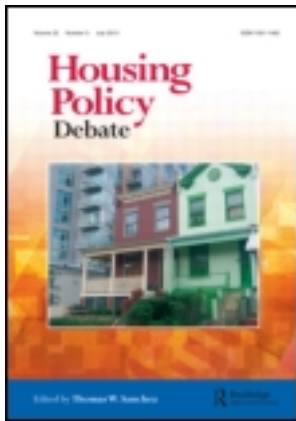


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Publisher: Routledge

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Housing Policy Debate

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rhpd20>

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Rachel Meltzer^a

^a The Milano School of International Affairs, Management and Urban Policy, The New School, New York, NY, USA

Published online: 25 Jul 2013.

To cite this article: Rachel Meltzer (2013) Do Homeowners Associations Affect Citywide Segregation? Evidence From Florida Municipalities, *Housing Policy Debate*, 23:4, 688-713, DOI: [10.1080/10511482.2013.812571](http://dx.doi.org/10.1080/10511482.2013.812571)

To link to this article: <http://dx.doi.org/10.1080/10511482.2013.812571>

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Do Homeowners Associations Affect Citywide Segregation? Evidence From Florida Municipalities

Rachel Meltzer*

*The Milano School of International Affairs, Management and Urban Policy,
The New School, New York, NY, USA*

(Received August 6, 2012; accepted June 2, 2013)

Homeowners associations (HOAs) have become one of the most popular housing options, offering residents supplemental services, amenities, as well as exclusivity and protection. HOAs are touted for their potential to improve the match between household preferences and local services, but denounced for, among other things, their tendency to facilitate residential segregation. Yet, despite growing claims, these propositions have not been rigorously tested. The expectation is that if households do sort into HOAs based on income or race/ethnicity, then these associations can affect segregation by encouraging exclusive and homogeneous living environments. However, HOAs may actually offer a unique vehicle for racial and/or economic mixing or, at the other extreme, they may not influence segregation if residents do not rely on HOAs to sort along racial or economic lines. Unlike previous studies, the current analysis observes jurisdictions over multiple decades in an attempt to better identify whether the growth in HOAs is driving changes in segregation. Using a unique, longitudinal database of HOAs in Florida and multiple measures of segregation, this article tests the effect of HOAs on jurisdiction racial/ethnic and economic segregation. Results from both ordinary least squares and instrumental variable regressions indicate that an increase in HOA presence exacerbates black–white and Hispanic–white residential segregation. Any segregation, however, is tempered by the concentration of HOA units in larger communities. On the contrary, there is no significant effect on income segregation; this suggests that HOAs do not intensify existing tendencies toward income sorting.

Keywords: homeowners associations; segregation; neighborhoods; private communities

Homeowners associations (HOAs) have become one of the most popular housing options, offering residents supplemental services, amenities, as well as exclusivity and protection. Residents tend to opt into these associations because they value more targeted service provision and, in certain cases, greater control over their neighbors. Even local governments have embraced them because they are often a means of downloading service and infrastructure costs onto the private developer (Cheung, 2009). In the face of rapid HOA growth, skeptics, on the contrary, are particularly concerned about the effect of HOAs on the fragmentation of jurisdictions and the distribution of resources across neighborhoods. Specifically, these organizations are believed to facilitate residential

*Email: meltzerr@newschool.edu

segregation, both racial and economic. In general, little is known about their social and economic implications: a deficit that becomes more noticeable as these associations become increasingly common and as segregation continues to characterize U.S. cities and metropolitan areas (see, for example, [Fry & Taylor, 2011](#)).¹

Despite growing interest in HOAs, little systematic evidence exists regarding the impact of these organizations on residential segregation. There are a handful of empirical studies that measure the association between HOAs and residential segregation, but the evidence is mixed and is based on observations at a single point in time ([Gordon, 2004](#); [Le Goix, 2005](#); [Vesselinov, 2008](#)). This article contributes to the existing literature by exploiting a unique longitudinal data set in Florida, the state with one of the highest number of HOAs and one that is yet to be studied in this context. To do this, I estimate the effect of HOAs on racial/ethnic and economic segregation, over three decades, for a sample of jurisdictions across Florida.

Results from both ordinary least squares (OLS) and instrumental variable regressions suggest that changes in the presence of HOAs do influence racial/ethnic segregation. Specifically, a 10% increase in the number of HOA units (approximately 240, based on the sample mean) can cause up to a 2% increase in indexed levels of black–white segregation and a 1% increase in indexed levels of Hispanic–white segregation (depending on the measure). Any segregation, however, is tempered by the concentration of HOA units in larger communities. On the contrary, there is no discernible effect of HOA presence on income segregation. This implies that HOAs do not independently change existing tendencies toward income sorting.

This article is structured as follows. The next section provides background on HOAs. It is followed by a review of the relevant empirical literature and a theoretical framework for analyzing the effect of HOAs on residential economic and racial/ethnic segregation. The two subsequent sections describe the data, methodology, and results from the empirical analysis. The last section concludes and offers policy implications.

Homeowners Associations

HOAs, and residential community associations (RCAs) more broadly, are by no means a new phenomenon; in fact, the first recorded association was founded in Boston, Massachusetts, in 1844 ([Reichman, 1976](#)). However, during the past few decades they have proliferated across the country as one of the fastest growing housing options and privatization efforts ([MacCabe & Tao, 2006](#)). In 1962, there were roughly 500 RCAs nationally, and that number rose to more than 280,000 by 2007 ([Community Associations Institute \[CAI\], 2008](#); [Gordon, 2004](#)). By 2007, the number of units in some kind of RCA constituted nearly 20% of the national housing stock and more than 60% of all new construction was included as part of an RCA.² Estimates of residents living in an HOA climbed from 2.1 million in 1970 to 62 million in 2010 ([Community Associations Institute, 2011](#)). HOAs are one type of RCA (a term that includes both cooperative and condominium associations as well), and are often considered synonymous with planned unit developments (PUDs) and gated communities.³ The developer typically establishes the association on erecting the community and then allocates the shares of the association as he or she sells the units in the development. HOAs are ultimately incorporated as nonprofits, and homeowners in the community share ownership of the common areas and facilities.⁴ The association also establishes and enforces covenants and restrictions governing land use ([Cheung, 2009](#); [Cheung & Meltzer, in press](#)). Each member pays an assessment (or fee) to maintain these amenities and to provide other supplemental services

to the community. Services range from basic maintenance to infrastructure development, and the size of a community can be as small as two units and as large as 20,000 units (CAI, 2008). In Florida, HOAs typically encompass single-family homes, whereas condominium and cooperative developments tend to apply to multifamily structures.⁵

Although HOAs have grown in popularity, they are not free from controversy. Like those who support other forms of private government (see Helsley & Strange, 1998), proponents of HOAs claim that they aid cash-strapped cities in providing more locally targeted services to households who value such supplements and are willing to pay for them. Some have also suggested that HOAs may reduce the cost of housing because many municipalities allow developers to build HOA projects and in turn bypass certain regulations that usually increase the cost of development (Advisory Commission on Intergovernmental Relations [ACIR], 1989). This means greater HOA access to lower- and middle-income households (Manzi & Smith Bowers, 2005). Local governments increasingly encourage the development of HOAs in that they require the formation of the association at the time of new construction (McKenzie, 2003).⁶ The services provided by PUDs and gated communities can lessen the burden for public sector service provision, and local officials often favor this approach.

Opponents, however, worry that HOAs are simply a private mechanism for residential exclusion and segregation, and that members are paying not only for extra services but also for protection and isolation from neighbors of racially or economically different backgrounds (Blakely & Snyder, 1997; Low, 2003; McKenzie, 1994). Some have suggested that HOAs are even more exclusionary than traditional suburbs (Gordon, 2004). Now residents have a mechanism to sort not only across jurisdictions but also within jurisdictions. The fact that HOAs often provide exclusive services and amenities to their members also means that within-jurisdiction sorting could lead to significant service disparities. Those less skeptical absolve local government of any responsibility regarding HOAs because they are believed to be *market-driven* mechanisms that merely respond to local demand for housing location and amenities (McKenzie, 2003; Strahilevitz, 2005). In fact, the Florida legislation governing HOAs explicitly exempts these associations from layers of oversight that are believed to interfere with the efficiency of the private government operations.

Previous Empirical Research

The body of literature on HOAs is relatively new, but much of the interest has focused on segregation outcomes. The research thus far has been dominated by theoretical and descriptive pieces, and the empirical evidence has been cross-sectional and concentrated in California. Gordon (2004) made one of the first empirical contributions by looking at the residential composition of PUDs in California in 1990 and their association with overall metropolitan segregation. Gordon uses the entropy index of segregation to measure diversity among several races and income groups at the block group and metropolitan levels. She finds that PUD block groups are less racially diverse than other block groups, in central city and suburban areas. She also finds that PUD block groups are more diverse with respect to income, but this heterogeneity is largely due to the fact that PUDs include more households in relatively higher income brackets. At the metropolitan level, the difference between PUDs and other block groups explains a very small share of total segregation. Gordon suggests that the lack of an effect at the metropolitan level is not surprising, given the small proportion of the population that lived in PUDs as of 1990, but she cautions that residential segregation will become more pronounced as HOA membership increases over time (which it certainly has).

Also looking at California, [Le Goix \(2005\)](#) executes a neighborhood-level analysis of gated communities and segregation in Los Angeles, California. He measures segregation by comparing the level of socioeconomic differentiation between gated communities and their neighboring areas and the differentiation between any other two adjacent neighborhoods; he concludes that if the former differentiation is higher, then gated communities are associated with increased segregation. Similar to Gordon, Le Goix does not find evidence to support an association between gated communities and segregation at the level of the municipality. He also observes that gated communities tend to exist in ethnically homogeneous neighborhoods (which are observed at the census block group), and are themselves homogeneous in terms of age and socioeconomic status. Even though this analysis provides an assessment as of 2000 (a decade following Gordon's work), the results do not fully disentangle the direction of the relationship between gated communities and segregation.

[Vesselinov \(2008\)](#) is the first to test segregation and gated communities for multiple cities in the United States. Using newly released data from the American Housing Survey on membership in gated communities as of 2001, Vesselinov finds that segregation and the number of gated communities are associated with higher proportions of recent immigrants. She also finds that although gated communities are prevalent in the southern and western regions of the country, segregation is less prevalent in these regions. Because the analysis is contemporaneous (she uses 2000 Census data), the implications of her findings are ambiguous—it is not clear whether gated communities are simply tempering segregation or they have simply emerged within less-segregated metro areas. Vesselinov also notes that a number of characteristics often associated with segregation, such as proportion of the population that is black or college-educated, are not associated with gated communities.

To date, the empirical evidence on the relationship between HOAs and residential segregation is preliminary and limited in its geographic scope. This article extends the analysis of HOAs to Florida, second to California in terms of HOA activity. In addition, the analysis uses longitudinal data and panel data analysis methods to better disentangle the direction of the relationship between HOAs and residential segregation.

HOAs, Household Sorting, and Residential Segregation

Although many critics of HOAs assume that their exclusive nature will increase residential segregation, the theoretical (and anecdotal) predictions are less clear. [Tiebout's \(1956\)](#) theory of household sorting suggests that households will make residential location decisions based on the value of local services and tax burdens (both of which may be capitalized into the value of the house). Households will opt for the jurisdiction that best meets their desired service package. Owing to nonnegligible costs of mobility and benefits from economies of scale for particular local services, the number of unique jurisdictions is limited. Therefore, relatively high-demanding households will not be satisfied with the package of local public goods provided by the municipality, and will be willing to pay for additional services and amenities. HOAs offer a package of supplementary local goods and services, which are provided exclusively to the members of the community who pay a fee. Whereas Tiebout describes a world in which households sort across jurisdictions, HOAs offer a mechanism for households to sort within jurisdictions (that are perhaps on their own not providing the best match of services, given the household's willingness to pay). Specifically, households will sort into HOAs if the cost of membership is no more than the value of the services and

amenities provided by the HOA.⁷ The question posed in the current analysis is whether HOAs encourage sorting along racial/ethnic or economic lines, such that they affect residential segregation across a jurisdiction.⁸

Assuming that HOAs apply to new housing only, the households that join HOAs are either new residents in the jurisdiction or existing households that relocate within the jurisdiction. There are three ways in which HOAs may (or may not) facilitate the sorting of households along racial/ethnic and economic lines: (1) household preferences over neighbors and services, (2) housing supply factors, and (3) other institutionalized factors. The framework, and analysis that follows, focuses on the segregation outcomes across a jurisdiction. Although there may be important outcomes within the HOA communities themselves or at larger geographies, such as counties or metropolitan statistical areas, the following analysis aims to assess the effects of HOAs, holding constant any differences in zoning or political regimes across multiple jurisdictions (both of which may influence HOA presence and levels of residential segregation).⁹ In addition, the jurisdiction, as opposed to the county or metropolitan statistical area, is arguably more relevant in terms of the context that shapes local residential preferences, that is, in terms of the level at which services are provided and the proximity of one's neighbors.

Household Preferences

First, households may sort into housing communities based on who they want their neighbors to be; namely, they may prefer to live near persons of similar racial, ethnic, or economic backgrounds. HOAs provide a convenient mechanism for achieving this. Certain HOAs may be very explicit about their membership, and impose screening mechanisms (e.g., interviews or equity requirements) that exclude certain households and ensure the homogeneity of the community over time.¹⁰ Second, households may sort into HOAs based on the services and amenities provided. It may be the case that preferences for particular services are correlated with race/ethnicity and income, and if this is the case, HOA communities will segregate along these lines. HOAs may also provide such amenities to intentionally exclude (or attract) certain households.¹¹ For example, communities with golf courses are more likely to attract more affluent households comprising older, white individuals, who are statistically more likely to play golf and therefore more willing to pay the additional fee for this supplemental amenity (Strahilevitz, 2005); households without an affinity for golf (or views of golf landscapes) are less likely to possess similar socioeconomic features and less likely to join such a community. Similarly, communities may be designed around religious or other ethnic affinities that attract homogenous residents along these lines.

On the contrary, the choice to join an HOA may be purely motivated by preferences for supplementary services and amenities, without any expectation of the race/ethnicity of other members. Specifically, members may pay the fee to benefit from the HOA's control over the appearance of the community, its physical exclusivity, and the general lifestyle it offers.¹² It is possible for these location and lifestyle preferences (which are signaled through HOA membership) to transcend racial or ethnic lines, and to offer opportunities for integration to an even greater degree than those in communities without any HOAs (Manzi & Smith-Bowers, 2005).¹³ Under these circumstances, HOAs may encourage more integrated living.

Housing Supply Factors

New housing is often clustered by tenure and price, and HOAs are characteristically attached to new development (Cheung, 2009). Therefore, we may observe increased

residential segregation because HOAs emerge in newly developed communities that are affordable only to upper-income households. In addition, depending on the spatial distribution of undeveloped land and new housing, HOAs may disproportionately emerge in outer fringe sections of the jurisdiction. Therefore, the very nature of how this new housing is supplied may increase segregation across the jurisdiction.¹⁴ Alternatively, HOA communities may make home purchase attainable for middle-income households who would otherwise not be able to afford such accommodations or services. Anecdotal evidence suggests that HOAs may reduce the cost of housing because many municipalities allow developers to build HOA projects and in turn bypass certain regulations that usually increase the cost of development (ACIR, 1989; Manzi & Smith-Bowers, 2005).¹⁵ In addition, developers take advantage of relatively cheap land on the outskirts of the jurisdiction by subdividing into small lots and providing community facilities (Cheung, 2009; Roland, 1998). On net, HOA housing may be affordable to a wider range of household incomes, therefore decreasing (or at least mitigating) segregation.

In addition, the location of the HOA housing may also encourage integration (or at least mitigate segregation). Even if the households inside an HOA remain racially/ethnically and economically homogeneous, the housing may be built such that the communities are still located in larger, diverse neighborhoods. Therefore, the HOAs may, in fact, offer a compromise to households who resist intimate residential integration, but tolerate nearby diversity.¹⁶ The jurisdiction as a whole may experience less severe segregation.

Institutionalized Factors

The third mechanism describes more systematic ways in which HOAs may facilitate residential segregation. HOAs are perhaps most notorious for their fiscal exclusion, which is reminiscent of traditional zoning regimes (Fischel, 1978, 1992). Like local jurisdictions, HOAs set a marginal tax (the maintenance or membership fee) for the additional household, which is equal to the average cost of the community's services and amenities. These binding fees and the exclusive nature of the association ensure that only paying residents receive the supplementary services, and they mitigate free-riding. Therefore, it may be the case that HOAs set their fees at prohibitively high levels so as to enable only affluent households to purchase homes in the developments.¹⁷ This approach may be particularly appealing for households dissatisfied with the exclusionary nature of the existing zoning regime (i.e., it is not exclusionary enough for them). The result would be economically homogeneous communities and highly segregated municipalities.¹⁸

In addition, some associations may screen potential members with interviews and other application procedures, ensuring that certain types of households move into the communities (and that certain households feel welcome and want to join these seemingly exclusive communities).¹⁹ Outside real estate brokers may also steer households toward certain HOAs, based on race, ethnicity, or income.²⁰ Both will reinforce the homogeneity of HOA communities and segregation across the jurisdiction.

In summary, the net effect is ambiguous. Household preferences for segregation could be reinforced by the formalized (perhaps spatially isolated) HOA mechanism, the higher cost of new housing and mandatory HOA fees, and the systematic steering into homogenized HOA communities. On the contrary, increasing cost efficiencies (i.e., lower prices and fees for homeowners) and mechanisms to explicitly signal lifestyle preferences may position HOAs as a segregation-reducing (or at least mitigating) phenomenon that could mean more integration citywide. Finally, a third alternative: it could be the case that

the sorting of households into HOAs does not differ from residential sorting that would otherwise occur in the absence of HOAs. That is, households may sort into housing based on preferences over the race and income of their neighbors even without the aid of a mechanism like HOAs (for example, Bayer, McMillan, & Rueben, 2004; Ellen, 2006; Schelling, 1969, 1978). In this scenario, HOAs (and the services and amenities that they provide) would presumably have no independent effect on residential segregation.

Data and Methodology

Data

The data for this article are collected from a number of sources. Information about Florida HOAs is obtained from Sunshine List, a private, Florida-based corporation that has compiled the most comprehensive and up-to-date list of HOAs in the state. This data set includes information about the location and creation date of every active HOA in Florida as of 2008.²¹ Because this data set does not indicate how many residential parcels are there in each HOA, I supplement it with information about parcels and subdivisions obtained from each individual county property assessor's office. Specifically, in order to determine the number of parcels per HOA, I assign each HOA address to a subdivision using GIS mapping techniques and then assign the number of parcels in that matched subdivision to the HOA. I make the reasonable assumption that all parcels within the same subdivision lie in the same HOA. I then sum up the cumulative number of parcels in an HOA by jurisdiction, over time, to obtain a total HOA parcel count for each municipality annually for the length of the study period.

I supplement these data with five additional data sets. First, I obtain economic, social, and housing characteristics for Florida municipalities from the U.S. Decennial Census and American Community Survey (for the years 1980, 1990, 2000, and 2010). Second, I get annual permit counts for single-family homes from the U.S. Census from 1980 to 2009. Third, I obtain land coverage statistics from a collection of land coverage data sets provided by the U.S. Geological Survey, Multi-Resolution Land Characteristics Consortium, and National Oceanic and Atmospheric Administration in order to measure the availability of developable land in all Florida jurisdictions for the years 1972, 1992, 1996, 2000, and 2006. Finally, I use information about the share of state and federal intergovernmental revenue to proxy for the local jurisdiction's reliance on the property tax (this variable is discussed in more detail in the next section) from the U.S. Census of Governments. I rely on data from 1977, 1987, 1997, and 2007, the years closest to the decennial years for which a census of governments for all municipalities is conducted.

Identification

Segregation

The dependent variable of interest is residential segregation for a jurisdiction j at time t . This variable will be operationalized in three ways and calculated separately for racial/ethnic and economic segregation. For racial/ethnic segregation, the variable will rely on two different pairwise race/ethnicity categories (whites/blacks and whites/Hispanics).²² For economic segregation, the variable will use the entire range of income categories, as defined by the U.S. Census. For all measures, the neighborhood will be operationalized as the census tract, which is a geographic area that consists of 3,000–5,000 residents and is commonly used as a proxy for the neighborhood.²³ Each index captures a unique aspect of

segregation (discussed in more detail in the following text) and together they achieve a more holistic measure of segregation.

The first measure of segregation is the dissimilarity index, which measures what share of the black (or Hispanic) population would need to move to a different census tract in order to have an even distribution of whites and blacks (or Hispanics) across the municipality.²⁴ This is the most widely used index of residential evenness and is highly correlated with alternative measures, such as the Theil entropy index and the Gini coefficient.²⁵ Considering the black population as the minority group of interest, the index is calculated as:

$$D = \frac{1}{2} \sum_{i=1} \left| \frac{\text{black}_i}{\text{black}_{\text{total}}} - \frac{\text{white}_i}{\text{white}_{\text{total}}} \right|$$

where i indexes the neighborhood (or census tract) and total is for the jurisdiction as a whole. This index ranges from 0 to 1. A score of 0 indicates that the two groups are distributed evenly across the municipality; a score of 1 indicates that the two groups never reside in the same neighborhood and they are completely segregated across the municipality.

The second measure of segregation, the isolation index, captures the exposure of blacks (or Hispanics) to members of the same group. This index captures the likelihood that members of the minority group will share the same neighborhood as other minority group members; this measure better assesses the actual experience with respect to segregation for residents in a municipality (Massey & Denton, 1988). The isolation index also takes into account the relative size of the minority and majority groups. Using blacks as the minority group, this index is calculated as:

$$I = \sum_{i=1} \left(\frac{\text{black}_i}{\text{black}_{\text{total}}} \times \frac{\text{black}_i}{\text{persons}_i} \right)$$

where persons_i (black_i) refers to the total (black) population in census tract i and $\text{black}_{\text{total}}$ refers to the total (black) population in the entire jurisdiction. This index ranges from 0 to 1, and the closer the score is to 1, the greater the degree of isolation.

The third measure, the Centile Gap Index (CGI), is used to calculate income segregation.²⁶ This index estimates how far the average household income within a census tract deviates in percentile terms from the median household income in the tract, compared with how far it would deviate under perfect integration. The CGI is an appealing measure of income segregation for two reasons. First, it is constructed using income percentiles, and it is theoretically sensitive to rank-preserving spreads in the income distribution.²⁷ That said, CGI is a measure of the distribution of income rank groups across neighborhoods and not of the distribution of income across neighborhoods (Watson, 2006). Second, because the CGI is based on income percentiles along the entire distribution, it more fully exploits the available data than dichotomous measures (e.g., the dissimilarity and isolation indices) that rely on an arbitrary cutoff between *high*- and *low*-income groups (Watson, 2006). The CGI for jurisdiction j is calculated using readily available data on income bins and the number of households:

$$\text{CGI}_j = \frac{0.25 - (1/I_j) \sum |P_i - P_{\text{medci}}|}{0.25}$$

where I_j is the number of households in jurisdiction j , P_i is the estimated percentile in the jurisdiction j income distribution of household i , and P_{medci} is the estimated income percentile of the median household in the tract of household i . Under perfect integration,

each neighborhood contains the full income distribution and the index equals 0; if the jurisdiction is completely segregated, each neighborhood is homogeneous, and the index equals 1.²⁸

HOA Prevalence

The primary independent variable of interest is the prevalence of HOAs in the jurisdiction. This will be operationalized in three ways. First, as the primary measure, I include *HOA_unitcount*, the total number of HOA units in jurisdiction *j* at time *t*.²⁹ This variable captures the overall extent of HOA presence. I also include in the regression the total number of housing units in the jurisdiction to provide context for the HOA unit count. Second, I include *HOA_avgsize*, which measures the average number of HOA housing units in jurisdiction *j* at time *t* (it is calculated as the total number of HOA units divided by the total number of HOAs). This variable captures HOA concentration. For example, places with many smaller HOAs might have a different impact on segregation than places with fewer and larger associations.³⁰ Third, I include *HOA_age*, a measure of the age of the first HOA in jurisdiction *j* at time *t*. Because the analysis takes place over three decades (or four census years), it is reasonable to imagine that the role and impact of HOAs might change over time. Because HOAs are formed in new housing developments, any subsequent sorting may take time to materialize as households enter and relocate within the jurisdiction. In addition, the ways in which HOAs facilitate (or mitigate) household sorting may change over time. For example, the earlier HOAs may have formed as a way to ensure homogeneous neighbors; the formation of more recent HOAs may be primarily driven by the availability and location of newly constructed housing. And the two motivations may result in different impacts on residential sorting and segregation. Therefore, *HOA_age* captures any difference in effect between places with older and newer HOAs.³¹

Instruments

The challenge with estimating the impact of HOAs on residential segregation is that the presence of HOAs may not be exogenous to racial/ethnic and economic segregation. That is, there is the potential for reverse causality: The degree of segregation may also influence the likelihood of establishing an HOA. For example, jurisdictions that are already highly segregated may support the formation of HOAs in order to maintain existing levels of segregation. Alternatively, jurisdictions with relatively lower levels of segregation may also be ripe for new housing development and subsequently grow HOAs in such a way that promotes residential segregation. If I were to regress my measures of segregation on HOA presence without accounting for this potential endogeneity, the estimates would be biased and inconsistent. In order to address this threat, I instrument for HOA presence, using variables that explain the likelihood of HOA presence, but do not affect segregation within a jurisdiction, over time.

Because the primary variable of interest is the number of HOA units, I instrument for this variable only. Therefore, the average HOA size and the age of the first HOA serve as covariates in the model that follows and their coefficients cannot be interpreted causally. The first instrument is the number of single-family permits issued. This variable will be correlated with HOA presence, because HOAs are formed when new housing is built, specifically, new single-family homes. Within jurisdictions and over time, it is reasonable to believe that, controlling for the other covariates (detailed in the following text), segregation should not be directly determined by the absolute number of single-family

permits.³² The second instrument, the share of total revenues from federal and state intergovernmental grants, is used as a proxy for the jurisdiction's reliance on property taxes over time. The validity of this instrument is premised on the notion that jurisdictions are more able to fiscally exclude households if they rely more heavily on the property tax to fund local public goods. Therefore, households in jurisdictions that receive more intergovernmental grants will be more amenable to mechanisms, such as HOAs, that offer a means of exclusion within the jurisdiction (i.e., because the local government is *underproviding* residential exclusion due to limited property tax reliance). Again, within jurisdictions and over time, segregation should not be directly determined by the share of intergovernmental revenue in the presence of the other covariates (detailed in the following text).³³ The third instrument is the number of HOA units lagged 15 years.³⁴ This instrument exploits the longitudinal nature of the HOA data (which extends back to 1959) and relies on the assumption that the lagged specification will be correlated with the current number of HOA units.³⁵ This relationship can be driven by institutional factors, local tastes, or developer behavior. The lagged number of HOA units will be correlated with current residential segregation inasmuch as the latter is persistent within jurisdictions over time. In order to address the potential for *stickiness* in residential segregation, considerably long lags are used (i.e., 15 years).³⁶

I also include a collection of variables to capture the residents' economic and demographic characteristics, which may be correlated with preferences for segregation and residence in HOAs. Population characteristics include population density, percentage of homeowners, percentage of black, percentage of Hispanic, percentage employed in manufacturing, percentage younger than 18 years, percentage older than 65 years, share of population with more than a college degree, percentage of unemployed, poverty rate, median household income, and percentage enrolled in private school. In addition, for the white–Hispanic and income segregation analyses, previous research (see Ellen [2006] for a review of the literature) has suggested that other, language-related characteristics are important in explaining segregation patterns, and therefore I include percentage of foreign born.

In addition, the analysis includes housing-related variables, in order to control for changes in the housing stock that may be correlated with HOA presence and segregation. Specifically, the model will include (1) the average housing value, because places with more HOAs may have higher (or lower) housing prices and/or preferences for HOA residential communities³⁷; (2) the share of housing built before 1940; and (3) the share of undeveloped land, which may determine both the potential for and the placement of new development (and particularly development of HOA communities).

Estimation

The empirical analysis relies on a modified difference-in-difference regression, for which I construct a panel of jurisdictions for the centennial years of 1980, 1990, 2000, and 2010. The sample will consist of all jurisdictions, that is, towns, cities, and villages, incorporated for all the four census years.³⁸ The regression analysis estimates the impact of a *change* in the presence of HOAs on the *change* in segregation, within a jurisdiction over time.³⁹ The equation to be estimated is:

$$\text{Segregation}_{j,c,t} = \alpha + \beta \text{HOA}_{j,t} + \lambda \text{Pop}_{j,t} + \gamma \text{Hsg}_{j,t} + \theta_j \text{Juris}_j + \eta_t \text{Year}_t + \varepsilon_{j,t}$$

In this regression, $\text{HOA}_{j,t}$ includes the number of logged HOA units (HOA_unitcount), average HOA size (HOA_avgsz), and the age of the first HOA (HOA_age), for

jurisdiction, j , as of time t (the first two variables are log specifications in the estimation)⁴⁰; $\mathbf{Pop}_{j,t}$ is a vector of population characteristics that vary across time for jurisdiction j at time t ; $\mathbf{Hsg}_{j,t}$ is a vector of housing and land use characteristics that vary across time for jurisdiction j at time t ; \mathbf{Juris}_j are jurisdiction-fixed effects; and \mathbf{Year}_t are year dummies. As described in the previous section, I instrument for the number of HOA units using the number of single-family permits issued, share of federal and state intergovernmental revenues, and the number of HOA units lagged 15 years. The coefficients to be estimated are β , λ , γ , θ , and η , and ε is an error term. I transform the dependent variables into log form to address the skewed distribution of the data and for ease of interpretation.

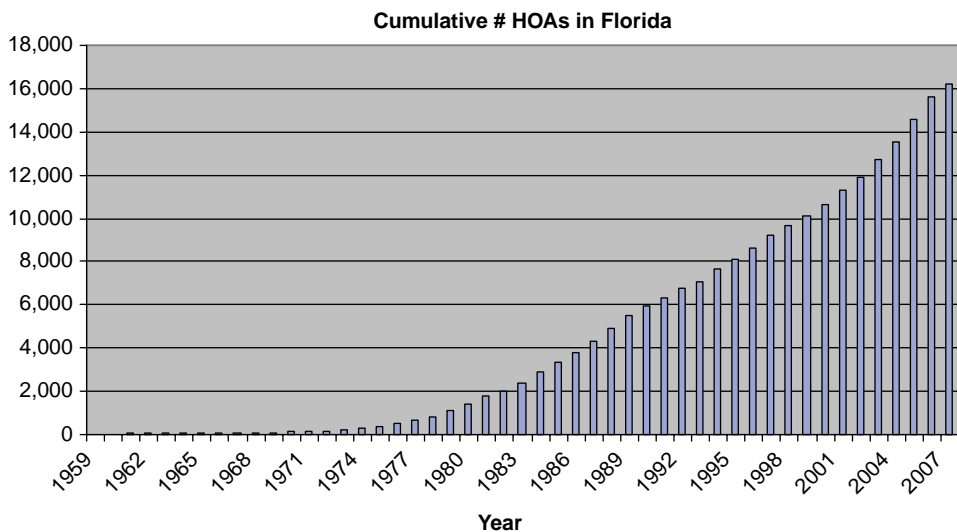
Results

HOAs in Florida

Like trends for the rest of the country, HOAs in Florida have proliferated over the past 30 years, and during the past two decades in particular (see Figure 1). The first recorded HOA was established in 1959, and since 1990, the number of HOAs in Florida has increased by nearly 140%. To put this in context, the number of new housing units in Florida has increased by 14% during the same period and the number of units in RCAs nationwide has increased by about 50% (CAI, 2008). HOAs, however, are not evenly distributed across the state of Florida. As the maps in Appendix A illustrate, they have primarily emerged along the coasts, and increasingly in the central peninsula and pockets of the northern panhandle. The number of HOAs in a particular jurisdiction varies considerably; as of 2008, some places had only one HOA whereas others had more than 1,000. Fort Lauderdale, Florida, for example, has approximately 500 HOAs and Miami, Florida, has nearly 3 times that. In the sample for this analysis, the typical jurisdiction formed its first HOA in the mid-1970s, and it has just under 80 HOAs with an average size of 77 units (see Table 1).

In terms of differences in HOA presence across jurisdictions, there are quite a few (see Table 1 for the summary statistics).⁴¹ As of 2008, jurisdictions with at least one HOA

Figure 1. Number of homeowners associations (HOAs) in Florida over time.



Source: Sunshine List, author's calculations.

Table 1. Summary statistics: high-HOA and low-HOA jurisdictions.

	HOA jurisdictions		Non-HOA jurisdictions		Difference
	Mean	SD	Mean	SD	
Demographics					
Population density	3,490	2,434	4,475	3,195	-985***
Year of incorporation (jurisdiction)	1917	36	1919	33	-1
Median HH income (2000\$)	40,238	12,112	35,964	9,771	4,274***
Percentage of black	15.0	14.3	18.6	20.9	-3.6*
Percentage of Hispanic	10.0	12.2	9.7	17.0	0.3
Percentage younger than 18 years	21.7	5.2	23.3	7.6	-1.6*
Percentage of older than 65 years	19.2	8.8	19.2	11.5	0.0
Percentage of foreign born	14.9	11.7	18.1	14.7	-3.2**
Percentage of unemployed	6.4	2.8	6.6	3.2	-0.2
Percentage of homeowners	61.1	12.3	57.6	12.0	3.5***
Housing stock					
SF housing unit permits ^a	168	332	66	202	102***
Percentage built pre-1940	4.4	5.6	6.8	8.0	-2.4***
Median housing value (2000\$)	143,911	94,594	117,906	59,275	26,006***
Median rent (2000\$)	697	168	584	146	113***
Share undeveloped land ^b	18.73	19.61	25.74	25.77	-7.00**
Segregation					
Black-white dissimilarity index	0.41	0.20	0.39	0.23	0.02
Hispanic-white dissimilarity index	0.20	0.11	0.18	0.12	0.02*
Black-white isolation index	0.272	0.244	0.266	0.273	0.007
Hispanic-white isolation index	0.117	0.128	0.100	0.157	0.017
Centile Gap index	0.072	0.052	0.067	0.054	0.005
HOAs					
First HOA incorporation year	1976	7	-	-	-
No. of HOAs	78	179	-	-	-
Average HOA size (no. of units)	77	123	-	-	-
N ^c	373		104		

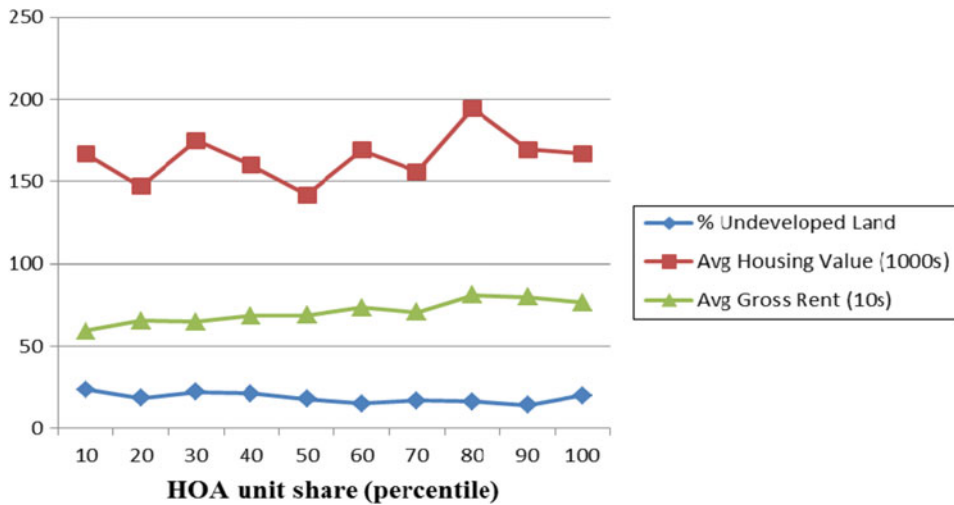
Note. HH = household. HOA = homeowners association. HOA jurisdictions are defined as incorporated places with at least 1 HOA; statistics are calculated for 2010. SF = single family. Source: U.S. Census, Multi-Resolution Land Characteristics Consortium, Sunshine List.

^a Permits are calculated as three-year rolling averages in order to account for lags in reporting or issuance.

^b This excludes land that is protected.

^c Number of jurisdiction-years.

Figure 2. Housing market characteristics by homeowners association (HOA) unit share.



Source: NCDB, Sunshine List, U.S. Census, Multi-Resolution Land Characteristics Consortium, author's calculations.

(herein referred to as *HOA jurisdictions*) are on average less dense and more affluent. The HOA jurisdictions tend to have slightly smaller black populations and fewer foreign-born residents (differences of only 4 and 3 percentage points, respectively, but both statistically significant). Populations in both HOA and non-HOA jurisdictions, however, are about 10% Hispanic. HOA jurisdictions boast a higher homeownership rate as well.

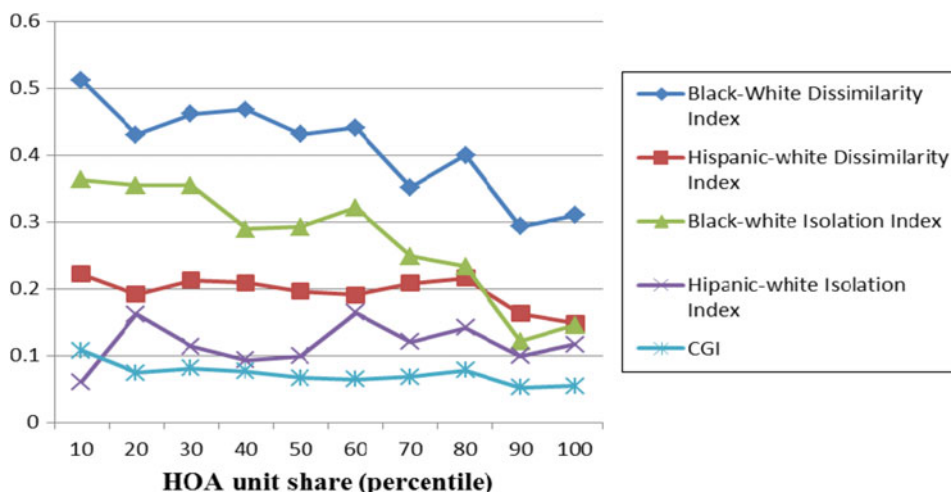
With respect to the housing market, HOA jurisdictions tend to have more new housing (as measured by single-family permits issued and the age of the overall housing stock). Housing values are significantly higher in HOA jurisdictions, as are rents: Prices and rents in HOA jurisdictions are about 20% higher on average. A few housing market variables against the cumulative share of HOA parcels in the jurisdiction (specifically, the percentile distribution of this share) are shown in Figure 2. Places with the highest concentration of HOA units (i.e., in the top 20th percentile) display the highest prices (compared with places without any HOAs and with places with fewer HOA units). Consistent with this pattern is the decline in undeveloped land as the share of HOA parcels in the jurisdiction increases; this reflects the tendency for places to incorporate new housing into HOAs.

Summary statistics for HOA and non-HOA jurisdictions (as displayed in Table 1) suggest that segregation does not vary significantly with HOA presence (only the small, positive difference in the Hispanic–white dissimilarity index is marginally significant). However, as shown in Figure 3, the relationship is a bit more nuanced. The race/ethnicity and income segregation indices are plotted against the share of HOA parcels in the figure and it shows that at the higher end of the distribution (i.e., where there is a higher share of HOA units), the segregation indices generally trend down. This suggests that as HOA presence increases, segregation goes down. The starkest patterns are for the black–white indices.

The Effect of HOAs on Jurisdiction Segregation Over Time

I now turn to the regression results, which consider the relationship between segregation and HOA presence in a multivariate context. Similar regressions are run for racial/ethnic

Figure 3. Segregation indices by homeowners association (HOA) unit share.



Source: NCDB, Sunshine List, author's calculations.

and income segregation, using the dissimilarity and isolation indices to estimate the former and the CGI to estimate the latter. For each regression, three specifications are displayed: Two show OLS results and the third shows results from two-stage least squares (2SLS), where I instrument for HOA presence. The race/ethnicity results are displayed in Tables 2, 3, and 4. The first column of the black–white regressions (see Table 2) shows the most parsimonious regression of segregation on HOA presence using the dissimilarity index: Controlling for year and jurisdiction effects, *HOA_unitcount* is positive, but statistically insignificant. The coefficient increases in magnitude, but remains insignificant when *HOA_age*, *HOA_avgsize*, and population and housing covariates are included in the model. The third column displays the 2SLS results, and the coefficient on *HOA_unitcount* has increased in magnitude and is now significant. After correcting for endogeneity, these results indicate that a 10% increase in HOA units (about 240, evaluated at the mean) results in a 2% increase in black–white segregation (when evaluated at the mean of 0.41, this is equivalent to an increase in the dissimilarity index of about 0.008; for perspective, the standard deviation for this variable is 0.211). *HOA_age* remains insignificant, but the average size is negative and significant. This result suggests that places with bigger HOAs, on average, are associated with lower levels of segregation.

The second panel of Table 2 displays the results for the black–white isolation index, and the OLS results are similar. Likewise, the 2SLS produce significant coefficients for the *HOA_unitcount* and *HOA_avgsize* variables. Again, a 10% increase in HOA units results in just under a 2% increase in the isolation index; and in places where the typical HOA size is bigger, segregation is lower. A survey of the other covariates across the two 2SLS models reveals that places with fewer and older housing units, less undeveloped land, and a higher share of black residents are associated with more segregation. In summary, the black–white segregation regressions indicate that HOA presence appears to exacerbate residential segregation. First-stage results for both 2SLS estimations are displayed in Table 4, and in all cases the *F*-statistic for the first-stage regression is greater than 16 and significant at the 1% level.⁴² In addition, on the basis of the Sargan–Hansen test, we fail to reject the null hypothesis of instrument validity (exogeneity).⁴³

Table 2. Regression results, black–white segregation.

Dependent variable	Black/white			
	Log (dissimilarity index)		Log (isolation index)	
HOAs	^b OLS	^c OLS	^b OLS	^c OLS
Log (HOA_unitcount)	0.00534 (0.0123)	0.0277 (0.0178)	0.192 (0.0777)**	0.0186 (0.0178)
Log (HOA_avgsize)	–0.0181 (0.0191)	–0.0181 (0.0191)	–0.107 (0.0491)**	–0.0133 (0.0201)
No. of years since first HOA	8.37e-05 (0.000757)	8.37e-05 (0.000757)	–0.000626 (0.000841)	0.000537 (0.000562)
Residents characteristics				
Log (pop density)	–0.0279 (0.0325)	–0.0279 (0.0325)	–0.0478 (0.0387)	0.0215 (0.0310)
Percentage of homeowners	0.00236 (0.00156)	0.00236 (0.00156)	0.00302 (0.00184)	–0.00116 (0.00149)
Percentage of black	0.000214 (0.00139)	0.000214 (0.00139)	–0.00128 (0.00150)	0.00573 (0.00127)***
Percentage of Hispanic	–0.00238 (0.00154)	–0.00238 (0.00154)	–0.00210 (0.00193)	0.000470 (0.00133)
Percentage of Manufacturing	–0.00582 (0.00418)	–0.00582 (0.00418)	–0.00127 (0.00489)	–0.00370 (0.00305)
Percentage younger than 18 yrs	0.00533 (0.00529)	0.00533 (0.00529)	0.00785 (0.00596)	0.00202 (0.00424)
Percentage older than 65 yrs	0.00383 (0.00312)	0.00383 (0.00312)	0.00227 (0.00362)	–0.000274 (0.00286)
Percentage of unemployed	–0.000828 (0.00349)	–0.000828 (0.00349)	0.000212 (0.00464)	–0.000850 (0.00400)
Log (median HH income)	–0.0826 (0.115)	–0.0826 (0.115)	–0.219 (0.147)	–0.0901 (0.115)
Percentage enrolled in private school	–0.00222 (0.00344)	–0.00222 (0.00344)	0.000223 (0.00439)	–0.000746 (0.00351)
Housing supply characteristics				
Total no. of housing units	–1.24e-06 (6.12e-07)**	–1.24e-06 (6.12e-07)**	–3.99e-06 (1.51e-06)***	–8.89e-07 (6.06e-07)
Percentage built pre-1940	0.00730 (0.00415)*	0.00730 (0.00415)*	0.0225 (0.00887)**	0.00896 (0.00410)**
Log (Avg housing value)	0.0723 (0.0691)	0.0723 (0.0691)	0.109 (0.0826)	0.0476 (0.0645)
Log (undeveloped land)	–0.0129 (0.0153)	–0.0129 (0.0153)	–0.0275 (0.0172)	–0.0235 (0.0140)*
Jurisdiction-fixed effects	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y
Adjusted R ²	0.595	0.604	0.695	0.759
N ^a	397	397	355	396

Note. 2SLS = two-stage least squares, HH = household, HOA = homeowners association, OLS = ordinary least squares, Robust standard errors values are given in parentheses.

^aNumber of jurisdiction-years.

^bRegression results without covariates.

^cRegression results with covariates.

* $p < .10$, ** $p < .05$, *** $p < .01$.

Table 3. Regression results, Hispanic–white segregation.

Dependent variable HOAs	Hispanic/white					
	Log (dissimilarity index)			Log (isolation index)		
	^b OLS	^c OLS	2SLS	^b OLS	^c OLS	2SLS
Log (HOA_unitcount)	0.00359 (0.00900)	0.0175 (0.0102)*	0.102 (0.0487)**	0.00666 (0.00614)	0.000699 (0.00398)	0.0626 (0.0292)**
Log (HOA_avgsize)		-0.0122 (0.0127)	-0.0568 (0.0297)*		-0.00446 (0.00541)	-0.0373 (0.0182)**
No. of years since first HOA		0.000527 (0.000591)	1.12e-05 (0.000656)		0.000533 (0.000385)	0.000302 (0.000429)
Residents characteristics						
Log (pop density)		-0.0548 (0.0202)***	-0.0869 (0.0307)		-0.000842 (0.00800)	-0.0282 (0.0150)*
Percentage of homeowners		0.00182 (0.00116)	0.00285 (0.00138)**		0.000239 (0.000384)	0.00106 (0.000637)*
Percentage of Black		-0.000698 (0.00123)	-0.000746 (0.00130)		0.000916 (0.000786)	0.000916 (0.000890)
Percentage of Hispanic		-0.000221 (0.00148)	0.00129 (0.00180)		0.00682 (0.000877)***	0.00788 (0.00111)***
Percentage of manufacturing		0.00327 (0.00304)	0.00370 (0.00336)		0.000362 (0.00132)	0.000811 (0.00159)
Percentage younger than 18 years		0.00199 (0.00394)	0.00241 (0.00457)		-0.000418 (0.00164)	-0.000211 (0.00240)
Percentage older than 65 years		0.00140 (0.00205)	0.00205 (0.00240)		-0.00190 (0.000849)**	-0.00173 (0.00122)
Percentage unemployed		0.00824 (0.00333)**	0.00838 (0.00399)**		0.00376 (0.00194)*	0.00324 (0.00243)
Log (median HH Income)		-0.0211 (0.0766)	-0.0172 (0.105)		-0.000291 (0.0393)	-0.0133 (0.0539)
Percentage enrolled in private school		-0.00197 (0.00217)	-0.00170 (0.00273)		-0.000148 (0.00122)	0.000308 (0.00159)
Percentage of foreign born		0.00180 (0.00158)	-0.000159 (0.00175)		0.000273 (0.000757)***	0.00154 (0.000978)
Housing supply characteristics						
Total no. of housing units		-7.37e-07 (5.81e-07)	-2.00e-06 (9.15e-07)**		-3.73e-07 (3.23e-07)	-1.36e-06 (5.92e-07)**
Percentage built pre-1940		0.00336 (0.00306)	0.0101 (0.00557)*		0.00139 (0.00133)	0.00682 (0.00320)**
Log (Avg housing value)		0.00598 (0.0399)	-0.00199 (0.0452)		0.0191 (0.0233)	0.0224 (0.0299)
Log (Undeveloped land)		-0.00416 (0.00960)	-0.0151 (0.0101)		0.00300 (0.00393)	-0.00249 (0.00562)
Jurisdiction-fixed effects	Y	Y	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y	Y	Y
Adjusted R ²	0.398	0.433	—	0.786	0.907	—
N ^a	401	401	357	401	401	357

Note. 2SLS = two-stage least squares. HOA = homeowners association. OLS = ordinary least squares. Robust standard errors values are given in parentheses.

^aNumber of jurisdiction-years.

^bRegression results without covariates.

^cRegression results with covariates.

p* < .10. *p* < .05. ****p* < .01.

Overall, the results from the Hispanic–white regressions (shown in Table 3) illustrate similar outcomes. The first columns of the dissimilarity and isolation regression panels in Table 3 display the most parsimonious specification: Controlling for year and jurisdiction effects, *HOA_unitcount* is positive, but statistically insignificant. The coefficients remain insignificant (or become marginally insignificant in the case of the dissimilarity index) when *HOA_age*, *HOA_avgsize*, and population and housing covariates are included in the model. Turning to the 2SLS results, the coefficients on the *HOA_unitcount* variables remain positive, increase in magnitude, and become significant. Specifically, a 10% increase in the number of HOA units results in a 1% increase in the dissimilarity index and a 0.6% increase in the isolation index. This amounts to about 0.002 and 0.001 index points, respectively (again, for perspective, the standard deviations are 0.112 and 0.135, respectively). In both models, places with bigger HOAs on average are associated with less segregation. A look at the other covariates in this model suggests that places with lower density, more homeownership, more unemployment, and older housing stock are associated with more segregation. Similar to the black–white regression results, increased HOA presence intensifies Hispanic–white segregation (although it may be tempered by the concentration of HOA membership in larger communities).

As discussed earlier, first-stage results for both 2SLS estimations are displayed in Table 4, and in all cases the *F*-statistic for the first-stage regression is greater than 16 and

Table 4. First-stage regression results, racial/ethnic segregation.

Dependent variable	Black/white	Hispanic/white
	Log (HOA_unitcount)	Log (HOA_unitcount)
Instruments		
Log (SF permits)	0.0985 (0.0330)***	0.1010 (0.0346)***
Share intergovernmental grants	0.3156 (0.1996)	0.1274 (0.2092)
15-year lag HOAs_unitcount	−0.0131 (0.0151)	−0.0143 (0.0157)
Second-stage regressors		
Log (HOA_avgsize)	0.5212 (0.1010)***	0.5255 (0.1001)***
No. of years since first HOA	0.0030 (0.0027)	0.0032 (0.0029)
Log (pop density)	0.1840 (0.0999)*	0.3499 (0.1657)**
Percentage of homeowners	−0.0097 (0.0053)*	−0.0127 (0.0058)**
Percentage of black	0.0069 (0.0056)	−0.0001 (0.0067)
Percentage of Hispanic	−0.0002 (0.0079)	−0.0141 (0.0091)
Percentage of manufacturing	−0.0168 (0.0163)	−0.0062 (0.0155)
Percentage younger than 18 years	−0.0185 (0.0278)	−0.0041 (0.0281)
Percentage older than 65 years	0.0073 (0.0127)	0.0012 (0.0133)
Percentage unemployed	0.0155 (0.0177)	0.0198 (0.0178)
Log (median HH income)	0.6711 (0.4402)	0.2632 (0.5398)
Percentage enrolled in private school	−0.0107 (0.0154)	−0.0028 (0.0154)
Percentage of foreign born		0.0192 (0.0079)**
Total no. of housing units	0.00002 (0.000003)***	0.00001 (0.000003)***
Percentage built pre-1940	−0.0771 (0.0186)***	−0.0766 (0.0190)***
Log (Avg housing value)	−0.0833 (0.2530)	−0.0951 (0.2565)
Log (Undeveloped land)	0.0674 (0.0672)	0.0624 (0.0676)
Jurisdiction-fixed effects	Y	Y
Year dummies	Y	Y
<i>F</i> statistic	70.47	63.74
Sargan–Hansen statistic	2.92 (<i>p</i> = .232)	1.378 (<i>p</i> = .502)

Note. HH = household. HOA = homeowners association. SF = single family. Robust standard errors values are given in parentheses.

p* < .10. *p* < .05. ****p* < .01.

significant at the 1% level.⁴⁴ In addition, on the basis of the Sargan–Hansen test, we fail to reject the null hypothesis of instrument validity (exogeneity).⁴⁵

Separate regressions are run for income segregation, and these are displayed in Table 5. Again, the first column shows the most parsimonious regression of segregation on HOA presence. As discussed earlier, the coefficient on *HOA_unitcount* is positive and insignificant. The magnitude of this coefficient decreases slightly and remains insignificant when *HOA_age*, *HOA_avgsize*, and the other covariates are added into the model. *HOA_age* is negative, but insignificant, and *HOA_avgsize* is negative and significant. When instrumenting for *HOA_unitcount*, the magnitude of the coefficient increases and the sign flips, but it remains insignificant.⁴⁶ Similarly, neither *HOA_Age* nor *HOA_avgsize* is significant. As for the other covariates, places with more and older housing units, more foreign-born residents, and a higher share of children in private school are associated with higher levels of income segregation. Therefore, unlike outcomes for racial/ethnic segregation, HOA presence does not seem to significantly impact income segregation (at most, there is a slight negative effect).

The first-stage results for these 2SLS regressions are displayed in Table 6, and in all cases the *F*-statistic is greater than 16 and significant at the 1% level. In addition, on the basis of the Sargan–Hansen test, we weakly reject the null of instrument validity (exogeneity; $p = .05$).⁴⁷

Conclusion

Governments and residents have used mechanisms to exclude households from local jurisdictions and neighborhoods for centuries, including land covenants and an array of exclusionary and fiscal zoning methods. Many consider HOAs the new wave of exclusionary residential practices that could exacerbate both racial/ethnic and economic segregation. Yet, despite growing claims, this proposition has not been rigorously tested. In this article, I test to see whether HOAs affect racial/ethnic and economic segregation in Florida. Results from both OLS and instrumental variable regressions suggest that changes in the presence of HOAs do influence racial/ethnic segregation. Specifically, a 10% increase in the number of HOA units (approximately 240, based on the sample mean) can cause up to a 2% increase in the indexed level of black–white segregation and a 1% increase in the indexed level of Hispanic–white segregation (depending on the measure). Any segregation, however, is tempered by the concentration of HOA units in larger communities, which might suggest that they are more heterogeneous than smaller, more exclusive communities. However, the age of the HOA does not seem to matter; therefore, any HOA-induced segregation has been relatively consistent across more established and more nascent associations.

On the contrary, there is no discernible effect of HOA presence on income segregation. This is in contrast to stark differences in economic profiles between HOA and non-HOA communities. In summary, although HOAs may tend to include more affluent households in more spatially concentrated locations, they may not be driving citywide segregation patterns. That is, HOAs do not appear to independently change existing tendencies toward income sorting.

These results are inconsistent with previous studies that find no association between similar residential communities and segregation at the municipal level (see Gordon, 2004; Le Goix, 2005). This difference is partially a product of the more recent data used in the current analysis (although I find no significant age effects), and likely more predominantly due to the methodological enhancements that exploit longitudinal information to more precisely identify HOA impacts.⁴⁸ It is also important to note that during the study period

Table 5. Regression results, income segregation.

Dependent variable HOAs	Log (Centile Gap Index)		
	^b OLS	^c OLS	
		² SLS	
Log (HOA_unitcount)	0.00677 (0.00446)	0.00462 (0.00512)	-0.0319 (0.0211)
Log (HOA_avgsize)		-0.0120 (0.00553)**	0.00792 (0.0133)
No. of years since first HOA		-6.96e-05 (0.000263)	0.000107 (0.000260)
Residents characteristics			
Log (pop density)		-0.00436 (0.00756)	0.0019 (0.00704)
Percentage of homeowners		-0.000260 (0.000472)	-0.000785 (0.000558)
Percentage of black		0.000769 (0.000472)	0.000927 (0.000451)**
Percentage of Hispanic		-6.99e-05 (0.000614)	-0.000501 (0.000686)
Percentage of manufacturing		0.000391 (0.00123)	0.000498 (0.00132)
Percentage younger than 18 years		-0.00151 (0.00225)	-0.00110 (0.00215)
Percentage older than 65 years		-0.00275 (0.00126)**	-0.00254 (0.00123)**
Percentage with college degree or higher		-0.000537 (0.00107)	-0.000143 (0.000992)
Percentage unemployed		-5.81e-05 (0.00109)	0.000861 (0.00132)
Poverty rate		-0.00196 (0.00110)*	-0.00286 (0.00119)**
Percentage enrolled in private school		0.00491 (0.00140)**	0.00433 (0.00131)**
Percentage of foreign born		0.000949 (0.000778)	0.00168 (0.000909)*
Housing supply characteristics			
Total no. of housing units		7.28e-07 (3.14e-07)**	1.15e-06 (4.67e-07)**
Percentage built pre-1940		-0.00131 (0.00155)	-0.00456 (0.00238)*
Log (Avg housing value)		-0.00121 (0.0245)	-0.0188 (0.0253)
Log (undeveloped land)		-0.00213 (0.00415)	0.000108 (0.00495)
Jurisdiction-fixed effects	Y	Y	Y
Year dummies	Y	Y	Y
R ²	0.643	0.735	-
N ^a	427	427	369

Note. 2SLS = two-stage least squares, HOA = homeowners association, OLS = ordinary least squares, Robust standard errors values are given in parentheses.

^aNumber of jurisdiction-years.

^bRegression results without covariates.

^cRegression results with covariates.

* $p < .10$, ** $p < .05$, *** $p < .01$.

Table 6. First-stage regression, income segregation.

Dependent variable	Log (HOA_unitcount)
Instruments	
Log (SF permits)	0.1011 (0.0341)***
Total intergovernmental grants	0.2832 (0.2236)
15-year lag HOAs_unitcount	-0.0095 (0.0157)
Second-stage regressors	
Log (HOA_avgsize)	0.5540 (0.0902)***
No. of years since first HOA	0.0030 (0.0029)
Log (pop density)	0.1813 (0.1644)
Percentage of homeowners	-0.0153 (0.0062)**
Percentage of black	0.0021 (0.0067)
Percentage of Hispanic	-0.0100 (0.0086)
Percentage of manufacturing	-0.0068 (0.0161)
Percentage younger than 18 years	-0.0098 (0.0282)
Percentage older than 65 years	-0.0041 (0.0117)
Percentage with college degree or higher	0.0106 (0.0132)
Percentage unemployed	0.0259 (0.0183)
Poverty rate	-0.0218 (0.0152)
Percentage enrolled in private school	-0.0024 (0.0140)
Percentage of foreign born	0.0167 (0.0076)**
Total no. of housing units	0.00002 (0.000003)***
Percentage Built pre-1940	-0.0783 (0.0191)***
Log (Avg housing value)	-0.2667 (0.3018)
Log (Undeveloped land)	0.0667 (0.0666)
Jurisdiction-fixed effects	Y
Year dummies	Y
F statistic	63.27
Sargan-Hansen statistic	5.65 ($p = .10$)

Note. HOA = homeowners association. SF = single family. Robust standard errors values are given in parentheses.

* $p < .10$. ** $p < .05$. *** $p < .01$.

Florida experienced a housing construction boom (and therefore HOA proliferation) not typical of all other states; so the racial segregation patterns observed here could be considered upper bound, or worse-case, scenarios. That said, various localities across the country witnessed housing booms that are not dissimilar to the statewide growth experienced by Florida.

HOAs are often referred to as *private governments*, because they possess similar powers to general purpose governments, but are privately run. There is a long history of households sorting across municipal lines to fulfill their residential needs and preferences; it is conceivable that households are engaging in similar sorting *within* single jurisdictions. And it appears that HOAs are facilitating this within-jurisdiction sorting and, in turn, a more intensified fragmentation of communities. This is important for two broad reasons. First, if a jurisdiction believes that segregation is harmful to local social and economic productivity, then it needs to seriously consider its endorsement of *private governments*, such as HOAs. Second, even though HOAs are a privately conceived and financed mechanism, they are still permitted (and sometimes encouraged) by the public sector. In fact, local governments negotiate land use regulations and infrastructure and service responsibilities with private developers, and the State (such as Florida) leaves HOAs largely unencumbered. Local and state governments have been proactive in designing and remedying housing and community development policies to encourage residential

integration, and the current analysis implies that HOAs should be part of this policy conversation.

Clearly, what is needed at this point is a better understanding of the microlevel residential sorting that occurs within and across HOAs. How do individuals incorporate HOA membership and characteristics into their location choices and are there systematic forces that are driving households into particular communities (i.e., based on race or ethnicity)? As the null results from the income analysis imply, there are certain housing-related behaviors and choices that are less shaped by public intervention. However, it warrants public consideration when local governments are facilitating the production of neighborhood-based mechanisms that generate citywide outcomes (that may or may not be preferred by or beneficial for all).

Acknowledgements

I thank the Furman Center for Real Estate and Urban Policy and the U.S. Department of Housing and Urban Development for their financial support; the Sunshine List and Raven Saks for their data; Tara Watson for her CGI programs; and Aaron Love, Jennifer Perrone, and Ronnie Hutchinson for their GIS assistance. I also thank the participants in the Wagner doctoral seminar, Ingrid Gould Ellen, Amy Ellen Schwartz, Vicki Been, and Jenny Schuetz, for valuable comments and insights.

Notes

1. Although it is important to note that while income segregation has increased, racial segregation has, on average, decreased.
2. This statistic is based on industry data from the CAI (available at <http://www.caionline.org/info/research/Pages/default.aspx>), data from the American Community Survey, and author's calculations.
3. Not all HOAs are situated in PUDs or gated communities; however, it is typically the case that PUDs and gated communities are governed by HOAs.
4. Incorporation as nonprofit is required in Florida; although other states do not always require it in the legislation, most HOAs incorporate as nonprofits in practice.
5. This distinction is based on conversations with professionals working with HOAs in Florida.
6. Or, alternatively, the municipality will make development easier should the developer establish an HOA with the project (ACIR, 1989).
7. Here, *amenities* may include tangible goods, such as open space or recreation facilities, or more intangible benefits, such as exclusivity and homogeneity of one's neighbors. And *value* can include the benefit of using the actual service or amenity or the potential price increase from the amenity value perceived by other owners or buyers.
8. This is a slightly different question than one focusing on municipal secession, in which HOAs (albeit very infrequently) de-annex from the host jurisdiction and incorporate their own municipality. It is presumed that, in the case of HOA secession, segregation (or municipal homogeneity) would be exacerbated even more than the within-jurisdiction HOA presence examined in the current analysis.
9. The assumption is that both zoning and political regimes change little or slowly over time.
10. Although discriminating potential members based on race/ethnicity is illegal, HOAs can certainly select members based on income or other characteristics they are correlated with race. They may also, in a nonexplicit way, select members based on maintaining a certain demographic composition (whether it be race, age, gender, etc.).
11. A related theory, "amenity-based exclusion," is developed by Strahilevitz (2005), who suggests that households may choose to live in HOAs with amenities that are "least palatable to undesired potential residents" (p. 4).
12. A survey commissioned by the Foundation for Community Association Research found that about half of HOA members were willing to pay a significant amount to ensure that they lived with neighbors who share their homeownership values; 72% of homeowners in general rated this issue as highly important (Cipriani, 2005).

13. It is true that the property tax plays a similar role in revealing preferences for local public goods. However, the HOA fee is more informative in its signaling, to the extent that it supports more targeted services than the general local government package.
14. Because race is highly correlated with income, any income segregation may indirectly lead to patterns of racial segregation as well.
15. Theoretical and empirical work on impact fees comes to a similar conclusion (see [Burge & Ihlanfeldt, 2006a, 2006b](#)). HOAs are not entirely identical to impact fees (the HOA fee is levied on the homeowner and at regular intervals, for example), but they may induce similar concessions on the part of the local government because they are providing services and infrastructure that the local government is no longer responsible for.
16. This outcome would depend on to what degree HOAs cluster in specific areas of the larger municipality and how big the individual communities are. The number of units in any HOA varies dramatically; for example, on the basis of conversations with HOA experts in Florida, the number of homes can range from 10 to 3,000 (one person reported a maximum size of 6,000 in the Orlando area, but this is not typical).
17. Again, to the extent that income is correlated with race, these mechanisms could result in racially segregated communities as well.
18. However, anecdotal evidence suggests that as HOAs have become more popular (and more cost-effective) and when real incomes were rising, membership has actually become *less* burdensome and more accessible to less affluent households ([Manzi & Smith-Bowers, 2005](#)).
19. Again, although it is illegal to racially/ethnically discriminate against potential members in explicit ways, there may be processes set up to preserve a certain demographic homogeneity in a nonexplicit way. Unfortunately, there is no empirical evidence to demonstrate these activities in the context of HOAs; therefore, this mechanism is purely speculative.
20. Although there is no empirical evidence on racial steering in the context of HOAs specifically, there is extensive literature that documents racial steering in the housing market more generally (see [Galster, 1990a, 1990b, 2005](#)). It is not unreasonable to posit that similar steering of buyers could occur based on the demographic profiles of HOA members and/or the amenities they provide (and the assumed racial preferences for those amenities, i.e., [Strahilevitz, 2005](#)).
21. Specifically, the data set contains the addresses of at least three members of the board of directors for each HOA in Florida and these addresses can be assigned to unique municipalities. Even though the list is as of 2008, the death rate of HOAs over time is small enough to be considered negligible.
22. Because blacks and Hispanics are the two second-largest groups after whites in the state of Florida (roughly 16% and 21% of the population, respectively, as of 2010), segregation is of interest for both groups. There are different mechanisms at work for each case, and this will be addressed in the control variables discussed later in this section.
23. Because growth is often accompanied by new tract formation, any tract-based segregation measure can be confounded by this change in neighborhood boundaries over time. For this reason, I replicate all of the models presented in the text with a specification that includes a control for the number of tracts in a jurisdiction at each point of time in the study period. All of the results are substantively unchanged, tempering any concern of bias. I thank an anonymous referee for pointing this out to me.
24. For this section, the segregation indices will be explained using the black–white dichotomy; however, all indices will be replicated using the Hispanic–white dichotomy as well.
25. The Gini coefficient, however, is sensitive to all transfers of minority and nonminority members across tracts, not just those over- and underrepresented ([Massey & Denton, 1988](#)).
26. The CGI was developed by Tara Watson. See [Watson \(2006, 2009\)](#) for additional information on constructing the CGI and how it compares with other measures of segregation.
27. [Jargowsky's \(1996\)](#) Neighborhood Sorting Index, for example, is not invariant to rank-preserving spreads in the income distribution. His index is also reliant on estimating the total variance of income in the jurisdiction, which is not readily available.
28. With a finite number of income bins, however, perfect segregation can never be reached; see [Watson \(2006\)](#) for a more detailed discussion.
29. All regression specifications are replicated with a count of the total number of HOAs and the share of units in HOAs; the results are substantively the same unless noted otherwise. Any growth in HOA prevalence is solely due to new HOA formation; that is, new HOA units only accompany new housing developments (there are no retroactive HOA assignments to units).

30. Ideally, I would also like to include a measure of HOA spending or services, because these can vary across associations and influence household sorting (and ultimately segregation). Unfortunately, these data are not available and I rely on HOA size to proxy for HOA capacity or comprehensiveness of service package.
31. Segregation may also be affected by HOA spatial characteristics. I test for effects from HOA clustering within jurisdictions and the presence of HOA units in neighboring jurisdictions. Neither of these variables is significant when included in the model and neither alters the results for the primary HOA variables (with the exception of the income segregation variable that remains negative, but turns significant). Therefore, the variables are not included in the baseline model and the results are not displayed here; they are available from the author on request.
32. The spatial distribution of new units may affect segregation, but unfortunately this is not observable in the available data.
33. The share of intergovernmental revenue will be correlated with segregation across jurisdictions, but the current analysis uses jurisdiction-fixed effects and therefore estimates the effect of HOAs on segregation *within* jurisdictions.
34. I also substitute a *shift-share* based instrument for the HOA lagged variable, which interacts the share of HOA units in a jurisdiction at $t=1980$ (the first year of the study period) with the growth in HOA units across the entire state of Florida. The results from the 2SLS estimation using this alternate instrument are substantively the same as those presented here and are available from the author on request.
35. [Cheung & Meltzer \(in press\)](#) and [Cheung \(2008\)](#) use a similar instrument strategy to estimate the effect of HOAs on local land use regulation and municipal expenditures, and assume an underlying relationship between the past and current growth of HOAs in any particular jurisdiction. See [Villas-Boas and Winer \(1999\)](#) or [Aronsson, Lundberg, and Wikstrom \(2000\)](#) for examples of lagged instrument variable approaches with panel data.
36. In addition, the correlation of the segregation indices over time varies depending on the domain, that is, it is as low as 0.33 for the Centile Income Gap index and as high as 0.81 for the black–white isolation index.
37. Specifically, either the added value of HOA amenities or the effective tax of the HOA fee may be capitalized into the value of the home, increasing or lowering the value respectively.
38. There are six places that are incorporated after 1980 and 891 places that are never incorporated. Most of the dropped places have no HOAs, and the average number of HOAs is just under 2 with about 250 units (compared with an average of 76 and over 2,000, respectively, in the sample used in the analysis). Therefore, the excluded places are, on average, places with significantly fewer HOAs. In addition, the tendency for HOAs located in unincorporated area to become incorporated municipalities is rare and Florida does not have any statutory process in place for de-annexations (based on conversations with the Florida League of Cities, of which every incorporated Florida municipality is a member). Likewise, municipal annexation is not prevalent over the study time period, and all regressions include a density variable on the right-hand side to control for changes in municipal expanse over time.
39. Therefore, the counterfactual to HOA membership in a particular jurisdiction is non-HOA residence, within the same jurisdiction. The current analysis exploits the longitudinal nature of the data set to observe within-jurisdiction changes over time. Because of data limitations, I cannot observe where households would have located, had they not moved into a particular jurisdiction; thus, the focus on within-jurisdiction changes.
40. Similar specifications are run with alternative measures of HOA presence: the number of HOA units per housing unit and the total number of HOAs. The results are substantively the same and are available from the author on request.
41. Summary statistics are also replicated with a cutoff of five HOAs (to test for differences due to more intense HOA presence) and results are substantively the same. These are available from the author on request.
42. The table displays only first-stage regressions for specifications estimating isolation indices to avoid redundancies. Coefficients are marginally different for first-stage regressions pertaining to dissimilarity indices because of the disparity in the number of observations; the significance and signs are identical. The Sargan–Hansen statistic for regressions using dissimilarity indices is 2.56 ($p = .278$).

43. Although only *Log (SF permits)* is significant in the first-stage regression, all instruments are significant at $p \leq .05$ (and the coefficient on *HOA_unitcount* remains the same) when *HOA_avgsize* is removed from the right-hand side.
44. Again, the table displays only first-stage regressions for specifications estimating isolation indices to avoid redundancies. Coefficients are marginally different for first-stage regressions pertaining to dissimilarity indices because of disparity in the number of observations; the significance and signs are identical. The Sargan–Hansen statistic for regressions using dissimilarity indices is 1.47 ($p = .479$).
45. Although only *Log (SF permits)* is significant in the first-stage regression displayed, *15-year lag HOA_unitcount* is also significant at $p = .05$ (and the coefficient on *HOA_unitcount* remains the same) when *HOA_avgsize* is removed from the right-hand side.
46. In 2SLS models without *HOA_avgsize* the coefficient on *HOA_unitcount* is negative and significant. The effect is small: For every 10% increase in the number of HOA units income segregation decreases by 0.4%.
47. I also run 2SLS models using only two of the three instruments. Models instrumenting with permits and lagged *HOA_unitcount* together or intergovernmental revenue share and lagged *HOA_unitcount* together fare better in the overidentification test. For these regressions the results remain substantively unchanged (except for a marginally significant coefficient on *HOA_unitcount* when using the latter pair of instruments).
48. When I run single-year regressions, any association between HOA prevalence and segregation does generally go away (especially in earlier years); this reinforces the importance of identifying off of changes over time.

Notes on Contributor

Rachel Meltzer is an assistant professor of Urban Policy at the Milano School of International Affairs, Management, and Urban Policy. Her research centers on issues related to housing, economic development and local public finance, and how public policies in these areas affect neighborhoods and cities.

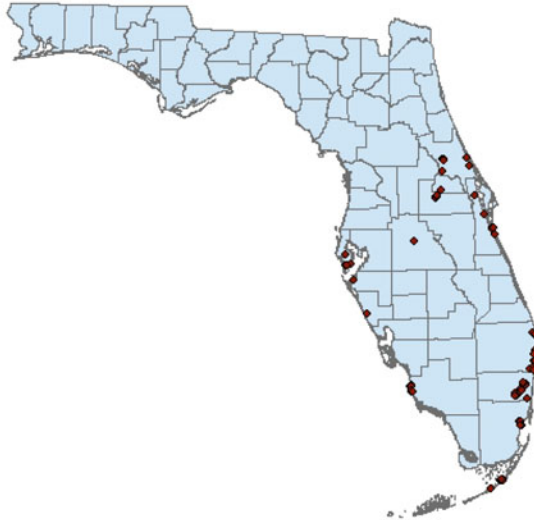
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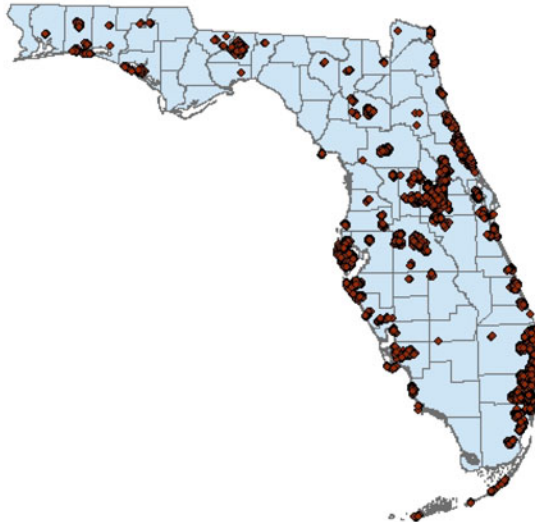
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Appendix A. Spread of Homeowners Associations Across Florida

1970



2008



Source: Authors' calculations.