	668	41%	861	44%
1	130,551	40%	1,410	40%	630	39%	780	40%
2	38,055	12%	487	14%	248	15%	239	12%
3	7,855	2%	113	3%	66	4%	47	2%
4	1,041	0.32%	24	1%	16	1%	8	0.41%
Total	329,508	100%	3,563	100%	1,628	100%	1,935	100%
Big city								
0	149,770	47%	1,459	44%	693	42%	766	46%
1	122,298	38%	1,289	39%	653	40%	636	38%
2	36,203	11%	442	13%	225	14%	217	13%
3	8,362	3%	109	3%	57	3%	52	3%
4	1,298	0.41%	31	1%	23	1%	8	0.48%
Total	317,931	100%	3,330	100%	1,651	100%	1,679	100%
Couple Totals	1,779,910		15,157		6,402		8,755	

Source: Census 2019 ACS 5-year data for household heads who are partnered, ages 19-39. “Location” variables proxy marriage market thickness; they’re constructed from IPUMS’ “met2013” variable using 25 / 50 / 75 / 100% cutoffs and setting the frequency weight equal to the person weight. “Opposite-sex” and “Same-sex” variables are constructed from IPUMS “same-sex married couple (SSMC)” binary indicator variable. “Male same-sex” and “Female same-sex” couples are identified within same-sex couples if male or female, respectively.

G. Table 6: T-test results.

I. Comparing opposite-sex and same-sex couples						
Variable		Opposite	Same	t-stat	df	prob
Not zero educational distance	Mean	1.3179	1.3690	-8.1836	980,529	0.000
		(0.00058)	(0.00670)			
	SD	0.5766	0.6227			
	N	971,905	8,626			
Perfect homogamy	Mean	0.4539	0.43089	5.6804	1,800,000	0.000
		(0.00037)	(0.00402)			
	SD	0.4978	0.4952			
	N	1,779,910	15,157			
Perfect heterogamy	Mean	0.0028	0.00547	-6.0658	1,800,000	0.000
		(0.00003)	(0.00059)			
	SD	0.7823	0.8247			
	N	1,779,910	15,157			

II. Comparing male same-sex and female same-sex couples						
Variable		Male	Female	t-stat	df	prob
Not zero educational distance	Mean	1.4167	1.3317	-6.3018	8,624	0.000
		(0.01078)	(0.00842)			
	SD	0.66325	0.58649			
	N	3,782	4,844			
Perfect homogamy	Mean	0.4092	0.4467	4.6041	15,155	0.000
		(0.00614)	(0.00531)			
	SD	0.49173	0.49718			
	N	6,402	8,755			
Perfect heterogamy	Mean	0.0079	0.003655	-3.5538	15,155	0.0004
		(0.00111)	(0.00064)			
	SD	0.0889	0.0603			
	N	6,402	8,755			

III. Comparing opposite-sex and female same-sex couples						
Variable		Opposite	Female	t-stat	df	prob
Not zero educational distance	Mean	1.3179	1.3317	-1.664	976,747	0.0961
		(0.00058)	(0.00842)			
	SD	0.5766	0.58649			
	N	971,905	4,844			

Source: Two-sample independent group t-tests run with equal variances on Stata I/C. Standard error reported below coefficients in parentheses. "prob" is the probability that the difference between the two means does not equal 0.

H. Table 7: Linear regression results.

	(1)	(2)	(3)	(4)	(5)	(6)
I. Educational distance						
Small city	-0.0113***	-0.00873***	0.3031	0.0254	0.0248	-
	(0.00159)	(0.00157)	(0.01895)	(0.0232)	(0.0320)	-
Medium city	-0.0171***	-0.01453***	0.0091	0.0095	-0.014	-
	(0.00161)	(0.0016)	(0.01751)	(0.0220)	(0.02873)	-
Big city	-0.0208***	-0.01840***	0.0178	0.0222	-0.0163	-
	(0.00164)	(0.00163)	(0.01804)	(0.0234)	(0.02876)	-
N	1,795,067	1,779,910	15,157	8,755	6,402	-
R-squared	0.0001	0.0001	0.0002	0.0002	0.0003	-
II. Perfect heterogamy						
	(1)	(2)	(3)	(4)	(5)	(6)
Small city	0.000467***	0.00033*	0.00147	0.00129	0.001552	-
	(0.000107)	(0.000105)	(0.00159)	(0.00153)	(0.00324)	-
Medium city	0.000946***	0.000817***	0.00312*	0.00135	0.00489	-
	(0.000110)	(0.000107)	(0.00147)	(0.00145)	(0.002912)	-
Big city	0.00188***	0.00147***	0.00663***	0.001923	0.010919***	-
	(000111)	(0.000109)	(0.00151)	(0.00154)	(0.002914)	-
N	1,795,067	1,779,910	15,157	8,755	6,402	-
R-squared	0.0002	0.0001	0.0013	0.0002	0.0024	-
III. Large educational distance						
	(1)	(2)	(3)	(4)	(5)	(6)
Small city	-0.00380***	-0.0023*	0.0220*	0.0176	0.0230	0.0244**
	(0.00071)	(0.00070)	(0.00868)	(0.01068)	(0.0146)	(0.0090)
Medium city	-0.00423***	-0.00228*	0.00846	0.00457	0.00309	0.0071
	(0.00072)	(0.00071)	(0.00802)	(0.010133)	(0.01313)	(0.00833)
Big city	-0.0025**	-0.00058	0.01115	0.02108	-0.0119	0.00648
	(0.00073)	(0.00073)	(0.00826)	(0.01076)	(0.01314)	(0.008562)
N	1,795,067	1,779,910	15,157	8,755	6,402	13,952
R-squared	0.0000	0.0000	0.0004	0.0006	0.0009	0.0005
*** at p <.000, ** p < 0.01, * p < 0.05						

Source: Linear regressions run with an analytic weight set equal to the person weight. Standard error reported below coefficients in parentheses. Equations 1, 2, 3, 4, 5, and 6 correspond to any couples, opposite-sex couples, same-sex couples, female same-sex couples, male same-sex couples, and same-sex couples who are not "movers.”

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