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## Peer-To-Peer Accommodation and Gentrification: The Moderating Role of Community Resilience

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# **Peer-To-Peer Accommodation and Gentrification: The Moderating Role of Community Resilience**

## **Introduction**

Among the paid online peer-to-peer accommodation platforms, Airbnb has become the iconic business model and been at the center of tourism research (Dolnicar, 2019). A series of studies have criticized the role of Airbnb in disrupting host communities, such as increasing housing and rental prices and increasing crime rates (e.g., Barron et al., 2018; Gurran, 2018; Horn & Merante, 2017; Lomas, 2016; Schäfer & Braun, 2016). Such disruption of host communities can in turn lead to a critical societal issue: gentrification.

Gentrification of an area involves a rise in rent and housing value as well as an increase in the percentage of higher income, more educated, and white resident populations in previously lower income, less educated, and non-white neighborhoods (Chapple et al., 2017; Chapple & Zuk, 2021). The issue with gentrification stems from the displacement of original residents due to increased living costs. The displacement can further result in loss of community values, health equity, and quality of life (Atkinson, 2010; Wilder et al., 2017).

Studies have repeatedly linked Airbnb and other short-term accommodations to gentrification in host communities (Wachsmuth & Weisler, 2018). Residents of popular destinations have expressed their anti-tourism stance and hostility toward Airbnb users and tourists (Amore et al., 2020; Cocola-Gant et al., 2020). Yet, banning Airbnb may be a knee-jerk solution but not a sustainable one considering its economic and social benefits to the area. There is a need for research on how Airbnb operations affect host communities with different characteristics and how we can moderate its impacts.

The current study turns to the idea of community resilience to help explain the extent that an area can adapt following disturbances, such as gentrification. Communities with greater resilience are believed to better endure crises and disturbances (Magis, 2010; Norris et al., 2008). Hence, this study aims to examine community resilience's moderating role in Airbnb's impact on gentrification and provide insights on addressing the Airbnb-induced gentrification.

## **Literature Review**

### ***Peer-to-peer accommodation and Gentrification***

Peer-to-peer accommodation, especially Airbnb, has been the target of critique for its role in gentrification and other processes of neighborhood change (Gant, 2016), along with other short-term rental companies. Research has found that long-term residents lose out when short-term rentals become dominant forces in local housing markets (Cocola-Gant & Gago, 2021; Gant, 2016; Mermet, 2017). When housing is converted to short-term rentals, this increases housing values, displacing tenants and facilitating gentrification (Gant, 2016; Mermet, 2017). Because short-term rentals are tied to the tourism industry, investments in tourism by cities, can lead to an increase in short-term rentals, which can lead to sprawl and gentrification (Mermet, 2017; Urquiaga et al., 2020).

A central issue within this phenomenon is that Airbnb, and companies like it, increase the financialization of housing, in which housing becomes a commodity rather than a public good, enabling investors to seek the most efficient route to profit (Cocola-Gant & Gago, 2021). In such heavily touristed areas, outside investors who become professional hosts can outcompete amateur

hosts, driving up the cost of renting and contributing to gentrification (Katsinas, 2021). Cocola-Gant and Gago (2021) thus describe short-term rental-induced gentrification as a social justice issue. Although much research on Airbnb-induced gentrification occurs in large, global cities (Urquiaga et al., 2020), this trend is not limited to such cities; smaller, post-recession cities also experience gentrification from short-term rentals—wherever rent gaps appear and are recognized (Katsinas, 2021).

The rent gap is a concept used to explain the mechanism by which gentrification creates neighborhood change and displaces long-term residents (Robertson et al., 2020; Smith, 1987). The rent gap is the difference between the actual, current rent and the potential rent based on a neighborhood's potential for “upgrading”—such as through improvements to the housing stock, businesses that cater to wealthier residents, and other amenities designed to attract capital and wealthier residents (Robertson et al., 2020; Smith, 1987). In the case of short-term rentals, such as Airbnb, the rent gap presents a framework for analyzing the relationship between short-term rentals and gentrification (Wachsmuth & Weisler, 2018). Wachsmuth and Weisler (2018) found, similar to others, that Airbnb created a separate, new source of capital in housing markets, facilitating a rent gap that increased rents in tourism hotspots (Amore et al., 2020; Robertson et al., 2020).

A consequence of this—besides displacement—is tourism phobia (Amore et al., 2020; Cocola-Gant et al., 2020). Cities seeking to address this disruption to housing markets and resident complaints turn to regulation, though research shows regulating short-term rentals is difficult (Robertson et al., 2020). However, regulating short-term rentals is increasingly important, given inequalities in who gets revenue generated by short-term rentals. Airbnb increases both income of the host—which increasingly is outside investors—as well as the value of the housing stock, and does not require conversion of housing units, as traditional rent gaps do. Furthermore, tourism-led gentrification tends to be more concentrated in heavily touristed areas, which tends not to be where other gentrification happens, presenting new issues for cities who struggle with both (Robertson et al., 2020).

### ***Community Resilience and Gentrification***

Previous studies have adopted the idea of resilience to explain the response and “trajectory of functioning and adaptation after a disturbance” (Norris et al., 2008, p. 130). The disturbance could be an environmental and social change that interrupts the normal functions of a region. The primary focus of past research was on the resilience of social-ecological systems at an extended scale, such as cities, states, and countries (Ross & Berkes, 2014). More recently, resilience research has narrowed its scope to communities, demanding updated definitions and conceptualization.

Community resilience often refers to the ability of a community to withstand and thrive after sudden and unexpected changes (Magis, 2010; Norris et al., 2008). This ability comes from the community’s economic, social, environmental, institutional, and infrastructural resources, as well as the severity and duration of the changes (Yang et al., 2021). Literature on community resilience has categorized the resources into different dimensions. For instance, Norris et al. (2008) defined community resilience as a set of networked capacities: economic development, information and communication, social capital, and community competence. Our study adapts Norris et al.’s conceptualization of community resilience, given parallels between such infrastructures and effects of gentrification as a disturbance, but focus on community-level factors.

Airbnb-induced gentrification, though it may not be as sudden or unpredicted as natural disasters, disturbs existing communities through increases in housing prices and displacement of residents, especially those with less education, lower income, and/or of color (Katsinas, 2021). Like other disturbances, it is reasonable to expect that community resilience may mitigate the impact of Airbnb-induced gentrification. Communities with greater economic, social, environmental, institutional, and infrastructural resources would be more able to provide better protection for their residents and avoid displacement.

## Methodology

The current study focused on Florida as the study area, considering its recent surge in in-migration and tourism (Baram, 2019; Kirilenko et al., 2021). Multiple data sources were merged at the zip code-level to examine the relationship between Airbnb performance, community resilience, and gentrification.

First, gentrification, the dependent variable, was measured as a composite index of changes in non-White population, education level, and housing median value using principal component analysis. The decision to use the composite index followed the intersectionality approach. The data came from Zillow Housing Data (ZHD) and American Community Survey (ACS), which provides population, housing, and economic data for all levels of U.S. census geography.

Second, the main independent variables, i.e., Airbnb performance and community resilience, were created. Airbnb revenue was used as a proxy for Airbnb performance and its data was gathered from AirDNA, a commercial sharing economy data company. Multiple variables were created to gauge community resilience: vulnerability, community network, inequality, and socio-economic status (SES). The data for the variables were from ACS, ZHD, and Census ZIP CODE Business Patterns (ZBP).

**Table 1.** Descriptive Statistics (unit: zip code)

Variable	Min.	Mean	Max.	Std.
Gentrification	-2.54	0.00	5.77	1.00
log(Airbnb performance)	3.98	7.17	9.05	0.50
Community resilience				
Vulnerability	-2.74	0.00	3.59	1.00
Community network	1.00	12.59	53.00	8.03
Inequality	-4.75	0.00	8.09	1.00
Socio-economic status	-2.18	0.00	13.87	1.00
Hispanic	0.00	0.22	0.97	0.21
Minority	0.00	0.22	0.89	0.17
Female	0.22	0.50	0.65	0.04
Rented	0.00	0.35	0.95	0.16
log(Housing value)	10.50	12.26	14.23	0.49

Note. All variables are proportion to total population except for per capita income (inflation-adjusted USD), years of education, house median value, and Airbnb revenue. All variables are at

zip code-level. Airbnb performance and housing value variables were logged due to their vastly wide distribution compared to the other variables. The logarithm format change did not affect the significance of the variables.

Except for the community network variable—the number of individuals involved in religious, civic, and social organizations—, all variables were created using principal component analysis. The vulnerability index was a composite of the uninsured, non-citizen, and unenrolled population; the inequality index was a composite of Gini index, population below poverty level, and population with public assistance; the SES index was a composite of per capita income, employed population, and years of education. Table 1 provides the descriptive statistics of the variables.

At the zip code-level, only 5-year data existed for ACS. Hence, datasets for the intervals 2012-2016, 2013-2017, 2014-2018, and 2015-2019 were used as proxies for 2014, 2015, 2016, and 2017 data. There was data available for 723 zip codes, which covered about 77% of the total 935 zip codes in Florida. After removing missing cases, the number of zip codes was reduced to 620 (66%) for panel analysis.

For geographically weighted regression (GWR), the data was transformed into a cross-sectional format. The four-year data was averaged to create aggregated values for each zip code. In the process, more data points were removed due to missing data in gentrification as it measured changes from the previous year. This resulted in 465 zip codes (50%) for GWR.

The current study conducted two types of analysis: linear panel regression and geographically weighted regression (GWR). The purpose of panel analysis was to examine the relationship between gentrification, Airbnb performance, and community resilience over time and identify factors that significantly affected gentrification. R package *plm* was used to conduct the analysis (Croissant & Millo, 2021). The interactions of Airbnb performance and vulnerability variables were included to examine the moderation effect of community resilience. Two analyses were conducted, first without any interaction terms and second with interaction terms.

The panel analysis, however, was unable to observe differences between regions. Therefore, GWR was used to explore important local dynamics in the relationships among variables. GWR, as a spatial econometric technique, has recently been introduced to examine spatial variability (or spatial heterogeneity) in the relationships between variables in studies of tourism (Xu et al., 2019; Lee et al., 2020; 2021; Yang et al., 2021). After conducting the linear panel regression model below, the significant variables were used for conducting GWR.

## **Results**

### ***Exploratory Linear Panel Regression***

The results from the exploratory panel analysis are presented in Table 3. The column (1) results indicate that Airbnb performance was correlated with lower gentrification, contradicting the existing belief. This result could be due to observing an average effect. The impact of Airbnb performance on gentrification differed geographically, as indicated in the following subsection.

The community resilience reduced gentrification in the area. The more vulnerable and inequal the community was, the more likely that the community would see gentrification. That is, communities are more prone to gentrification if they are populated with more uninsured, non-citizen, unenrolled, below poverty-level, on-public-assistance residents and that exhibit a higher Gini index.

In similar logic, communities with greater SES (per capita income, employed population, and years of education) and more involvement with religious, civic, and social organizations (i.e., community network) were more resilient to gentrification.

The results with interaction terms also provided interesting findings. Though the community network variable was negatively correlated with gentrification, its impact was deterred by Airbnb performance. This indicates that greater Airbnb presence may hinder the benefits of community network in slowing gentrification.

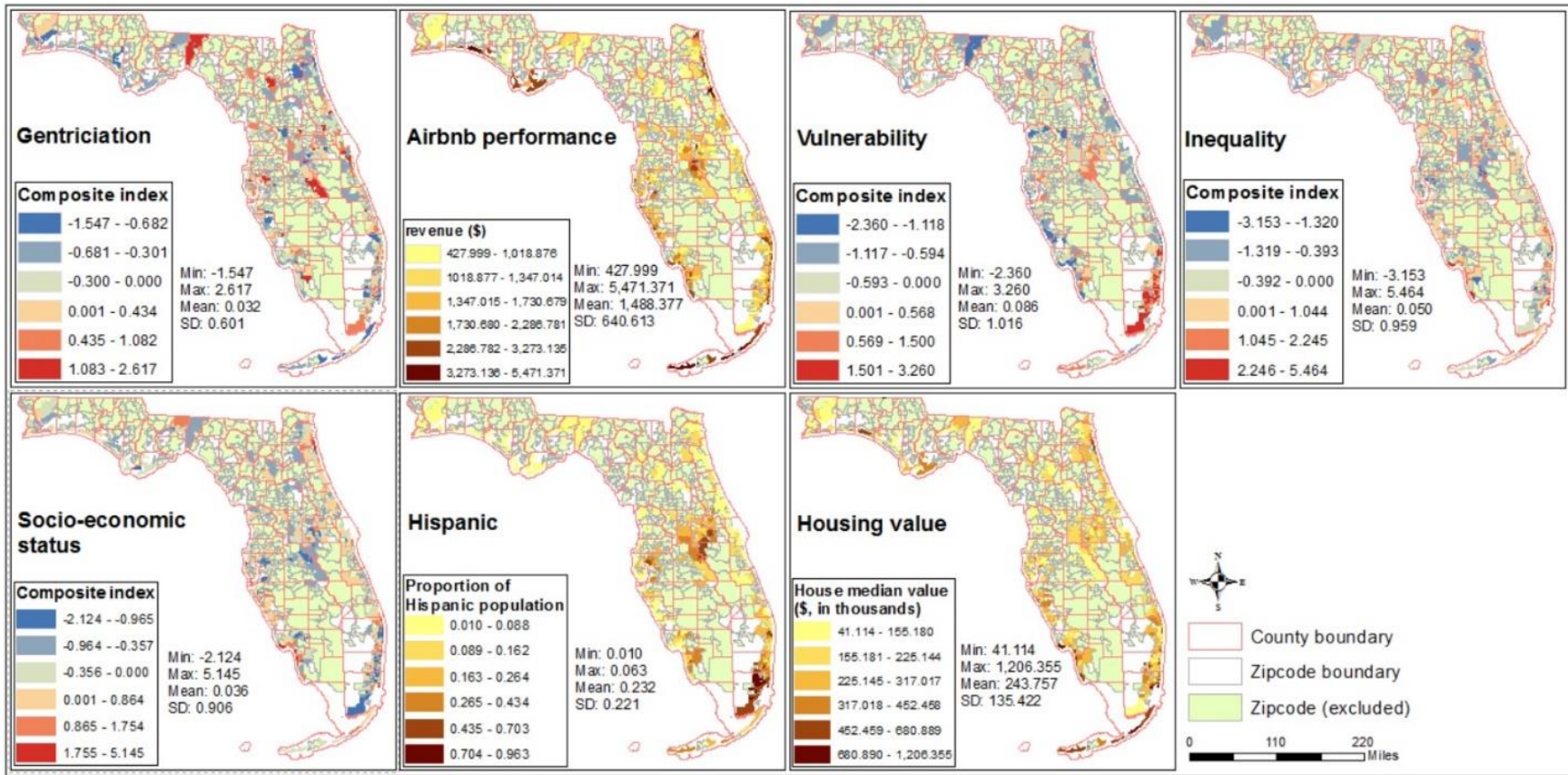
**Table 3.** Results of Exploratory Linear Panel Regression (n = 620)

Variable	(1)			(2)		
	Coef.	SE	p-value	Coef.	SE	p-value
<i>log</i> (Airbnb performance)	-0.47***	0.11	<0.001	-0.88***	0.20	<0.001
Vulnerability	0.62**	0.22	0.006	0.87	1.07	0.417
Community network	0.01	0.02	0.735	-0.24**	0.09	0.007
Inequality	0.23*	0.10	0.016	1.50	0.81	0.063
Socio-economic status	-3.06***	0.23	<0.001	-2.20	1.26	0.081
<i>log</i> (Airbnb performance)* Vulnerability				-0.03	0.15	0.858
<i>log</i> (Airbnb performance)* Community				0.03**	0.01	0.006
<i>log</i> (Airbnb performance)* Inequality				-0.17	0.11	0.111
<i>log</i> (Airbnb performance)* SES				-0.08	0.16	0.614
Hispanic	-5.29*	2.20	0.016	-5.94**	2.20	0.007
Minority	-2.30	1.98	0.247	-1.67	1.99	0.402
Female	0.02	0.76	0.970	-0.05	0.76	0.946
Rented	-0.26	1.98	0.894	-0.76	1.99	0.704
<i>log</i> (Housing value)	-2.52***	0.46	<0.001	-2.79***	0.47	<0.001
R <sup>2</sup>	0.4965			0.5066		

Note. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

### ***Geographically Weighted Regression Model***

According to exploratory linear panel regression, six variables (*Airbnb performance*, *vulnerability*, *inequality*, *SES*, *Hispanic*, and *housing value*) were significant. Figure 1 shows the distribution of dependent variables and significant independent and control variables.



**Figure 1.** Spatial distribution of variables for GWR analysis

The results of the GWR analysis are summarized in Table 3. The value of local  $R^2$  ranged from 0.199 to 0.870 with a mean of 0.373. The values of local condition index ranged from 11.135 to 21.599, which indicated the lack of local collinearity between the selected significant variables. According to the rho values, all variables except *housing value* indicated significant spatial variability in the regression coefficients at the 0.05 level. The local coefficients of Airbnb and community resilience variables ranged from -0.00063 to 0.00014 with a mean of 0.0008 (*Airbnb performance*), -1.185 to 0.509 with a mean of 0.119 (*vulnerability*), -0.226 to 0.258 with a mean of -0.012 (*inequality*), and -0.875 to 0.653 with a mean of -0.232 (*SES*). Such variability in the local coefficients represents spatial heterogeneity, which indicates spatially heterogeneous impacts of the Airbnb industry and community resilience on gentrification in Florida.

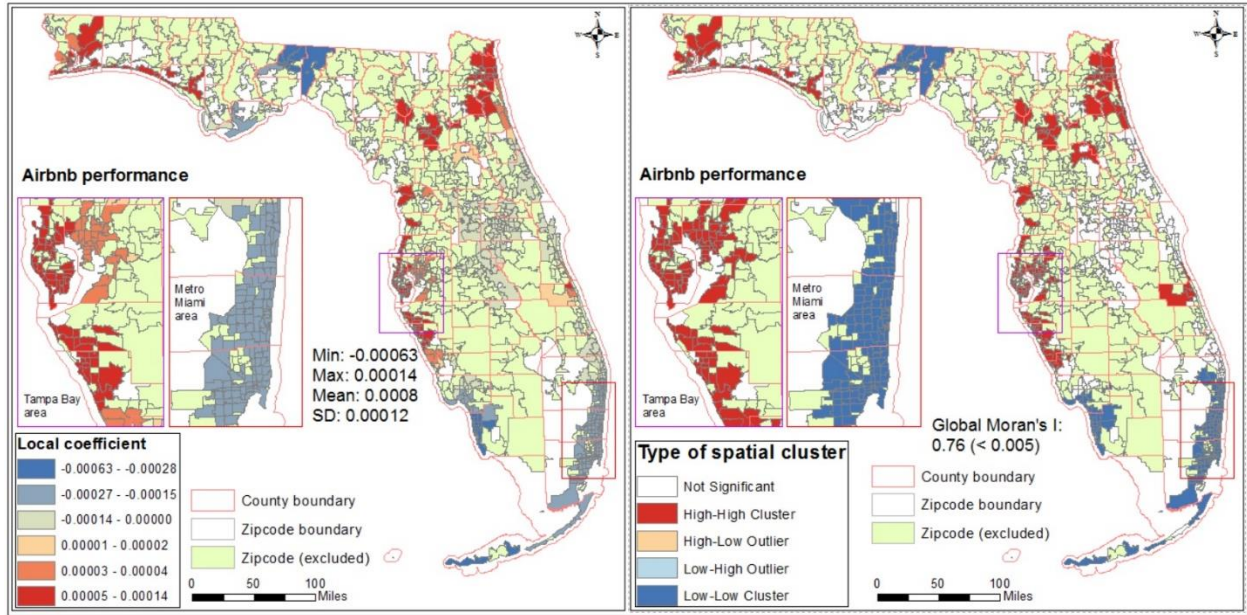
**Table 4.** Results of Geographically Weighted Regression Model

Variable	GWR coefficients ( $\beta$ )			Range	Spatial variability
	Min.	Mean	Max.		
Intercept	-0.227	0.515	1.619	1.846	
Airbnb performance	-0.00063	0.0008	0.00014	0.00077	Yes
Vulnerability	-1.185	0.119	0.509	1.694	Yes
Inequality	-0.226	-0.012	0.258	0.484	Yes
Socio-economic status	-0.875	-0.232	0.653	1.528	Yes
Hispanic	-6.947	-1.199	0.133	7.080	Yes
Housing value	-0.0000056	-0.000008	0.0000022	0.0000078	
$R^2$	0.199	0.373	0.870	0.041	
Condition number	11.135	13.422	21.599		
AIC <sub>c</sub>		723.014			

Note. AIC<sub>c</sub>: Corrected Akaike's information criterion.

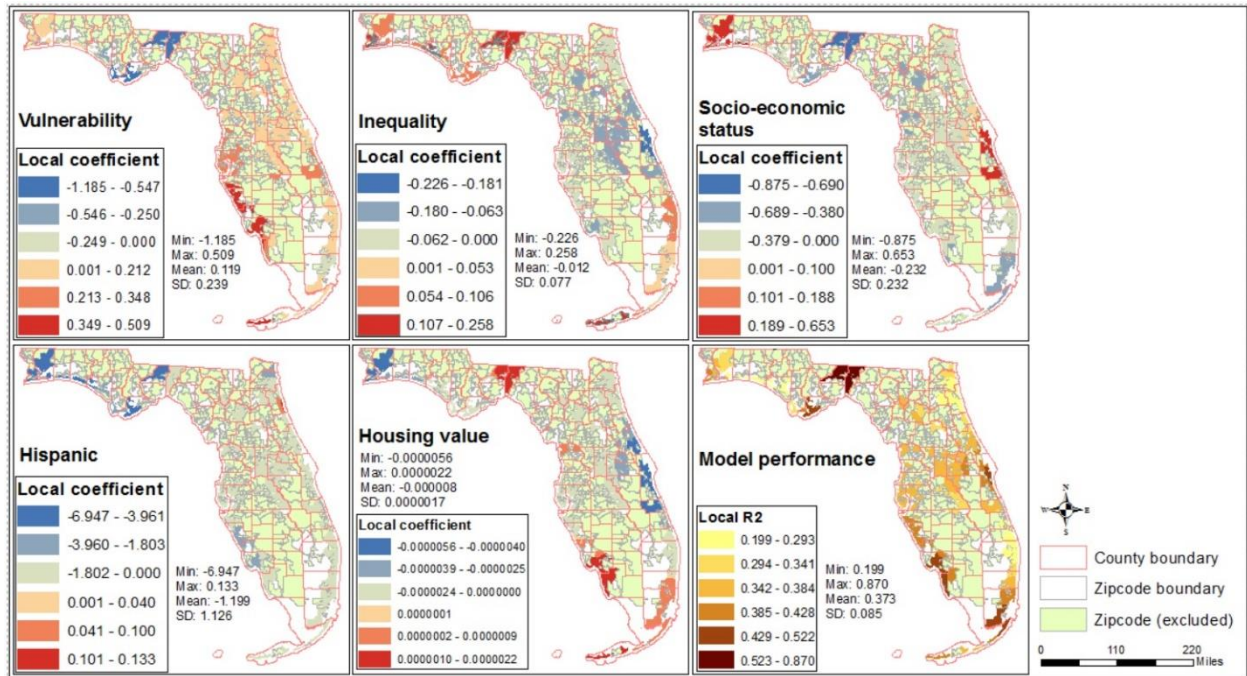
To provide a better understanding of these differences, Figure 2 illustrates the spatial distribution of GWR-based local coefficients for one exemplary variable (Airbnb performance) across zip codes in Florida. Specifically, Airbnb performance was positively associated with gentrification in the northwestern, northeastern, and western areas. Conversely, Airbnb performance was negatively associated with gentrification in the northern, southeastern, and southwestern areas. These results showed the existence of zip code-specific variations in the Airbnb performance-gentrification association.





**Figure 2.** Spatial distribution of GWR-based local coefficients for Airbnb performance

In the same vein, Figure 3 illustrates the spatially heterogeneous associations between other significant variables and gentrification. These results also indicated that the association of community resilience and control variables with gentrification varies across different geographic areas. Finally, the last panel in Figure 3 reveals spatially heterogeneous local  $R^2$ , indicating that the model performance from GWR analysis is not consistent across zip codes in Florida.



**Figure 3.** Spatial distribution of local coefficients for other significant variables and local  $R^2$

## **Conclusion and Discussion**

The findings from this study hint at the significant role of community resilience in addressing Airbnb-induced gentrification. The current study identified areas in Florida that were susceptible to Airbnb-induced gentrification: northwestern, northeastern, and western regions near the cities of Gainesville, Jacksonville, Pensacola, and Tampa. On the other hand, northern, southeastern, and southwestern regions, especially those surrounding the cities of Fort Myers, Miami, and Tallahassee showed a negative relationship between Airbnb performance and gentrification.

Greater vulnerability and inequality exposed the regions to gentrification, whereas higher SES and a better community network protected them from gentrification. However, the impact of community resilience indexes also differed geographically. The current study calls for location-specific approaches to moderating the Airbnb-induced gentrification. It is critical to understand how Airbnb and community resilience exhibit different patterns depending on the region.

Future studies should examine the impact of Airbnb performance and community resilience on gentrification at an even more granular level than zip codes. Gentrification often occurs on a smaller scale, which our study was not able to address due to the limitation of the available datasets.

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