WHAT ROLE SHOULD GOVERNMENT PLAY IN REGULATING THE GROWTH IN THE NUMBER OF HOMEOWNERS ASSOCIATIONS IN SACRAMENTO COUNTY?

A Thesis

Presented to the faculty of the Department of Public Policy and Administration

California State University, Sacramento

Submitted in partial satisfaction of
the requirements for the degree of

MASTER OF PUBLIC POLICY AND ADMINISTRATION

by

Erin Nicole Stumpf

SPRING
2018

WHAT ROLE SHOULD GOVERNMENT PLAY IN REGULATING THE GROWTH IN THE NUMBER OF HOMEOWNERS ASSOCIATIONS IN SACRAMENTO COUNTY?

A Thesis

by

Erin Nicole Stumpf

Approved by:

_____, Committee Chair
Dr. Robert Wassmer

_____, Second Reader
Dr. Su Jin Jez

_____
Date

Student: Erin Nicole Stumpf

I certify that this student has met the requirements for format contained in the University format manual, and that this thesis is suitable for shelving in the Library and credit is to be awarded for the thesis.

_____, Department Chair _____
Dr. Robert Wassmer Date

Department of Public Policy and Administration

Abstract

of

WHAT ROLE SHOULD GOVERNMENT PLAY IN REGULATING THE GROWTH IN THE NUMBER OF HOMEOWNERS ASSOCIATIONS IN SACRAMENTO COUNTY?

by

Erin Nicole Stumpf

A Homeowners Association (HOA) is a private organization that governs a community or neighborhood subdivision. The number of HOAs has increased significantly over the last few decades, and today nearly one in four Californians resides in a neighborhood governed by a HOA. This thesis attempts to determine if the continued proliferation of HOAs should be mitigated or perhaps encouraged by government intervention.

Via a mixed methods approach, including a review of existing literature, regression analysis, and interviews, I analyze the ramifications of the growth in the number of HOAs in the Sacramento County area in California.

Using a dataset from Metrolist Multiple Listing Service (MLS) containing home sales spanning September 2016 through December 2016 in Sacramento County, California, I performed quantitative hedonic regression analysis to determine how HOAs influence home values to determine if HOA exacerbate the affordable housing crisis in Sacramento County. Homes located in HOAs sell for 1.96 percent more than homes not in HOAs, holding all factors constant. When data is separated by zip code, there is a wide variance of HOA influence on home value, ranging from several percent positive effect, to zero effect, to several percent negative effect. Via interviews with housing experts in Sacramento County I tested ideas for specific policy interventions and sought to gauge people's attitudes toward HOAs.

Given the current mix of housing stock, HOA effects on home values, and interviewee attitudes surrounding HOAs, I conclude that government does not need to mitigate the number of HOAs in Sacramento. I offer policy ideas to enrich the public-private partnership between local government and HOAs, including developing a HOA formation toolkit to ease formation of new HOAs in existing neighborhoods, encouraging more collaboration and information sharing between local governments and HOAs, and local government offering best practices workshops for volunteer HOA leaders.

_____, Committee Chair
Dr. Robert Wassmer

_____
Date

ACKNOWLEDGEMENTS

First and foremost, I must thank my husband Greg Wilson who encouraged me to apply to this program, had nerdy economics conversations with me over morning coffee, and had dinner waiting for me most nights after class. You are most definitely my Pareto Optimal partner. I am so looking forward to spending evenings and weekends with you, sans homework.

To my parents Eric and Mary Ann Stumpf, thank you for emphasizing the importance of education throughout my childhood and for being so encouraging and supportive.

To my brother Matticakes Stumpf, thank you for being a huge inspiration to me, earning your own master's degree in half the time it took me to finish mine!

To Kellie Swayne, thanks for listening to me talk endlessly about my classes, Homeowners Associations, and lord knows whatever other geeky policy stuff. There's nobody else I would rather share a brain with.

To Suzanne Bemis…AND THEN?! Thanks for the pep talks when I needed them and for always finding a way to make me laugh and lose control of bodily function.

To my PPA 2015 cohort, thanks for helping make the program so much better than I ever imagined it would be. Best. Cohort. Ever.

To the PPA staff and faculty, thank you for such engaging instruction and always going above and beyond for the students. I know I can speak on behalf of everyone when I say you all are truly amazing and your dedication to the students is unparalleled.

And finally, thanks to Dr. Rob Wassmer, who as my first reader provided thought-provoking feedback and advised me with my regression analysis, and thanks to Dr. Su Jin Jez, who as my second reader provided excellent guidance on my qualitative analysis and feedback to develop and round-out my ideas more clearly.

TABLE OF CONTENTS

Page

LIST OF TABLES

Tables Page

LIST OF FIGURES

Figures Page

CHAPTER ONE: INTRODUCTION

HOAs Share Some Commonalities with Government Agencies

A Homeowners Association (HOA) is a private organization that governs a community or neighborhood subdivision. A HOA and its Board of Directors are typically charged with things like enforcement of the community's codes, covenants, and restrictions (CC&Rs), maintenance of shared areas, or providing services to residents. All residents living within associations pay dues to the HOA for the provision of goods or services provided. Often HOAs own infrastructure in the communities they serve which would typically, in non-HOA governed communities, be owned by local government agencies, such as underground sewer lines, water lines, roads, parks, recreation facilities, or street lighting. As such, HOAs act as private suppliers of services or maintain privately-owned infrastructure that generally, in non-HOA governed communities, are provided or maintained by local governments such as utilities, roads, lighting, security, or waste removal (Langbien and Spotswood-Bright, 2005).

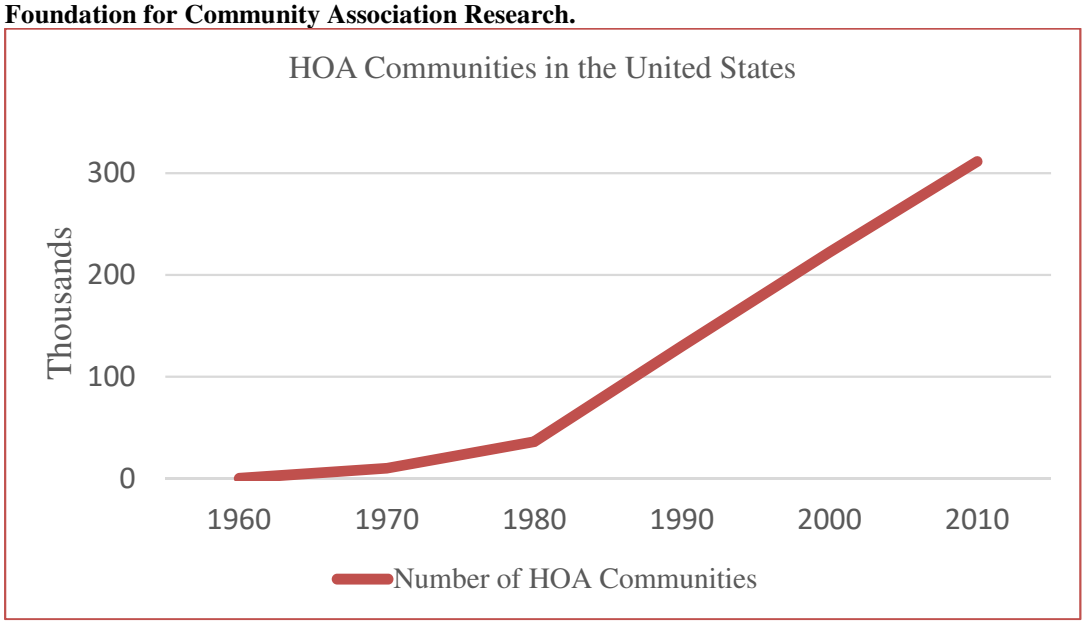
A HOA is formed when a group of residents joins together, and the collective group taxes itself to provide supplementary services or additional regulation. HOAs are 'private' in that the policies are directed solely to this exclusive group. They are 'governments' in that their policies, and possibly their incentives as well, are similar to those of traditional public-sector institutions (Helsley and Strange, 2000). While cities and counties are state-chartered institutions, HOAs are generally established under state law as private, nonprofit corporations (McCabe, 2005). For HOAs, rather than a city charter, they instead employ recorded codes, covenants, and restrictions (CC&Rs) along with the association bylaws as their governing documents. The court system protects private entities from government intrusion in their internal operations, and thus once they are established neither the state nor its cities can terminate a HOA, change its jurisdiction, or require that it perform tasks or offer services not assigned to it in its organizing documents.

Despite their private status, HOAs operate similarly to government entities. HOAs are usually governed by a board of directors elected by residents. HOAs "tax" residents in the form of charging mandatory dues which pay for the administrative functions of the association and fund the services offered to residents (Carlee, 2011).

Rapid Expansion in Number of Homeowners Associations

The number of HOAs increased over the last few decades with approximately 44,900 associations in California as of 2015 (Treese, 2016). Within those associations, there are approximately 9,033,000 individuals residing in them, which equates to nearly one in four Californians residing in a neighborhood governed by a HOA according to the most recent census data.

Figure 1 illustrates the growth in the number of HOA Communities in the United States. Adapted from Treese, C. J. (2016). *Community Association Fact Book 2015* [Pamphlet]. Mountain House, CA: Foundation for Community Association Research.



Why study Homeowners Associations in Sacramento?

With the explosion in the number of HOAs over the last few decades, it is important to understand what role government should play, if any, in regulating the formation of HOAs. HOAs are responsible for service delivery and quality of life for residents. I specifically research

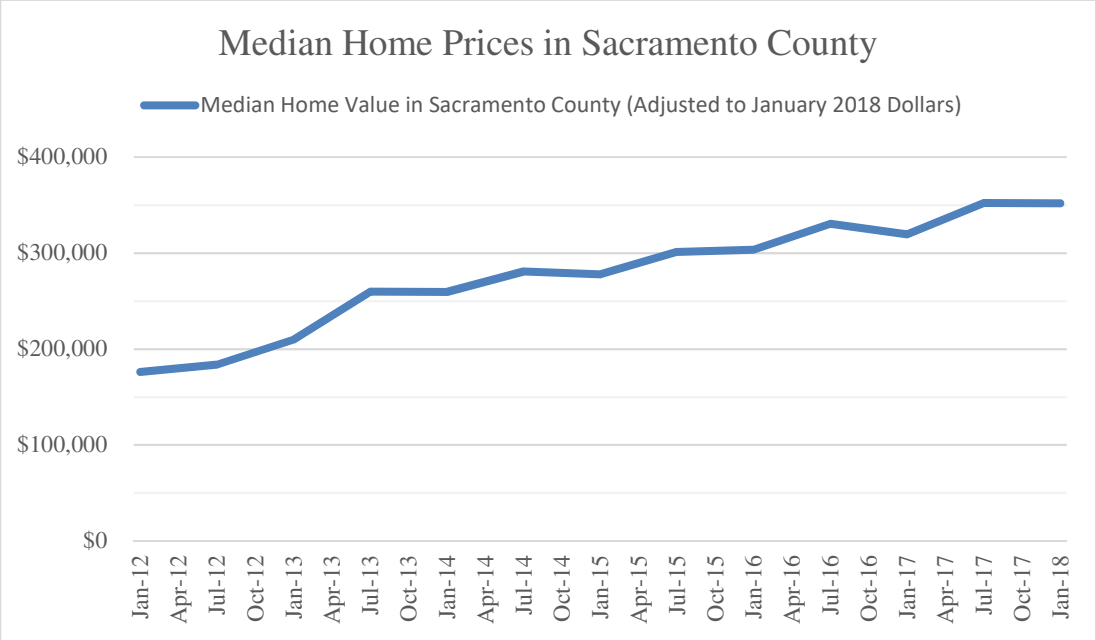
the following question: What role should government play in regulating the growth in the number of HOAs in Sacramento?

On one hand, it is possible that increasing numbers of HOAs in Sacramento County and its incorporated cities may be a benefit to local governments. Local governments may be able to offload to HOAs some of the public services typically provisioned to residents and decrease government spending. For example, many HOAs own and maintain private roads. Sacramento voters recently failed to pass 2016 Measure B, a tax measure which would have funded repairs to transportation infrastructure (Bizjak, 2016). More private roads maintained by HOAs would equate to fewer roads Sacramento County would have to maintain. HOAs also often own and maintain parks and recreation facilities. Over the last 30 years, the public parks space in Sacramento has quadrupled, while the city and county of Sacramento has allocated less funding for park maintenance. Many park amenities and facilities have fallen into disrepair. They also employ fewer workers; in 2016 each park worker was responsible for the upkeep of 23 acres, up from 5.4 acres in 1981 (Khury, 2015). More parks and recreation facilities maintained by HOAs would equate to fewer park acres that Sacramento County would have to maintain. I examine the spillover effects of HOAs on local government spending in Section A of the literature review in the next chapter. Similar themes relating to private service delivery emerge in my qualitative interviews that I discuss in Chapter 4.

On the other hand, increasing numbers of HOAs may be a negative for Sacramento residents. If homes in HOAs are found to be far more expensive than like-kind non-HOA properties, it may be that increasing numbers of HOAs exacerbates the affordable housing crisis in the area. According to the California Association of REALTORS® (2018), 43 percent of Sacramentans can afford to purchase a home as of the fourth quarter of 2017, which is down from 71 percent in the fourth quarter of 2012. Declining affordability is attributed to the increase in the

median home price in Sacramento County, which at the bottom of the real estate market was $161,000 in mid-2012, and most recently measured at $350,000 in January 2018. Rental prices are also rapidly increasing in Sacramento, and according to Yardi Matrix, Sacramento rents swelled 40 percent over the last 4 years (van der Meer, 2018). Measuring the effect of a HOA on property value in Sacramento, will help guide policy-making in these areas. I measure the effect of a HOA on property value via regression analysis that I will outline in Chapter 3.

Figure 2 illustrates the increasing median home values within Sacramento County with prices adjusted per Bureau of Labor Statistics Consumer Price Index calculator. Adapted from [MetroList MLS January 2012 - January 2018]. (2018, February 10). Unpublished raw data.



There are other negative spillover effects often associated with HOAs, such as racial and economic segregation. Recently, according to data from the United States Census, the Arden-Arcade area of Sacramento has the highest level of income inequality of any place in California with more than 65,000 residents (Reese, 2018). HOAs are also thought to have effects on civic engagement. According to the California Secretary of State (2018), only 34.42 percent of eligible voters in Sacramento County cast ballots in the 2014 gubernatorial election as compared to 45.52

percent in the 2010 gubernatorial election. I examine the effects of HOAs on segregation and civic engagement in Section A of the literature review in the next chapter. Similar themes relating to affluence and community unity emerge in my qualitative interviews that I discuss in Chapter 4.

No Central Repository of Information About Homeowners Associations

There is a lack of available data about HOAs. There are a few unrelated entities that collect some limited information. An accounting firm Levy and Company maintains a proprietary database that tracks the size and location of HOAs in California, using data from the filed articles of incorporation with the California Secretary of State (Cheung, 2008a). This data is incomplete, as not all HOAs incorporate in the state of California. The Community Associations Institute, a member-based organization for associations, also collects information on HOAs in the United States. This source too is incomplete as the organization only collects data on its member organizations and does not have information for non-member HOAs (McCabe and Tao, 2006). The real estate marketing website Zillow compiled a database, referred to as ZTRAX, which is comprised of residential property sales in the United States from 1980 to present day (Clark, 2017). ZTRAX flags properties where a mortgage is recorded with a Planned Unit Development (PUD) rider, a lending addendum which is a signal the property is a HOA. This source is incomplete as well, as properties sold prior to 1980 are not in the database, nor are units that are sold for all cash or alternative financing as they would not have a PUD addendum. Additionally, this only provides property-level data, and not information about the HOA itself. Aside from these fragmented data sources, there is no known no comprehensive database of HOAs. For my quantitative study of HOAs in Sacramento County, I use a dataset from the Metrolist MLS, which notes if a home is located within a HOA, the dues amount, and other factors.

Study Approach and Framework

Via a mixed methods approach, including a review of existing literature, regression analysis, and interviews with experts, I will examine the ramifications of the proliferation of HOAs in Sacramento County, California. This paper is organized into five chapters. The current, first chapter is an introduction of the study. In the second chapter, I review existing literature surrounding HOAs. Part A of the literature review examines existing studies looking at the various externalities that HOAs are thought to be associated, including racial and economic segregation, civic engagement, and local government spending. Part B explores empirical studies that examine the influence of a property's location within a Homeowners Association as a primary explanatory variable on the property's value. In the third chapter, I outline my regression analysis. I will describe regression model employed, outline the independent variables and their expected effects on the dependent variable selling price, describe the dataset used, define the variables used, and outline their descriptive statistics. I will outline any corrective action for potential issues such as heteroskedasticity and multicollinearity. I will then interpret the significant regression coefficients and characterize the magnitude of the results. The fourth chapter, outline my qualitative interview methodology, and I synthesize and report the results of interviews I performed with Sacramento-area local officials, real estate experts, HOA managers, and others. In the fifth chapter, I outline my findings, and policy recommendations, and opportunities for future research.

CHAPTER TWO: LITERATURE REVIEW

Literature Review Introduction

This literature review is broken into two sections. First, I survey existing literature that examines the proliferation of Homeowners Associations over the last few decades and explores the various spillover effects to which this expansion of Homeowners Associations is thought to be associated. In the second section, I review existing empirical literature that explores studies that examine the influence of a property's location within a Homeowners Association as an explanatory variable on the property's value. In the research studies I reviewed, Homeowners Associations may be referred to by other terms such as Residential Community Associations, Gated Communities, or Private Governments. For the sake of consistency, I will refer to them uniformly as Homeowners Associations (HOAs).

Section A: Spillover Effects of Homeowners Associations

I noted three common themes that emerged while reviewing existing literature regarding HOAs; the potential for HOAs to exacerbate economic and racial segregation, a possible link between HOAs to decreased civic engagement among HOA residents, and possible correlation between HOAs and a decrease in local government per capita spending.

Homeowners Association Effects on Segregation

Scholars seem to agree that economic and racial segregation may coincide with the existence of HOAs. Some speculate that segregation is exacerbated by the existence of HOAs and the policies enacted by those who govern them, while others argue segregation exists with or without HOAs. After evaluating the evolution of housing policy over time, Boyack (2017) contends that planned communities governed by HOAs leverage CC&Rs along with other rule-making as a manner to exclude certain types of uses and certain types of people. This practice allows communities to engage in less-direct forms of discrimination. For example, mandating

homes in a HOA to be of a certain large size might be a covert way to prevent less affluent people and minorities from becoming homeowners in the community as they may not be able to afford larger, more expensive homes.

In a similar analysis, Cashin (2001) notes that HOAs are more likely to form in new suburban communities, since forming them in the urban core in existing neighborhoods is too difficult. Organizing the residents of an existing neighborhood is an onerous process, incorporating a HOA is legally complex, and the cost associated with formation is high. Builders, when planning new communities and forming HOAs, tend to tailor new developments to more affluent income brackets. New HOAs are predominately formed in sprawling outer-ring areas where most new residential subdivisions are being developed. This dynamic may exacerbate income segregation since builders develop these communities with profit motivations, and their financial goals are more easily met selling homes to the more affluent.

A study by Cheung and Meltzer (2014) supports this notion. Using data from the state of Florida, they performed regression using a Cox Proportional Hazards Model with time-varying covariates and analyzed census tract data from 26 of 67 Florida counties. They controlled for variables such as resident demographics, housing tenure, age of the property, vacancy rates, and local government expenditures. They found that neighborhoods with a higher proportion of Black residents are less likely to form a HOA. A HOA is 37 percent less likely to be in an area where the hazard ratio of Black residents increases by 0.63. They also found that tracts with higher incomes are more likely to form HOAs. A census tract is 14% more likely to form a HOA for a $10,000 increase in average family income.

Carlee (2011) reviewed housing policy and HOA formation throughout the United States, and concluded that many HOAs are economically segregated communities, as are many communities without HOAs. Per Carlee, economic segregation is not a unique issue and exists

throughout the country, both inside and outside HOAs. Le Goix (2005) evaluated the level of segregation in HOAs in the Los Angeles metro area. He measured segregation by comparing socioeconomic factors between census blocks of HOA communities and census blocks adjacent, non-HOA areas. He did not find evidence to support a relationship between HOAs and segregation. He observed that HOAs tend to exist in areas that are already ethnically and economically homogeneous and there is likely no causal connection between HOA formation and segregation.

Homeowners Association Effects on Civic Engagement

There are conflicting sentiments about the impact of living in a HOA on the level civic engagement and participation of HOA residents. Many believe that residents in HOAs tend to focus on the happenings within the community where they live and become disengaged from the greater community, while other evidence contradicts this theory. Cashin (2001) opines that HOAs foster an environment where residents are incented to sever ties to the larger populace and increasingly resist government efforts to address problems that residents believe are not their own issues. She claims that fee-for-service environment perpetuates a notion that residents should have limited fiscal obligation beyond their immediate community.

Fu and Lin (2014) conducted field interviews with 27 different volunteers and HOA management company employees in Guangdong, Shenzhen, and Meizhou in China. They conclude that residents within HOAs lack civic engagement. Based on their surveys they found that most HOA residents tend to be more affluent, and that affluent residents of HOAs have high opportunity costs to take the time to educate themselves as to the governance structure and expenditures of the HOA and the greater community. People who live in HOAs have high social status and do not care about the trivial amount of money they are spending on dues and on taxes, and as such do not bother to get involved in community decisions.

Conversely, Carlee (2011) states there is no difference between the behavior of HOA residents and non-residents. He claims that residents of HOAs likely have limited knowledge about their HOA, unless they are among the few engaged proactively in its management. He asserts the same dynamic is true of their interactions with government outside the HOA, and he theorizes HOA residents are likely to be equally uninformed about the local governments to which they pay their taxes.

An empirical study by Gordon (2003) also contradicts the belief that HOA residents tend to be disengaged. She looks at voting behavior as a proxy used for measuring civic engagement, did a regression analysis, and found no measurable difference in the voting behavior in HOA residents and non-HOA residents. She investigated the voter turn-out in California statewide general elections, specifically looking at voter registration, and the results of varying propositions within census block groups with and without HOAs. She used a series of pooled cross-sections for 1990, 1992, and 1994, and controlled for acreage, year of formation, monthly fees per unit, HOA revenues, resident demographics, home values, private school enrollment, and voter registration information. Her results indicate that areas with HOAs do not exhibit significantly different voter turnout, registration, and party affiliation once potential selection bias is factored.

Homeowners Association Effects on Local Government Spending

HOAs provide a range of services to residents. Common services provided by HOAs to residents are things like security services, waste disposal, parks and recreation facility maintenance, road maintenance, and common area landscaping and maintenance. Often, these services supplement or completely supplant tax-funded services already provided by local municipalities. Some states provide HOAs financial incentives to privately offer services to residents (Nelson, 2009). New Jersey requires municipalities to repay HOAs for some private services that would otherwise be publicly provided. Montgomery County, Maryland, provides tax

rebates to associations. Residents of HOAs in most states, including California, essentially pay for these services twice – once in the form of taxes, and again in their HOA dues. Studies found that local governments benefit from the existence of HOAs and spend less per capita in areas where HOAs privately provide services.

The number of HOAs in California started increasing rapidly in the late 1970's. There is evidence to suggest that private supplementation of public services arose as a response to municipal budget constraints. Cheung (2008a) performed a Poisson regression using panel data between 1976 – 1982 from 198 California cities, and data for HOA incorporation filings with the California Secretary of State. His regression controlled for variables such as year, passage of Proposition 13, land area, population, population growth, intergovernmental revenues, and expenditures. He found that HOAs were 36 percent more likely to be formed in the four years after Proposition 13 than during the years prior. He speculates that since local governments were unable to raise property taxes to fund local services, local governments encouraged this private government growth to offload the responsibility of providing public services.

Helsley and Strange (1998) constructed economic models and formed a similar conclusion. In their model, HOAs have five essential characteristics: they are voluntary, exclusive, supplementary, self-financing and strategic. They explore how the presence of a HOA should affect provision and consumption of a collective good. Their analysis suggests that existence of a HOA should cause the public sector to reduce its provision of the collective good. They admit that the welfare effects of HOAs are ambiguous and complex. In some cases, introducing a HOA increases aggregate welfare for members and nonmembers alike since governments may reallocate the services they provide, though that is not always the case.

Another study by Cheung and Meltzer (2014) examining data from the state of Florida comes to a similar conclusion. They performed regression using a Cox Proportional Hazards

Model with time-varying covariates and analyzed census tract data from 26 of 67 Florida counties, searching for causes for HOA formation. They controlled for variables such as resident demographics, housing tenure, age of the property, vacancy rates, and local government expenditures. They found that for each $1,000 increase in per capita municipal spending decreases the hazard ratio by 20 percent. This means that tracts located in cities that spend relatively less on public services are more likely to form HOAs, which they believe suggests substitutability between HOAs and local public services. Another finding of their study is that for each 1-mile increase in distance to the central business district increases the hazard ratio by 0.7 percent. This suggests that neighborhoods located on the municipal outskirts, areas that are logistically more difficult for local governments to service, are also more likely to form HOAs.

Further supporting the substitutability of services provided by HOAs and local governments is yet another study by Cheung (2008b). He speculates that once a HOA provides services privately there is less of a need for the public government to provide them – a theory referred to as "Strategic Downloading". Cheung performed a two-stage least squares regression using 30 years of government expenditures and U.S. Census data from years 1970 to 1999 from 110 California cities. Controlling for variables such as private government activity, resident demographics, owner occupancy, year, and population growth rates, Cheung found that a 10 percent increase in the prevalence of HOAs in a city will on average decrease per capita total expenditures by 1.51 percent. Public spending decreases where substitutability is the highest – services for parks, community development, police, and waste disposal.

Section A: Conclusion

Of the studies reviewed, they arrive at mixed conclusions with the relationship between HOAs and segregation, civic engagement, and per capita government spending. Scholars seem to agree that HOAs coincide with economic and racial segregation, though some studies suggest that

HOAs and their rules may exacerbate economic and racial segregation (Boyack, 2017, Cashin, 2001, and Cheung and Meltzer 2014), while others claim segregation exists with or without HOAs (Carlee, 2011, and Le Goix, 2005). Other research theorizes that HOAs are linked to a decrease civic engagement (Cashin, 2001, and Fu and Lin, 2014), although some studies assert that HOAs do not exert any influence on residents' civic engagement (Carlee, 2011, and Gordon, 2003). There also seems to be consensus amongst scholars (Cheung, 2008a, Helsley and Strange, 1998, Cheung and Meltzer 2014, and Cheung, 2008b) that HOAs do help government agencies by taking on the financial responsibility of providing certain services that are typically offered by local governments, and by doing so may offset government expenses.

Some studies are California-specific and use datasets from California census tracts and other blocks (Le Goix, 2005, Gordon, 2003, Cheung, 2008a, Cheung, 2008b), although none of them are specifically located in Northern California. Other studies examine data from other regions, such as the state of Florida (Cheung and Meltzer, 2014,), or in China (Fu and Lin, 2014). As analysis from the state of California, southern California, other states, or other countries is useful, the demographics and cultural attitudes of these areas may be unlike findings from study in northern California. As such, results from these studies may not be extrapolated to Northern California areas. Hence, further investigation is needed specifically in Sacramento County, California. Applying these lessons to my own qualitative study, I will interview Sacramento-area experts involved in housing policy, land use, real estate valuation, real estate sales, real estate development, and HOA management. These interviews will assist me to assess the viability of policy recommendations and conclusions drawn from this literature review and my regression analysis.

Section B: Homeowners Association Effects on Home Value

Existing empirical research suggests that in many localities there may be positive or negative relationships exerted by location within a HOA on real property value. In this literature review, I will describe the statistical regression models employed by the studies. I will review the results of past studies that found the influence of location within a HOA may be mitigated by controlling for other explanatory variables; within each HOA is a unique combination of the style of housing stock with varying size and types of features, varying size or number of homes within the HOA, different governance structures, type and quantity of restrictive covenants, and level of homeowner involvement. I will conclude by offering insight into my regression analysis, as well as ideas for future research studies to develop a better understanding how location in a HOA influences property value.

Regression Functional Form – The Hedonic Pricing Model

The hedonic pricing model seems to be the regression model of choice in the existing literature for studies that seek to explain determinants of property value. A hedonic pricing model allows for the total value or cost of a property to be broken down into values of its individual characteristics (Sirmans, Macpherson and Zietz, 2005). As such, since no two real properties may have the exact same features, location, or market sale qualities, hedonic regression allows comparison of real property holding all else constant. Table 1 in the appendix summarizes the studies referenced in this literature review and demonstrates the hedonic pricing model is used in every study. The dependent variable in all hedonic regression studies is home price. Some studies do nothing to alter this value, while others take the natural log of the price before running the regression; and others further take the natural log of some of the explanatory variables. Logging the dependent variable allows the regression coefficients to reflect percentages of the overall property value relative to the property's price range. Logging some of the independent

variables as well and regressing with a logged dependent variable allows the regression coefficients to reflect elasticity, or the ratio of change between the dependent and independent variable. All the studies are examples of causal-comparative studies, such that data is not from controlled experiments.

While numerous hedonic regression studies explore factors that influence real property values, the majority focus on measuring the effects of a home's physical characteristics, such as the square footage, parcel size or number of bedrooms, or the effects of a home's geographic location in proximity to certain community amenities on property value. Sirmans, Macpherson and Zietz (2005) examined 125 peer-reviewed studies of hedonic pricing models used to explain real property prices and ranked key explanatory variables of statistical significance of influence on a home's selling price. Only two studies used explanatory variables that could be elements of HOAs; the presence of deed restrictions is used as an explanatory variable in one, and another study used whether the home is located within a gated community as an explanatory variable. Relationship to selling prices in both cases proved positive at the 90 percent confidence level, though the magnitude of the statistical significance was not noted as this is an aggregate study that merely ranked use of variables. The examination by Sirmans, Macpherson and Zietz noted zero studies that explored the impact of the existence of a Homeowners Association on selling price. In the next section I will review more recent literature that specifically seeks to determine a HOAs impact on property value.

Controlling for Property Characteristics

Studies suggest both positive and null relationships between HOAs and home selling prices based on examination of property characteristics and whether a property is located within a HOA. Agan and Tabarrok (2005) hypothesized that HOAs raise property values in a study of 11,979 home sales from local multiple listings service data spanning 2000 - 2004 within five zip

codes in Prince William County, Virginia. Upon initial review of the descriptive statistics, properties in HOAs appeared to sell for nearly 20 percent less than their non-HOA counterparts. They controlled for property characteristic variables such as the age of the home, parcel size, number of bedrooms and bathrooms, number of fireplaces, number of stories, and architectural style, and a HOA dummy variable. Holding property characteristics constant, their examination found that houses within HOAs sell for on average for 5.4 percent more than houses that are not within HOAs. Based on the mean sales price in the sample, the price premium for association membership amounted to about $14,000.

Rogers (2006) also found that homes within HOAs sell at higher prices while controlling for property characteristics. He examined 1,487 home sales from Greeley, Colorado in the year 2000 with data obtained from the Weld County Assessor's office to see if the presence of a HOA influenced sales price. He controlled for square footage, parcel size, basement size, garage size, number of bedroom and bathrooms, number of fireplaces, a central air conditioning dummy, age of the home, and a HOA dummy variable. He added variables for proximity to neighborhood features such as distance to feedlots, parks, and lakes. Holding all else constant, homes within HOAs sold for about three percent more than homes not in associations. Based on the mean home price in Greeley, this equated to approximately $4,450.

Groves (2008) concluded that the net effect of a HOA on home value is essentially zero, and attributes that to the homogeneous qualities of homes in HOAs in his study. Groves' dataset comprised 124,878 home sales spanning a 10-year period. Groves created the dataset by merging Geographic Information Systems data with home sales data in Saint Louis County, Missouri from 1992-2001, and manually collected association data. He controlled for square footage, parcel size, architectural style, number of bedroom and bathrooms, age of the home, spatial location variables, and a HOA dummy variable. The most commonly occurring architectural style in the

dataset resulted in a decrease in value of about eight percent when located in an association. The least commonly occurring architectural styles resulted in a 19% increase in value when located in an association, however these occurrences were rare. Groves speculated this is due to housing stock within HOAs in Saint Louis County being newer and developers not varying their floorplans and elevations much between developments.

Controlling for Homeowners Association Size

Meltzer and Cheung (2014) sought to find out how homeowners associations were capitalized into property values and studied 588,133 home sales from 1960 - 2008 in 49 of 67 counties in the state of Florida using county assessor data. They controlled for property characteristic variables such as the age of the home, number of buildings per parcel, parcel size, square footage, vacancy status, and improved quality, a HOA dummy, sales year dummies, and added HOA characteristic variables like association formation year, number of housing units in the association. They found that houses within HOAs sell on average for five percent more than houses that are not within HOAs. Based on the mean sales price in the sample, the price premium for association membership amounts to about $9,852. They also concluded that properties in large HOAs sell for less than those in small HOAs. Each additional parcel over the mean number of 450 reduced the selling price by $22. In large associations of over 1,000 homes, properties suffer a decline in value over $10,000 compared to their smaller HOA counterparts. They suspect this is because homeowner perception may be that larger HOAs are less exclusive, or the disparity might be due to varying property ages within larger HOAs that were developed over time.

Radetskiy, Spahr, and Sunderman (2015) also considered HOA size in their study of 4,422 homes sales from Shelby County, Tennessee. They considered various property characteristic variables such as square footage, property age, parcel size, architectural style, number of bedrooms and bathrooms. They too factored dummy variables for small, medium and

large communities, and dummy variables for several HOA amenities such as an entry gate, swimming pool, tennis courts and lakes. Their analysis revealed that medium sized HOA communities yielded the highest price premium. Smaller communities sold for $21,849 more, medium communities sold for $33,775 more, and large communities sold for $22,068 more than their non-HOA counterparts. They surmise this result reflected that smaller gated communities have fewer members among whom amenity costs could be shared, and that in larger HOA community residents must travel farther from home to use amenities.

Controlling for Homeowners Association Financial and Governance Factors

Angjellari-Dajci, Cebula, Boylan, Izard, and Gresham (2015) sought to determine if HOA dues were capitalized into home prices and arrived at a similar positive conclusion, with financial elements from the HOA added to their variable mix. They analyzed 123,431 home sales from Duval County, Florida with information obtained from the county assessor's office for years 2002 – 2013, controlling for square footage, number of bedroom and bathrooms, a waterfront location dummy, age of the home, age of the home squared, number of stories, the amount of annual property tax, annual tax rate, amount of association dues, zip code dummies, and a HOA dummy variable. They found that for each one dollar charged in annual HOA fees, the average home value increases by about $1.80.

Langbien and Spotswood-Bright (2005) came to the opposite conclusion for their study in Alexandria, Virginia, finding a negative relationship between HOA dues and value. They assembled data from six HOAs in Alexandra, Virginia, measuring a total of 195 properties within the communities. Sales data was obtained from the MLS and they administered their own survey to HOA managers and board members to gauge community involvement, governance structure, number of services included in the HOA management fee, and number of restrictive covenants, with responses measured in a Likert scale. Along with those variables, they controlled for the

previous year assessed property value, monthly association fee, square footage of the unit, and number of units in the association. They concluded that higher association fees lead to a lower selling price. A one percent increase in the monthly fee reduces average property values by 0.2 percent. In this study that equates to a $2.50 increase in the monthly fee results in a $277 drop in the sales value of the unit. They theorize that HOAs tend to overcharge residents for services provided thus lowering property values. One element to note with this study, however, is that they did not compare data from properties not located within a HOA. Additionally, the sample size with only 195 observations may be too small to extrapolate findings to a broader context.

Section B: Conclusion

Of the empirical studies reviewed, the majority suggest that HOAs do increase the value of homes between 3 percent to 5.4 percent (Agan and Tabarrok, 2005, Rogers, 2006, Meltzer and Cheung, 2014, Radetskiy, Spahr, and Sunderman, 2015, and Angjellari-Dajci, Cebula, Boylan, Izard, and Gresham, 2015). Yet some studies suggest no relationship to value (Groves, 2008) or a negative relationship to home value (Langbien and Spotswood-Bright, 2005) of -0.2 percent for every one percent increase in monthly dues. The true nature of this relationship is not yet determined in the literature. Further I found no studies conducted west of the Rocky Mountains. I surmise there may be regional differences based on local property preferences and demographics. Proportionally, nearly half the population of Florida lives in a HOA (United States Census, 2017 and Treese, 2016), which is far more than California. Florida is also home to a large retirement population (Meltzer and Cheung, 2014) so results from those studies may not be extrapolated to other areas. Hence, further investigation is needed on the west coast.

A variety of quantitative factors were used to explain the significance of HOAs to home price, including a property's physical characteristics and location characteristics, HOA size, HOA amenities, HOA financial characteristics, and HOA governance and engagement. Applying these

lessons to my quantitative study, I will incorporate similar elements available in the dataset procured from the MetroList Multiple Listing Service for properties located in Sacramento, California that sold in the fourth quarter of 2016. The MetroList dataset is rich with HOA financial characteristics, property characteristics, location characteristics, and market characteristics.

CHAPTER THREE: QUANTITATIVE ANALYSIS

Regression Analysis Model: Hedonic Regression

Via this quantitative analysis, I seek to determine the effects of a HOA on home value. The results of this section of my study will help me ascertain if HOAs are exacerbating the housing affordability crisis in Sacramento County. According to my review of academic literature of empirical data-based regression studies of HOA influence on selling price in the previous section, the control variables best used for this type of hedonic regression fall into broad categories: HOA Characteristics, Property Characteristics, Location Characteristics, and Market Characteristics. This section will describe the model I will employ in this study. As such, the framework for my regression is based on the following theoretical model:

$$\textit{Selling Price} = f(\textit{HOA Characteristics}_i, \textit{Property Characteristics}_i, \textit{Location Characteristics}_i, \textit{Market Characteristics}_i)$$

where,

$\textit{HOA Characteristics}_i$ = f (Dummy if Codes Covenants and Restrictions; Dummy if located in a HOA; the amount of annual dues paid; Dummy if a retirement community; dummy interaction variables for each zip code and located in a HOA; and dummy interaction variables for each zip code and amount of annual dues paid),

$\textit{Property Characteristics}_i$ = f (Number of bedrooms; parcel size in square footage; log of parcel size; Dummies if property has a den, loft, granny unit, central air, central heat, block framing, downstairs bedroom, downstairs bathroom, owned solar, leased solar, full dual pane windows, stucco siding, wood siding, brick siding, stone siding, lap siding, vinyl siding, metal siding, slab foundation, horse property, granite counters, stone counters, laminate counters, kitchen island, pantry closet, dog run, fenced backyard, fenced front yard, dual sinks in the master bathroom, multiple shower heads in the master bathroom, walk-in closet, pergola, shed, gazebo, workshop, a built-in pool on the lot, an above-ground pool on the lot, recreational vehicle access, recreational vehicle storage, boat storage, recreational vehicle restrictions, possible recreational vehicle access, composition roof, tile roof, shake roof, flat roof, tar and gravel roof, metal roof, other type of roof, a basement, a-frame architectural style, colonial style, contemporary style, cottage style, Mediterranean style, ranch style, Spanish style, Tudor style, Victorian style, other architectural style, a septic system, is a fixer-upper property; number of garage spaces; number of carport spaces; square footage; square footage squared; log of square footage; number of full bathrooms; number of half bathrooms; number of fireplaces; number of stories; log of stories; age of the home; age squared),

Location Characteristics$_i$ = f (Dummies if home is located on a Cul-de-Sac, located on a corner, has a waterfront lot, is close to public transportation, has a special view; Dummies for 51 different zip codes within Sacramento County), and

Market Characteristics$_i$ = f (Dummies for selling month in September 2016, October 2016, November 2016, December 2016; Dummy if property has a Notice of Default; Dummy if property is bank-owned; Dummy if property is a short sale)

A table illustrating the descriptions of the dependent variable, each independent variable, and the expected effect on the dependent variable is shown below. Variables that are omitted from the regression to be used as baselines are noted. I will address the transformed squared and logged variables in the next section.

Table 1: Variable Descriptions and Expected Effect on Selling Price

Variable name	Variable description	Expected Effect
DEPENDENT VARIABLE		
SELLING_PRICE	Equals the home's selling price in dollars	
HOA CHARACTISTICS		
HOA_DUMMY	Equals one if property is within a Homeowners Association	P
CCR_DUMMY	Equals one if property has Codes Covenants and Restrictions	?
HOA_DUES_ANNUAL	Annual association dues in dollars	P
RETIREMENT_COMM_DUMMY	Equals one if association only permits residents over the age of 55	P
HOA DUMMY / ZIP CODE INTERACTIONS	Interaction between the presence of a HOA in each zip code	?
HOA DUES AMOUNT / ZIP INTERACTIONS	Interaction between the amount of annual HOA dues in each zip code	?
PROPERTY CHARACTERISTICS		
BEDROOMS	Number of home's bedrooms	P
PARCEL_SF	Size of parcel in square feet	P
DEN_DUMMY	Equals one if the home has a den	?
LOFT_DUMMY	Equals one if the home has a loft	?
GRANNY_DUMMY	Equals one if the home has a granny flat	P
GARAGE_SPACES	Number of home's garage spaces	P
CARPORT_SPACES	Number of home's carport spaces	N
CAIR_DUMMY	Equals one if the home has central air	P
SQ_FOOTAGE	Number of home's living space square footage	P
HALF_BATH	Number of home's half bathrooms	P
FULL_BATHS	Number of home's full bathrooms	P
BLOCK_FRAME_DUMMY	Equals one if home has a block frame	N

DWNST_BED_DUMMY	Equals one if home has a downstairs bedroom	N
DWNST_FULLBATH_DUMMY	Equals one if home has a downstairs full bathroom	N
OWNED_SOLAR_DUMMY	Equals one if home has owned photovoltaic solar system	P
LEASED_SOLAR_DUMMY	Equals one if home has a leased photovoltaic solar system	N
DP_FULL_DUMMY	Equals one if home has all dual pane windows	P
STUCCO_DUMMY	Equals one if home has stucco siding	P
WOOD_SIDING_DUMMY	Equals one if home has wood siding	N
BRICK_SIDING_DUMMY	Equals one if home has brick siding	P
STONE_SIDING_DUMMY	Equals one if home has stone siding	P
LAP_SIDING_DUMMY	Equals one if home has lap siding	P
VINYL_SIDING_DUMMY	Equals one if home has vinyl siding	N
METAL_SIDING_DUMMY	Equals one if home has metal siding (omitted baseline)	n/a
SLAB_DUMMY	Equals one if home has a slab foundation	N
CHEAT_DUMMY	Equals one if home has central heat	P
HORSE_PROP_DUMMY	Equals one if home is a horse property	P
GRANITE_COUNTER_DUMMY	Equals one if home has granite kitchen counters	P
KITCHEN_ISLAND_DUMMY	Equals one if home has a kitchen island	P
COUNTER_STONE_DUMMY	Equals one if home has stone kitchen counters	P
COUNTER_LAMINATE_DUMMY	Equals one if home has laminate counters	N
PANTRY_CLOSET_DUMMY	Equals one if home has a pantry closet	P
DOG_RUN_DUMMY	Equals one if home has a dog run	?
FENCED_FRONT_DUMMY	Equals one if front yard is fenced	N
FENCED_BACK_DUMMY	Equals one if back yard is fenced	?
MBA_DOUBLE_SINK_DUMMY	Equals one if master bathroom has double sinks	P
MULTIPLE_SHOWER_HEAD_DUMMY	Equals one if master bathroom has multiple shower heads	P
WALKIN_DUMMY	Equals one if master bedroom has walk-in closet	P
FIREPLACES	Number of fireplaces in the home	P
PERGOLA_DUMMY	Equals one if there is a pergola on the parcel	P
SHED_DUMMY	Equals one if there is a shed on the parcel	P
GAZEBO_DUMMY	Equals one if there is a gazebo on the parcel	P
WORKSHOP_DUMMY	Equals one if there is a separate workshop on the parcel	P
OWN_BUILTIN_POOL_DUMMY	Equals one if the home has a built-in pool on the parcel	P
OWN_ABV_GR_POOL_DUMMY	Equals one if the home has an above-ground pool on the parcel	N
RV_ACCESS_DUMMY	Equals one if the home has RV Access	P
RV_STORAGE_DUMMY	Equals one if the home has RV Storage	P

BOAT_STORAGE_DUMMY	Equals one if the home has Boat Storage	P
RV_RESTRICTIONS_DUMMY	Equals one if the community has RV Restrictions	N
POSS_RV_ACCESS_DUMMY	Equals one if the property may be reconfigured to have RV Access	?
COMP_ROOF_DUMMY	Equals one if the home has a composition shingle roof	?
TILE_ROOF_DUMMY	Equals one if the home has a tile roof	P
SHAKE_ROOF_DUMMY	Equals one if the home has a wood shake roof	P
FLAT_ROOF_DUMMY	Equals one of the home has a flat roof	N
TAR_ROOF_DUMMY	Equals one if the home has a tar and gravel roof	N
METAL_ROOF_DUMMY	Equals one if the home has a metal roof	P
OTHER_ROOF_DUMMY	Equals one if the home has other style of roof (omitted baseline)	n/a
BASEMENT_DUMMY	Equals one if the home has any type of basement	P
STORIES	Number of stories / levels in the home	N
AFRAME_DUMMY	Equals one if the home is A-frame architectural style	?
COLONIAL_DUMMY	Equals one if the home is colonial architectural style	P
CONTEMPO_DUMMY	Equals one if the home is contemporary architectural style	P
COTTAGE_DUMMY	Equals one if the home is cottage/bungalow architectural style	P
MEDITERRANEAN_DUMMY	Equals one if the home is mediterranean architectural style	P
RANCH_DUMMY	Equals one if the home is ranch architectural style	N
SPANISH_DUMMY	Equals one if the home is spanish style	P
TUDOR_DUMMY	Equals one if the home is tudor style	P
VICTORIAN_DUMMY	Equals one if the home is victorian style	P
OTHER_ARCH_DUMMY	Equals one if "other" architectural style (omitted baseline)	n/a
SEPTIC_DUMMY	Equals one if the home has a septic sewer system	N
FIXER_DUMMY	Equals one if the home is described as a fixer-upper	N
AGE	Age of home in years (2016 - year built)	?
LOCATION CHARACTERISTICS		
ZIP CODE DUMMIES	Equals one if property is located in specified zip code	?
CULDESAC_DUMMY	Equals one if home is situated in a cul-de-sac	P
CORNER_DUMMY	Equals one if home is situated on a corner	?
WATERFRONT_DUMMY	Equals one if home is situated on a waterfront lot	P

PUBLIC_TRANS_DUMMY	Equals one if home is located near public transportation	?
SPEC_VIEW_DUMMY	Equals one if home has a special view	P
MARKET CHARACTERISTICS		
SEPT_COE_DUMMY	Equals one if close of escrow was in September 2016	P
OCT_COE_DUMMY	Equals one if close of escrow was in October 2016	P
NOV_COE_DUMMY	Equals one if close of escrow was in November 2016	P
DEC_COE_DUMMY	Equals one if close of escrow was in December 2016 (omitted baseline)	n/a
NOD_DUMMY	Equals one if the home has a recorded notice of default, pre-foreclosure	N
REO_DUMMY	Equals one if the property is bank-owned	N
SS_DUMMY	Equals one if the property is underwater and is a short sale	N

*Data for all variables was obtained from Metrolist Multiple Listing Service for sales closed between September 1, 2016 – December 31, 2016.

HOA Characteristics

I expect that the presence of a HOA will have an overall positive influence on selling price. I also expect that the dues charged by the HOA will have an overall positive effect on selling price**.** HOAs tend to regulate and elevate the condition of properties within them and I think this elevated standard contributes to the positive effect on selling price. HOAs also provide goods and services that I believe residents value and for which they are willing to pay a premium. Sorted by individual zip code, the effects of a HOA on value in differing areas will likely be both positive and negative.

Property Characteristics

I expect that Property Characteristics will have both positive and negative effects on selling price. With over 70 variables in this category, an exhaustive narrative of each variable as to the expected influence on value is not practical for this paper. For example, I believe that the presence of energy-saving features, such as dual pane windows and owned solar arrays, will affect selling price positively as those features are desirable and may save homeowners money on

their monthly utility bills. Given the high temperatures during the summer months, I believe central air conditioning will positively influence value. Built-in swimming pools should positively affect value; however, I believe that an above-ground swimming pool may negatively affect value since they can be costly to remove. Other backyard enhancements, such as gazebos or pergolas, should also positively influence value. I believe that interior cosmetic enhancements, such as granite or stone countertops in the kitchen, and dual sinks or multiple shower heads in the master bathroom will positively influence value. Conversely, I expect that the presence of multiple stories will have a negative effect on price as homeowners do not have to worry about moving heavy objects upstairs, or the potential for additional costs of heating and cooling second or third levels. I expect that certain architectural features of homes may be more desirable and translate into increased selling prices. As such I think that more common ranch-style homes will likely sell for less, while homes with distinctive architecture such as Tudor or Victorian-style will sell for more.

Location Characteristics

I expect that Location Characteristics will have positive and negative effects on selling price. The adage in real estate is "location location location" – and I believe zip codes will influence selling prices as some areas are considered to be more or less desirable than others. These variables are used to ensure that location is held constant throughout the regression, and zip codes results will not be reported in the tables in this paper. I believe that location on a dead-end cul-de-sac lot will also have a positive influence on selling price. Additionally, I believe that a home situated on a waterfront lot, or a on a lot with a special view will positively impact selling price. I am not sure what the impact location near public transportation may be, since in Sacramento County public transportation is not as widely used as it may be in other major metropolitan areas.

Market Characteristics

I expect that Market Characteristics will have positive and negative effects on selling price. The month of sale within this regression may play a role to influence selling price, as homes may sell for higher or lower prices as weather and seasons change, school begins and ends, or with the holidays. Further, I believe that other market dynamics such as if the property is a short sale, has received a pre-foreclosure notice of default, or is bank-owned may have a negative effect on selling price. Homes that are short sale, pre-foreclosure, or bank-owned tend to have more deferred maintenance as the current or previous homeowner may have faced a financial hardship and subsequently fallen behind on property care.

Dataset

In the previous I section reviewed the model I will employ in this study. This section will describe the dataset, the manner data was collected, transformation of quadratic and logged variables, and the potential for issues like multicollinearity and heteroskedasticity.

The dataset is provided by the Metrolist Multiple Listings Service (MLS) and contains all single-family home sales within Sacramento County closing between September 1, 2016 through December 31, 2016. Selling price, the dependent variable for this study, is a proxy for the value of the home. Transactions recorded in the MLS reflect arm's-length sales listed and sold on the open real estate market and should be a solid measure of the property value at the time the transaction recorded. The independent variables classify the characteristics of the property's HOA, features of the structures and parcels, the property location, and market data. These variables were entered into the MLS system by individual licensed real estate agents, and deemed reliable, though it is possible that some data entry error occurred. The sample size has 6,165 total observations, which should be large enough to absorb the effects of data entry errors as they will likely be somewhat even distributed throughout the variables.

Within the 6,165 observations within the dataset, there are 877 homes that are located within a HOA, and 5,288 homes not located within a HOA. This ratio is less than the statewide figures which indicate nearly a quarter of Californians live within a HOA, though this dataset does not account for other property types. Condominiums, townhomes, or other attached properties that may be governed by HOAs are not included in this analysis. If included, they would likely bring the Sacramento County area ratio closer to that of the state. The mean price of a home in a HOA is $415,025 while the mean price of a home not in a HOA is $336,040 The standard deviation of homes in an HOA is $169,706 and is $142,797 for homes not in a HOA, which indicates the spread of properties within a HOA generally encompasses a wider price range. Examining these data, and without analysis that holds all variables constant, it seems that is a major difference between the value of homes located within HOAs and those not within HOAs. How much of that value difference is possibly caused by the HOA itself cannot be determined by a review of the descriptive statistics, and regression analysis will help tease out what, if any, effect HOAs have on home value. Figure 2 below illustrates the mean and standard deviation for observations within the dataset.

Figure 3 below illustrates the differences in mean price for homes in the dataset located in a HOA, not in a HOA, and for all observations.

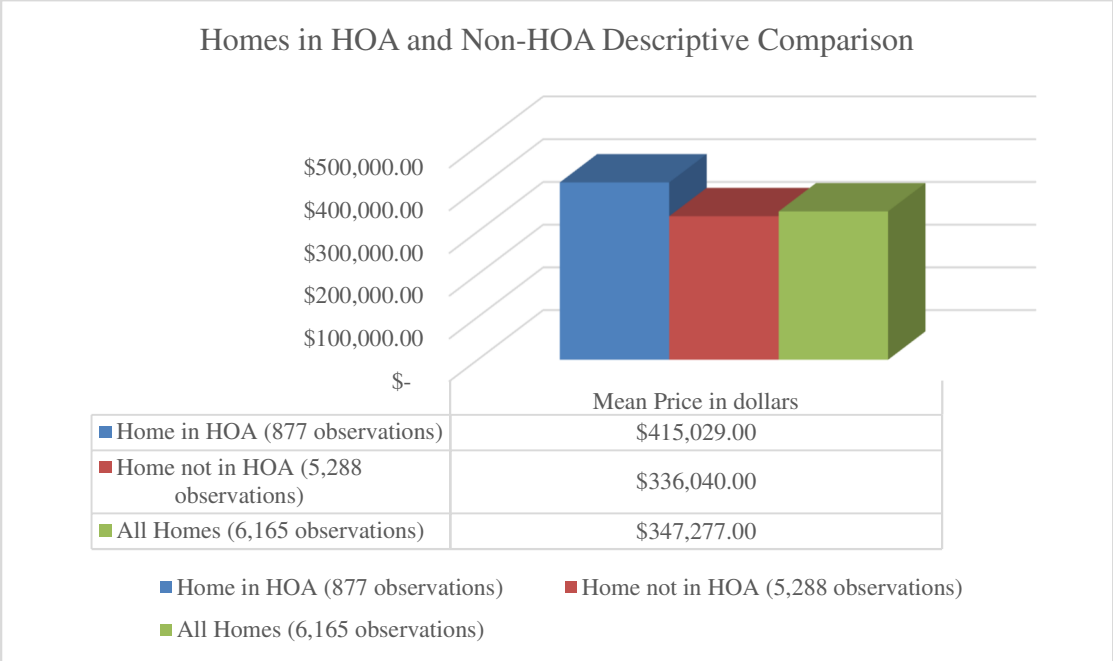


Table 2 provides the descriptive statistics for all the variables in this regression.

Table 2: Descriptive Statistics. N = 6,165

Variable name	Mean	Standard Deviation	Minimum	Maximum
DEPENDENT VARIABLE				
SELLING_PRICE	$347,277	$149,480	$40,000	$2,900,000
LOG_SELLING_PRICE	12.68	0.370	10.59	14.88
HOA CHARACTISTICS				
HOA_DUMMY	0.142	0.349	0	1
CCR_DUMMY	0.849	0.357	0	1
HOA_DUES_ANNUAL	$180.32	$564.35	0	$6,192.00
RETIREMENT_COMM_DUMMY	0.01	0.098	0	1
PROPERTY CHARACTERISTICS				
BEDROOMS	3.328	0.753	0	8
PARCEL_SF	9869.26	22982.89	523	522720
LOG_PARCEL_SF	8.884	0.572	6.260	13.17
DEN_DUMMY	0.059	0.235	0	1
LOFT_DUMMY	0.027	0.161	0	1
GRANNY_DUMMY	0.005	0.067	0	1
GARAGE_SPACES	1.92	0.799	0	10

CARPORT_SPACES	0.066	0.405	0	10
CAIR_DUMMY	0.950	0.218	0	1
SQ_FOOTAGE	1721.99	661.99	432	9213
SQ_FOOTAGE_SQUARED	3403407	3119258	186624	8.49E+07
LOG_SQ_FOOTAGE	7.39	0.351	6.07	9.13
HALF_BATH	0.216	0.416	0	3
FULL_BATHS	2.050	0.632	0	6
BLOCK_FRAME_DUMMY	0.011	0.103	0	1
DWNST_BED_DUMMY	0.172	0.377	0	1
DWNST_FULLBATH_DUMMY	0.175	0.380	0	1
OWNED_SOLAR_DUMMY	0.063	0.079	0	1
LEASED_SOLAR_DUMMY	0.008	0.086	0	1
DP_FULL_DUMMY	0.659	0.474	0	1
STUCCO_DUMMY	0.690	0.462	0	1
WOOD_SIDING_DUMMY	0.316	0.465	0	1
BRICK_SIDING_DUMMY	0.096	0.294	0	1
STONE_SIDING_DUMMY	0.043	0.203	0	1
LAP_SIDING_DUMMY	0.123	0.329	0	1
VINYL_SIDING_DUMMY	0.044	0.204	0	1
METAL_SIDING_DUMMY	0.030	0.206	0	1
SLAB_DUMMY	0.732	0.443	0	1
CHEAT_DUMMY	0.948	0.223	0	1
HORSE_PROP_DUMMY	0.011	0.105	0	1
GRANITE_COUNTER_DUMMY	0.342	0.474	0	1
KITCHEN_ISLAND_DUMMY	0.145	0.352	0	1
COUNTER_STONE_DUMMY	0.036	0.186	0	1
COUNTER_LAMINATE_DUMMY	0.069	0.253	0	1
PANTRY_CLOSET_DUMMY	0.165	0.371	0	1
DOG_RUN_DUMMY	0.037	0.188	0	1
FENCED_FRONT_DUMMY	0.044	0.206	0	1
FENCED_BACK_DUMMY	0.587	0.492	0	1
MBA_DOUBLE_SINK_DUMMY	0.338	0.473	0	1
MULTIPLE_SHOWER_HEAD_DUMMY	0.008	0.092	0	1
WALKIN_DUMMY	0.260	0.439	0	1
FIREPLACES	0.854	0.545	0	5
PERGOLA_DUMMY	0.024	0.152	0	1
SHED_DUMMY	0.141	0.348	0	1
GAZEBO_DUMMY	0.017	0.129	0	1
WORKSHOP_DUMMY	0.024	0.152	0	1
OWN_BUILTIN_POOL_DUMMY	0.115	0.319	0	1
OWN_ABV_GR_POOL_DUMMY	0.005	0.072	0	1
RV_ACCESS_DUMMY	0.097	0.296	0	1

RV_STORAGE_DUMMY	0.044	0.206	0	1
BOAT_STORAGE_DUMMY	0.054	0.227	0	1
RV_RESTRICTIONS_DUMMY	0.012	0.108	0	1
POSS_RV_ACCESS_DUMMY	0.128	0.335	0	1
COMP_ROOF_DUMMY	0.612	0.487	0	1
TILE_ROOF_DUMMY	0.332	0.471	0	1
SHAKE_ROOF_DUMMY	0.023	0.151	0	1
FLAT_ROOF_DUMMY	0.010	0.101	0	1
TAR_ROOF_DUMMY	0.002	0.042	0	1
METAL_ROOF_DUMMY	0.012	0.108	0	1
OTHER_ROOF_DUMMY	0.001	0.082	0	1
BASEMENT_DUMMY	0.013	0.112	0	1
STORIES	1.301	0.473	1	4
LOG_STORIES	0.207	0.322	0	1.386
AFRAME_DUMMY	0.054	0.225	0	1
COLONIAL_DUMMY	0.006	0.076	0	1
CONTEMPO_DUMMY	0.220	0.415	0	1
COTTAGE_DUMMY	0.061	0.239	0	1
MEDITERRANEAN_DUMMY	0.034	0.181	0	1
RANCH_DUMMY	0.254	0.435	0	1
SPANISH_DUMMY	0.010	0.097	0	1
TUDOR_DUMMY	0.008	0.091	0	1
VICTORIAN_DUMMY	0.001	0.034	0	1
OTHER_ARCH_DUMMY	0.353	0.511	0	1
SEPTIC_DUMMY	0.015	0.121	0	1
FIXER_DUMMY	0.022	0.144	0	1
AGE	37.82	22.89	0	122
AGE_SQUARED	1954.16	2091.52	0	14884
LOCATION CHARACTERISTICS				
ZIP CODE DUMMIES			0	1
CULDESAC_DUMMY	0.111	0.314	0	1
CORNER_DUMMY	0.103	0.303	0	1
WATERFRONT_DUMMY	0.003	0.052	0	1
PUBLIC_TRANS_DUMMY	0.149	0.356	0	1
SPEC_VIEW_DUMMY	0.023	0.150	0	1
MARKET CHARACTERISTICS				
SEPT_COE_DUMMY	0.268	0.443	0	1
OCT_COE_DUMMY	0.254	0.435	0	1
NOV_COE_DUMMY	0.235	0.424	0	1
DEC_COE_DUMMY	0.243	0.429	0	1
NOD_DUMMY	0.008	0.092	0	1
REO_DUMMY	0.025	0.156	0	1

SS_DUMMY	0.022	0.175	0	1

Regression Analysis

In the previous section I described the data used in the regression analysis. In this section I will discuss the transformation of certain variables into quadratic and logged variables. I will review the three functional forms tested in the regression analysis to determine the most appropriate one. Employing the model noted in Section IV, I regressed the variables using a Linear-Linear form, a Log-Linear form, and a Log-Log form. I also tested for issues such as multicollinearity and heteroskedasticity, which are described in detail.

Quadratic Variables

Some variables are squared to capture the potential for non-linear relationships between them and the selling price. For example, I expect square footage to have a positive effect on price such that a larger property will generally have a higher selling price than a smaller one. However, I theorize that square footage in smaller homes may be disproportionately valuable to that of larger homes and the quadratic variable for square footage squared may better fit this dynamic. Additionally, the variable for the age of the home is also squared. I believe that newer properties may be more valuable and desirable, then as homes age the features become obsolete and less valuable, however once homes become vintage they may become more valuable and desirable once again. As such, a quadratic variable may better demonstrate this age dynamic.

Logged Variables

Some variables are logged to attempt to correct for skewed data and transform the variables to have more normal distributions. I have taken the log of the dependent variable, selling price. When a logged dependent variable is measured against a non-logged independent variable, a one-unit change in the independent variable equates to 100 times the coefficient, allowing for calculation of the percent of change of the dependent variable. I also logged a few

independent variables. I transformed parcel square footage, home square footage, and the number of stories to log variables. In these instances, when measure those variables' effect on the dependent variable selling price, the regression allows for measurement of elasticity, such that a percentage change in the independent variable equates to a percentage change in the dependent variable. Transforming the data in this way is the suggested functional form in the existing literature and will allow for an enriched interpretation of the regression results.

Functional Forms

I tested three ordinary least squares (OLS) functional forms: Linear-Linear, Log-Linear, and Log-Log. In the Linear-Linear form, none of the variables are transformed and all remain in their original states. In the Log-Linear form, the dependent variable Selling Price is logged, while the independent variables remain untransformed. In the Log-Log form, the dependent variable Selling Price and three independent variables are logged: Square Footage, Parcel Square Footage, and Stories. The functional form of choice per the literature review of similar hedonic-based regression studies was Log-Lin, and based on testing of the models, Log-Lin produced the most statistically significant and intuitive results.

The Lin-Lin regression model produced 33 variables with statistical significance, not including the zip code and interaction variables. Log-Lin produced 39 variables with statistical significance. Log-Log produced 37 statistically significant variables, which itself is fewer significant results despite adding three more logged variables not present in the Lin-Lin and Log-Lin regressions. Overall the number and ratio of statistically significant variables was highest in Log-Lin. This result is consistent with the findings of my review of empirical literature. Table 3 illustrates the regression results for the Log-Lin functional form.

Table 3: Functional Forms

	Log-Lin
Number of Observations	6165
R-Squared	0.869

Root MSE	0.13585	
Significant Results	39	
Variable name	**Coefficient**	**Clustered Robust Standard Error**
Constant	11.721	0.051
HOA CHARACTISTICS		
HOA_DUMMY ∞	2.097***	0.334
HOA_DUMMY	0.020***	0.006
CCR_DUMMY	0.001	0.007
HOA_DUES_ANNUAL ∞	-0.658**	0.264
RETIREMENT_COMM_DUMMY	0.062***	0.022
PROPERTY CHARACTERISTICS		
BEDROOMS	-0.013*	0.008
PARCEL_SF	1.91E-06***	4.80E-07
LOG_PARCEL_SF	n/a	n/a
DEN_DUMMY	0.005	0.006
LOFT_DUMMY	-0.0364***	0.008
GRANNY_DUMMY	-0.027	0.031
GARAGE_SPACES	0.03***	0.005
CARPORT_SPACES	0.002	0.007
CAIR_DUMMY	0.092***	0.023
SQ_FOOTAGE	0.0004***	0.00004
SQ_FOOTAGE_SQUARED	-3.37E-08***	8.72E-09
LOG_SQ_FOOTAGE	n/a	n/a
HALF_BATH	0.021**	0.009
FULL_BATHS	0.038***	0.009
BLOCK_FRAME_DUMMY	-0.032	0.029
DWNST_BED_DUMMY	-0.003	0.014
DWNST_FULLBATH_DUMMY	-0.0003	0.013
OWNED_SOLAR_DUMMY	0.009	0.026
LEASED_SOLAR_DUMMY	0.010	0.018
DP_FULL_DUMMY	0.020***	0.006
STUCCO_DUMMY	0.003	0.006
WOOD_SIDING_DUMMY	-0.002	0.005
BRICK_SIDING_DUMMY	0.019***	0.006
STONE_SIDING_DUMMY	0.015	0.009
LAP_SIDING_DUMMY	0.005	0.007
VINYL_SIDING_DUMMY	-0.013	0.012
SLAB_DUMMY	-0.015*	0.008
CHEAT_DUMMY	0.031	0.019
HORSE_PROP_DUMMY	0.023	0.027
GRANITE_COUNTER_DUMMY	0.025***	0.004
KITCHEN_ISLAND_DUMMY	-0.0007	0.004
COUNTER_STONE_DUMMY	0.062***	0.013

COUNTER_LAMINATE_DUMMY	-0.043***	0.008
PANTRY_CLOSET_DUMMY	-0.001	0.005
DOG_RUN_DUMMY	0.014*	0.007
FENCED_FRONT_DUMMY	-0.030	0.022
FENCED_BACK_DUMMY	0.002	0.004
MBA_DOUBLE_SINK_DUMMY	0.026***	0.007
MULTIPLE_SHOWER_HEAD_DUMMY	0.027	0.024
WALKIN_DUMMY	0.007*	0.004
FIREPLACES	0.032***	0.006
PERGOLA_DUMMY	0.014*	0.008
SHED_DUMMY	0.006	0.005
GAZEBO_DUMMY	0.023	0.014
WORKSHOP_DUMMY	0.052***	0.017
OWN_BUILTIN_POOL_DUMMY	0.053***	0.007
OWN_ABV_GR_POOL_DUMMY	0.023	0.021
RV_ACCESS_DUMMY	0.016**	0.007
RV_STORAGE_DUMMY	0.001	0.011
BOAT_STORAGE_DUMMY	0.011	0.01
RV_RESTRICTIONS_DUMMY	-0.002	0.016
POSS_RV_ACCESS_DUMMY	0.004	0.007
COMP_ROOF_DUMMY	-0.017	0.015
TILE_ROOF_DUMMY	-0.017	0.016
SHAKE_ROOF_DUMMY	0.041	0.025
FLAT_ROOF_DUMMY	-0.011	0.035
TAR_ROOF_DUMMY	0.148**	0.066
METAL_ROOF_DUMMY	0.032	0.028
BASEMENT_DUMMY	0.075**	0.031
STORIES	-0.071***	0.009
LOG_STORIES	n/a	n/a
AFRAME_DUMMY	-0.020	0.008
COLONIAL_DUMMY	-0.0001	0.030
CONTEMPO_DUMMY	0.003	0.003
COTTAGE_DUMMY	0.023	0.018
MEDITERRANEAN_DUMMY	-0.0003	0.011
RANCH_DUMMY	0.004	0.005
SPANISH_DUMMY	-0.011	0.019
TUDOR_DUMMY	0.107***	0.038
VICTORIAN_DUMMY	0.061	0.058
SEPTIC_DUMMY	0.139***	0.034
FIXER_DUMMY	-0.168***	0.023
AGE	-0.004***	0.001
AGE_SQUARED	0.00003***	8.33E-06
LOCATION CHARACTERISTICS		
CULDESAC_DUMMY	0.008*	0.005
CORNER_DUMMY	0.001	0.006
WATERFRONT_DUMMY	0.195***	0.043
PUBLIC_TRANS_DUMMY	-0.004	0.007
SPEC_VIEW_DUMMY	0.025	0.016

MARKET CHARACTERISTICS		
OCT_COE_DUMMY	0.007*	0.004
NOV_COE_DUMMY	0.003	0.005
DEC_COE_DUMMY	0.007	0.004
NOD_DUMMY	-0.083***	0.028
REO_DUMMY	-0.163***	0.019
SS_DUMMY	-0.119***	0.016

∞ Indicates Dummy variable in context of interaction with Zip Code Dummies
***Indicates statistical significance with 99 percent confidence ($p < .01$)
**Indicates statistical significance with 95 percent confidence ($p < .05$)
*Indicates statistical significance with 90 percent confidence ($p < .10$)

Multicollinearity

Multicollinearity may exist and potentially interfere with regression results and lower statistical significance among variables if multiple variables are highly correlated with each other. One method to detect potential multicollinearity is to examine correlation between variables. Correlation coefficients above 0.8 are considered to have a high potential for multicollinearity. There are some large correlation scores in my regression. Most of these variables are statistically significant in the regression results. Another method to test for multicollinearity is to calculate the variance inflation factor (VIF) values. A high VIF value is greater than 5, and there are nine variables with high VIF values. Most of these variables are statistically significant despite having high VIF values. As such, in my regression I made no corrections for multicollinearity as it did not seem to impact the statistical significance of most the highly-correlated variables.

Heteroskedasticity

Heteroskedasticity is another potential issue with regression analysis. This occurs when the variability of sub-population of a variable is not equal across a range of values. This may bias the outcome of the results unless corrected in the regression model. I tested for signs of it using

the Breusch-Pagan/Cook-Weisberg Test, which squares the residuals of the variables to detect wide variances. The result of the test was near certain probability at 99 percent confidence of the presence of Heteroskedasticity. To correct for heteroskedasticity, I ran the regression clustering the data by zip code and using clustered robust standard errors. As such this is noted on the variable tables.

Regression Results

This regression analysis sought to determine if HOAs influence home value while holding other variables constant. The regression coefficients for the Log-Linear regression are interpreted to mean that a one-unit change in the independent variable would equate to a 100 percent change in its coefficient as an effect on the dependent variable selling price. As such, a variable with a coefficient of -0.01 equates to a decrease of 1 percent per one unit increase in the variable. This final section will detail the significant regression findings and outline the findings for variables with the most statistically significant positive or negative influence. I then will discuss potential limitations of the study and conclude by offering potential public policy considerations and suggestions for future research on this topic.

Significant Findings

Table 6 below outlines the variables of the highest statistical significance in the Log-Lin Functional Form regression. The HOA Dummy variable is statistically significant with over 99 percent confidence to have a positive impact on home value. Interesting, the HOA Annual Dues variable is statistically significant with over 95 percent confidence to have a negative overall impact on home values. In order to determine the overall effect of the presence of a HOA in the dataset, I ran a separate regression using the HOA Dummy and controlling for all of the other variables and excluded the interaction variables between the HOA Dummy variable and zip codes, and HOA Annual Dues Dummy and Zip Codes. That regression reveals that homes in

HOAs sell for approximately 1.96 percent more than non-HOA counterparts, holding all factors constant. As it relates to the mean home price in Sacramento County in the dataset, that would equate to an increase of approximately $6,806. I will discuss the differing effect by zip code in the Interaction Terms section.

There are several other highly statistically significant variables contributing both positively and negatively to home values. The magnitude of positive and negative impact differs significantly. Variables that are significant with at least 90 percent confidence and have a positive effect on value in descending order are if a home is situated on a waterfront lot at 19.5 percent, if the home has a tar and gravel roof at 14.8 percent, has a septic system at 13.9 percent, has Tudor style architecture at 10.7 percent, has central air conditioning at 9.1 percent, has a basement at 7.5 percent, is in a retirement community at 6.2 percent, has stone kitchen countertops at 6.2 percent, has a built-in swimming pool at 5.3 percent, has a detached workshop at 5.2 percent, each full bathroom at 3.8 percent per bathroom, each fireplace at 3.2 percent per fireplace, each garage space at 3 percent per space, has double sinks in the master bathroom at 2.6 percent, has granite kitchen counters at 2.5 percent, each half bathroom at 2.1 percent per bathroom, has full dual pane windows at 2 percent, has brick siding at 1.9 percent, and has recreational vehicle access at 1.6 percent, has a dog run at 1.4 percent, has a pergola at 1.4 percent, being located in a cul-de-sac at 0.8 percent, and has a walk-in closet in the master bedroom at 0.7 percent.. Variables that are significant with at least 90 percent confidence and have a negative effect on value in ascending order are if the home is a fixer-upper at -16.8 percent, if a bank foreclosure at -16.3 percent, if a short sale at -11.9 percent, if there is a notice of default at -8.3 percent, if the home has multiple stories at -7.1 percent per story above one, has laminate countertops at -4.3 percent, has a loft at -3.6 percent, has A-Frame architecture at -2 percent, if the home is on a slab

foundation at -1.5 percent, and the number of bedrooms a home has at -1.3 percent for each bedroom.

The quadratic variables for the age of the home squared and square footage squared are highly statistically significant as well with 99 percent confidence. At zero years of age, a new home loses 0.4 percent of its value with each additional year of age. This value is not constant, and as such the quadratic illustrates that after a peak, the value increases 0.003 percent each year thereafter. The opposite slope is present for square footage. At zero square feet, each additional square foot adds .044 percent of value. Again, this value is not constant, and after a peak, the value decreases .000003 percent for each square foot. These numbers are small, so to put this is more relatable perspective, for each 100 square feet, a home gains 4.4 percent value, and after a peak, the value decreases, .0003 percent for each additional 100 square feet.

Table 4: Variables of Highest Magnitude, Per Log-Lin Functional Form ($p < 0.10$)

Variable	Coefficient	Clustered Robust Std. Errors	t	P>t	90% Conf. Interval	
HOA_DUMMY ∞	2.097	0.334	6.270	0.000	1.538	2.656
WATERFRONT_DUMMY	0.195	0.043	4.500	0.000	0.122	0.267
TAR_ROOF_DUMMY	0.148	0.066	2.250	0.029	0.038	0.259
SEPTIC_DUMMY	0.139	0.034	4.120	0.000	0.082	0.195
TUDOR_DUMMY	0.107	0.038	2.800	0.007	0.043	0.171
CAIR_DUMMY	0.092	0.023	3.990	0.000	0.053	0.130
BASEMENT_DUMMY	0.075	0.031	2.410	0.019	0.023	0.127
RETIREMENT_COMM_DUMMY	0.062	0.022	2.860	0.006	0.026	0.098
COUNTER_STONE_DUMMY	0.062	0.013	4.850	0.000	0.040	0.083
OWN_BUILTIN_POOL_DUMMY	0.053	0.006	8.220	0.000	0.042	0.064
WORKSHOP_DUMMY	0.052	0.017	3.100	0.003	0.024	0.080
FULL_BATHS	0.038	0.009	4.000	0.000	0.022	0.054
FIREPLACES	0.032	0.006	5.750	0.000	0.023	0.041
GARAGE_SPACES	0.030	0.005	6.060	0.000	0.022	0.038
MBA_DOUBLE_SINK_DUMMY	0.026	0.007	3.730	0.000	0.014	0.037
GRANITE_COUNTER_DUMMY	0.025	0.004	6.190	0.000	0.018	0.032
HALF_BATH	0.021	0.009	2.310	0.025	0.006	0.037
DP_FULL_DUMMY	0.020	0.006	3.130	0.003	0.009	0.031

HOA DUMMY (NOT INTERACTED)	0.020	0.006	3.150	0.002	0.009	0.030
BRICK_SIDING_DUMMY	0.019	0.006	3.080	0.003	0.008	0.029
RV_ACCESS_DUMMY	0.016	0.007	2.320	0.024	0.004	0.027
DOG_RUN_DUMMY	0.014	0.007	1.940	0.058	0.002	0.026
PERGOLA_DUMMY	0.014	0.008	1.680	0.098	0.000	0.027
CULDESAC_DUMMY	0.008	0.005	1.690	0.097	0.000	0.017
WALKIN_DUMMY	0.007	0.004	1.670	0.100	0.000	0.014
SQ_FOOTAGE	0.000	0.000	10.960	0.000	0.000	0.001
AGE_SQUARED	0.000	0.000	4.160	0.000	0.000	0.000
PARCEL_SF	0.000	0.000	3.970	0.000	0.000	0.000
SQ_FOOTAGE_SQUARED	0.000	0.000	-3.870	0.000	0.000	0.000
AGE	-0.004	0.001	-5.930	0.000	-0.005	-0.003
BEDROOMS	-0.013	0.008	-1.670	0.100	-0.026	0.000
SLAB_DUMMY	-0.015	0.008	-1.910	0.061	-0.026	-0.002
AFRAME_DUMMY	-0.020	0.008	-2.430	0.018	-0.034	-0.006
LOFT_DUMMY	-0.036	0.008	-4.360	0.000	-0.054	-224605.000
COUNTER_LAMINATE_DUMMY	-0.043	0.008	-5.450	0.000	-0.056	-0.030
STORIES	-0.071	0.009	-7.930	0.000	-0.087	-0.056
NOD_DUMMY	-0.083	0.028	-2.940	0.005	-0.130	-0.036
SS_DUMMY	-0.119	0.016	-7.250	0.000	-0.146	-0.091
REO_DUMMY	-0.163	0.019	-8.400	0.000	-0.195	-0.130
FIXER_DUMMY	-0.168	0.023	-7.250	0.000	-0.207	-0.130
HOA_DUES_ANNUAL ∞	-0.658	0.264	-2.490	0.016	-1.100	-0.217

Interaction Terms for HOA Dummies and Annual Dues

Both the existence of a Homeowners Association and the amount of annual HOA dues dollars were highly statistically significant in the regression with 99 percent confidence and 95 percent confidence, respectively, when interacted with each zip code. To determine the localized effects of the presence of a HOA and the effects of the annual HOA dues dollars in different

areas, I interacted the variables for each zip code within Sacramento County separately with the presence of a HOA and with the Annual Dues. To determine the magnitude of the regression coefficients, I added the coefficient for each zip code interaction to the applicable regression HOA dummy variable, or to the HOA annual dues variable. Overall, the presence of a HOA and its dues influenced home value in 31 of 51 Sacramento zip codes

Table 5: Statistically Significant HOA and HOA Dues Zip Code Interactions

Variable	Coefficient	Clustered Robust Standard Error	T	P>|t|	90% Confidence	Interval
_cons	11.721	0.051	231.790	0.000	11.637	11.806
DUES95608	0.650	0.255	2.550	0.014	0.223	1.076
DUES95610	0.607	0.264	2.300	0.025	0.165	1.049
DUES95621	0.633	0.265	2.390	0.020	0.190	1.077
DUES95624	1.152	0.330	3.490	0.001	0.600	1.703
DUES95628	0.606	0.257	2.360	0.022	0.176	1.036
DUES95630	0.633	0.262	2.420	0.019	0.195	1.072
DUES95662	0.624	0.262	2.390	0.021	0.186	1.062
DUES95670	0.694	0.266	2.610	0.012	0.249	1.140
DUES95742	0.740	0.248	2.990	0.004	0.325	1.154
DUES95757	0.726	0.253	2.870	0.006	0.304	1.149
DUES95758	0.655	0.266	2.460	0.017	0.210	1.100
DUES95816	0.708	0.261	2.710	0.009	0.271	1.144
DUES95817	1.005	0.336	2.990	0.004	0.442	1.568
DUES95818	0.486	0.274	1.780	0.081	0.028	0.944
DUES95821	0.479	0.257	1.860	0.068	0.049	0.909
DUES95822	0.675	0.267	2.530	0.014	0.229	1.122
DUES95823	0.533	0.265	2.010	0.049	0.090	0.976
DUES95825	0.590	0.269	2.200	0.032	0.140	1.039
DUES95826	0.619	0.262	2.360	0.022	0.181	1.057
DUES95827	0.558	0.261	2.140	0.037	0.121	0.995
DUES95828	0.847	0.266	3.190	0.002	0.402	1.292
DUES95829	1.051	0.266	3.950	0.000	0.606	1.496
DUES95831	0.536	0.258	2.080	0.043	0.104	0.969
DUES95833	0.629	0.267	2.360	0.022	0.183	1.076
DUES95834	0.651	0.263	2.470	0.017	0.211	1.092
DUES95835	0.638	0.265	2.410	0.019	0.195	1.082
DUES95841	1.015	0.284	3.570	0.001	0.539	1.491
DUES95864	0.729	0.269	2.710	0.009	0.279	1.180
HOA95608	-2.142	0.347	-6.180	0.000	-2.723	-1.562

HOA95610	-2.118	0.330	-6.420	0.000	-2.670	-1.565
HOA95621	-2.153	0.333	-6.460	0.000	-2.710	-1.595
HOA95624	-2.664	0.311	-8.570	0.000	-3.184	-2.144
HOA95628	-2.087	0.337	-6.190	0.000	-2.651	-1.522
HOA95630	-2.063	0.335	-6.150	0.000	-2.624	-1.502
HOA95662	-2.068	0.335	-6.170	0.000	-2.629	-1.507
HOA95670	-2.045	0.332	-6.160	0.000	-2.600	-1.489
HOA95742	-2.263	0.355	-6.380	0.000	-2.857	-1.669
HOA95757	-2.168	0.342	-6.350	0.000	-2.740	-1.596
HOA95758	-2.056	0.334	-6.160	0.000	-2.614	-1.498
HOA95815	-1.510	0.369	-4.100	0.000	-2.127	-0.893
HOA95816	-2.033	0.327	-6.210	0.000	-2.581	-1.485
HOA95817	-2.380	0.380	-6.260	0.000	-3.016	-1.744
HOA95818	-1.826	0.326	-5.600	0.000	-2.372	-1.281
HOA95821	-2.067	0.358	-5.770	0.000	-2.666	-1.468
HOA95822	-2.086	0.342	-6.110	0.000	-2.658	-1.515
HOA95823	-2.000	0.332	-6.020	0.000	-2.556	-1.444
HOA95825	-1.578	0.331	-4.770	0.000	-2.131	-1.025
HOA95826	-2.058	0.335	-6.140	0.000	-2.619	-1.498
HOA95827	-2.096	0.341	-6.150	0.000	-2.666	-1.526
HOA95828	-2.828	0.336	-8.420	0.000	-3.389	-2.266
HOA95829	-2.670	0.348	-7.680	0.000	-3.252	-2.088
HOA95830	-1.739	0.328	-5.310	0.000	-2.287	-1.191
HOA95831	-1.881	0.334	-5.630	0.000	-2.441	-1.322
HOA95833	-1.973	0.334	-5.910	0.000	-2.532	-1.414
HOA95834	-2.080	0.335	-6.210	0.000	-2.641	-1.520
HOA95835	-2.073	0.336	-6.180	0.000	-2.634	-1.511
HOA95841	-2.057	0.334	-6.170	0.000	-2.615	-1.499
HOA95842	-1.607	0.329	-4.880	0.000	-2.158	-1.056
HOA95864	-2.054	0.349	-5.880	0.000	-2.639	-1.470

I added the coefficient for each zip code interaction to the applicable regression HOA dummy variable or to the HOA annual dues variable to calculate the localized effect. I then calculated a blended effect of a HOA and HOA annual dues by determining the average HOA fee paid in each zip code and multiplying that by the zip code HOA interaction coefficient to find the typical effect of fees in each zip code. Then I added that to the HOA interaction coefficient. I then took the dataset mean home price in each zip code and calculated the magnitude of overall HOA influence in dollars. This data is reflected in Table 6 below.

Table 6: Localized Effects by Zip Code

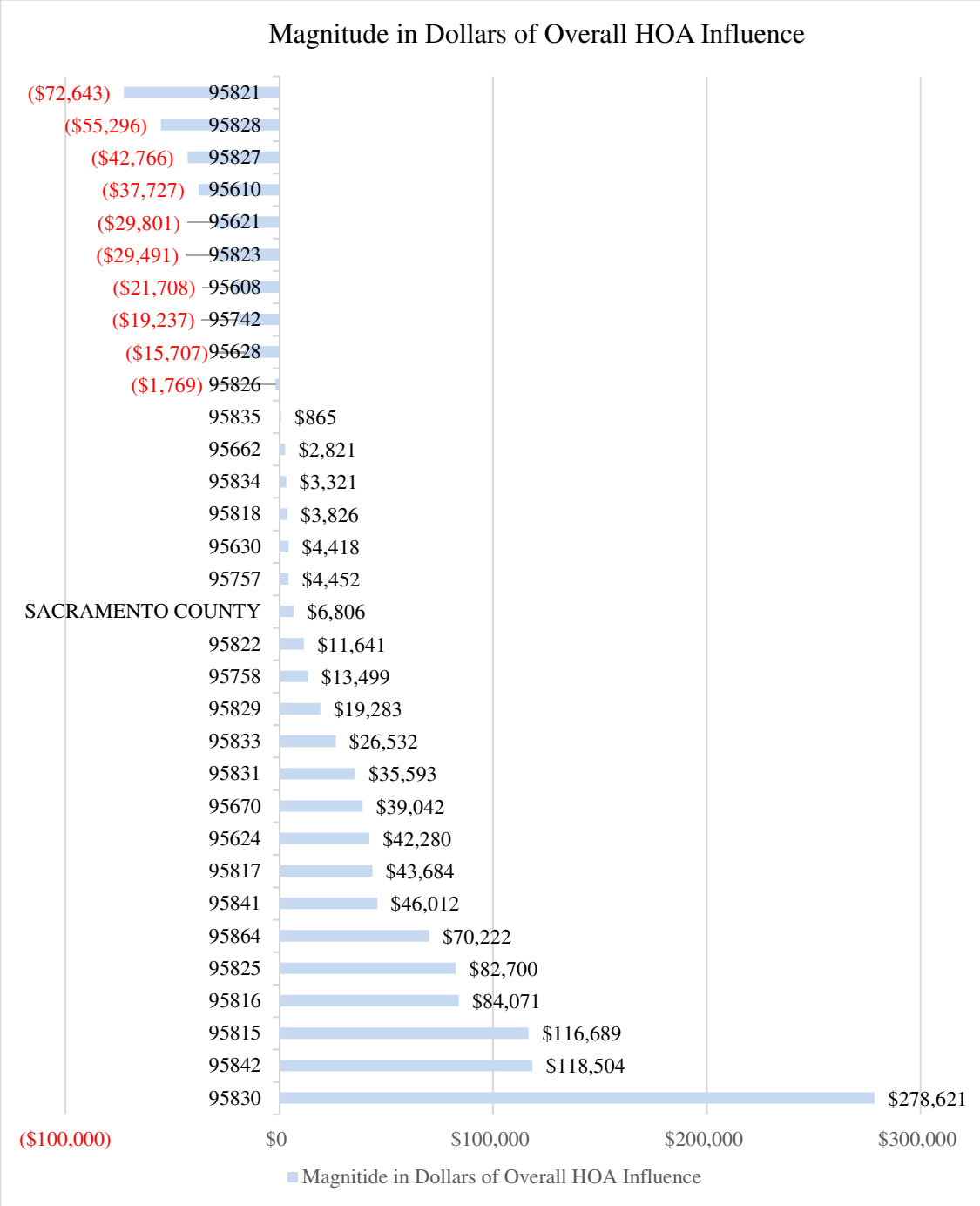
Zip Code	HOA influence	Dues Influence	Blended Influence	Mean Zip Code Price	Mean HOA Effect
ZIP95608	-0.046	-0.009	-0.053	$405,761.10	-$21,707.96
ZIP95610	-0.021	-0.051	-0.119	$318,167.70	-$37,726.53
ZIP95621	-0.056	-0.025	-0.107	$278,587.30	-$29,800.86
ZIP95624	-0.567	0.493	0.109	$388,848.80	$42,280.48
ZIP95628	0.010	-0.052	-0.036	$435,639.40	-$15,706.89
ZIP95630	0.034	-0.025	0.009	$506,588.90	$4,417.77
ZIP95662	0.029	-0.034	0.008	$362,732.70	$2,820.50
ZIP95670	0.052	0.036	0.123	$316,779.50	$39,041.78
ZIP95742	-0.166	0.081	-0.049	$393,987.50	-$19,236.78
ZIP95757	-0.071	0.068	0.010	$430,729.70	$4,451.82
ZIP95758	0.041	-0.003	0.039	$349,714.50	$13,498.76
ZIP95815	0.586	0.000	0.586	$199,037.50	$116,689.12
ZIP95816	0.064	0.049	0.158	$530,928.90	$84,070.79
ZIP95817	-0.284	0.347	0.141	$309,996.30	$43,684.23
ZIP95818	0.270	-0.172	0.007	$520,527.10	$3,825.74
ZIP95821	0.030	-0.179	-0.230	$315,881.00	-$72,643.29
ZIP95822	0.010	0.017	0.041	$282,678.40	$11,640.61
ZIP95823	0.096	-0.125	-0.120	$246,054.50	-$29,491.01
ZIP95825	0.519	-0.068	0.236	$350,062.40	$82,700.29
ZIP95826	0.038	-0.039	-0.006	$290,245.00	-$1,769.07
ZIP95827	0.000	-0.100	-0.152	$281,635.30	-$42,766.48
ZIP95828	-0.731	0.189	-0.210	$262,825.20	-$55,295.63
ZIP95829	-0.573	0.393	0.052	$367,496.40	$19,283.40
ZIP95830	0.357	0.000	0.357	$779,855.70	$278,621.39
ZIP95831	0.215	-0.122	0.084	$424,397.40	$35,592.81
ZIP95833	0.123	-0.029	0.089	$299,004.10	$26,532.43
ZIP95834	0.016	-0.007	0.010	$337,008.60	$3,321.16
ZIP95835	0.024	-0.020	0.002	$375,553.70	$865.02
ZIP95841	0.040	0.357	0.162	$284,683.10	$46,012.28
ZIP95842	0.490	0.000	0.490	$242,014.40	$118,504.05
ZIP95864	0.042	0.071	0.128	$549,469.20	$70,222.10

Upon a more granular analysis looking at each zip code individually for the effect of both HOAs and HOA dues, I am surprised to find that the results vary drastically area by area. These results are reflected in Figure 3 below. There are six combinations of results:

- A negative effect of a HOA and a negative effect of HOA dues. This is found in areas 95608, 95610, and 95621.

- A positive effect of a HOA and a positive effect of HOA dues. This is found in areas 95670, 95816, 95822, 95841, and 95864.
- A negative effect of a HOA, though a mitigating positive effect of HOA dues. This is found in areas 95624, 95742, 95757, 95817, 95828, and 95829.
- A positive effect of a HOA, though a mitigating negative effect of HOA dues. This is found in areas 95628, 95630, 95662, 95758, 95818, 95821, 95823, 95825, 95826, 95827, 95831, 95833, 95834, and 95835.
- A positive effect of a HOA, and no effect of dues. This is found in areas 95815, 95830, and 95842.
- There were zero combinations of no effect of a HOA, and either positive or negative effect of dues.
- No effect of HOA, and no effect of dues. These areas are 95615, 95626, 95632, 95638, 95639, 95641, 95655, 95660, 95673, 95683, 95690, 95693, 95811, 95814, 95819, 95820, 95824, 95832, 95838, and 95843.

Figure 4 below illustrates the effect on mean home price by zip code in ascending order.



Expected Effects Versus Actual Outcomes

There are many property characteristics that I expected would have a positive or negative effect that either had the opposite effect, or no statistical significance. For example, I expected that an increasing number of bedrooms would have a positive effect on value, though the regression proved the opposite is indeed true likely due to holding square footage constant. It was also surprising that most roofing material types do not influence value, and that only a tar and gravel roof influences value and to a huge magnitude at 14.8 percent as compared to the baseline of "other" roofing type. I expected a tar and gravel roof to have a negative impact on value, if any. It is also surprising to me that only brick siding influences by a 1.9 percent increase in value compared to the baseline metal siding, by while other types of siding have no impact by comparison. I also expected that an owned solar array would have a positive impact on value as compared to no owned solar array, where it is not statistically significant. Following that line of thinking, I expected that a leased solar array would have a negative effect on value as compared to no leased solar array, and it is also not statistically significant. Architectural style overall does not play a role in influencing value, except the Tudor style which exerts a positive influence of 10.7 percent compared with the other architectural style variable. I also incorrectly predicted that a septic system would have a negative impact on value, when instead it increases value by approximately 13.9 percent. Regarding HOA-related findings, I was correct that overall the presence of a HOA has a positive influence on value, though upon a more granular analysis looking at each zip code individually for the effect of both HOA and HOA dues, I am surprised to find that the results vary drastically area by area. My expected outcome that HOA dues would also positively influence value is not confirmed. The outcome is actually an overall negative effect, though again, this varies significantly by area.

Study Limitations and Opportunities for Future Research

The R-squared value for the Log-Linear regression is .8690, which means that the 86.90 percent of the changes in the dependent variable selling price could be explained by the variables in the regression. My regression results indicate that I can substantiate that HOAs do have a positive effect on selling price, holding all other factors constant. While this number is strong, there are still unknown variables that are not part of the regression that explain the remaining 13.1 percent variance. This regression may suffer from omitted variable bias.

A limitation on this study might be that data obtained from the Metrolist MLS may be somewhat limited in scope. It is possible that variables not collected by the MLS may impact home values as well. Factors such as proximity to neighborhood amenities, proximity to recreational opportunities, proximity to industrial zones, local school boundaries, crime rates, resident demographic factors, or other things may influence selling price.

Additionally, this regression represents a snapshot of the Sacramento real estate market dynamics limited to the four-month duration of the dataset. Expanding the dataset to cover a longer period may produce different results. During the final months of 2016, economic conditions were generally strong and real estate values increasing in Sacramento County. If the study covered a period from earlier years during the Great Recession, the influence of HOAs may differ. For example, HOA factors that may increase the overall expense or monthly payment of a home, such as monthly HOA dues, may decrease the desirability of a home within a HOA. More study may be needed to determine if HOAs still would still have a positive effect on home values in Sacramento under those economic conditions.

This dataset also only represents sales data from Sacramento County, and not the rest of the surrounding region. Incorporating data from the surrounding counties of Placer, El Dorado,

and Yolo may lend context to the effects of HOAs in Sacramento and inform policy decision-making in Sacramento County relative to regional dynamics.

CHAPTER FOUR: QUALITATIVE ANALYSIS -- INTERVIEWS

While a quantitative analysis is useful in that I can isolate regarding the influence of HOAs on home value while controlling for other variables in the dataset, it cannot fully identify what role the spillover effects of HOAs identified in the review of literature play in the overall ramifications of the expansion of HOAs in Sacramento County. As such, I employ interviews to complement the findings of the quantitative element of my research. In this chapter I describe my qualitative research methodology and synthesize interview results.

Research Design

I use a set of seven open-ended questions interview questions, some of which are multipart. The design of these questions is in two distinct styles: one to elicit the participant's unfettered opinion of HOAs or effect of HOAs, and the other to prompt them with some findings from my study for context and then ask a related question. The full set of questions is available in Appendix B. The interviews occurred with individual participants, one at a time, in a 30 to 60-minute session with each participant.

I formulated these interview questions to allow me to gauge the participants' attitudes relating to my regression findings of HOA influence on value and relating to the spillover effects noted in the literature review. I also wanted to test their perspectives relating to potential policy recommendations I formulated through my research. I sought and received an "exempt" approval to conduct my research with human subjects from the Sacramento State Institutional Research Board (IRB) in January 2018. Given the potential for personal and professional risks for the interview participants, the participants remain anonymous. I will maintain any interview materials, including consent forms, audio recordings, interview transcripts, or other notes in locked cabinets and in password protected folders for three years, after which time they will be destroyed.

I sought to interview people actively engaged in Sacramento-area housing policy, land use, real estate valuation, real estate sales, real estate development, and homeowner association management. A requirement is that interview participants be engaged in these professions, otherwise they were not invited to participate. I did not interview anyone from a sensitive population, such as minors under the age of 18. I did not offer any financial compensation, reward, or other incentives to participants in exchange for agreeing to an interview.

IRB Informed Consent Process

I conducted semi-structured in-person interviews with the participants individually. I solicited each participant via email explaining the intent and scope of the research, and upon initial agreement to participate, I emailed each participant a formal consent letter. The consent letter, available in Appendix C, further explained the scope of the research, explained the methods employed to keep their personal information confidential, and the timeline to retain and destroy the interview materials. Most participants signed and returned the consent letter in advance. For those who did not return the letter in advance, I brought a printed copy of the consent letter to the interview with me, reviewed it with the participants, and obtained their signatures prior to commencing the interview.

Sample

I interviewed a total of seven participants (n=7) and recorded the audio of the conversations. While a larger sample would have been more desirable, given my limited resources and time constraints as a student, seven was a manageable and practical number of people to interview. Most of the interview participants were people known to me. While obtaining a random sample of interview subjects would have been a more favorable data collection method, again given my limited resources and time, leveraging my own network of contacts was more practical for this research. These constraints did not hamper my ability to

interview a variety of professionals with a broad range of perspectives. I interviewed people from the following backgrounds:

- One elected official from an agency in Sacramento County;
- One appointed member of a Sacramento-area Community Planning Advisory Council (CPAC);
- One housing policy specialist from a Sacramento-area affordable housing advocacy organization;
- One licensed Sacramento-area real estate broker;
- One licensed Sacramento-area real estate appraiser;
- One high-level manager from a Sacramento-based real estate development firm; and
- One professional manager of multiple Sacramento-area HOAs.

Interview Results

As described in the previous sections of this chapter, I interviewed seven people engaged in real estate related professions in the Sacramento area. In this section, I synthesize and outline the results and categorize answers thematically. First, I will summarize how participants responded to questions regarding HOAs and specific policy interventions. Then I will identify the themes associated with the participants' responses. My main goals of the interviews were to gain a better understanding of people's impressions of HOAs in general, and then gauge their attitudes about the viability of different the different policy alternatives I drew from the literature.

Questions and Answers

(1) *Question 1: Do you think there are any ramifications, either positive or negative, of the proliferation of HOAs? If so, please describe them.*

My first question sought to gauge attitudes about the rapid expansion of HOAs and determine what their impressions are relating to HOAs, whether positive or negative. I illustrate

the responses in Figures 4 and 5 below. I did not prompt interviewees with potential positives or negatives and allowed them to describe their impressions, and then I coded their different responses. It was interesting to hear that several individual interviewees outlined the same traits as both positive and negative. For example, several interviewees mentioned HOAs having a lot of rules as being both a positive and a negative. Interviewees also noted exclusivity to be both a positive and a negative attribute of HOAs. Similarly, one participant noted higher values and the perception that HOAs are less affordable to be positive and negative. Answers to this question were all over the map by type of respondent, and no pattern emerged. I discuss the concept of housing choice, a common theme I coded from respondent answers, in the Themes section of this chapter, may partially explain these as both positive and negative ramifications of HOAs.

Figure 5: Positive Ramifications of Homeowners Associations

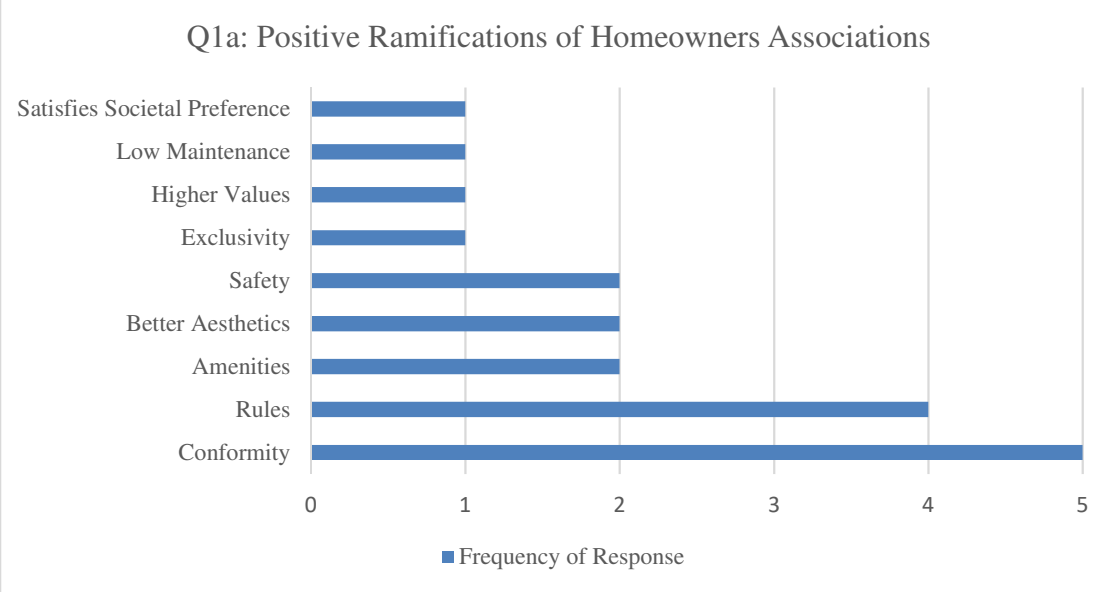
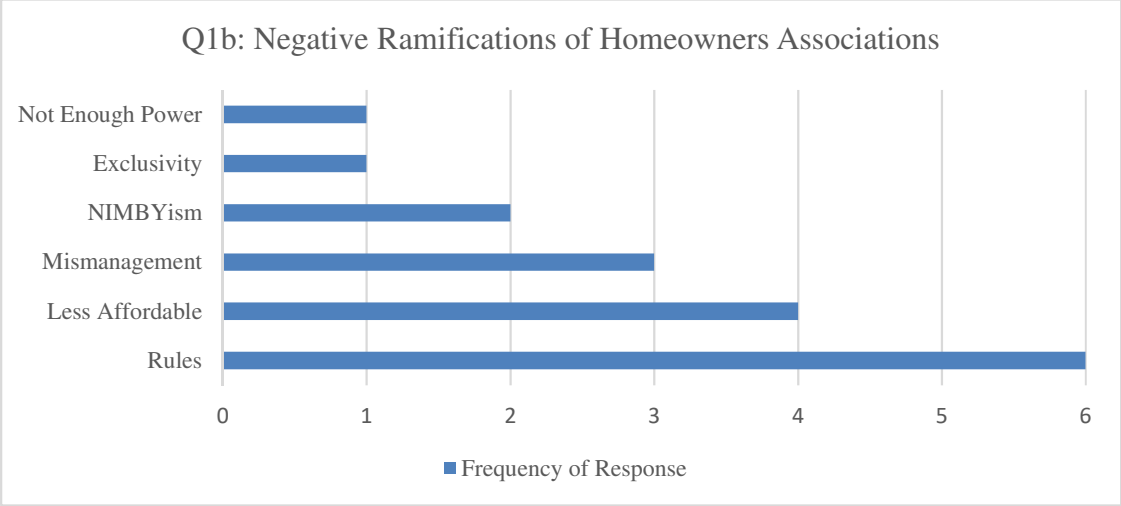


Figure 6: Negative Ramifications of Homeowners Associations

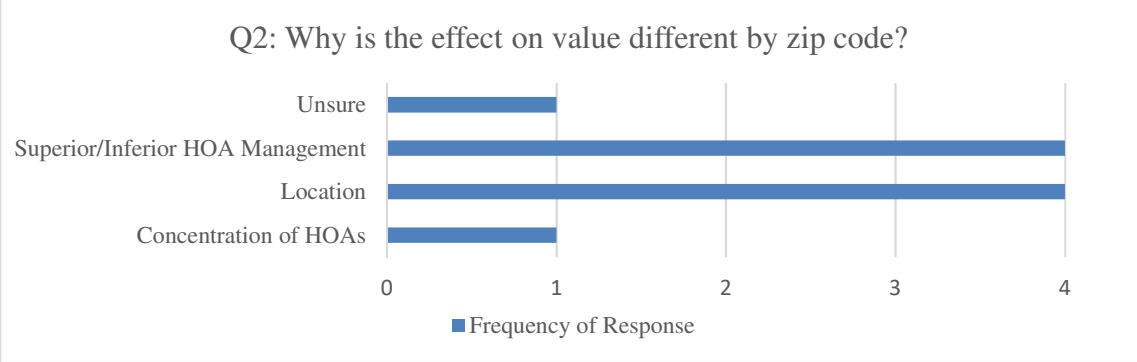


(2) Question 2: Why do you think that the effect of a HOA on value is different area-by-area?

In my second question, I prompted the interviewees with the results of the regression analysis and the magnitudes in dollars by each zip code, and then asked to what they attributed these differences in value? I illustrate the responses in Figure 6 below. One of the most frequently given answers was that the participant surmised that superior or inferior management of individual HOAs may be the cause of differences in value because perhaps one large HOA in the zip code may be lifting or pulling down value due to either prudent or reckless management practices. Interestingly, both the elected official and CPAC member speculate about mismanagement, and I surmise if by their political involvement they have specific insight into the politics of HOA management. HOA mismanagement was a common theme I will report in the Themes section of this chapter. The other most frequent responses given were that other area amenities, like proximity to the American River or neighborhood walkability, may be the cause of differences in value. Both the real estate agent and the appraiser, who are compensated during the sale of real estate, speculate location plays important role in differences in value, and my intuition is that area tends to be what their clients claim to be of primary importance. The importance of

location is also a common theme I will discuss later. Given the limitations of the Metrolist dataset, I controlled for neither of those factors in my regression. These responses may indicate opportunities for future research. Case studies of individual HOAs to examine the management practices, financial management, and board culture may be valuable to explore how administration may affect value. As well, adding more variables for proximity to area amenities or other types of underlying neighborhood factors may enrich the regression model in future quantitative analysis.

Figure 7: Why is the effect on value different by zip code?

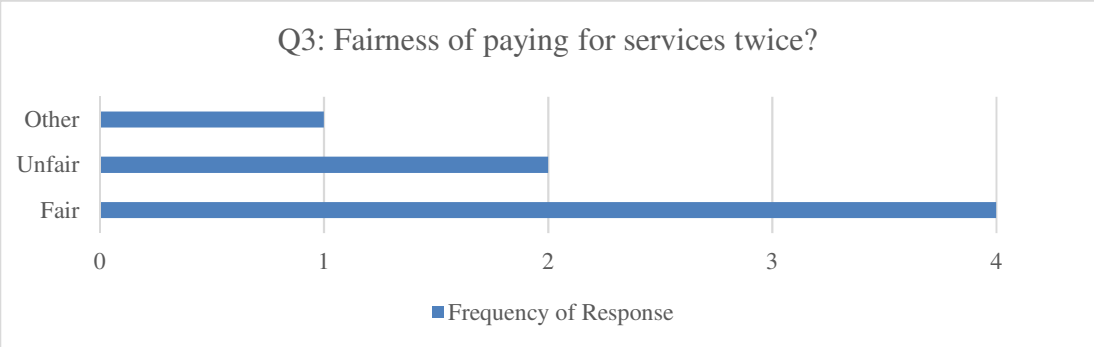


(3) *Question 3: Do you think effectively paying for services twice is fair to people who live in HOAs? Why or why not?*

In question 3, I prompted interviewees with the idea that residents who own homes located within HOAs pay for services provided by their HOA that the local city or county already provide. Local governments fund these services using taxpayer revenue, and thus residents of HOAs often pay for these services twice; once via dues, and again via paying taxes. I then asked if this is fair for those who live in HOAs. My intent with this question was to determine if the interviewees believe generally if paying both HOA dues and taxes imposes an undue burden on HOA residents. I illustrate the responses in Figure 7 below. The majority expressed that it is fair, mainly because people may choose whether to live in a HOA and pay additional expenses associated with living there. Interestingly, again the elected official and the CPAC member both

believed it was unfair, and I wonder if their mutual involvement in the political process influences their shared opinion. Housing choice is a common theme amongst responses. The one respondent who did answered neither fair nor unfair asserted that HOAs offer extra services to residents that local government do not replicate services, so HOA residents indeed do not pay twice.

Figure 8: Fairness of paying for services twice?



(4) *Question 4: Do you think that HOAs provide value to local government jurisdictions? Why or why not? Do you think that HOAs provide value to residents of the greater surrounding community? Why or why not?*

In question 4, I revealed to participants that in my research I discovered that local governments tend to spend less per capita providing services where there are high concentrations of HOAs. I then asked if they thought HOAs provide value to local government agencies, and then also asked if HOAs provide value to the greater surrounding community? The intent of this question was to elicit if interviewees believed that HOAs generally provide value knowing they may potentially offset local government expenses. I also was interested to see if interviewees felt there were any positive or negative spillover effects to the greater community. I illustrate the responses in Figures 8 and 9 below. Generally, interviewees thought that HOAs provide value to both governments and the greater surrounding community.

Figure 9: Do HOAs provide value to governments?

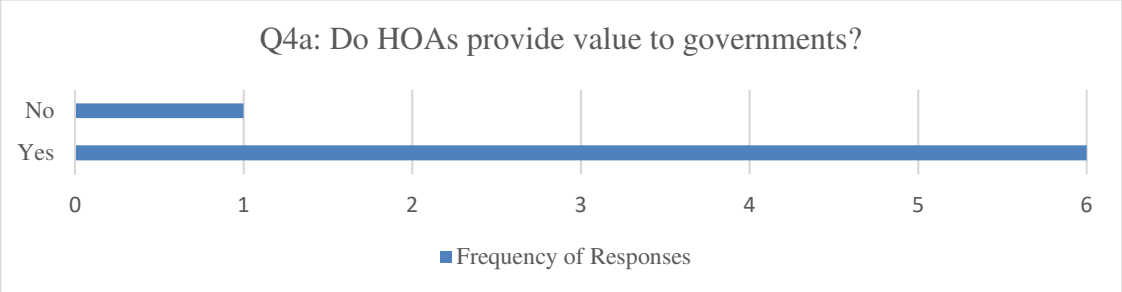
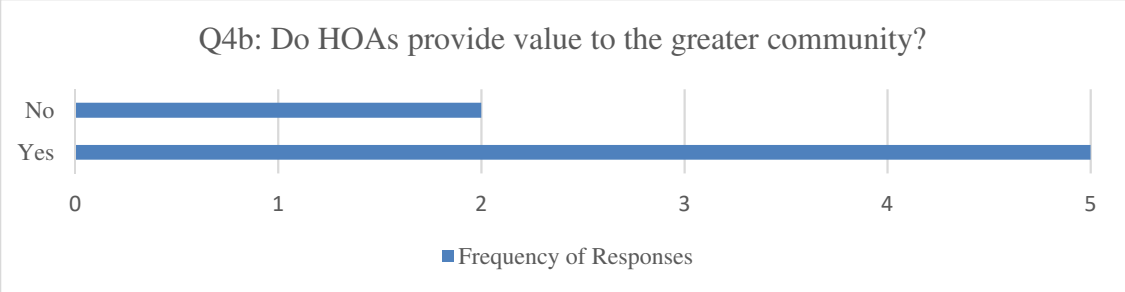


Figure 10: Do HOAs provide value to the greater community?



(5) *Question 5: Should the government sponsor some sort of downpayment or home buyer financial assistance for home buyers who purchase homes in HOAs? Should the government provide assistance for people to rent homes in HOAs? Why or why not?*

In question 5, I sought to test potential policy interventions, and asked participants if government should provide home buyer down payment assistance or rent assistance to those who want to purchase or rent homes in HOAs. I illustrate the responses in Figures 10 and 11 below. My impression is that governments employ these sorts of policy concepts in other contexts and given the HOAs overall positive effect on home value these concepts might be well-received in these applications. I was surprised to find that this was overall not a popular idea with the interviewees. Most expressed that there is plenty of housing choice for those who do, or do not, want to live in a HOA, so providing an incentive to purchase or rent in a HOA did not make sense. Again, the two interviewees who did believe that assistance is a good policy idea are the elected official and CPAC member, perhaps swayed in their opinion by the fact these are common types of policies in other applications. Another commonly expressed thought is that

HOA residents are more commonly affluent who did not need a financial subsidy. Affluence is another theme I will explore in the Themes section later in this chapter.

Figure 11: Should government provide downpayment assistance?

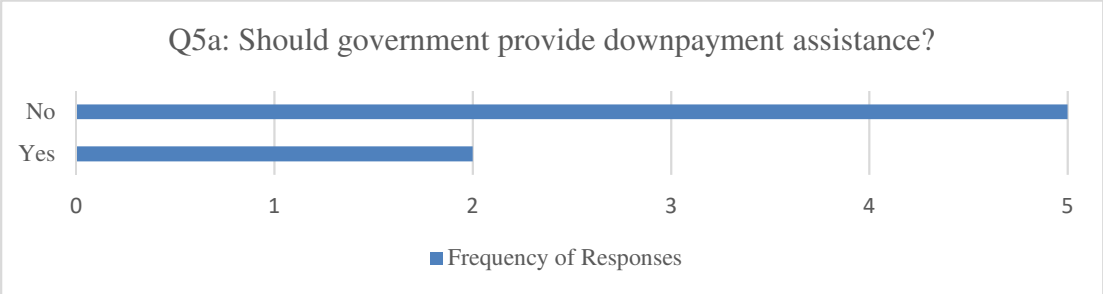
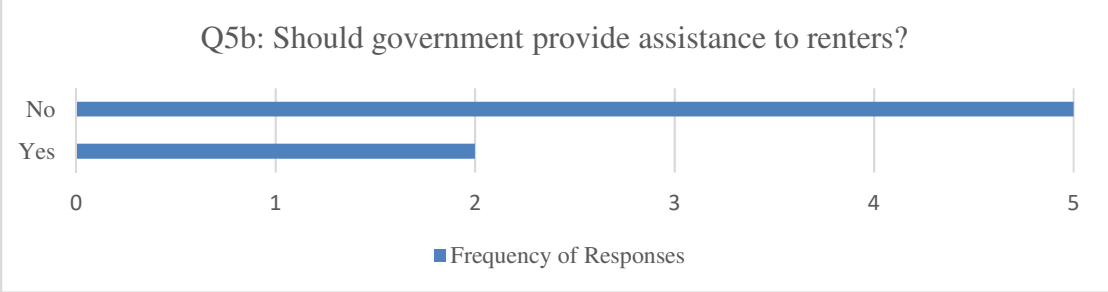


Figure 12: Should government provide assistance to renters?

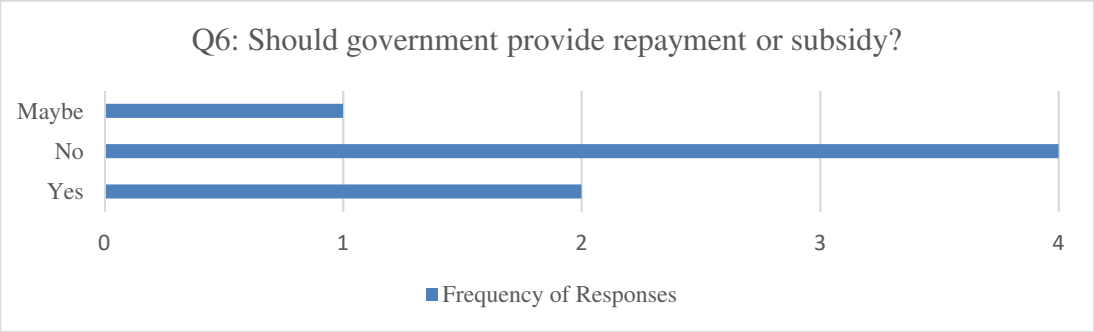


(6) *Question 6: Do you think that government should provide repayment or subsidy to HOAs for privately providing services that would be otherwise publicly provided? Why or why not?*

In question 6, I again sought to test a potential policy intervention. I prompted the interviewees with the information that outside of California, other states and local governments provide a repayment or subsidy to HOAs as compensation for privately providing services that local governments would otherwise provide be publicly provided, and then asked if California or any jurisdiction in Sacramento should provide a similar subsidy. I illustrate the responses in Figure 12 below. Most participants were not in favor of that solution. Most of these responses noted that with the progressive political climate in California, a subsidy would not be feasible. More than one interviewee also expressed concern that the public could perceive a subsidy as a transfer of more wealth to an already affluent group. While a subsidy was not specifically popular

amongst interviewees, many agreed that private service delivery was more efficient, and that is another theme I will explore in the next section of this chapter.

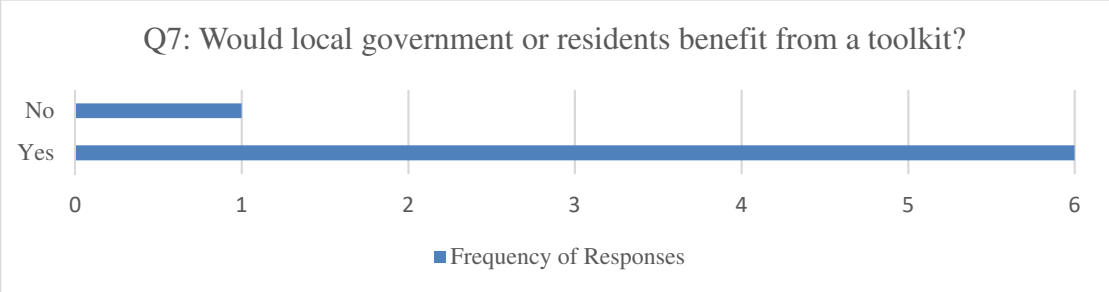
Figure 13: Should government provide repayment or subsidy?



(7) Question 7: Do you think that local governments and/or residents would benefit if a "toolkit" were created to make forming a HOA easier in existing neighborhoods?

In my final question 7, I again sought to test a potential policy intervention. I prompted the interviewees with the information that in my research I discovered developers create most new HOAs when planning and building new suburban communities, while few if any HOAs are formed in existing urban communities given the barriers that exist to formation. I then asked if local governments or residents would benefit if government or a non-profit created a "toolkit" to ease barriers to forming a HOA in existing neighborhoods. I illustrate the responses in Figure 13 below. The answer was overwhelmingly yes and feedback to that idea was resoundingly positive. The one respondent who did not think a toolkit is a promising idea expressed that urban areas are city laboratories where local governments should be able to offer the best services and a toolkit would not be a benefit. Most respondents expressed that a toolkit would be helpful because HOAs do bring value to residents and the greater community and they are very difficult to form. Most also added that even if there were not consensus amongst residents to form a HOA, the exercise of civic discourse and organizing would bring residents and communities together in a very positive way. Community unity is another theme I will explore in the next section.

Figure 14: Would local governments or residents benefit from a toolkit?



Themes

During my interviews, several common themes emerged from the interviewees responses. The most common themes are the efficiency of private service delivery, the importance of location, the potential for HOA mismanagement, housing choice, the importance of community unity, and affluence.

Theme One - Efficient Private Service Delivery

As Cheung (2008a, 2008b) and Cheung and Meltzer (2014) discovered through numerous studies, there is evidence to suggest that private supplementation of public services arose as a response to municipal budget constraints, and further suggests there is substitutability between HOAs and local public services. Many interview participants also opined that private services performed by HOAs are potentially more efficient than the manner local governments provide some services, although one asserted that HOAs provide services that are complement what government provides rather than act as a substitute.

- *"The more things that could be provided privately the better. Private service will always outdo government service. An HOA board is member-driven versus government driven."*
- *"I could see the county doing a subsidy for HOAs to provide substitute services, especially if developments were built outside of the main service area of the county. HOAs might actually be able to deliver those services more effectively than the county. It*

would save the county from having to try to deliver services outside of the typical and more dense areas."

- *"An HOA goes above and beyond with their services and that is not replicated by cities. Even though you do pay taxes, while paying those taxes provides community benefit for all, I do not think services of HOAs are a substitute for what the government provides. HOA services are provided in addition to what the local government provides."*

Theme Two - Location Matters

Several hedonic regression studies that I reviewed (Agan and Tabarrok, 2005, Rogers, 2006, Meltzer and Cheung, 2014, Radetskiy, Spahr, and Sunderman, 2015, Angjellari-Dajci, Cebula, Boylan, Izard, and Gresham, 2015, Groves, 2008, and Sirmans, Macpherson and Zietz, 2005) noted that location is an important control variable and affects home value. While I did control for zip codes in my regression analysis, I did not incorporate spatial factors such as proximity to the American River or school district boundaries into my theoretical model as the data was not readily available. One of the interviewee theories as to why the HOA influence on home value varied area by area is that something inherent about the location of zip code is just more desirable than other ones.

- *"That's just the old real estate question of location, location, location. The potential buyer or occupant of a HOA, when they are willing to pay the extra amount for those amenities, they probably have preferred zip codes and probably a different socio-economic background."*
- *"There are some single family detached developments where location plays a huge role in everything. Location drives price. Why are values different anywhere? Where is it located? What is nearby? What are the amenities? How are the schools? That stuff all probably impacts value more than anything."*

- *"If you look at areas with large established HOAs, those tend to be located in areas that are highly desirable themselves."*

Theme Three - HOA Mismanagement

One regression study by Langbien and Spotswood-Bright (2005) attempted to measure the impact of HOA governance factors on home value via data from their own survey to HOA managers and board members to gauge governance structure. The other interviewee theories as to why the HOA influence on home value varied area by area is that some HOAs are poorly managed and that has an overall impact on the effect on value in the given zip code. Interviewees also expressed concerns about providing subsidies to poorly managed HOAs.

- *"I would think a lot of the difference in values must be related to how the individual HOAs are managed. If two HOAs are side-by-side, and you have one that is professionally managed, has a board of directors that is stable, versus another HOA that has a lot of political in-fighting and has management that is erratic or a lot of turn-over of that management's staff, then those two communities will feel very different. There will be less continuity and more chaos. Management has got the be the biggest impact on the differences in property values. I would think all HOAs would be a positive impact."*
- *"Overall HOAs provide value to the greater community. I will add that the biggest thing is probably management. Management is the biggest impact. If a HOA is managed properly then it will provide the biggest value to the community. If it is not managed well it could be a cancer to the greater area."*
- *"There is a large local HOA in [my constituency] that was poorly managed. Due to that mismanagement, they damaged some of [my agency's infrastructure] that we had to pay significant costs to repair. HOAs can create additional layers that affect our service*

delivery. It can be a negative sometimes to have to deal with the HOA rather than individual constituents directly."

- *"I would hate to see a subsidy given to a HOA that is not efficiently managed. There would have to be a strict set of criteria for a HOA to receive a subsidy."*

Theme Four - Housing Choice

Housing choice was not a theme I found evident in the literature regarding HOAs. Many of the interview respondents noted a distinct difference in preferences among those who want or do not want to live in a HOA. They generally asserted that people of varying economic means and those with specific predilections have plenty of options in Sacramento between homes to purchase or rent both in and not in HOAs.

- *"People are making a conscious choice to live in a HOA. Assuming that conscious choice isn't disappearing? People do have enough choices in this area that are HOA/non-HOAs at this point, thankfully."*
- *"Some people make a cognitive decision to live in a HOA. Some people wouldn't have it any other way and deem living in a HOA as extremely desirable."*
- *"For many HOA residents it reflects what they want. If HOAs weren't important there would not be so many of them. HOAs meet a need. People want communities where neighbors do not park three cars in the front yard, crazy stuff happening, where there is less blight, where someone's grass is three feet tall. It helps satisfy that for those who want it."*
- *"People are choosing to purchase a home within those communities. I am a proponent of the government providing downpayment assistance, but I think it should be at the discretion of the home buyer to decide what type of home they want to apply that to."*

- *"Some people do not want anything to do with HOAs and do not want to deal with the rules."*

Theme Five - Community Unity

In my review of the literature, some research theorizes that HOAs are linked to a decrease civic engagement (Cashin, 2001, and Fu and Lin, 2014), and some studies assert that HOAs do not exert any influence on residents' civic engagement (Carlee, 2011, and Gordon, 2003). Interestingly, interviewees generally expressed that the exercise of forming a HOA in an existing community might increase civic engagement.

- *"HOAs seem to be a win-win in the right circumstances, a benefit to the community and reduces expenses to the government. Removing barriers to creating HOAs would help communities and potentially help the local government as well. I think many people would like to organize members of their community and even just bringing them together in the conversation of possibly forming a HOA would be a good thing."*
- *"Yes everyone would benefit from being more organized. People would benefit from thinking about the welfare of their neighbors. The exercise of forming a HOA would be a very unifying experience. People live in these parcel islands sometimes. It could be very powerful if birthed from the community on up, instead of imposed from the top down."*
- *"Helping communities come together can only be positive. We ask those in our communities to get out and meet your neighbors, get out and collaborate with each other. Most residents don't utilize the benefits of HOAs. There are too many agendas sometimes. It is sad that neighborhoods usually have a low percentage of homeowners participating in the community. Maybe taking the initiative to form one themselves would help engagement generally."*

Theme Six - Affluence

Scholars seem to agree that HOAs coincide with economic segregation, though some studies suggest that HOAs and their rules may exacerbate economic segregation (Boyack, 2017, Cashin, 2001, and Cheung and Meltzer 2014), while others claim segregation exists with or without HOAs (Carlee, 2011, and Le Goix, 2005). Several interview participants spoke of affluence and HOAs being an enclave for people of higher socio-economic means, which is similar to the economic segregation theme in the literature about HOAs. Interviewees seemed to think that people living or who want to live in HOAs are not in need of incentives to do.

- *"Government should not need to help affluent people buy homes in exclusive communities."*
- *"There are government downpayment assistance programs already, and I do not think people need to be rewarded to buy homes in HOAs. The benefit people get is what the HOA provides. There are so many other huge housing needs out there. HOA buyers are usually not first-time buyers. I do not want to give more advantage to people who do not need the advantage."*
- *"I do not think the target demographic for downpayment assistance or a subsidy would be people who want to live in a HOA community."*
- *"Some people want to pay more money for certain HOAs. I am guessing that the more affluent can afford to make the choice where to live and choose areas with better amenities and choose HOAs with better amenities."*
- *"I will say that that [my spouse] travels a lot for business, and many people outside of California are surprised to learn that we do not live in a gated community. Not just a regular HOA but specifically gated. In other parts of the county it seems socio-economic*

statuses are kept way more separate than here. Here we are way more liberal with things so in other states your outcomes would probably be a lot different."

Qualitative Analysis Conclusion

The responses from the qualitative interviews I performed are very enlightening. It seems that generally the respondents believe that while HOAs are imperfect entities, overall HOAs are a positive thing for the greater Sacramento region. Some of the interview responses are consistent with findings and themes in scholarly literature, such as the efficiency of private service delivery, the importance of location in as a determinant of home value, the potential for HOA mismanagement affecting value, and HOAs potentially being enclaves of the affluent. Other sentiments and themes, such as the importance of housing choice and potential for forming HOAs resulting in an increase in community engagement were not present in the literature. Interestingly, the interviews revealed a potential disconnect between the attitudes of those who are deeply involved in making policy decisions and the others, as the elected official and CPAC member frequently responded to my policy intervention ideas differently than the rest of the interviewees. My interviews also revealed opportunities for future research. Case studies for the management and financial practices of individual HOAs in Sacramento may enrich the findings of this study. Adding spatial location variables to the quantitative analysis may also enrich the outcome of the regression study. In the next Chapter I will present my overall takeaways and conclusions for my study of HOAs in Sacramento County.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

Throughout this thesis, I have sought to answer my research questions: What role should government play in regulating the growth in the number of HOAs? With that, in Sacramento, what level of government intervention with Homeowners Associations would most likely produce a win-win for both residents and local governments in Sacramento County, California? To answer these questions, I employed a mixed methods approach to examine HOA influence on property value and housing affordability in Sacramento County, as well as interview local experts to gauge attitudes surrounding HOAs. In this final chapter I will discuss my findings and their implications, as well as offer policy alternatives.

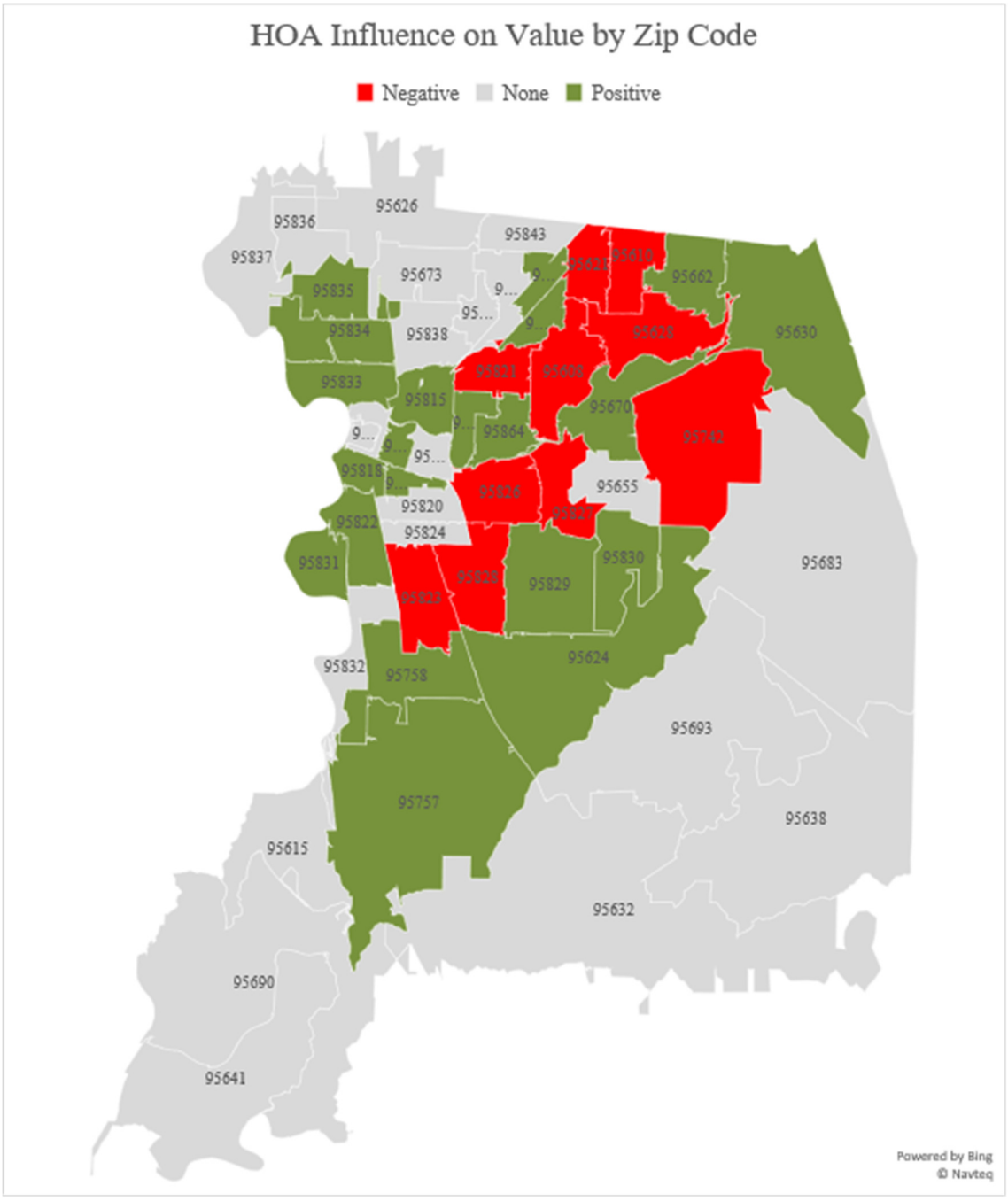
Implications Relating to Effect on Home Value

I performed a hedonic regression quantitative analysis using a Sacramento County, CA dataset obtained from the Metrolist MLS for all single family detached homes sales from September 1, 2016 to December 31, 2016. There were 6,165 observations within the dataset and I controlled for over 160 independent variables to measure the effect of a HOA and HOA Dues on home value. A few key takeaways from my quantitative analyses are:

- Overall in Sacramento County, HOAs increase a home's value by approximately 1.96 percent, and based on the mean price in the dataset, by approximately $6,806; and
- The magnitude varies significantly by zip code; in some zip codes HOAs are associated with an overall negative effect on value, and in some zip codes HOAs are associated with an overall positive effect on value.
- In some zip codes HOAs exert no influence of statistical significance. These areas tend to have zero observations in HOAs or are comprised solely of observations in HOAs. Without variance in the HOA Dummy variable, it is not possible to determine what influence the HOA Dummy would have on value in the given zip code.

The areas of overall positive, negative, and no effects tend to cluster together. Figure 14 below visually illustrates this clustering. The zip codes where HOAs have no value and no observations tend to be more outer ring rural communities. The zip codes where HOAs tend to have the most positive or negative impact tend to be suburban communities.

Figure 15: HOA Influence on Value by Zip Code



- Cross-referencing my regression results with demographic data, there were three discernable patterns in zip codes with positive and negative HOA influence. Table 10

outlines some of the demographics and other characteristics of the zip codes. The three patterns are:

- HOAs mostly tend to have higher value in areas where more residents have a bachelor's degree or higher. As higher education and higher income levels tend to correlate with each other, this finding may support the theory from the literature that affluent people tend to place higher value on living within HOAs. Many of the people I interviewed also speculated that HOAs tend to be an enclave for the affluent.
- The zip codes with the highest numbers of observations within HOAs tend to be relatively newly developed areas from the 1990's and 2000's (dataset mean home age lower than 25 years). The HOAs in these newly developed areas also tend to have positive effects on value, with the one notable exception of zip code 95742. The literature also supports the idea that most HOAs are formed in newly developing communities.
- Areas with housing stock developed from the late 1960's, the 1970's, and early 1980's (dataset mean home age between 30-50) years tend to have the highest concentrations of negative HOA values. I surmise this may be attributed to the uncommonness of HOAs at the time of those properties were constructed. This does not explain why HOAs in communities with housing stock that pre-dates that era may have higher values, although I suspect that could be attributed to the housing stock in newer urban infill projects with HOAs tending to be in superior functional condition, where older housing stock may overall be in a state of functional obsolescence.

Table 7: Magnitude by zip code, cross referencing demographic data from the United States Census 2016 American Community Survey (2018).

Zip Code	Mean Zip Code Price	Mean HOA Effect	#Total Obs	#HOA Obs	Mean Home Age	% Owner Occ	% BA or higher	% below poverty line	% Caucasian
95608	$405,761	-$21,708	239	17	47	54.4%	6.7%	14.6%	79.1%
95610	$318,168	-$37,727	161	12	43	47.7%	6.2%	15.2%	87.5%
95615	$290,625	$0	4	0	72	34.5%	0.0%	20.3%	74.2%
95621	$278,587	-$29,801	181	9	43	63.3%	7.5%	13.9%	85.7%
95624	$388,849	$42,280	261	6	25	76.1%	5.6%	10.3%	60.2%
95626	$273,675	$0	16	0	40	76.5%	0.0%	10.8%	87.7%
95628	$435,639	-$15,707	204	33	39	66.7%	6.0%	11.0%	90.5%
95630	$506,589	$4,418	310	114	23	68.9%	10.5%	4.7%	75.1%
95632	$321,950	$0	124	2	26	71.5%	6.6%	17.1%	81.1%
95638	$534,744	$0	9	0	29	89.4%	2.9%	4.8%	83.1%
95639	$168,000	$0	1	0	80	72.0%	0.0%	3.0%	72.1%
95641	$442,500	$0	4	0	34	62.1%	0.0%	21.8%	85.0%
95655	$327,506	$0	27	27	16	82.2%	6.4%	18.1%	66.9%
95660	$215,963	$0	120	0	57	49.2%	2.9%	26.5%	69.3%
95662	$362,733	$2,820	154	7	43	72.0%	5.1%	10.0%	92.1%
95670	$316,780	$39,042	238	60	39	54.3%	8.9%	15.9%	72.3%
95673	$285,349	$0	71	0	40	74.6%	2.6%	19.4%	77.1%
95683	$509,531	$0	41	40	24	89.7%	5.8%	3.0%	91.2%
95690	$375,667	$0	3	0	99	51.8%	7.0%	9.5%	88.6%
95693	$590,063	$0	19	1	27	85.0%	8.1%	11.1%	86.7%
95742	$393,988	-$19,237	91	37	8	84.9%	3.2%	8.1%	60.1%
95757	$430,730	$4,452	257	47	10	70.4%	7.4%	9.0%	42.8%
95758	$349,715	$13,499	345	99	23	68.1%	8.5%	11.8%	51.6%
95811	$475,000	$0	4	1	62	15.8%	23.0%	32.7%	69.3%
95814	$667,450	$0	2	0	107	7.5%	30.5%	32.2%	66.7%
95815	$199,038	$116,689	95	7	60	30.3%	9.7%	38.4%	55.5%
95816	$530,929	$84,071	65	4	85	27.8%	44.2%	13.5%	85.1%
95817	$309,996	$43,684	80	2	72	40.7%	12.5%	30.7%	64.0%
95818	$520,527	$3,826	84	4	78	52.0%	21.0%	18.1%	75.4%
95819	$588,419	$0	87	0	68	69.0%	7.2%	5.8%	89.6%
95820	$236,304	$0	195	0	66	49.9%	10.3%	27.4%	63.8%
95821	$315,881	-$72,643	138	2	60	42.9%	2.5%	26.6%	72.3%
95822	$282,678	$11,641	218	4	58	53.5%	5.0%	21.6%	51.2%
95823	$246,055	-$29,491	225	15	36	43.3%	4.7%	27.7%	36.1%
95824	$196,611	$0	77	0	58	37.8%	2.2%	40.0%	40.8%
95825	$350,062	$82,700	63	19	53	24.5%	13.3%	33.3%	62.7%
95826	$290,245	-$1,769	165	9	45	53.1%	6.6%	19.3%	71.3%
95827	$281,635	-$42,766	75	5	36	58.6%	8.1%	15.8%	69.1%
95828	$262,825	-$55,296	216	11	33	57.5%	7.9%	22.6%	38.1%
95829	$367,496	$19,283	145	16	17	74.8%	6.5%	11.9%	51.9%

95830	$779,856	$278,621	7	5	20	90.0%	22.7%	22.2%	78.4%
95831	$424,397	$35,593	122	9	40	56.1%	14.5%	8.2%	52.2%
95832	$241,417	$0	42	0	32	48.7%	0.0%	27.9%	32.4%
95833	$299,004	$26,532	153	30	29	45.0%	7.7%	18.7%	58.2%
95834	$337,009	$3,321	111	48	15	38.6%	5.4%	19.0%	49.9%
95835	$375,554	$865	231	155	14	60.3%	12.2%	7.6%	53.2%
95838	$209,090	$0	143	2	40	49.7%	2.0%	29.5%	48.5%
95841	$284,683	$46,012	44	2	50	35.2%	7.7%	25.0%	77.1%
95842	$242,014	$118,504	120	7	42	51.7%	4.8%	25.4%	73.6%
95843	$311,533	$0	251	1	25	63.9%	3.9%	14.2%	69.7%
95864	$549,469	$70,222	127	8	60	75.4%	19.9%	7.0%	84.0%
ALL	$347,277	$6,806	6165	877	38	55.2%	7.8%	17.9%	64.7%

Impact of Positive and Negative Effects on Value

An increase in value requires that a buyer have more income or more assets to purchase a home in a HOA. With an overall increase of approximately $6,806, if a home buyer financed this extra cost amount entirely, this translates into an expense of approximately $36.54 per month in principle and interest for a loan at 5 percent interest and amortized over 30 years. While this small increase in monthly payment may certainly price some home buyers out of affording to purchase (or rent) a home within a HOA, there are several areas where there would be less of a price increase, a price decrease, or no increase:

- An increase in price for an amount less than the $6,806 increase in the greater county as a whole (95757, 95630, 95818, 95834, 95662, and 95835);
- A decrease in price (95826, 95628, 95742, 95608, 95823, 95621, 95610, 95827, 95828, and 95821); and
- No statistically significant increase in price (95615, 95626, 95632, 95638, 95639, 95641, 95655, 95660, 95673, 95683, 95690, 95693, 95811, 95814, 95819, 95820, 95824, 95832, 95838, and 95843).

Given these data, I conclude that the existing presence of HOAs in their current concentration in Sacramento County is not adversely exacerbating the housing affordability crisis.

Implications Relating to Attitudes Regarding Homeowners Associations

I interviewed people actively engaged in Sacramento-area housing policy, land use, real estate valuation, real estate sales, real estate development, and HOA management. I developed a set of seven interview questions designed to style to elicit the participant's opinion of HOAs in Sacramento as well as test their attitudes on different policy alternatives. A few key takeaways from my qualitative analyses are:

- The ability to choose the type of community one prefers to live within is important, and such choices are indeed available within Sacramento County;
- Interviewees viewed HOAs conceptually as enclaves for the affluent. While this may be true for some Sacramento communities, particularly the areas where the HOA influence on value is the highest, it is not true for all of them, and there are many zip codes with high concentrations of residents who have earned a bachelor's degree or higher where HOAs are not prevalent or do not add value;
- Formation, or the attempt to form new HOAs in existing urban communities could be an important activity to stoke community involvement and engagement, and because HOAs tend to be of highest value in newer developed communities, I do not think forming new HOAs in existing urban or suburban areas would adversely impact home values in existing areas;
- HOAs deliver services privately, and interviewees perceive private service delivery to be a more effective delivery mechanism than some local government agencies; and
- HOAs themselves vary in quality and are only as good as their governing board members and professional management companies allow.

Given these interview findings, it seems there is a healthy mix of homes in HOAs and homes not in HOAs within Sacramento County at this time. If there were an increase in the number of HOAs in Sacramento County, that would not be negative for the region provided that the expansion of HOAs does not threaten a resident's ability to choose whether or not to live in a HOA.

Policy Recommendations

Given the conclusions I developed from both my quantitative and qualitative analysis, there are a few policy recommendations worth considering. I do not think there are too many HOAs within Sacramento County at this time, and moderate growth in the number of HOAs should not have adverse effects on housing affordability or quality of life. According to the dataset, only about 14 percent of the observations are single family detached homes in HOAs, which suggests there are fewer HOAs in Sacramento than in the rest of California. As such I do not think there is any justification for government to specifically regulate or mitigate the growth of HOAs. I do think there are some policy recommendations that may improve a public-private partnership between local government and HOAs.

I tested a few policy interventions, which were policy ideas I gleaned from the literature, during the interviews and found that some concepts I had initially considered probably would not be needed or feasible within Sacramento County. Specifically, offering a down payment assistance program to buyers of homes in HOAs, offering a rent subsidy to renters of homes in HOAs, and providing tax incentives to HOAs to offset the expenses of redundantly offered services were ideas that the majority of interviewees did not view favorably. Interview participants responded very favorably to the idea of providing a HOA Formation Toolkit, which is not a concept from the literature. I will again point out that there seemed to be a disconnect between the interviewees who are responsible for making policy decisions, as the elected official and CPAC member did favor the recommendations from the literature while the rest of the

interviewees did not. A concept that arose from the interviews that I did not specifically find as a policy recommendation in the literature is the potential need for some public-private collaboration between HOAs and government to synchronize efforts. Additionally, to mitigate the potential for HOA mismanagement, I also recommend local government facilitate workshops for HOAs managed solely by volunteers.

Homeowners Association Formation Toolkit

In my literature review I discovered that that HOAs are more likely to form in new suburban communities, since forming them in the urban core in existing neighborhoods is too difficult (Cashin, 2001). Organizing the residents of an existing neighborhood is an onerous process, incorporating a HOA is legally complex, and the cost associated with formation is high. As I noted from my interviews, the participants overwhelmingly believed that the act to attempt to form a new HOA in existing urban communities could be an important activity to stimulate community involvement and engagement. As such, I recommend that Sacramento County and its incorporated cities within form a task force to create a HOA Formation Toolkit. Task force members should include stakeholders from different cities, professional HOA managers, attorneys, and volunteers actively engaged on HOA boards.

This task force should assemble resources for community members to use to ease formation of new HOAs in existing communities. The toolkit should include things best practices for organizing meetings amongst community members, best practices for gaining consensus amongst community members, instructions to file articles of incorporation, model association bylaws and CC&Rs, model association budget and finance documents, model meeting minutes, and best practices documents for ongoing HOA management.

Increase Public-Private Collaboration

Several of the interview participants agreed that HOAs do often provide services to residents that are redundant with publicly provided services. For example, if a HOA provides a security patrol in the neighborhood, then the police likely do not need to patrol the area as frequently but are still available in emergency situations. There is no effort to within Sacramento County, its incorporated cities, or other service-providing agencies to collaborate with HOAs. It would be helpful to determine what services HOAs offer privately, where they are offered, and strategically look for overlaps and ways to mutually improve efficiency.

A good starting point would be for Sacramento County to compile its own list of HOAs across the entire county. As I mentioned in the introduction no comprehensive list is currently available. The county should form a list to identify where the HOA and agency service boundaries are located, who manages them, what services the HOAs provide, and how they are provided. Then leaders from Sacramento County, its cities, and service-providing agencies should collaborate with HOA stakeholders to inventory what services are offered and where, if and where service overlaps occur, and seek optimal and cost-effective ways to deliver services to all residents of Sacramento County.

Homeowners Association Management Best Practices Workshops

Since HOAs are involved in service delivery for residents, their organizational health and proper management is critical to the well-being of residents. Interview respondents cited poor HOA management practices as a potential problem. While it may be an unnecessary overreach for local government to step in and regulate HOA management practices, it might make sense for local government agencies to host some best practices workshops for HOA boards that are not professionally managed. HOA boards might benefit from some professional administrative guidance as to prevent potential mismanagement. Providing workshops would also be a good way

to identify and begin to engage HOAs in public-private collaboration. Local government may seek to partner with the northern California chapter of the Community Associations Institute to develop content for workshops.

Opportunities for Future Research and Concluding Comments

There are numerous opportunities to enrich the findings or expand the scope of this study. Relating to the quantitative component of this study, the regression represents a snapshot of the Sacramento real estate market dynamics limited to the four-month duration of the dataset. Expanding the dataset to cover a longer period may produce different results. It would also be valuable to add more spatial variables to the regression. Factors such as proximity to neighborhood amenities, proximity to recreational opportunities, proximity to industrial zones, and local school boundaries may influence selling price. This dataset also only represents sales data from Sacramento County, and not the rest of the surrounding region. Incorporating data from the surrounding counties of Placer, El Dorado, and Yolo may lend context to the effects of HOAs in Sacramento and inform policy decision-making in Sacramento County relative to regional dynamics.

Relating to the qualitative component of this study, I interviewed a small number of local experts (n=7). Interviewing more participants would be more ideal. Most of the interview participants were people known to me, and interviewing people outside of my personal sphere might also provide a greater perspective.

I did not perform any case studies for my analysis. For researchers performing future studies, case studies of specific Sacramento-area HOAs would enrich the findings. Case studies could be used to explore different management practices, financial practices, board culture, and resident attitudes in different HOAs to compare and contrast what constitutes an effective HOA. I also did not survey non-professionals. A survey of Sacramento residents who live both in and not

in HOAs to compare and contrast their attitudes about HOAs would also provide depth to this study.

While my findings now do not indicate that the growth in the number of HOAs needs to be mitigated in Sacramento and that public-private collaboration would make both local governments and HOAs more effective, periodic re-evaluation will be critical to determine if continued growth in the number of HOAs is indeed the right path for Sacramento County.

APPENDIX A: Table of Regression Articles

Author & Publication Date	Title	Type of Research / Regression Method	Data Source & Sample Size	Dependent Variable	Key Explanatory Variables	General Conclusions	Magnitude of Findings
Agan and Tabarrok (2005)	What are Private Governments Worth?	Regression / Hedonic in a semi-log form, with the natural log of price used as the dependent variable	11,979 home sales from 2000 - 2004 within 5 zip codes in Price William County, Virginia (DC Metro Area) from multiple listing service data.	Log of Sales Price	HOA dummy, Home age, parcel size, number of bedrooms, number of bathrooms, fireplaces, stories, architectural style, zip code dummies.	Homes within HOAs sell for higher prices than those located outside associations.	Houses that belong to associations sell for on average for 5.4% more than houses that do not reside in associations. Based on the mean sales price in the sample, the price premium for association membership amounts to about $14,000.
Angjellari-Dajci, Cebula, Boylan, Izard, and Gresham (2015)	The Impact of Taxes and HOA Fees on Single Family Home Prices	Regression / Hedonic in a semi-log form, with the natural log of price used as the dependent variable	123,431 home sales from Duval County Florida from years 2002 - 2013. Obtained from the Duval County Assessor's office.	Log of Sales Price	HOA dummy, square footage, number of bathrooms, waterfront dummy, age, age squared, stories, property taxes, tax rate, association dues, zip code dummies.	Homes within HOAs sell for higher prices than those located outside associations.	For a one-dollar increase in annual HOA fees the average home value goes up by about $1.80.
Cheung (2008a)	The Effect of Property Tax Limitations on Residential Private Governments: The Case of Proposition 13	Multiple Regression, Poisson regression	Panel data from the United State Census for 198 cities from years 1976 through 1982. HOA incorporation information from 1976 through 1982 from accounting firm Levy and Company as of 2003.	Private government formation activity in city	Proposition 13 dummy variable, year, land area, 1-year population growth, governmental revenues.	Number of new HOA incorporations is 21 percent higher in 1979, the year immediately following Proposition 13.	Passage of Proposition 13 results in an increase of 36 percent in new incorporations of private governments every year in an average city in California, relative to the period before Proposition 13. The strongest impact occurs in years immediately following Proposition 13 and attenuates thereafter.

Cheung (2008b)	The Interaction between public and private governments: An empirical analysis	Ordinary Least Squares, and Two-Stage Least Squares	30 years of data from years 1970 to 1999 from 110 California cities, obtained from the Annual Survey of Governments, United States Census Bureau. Database of HOAs in California from accounting firm Levy and Company as of May 2003.	Local government expenditures, including total expenditure, and for police, highways, fire, parks, waste disposal, libraries, housing and community development, administration	Private government activity in a city (per capita housing units in a planned development), resident demographics, owner occupancy, income, population density, year dummies, MSA/year interaction dummies, population growth rate.	Public governments engage in "Strategic Downloading" and view private governments and their services as a strategic substitute.	A 10% increase in the prevalence of HOAs in a city will on average decrease per capita total expenditures by 1.51% a small but significant percentage.
Cheung and Meltzer (2014)	Why and Where to Homeowners Associations Form?	Cox proportional hazards model with time-varying covariates	United States Census data for census tracts in 26 of 67 counties in Florida: total of 2,176 census tracts with a mean population of 3,127.	Location where HOA is formed	Resident Demographics, housing tenure, housing vacancy rate, distance to central city, age of structure, public-finance variables per capita on revenues, expenditures on roads, parks, police, waste disposal.	Neighborhoods with higher shares of Black residents are less likely to form HOAs. Tracts with higher average family incomes are more likely to form HOAs. Neighborhoods located farther from the central business district (CBD) closer to the municipal outskirts are also more likely to form HOAs.	The likelihoods of forming HOAs specifically are reduced by 37% when the share of Black residents in a tract goes up by 1 unit (that is, the share rises from 0 to 100 percent). A census tract is 14% more likely to form a HOA for a $10,000 increase in average family income. A 1-mile increase in distance to the CBD increases the hazard ratio by 0.7 percent.
Gordon (2003)	Crowd in or crowd out?: the effects of common interest developments on political participation in California	Least squares regression with demographic covariates, least squares regression with block-group fixed effects, a Heckman selection correction model, and a propensity-score approach.	A series of pooled cross-sections for 1990, 1992, 1994 from the United States Census. Unit of analysis is block group and year. Total of 64,554 observations (21,518 block groups by 3 years), voter turnout records.	Voter Turnout, Pass/Fail of varying propositions	Number of units, total acreage, year founded, monthly fees/unit, annual HOA revenues, resident demographics, percent owner-occupied, year built, home value, urban/rural, private school enrollment, percent commuter, voter registration.	Findings from this study suggest that concerns regarding potential negative effects of private government on political participation are unwarranted.	Planned developments in California do not exhibit significantly different rates of voter turnout, registration, and party affiliation once potential selection bias is taken into account

Groves (2008)	Finding the Missing Premium: An Explanation of Home Values within Residential Community Associations	Regression / Hedonic in a semi-log form, with the natural log of price used as the dependent variable	Dataset comprised of 124,878 home sales spanning a 10 year period. Dataset was created merging Geographic Information Systems information with home sales data in Saint Louis County from 1992-2001, and manually collecting association data.	Log of Sales Price	HOA dummy, square footage, age of the home, lot size, architectural style, bedrooms, bathroom, location and census variables, spatial location variables.	Controlling for other factors the average home value does not change, or changes very slightly positively and negatively when in an association. While homes in HOAs sell for higher prices, if the builder incorporated more varied design elements into construction, they might add value.	Net effect of an HOA on home value is essentially zero, since the properties and characteristics of homes in a HOA are homogenous. The most commonly occurring home style in the dataset results in a net decrease in value of about 8% when located in a HOA. Least commonly occurring home styles result in a 19% increase in value when located in an association.
Langbien and Spotswood-Bright (2004)	Efficiency, Accountability, and Private Government: The Impact of Residential Community Associations on Residential Property Values	Regression / Hedonic in a semi-log form, with the natural log of price used as the dependent variable	Data gathered from 6 homeowners associations in Alexandra, Virginia. A total of 195 individual properties within the communities were measured. Obtained from the MLS and their own survey.	Log of Sales Price	1999 assessed property values, monthly HOA fee, percent of professional HOA management, level of community involvement, number of services included in management fee, square footage, number of units in the association.	Higher HOA fees lead to a lower sales value of the average unit	A 1% increase in the monthly HOA fee reduces average property values by 0.2 percent. In this study that equates to a $2.50 increase in the monthly fee results in a $277 drop in the sales value of the unit.
Meltzer and Cheung (2014)	How are homeowners associations capitalized into property values?	Hedonic	588,133 home sales from 1960 - 2008 in 49 of 67 counties in the state of Florida. Data Obtained from various county assessor offices.	Log of sales price	HOA dummy, HOA formation year, number of housing units in association, year built, number of buildings per parcel, parcel size, square footage, vacancy status, improved quality, year dummies.	Homes within HOAs sell for higher prices than those located outside associations.	Houses that belong to HOAs sell for on average for 5% more than houses that do not reside in HOAs. Based on the mean sales price in the sample, the price premium for HOA membership amounts to about $9852. Houses in large HOA's sell for $22 less per each additional parcel over 450 parcels.

Radetskiy, Spahr, and Sunderman (2015)	Gated Community Premiums and Amenity Differentials in Residential Subdivisions	Hedonic Regression	4,422 home sales from Shelby County, Tennessee from 2000 - 2012. Data obtained from the Shelby County Assessor's office.	Sales price	Gate dummy, Small / Medium Large Community dummies, High / Low price dummies, HOA feature dummies, square footage, age of home, parcel size, stories, garage size, number of fireplaces, siding dummies, architectural style, condition quality, sale year dummies	Properties in gated communities sell for more, though the highest premiums occur in medium sized communities. The presence of more HOA amenities (clubhouse, pool, cabana, tennis courts, basketball courts, lakes, guarded security, gates) decrease value.	Properties with combinations of several HOA amenities sell for $19,534 less. Smaller communities (under 42 homes) sell for $21,849 more, medium (43 - 126 homes) communities sell for $33,775 more, and large (over 127) communities sell for $22,068 more.
Rogers (2006)	A Market for Institutions: Assessing the Impact of Restrictive Covenants on Housing	Regression / Hedonic in a semi-log form, with the natural log of price used as the dependent variable	1,487 home sales from Greeley, Colorado in the year 2000. Data obtained from the Weld County Assessor's office.	Log of Sales Price	HOA dummy, square footage, parcel size, basement size, garage size, porch size, number of bedrooms, number of bathrooms, number of fireplaces, central air dummy, age of home, distance to feedlot, distance to park, distance to lake, number of building restrictions, number of use restrictions.	Homes within HOAs sell for higher prices than those located outside associations.	Homes in HOAs sell for about 3% more than homes not in HOAs. Based on the mean home price in Greeley, this equates to approximately $4,450.
Sirmans, Macpherson and Zietz (2005)	The Composition of Hedonic Pricing Models	Regression / Hedonic in a semi-log form, with the natural log of price used as the dependent variable	Reviewed 125 peer-reviewed studies of hedonic regression and ranked key explanatory variables and their significance of influence on the dependent variable (selling price).	Log of Sales Price	Square footage, number of bedrooms, number of bathrooms, swimming pool, fireplace, age, central heat and air, basement, number of stories, number of rooms, days on market, gated community, lot size, special views, various neighborhood factors, crime rates, location dummies.	Many variables lead to increases or decreases in selling price.	Study reports frequency of variables from other studies and does not report specific magnitude and any one variable.

APPENDIX B: INTERVIEW QUESTIONS

(1) The number of homes in HOAs has increased significantly in the last few decades, and today approximately one in four Californians lives in a HOA. Do you think here are any ramifications, either positive or negative, of the proliferation of HOAs? If so, please describe them.
(2) In my research I discovered that single family homes in HOAs in Sacramento County generally sell for 1.96% more than homes not located in HOAs, holding all factors constant. Broken down by zip code, I found that the effect of HOAs varies significantly; some homes sell for less than their non-HOA counterparts, some sell for more, and in other areas there is no difference. Why do you think that the effect of a HOA on value is different area-by-area?
(3) People who own homes located in HOAs pay for services provided by their HOA that are often already provided within their city or county by local government providers. These services are often funded by tax dollars, and thus owners effectively pay twice for these services. Do you think this is fair to people who live in HOAs? Why or why not?
(4) In my research I discovered that local governments tend to spend less per capita providing services in areas where there are high concentrations of HOAs.
    a. Do you think that HOAs provide value to local government jurisdictions? Why or why not?
    b. Do you think that HOAs provide value to residents of the greater surrounding community? Why or why not?
(5) If local government does indeed benefit from HOAs providing services to residents that would otherwise be provided by government agencies,
    a. Should the government sponsor some sort of downpayment or home buyer financial assistance for home buyers who purchase homes in HOAs?
    b. Should the government sponsor some sort of assistance for people who rent homes in HOAs? Why or why not?
(6) Outside of California, some states and other local governments offer repayment or tax incentives to HOAs to provide services to residents that would be otherwise publicly provided. Do you think that government should provide this type of repayment or subsidy? Why or why not?
(7) In my research I discovered that HOAs are most frequently created by developers when planning and building suburban communities, while few if any are formed in existing urban neighborhoods. Often, there are barriers to forming HOAs in existing urban communities since organizing the residents of an existing neighborhood is an onerous process, incorporating a HOA is legally complex, and the cost associated with formation is high. Do you think that local governments and/or residents would benefit if a “toolkit” were created to make forming a HOA easier in existing neighborhoods?

APPENDIX C: INTERVIEW CONSENT LETTER

INFORMED CONSENT: *The Ramifications of the Proliferation of Homeowners Associations*

You are invited to participate in a research study which will involve in-person interviews. My name is Erin Stumpf, and I am a student at California State University, Sacramento, Department of Public Policy and Administration. The purpose of this research is to ascertain the necessity for government to intervention to regulate Homeowners Associations.

If you decide to participate, you will be asked to answer approximately ten interview questions. The interview will be audio recorded. Your participation in this study will last approximately one hour. Risks associated with this study are not anticipated to be greater than those risks encountered in daily life.

Your participation in this project is voluntary. You have the right not to participate at all or to leave the study at any time without penalty. In order withdraw your participation, please email notification to Erin Stumpf at erinnstumpf@csus.edu. If you do not have access to email, you may also give verbal notification to withdraw to Erin Stumpf by calling 916-342-1372.

Any information that is obtained in connection with this study and that can be identified as you will remain confidential, and will be disclosed only with your permission. The results of the interview will be published in Findings section of my thesis. Your identity will be confidential, and I will refer to your interview responses only by your profession. Measures to insure your confidentiality are that recordings of interviews will be maintained on a password protected device, and in a password protected folder. Signed consent forms will be kept in a locked file cabinet. The data obtained will be maintained these safe, locked locations for a period of three years after the study is completed. Audio recordings and consent forms will be destroyed three years after the completion of the study.

If you have any questions about the research at any time, please contact me at 916-342-1372 or erinnstumpf@csus.edu, or contact my thesis advisor Dr. Robert Wassmer at 916-278-6304 or rwassme@csus.edu. If you have any questions about your rights as a participant in a research project please call the Office of Research Affairs, California State University, Sacramento, 916-278-5674, or email irb@csus.edu.

Your signature below indicates that you have read and understand the information provided above.

_____ _____

Signature Date

REFERENCES

Agan, A. & Tabarrok, A. (2009). What are Private Governments Worth? *Regulation*, 14-17.

Angjellari-Dajci, F., Cebula, R. J., Boylan, R., Izard, C. D., & Gresham, G. (2015). The Impact of Taxes and HOA Fees on Single-Family Home Prices. *International Advances in Economic Research*, 21(2), 201-211.

Bizjak, T. (2016, November 9). Sacramento and Placer transportation taxes fail to pass. *The Sacramento Bee*. Retrieved May 1, 2017, from http://www.sacbee.com/news/politics-government/election/local-election/article113613523.html

Boyack, A. J. (2017). Limiting the collective right to exclude. *Fordham Urban Law Journal,44*(451), 1-43.

California Association of REALTORS® Housing Affordability Index - Traditional. (2018). Retrieved March 13, 2018, from http://www.car.org/marketdata/data/haitraditional/

California Secretary of State: Statewide Election Results. (n.d.). Retrieved April 07, 2018, from http://www.sos.ca.gov/elections/prior-elections/statewide-election-results

Carlee, R. (2011). Homeowners Associations: One More Idiosyncrasy in U.S. Local Governance. *Public Administration Review,71*(4), 550-552.

Cashin, S. D. (2001). Privatized Communities and the "Secession of the Successful": Democracy and Fairness Beyond the Gate. *Fordham Urban Law Journal,28*(1675), 1-14.

Cheung, R. (2008a). The Effect of Property Tax Limitations on Residential Private Governments: The Case of Proposition 13. *National Tax Journal,61*(1), 35-56.

Cheung, R. (2008b). The interaction between public and private governments: An empirical analysis. *Journal of Urban Economics,63*(3), 885-901.

Cheung, R., & Meltzer, R. (2014). Why and Where to Homeowners Associations Form? *Cityscape: A Journal of Policy Development and Research,16*(3), 69-92.

Clarke, W. (2017). Mapping Homeowners' Associations: Who lives in them and how do they Affect Housing Values? Retrieved December 20, 2017, from http://sites.uci.edu/wyattclarke/files/2017/10/HOA_hedonic-57.pdf

Fu, Q., & Lin, N. (2014). The Weaknesses of Civic Territorial Organizations: Civic Engagement and Homeowners Associations in Urban China. *International Journal of Urban and Regional Research,38*(6), 2309-2327.

Goix, R. L. (2005). Gated Communities: Sprawl and Social Segregation in Southern California. *Housing Studies,20*(2), 323-343.

Gordon, T. M. (2003). Crowd out or crowd in?: The effects of common interest developments on political participation in California. *The Annals of Regional Science,37*(2), 203-233.

Groves, J. R. (2008). Finding the Missing Premium: An Explanation of Home Values within Residential Community Associations. *Land Economics*, 84(2), 188-208.

Helsley, R. W., & Strange, W. C. (1998). Private Government. *Journal of Public Economics,69*, 281-304.

Helsley, R. W., & Strange, W. C. (2000). Potential competition and public sector performance. *Regional Science and Urban Economics ,30*, 405-428.

Khury, S. (2015, August 29). Sacramento parks staff shrunk as acreage rose. *The Sacramento Bee*. Retrieved January 30, 2018 from http://www.sacbee.com/news/investigations/the-public-eye/article32759397.html

Langbein, L., & Spotswood-Bright, K. (2004). Efficiency, Accountability, and Private Government: The Impact of Residential Community Associations on Residential Property Values. *Social Science Quarterly*, 85(3), 640-659.

Mccabe, B. C. (2005). The Rules are Different Here. *Administration & Society,37*(4), 404-425.

Mccabe, B. C., & Tao, J. (2006). Private Governments and Private Services: Homeowners Associations in the City and Behind the Gate. *Review of Policy Research,23*(6), 1143-1157.

Meltzer, R., & Cheung, R. (2014). How are homeowners associations capitalized into property values? *Regional Science and Urban Economics*, 46, 93-102.

[MetroList MLS January 2012 - January 2018]. (2018, February 10). Unpublished raw data.

Nelson, R. H. (2009). The Puzzle of Local Double Taxation: Why do Private Community Associations Exist? *The Independent Review,13*(3), 345-365.

Radetskiy, E., Spahr, R. W., & Sunderman, M. A. (2015) Gated Community Premiums and Amenity Differentials in Residential Subdivisions. *Journal of Business and Economics Research*, 37(3), 405-438.

Reese, P. (2018, February 12). The highest income inequality in California? Census suggests it's in Arden Arcade. The Sacramento Bee. Retrieved April 7, 2018 from http://www.sacbee.com/news/local/article199690919.html

Rogers, W. H. (2006). A Market for Institutions: Assessing the Impact of Restrictive Covenants on Housing. *Land Economics*, 82(4), 500-512.

Sirmans, G. S., Macpherson, D. A., and Zietz, E. N. (2005). The Composition of Hedonic Pricing Models. *Journal of Real Estate Literature*, 3(1), 3-43.

Treese, C. J. (2016). *Community Association Fact Book 2015* [Pamphlet]. Mountain House, CA: Foundation for Community Association Research.

United State Census Bureau Quickfacts: California. (2017, March 26). Retrieved March 26, 2017, from https://www.census.gov/quickfacts/table/AFN120212/06

van der Meer, B (2018, February 1). New year, same rising rents in Sacramento region. *Sacramento Business Journal*. Retrieved April 7, 2018 from https://www.bizjournals.com/sacramento/news/2018/02/01/new-year-same-rising-rents-in-sacramento-region.html