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David Christafore, Susane Leguizamon

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The Influence of Gay and Lesbian Coupled Households on House Prices in Conservative and Liberal Neighborhoods*

David Christafore
Department of Economics
Konkuk University

Susane Leguizamon
Department of Economics
Tulane University

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Abstract

Gays and lesbians perceive themselves to be targets of discrimination in the housing market. Previous research has found that the presence of gays and lesbians is associated with *increased* housing values. We reconcile the perceived discrimination and research results by classifying neighborhoods as more conservative or liberal according to voting outcomes of the "Defense of Marriage Act". Using a data set comprised of over 20,000 house sale observations, we show that an increase in the number of same-sex coupled households is associated with an increase in house prices in more liberal neighborhoods and a decrease in house prices in more conservative neighborhoods. This suggests that gay and lesbian coupled households do experience prejudice in conservative neighborhoods.

JEL Classification: R21, J15
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Introduction

It is estimated that there are 4 million gays and lesbians in the United States, although exact measures are difficult to determine.[1] The gay and lesbian population perceive themselves to be the target of discrimination in housing and labor markets (Herek, 2009). If true, this aversion to gays and lesbians by some segments of the population should manifest itself in housing prices. Just as housing prices reflect a preference of individuals for social characteristics such as crime rates, school quality and the racial composition of the neighborhood, we expect preferences regarding other characteristics to influence housing prices as well. A preference for or against the presence of gays and lesbians in the neighborhood, in particular, should be reflected in the housing prices around individuals in this minority group. There is extensive research on housing price differentials due to racial characteristics but less research exists examining the influence of sexual orientation on housing prices. Florida and Mellander (2010) examine housing prices in 331 Metropolitan Statistical Areas and their findings suggests that the presence and migration of gays and lesbians to an area increases housing prices, in part because of the development and expansion of cultural amenities they may provide or enhance.

This result is somewhat surprising given the strongly held anti gay and lesbian sentiments that exist within socially conservative groups. It is likely that homeowners differ significantly with respect to tolerance of individuals with differing sexual orientation than themselves. Policies proposed to extend or protect the rights of gays and lesbians are always the topic of heated debate with very strong preferences on both sides of the issue. Advocates of gay and lesbian rights groups maintain that they are the victims of discriminatory practices in the labor market and with respect to civil liberties and should be afforded special legal consideration in the form of anti-discrimination legislation. Other groups maintain that gays and lesbians do not experience discrimination and legal consideration would only act

[1] It is difficult to estimate due to the propensity for error both on the side of underreporting and overreporting, and to appropriately classify individuals as gay or lesbian (Source: Gates (2011)).

to extend them special privileges. Examining the influence of gays and lesbians on housing price will allow us to observe if there does exist prejudice against this group by particular types of homeowners.

This paper estimates a hedonic price model that incorporates the number of same-sex coupled households and an interaction between this variable and the percent of individuals who voted for the "Defense Of Marriage Act" (DOMA) in Ohio. This act stated that a marriage could only be entered into by one man and one woman, and negated legal recognition of same-sex marriages which occurred in other states. A higher percentage of households voting in favor of DOMA is used as a proxy for whether the area is more socially conservative while a lower percentage is used as a designation of a more socially liberal area. The number of households that are gay or lesbian coupled is determined by identifying same-sex unmarried partner households on the 2000 Census. Prejudice by either group will be reflected by a negative influence on housing price. We expect that conservative groups do not want to live near gay and lesbian coupled households and their presence will be reflected by a negative associated influence on house prices. Similarly, we expect that liberal groups may view the presence of gays and lesbians as neutral or desirable outcome and, consequently, we may see a positive associated influence on house prices in these areas.

One issue with this type of analysis is that gays tend to locate in high amenity areas, and these amenities are reflected in higher housing prices. Black et al. (2002) find that amenities are a significant draw of gays to San Francisco and that gays themselves may not be providing amenities, but rather are self-selecting into high amenity areas. They argue that the cost of having children is higher for gays and lesbians and as a result these groups have less children. This translates to more disposable income available for housing purchases and a higher tolerance for lower school quality and higher crime rates in exchange for increased access to amenities. We acknowledge this relationship by choosing an area that is representative of amenities provided compared to other areas rather than focusing on extremely high-amenity areas. Within our chosen location, we control for distance to

the CBD and then allow county subdivisions to differ with respect to conservative or liberal outcomes of the DOMA vote. In this way, we attempt to isolate the associated effect of same-sex coupled households on housing prices in differing neighborhood types rather than entire cities.

This model is estimated for the Columbus, Ohio Metropolitan Statistical Area. Columbus has a representative gay population and a slightly over represented lesbian population (Black et al., 2002; Gates and Ost, 2004). The mean house price in 2000 was $145,000 which was slightly below the national average at the time.[2] Kahn (1995) and Blomquist et al. (1988) suggest that housing values and wage differentials reflect the level of amenities in a given area and with respect to housing prices the Columbus MSA appears to be reasonably representative. Columbus reports a wide range of county subdivision votes in 2004 in favor of DOMA (ranging from 31% - 85%), giving us a significant variation in degree of conservativeness while the number of households identified as a same-sex coupled per census tract ranged from 0 to over 45 out of 1,000.

We find that, indeed, there is a negative associated effect between the interaction of same-sex couples and percent who voted in favor of DOMA with housing prices. More specifically, the results from this analysis indicate that an increase in the number of same-sex households is associated with an increase in house prices for liberal areas that reported 59.5% vote and below in favor of DOMA, while in more conservative areas an increase is associated with a reduction in housing prices. At the extremes of degree of conservativeness, an increase in the number of same-sex coupled households (by 1 per 1,000 households) is associated with an increase in house prices of approximately 1.1% in very liberal neighborhoods, but a reduction in housing prices of 1% in very conservative neighborhoods. This result is robust to the inclusion of a control for selection bias and limiting the sample to only those houses located in above average income neighborhoods. When we run the specification separately for same-sex male coupled households and same-sex female coupled households, we find

[2]Source: Census 2000.

consistent associated effects for same-sex male couples but an insignificant effect for same-sex female coupled households. This result suggests that same-sex male coupled households do experience prejudice in conservative neighborhoods while being associated with higher house prices in liberal neighborhoods and this associated effect is driving our general result.

Literature Review

Gentrification and Cultural Diversity

The influence of gays and lesbians on housing prices has been examined previously in the context of gentrification (Castell, 1983; Ley, 1994; Zukin, 1995; Smith, 1996). In communities where gays and lesbians gentrify the neighborhood, housing prices increase. These studies are not isolating the effects of gays and lesbians from other influential variables, but rather are noting trends. Additionally, Bell and Binnie (2004), similar to Black et al. (2002), suggest that some individuals prefer to live in neighborhoods with more diversity and cultural capital. The presence of gays and lesbians may increase housing prices by adding to the diversity of a neighborhood. Bell and Binnie (2004) analysis is limited to discussion rather than empirical study.

Black et al. (2002) examines the factors which explain the overrepresentation of gays in San Francisco and find that a preference for amenities is the strongest force in locational decisions. They find that metropolitan areas which have higher levels of amenity provisions do experience a higher concentration of gay population. They also consider that gay friendliness, measured by survey responses on attitudes towards gays and lesbians, may influence locational decisions but find that amenity provision is a much more influential factor. Additionally, their model predicts that all households with higher levels of disposable income will exhibit similar preferences for amenities. In our paper, rather than examine different metropolitan areas, we focus on the variation in one metropolitan area to account for these large-scale sorting preferences. We also control for median income for all areas and,

separately, consider only areas which have above the median income.

More recently, Florida and Mellander (2010) find that gays and lesbians may influence housing prices through two channels. The first is what they coin an "aesthetic-amenity premium" and is the value of the amenities that artist, bohemians and gays produce. These amenities are positively valued by consumers and consequently drive housing prices up. The second effect is the "open culture premium" which is the recognition that areas which are open to artists, bohemians and gays signals a reduction in barriers to human capital entry. This increases knowledge spillovers and idea generation, acting to increase regional housing values.

Florida and Mellander (2010) construct a "Bohemian-Gay Index" which combines the populations of bohemians and gays. This index is included in a model of regional housing values and the authors control for regional factors including income, wages, technology, regional size, regional rank, recent economic growth, job prospects and human capital. They find persistent and significant positive effects of the index on housing values across 331 metropolitan regions for the year 2000, suggesting that the presence of gays and lesbians increases housing values. However, this study combines the effect of artists and bohemians with the effect of gays and lesbians. Preferences regarding sexual orientation of the neighbors are not isolated from preferences regarding lifestyles of artists and bohemians. It may be that the groups have different, both in direction and magnitude, effects on housing prices. Furthermore, this study does not allow for systematically different preferences regarding the presence of these groups. It is likely that some groups view the presence of gays and lesbians as undesirable rather than desirable.

Discrimination and Prejudice

It is noted in the literature that gays and lesbians are subject to discrimination in the labor market (Badgett, 1995; Tebaldi and Elmslie, 2006; Allegretto and Arthur, 2001). With respect to other forms of discrimination, Herek (2009) uses survey responses by gays and

lesbians to estimate whether they are victims of hate crimes and housing discrimination. His findings indicate that 20% experience either price or property discrimination at some point and one in ten experience discrimination in the housing or labor market. This discrimination against gays and lesbians, whether in the labor or housing market, is thought to be rooted in a preference for being near individuals who have similar preferences and behaviors. Therefore, it may be the case that individuals who do not want to live near gays and lesbians must be compensated with lower housing prices compared to comparable houses where less gays and lesbians live. Although our analysis reflects the associated effect of gay and lesbian *couples*, proxied by same-sex unmarried households, rather than the entire gay and lesbian population, it is necessary for our purposes that neighbors have information on the sexual orientation of their neighbors. This may or may not be true for couples but is more likely than for single gays and lesbians.[3]

At this point it is useful to distinguish discrimination from prejudice in the housing market. Myers (2004) describes the difference as discrimination occurring when a particular group must pay more for an identical house compared to the general population. Prejudice occurs when a segment of the population has an aversion to living near a particular group. This aversion leads to housing prices being higher in areas where the group does not reside, or, consequently, being lower where the group does reside. In other words, discrimination is a direct action against a particular group and prejudice is the reaction of others to said group. Discrimination against gays and lesbians in housing market requires identifying the sale price of the house and the sexual orientation of individual buyers. Although our data set contains house sales at the individual house level, we use the census data to identify same-sex coupled households by census tract. Privacy constraints preclude us from testing whether same-sex couples pay more for an identical house compared to heterosexual individuals. Instead, we test for prejudice by examining the house price of houses in neighborhoods in which the

[3]Additionally, if gay and lesbian coupled households behave systematically different than non-coupled gays and lesbians, our results cannot be generalized to the effect of gays and lesbians in general.

number of same-sex coupled households is higher compared to those where it is lower.[4]

Given the results by Florida and Mellander (2010), prejudice may be reflected in the results one of two ways. In the strictest sense, prejudice will be evidenced by a negative influence on housing price. However, if the presence of gays and lesbians does act as an amenity to the neighborhood for reasons proposed by by Florida and Mellander (2010), this should be reflected by a positive influence on housing price. If we find that gays and lesbians do provide an amenity and act as a positive influence for some groups but a negligent influence with respect to other groups, this may also be considered a form of prejudice. Some of the amenities provided by the presence of gays and lesbians are not amenities *because* they are gay or lesbian but the population is associated with positive amenities and that population *happens* to be gay or lesbian. In the presence of a positive amenity and prejudice, we expect the observed negative association to be smaller than the negative association caused by prejudice. In other words, the net effect may be small in terms of magnitude but imply a larger prejudice effect.

Hedonic Price Models

The use of the hedonic price model to value goods that are not explicitly traded in markets is first developed by Rosen (1974). As applied to housing, the hedonic price model suggests that the price of a house represents the sum of expenditures on a number of bundled housing characteristics. These housing characteristics not only include tangible characteristics such as the size of the house or the number of bedrooms in the house, but also less tangible neighborhood characteristics such as the quality of the school district or the amount of pollution where the house is located (Brasington and Hite, 2005; Kim et al., 2003). The recognition that these less tangible neighborhood characteristics are also capitalized into house prices is formally modeled by Roback (1982).

[4]It is possible that any prejudice observed is indicative of a prejudice against unmarried couples in general and not same-sex unmarried couples in particular. As such we run the model controlling for percent of unmarried different-sex couples as well. Results suggest that there is not a bias against different sex unmarried couples, and both specifications are discussed in the results section.

The theory that a hedonic price model can be used to examine prejudice against a group is based on the model developed by Yinger (1976). This model departs from the typical border model of segregation, developed by Bailey (1966), in that whites and blacks may receive utility or disutility from living near one another. Yinger (1976) shows that in a hedonic price regression a negative coefficient on a variable that represents the percent of blacks in a neighborhood indicates the existence of prejudice. He also discusses the possibility that the degree of prejudice could vary by neighborhood type and suggests that the use of interactions between neighborhood type and racial composition is appropriate if this is suspected.

A number of studies have been performed using the hedonic price model to examine the existence of racial prejudice and discrimination. Kiel and Zabel (1996), using data from the American Housing Survey for Denver, Philadelphia, and Chicago, provide evidence that prejudice against blacks exists in all three of these cities. They also show that this prejudice has been increasing overtime in Denver and Philadelphia, while decreasing in Chicago. Myers (2004) examines discrimination and prejudice also using data from the American Housing Survey, but uses variables that better control for neighborhood effects. She estimates a hedonic price model that controls for the race of the household, percent of a neighborhood's population that is black, and interactions between the percentage of a neighborhood that is black and how racially integrated that neighborhood is. She finds that black owners pay a premium of around 10% for housing and that house values decline in a neighborhood as the percentage of blacks residing there increases. These results indicate that both discrimination and prejudice against blacks are present in at least some segments of the housing market.

The hedonic price model that is used in our paper is similar to previous models, with the exception that, in addition to the inclusion of a sexual orientation variable, we use a spatial autoregressive model to account for the interrelatedness of housing prices. Only recently have hedonic price models begun to incorporate spatial econometrics into the estimation of the models.[5] A full discussion of the spatial modeling technique can be found in the Model

[5]A complete discussion of spatial econometrics can be found in Anselin (1988) and LeSage and Pace (2009a).

Section.

Data and Methodology

Data

We use housing transaction data from the Columbus, OH Metropolitan Statistical Area (MSA) in the year 2000. The data on housing used in this study is the same as used in Brasington and Haurin (2006), Brasington (2007), and Brasington and Hite (2006). The data set is comprised of 20,027 real estate transactions in the year 2000 for the Columbus, OH MSA. Palmquist (1984) and Brasington and Hite (2005) suggest that there is segmentation in the housing and employment market between MSAs but not within an MSA. This is likely true due to differing construction costs and job availability. They speculate that it is more difficult and costly to find a job in a new metropolitan area and move to that area than it is to move or find a job in the same metropolitan area. As such, the analysis contains information of all available housing data within the MSA.

The count of gay and lesbian households per census tract comes from the 2000 Census. The Census does not ask individuals directly about their sexual orientation, but beginning with the 1990 Census it has been possible to identify unmarried same-sex partner households,[6] which have been taken to represent gay and lesbian households.[7] However, Black et al. (2007) and Gates and Steinberger (2010) both document concerns about measurement error when coding same-sex couples. We restrict our sample to those individuals who have not had their marital status altered by the census processors.[8]

[6]Gay and lesbian households are identified from the "relationship to household head" heading on the Census. The categories under this heading are spouse, child, inlaw, unmarried partner, and other non-relative.

[7]See Black et al. (2000) and Carpenter (2004) for an in depth discussion on identifying gay and lesbian households using the Census.

[8]The Census automatically recodes those who report themselves as same-sex married couples to same-sex unmarried couples, but Black et al. (2007) find that most of these same-sex married couples are actually different-sex married couples that have misclassified themselves. Leaving these observations may result in an inflated count of same sex couples and may bias the results if not addressed. Gates and Steinberger (2010) suggest that same-sex couples for which at least one of the members of the household had their marital status

There is not an obvious way to identify if a neighborhood is socially conservative. To proxy for conservative, we use the percent of households who voted in favor of DOMA in a county subdivision, with a higher percentage in favor of the act being interpreted as a more socially conservative area.[9] Legislation to afford gays and lesbians civil union rights under the law is often opposed by socially conservative groups and supported by socially liberal groups. As such, we feel this is an appropriate proxy to distinguish between groups that may be prejudiced against gay and lesbian coupled households.

The data for the rest of the control variables included in the analysis are from the Brasington data set or the summary files of the 2000 Census. The inclusion of variables follows the literature. The housing characteristics that are included as continuous variables are age, age squared, house size, house size squared, lot size, lot size squared, partial bathrooms, full bathrooms, distance to the CBD, and distance to the nearest environmental hazard. Included as binary variables are the presence of a deck, pool, garage, air conditioning, and whether the house is one story. Neighborhood controls that are included are the median household income, percentage of individuals with a graduate degree, school quality, percentage of individuals that are white, and the crime rate. A description of the variables can be found in Table 1.

Model

The original hedonic price model regresses the price of a house on the characteristics of that house and the neighborhood the house is located in using Ordinary Least Squares. However, the coefficients from the OLS estimation of the hedonic price model are likely to be biased because housing prices are interrelated (Anselin, 1988). To control for this, we include

changed by the Census are those that identified themselves as same-sex married couples and are therefore "at risk of being different-sex married couples. We use microdata from the 5% sample of the 2000 Census (Ruggles et al., 2010) to identify these same-sex coupled households. The number of these couples found at the PMUS level was applied proportionately to the census tracts within each PUMA and we deleted those observations.

[9]The county subdivision level of geography is used as it directly relates to the precinct levels where votes are counted. These subdivisions are designed on the basis of political units like townships and boroughs and range in size.

the average housing prices of neighboring houses as an additional independent variable. The house price dependent variable vector is multiplied by a weight matrix representing the spatial relationship in prices. The weight matrix is typically constructed as an $n \times n$ standardized matrix representing a nearest neighbor or distance relationship between housing observations. This matrix is constructed by placing a one in the matrix if two houses neighbor each other and then dividing across each row by the number of non-zero elements in that row.

The spatial autoregressive hedonic price model takes the form:

$$v = \alpha + \rho W v + X\beta + \epsilon_i, \text{ where } \epsilon \text{ is } N(0, \sigma^2 I), \tag{1}$$

where v is the logged house price, X is a matrix of the housing and neighborhood characteristics, and W is an $n \times n$ spatial weight matrix representing the nearest neighbor relationship between houses within the MSA. The appropriate number of nearest neighbors is found to be seven, following the procedure to determine optimal number of nearest neighbors put forth in Lesage and Pace (2009b). Consequently, the matrix is the average of the nearest seven neighbors. Included in X is the variable for the number of same-sex coupled households in the census tract, and a variable representing the interaction between this variable and the percent of the county subdivision voters who voted in favor of the DOMA. Following LeSage and Pace (2009a), the data generating process is then:

$$v = (I_n - \rho W)^{-1} X\beta + (I_n - \rho W)^{-1} \epsilon$$

The spatial model allows us to calculate the direct, indirect, and total effects for each of

the independent variables. We can rewrite equation 1 as:

$$
\begin{aligned}
(I_n - \rho W)v &= X\beta + i_n\alpha + \epsilon, \text{ then} \\
v &= (I_n - \rho W)^{-1}[X\beta + \alpha + \epsilon] \\
\text{Let } V(W) &= (I_n - \rho W)^{-1} \text{ and} \\
S_r &= V(W)(I_n * \beta_r), \text{ then} \\
v &= \sum_{r=1}^{k} S_r(W)x_r + V(W)i_n\alpha + V(W)\epsilon
\end{aligned}
\tag{2}
$$

The direct effect is the average effect that a change in the independent variable of an observation has on its own dependent variable and can be describes as $\frac{\partial v_i}{\partial x_{i,r}} = S_r(W)_{i,i}$. This coefficient includes the initial impact of the change in an independent variable on its dependent variable as well as feedback in the system. This feedback occurs when the change in the dependent variable causes changes in the other dependent variables of the system through the spatial weight matrix, which in turn feedback onto the initial dependent variable. The indirect effect represents the average spatial spillover effect that a change in an independent variable has on all other dependent variables, excluding its own dependent variable and can be describes as $\frac{\partial v_i}{\partial x_{j,r}} = S_r(W)_{i,j}$. The total effect is the sum of the direct and indirect effects. To isolate the associated effect of an increase in the number of same-sex coupled households, we focus on the direct effects, although the indirect and total effects are reported as well.[10]

Results

We first consider the estimation of a simple OLS regression and report the results in Table 2. In general, the control variables behave as expected. The age of the house, house size squared and lot size squared are negative and significant. Housing amenities such as pres-

[10]For a complete discussion of the effects estimates, see LeSage and Pace (2009a).

ence of a fireplace, pool, deck, number of bathrooms, whether the house is one story and air conditioning are positive and significant. The coefficient on the number of same-sex coupled households is positive and significant while the coefficient on the interaction term of conservative and number of same-sex coupled households is negative and significant, providing evidence of prejudice in socially conservative neighborhoods. Other neighborhood variables behave predictably with the distance to the nearest hazard, distance to the CBD and crime rate having a negative influence on house prices while school quality, percent white, percent with graduate degrees and median income exert a positive influence on housing prices.

We then consider the spatial autoregressive model and find that the spatial coeffcient, ρ, is positive and significant, suggesting that OLS results suffer from omitted variable bias. The magnitude of effect of the control variables differs with respect to the OLS estimation, in some cases, significantly so. We find that the distance to the nearest hazard, crime rate and distance to CBD are associated with a reduction in housing price while school quality, percent with graduate degrees, percent white and median income are associated with a positive effect. Variables measuring house specific amenities are positive and significant while amenities squared, where applicable, also have the expected signs. The number of same-sex households is found to be positive and significant while the number of same-sex households interacted with our proxy for socially conservative neighborhoods is negative and significant.

More specifically, the marginal associated effect of a one unit increase in the number of same-sex households out of every 1,000 households can be found by adding the coefficient on same-sex households and the coefficient on the interaction term multiplied by the percent DOMA vote. The mean DOMA vote for all households is 56.07% so the marginal effect of an increase in the the number of same-sex households on house price is 0.145% at the mean. In extremely liberal neighborhoods where the percent DOMA vote is 31%, the marginal associated effect of an increase in 1 same-sex household out of every 1,000 households on house price is *positive* 1.1% and for extremely conservative neighborhoods, with a DOMA

vote of 84%, the effect is *negative* 1.0%. The level of conservativeness at which an increase in the number of same-sex households has a negative associated effect is found to be when the DOMA vote is at or above 59.6% which is slightly above the mean. The direct, indirect and total effects estimation for this estimation can be found in Table 3.

As noted previously, observing the effect of prejudice against same-sex coupled households in conservative neighborhoods is complicated by the fact that the presence of same-sex coupled households may be a positive amenity in and of itself as well as reflecting the value of the positive amenities that they are associated with or provide. Prejudice is the negative associated effect of the presence of same-sex coupled households on housing prices in conservative areas and the observed effect of an increase in the number of same-sex couples includes this as well as the positive influence of the amenities that these couples provide. This implies that the effect of prejudice against same-sex couples may be greater than the estimated drop in housing prices that occurs with an increase in social conservativeness.

However, by a similar logic, some of the associated effect of same-sex coupled households on housing prices in liberal neighborhoods may be due the positive amenity of increased diversification. If individuals in conservative neighborhoods are indifferent to increasing diversity, then some of the drop in the effect of same-sex couples when moving from more liberal to more conservative neighborhoods may be reflecting indifference to diversity rather than simply prejudice. Although we cannot isolate these influences, we assume that these forces are similar in magnitude and effectively cancel each other out, and consequently, the drop in housing prices when considering more conservative neighborhoods may be an accurate representation of the effect of prejudice in conservative neighborhoods. However, even without this assumption, evidence suggests that at least part of the drop in the associated effect of the presence of same-sex coupled households when considering more conservative neighborhoods is due to prejudice.

We run the specification to separately control for the number of same-sex female coupled households out of 1,000 households from the number of same-sex male coupled households

and the results are reported in Table 4. We find that an increase in the number of both households are positive and the interaction between these households and conservative neighborhoods are both negative, but only same-sex male households yield significant coefficients. That same-sex male coupled households appear to be driving our general result may be due to different reactions by conservative groups with respect to the two groups. The location choices of same-sex male and female households are both not strongly correlated with percent of the area which voted in favor of DOMA, so the differing effect is unlikely to be the result of selection bias (and, if it was, would suggest that the prejudice coefficient against same-sex male households is perhaps stronger than our results suggest). Although surprising, this weak correlation between location choice and social attitudes towards gays and lesbians was also found by Black et al. (2002). Data limitations regarding systematically different preferences with respect to same-sex male and same-sex female households preclude us from drawing a strong conclusion regarding the source of the different outcome.

We also consider the selection bias that may be present when using data for which we only have transaction prices for houses that were sold. If houses that were sold are systematically different than houses that were not sold, our results may be biased. In order to treat this potential selection bias we use the inverse Mills ratio (Jud and Seaks, 1994; Brasington and Hite, 2005) at the census block group level.[11] A probit regression is first estimated to explain the likelihood of the appearance of a census block group in the dataset. The explanatory variables are census block group aggregates, when possible, analogous to the variables employed in the second stage regression.[12] The inverse Mills is calculated for each census block group from this regression and included as a regressor in the second stage demand model as in Heckman (1979). Results with the inclusion of the inverse Mills ratio are reported in Table 5 and the interaction term between same-sex households and

[11]The census block group level is used as opposed to individual house observations since the Brasington dataset does not provide data on unsold houses.

[12]The explanatory variables included in the first stage regression are median house age, median number of rooms, percent with a graduate degree, percent white, median family income, percentage of same-sex coupled households, conservative, and the same-sex coupled households and conservative interaction.

conservativeness is still negative and significant. Other control variables do not differ from the main model results.

We conduct several robustness checks to preclude mitigating factors from affecting our conclusion. The Columbus county subdivision is home to Ohio State University which contain amenities and population characteristics that may differ with respect to surrounding areas. When we exclude this subdivision, we find that the results are consistent and reported in Table 6. We also consider that the prejudice result may be driven by prejudice against unmarried coupled households in general rather than same-sex couples in particular and the results from this estimation can be found in Table 7. We find that the associated effect of unmarried couples interacted with conservative neighborhoods is positive, rather than negative, while all other variables behave consistently. However, when the Columbus county subdivision is excluded, the influence of different-sex unmarried households becomes insignificant.[13] The number of different sex unmarried couples is higher in this county subdivision relative to the other subdivisions (5.5% compared to 4.3%) and it may be that there are unobserved characteristics associated with lower house prices in this subdivision in particular that are driving these puzzling results (traffic resulting from downtown congestion, for example). In both specifications, the negative associated effect of the number of same-sex households and conservativeness remains negative and significant.[14]

Another potential issue is that the large effect in liberal neighborhoods may be a result of gays and lesbians self-selecting into "tolerant", high income neighborhoods or neighborhoods with what Florida and Mellander (2010) refers to as neighborhoods with high "aesthetic-amenity premium" in line with the conclusion drawn by Black et al. (2002). If so, then gays and lesbians may be self-selecting into areas with existing amenities that are not correlated with distance to the CBD. To test for this possibility, we constrict our sample to only houses

[13]Results from these specifications are available upon request.

[14]We also separately proxy for conservative as subdivisions in which the majority voted for the republican candidate, George Bush, in the presidential election. The voting data used is from the 2004 Presidential Election and is taken from http://www.sos.state.oh.us/SOS/elections.aspx. Results are consistent with our findings and are available upon request.

located in census block groups with median family incomes over the mean median family income for Columbus census block groups in 2000 dollars. The interaction term remains negative and significant and results from this estimation can be found in Table 8.

Conclusion

We estimate the associated effect of an increase in the number same-sex households on housing prices for the Columbus, Ohio metropolitan area. We run a spatial autoregressive model on over 20,000 observations and find that whether a neighborhood is more "socially conservative" or "socially liberal" has a significant impact on the associated effect of an increase in same-sex households on house price. In liberal neighborhoods, the associated effect is positive and significant as found in previous research (Black et al., 2002) and (Florida and Mellander, 2010). However, in conservative neighborhoods the associated effect is negative and significant. This negative associated effect is found to be negative and significant for several robustness check specifications and consideration of other mitigating factors. In extremely conservative areas, we find that the addition of one more same-sex couple for every 1,000 households is associated with a reduction in housing prices by 1%. The result appears to be driven by the associated effect of same-sex male coupled households in particular and overall, our results suggest that prejudice against same-sex coupled households does exist in areas that are socially conservative.

References

Allegretto, Sylvia A. and Michelle M. Arthur, "An Empirical Analysis of Homosexual/Heterosexul Male Earnings Differentials: Unmarried and Unequal?," *Industrial and Labor Relations Review*, 2001, *54* (3), 631–646.

Anselin, Luc, *Spatial Econometrics: Methods and Models*, Kluwer Academic Publishers, 1988.

Badgett, M. V. Lee, "The Wage Effects of Sexual Orientation Discrimination," *Industrial and Labor Relations Review*, 1995, *48* (4), 726–739.

Bailey, Martin J., "Effects of Race and Other Demographic Factors on the Values of Single-Family Homes," *Land Economics*, 1966, *42* (2), 215–220.

Bell, David and Jon Binnie, "Authenticating Queer Space: Citizenship, Urbanism and Governance," *Urban Studies*, 2004, *41* (9), 1807–1820.

Black, Dan A., Seth G. Sanders, and Lowell J. Taylor, "Demographics of the Gay and Lesbian Population in the United States: Evidence from Available Systematic Data Sources," *Demography*, 2000, *37* (2), 139–154.

Black, Dan, Gary Gates, Seth Sanders, and Lowell Taylor, "Why Do Gay Men Live in San Fancisco?," *Journal of Urban Economics*, 2002, *51*, 54–76.

_ , _ , _ , and _ , "The Measurement of Same-Sex Unmarried Partner Couples in the 2000 U.S. Census," 2007. California Center for Population Research On-Line Working Paper Series.

Blomquist, Glenn C., Mark C. Berger, and John P. Hoehn, "New Estimates on Quality of Life in Urban Areas," *American Economic Review*, 1988, *78* (1), 89–107.

Brasington, David M., "Private Schools and the Willingness to Pay for Public Schooling," *Education Finance and Policy*, 2007, *2* (2), 152–174.

_ and Diane Hite, "Demand for Environmental Quality: A Spatial Hedonic Analysis," *Regional Science and Urban Economics*, 2005, *35*, 57–82.

_ and _ , "A Mixed Index Approach to Identifying Hedonic Price Models," Louisiana State Univerisity Department of Economics 2006.

_ and Donald R. Haurin, "Educational Outcomes and House Values: A Test of the Value-Added Approach," *Journal of Regional Science*, 2006, *46* (2), 245–268.

Carpenter, Chris, "New Evidence on Gay and Lesbian Household Incomes," *Contemporary Economic Policy*, 2004, *22* (1), 78–94.

Castell, M., *The city and the grass roots*, Berkeley, CA: University of California Press, 1983.

Florida, Richard and Charlotta Mellander, "There goes the metro: how and why bohemians, artists and gays affect regional housing values," *Journal of Economic Geography*, 2010, *10*, 167–188.

Gates, Gary, "How many people are lesbian, gay, bisexual and transgender?," The Williams Institute, UCLA School of Law publication April 2011.

_ and Jason Ost, *The Gay and Lesbian Atlas*, Urban Institute Press, 2004.

_ and Michael Steinberger, "Same-Sex Unmarried Partner Couples in the American Community Survey: The Role of Misreporting, Miscoding and Misallocation," May 2010. Available at $http://economics-files.pomona.edu/steinberger/research/Gates_steinberger_ACS_Miscode_May2010.pdf$.

Heckman, James, "Sample Selection Bias as a Specification Error," *Econometrica*, 1979, *47*, 153–161.

Herek, Gregory M., "Hate Crimes and Stigma-related Experiences Among Sexual Minority Adults In the United States: Prevalence Estimates From a National Probability Sample," *Journal of Interpersonal Violence*, 2009, *24* (1), 54–74.

Jud, D.G. and T.G. Seaks, "Sample Selection Bias in Estimating Housing Sales Prices," *Journal of Real Estate Research*, 1994, *9* (3), 289–298.

Kahn, Matthew E., "A Revealed Preference Approach to Ranking City Quality of Life," *Journal of Urban Economics*, 1995, *38*, 221–235.

Kiel, Katherine A. and Jeffrey E. Zabel, "House Price Differentials in U.S. Cities: Household and Neighborhood Racial Effects," *Journal of Housing Economics*, 1996, *5* (2), 143–165.

Kim, C., T. Phipps, and L. Anselin, "Measuring teh Benefits of Air Quality Improvement: A Spatial Hedonic Approach," *Journal of Environmental Economics and Management*, 2003, *45*, 24–39.

LeSage, James and R. Kelley Pace, *Introduction to Spatial Econometrics*, Boca Raton: Chapman and Hill, 2009.

Lesage, James and R. Kelley Pace, *Introduction to Spatial Econometrics*, Chapman and Hall, Taylor & Francis Group, 2009.

Ley, D., "Gentrification and the politics of the new middle class," *Environment and Planning: Society and Space*, 1994, *12* (1), 53–74.

Myers, Caitlin Knowles, "Discrimination and Neighborhood Effects: Understanding Racial Differences in US Housing Prices," *Journal of Urban Economics*, 2004, *56* (2), 279–302.

Palmquist, Raymond B., "Estimating the Demand for the Characteristics of Housing," *Review of Economics and Statistics*, 1984, *66* (3), 394–404.

Roback, Jennifer, "Wages, Rents, and the Quality of Life," *The Journal of Political Economy*, 1982, *90* (6), 1257–1278.

Rosen, Sherwin, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," *The Journal of Political Economy*, 1974, *82* (1), 34–55.

Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek, "Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]," Minneapolis: University of Minnesota 2010.

Smith, N., *The New Urban Frontier*, New York: Routledge, 1996.

Tebaldi, Edinaldo and Bruce Elmslie, "Sexual Orientation and Labour Supply," *Applied Economics*, 2006, *38*, 549–562.

Yinger, John, "Racial Prejudice and Racial Residential Segregation in an Urban Model," *Journal of Urban Economics*, 1976, *3* (4), 383–396.

Zukin, S., *The culture of cities*, Oxford: Blackwell, 1995.

Table 1: Definition and Source of Variables

Variable	**Definition**	**Mean**	**Std.**
$LnPrice$	Log of price of house	11.84	0.52
Age_1	Age of house in hundreds of years	0.30	0.32
$AgeSq.$	Age Squared	0.19	0.36
$LotSize_1$	Lot size of house in ten thousands of square feet	2.03	4.85
$LotSizeSq.$	Lot size squared	27.61	260.24
$HouseSize_1$	Building size of house in thousands of square feet	1.80	0.67
$HouseSizeSq.$	House size squared	3.71	3.59
Air_1	= 1 if the house has AC, 0 otherwise	0.61	0.49
$Deck_1$	= 1 if house has a deck, 0 otherwise	0.04	0.19
$Garage_1$	= 1 if house has a garage, 0 otherwise	0.73	0.45
$Pool_1$	= 1 if house has a pool, 0 otherwise	0.01	0.11
$OneStory_1$	= 1 if house is one story, 0 otherwise	0.33	0.47
$FullBaths_1$	Number of full baths in house	1.67	0.60
$PartialBaths_1$	Number of partial baths in house	0.62	0.52
$CBDDistance_4$	Distance from house to CBD in miles	12.11	7.90
$HazardDistance_1$	Distance from house to nearest pollution source in miles	1.56	1.09
$SchoolQuality_1$	Pass rate on 9th grade proficiency test in school district	67.07	17.92
$Crime_1$	Offenses per thousand persons in police district	80.80	53.29
$White_2$	Percentage of individuals that are white in CBG	84.94	18.28
$Income_2$	Median income in thousands of dollars in CBG	6.64	2.53
$GradDegree_2$	Percentage of individuals 25+ with a graduate degree in CBG	10.88	9.13
$Conservative_3$	Percent vote in favor of DOMA	56.07	9.21
$SameSex_2$	Number of same-sex coupled households per 1,000 households	3.59	4.80
$DiffSexUnmar_2$	Number of unmarried different-sex coupled households per 1,000 households	44.34	24.23

Source: (1) Brasington Housing Data Set, (2) 2000 Census Summary File and based on author's calculation using IPUMS (3) Ohio vote site(http://www.sos.state.oh.us/SOS/elections.aspx), (4) Author's calculation

Table 2: Ordinary Least Squares

Dependent Variable: Ln House Price		
Variable	Coefficient	
Age	-0.667	***
	(-32.467)	
AgeSq.	0.375	***
	(-23.243)	
HouseSize	0.392	***
	(38.377)	
HouseSizeSq.	-0.021	***
	(-13.283)	
LotSize	0.015	***
	(19.372)	
LotSizeSq.	0.000	***
	(-8.766)	
Air	0.015	***
	(3.035)	
Fire	0.043	***
	(10.072)	
Garage	0.037	***
	(6.971)	
Deck	0.041	***
	(4.038)	
Pool	0.039	**
	(2.270)	
OneStory	0.047	***
	(9.902)	
FullBaths	0.103	***
	(22.398)	
PartialBaths	0.059	***
	(13.052)	
CBDDistance	-0.003	***
	(-8.406)	
Income	0.025	***
	(17.337)	
HazardDistance	-0.006	***
	(-3.517)	
Crime	0.000	***
	(-8.406)	
SchoolQuality	0.000	***
	(4.961)	
White	0.003	***
	(22.596)	
GradDegree	0.011	***
	(30.204)	
Conservative	-0.001	***
	(-8.532)	
SameSex	0.034	***
	(8.532)	
SameSex $*$ *Cons.*	-0.00058	***
	(-7.409)	
R-squared	0.764	

*** is significance at the 1% level, ** at the 5% level, and * at the 10% level.
T-statistics are reported in the parenthesis.

Table 3: Spatial Autoregressive Model

Dependent Variable: Ln House Price

Variable	Direct	Indirect	Total
Age	-0.394***	-0.220***	-0.614***
	(-19.837)	(-19.455)	(-20.722)
AgeSq.	0.207***	0.116***	0.323***
	(13.731)	(13.908)	(14.133)
HouseSize	0.331***	0.185***	0.517***
	(33.605)	(23.754)	(32.359)
HouseSizeSq.	-0.017***	-0.010***	-0.028***
	(-11.499)	(-10.902)	(-11.458)
LotSize	0.012***	0.007***	0.020***
	(16.360)	(15.025)	(16.362)
LotSizeSq.	0.000***	0.000***	0.000***
	(-6.223)	(-6.167)	(-6.233)
Air	0.018***	0.010***	0.028***
	(3.728)	(3.688)	(3.720)
Fire	0.036***	0.020***	0.056***
	(8.873)	(8.654)	(8.758)
Garage	0.022***	0.012***	0.042***
	(4.348)	(4.31)	(5.404)
Deck	0.048***	0.027***	0.064***
	(4.775)	(4.720)	(4.238)
Pool	0.038**	0.021**	0.056**
	(2.394)	(2.384)	(2.260)
OneStory	0.034***	0.019***	0.054***
	(7.612)	(7.466)	(7.614)
FullBaths	0.085***	0.048***	0.133***
	(18.759)	(17.026)	(18.862)
PartialBaths	0.054***	0.030***	0.085***
	(12.849)	(11.861)	(12.717)
CBDDistance	-0.002***	-0.001***	-0.003***
	(-4.720)	(-4.731)	(-4.738)
Income	0.006***	0.003***	0.009***
	(3.838)	(3.952)	(3.885)
HazardDistance	-0.009***	-0.005***	-0.014***
	(-4.995)	(-4.943)	(-4.992)
Crime	-0.001***	0.000***	0.000***
	(-5.342)	(-5.305)	(-5.348)
SchoolQuality	0.001**	0.000**	0.001**
	(2.356)	(2.358)	(2.359)
White	0.002***	0.001***	0.003***
	(17.270)	(16.296)	(17.536)
GradDegree	0.007***	0.004***	0.010***
	(17.716)	(17.464)	(18.350)
Conservative	-0.002***	-0.001***	-0.002***
	(-4.557)	(-4.496)	(-4.547)
SameSex	0.02443***	0.014***	0.039***
	(6.650)	(6.540)	(6.646)
SameSex $*$ *Cons.*	-0.00042***	-0.000***	-0.001***
	(-5.754)	(-5.684)	(-5.752)
R-squared	0.767		
ρ	0.371***		
	(65.640)		

[a] *** is significance at the 1% level, ** at the 5% level, and * at the 10% level.

[b] T-statistics are reported in the parenthesis.

Table 4: SAR Model With Same-Sex Male and Same-Sex Female Separately

Dependent Variable: Ln House Price

Variable	Direct	Indirect	Total
Age	-0.393***	-0.218***	-0.610***
	(-19.721)	(-19.103)	(-20.549)
AgeSq.	0.202***	0.112***	0.315***
	(13.143)	(13.245)	(13.503)
HouseSize	0.332***	0.184***	0.516***
	(34.459)	(23.824)	(33.382)
HouseSizeSq.	-0.018***	-0.010***	-0.027***
	(-11.883)	(-11.262)	(-11.871)
LotSize	0.013***	0.007***	0.020***
	(17.325)	(15.655)	(17.341)
LotSizeSq.	0.000***	0.000***	0.000***
	(-6.378)	(-6.352)	(-6.405)
Air	0.020***	0.011***	0.031***
	(4.390)	(4.351)	(4.388)
Fire	0.036***	0.020***	0.056***
	(9.199)	(8.877)	(9.187)
Garage	0.019***	0.010***	0.029***
	(3.642)	(3.623)	(3.642)
Deck	0.047***	0.026***	0.072***
	(4.728)	(4.636)	(4.709)
Pool	0.038**	0.021**	0.058**
	(2.301)	(2.295)	(2.301)
OneStory	0.035***	0.019***	0.054***
	(7.708)	(7.557)	(7.715)
FullBaths	0.085***	0.047***	0.132***
	(19.754)	(17.103)	(19.631)
PartialBaths	0.055***	0.030***	0.085***
	(12.366)	(11.572)	(12.318)
CBDDistance	-0.002***	-0.001***	-0.003***
	(-4.275)	(-4.301)	(-4.295)
Income	0.006***	0.003***	0.09***
	(3.916)	(4.034)	(3.966)
HazardDistance	-0.008***	-0.005***	-0.013***
	(-4.626)	(-4.559)	(-4.615)
Crime	0.000***	0.000***	0.000***
	(-5.404)	(-5.403)	(-5.427)
SchoolQuality	0.000**	0.000**	0.001**
	(2.551)	(2.559)	(2.557)
White	0.002***	0.001***	0.003***
	(17.262)	(15.624)	(17.292)
GradDegree	0.006***	0.003***	0.010***
	(17.151)	(16.790)	(17.808)
Conservative	-0.002***	-0.001***	-0.003***
	(-4.946)	(-4.559)	(-4.918)
SameSexMale	0.046***	0.026***	0.072***
	(8.138)	(7.960)	(8.148)
SameSexFemale	0.000	0.000	0.000
	(1.449)	(1.449)	(1.145)
$SameSexMale * Cons$	-0.00084***	-0.000***	-0.001***
	(-7.489)	(-7.351)	(-7.497)
$SameSexFemale * Cons$	0.000	0.000	0.00
	(-0.970)	(-0.968)	(-0.969)
R-squared	0.768		
ρ	0.369***		
	(67.420)		

[a] *** is significance at the 1% level, ** at the 5% level, and * at the 10% level.

[b] T-statistics are reported in the parenthesis.

Table 5: SAR Model With Inverse Mills Ratio

Dependent Variable: Ln House Price

Variable	Direct	Indirect	Total
Age	-0.389***	-0.211***	-0.600***
	(-18.046)	(-18.028)	(-18.852)
AgeSq.	0.204***	0.111***	0.315***
	(12.450)	(12.591)	(12.761)
HouseSize	0.334***	0.181***	0.515***
	(34.807)	(24.499)	(34.011)
HouseSizeSq.	-0.018***	-0.010***	-0.028***
	(-12.081)	(-11.484)	(-12.082)
LotSize	0.013***	0.007***	0.020***
	(16.221)	(14.714)	(16.151)
LotSizeSq.	0.000***	0.000***	0.000***
	(-6.213)	(-6.128)	(-6.213)
Air	0.018***	0.010***	0.027***
	(3.702)	(3.643)	(3.688)
Fire	0.036***	0.020***	0.055***
	(8.522)	(8.239)	(8.499)
Garage	0.022***	0.012***	0.034***
	(4.311)	(4.303)	(4.318)
Deck	0.051***	0.027***	0.078***
	(5.326)	(5.246)	(5.317)
Pool	0.038**	0.021**	0.059**
	(2.336)	(2.325)	(2.334)
OneStory	0.034***	0.018***	0.052***
	(7.676)	(7.633)	(7.5720)
FullBaths	0.085***	0.046***	0.131***
	(19.804)	(16.951)	(19.534)
PartialBaths	0.054***	0.029***	0.083***
	(12.812)	(12.006)	(12.772)
CBDDistance	-0.002***	-0.001***	-0.003***
	(-5.330)	(-5.339)	(-5.353)
Income	0.008***	0.005***	0.012***
	(5.245)	(5.451)	(5.335)
HazardDistance	-0.008***	-0.004***	-0.012***
	(-4.630)	(-4.544)	(-4.613)
Crime	0.000***	0.000***	0.000***
	(-6.007)	(-5.948)	(-6.014)
SchoolQuality	0.000**	0.000**	0.000**
	(2.152)	(2.153)	(2.154)
White	0.002***	0.001***	0.003***
	(17.427)	(16.104)	(17.589)
GradDegree	0.006***	0.003***	0.010***
	(16.715)	(16.470)	(17.255)
Conservative	-0.002***	-0.001***	-0.003***
	(-4.540)	(-4.480)	(-4.531)
SameSex	0.02414***	0.013***	0.037***
	(6.478)	(6.349)	(6.446)
$SameSex * Cons$	-0.00040***	-0.000***	-0.001***
	(-5.448)	(-5.359)	(-5.437)
InverseMills	0.081***	0.043***	0.125***
	(4.228)	(4.270)	(4.254)
R-squared	0.768		
ρ	0.364***		
	(65.284)		

[a] *** is significance at the 1% level, ** at the 5% level, and * at the 10% level.

[b] T-statistics are reported in the parenthesis.

Table 6: SAR Model With Columbus Subdivision Excluded

Dependent Variable: Ln House Price

Variable	Direct	Indirect	Total
Age	-0.399***	-0.175***	-0.575***
	(-14.520)	(-13.447)	(-14.878)
AgeSq.	0.189***	0.083***	0.273***
	(8.700)	(8.537)	(8.804)
HouseSize	0.362***	0.159***	0.520***
	(28.951)	(18.333)	(27.990)
HouseSizeSq.	-0.021***	-0.009***	-0.030***
	(-11.201)	(-10.159)	(-11.158)
LotSize	0.013***	0.006***	0.019***
	(16.410)	(13.414)	(16.191)
LotSizeSq.	0.000***	0.000***	0.000***
	(-6.173)	(-6.051)	(-6.190)
Air	0.018***	0.008***	0.025***
	(2.891)	(2.854)	(2.886)
Fire	0.051***	0.023***	0.074***
	(9.273)	(8.494)	(9.190)
Garage	0.019***	0.008***	0.027***
	(3.015)	(2.988)	(3.013)
Deck	0.046***	0.020***	0.066***
	(4.461)	(4.405)	(4.464)
Pool	0.045**	0.020**	0.065**
	(2.403)	(2.391)	(2.403)
OneStory	0.035***	0.015***	0.050***
	(5.515)	(5.434)	(5.530)
FullBaths	0.089***	0.039***	0.129***
	(16.064)	(13.621)	(16.065)
PartialBaths	0.064***	0.028***	0.093***
	(11.158)	(10.124)	(11.112)
CBDDistance	-0.003***	-0.001***	-0.004***
	(-5.970)	(-5.888)	(-5.995)
Income	0.009***	0.004***	0.012***
	(4.786)	(5.019)	(4.881)
HazardDistance	-0.013***	-0.006***	-0.018***
	(-5.612)	(-5.396)	(-5.583)
Crime	0.000	0.000	0.000
	(0.354)	(-0.354)	(-0.354)
SchoolQuality	0.002***	0.001***	0.002***
	(5.454)	(5.471)	(5.530)
White	0.004***	0.002***	0.005***
	(11.295)	(10.092)	(11.197)
GradDegree	0.003***	0.001***	0.004***
	(5.113)	(5.162)	(5.162)
Conservative	-0.006***	-0.003***	-0.008***
	(-9.520)	(-8.838)	(-9.488)
SameSex	0.01221*	0.005*	0.018*
	(1.843)	(1.835)	(1.842)
SameSex $*$ *Cons.*	-0.00024**	-0.000**	-0.000**
	(-2.180)	(-2.167)	(-2.178)
R-squared	0.778		
ρ	0.314***		
	(65.772)		

[a] *** is significance at the 1% level, ** at the 5% level, and * at the 10% level.

[b] T-statistics are reported in the parenthesis.

Table 7: Spatial Autoregressive Model With Different Sex Unmarried Households

Dependent Variable: Ln House Price

Variable	Direct	Indirect	Total
Age	-0.048***	-0.228***	-0.637***
	(-18.603)	(-18.451)	(-19.405)
AgeSq.	0.217***	0.121***	0.339***
	(13.215)	(13.297)	(13.547)
HouseSize	0.330***	0.185***	0.515***
	(33.770)	(24.066)	(32.770)
HouseSizeSq.	-0.018***	-0.010***	-0.027***
	(-11.347)	(-10.825)	(-11.331)
LotSize	0.012***	0.007***	0.020***
	(17.331)	(15.387)	(17.147)
LotSizeSq.	0.000***	0.000***	0.000***
	(-6.699)	(-6.640)	(-6.716)
Air	0.016***	0.009***	0.025***
	(3.624)	(3.596)	(3.620)
Fire	0.036***	0.020***	0.056***
	(8.922)	(8.612)	(8.894)
Garage	0.020***	0.011***	0.031***
	(4.043)	(4.039)	(4.050)
Deck	0.048***	0.027***	0.075***
	(4.904)	(4.827)	(4.890)
Pool	0.039**	0.022**	0.056**
	(2.362)	(2.359)	(2.363)
OneStory	0.033***	0.019***	0.052***
	(6.977)	(6.928)	(7.003)
FullBaths	0.085***	0.047***	0.132***
	(19.180)	(16.692)	(18.959)
PartialBaths	0.053***	0.030***	0.084***
	(12.711)	(11.766)	(12.589)
CBDDistance	-0.002***	-0.001***	-0.003***
	(-5.258)	(-5.264)	(-5.280)
Income	0.006***	0.003***	0.009***
	(4.092)	(4.211)	(4.142)
HazardDistance	-0.009***	-0.005***	-0.013***
	(-4.640)	(-4.557)	(-4.622)
Crime	0.000***	0.000***	0.000***
	(-5.024)	(-4.997)	(-5.030)
SchoolQuality	0.00*	0.000*	0.001*
	(1.844)	(1.843)	(1.845)
White	0.002***	0.001***	0.003***
	(17.270)	(16.296)	(17.536)
GradDegree	0.006***	0.003***	0.010***
	(16.714)	(16.522)	(17.255)
Conservative	-0.003***	-0.002***	-0.005***
	(-5.870)	(-5.789)	(-5.866)
SameSex	0.02400***	0.013***	0.037***
	(6.587)	(6.504)	(5.650)
SameSex $*$ *Cons.*	-0.00040***	0.000***	-0.001***
	(-5.754)	(-5.684)	(-5.752)
DifferentSex	-0.002***	-0.001***	-0.003***
	(-3.721)	(-3.771)	(-3.725)
DifferentSex $*$ *Cons.*	0.00003***	0.000***	0.00***
	(3.573)	(3.564)	(3.576)
R-squared	0.767		
ρ	0.370***		
	(54.328)		

[a] *** is significance at the 1% level, ** at the 5% level, and * at the 10% level.

[b] T-statistics are reported in the parenthesis.

Table 8: SAR Model With Above Average Income

Dependent Variable: Ln House Price

Variable	Direct	Indirect	Total
Age	-0.421***	-0.218***	-0.640***
	(-18.046)	(-18.028)	(-18.852)
AgeSq.	0.251***	0.130***	0.381***
	(12.450)	(12.591)	(12.761)
HouseSize	0.353***	0.183***	0.537***
	(33.055)	(22.544)	(32.486)
HouseSizeSq.	-0.018***	-0.010***	-0.028***
	(-11.605)	(-10.836)	(-11.572)
LotSize	0.012***	0.006***	0.019***
	(15.288)	(13.694)	(15.234)
LotSizeSq.	0.000***	0.000***	0.000***
	(-5.851)	(-5.797)	(-5.866)
Air	-0.009*	-0.005*	0.014*
	(-1.856)	(-1.861)	(-1.859)
Fire	0.031***	0.016***	0.046***
	(7.218)	(7.008)	(7.206)
Garage	0.012***	0.006***	0.018***
	(1.958)	(1.958)	(1.959)
Deck	0.048***	0.025***	0.072***
	(4.572)	(4.467)	(4.552)
Pool	0.032*	0.017*	0.049*
	(1.951)	(1.949)	(1.952)
OneStory	0.028***	0.015***	0.043***
	(5.435)	(5.355)	(5.434)
FullBaths	0.087***	0.045***	0.132***
	(18.882)	(15.520)	(18.316)
PartialBaths	0.041***	0.021***	0.063***
	(8.975)	(8.437)	(8.894)
CBDDistance	-0.003***	-0.001***	-0.004***
	(-5.690)	(-5.667)	(-5.714)
Income	0.002	0.001	0.003
	(1.487)	(1.497)	(1.491)
HazardDistance	-0.010***	-0.005***	-0.015***
	(-4.925)	(-4.823)	(-4.910)
Crime	0.000***	0.000***	0.001***
	(-7.950)	(-7.701)	(-7.944)
SchoolQuality	0.000	0.000	0.000
	(1.586)	(1.589)	(1.588)
White	0.002***	0.001***	0.004***
	(10.499)	(9.793)	(10.422)
GradDegree	0.006***	0.003***	0.009***
	(14.944)	(14.534)	(15.363)
Conservative	-0.003***	-0.002***	-0.005***
	(-7.228)	(-7.028)	(-7.219)
SameSex	0.031***	0.016***	0.047***
	(7.075)	(6.935)	(7.085)
$SameSex * Cons$	-0.00048***	-0.000***	-0.001***
	(-5.740)	(-5.670)	(-5.748)
R-squared	0.736		
ρ	0.353***		
	(60.814)		

[a] *** is significance at the 1% level, ** at the 5% level, and * at the 10% level.

[b] T-statistics are reported in the parenthesis.