

PLANNING FOR RESILIENT COMMUNITY: FUNCTIONS AND SUITABILITY OF HOME-SHARING FOR DISASTER RELIEF

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INTRODUCTION

Home-sharing is a typical type of community-based hospitality business. Developing home-sharing has become an alternative to large-scale accommodations in rural areas. While various restrictions have been placed on the home-sharing industry due to the negative impact it brings (Simcock, 2021), home-sharing may benefit a community during and post a major crisis. However, the potential positive functions and public goods of the home-sharing economy were underexplored. During disasters, home-sharing can provide critical accommodation resources to communities. Conducting a resource stewardship for home-sharing properties can help destinations avert unexpected disasters during the response and recovery phase. Past experiences have shown that the home-sharing properties have been used to increase affordable housing, emergency shelters, and medical stays during various crises such as wildfires, hurricanes, or floods (Griswold, 2017; Guesty, 2020; von Briel & Dolnicar, 2021; Wong et al., 2019).

Tourism destinations are vulnerable to disasters. Any man-made disasters or natural hazards can greatly affect not just the tourism economy but also the whole destination system. Natural disasters like earthquakes, hurricanes can cause a decline in tourism demand by up to 73% (Hajibaba & Dolnicar, 2018; Huan et al., 2004). Man-made crises such as terrorism, major crime, and political instability can cause an extreme decline in the tourism and hospitality industry (Sönmez, 1998; Xu et al., 2019). During the past decade, Florida has experienced a major loss of life and property due to a wide range of disasters. According to the National Hurricane Center, 40% of the Florida population live in places vulnerable to hurricanes and storm surge (FDEM, 2018). While tourism consists of nearly 10% of the Florida economy

(RockPort Analytics, 2017), tourism industry in Florida is particularly vulnerable to hurricanes. For communities who want to develop tourism into a pillar industry, it is important to build a resilient tourism destination and provide temporary housings to tourists and residents in times of crisis.

There is a good chance for the home-sharing economy to play a role in destination/community disaster relief. However, current public understanding and governmental regulations on the home-sharing economy have put limits to leverage this resource. Communities who look to develop the home-sharing business into a supportive industry for locals, must understand the interactions between the home-sharing and local community and pay efforts to integrate the home-sharing economy into the destination system. Accordingly, the overall guiding question for this study is: how could home-sharing contribute to community resilience in rural areas, and how could we plan for home-sharing in a resilient way?

The purpose of this study is two-fold: first identify the determinants that have been influencing the use of home-sharing economy for disaster relief purpose in rural destinations. Second, validate the determinants and make spatial planning suggestions for home-sharing siting.

METHOD

Based on the research goals, the study consists of two steps:

Step 1, survey residents' perception of home-sharing, community resilience, disaster response, and relevant policies so as to explore the chance of using home-sharing for disaster relief.

Step 2, identify the resilience-related factors that have significant impacts on home-sharing development and community crisis recovery. Using the factors to make spatial planning for home-

sharing accommodations and evaluate the current geographical distribution of the current home-sharing properties.

For step 1, we traveled onsite and surveyed 169 residents in the Gulf County of Florida to identify the factors that impact their attitudes toward using home-sharing for temporary housing needs after Hurricane Michael of year 2018, and how the level of shock and policies can intermediate the impact. To achieve that, three major constructs were measured: 1) residents' attitudes towards home-sharing business, 2) residents' perceptions of

community resilience, and 3) residents' attitudes toward the policy on home-sharing business. To control for the main effect, questions were created to measure residents' housing conditions, their experience with home-sharing economy, and socio-economic features. The research framework in Figure 1 shows the relationships among the constructs being measured. Questionnaire were designed in a way to inquire residents' perception towards the existing policy, resilience, and development of home-sharing economy as well as their agreement on using home-sharing property for disaster relief.

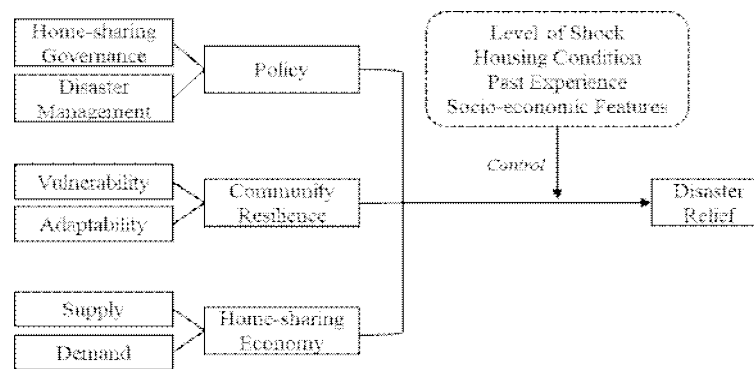


Figure 1. Resident survey framework

For step 2, a suitability model was built to identify the most suitable places to operate home-sharing properties for disaster relief. The scores were calculated by the formula below:

$$\text{Suitability Score} = \sum_i^n W_i \times S_i$$

$$S_i = F_i(x_i)$$

where Suitability Score represents the level of suitability a location, is the i th factor to be included in the siting decision, denotes the function to transfer different into comparable scale. In this study, the factor scores are assigned to each class defined by natural breaks. W represents the weight assigned to factor so that the $\sum W_i = 1$. The weights were calculated based on the value of the beta coefficients of the survey regression result as shown in Table 1.

Eventually we included four factors in to the model with their weights marked behind: 1. Area of Designated Enterprise Zones (DEZ)– 29.3%; 2. Number of reservations in home-sharing accommodation sector (DEMAND)– 23.9%; 3. Special Flood Hazard Areas (SFHA)– 20.7%; 4. Home-sharing performance: Revenue per available room (RevPAR)– 26.1%

FINDINGS

Among all the respondents, 82% were permanent residents of Gulf County. Over one third (34%) of respondents were male. 44% have a bachelor's or graduate degree and 54.2% have a high school or associate degree. In terms of racial and ethnic distribution, 87% were White/Caucasian, 10% were black/African American, and 1% were Asian/Pacific Islander. In terms of employment status, over half of the respondents were employed in some way and 30% were retired. The median income of the respondents which fell between USD 35,000 ~ 49,999, which corresponds to the U.S. census data. As of living conditions, 72% of respondents owned a home, while 18% rent a home. A large percentage (80%) live in permanent homes, while only 6% are in an apartment or condo, and 11% reside in mobile homes.

Table 1 showed the regression results for model 1-3. The four factors have shown significant influences on residents' perception of using home-sharing properties for disaster relief: (1) incentives, (2) prospect demand of home-sharing accommodation, (3) level of vulnerability of a community, and (4) effective community governance.

Table 1. Regression results

	Model 1	Model 2	Model 3
Demand of home-sharing	0.324**		
Supply of home-sharing	0.028		
Community vulnerability		0.281**	
Community adaptability		0.129	
Policy to home-sharing			0.354**
Policy to disaster management			-0.109
Perceived shock	0.074	0.083	0.147
House distance from seashore	-0.037	0.072	-0.01
Household size	-0.056	-0.03	-0.022
Length of residence	-0.072	-0.081	-0.11
Housing cost	-7.00E-03	0.022	0.039
Past experience as guest	0.024	0.166*	0.168*
Past experience as host	-0.072	-0.133	-0.05
Age	-0.071	0.021	0.014
Gender	-0.092	-0.05	-0.098
Education	-0.033	0.054	0.003
R square	0.158	0.154	0.185

Dependent Variable: agreement to share homes for disaster relief purposes

*Significant at Alpha = 0.10 level

**Significant at Alpha = 0.05 level

Figure 2 shows the suitability of all parcels to develop home-sharing for disaster relief purposes. The green and light green areas indicate suitable locations, while the brown and white areas represent unsuitable areas. The selection of the suitable areas not just considered a location's suitability to develop home-sharing accommodation, but also included the

factor of vulnerability, which can help facilitate homeowners' willingness to share their properties. The suitability map indicates that the vulnerability and business attractiveness are both higher in the north of Cape San Blas and the north of Highland View.

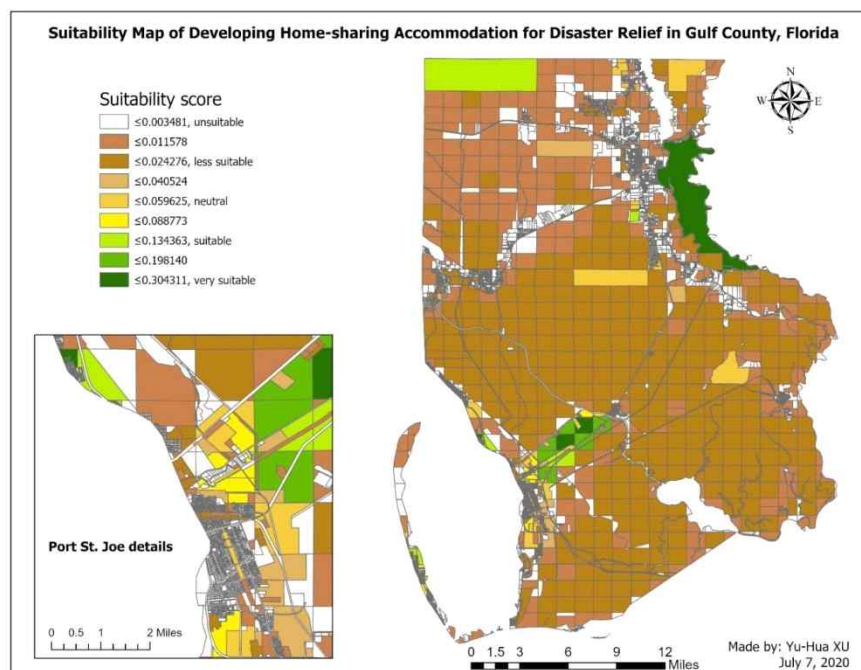


Figure 2. Suitability map of developing home-sharing for disaster relief

CONCLUSIONS AND IMPLICATIONS

The study used a mixed-method to explore the disaster relief function of home-sharing accommodations for communities. A survey was conducted among 169 residents in Gulf County, Florida, and suggested a group of factors that can encourage homeowners to engage in the practice disaster relief. First, incentives can largely enhance hosts' willingness to leverage their properties for crisis recovery. Secondly, people who have ever engaged in sharing economy as guests are more prone to share their resources for disaster relief. Thirdly, the level of vulnerability of a place can positively stimulate residents to share their homes to people in need. Finally, a good governance of the sharing economy and a prosperous shared service market will present an encouraging environment for people to share their resources during crises.

Based on the results from the survey, the second part of the study adopted a suitability model to identify the most suitable locations in Gulf County to use home-sharing for disaster relief. When interpreting community resilience, there should be a balance between adaptability and vulnerability (Cutter et al., 2008; Norris et al., 2008). Therefore, our suitability model adopted 3 factors representing the attractiveness to the home-sharing business and 1 factor to represent the community vulnerability. With an important assumption that a suitable place should be a place where homeowners are willing to share their properties, we made a map to assess the level of suitability of all parcels in the studied area.

It is recommended to design a system of incentives to encourage homeowners to register their vacant properties as temporary shelters in regular time and open it for hurricane evacuees in times of crisis. Since the mapped suitable areas are also susceptible to hurricane and flood, it is also suggested to implement architectural screening for safety before registering a home-sharing property for crisis recovery purposes.

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