UNDERSTANDING CLIMATE RESILIENCE TO ENVIRONMENTAL HAZARDS: HOW A BROWARD COUNTY COMMUNITY ASSESSMENT HELPS TO COMPLETE THE PICTURE

by

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ABSTRACT

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Climate patterns over the past century served to amplify the frequency and intensity of environmental hazards, including flooding, wind and heat. While indicators like SoVi and BRIC begin to characterize how people and places fair against hazards, they can be limited in scope. Through the administration of household surveys, I investigate the usefulness of such indicators by examining the roles communication, infrastructure, institutional efforts, financial independence, knowledge, mobility and social capital play in producing resilience within the Estates of Fort Lauderdale Community in Dania Beach, FL. While results confirm BRIC's Medium-High Resilience community classification, they push beyond Census data to pinpoint underlying resilience processes. Responses indicate that place attachment and community connectedness encourage weather-related information sharing, limited experiences and skills impede weather preparedness and response actions, and weather preparedness and response experiences are associated with less evacuation than expected. Findings prove to be richer and more policy and program actionable.

DEDICATION

This thesis is dedicated to the community members of the Estates of Fort Lauderdale in Dania Beach, FL.

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1 INTRODUCTION

1.1 Framing of Hazards, Vulnerability and Resilience

Over the past two decades, escalating losses from environmental hazards have prompted a reorientation of emergency management systems. This shift in policy steers away from the customary *post hazard* response approach and towards a *pre hazard* loss reduction approach via mitigation, preparedness and recovery programs (Cutter et al., 2000). As environmental hazards continue to increase both in frequency and intensity, it is extremely crucial to define and understand the scope of impacts such hazards can pose so that we can work to better adapt and better minimize loss moving forward. To undertake such characterization, we must first focus on vulnerability as a whole, to then be able to understand the role that resilience plays and its significance in determining overall impacts of natural hazards.

Over the years, researchers have created and implemented vulnerability assessments. Such assessments aim to paint a picture of not only a hazard's scope of impact but of the biophysical and social systems present within an area as well, as the degree to which populations are vulnerable to hazards does not solely depend on their proximity to a hazard nor a hazard's intensity.

The concept of vulnerability has evolved over time, as researchers continue to explore the elements of hazards as well as the resulting climate implications. Vulnerability, viewed as a coupled human-environment system, is a function of three overlapping dimensions: exposure, sensitivity and adaptive capacity (Turner et al., 2003a). *Exposure* characterizes the stressors and the entities under stress; *sensitivity* characterizes the first-order effects of the stresses; and *adaptive capacity* characterizes the responses to the effects of the stresses (Polsky et al., 2007). Within this function, adaptive capacity relates to resilience, and thus, vulnerability research and developments were first necessary to set a foundation for resilience research and developments. Generally, with an increase in adaptive capacity, we see a decrease in vulnerability.

Foundational vulnerability assessments and risk-hazard analyses have sought to understand the impact of hazards as a function of exposure to the hazard event and the dose-response (sensitivity) of the entity exposed (Turner et al., 2003a). Such past quantitative assessments help to explore the first two dimensions of vulnerability but rarely help to fully account for the systems and dynamics in place within the exposed areas that result in varying levels of responses, consequences, and impacts (adaptive capacity). The resulting vulnerability maps reflect this approach, as they generally focus on hazard exposure with some reference to the differing population characteristics and variables at play that tend to influence vulnerability.

The third dimension of vulnerability- adaptive capacity- serves as a vital piece to understanding vulnerability, as the abilities of all people in a given place to adapt are rarely homogenous (Turner et al, 2003a). Some individuals or social classes will likely be better equipped to cope with specific stresses, while others' adaptation options may be limited by insufficient resources or political-institutional barriers (Schroter et al., 2005). While some efforts have been made to account for this varying degree of adaptation, and to map resilience, they represent multivariate Census-driven composite resilience indicators, which may not allow for complete and useful local small scale application. Baseline Resilience Indicators for Communities (BRIC) is one such effort that characterizes resilience via sixty-one indicators within six overarching types of resilience- social, economic, community, institutional, housing/infrastructure, and environmental (Cutter et al., 2014). Yet, such indicators have neither been assessed for, nor applied to, areas of smaller scale.

1.2 Research Focus

Broward County is a coastal county experiencing changing climate trends that are testing its local resilience (the resilience of neighborhoods, communities, and the local governments that serve them). Utilizing the BRIC framework as a conceptual foundation, this study serves to examine the roles that locally adapted BRIC indicators and dimension types play in shaping resilience within Broward County communities. Specifically, BRIC indicators and resilience types were adapted to both our local study area (The Estates of Fort Lauderdale in Broward County. FL) and our local hazards [flooding (tidal, heavy precipitation and storm surge), wind and heat], in order to create a more meaningful resilience metric for our local landscape and composition. The resulting resilience dimensions for this study were Communication, Financial Independence, Infrastructure, Institutional Efforts, Knowledge, Mobility and Social Capital. The roles that these seven dimensions play in local resilience were explored, both quantitatively and qualitatively, through survey administration at the household level within the selected study community of the Estates of Fort Lauderdale.

The research question for this study is as follows:

How useful are multivariate Census-driven composite resilience indicators (such as SoVi and BRIC) in characterizing the climate resilience of local communities to environmental hazards?

a) What processes, underpinned by the following locally tailored dimensions, produce resilience to environmental hazards at the community level within Broward County?

    i. Communication
    ii. Financial Independence
    iii. Infrastructure
    iv. Institutional Efforts
    v. Knowledge
    vi. Mobility
    vii. Social Capital

1.3 Expected Contributions

This work contributes to existing literature by suggesting a more comprehensive, customized, transparent method for evaluating resilience at the local community level, which can then be used to complement existing broader scale, higher resolution, resilience metrics and assessments. Moreover, it helps to account for those processes that exist that underlie the production of resilience, which can often be overlooked by broadly designed resilience assessments. Small scale resilience characterizations like the one in this study must be conducted for communities within Broward County, FL so that communities are able to successfully adapt to the existing wide range of local environmental hazards.

1.4 Research Method Overview

A customized household level survey was created and administered within the study community in order to gather applicable data and produce results. The survey responses gathered from the 100 household surveys were scored and utilized to produce resilience dimension scores and an overall resilience score for the community. Dimension to dimension correlations were then assessed to pinpoint dimensions possessing connections and producing greater trends within the community. Cross tabulations within correlated dimensions were also created to bring to light specific related concepts and resilience processes existing within the community. Altogether, this analysis helped to highlight the role the seven dimensions of this study play in characterizing resilience as well as how these dimensions work together to produce interwoven storylines throughout the community.

1.5 Thesis Outline

The following section introduces relevant literature and explores the existing gaps in research regarding local resilience assessments to environmental hazards. I then outline the process for adapting the broad scale, higher resolution, resilience metric of BRIC to our local community for this study. My study design and methods then follow, which detail the development of the survey instrument, the community selection process, and data collection and input process. The study area composition and community specific research are also included within my design and methods. Lastly, I detail the data analysis process and discuss the project's results and conclusions. Based on the conclusions, future potential exploration is suggested.

2 LITERATURE REVIEW

2.1 Escalating Impacts From Environmental Hazards

For centuries, environmental hazards and disasters have plagued communities and people across the globe. Changes in the global climate and lifestyle over the past century have altered temperature and weather patterns and consequently have served to amplify the frequency and intensity of such hazards, resulting in stronger storms, rising sea levels, more intense rainfall, increased drought, etc. From 2005 to 2014, the yearly average of weather-related disasters was 335, which represents a 14% increase from the previous decade and an almost 50% increase from two decades before (Vyas, 2019). The increasing frequency of environmental hazards and disasters has also taken a hefty economic toll, especially here in the United States. In 2017, sixteen separate billion-dollar disaster events impacted the United States, ranging from hurricanes to inland flooding, which resulted in $306 billion worth of damages (Pohl, 2018). Three major environmental hazards affecting communities worldwide, country wide, and statewide within Florida, are flooding events, hurricanes and extreme heat events.

Under high emissions, Coastal DEM reveals that 250 million people globally currently live on land below annual flood levels and by mid-century this number will rise to 340 million (Strauss & Ziemlinski, 2019). As of 2012, 3.7 million people in the United States alone had been living on land within 1 m of high tide and were at high risk of coastal flooding (Strauss et al., 2012). Flooding has proved to be a wide scale global problem, as well as a local problem within Broward County, FL. Local communities are experiencing not only the increasing impacts of tidal flooding, but flooding from heavy precipitation and storm surge events, as concurrent sea level rise raises the baseline of flooding during all events (Clark et al., 1998). In the past few decades, the local flooding hazard has been exacerbated by regional variations of the rate of sea level rise and land elevation change (subsidence) of coastal communities and an increase in the frequency, intensity and geographic distribution, of severe storms (Wdowinski et al., 2016; Clark et al., 1998).

In the year 2017, the United States experienced a new record for highest cumulative damage costs from natural disasters, which exceeded $300 billion (2017 U.S billion-dollar weather and climate disasters, 2018). During the same year, the National Flood Insurance Program (NFIP) paid out over $8 billion dollars in flood insurance claims due to natural disasters (FEMA Reflects On Historic Year, 2017). In Florida alone, 25 federal flooding disasters were declared between 2000 and 2017, which represents a major economic impact and threat as Florida ranks as the second most vulnerable insured U.S coastal state, with $2.86 trillion worth of coastal property at risk (Hurricane Costs, 2017).

Hurricanes also produce severe physical and economic impacts around the world and especially in Florida. They not only cause severe wind and rain, but tornadoes and severe storm surge and flooding as well, all of which can be extremely dangerous. Each year, about 10,000 people die in hurricanes and tropical storms worldwide and those who do survive these storms can still be left in dire circumstances (“Hurricane Damage”, 2011). Infrastructure, lifelines and community pathways can all be destroyed or hindered as a result of hurricanes, which jeopardizes people's health, safety and wellbeing and can halt normal functioning and sustainment of communities. Severe storms can also lower U.S. production and increase unemployment. The Coastal shoreline across the United States is especially susceptible to these impacts, which poses a major threat to the economy as these coastal shoreline counties account for 40% of America's jobs. Moreover, the governmental economic cost to repair damage from hurricanes is about $28 billion a year, with Florida alone accounting for 55% of that total (Amadeo, 2019).

Changing temperature patterns are some of the most significant impacts people are experiencing due to a changing climate. Heightened temperatures are causing changes in wind, moisture, and heat circulation patterns, which can result in detrimental health impacts such as heat stress and respiratory problems. According to the United States Environmental Protection Agency, more than 9,000 Americans have died from heat-related causes since 1979, with a peak in heat-related deaths in 2006 which was a year associated with widespread heat waves and was one of the warmest recorded years in the United States ("Climate Change Indicators: Heat-Related Deaths", 2017). Humidity plays a vital role in such impacts as high humidity prevents the human body from being able to regulate its own temperature. Because Florida is known for its high temperatures and humidity levels, its residents are at greater risk of impacts from extreme heat events (Witmer, 2019).

The increasing frequency and intensity of such local environmental hazards necessitates better planning, strategizing and adaptation. As the natural environment changes, management efforts need to change with it, adjusting appropriately, in order to offset the increase in risk. Towards the middle of the 20th century, there was a heightened focus on streamlining institutional hazard related efforts, which lead to the emergence of three possible strategies for hazard control- 1) the prevention of hazard events, 2) the prevention of hazard consequences once events have taken place and 3) the mitigation of consequences once these have occurred (Clark et al., 1998). Such strategies speak to the concepts of mitigation, preparedness and recovery, which serve as the foundation for combating the impacts of environmental hazards to this day.

2.2 Vulnerability Sets the Foundation for Resilience

An initial focus on vulnerability as a whole will help to set a conceptual foundation, which is necessary to be able to pinpoint and understand the role that resilience plays in vulnerability. While this study is focused on the concept of resilience and on evaluating communities in regard to resilience, we cannot do so without first exploring and accounting for vulnerability, as the conceptualization of vulnerability both preceded, and contrived, the concept of resilience. Additionally, the distinction between the two research fields must be established to understand how they then merge together.

While both terms represent varying research themes as a whole, some convergence between the two terms does exist conceptually or thematically. Vulnerability and resilience are both based on the idea of a coupled human-environmental system and reflect the general idea that human action and social structures are vital components within the overall natural hazard assessment picture (Adger, 2006; Turner, 2010). Moreover, both vulnerability and resilience research have similar goals, as they seek to identify and evaluate 1) shocks and stresses experienced by social ecological systems 2) the responses to such systems and 3) the capacities for adaptive action (Adger, 2006).

The major distinction between the two terms and areas of research is their overall motivation or goal. The concept of vulnerability emerged first and seeks to identify the characteristics that make systems *weaker* and thus works to identify areas most likely to be negatively affected by environmental hazards. Resilience, on the other hand, was conceived later on, as a byproduct of vulnerability, and seeks to identify the characteristics that make systems more *robust* to disturbances (Turner, 2010). While different in nature, both concepts work together to evaluate the resulting true vulnerability of a system, as the ability of resilience to reduce overall vulnerability is taken into account. As you will read in the sections to follow, current vulnerability framing actually incorporates the concept of resilience to account for one of its major components. Resilience is related to the capacity of response component of vulnerability, and thus, because of this interconnection, vulnerability and resilience are not complete opposites (Gallopin, 2006). The terms therefore work together, and while a vulnerable system is less resilient than a non-vulnerable one, this relation does not necessarily imply symmetry (Gallopin, 2006; Cutter et al., 2008).

2.3 The Emergence of Vulnerability and Vulnerability Assessments

A new holistic view and approach to hazard assessment and management was introduced in 1936 and was further explored in 1945 and beyond by Gilbert White. Under this approach, factors such as wealth, systems of belief, experience of previous hazardous events and psychological factors were accepted as having key influence on human responses to disasters (Macdonald, Chester, Sangster, Todd, & Hooke, 2011). Moreover, the notion of selection and adjustment in regard to flooding and other natural hazards was created as it was realized that individuals and societies experience a range of adjustments when they have to cope with extreme natural hazards. Essentially, it was established that the impacts and effects felt by natural hazards were partially the result of the hazard itself but also the result of how humans adjust to, and accommodate, the impacts and extent of such hazards. Adjustments to flooding hazards, for example, were identified as land elevation, flood abatement, flood protection, emergency measures and structural arrangements to physical structures such as roads and buildings, land-use changes, public relief and insurance (Macdonald, Chester, Sangster, Todd, & Hooke, 2011). Such adjustments and responses were identified as factors that play a key role in defining the relationship between hazards and human responses.

In 1975, this notion of adjustments fueled the creation of the first natural hazard assessment to merge natural disaster knowledge with social sciences (Mileti, 1999). These efforts of Gilbert White and sociologist Eugene Haas represented a shift from the traditional risk and hazard approach to a more pragmatic, interdisciplinary approach that began to account for varying issues and dynamics of both the physical and human environments. Population and economy shifts, increases in mobility, and housing infrastructure degradation were among the few variables identified as influential in determining the economic, social, and political ramifications of extreme natural events (White and Haas, 1975). While still relevant today, these factors only began to scratch the surface of potential influential variables to be considered when assessing hazard impact.

The first natural hazard assessment with an initial consideration of social science influences pioneered a new age of research and prompted other researchers, from a variety of disciplines, to explore the hazard phenomenon. Researchers sought to obtain a comprehensive understanding of not only hazards, but of places and populations being exposed to hazards, in order to restructure and modify mitigation plans and recovery efforts to account for specific hazards. Throughout the 1970s, the desire to acquire such understanding persisted, which prompted the emergence of vulnerability terminology. *Vulnerability*, broadly defined, refers to the degree to which a system, subsystem, or system component is likely to experience harm due to exposure to a hazard, a perturbation or stress/ stressor (Turner et al., 2003a).

During the early exploration of the concept and origins of the term "vulnerability", researchers aimed to explore and clarify our understanding of how hazardous events and human populations interact (Clark et al., 1998). A deeper look into vulnerability and its components occurred in 1998, when researchers created an assessment that embodied a new way to evaluate hazard impact. This assessment introduced vulnerability into the equation and served to highlight exposure (the risk of experiencing a hazardous event) and coping ability as co determinants of vulnerability (Clark et al., 1998). Variables such as age, income and lifelines were introduced as attributes that influence the ability to deal with, and recover from, storms (Clark et al., 1998).

The inclusion of such variables draws from previous research and highlights the interconnectedness of the multiple aspects of vulnerability, identified during this time as exposure and coping ability. Older age, for example, has been deemed a characteristic associated with an increased risk for suffering as older people are generally less mobile and less physically and mentally agile, often making them unable to resist storms or respond on their own (Clark et al.,1998). Here we see an increase in what was deemed "exposure", which would consequently cause an increase in vulnerability, unless coping ability was relevant and worked to simultaneously reduce this vulnerability, as coping ability serves as an antonym of social vulnerability (Clark et al.,1998). This exploration proved extremely critical for hazard managers in their search for points of intervention in the causal chain between hazard event and the downstream human consequences. Understanding vulnerability was, and is, necessary for managers to effectively address behavioral, managerial, institutional and other human activity-related issues that change the likelihood of severe impacts from hazards (Clark et al., 1998).

As researchers continued to merge varying schools of thought of hazard research and management, including those of geographers, climatologists, economists, and planners, they continued to uncover connections between everyday variables and vulnerability. Infrastructure density, habitation of at-risk land and wealth and socioeconomic disparities were among the next few notable variables to be identified as factors linked to increasing the potential for greater human losses to hazards (Miletti, 1999). However, these efforts had only partially provided explanations for vulnerability and the resulting losses from disasters. Further explanation recognized that hazards are complex due to overlapping and interacting environments- "the physical systems that give rise to extreme events are complex and changing and the socio-economic characteristics of the nation's people are dynamic" (Mileti, 1999, p.133).

2.4 Vulnerability as a Three-Dimensional Function

While these initial assessments proved to be extremely pivotal in the development of vulnerability assessments, they were limited in scope and inclusion. They conceptualized vulnerability as two dimensional, comprised of exposure and coping ability. However, research began to demonstrate that vulnerability is not only registered by exposure to hazards, but also by the sensitivity and resilience of the system experiencing such hazards (Turner et al., 2003a). It wasn't until the early 21st century, when "Sustainability Science" emerged, that scientists began to embrace a more dimensional way of thinking.

Sustainability science is based in the ideology of coupled human- environmental systems, which stresses how human and environmental systems are not separable entities but rather are part of an integrated whole. Linkages and interdependencies exist between both systems that affect overall vulnerability, and thus, the process of assessing vulnerabilities demands a thorough investigation of biophysical, cognitive, and social dimensions of human- environmental interactions (Turner et al., 2003a; Schroter et al., 2005). Vulnerability evaluations based in the sustainability science ideology, describe vulnerability as being a function of three overlapping dimensions: *exposure, sensitivity* and *adaptive capacity* (Turner et al., 2003a).

Within this function, exposure serves to characterize the stressors and the entities under stress. In terms of a changing climate, this would encompass the specific environmental hazards as well as the geographic extent of the hazards impact (including those populations and infrastructure within this zone). Exposure includes the site and situation of the place and the proximity to hazard sources and events. Basic flood prediction maps are examples of exposure maps. The second dimension, sensitivity, characterizes the first-order effects of the stress. These effects are determined by the sociodemographic and physical characteristics of an area. Factors such as elevation, population characteristics, infrastructure quality and dependence can impact how sensitive an area will be to hazards.

Adaptive Capacity, the third dimension of vulnerability, characterizes the responses to the effects of the stresses (Polsky et al., 2007). Adaptive capacity encompasses actions taken to either reduce or avoid risk or damage from hazard events, or to reduce or avoid peoples' or places' exposure and/or sensitivity to hazard events. Moreover, it accounts for the way in which peoples' specific characterizations, abilities and resources serve to lessen the impact of hazards. Using this conceptualization, human-environment systems would be more vulnerable to the effects of environmental hazards if they were not only exposed and sensitive to the effects but also had limited ability to adapt (Polsky et al., 2007). Conversely, a greater ability to adapt (adaptive capacity) of people or place would reduce their vulnerability to hazard events.

When describing actions taken to, or characteristics that, reduce the impacts of exposure and sensitivity, researchers utilize a vast array of terms including mitigation, adaptation and resilience. While not completely interchangeable with adaptive capacity, these terms speak to the same goal and consider the capacity to cope with, deal with, and adapt to hazard events. Especially related, and mentioned previously, the term "resilience" refers to the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events (Pennsylvania State University, 2019). People and communities with strong adaptive capacity have greater resilience (U.S Global Change Research Program Climate and Health Assessment). Thus, within the three-dimensional function of vulnerability, adaptive capacity serves to represent resilience, and with an increase in adaptive capacity, we see a decrease in vulnerability. This relationship further highlights the partial degree of conceptual linkage and overlap between vulnerability and resilience as entire concepts. While not complete opposites, generally as vulnerability increases, resilience decreases (Cutter et al., 2014)

2.5 The Evolution and Limitations of Vulnerability Assessments

Following the emergence of sustainable science, researchers began to strive to embody, and account for, the three varying dimensions within their assessments. The scope of identified influential variables began to widen and focus expanded from the biophysical environment and built environment to the social environment as well (Cutter et al., 2000 and 2003). It wasn't until the late 1990s that a major emphasis of the interaction between both the biophysical risk and the social response involved with hazards emerged, which also stressed that this interaction is geographically specific. Through the creation of the Hazards-of-Place- model of vulnerability, it was determined that a population's vulnerability did not depend solely on its proximity to the potential source of threat, but rather also depended on characteristics that can contribute to greater vulnerability on particular population subgroups within specific areas (Cutter et al, 2000). Thus, vulnerability was denoted as "place" vulnerability, and was constructed as a function of not only the potential of risk and the social fabric of an area, but of geographic context as well.

Consecutive research continued to explore the varying components of the Hazards-of-Place model, with a specific focus on dissecting social fabric. Some researchers believed that socially created vulnerabilities were generally being ignored and even when included, were based off of the predictive characteristics of people (race, age, income, etc), rather than the social and place inequalities that existed within a region. (Cutter et al., 2003). In 2003, a systematic approach to quantifying social vulnerability based on qualitative characteristics of an area was developed. This approach was grounded in three major tenets in vulnerability research- identifying characteristics that link to vulnerability, incorporating exposure and accounting for societal resistance or resilience to hazards (Cutter et al., 2003). These foundations link to the three dimensions of vulnerability, as identified via sustainable science-sensitivity, exposure and adaptive capacity.

Utilizing principal component analysis, an assessment tool was created that aimed at ranking and monitoring changes in social vulnerability, both geographically and over time, by providing counties across the United States with a specific Social Vulnerability Index Score (SoVi) (Cutter et al., 2003). Within the analysis, 42 variables, including age, gender, race, socioeconomic status, physically or mentally challenged populations, non- English speaking immigrants, the homeless, transients, tourists, housing type, infrastructure, and lifelines, were reduced to 11 independent factors that accounted for about 76% of the variance between counties. The 11 most influential factors that were thus utilized to generate SoVi were, in descending influence, personal wealth, age, density of the built environment, single-sector economic dependence, housing stock and tenancy, African American race, Hispanic ethnicity, Asian race, occupation and infrastructure dependence (Cutter et al., 2003). This reductionist technique provided a concise, representative, set of factors that could be tracked over time and could be replicated at other spatial scales.

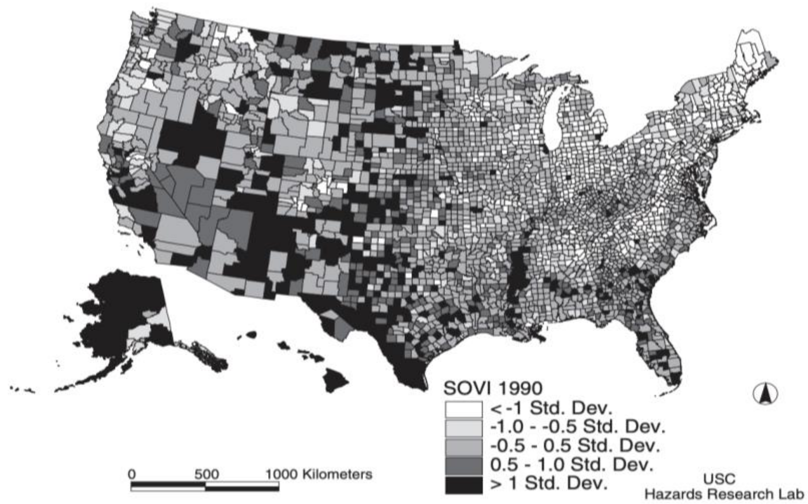

Figure 1. Comparative Vulnerability of U.S Counties Based on the Social Vulnerability Index (SoVi)

As seen in the resulting SoVi map in Figure 1, a significant portion of U.S. counties exhibited moderate levels of social vulnerability. Those counties that resulted with a SoVi score greater than +1 standard deviation were deemed most vulnerable, while those counties -1 standard deviations from the mean were deemed least vulnerable. The most vulnerable counties consisted of highly urbanized areas, large Hispanic and/or Native American populations and socially dependent populations (Cutter et al., 2003). 12.5% of all counties were classified in the most vulnerable category, with Manhattan Borough in New York City ranking as the most vulnerable. Least vulnerable counties were concentrated in New England and the Great Lakes states, with Yellowstone National Park, MT and Poquoson, VA ranking as the least vulnerable (Cutter et al., 2003). While the variables are consistent with other vulnerability measurements and assessments and strive to reflect all three vulnerability dimensions, they are partially limited in their ability to do so.

According to the three-dimensional structure of vulnerability, increased exposure and sensitivity is cause for increased vulnerability, just as increased adaptive capacity is cause for decreased vulnerability. However, when looking at a singular variable, such as poverty, and how it relates to vulnerability, it is limiting to suggest that an increase in poverty results in an increase in vulnerability purely because it is associated with increased sensitivity. Increased poverty could also be associated with a higher level of adaptive capacity, as people could use their resources more effectively and may be taking actions to reduce their susceptibility, regardless of their financial standing. Thus, sometimes a variable isn't encompassing enough to capture all three dimensions of vulnerability. Often times other variables and actions can be at play that make these variables less directly influential.

Although sometimes limited in their scope and variable inclusion, Social Vulnerability Index scores do serve as instrumental relative measures of socio-economic vulnerability, allowing for visual representations of how one county may fare in relation to others. Such benchmarking of vulnerability allows for the identification of highly vulnerable counties, so that greater attention and resources can be allocated. Originally constructed at the county level for broad hazard application, replications of SoVi began to downscale to a finer geographic unit and to a variety of specific hazards, including drought, hurricanes, and sea level rise. In 2012, the utility of social vulnerability metrics was tested when SoVi was constructed at the census tract level for a specified study area as is seen in Figure 2 (the USACE South Atlantic Division) for flood risk (Cutter et al., 2012).

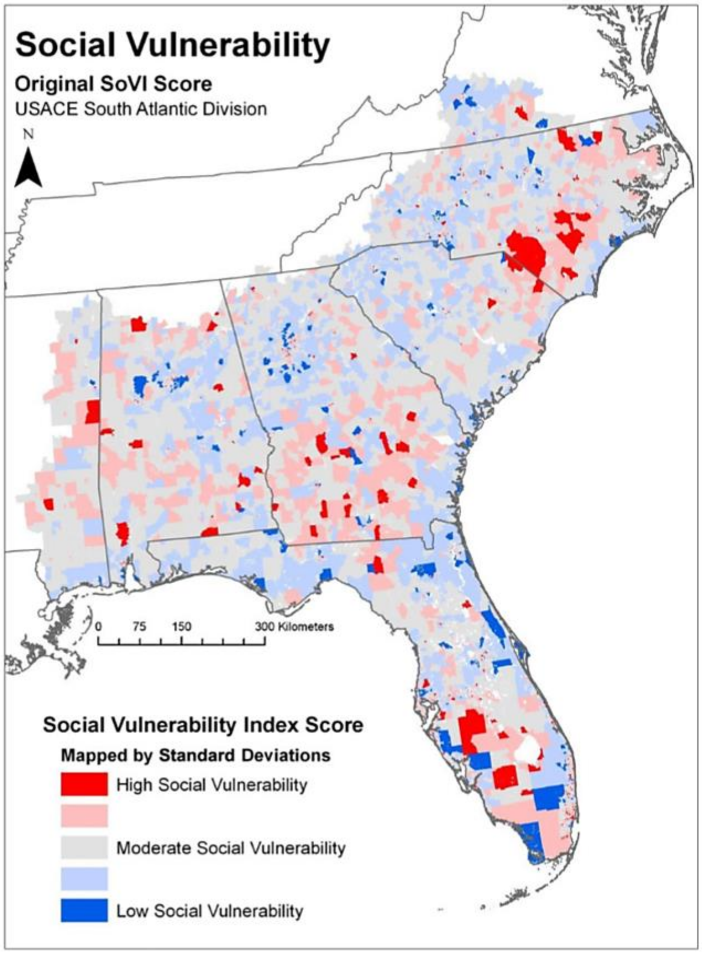

Figure 2. Social Vulnerability Index (SoVi) for the USACE South Atlantic Division

Thirty-two variables were reduced to nine variables, which explained 73% of the variation in the data. These variables included poverty and race, age, urban/rural, wealth, gender, migration and renters, Hispanic ethnicity, special needs population and race and ethnicity (Cutter et al., 2012). The 2012 study then went on to evaluate eight variations of this SoVi by comparing the variations to the original SoVi, as a means to test their spatial and statistical sensitivity, including an assessment of each variant's robustness, reducibility, scalability and transferability. It was concluded that while it is possible to downscale SoVi and such measures are scalable within specific geographic areas, the SoVi metric itself is inherently place-based and thus one metric cannot be applicable to all regions. This geographic constraint, along with the same limiting variable factor from the original SoVi, inhibits this metric from being used as a general, all encompassing, metric for any location to determine vulnerability. Moreover, the large number of variables, many of which seem to hold relation with other included variables, causes some concern for inflating confidence on their direct impact on vulnerability.

2.6 The Need for Resilience Assessments

As demonstrated, many vulnerability maps and assessments exist, however, they generally focus on the first two dimensions of vulnerability- exposure and sensitivity- and only partially account for adaptive capacity. While these maps begin to accurately portray vulnerability, as they account for the differing population characteristics and variables at play that tend to influence vulnerability, they are often still under theorized, as they rarely account for the entire vulnerability picture (Cutter et al., 2012).

To truly be able to characterize how individuals and communities will fare against a changing climate, researchers must account for, and fully represent, the third dimension of vulnerability- adaptive capacity – which serves to highlight the varying coping abilities of individuals in response to environmental hazards. Generating resilience assessments and maps that account for these varying capabilities and expand on the already identified and incorporated variables helps to complete the three-dimensional vulnerability picture. This adaptive capacity dimension, which accounts for capabilities and resilient actions, is the missing layer to many vulnerability maps, including the one in Figure 1.

2.7 Defining Resilience

In 1973, resilience was originally defined within an ecological framing by Crawford Holling, who characterized a system's resilience as the measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables (Holling, 1973). The motivation behind this origin was the need to address persistence and change in ecosystems (Turner, 2010). Under this definition, resilience referred to both a systems' ability to absorb changes and still persist and the amount of disturbance a system could take before it shifted into an alternative configuration (Holling, 1973).

The definition of resilience was then expanded, within the geography discipline, to address coupled human–environment systems (CHES), referred to as social-ecological systems (SES) in more recent literature. This concept of coupled systems was based on the idea that human and social processes are integral to nature and thus the distinction between the two entities is not discrete and easily definable (Adger, 2006). Resilience started being used to describe a system's ability to bounce back to a reference state after a disturbance as well as its capacity to maintain specific functions despite experiencing a disturbance (Turner et al., 2003). The concept of reference states was clearly incorporated into resilience terminology in 2006, as resilience became defined as the level of disturbance that could be handled until a system changes to a radically different state. Moreover, the definition and framing of resilience began to touch upon the human aspects of the resilience processes, highlighting the role of organization for, and adaptation to, emerging circumstances, within resilience (Adger, 2006).

Between 2006-2010, multiple researchers explored the conceptual relations among the terms vulnerability, resilience, and adaptive capacity. Because different disciplines were using the terms in different, sometimes incompatible, ways, they had emerged as strongly related but the precise nature of their relationships was unclear. Especially unclear was the relationship or overlap between resilience and adaptive capacity. The global change perspective viewed adaptive capacity as a component of resilience, while other disciplines viewed resilience as a component of adaptive capacity. Meanwhile, a least one CHES vulnerability research perspective employed the term resilience to a more general, broad component, described as coping capacity (Turner et al., 2003). Figure 3 visually showcases this ongoing discussion of the exact linkages between these terms and concepts. Especially of interest, is the depiction of the multitude of plausible conceptual connections and relationships between resilience (R), vulnerability (V), adaptive capacity (AC), and capacity of response (CR). The $\subset$ symbol stands for "subset of", while the $\not\subset$ symbol stands for "not a subset of", helping to display the multitude of relationships supported amongst literature (Gallopin, 2006). .

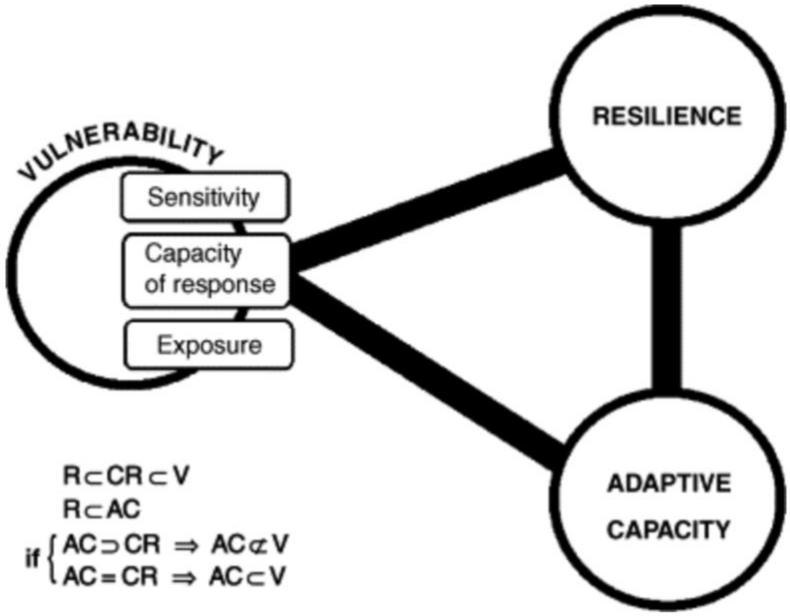

Figure 3. Linkages between Vulnerability, Resilience and Adaptive Capacity

Within the natural hazard discipline, there is a pretty general understanding that disaster resilience enhances the ability of a system to prepare for, absorb, recover from, and more successfully adapt to actual or potential adverse events in a timely and efficient manner (Cutter, Ash and Emrich, 2014). Originally within the ecology framing, resilience was defined by the notion of bouncing back to a pre-impact state. However, within the natural hazard and disaster framing, this notion has been expanded to include the concept of bouncing forward, or improving or bettering (Cutter, Ash and Emrich, 2014).

Resilience terminology hasn't been confined to just scholarly disciplines. With more and more city, state and country wide attention being paid to rising sea levels, intensified hurricanes, greater infrastructure destruction, etc, resilience is becoming a commonly used term in popular press. Specifically, it is being used in the context of how communities are responding to such ever changing climate events by channeling resources into building stronger infrastructure and by making current decisions based on considerations of future events and environmental threats. Resilience has emerged as ever growing and important within the professional and government world as well. Specific resilience-based academic, organizational and government positions have emerged across municipalities and counties, as well as across private companies, with the goal of better channeling resources and better adapting physical and societal systems for future events. In the past few years, many cities within Florida alone have acquired chief resilience officers and resilience coordinators. The presence and recognition of resilience through many facets of society only further supports its ever-growing importance.

As is evident, the term resilience has been around for decades, but its exact meaning has evolved and changed throughout time. More specifically, as mentioned, the incorporation of the term across a multitude of disciples has shaped the term and has resulted in many, often differing, applications. A big difference in the application of resilience across disciples and throughout time is whether a system of interest returns to a prior state or reconfigures into something different (Gunderson, 2010). For the purpose of my study, resilience will take on a general meaning of the ability to prosper through adversity, while also speaking to the notion of bouncing forward after a hazard event, rather than just rebuilding to the previous state. Here, resilience involves not only coping with consequences but moderating damages in a transformational manner in order to make systems more robust for future events.

2.8 The Emergence of Resilience Assessments

Some efforts have already been made to quantify and map resilience. In 2003, engineers created a framework emphasizing the importance of buildings and critical infrastructure on resilience (Bruneau et al., 2003). This framework was generated to help define seismic resilience of communities and to generate measures of resilience that could be useful for tracking and enhancing resilience over time. A key foundation for this study and studies to follow was the characterization of resilience for both physical and social systems as consisting of four properties- robustness (ability of systems to withstand a given level of stress), redundancy (the extent to which systems exist that are substitutable), resourcefulness (the capacity to identify problems, establish priorities, and mobilize resources) and rapidity (the capacity to meet priorities and achieve goals in a timely manner) (Bruneau et al. 2003). Subsequent frameworks followed a similar structure with the goals of 1) limiting damage to infrastructure, 2) mitigating the consequences and 3) recovery to the pre-event state. While such frameworks were helpful for structural applications of the physical environment, they didn't account for the social nature of communities.

In 2008, the notion that pre event capabilities influence resilience, and thus influence population health and individual mental health was solidified. A 2008 study declared that four sets of capacities determine resilience- economic development, social capital, information and communication, and community competence (Norris et al., 2008). These adaptive capacities were not identified as tangible tasks for preparedness, but rather as a part of the social and economic fabric of the community (Norris et al., 2008).

This theoretical foundation was then utilized in 2010 to generate a metric based framework that sought to measure the adaptive capacities theorized to influence community resilience within the study area of Mississippi. Only the concepts of economic development (including indicators representing resource level, resource equity and resource diversity) and social capital (including indicators representing social support, social participation and community bonds) were included in this analysis as literature of this time failed to identify methods for measuring the concepts of information and communication and community competence. An initial set of 88 potential variables underwent a process of elimination, where researchers determined whether each indicator was relevant and descriptive in nature, if it was used in the literature to measure that concept and if the measure produced results in alignment with what was known about Mississippi (Sherrieb et al., 2010).

The resulting indicators were used to produce composite indicators for both economic development and social capital. An additive index of community resilience was then created using Mississippi county data and was validated against both the well-established SoVi metric and survey data on collective effectiveness (Sherrieb et al., 2010). Through this repetitive process, researchers eliminated 77 of the initial 88 proposed indicators, with the final set of indicators representing capacities at the county, not the individual level. This study provided a pivotal advancement in identifying capacities that may predict a community’s ability to recover from disasters.

2.9 The Emergence of Baseline Resilience Indicators for Communities (BRIC)

During the same time, a new monumental resilience framework, known as the Disaster Resilience of Place (DROP) model, was created by other researchers with the purpose of improving comparative assessments of disaster resilience (Cutter et al., 2008). This model was developed in 2008 solely for place specific, community level, natural disaster applications and presents resilience as an inherent and antecedent condition in conjunction with vulnerability, as well as a process post hazard. It is based on the concept that the total resulting impact from a hazard is the sum of the antecedent conditions, event characteristics, and coping responses (Cutter et al., 2008). Specifically, the coping responses and social system dynamics of a community can moderate the overall local impact of a hazard. This conceptualization helped to highlight the relationship between vulnerability and resilience, as well as the impact that resilience has on recovery and on lessening hazard impact (Cutter et al., 2008).

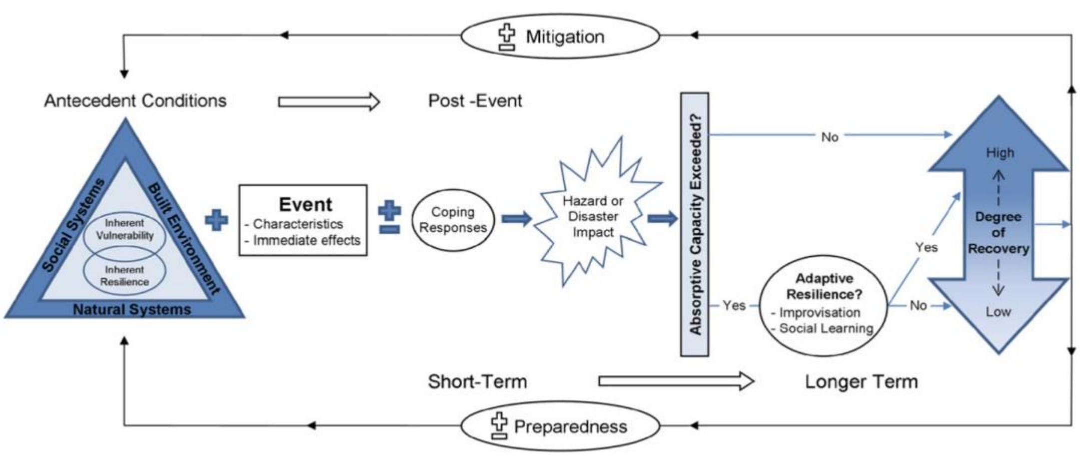

Figure 4. The Disaster Resilience of Place (DROP) Model

As seen in Figure 4, DROP represents resilience as a dynamic process dependent on antecedent conditions, the intensity of a disaster, the period between hazard events and the impacts of external factors (Cutter et al., 2008). Researchers acknowledged that to follow and utilize this conceptual framework, they first needed to be able to measure the first element of the model- inherent resilience. They needed to evaluate the antecedent or baseline conditions and those factors that inhibit effective response to then be able to utilize this initial metric to scale impacts and recovery. This prompted an integration of the literature at this time in order to lay the conceptual framework of what constitutes the extremely dynamic and multifaceted concept of resilience. The established resulting resilience dimensions were ecological, social, economic, institutional, infrastructure and community competence (Cutter et al., 2008).

The next step was to operationalize the model and create resilience metrics based on common indicators that could then be applied to places across the country. In 2010, this next step was achieved as researchers worked to generate a composite indicator for resilience, similar in concept to SoVi, as mentioned previously. Researchers utilized the resilience subcomponents or dimensions, established in 2008, to guide the categorization of the resilience indicators, which resulted in five subcomponents of resilience- social resilience, economic resilience, institutional resilience, infrastructure resilience and community capital (Cutter et al., 2010). Thirty-six individual variables were combined to produce an aggregate measure of resilience for the U.S Federal Emergency Management Agency's (FEMA) Region IV, which encompasses the southeastern region of the United States. This aggregate measure was then able to quantify the relative position of resilience for a given place or system, which could then be measured and compared over time to pinpoint a magnitude of change (Cutter et al., 2010).

To accomplish the construction of a composite indicator, researchers utilized the Disaster Resilience of Place (DROP) as a conceptual basis. This methodology highlighted the idea that resilience is more than the product of natural systems and the built environment, but of social systems as well. Often times it is these social systems, such as improving social and organizational factors and increased community engagement that help to reduce the impacts from disasters. The resulting set of indicators became known as the Baseline resilience Indicators for Communities (BRIC).

2.10 Updated Baseline Resilience Indicators for Communities (BRIC)

Since the pivotal construction of the 2010 version of BRIC, a gap in understanding persisted, as researchers were still trying to pinpoint how disaster resilience varies from place to place within a larger geographic unit. In 2014, researchers utilized the 2010 metrics-based approach as a foundation and worked to extend this model for community disaster resilience. This application was generated to include a more comprehensive set of variables and a much bigger and heterogeneous study area of the entire United States, in contrast to the previous study area application of the Southeastern region of the United States (Cutter et al., 2014).

In this newly revised and refined version of BRIC, sixty-one potential variables, including those from the initial indicator set construction, chosen through conceptual, theoretical and/ or empirical justification, were narrowed down to a set of 49 variables. This new framework consisted of an additional thirteen indicators than the initial BRIC model and the additional resilience subcomponent, environmental resilience (Cutter et al., 2014). Following elimination of conceptually and statistically extraneous variables, the finalized variables were chosen as they proved to represent all six capitals or types of resilience- social, community capital, economic, housing and infrastructure, institutional and environmental.

The resulting minimum value of BRIC, which corresponded to the least resilient counties, was 1.67, while the maximum value of BRIC, representing the most resilient counties was 4.39. The average value of BRIC was 3.18 with a standard deviation of .37 (Cutter et al., 2014). The most resilient areas were the Midwest region of the United States, as well as Easter Wisconsin, Central Illinois and Northwestern Ohio. The least resilient areas were the Western United States, Southern and West Texas and in Eastern Kentucky and West Virginia (Cutter et al., 2014). The following subsections explore the six capitals of types of resilience utilized to generate these results.

2.10.1 *Social*

Social resilience was incorporated to capture the demographic qualities of a community's population that tend to be indicators of health, comprehension, communication, and mobility (Cutter et al., 2014). Quantifying how many physicians are in an area and the availability of health insurance and mental health support speaks to the physical and mental health of a community, just as access to a telephone speaks to the communication ability of a community. Other variables such as education, age, transportation, English competency, nonspecial needs and food provisioning capacity were incorporated within the social resilience capital, as they are indicators that help account for resources and characteristics of a community. While accounting for demographics helps to differentiate between communities, accounting for the level of conscientiousness and helpfulness toward fellow citizens within a community, helps to paint a larger picture of how a community works as a whole.

2.10.2 Community Capital

The indicators that comprise BRIC's community capital resilience type conceptually represent this level of community engagement and involvement. The presence of social networks (indicated by volunteering and religious and civic organizations) paired with the level of attachment and care for one's community, were highlighted as key components of community capital resilience. The incorporated indicators serve to build one's social capital and network base, which has proved to be vital to people's well-being and safety during a hazard and during recovery.

2.10.3 Economic

Eight indicators are included in BRIC to represent community economic vitality (via employment and homeownership), diversity (via tourism economies and retail store distribution), and equality in compensation (via equality in income distribution across races and ethnicities). The 2014 study also highlighted the impact of economic ties outside of the community, as communities with large businesses and a high proportion of federal jobs, generally have better access to resources and aid from surrounding areas post hazards.

2.10.4 Housing and Infrastructure

Additionally, according to the researchers, the quality of housing construction and physical capacities within a community to house and aid the displaced post hazard is extremely vital for gauging resilience. If homes are sturdy and up to date and if temporary housing, evacuation routes, shelters, high speed internet, and adequate schools are available to the community post hazard, then a community will be more resilient (Cutter et al., 2014).

2.10.5 Institutional

Also instrumental in gauging resilience, is the presence of programs, policies and governance within a community, as fewer jurisdictions within a county and greater proximity to seats of political and economic power, increases community resilience (Cutter et al., 2014). The value of programs and policies that may benefit communities before, during, and after a hazard was also stressed due to their ability to provide communities with knowledge and experience that is vital for preparedness and resource attainment. Local disaster trainings have also been linked to resilience, as they help to educate and prepare citizens on hazards and recovery skills.

2.10.6 Environmental

The final type of resilience incorporated in BRIC, environmental resilience, accounts for the qualities of the environment that enhance absorptive capacity of coastal surges and freshwater flooding and the efficiency of the use of natural resources (Cutter et al., 2014).

2.11 Subsequent BRIC Applications

Utilizing the 2010 BRIC framework as a partial foundation, another resilience study was conducted in 2015 to evaluate the relationship of resilience indicators and disaster recovery at the block group level by comparing them in a case study of the Mississippi Gulf Coast (Burton, 2015). The initial framework consisted of 98 variables, many of which were drawn from BRIC, while the remainder were derived from a multitude of sources. This extensive set of variables was reduced to sixty-four via a correlation analysis (Burton, 2015). The set of potential indicators for resilience assessment were divided into six resilience types, consistent with BRIC's framing- social, economic, institutional, infrastructure, community capital and environment.

A spatiotemporal assessment of the recovery of one, three and five years following Hurricane Katrina was the metric for external validation used to identify variables that could be sufficient for use in a disaster resilience index (Burton, 2015). A regression analysis was performed on the sampling of recovery points and their respective scores were spatially joined to their corresponding census block groups. The regression analyses worked to select those indicators that could be fit for measuring disaster resilience, due to their correlation with recovery from the external validation. Forty one out of the sixty-four indicators were selected and the variable scores for each subcomponent of resilience were averaged to avoid uneven contribution of subcomponents based on differing number of applicable indicators. The values were then combined to produce and map composite indicator scores of disaster resilience within the study area (Burton, 2015). The findings from this study suggest that specific resilience indicators have the potential to be externally validated using post-disaster recovery activities.

Also in 2015, the institutional sub index of the BRIC framework was replicated and tested for its applicability and utility for eighty-two counties in Mississippi in the context of pre- and post-Hurricane Katrina (Nguyen, 2015). The study area boundary was the same as that of the previously mentioned study linking resilience to recovery. Researchers aimed to determine the drivers of change in institutional resilience from 2000 to 2010 for the state of Mississippi and for Hancock, Harrison, and Jackson counties (Nguyen, 2015). Here, institutional resilience was viewed as the cornerstone of all resilience as institutions were thought to determine not only the resilience of social systems but of the economic system as well in terms of its structure and distribution of assets (Nguyen, 2015). To determine and track the drivers and influencers of change in institutional resilience, researchers conducted difference of means and median tests and performed an evaluation of change in ranking. An analysis of state and local hazard mitigation plans was also performed to help contextualize the resilience indicators and to provide rich, comprehensive, explanations for the observed changes (Nguyen, 2015).

Of the BRIC variables, those that proved to be the most influential drivers of resilience for the state of Mississippi were 1) mitigation spending 2) flood insurance coverage 3) disaster aid experience 4) jurisdictional coordination and 5) crop insurance coverage. At the county level, only the first three indicators along with population stability were concluded to be the institutional resilience drivers for Hancock, Harrison and Jackson counties. From the temporal standpoint of 2000 versus 2010 results, the increase in mitigation spending, flood insurance coverage and substantial improvements in the Hazard Mitigation Plan can be directly attributed to Hurricane Katrina (Nguyen, 2015).

A major revelation of this study was the significance and impact of scaling. The replicated BRIC scores for Mississippi in this study were scaled within the eighty-two counties. Paired difference of means tests suggested the scores scaled at the national scale for Mississippi were statistically different than the scores scale statewide in both 2000 and 2010, which was the direct result of the difference in scaling (Nguyen, 2015). At the Mississippi scale, each county was being compared against eighty-one other counties in Mississippi, while at the national scale, it was compared against 3,107 other counties in the U.S (Nguyen, 2015). This finding illustrates that spatial scale has a direct impact on resilience scores and must be considered when replicating the BRIC index, especially at the local level.

Another resilience application centered around the impacts from Hurricane Katrina occurred in 2015, when researchers sought to account for variations in recovery between neighborhoods in relation to Orleans Parish over the ten years following the major hurricane (Algu, 2015). To do so, the Baseline Resilience Index for Communities (BRIC) variables of percent black population, population 25 years and older with a bachelor’s degree, median household income and number of owner-occupied housing units were utilized for analysis. Other variables utilized were Percentage of Mail Delivery to Active Residential Addresses from June 2005 – June 2015 (considered an accurate indicator of population change following a disaster), Female headed households with no husband present, Median Rent and Average Flood Depth (Algu, 2015).

These resilience capital indicators were analyzed for the Orleans Parish as a whole, as well as for six individual New Orleans neighborhoods within the Parish to provide a multitude of resolution and detail. The six neighborhoods were identified as they not only experienced a sharp decline in mail delivery directly after Hurricane Katrina but also experienced unique recovery patterns due to the incorporated socioeconomic factors in the succeeding years (Algu, 2015). As a whole, the Orleans Parish progressed in all resilience capital indicators except for median household income, and thus it was concluded that New Orleans was close to making a full recovery. However, the recovery patterns of the individual neighborhoods expressed an uneven and skewed pattern toward upwardly mobile neighborhoods which experienced negligible flood damage (Algu, 2015).

In 2016, the BRIC framework was utilized to explain the resilience divide between urban and rural areas within the United States at the County level. Multiple statistical tests were conducted to describe the relationship between rurality and resilience as compared to urbaness and resilience (Cutter, Ash & Emrich, 2016). This was accomplished by exploring the quantitative relationship between each composite resilience assessment score generated for each county by the BRIC framework and the USDA rural-urban classification for the United States. The USDA rural-urban classification categorizes each county based on the size of their population into nine categories with 1 being the most populated and most urban and 9 being the least populated and least urban (Cutter et al., 2016). This application resulted in multiple significant findings. Firstly, the statistical tests revealed that economic capital drives resilience in urban areas, while community capital drives resilience in rural areas.

Furthermore, consistent with previous analyses, this application proved that significant spatial variability existed in the components of resilience within rural areas, which suggests that a standardized set of resilience indicators is insufficient in enhancing resilience at the county scale (Cutter et al., 2016).

2.12 Determining Locally Applicable Resilience Dimensions Based off of BRIC

While an instrumental starting point, assessments such as BRIC, and the resulting maps as shown in Figure 5, may be incomplete and may not be useful at the community scale. As demonstrated, different places have distinct socio-economic and demographic characteristics specific to each area, and thus BRIC is sensitive to changes in the area and hazard(s) of interest, the enumeration unit and/or the incorporated indicators. BRIC mapping in Figure 5 represents a county level, country wide, model designed broadly for disaster application- it is large scale both in enumeration unit and disaster incorporation.

To be able to apply assessments like BRIC at a smaller scale, the framework requires tailoring, as many of the indicators applicable countrywide and at the county level may not be applicable at different geographic areas and scales nor for different disasters or hazards. Even more, indicators that are vital for defining resilience in specific local areas, may not have been applicable in larger scales, so could have been excluded when constructing BRIC initially. Such specific local indicators are crucial for understanding local resilience and need to be identified and incorporated.

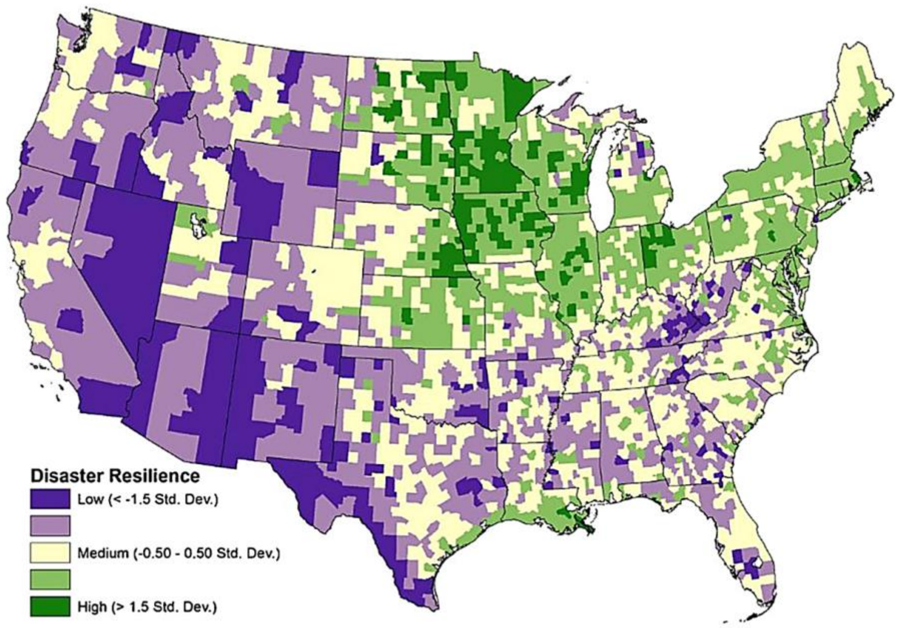

Figure 5. BRIC Disaster Resilience Index Map for the United States, 2010.

For the purposes of this study, in order to measure and map resilience within local Broward County communities, it was necessary to adapt BRIC's method and to revisit the influential indicators, in order to assure relevance still exists locally. By doing so, I adjusted the enumeration unit from the county scale to the community scale, adjusted the hazard(s) of interest from all major disasters to those locally relevant (tidal flooding, storm surge, heavy rainfall, extreme wind and extreme heat) and considered the impact of the local social fabric and population dynamics. This method required incorporating indicators and data that reach beyond the freely available data that has been used previously.

Each of the 61 resilience indicators utilized in BRIC were revisited and the corresponding supporting literature that had been utilized as justification for indicator inclusion were reviewed. The indicators were each assessed for their general local applicability and for their determinant relationship with resilience. Through this analysis, many indicators were deemed non influential in determining resilience to local hazards within Broward County, as they either were superfluous in nature, irrelevant or were solely disaster response focused. Those indicators that were deemed influential for characterizing local resilience, determined via literature review, were then reorganized into new resilience dimensions tailored specifically for Broward County communities- Knowledge, Communication, Mobility, Financial Independence, Social Capital, Institutional Efforts and Infrastructure.

Upon reviewing the literature and becoming familiar with the variable justifications used for BRIC, connections and relationships between indicators became apparent, as many indicators work together in real life to influence larger scale resilience processes. Such connections and processes did not seem to be accounted for within the BRIC composite score.To rationalize and depict such processes that influence resilience, I generated conceptual roadmaps for each dimension, which highlight the incorporated applicable indicators and showcase the interactions present within each dimension. Some indicators incorporated in BRIC were expanded upon, some were omitted for our study purposes, and some new indicators were added to the resilience analysis, as they arose from local social fabric and other literature, outside of the literature utilized for BRIC construction. Moreover, the conditions and processes within these maps help to highlight the added value of this study. The major components of each dimension are outlined in Table 1 and the seven conceptual roadmaps are detailed in Figures 6-12. As indicated within the roadmaps, the applicable environmental hazards include tidal flooding (indicated by “tidal”), extreme wind (indicated by “wind”), heavy rainfall and storm surge (indicated by “storm”) and extreme heat (indicated by “heat”).

Table 1. Center for Environmental Studies (CES) Resilience Dimensions and Corresponding Components

CES Resilience Dimension Concepts	
Communication	Media outlets Social networks Emergency communication services
Financial Independence	Individual security Economic stability
Infrastructure	Manmade Natural
Institutional Efforts	Climate Mitigation efforts Climate Recovery efforts
Knowledge	Hazard maps Climate-related Experiences Preparedness and response training
Mobility	Transportation accessibility Means to evacuate
Social Capital	Place attachment Community connectedness

2.12.1 Communication

Communication is a major key to resilience to environmental hazards. Information transfer becomes critical, especially during major storms, when people need fast and accurate communication about the storm, evacuation routes, available shelters, and accessibility of food, medical supplies, and other necessities (Burger et al., 2013). Furthermore, to increase resilience, communication is required before, during and after a hazard or disaster (Burger et al., 2013). BRIC acknowledges the importance of communication in determining resilience but focuses solely on quantifying telephone service availability. While this measurement definitely contributes to communication, there is a qualitative aspect to communication as well. The type of phone used to communicate (landline versus cell phone), the media outlets engaged in, the emergency communications services employed, as well as the social networks engaged in, all contribute to communication in a more dimensional way.

In the last two decades alone, communication has changed dramatically due to changes in the Internet, and the expansion of Web sources and social media (Burger et al., 2013). Therefore, for this study I will capture not only telephone service availability and use, but also the availability, accessibility and utilization of social networks and media outlets that help expand and nurture one's communication, regularly and in times of trouble. Furthermore, improving awareness of, and building trust in, disaster information and communication networks for all people requires that the information be communicated via multiple languages and multiple outlets (Messias et al., 2012). For this reason, I will incorporate language competency in my study, as was incorporated in

BRIC. Figure 6 depicts the conceptual process of these indicators that influence communication.

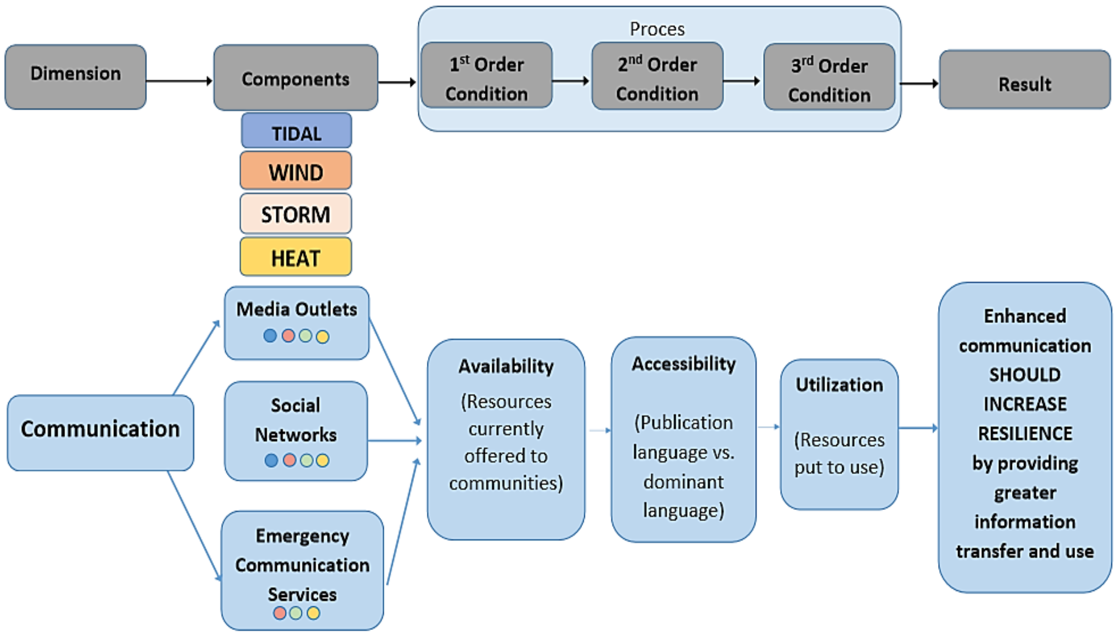

Figure 6. Environmental Hazard Resilience Roadmap- Communication

2.12.2 Financial Independence

Building off of BRIC's economic resilience, I have included a financial independence resilience dimension in my study. For my study purposes, financial independence is divided into two major facets- individual security and economic stability. Individual security is comprised of homeownership and income equality, while economic stability is comprised of employment and non-dependence on tourism. All indicators included in this dimension were derived from BRIC and possess direct local relevance to resilience, which is evident in Figure 7. Homeownership results in not only home equity but has also been linked to the ownership of other financial assets and resources that increase resilience (Haveman and Wolff, 2005). Moreover, homes are often considered more vulnerable when they are rented, multi-family, manufactured, crowded, or subject to overpayment, as they are more likely to change than other units in the face of stress and households living in these homes are at greater risk of being adversely affected (Pendall et al., 2012).

Income equality also plays a role in determining resilience as research suggests that low income neighborhoods with income inequalities experience especially strong adverse psychosocial effects after experiencing disasters (Norris et al., 2008). Income inequalities can cause psychological and financial hardship, can inhibit people from having access to resources and has the ability to divide people. When looking at financial stability from a larger standpoint, business diversification helps to distribute employment among various employers, creating stability, and avoiding single-sector economic dependence. Locally, having a diversified economy, and one that is not heavily dependent on tourism is crucial, as tourism industries can be heavily impacted by environmental hazards. Such diversification also helps to create stable employment, which creates a more resilient population (Sherrieb et al., 2010).

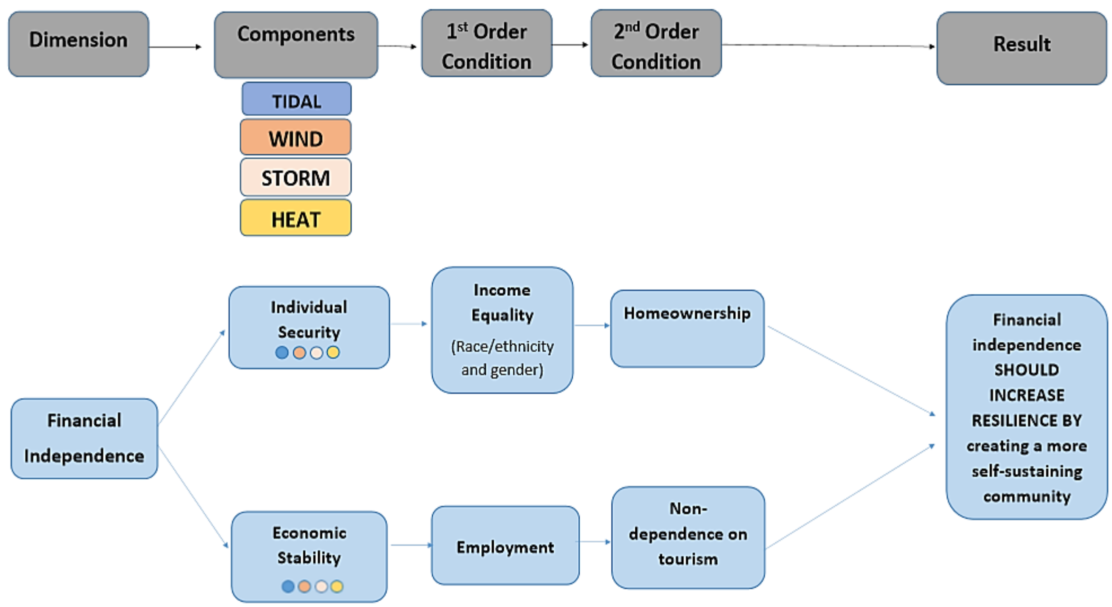

Figure 7. Environmental Hazard Resilience Roadmap- Financial Independence

2.12.3 Infrastructure

Infrastructure is foundational in assuring that a place will withstand the impacts of hazards. Three major man-made infrastructure elements- housing types, housing quality and facility/ structure availability- are incorporated from BRIC into my study to represent the role that the physical environment plays in resilience. Research suggests that the chance of a fatality occurring is ten times greater in mobile homes than in permanent homes (Sutter and Simmons, 2010). This poses a great degree of risk for Florida residents, as there are many mobile home parks that are at risk of severe damage and danger. Almost 30% of all mobile home fatalities in the United States have occurred in Florida and Georgia (Sutter and Simmons, 2010). Sturdier housing types or those homes that are not manufactured (non-mobile homes) prove to be more resilient in the face of hazards, and thus, typically, areas with little to no mobile homes are less vulnerable than areas comprised mostly of mobile homes.

Better building quality and code adherence also plays a major role in reducing the vulnerability of the physical environment as building codes help to assure structures are more durable and help reduce death, property damage, and disruption to institutions and homeowners post disaster (Theckethil, 2006). Seawalls and their corresponding codes are something specific to consider for Florida neighborhoods located on or near a major waterway. Once a hazard does occur, the availability of shelters and other facilitates impacts the ability of people to cope with, and respond to, environmental hazards. Shelter availability typically helps people stay safe, protected and cared for, which allows them to normalize their lives and gives them the support they need to restore their household routines (Tierney, 2009).

When considering infrastructure, there are also natural elements to account for, which help to attenuate the impacts of hazards. Pervious surfaces are the main natural element my study will focus on because it applies throughout various areas in Florida. Pervious surfaces, or green spaces that are permeable, serve important hydrological functions because they absorb water (Tourbier and Westmacott, 1981). With increased urbanization, pervious surfaces are often replaced with impervious surfaces, such as streets and sidewalk, which increase runoff volume, peak discharges, and associated flood magnitudes (Brody et al., 2012). Generally, with decreased amounts of pervious surfaces, communities can experience greater intensity and frequency of flooding and the resulting levels of damage and human losses. Other natural elements that can impact resilience include natural flood buffers and renewable energy. Greener and more biophilic cities, which take steps to preserve wetlands and incorporate more drought tolerant vegetation, serve to make a city more resilient in the long run ecologically, economically and socially, due to their greater capacity to lessen impacts of flooding (Brody et al., 2012).

With more vegetation and natural coastal buffering, commercial and residential areas can experience flooding, which helps them to maintain normal productivity. Energy use- both type and efficiency- can also play a role. BRIC focuses on energy use as a resilience indicator, with the justification that energy efficient areas have greater energy security and create fewer pressures from economic activities on the environment (UNDESA, 2007). My study will also focus on energy in regard to renewable energy back up modes, such as solar powered lights and batteries and grills, to explore if, and how, such resources are instrumental in the recovery process after hazards. See Figure 8 for the conceptual roadmap of the infrastructure resilience dimension.

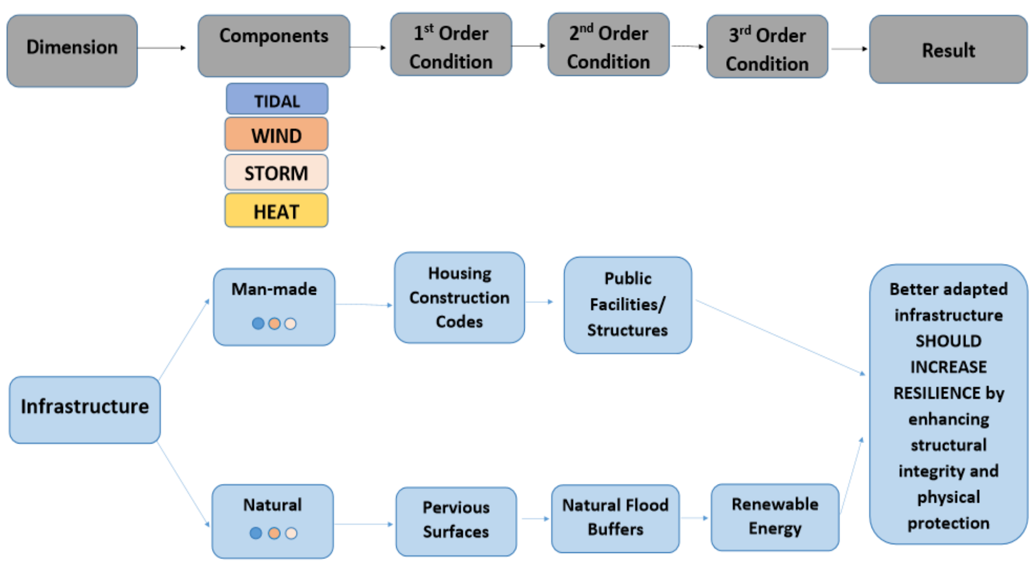

Figure 8. Environmental Hazard Resilience Roadmap- Infrastructure

2.12.4 Institutional Efforts

When characterizing resilience, it is also extremely important to emphasize the macro level efforts and determinants. Institutional efforts, both mitigation and recovery centered, play a major role in communities' resilience because those mandates and actions taken at a higher-level trickle down to the neighborhood level. For my study application, jurisdictional coordination, mitigation spending, and flood insurance coverage, need to be in place (as is depicted in Figure 9), in order for communities to have the standards, resources and projection and recovery aid needed to withstand environmental hazards. Both government leaders and community leaders play a role in hazard resilience- government authorities have the resources and power to help to assist across the municipality, and communities can help provide their members with the materials and knowledge needed to prepare for hazards. Community emergency management involves a strong interdependency between communities and the local government emergency management agencies, which highlights the importance of maintaining jurisdictional coordination especially for resiliency purposes.

Mitigation spending is also a necessity for ensuring a safe future. By spending 3.5 billion dollars on hazard mitigation from 1993 to 2003, the federal government saved society 14 billion dollars in estimated losses (Godschalk et al., 2009). Spending money to adapt and prepare for hazards, proves to be an instrumental way of suppressing losses and damages experienced due to hazards, and helps to create a stronger and more successful society for years to come. This process of spending now to save later also applies to flood insurance, which helps to defray the cost of disaster relief. Flood insurance aims to improve both individual and social welfare from the perspective of relevant stakeholders and is a key risk reduction measure that homeowners can take to help protect their property and minimize costs and loss post hazard (Michel-Kerjan et al., 2012).

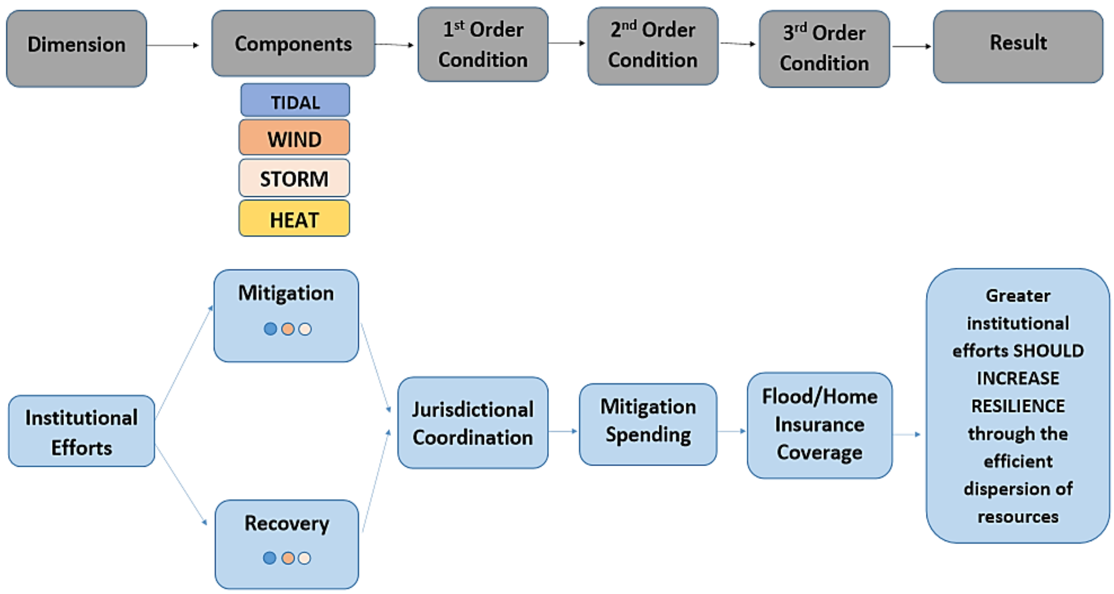

Figure 9. Environmental Hazard Resilience Roadmap- Institutional Efforts

2.12.5 Knowledge

Resilience is often associated with literacy and education and there is evidence that people with less than a high school education are not able to interpret evacuation maps and other resources correctly (Morrow, 2008). The concept of education is prominent throughout many facets of BRIC's design and proves to be an instrumental aspect of people's resilience. However, while accounting for peoples' educational attainment is a good first step in understanding a population’s knowledge level, it is not an all-encompassing depiction of knowledge or education. Knowledge spans beyond formal education and encompasses, as mentioned above, the understanding of hazard maps, as well as personal experiences and preparedness training. Hazard awareness information and training have been linked to mitigation capability, as they help strengthen education and provide various opportunities for learning (Godschalk, 2003). Thus, the availability, accessibility and actual utilization of maps, hands-on informal experiences, and trainings are crucial determinants of one's knowledge, and consequently, of one's resilience. These indicators are incorporated in my study as predictive influencers of resilience and their relationship to resilience can be visualized in Figure 10.

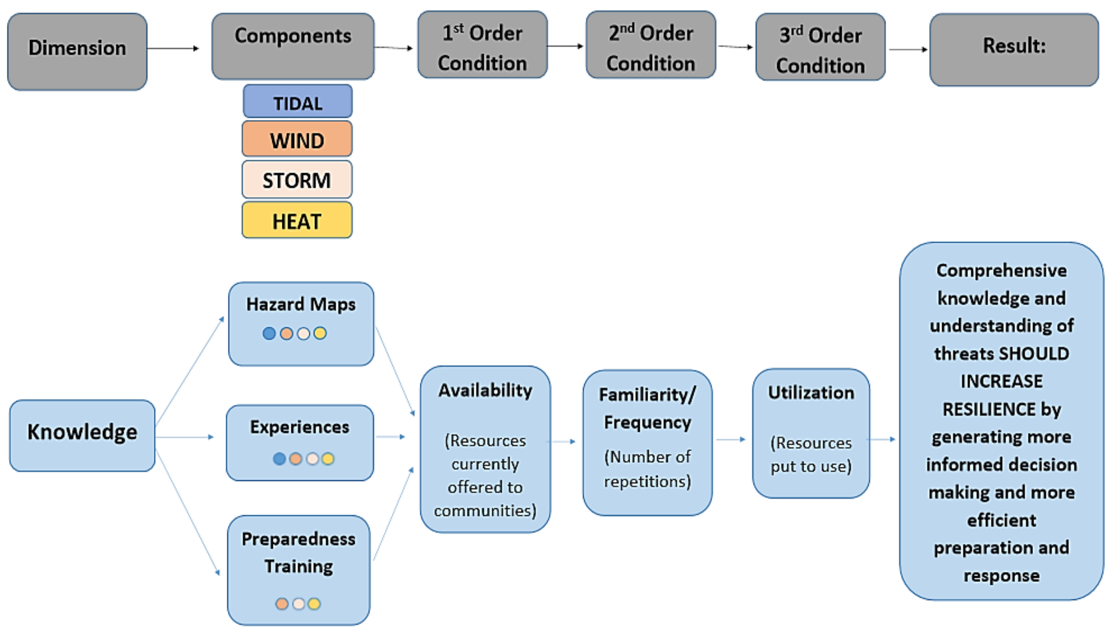

Figure 10. Environmental Hazard Resilience Roadmap- Knowledge

2.12.6 Mobility

Mobility also proved to be an extremely critical dimension for my study purposes. When experiencing environmental hazards, from tidal flooding to extreme wind, people need to be able to move and leave, if necessary. Mobility directly encompasses transportation accessibility and means or resources to evacuate. Studies have shown that there is a relationship between disaster resilience and physical capital, which includes transportation. Communities with poor transportation networks are more likely to face difficulties in evacuating and mobilizing (Peacock et al., 2010). Furthermore, in order to mobilize and utilize transportation, people must have money and resources (Tierney, 2009). Once again, transportation and income were evaluated quantitatively via BRIC, but my study serves to push beyond percentages and available data, to capture what is happening on the ground within communities.

Essential to the concept of mobility is accessibility. Accessibility measures are rooted in the idea that the purpose of transportation methods is to provide access to places and people (Merlin, 2017). The concept of accessibility helps to account for transportation changes, individual characteristics, needs and abilities and temporal constraints that impact movement (Merlin, 2017). Here, accessibility serves as the cornerstone and key condition to determining the mobility of people, while mobility serves as the bigger picture, more colloquial, representation of transportation and movement.

Capturing which modes of transportation are being relied on and the accessibility and quality of such transportation is crucial to painting the full picture of how mobility influences resilience. Even then, we must consider how age and health impact mobility, as was incorporated within BRIC. While the elderly population can vary in physical ability and strength, old age is an indicator that generally decreases resilience, as it often determines one's ability to respond and recover from a disaster (Morrow, 2008). The disabled population is often another vulnerable population when it comes to warning transmission, transportation, evacuation, and recovery, and thus needs to be accounted for when considering resilience determinants (Davis and Phillips, 2009). Figure 11 serves to depict the conditionality of such factors.

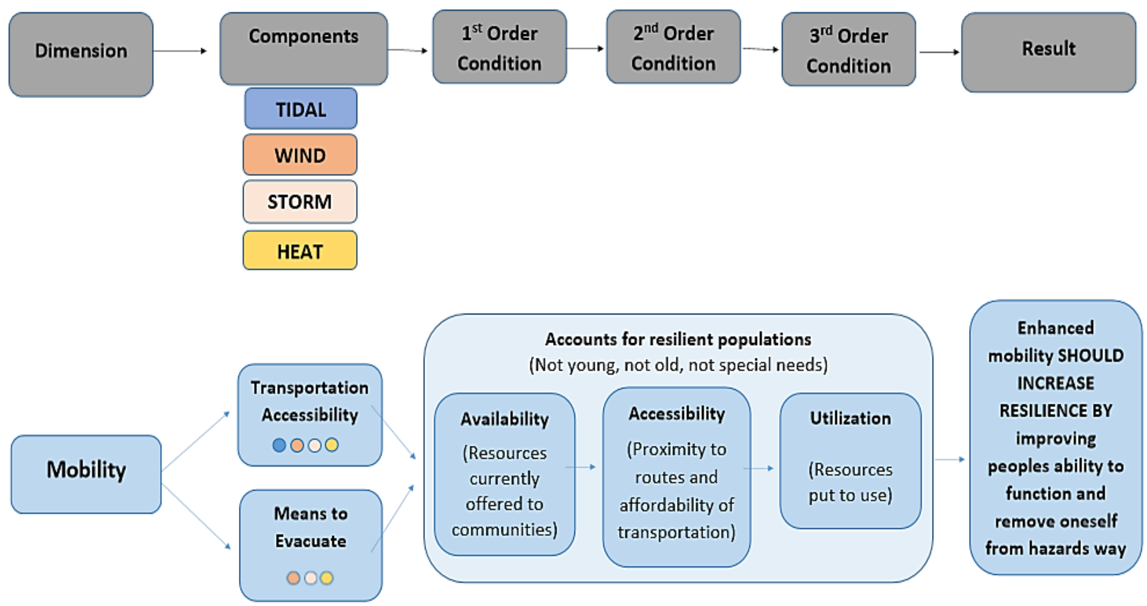

Figure 11. Environmental Hazard Resilience Roadmap- Mobility

2.12.7 Social Capital

Three key factors of social capital are sense of community, place attachment, and citizen participation (Norris et al., 2008). While BRIC's community capital resilience concept begins to touch upon place attachment and sense of community, it measures aspects solely by their presence, not by their quality or complexity. I have included the place attachment and social and civil organization factors from BRIC but serve to capture them in their entirety. Place attachment is multi-dimensional, and thus, measuring place attachment via native born and non-recent immigrant populations, as BRIC does, helps to begin capturing why people would feel connected to an area, but leaves many factors unaccounted for. Place attachment relates to one's sense of community and implies there is an emotional connection and bond to the place they live, aside from having a bond with those who live there. Such connection has been linked to motivating citizens' efforts to revitalize a community and thus may be crucial to a community's resilience (Norris et al., 2008). Homeownership also helps contribute to one's attachment to an area and has already been accounted for within the Financial Independence dimension Owning a home creates a sense of investment in, and connection to, an area and increases the likelihood that individuals, and a community as a whole, will have the will to rebuild after hazards damage their homes (Manzo and Perkins, 2006; Norris et al., 2008).

My study also serves to account for citizen participation and sense of community by exploring social capital, or the interactions, networks and relationships among people within a community. Informal networks and social relationships formed with family and friends can provide a variety of types of social support that can be mobilized to meet unique needs in time of stress and uncertainty (Sherrieb et al, 2010). Conversely, the lack of such social contact (~social isolation) has been reported to increase one's risk to vulnerability, rendering them susceptible to hazards like heat, or even leading to death (Klinenberg, 2003). Those living alone are of special concern and can be extremely vulnerable during times of environmental hazards. See Figure 12 for the conceptual roadmap of the social capital resilience dimension.

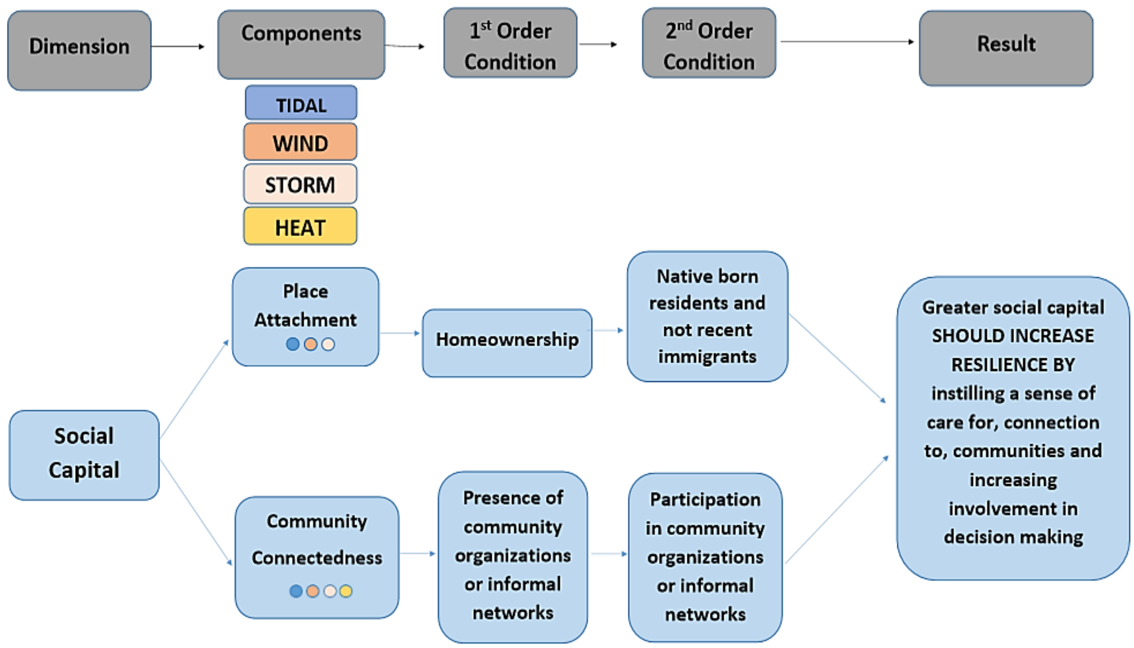

Figure 12. Environmental Hazard Resilience Roadmap- Social Capital

3 RESEARCH QUESTION

How useful are multivariate Census-driven composite resilience indicators (such as SoVi and BRIC) in characterizing the climate resilience of local communities to environmental hazards?

a) What processes, underpinned by the following locally tailored dimensions, produce resilience to environmental hazards at the community level within Broward County?

    i. Communication
    ii. Financial Independence
    iii. Infrastructure
    iv. Institutional Efforts
    v. Knowledge
    vi. Mobility
    vii. Social Capital

4 RESEARCH DESIGN & METHODS

4.1 Survey Instrument Development

The topics addressed within the survey instrument were derived from my literature review and reflect those concepts present within BRIC, that through my analysis, I deemed appropriate and relevant to my study. Each of my seven resilience dimensions encompass multiple components and each of these components fueled the construction of the survey questions. The components can be traced throughout my conceptual resilience dimension roadmaps, as can the many conditions that are required when using these components as indicators for resilience. Just as my identified components were vital in determining the general content of the survey questions, these conditions were vital in determining the specifics and framing of the questions. Demographic survey questions were modeled after the demographic content and grouping in the 2019 PEW Charitable Trusts SSRS Omnibus survey.

The corresponding survey questions for each component or condition within each resilience dimension roadmap were mapped out to produce a second, survey specific, version of my resilience dimension roadmaps (Figures 13-19). Here, the original resilience roadmaps are expanded to also include the applicable surveys questions per component/ condition and the hypothetical relationships between the specific questions and the corresponding component and overall resilience dimension. Please note that the economic stability conceptual component of the financial independence dimension did not come to fruition in application as the study community is largely retired and measuring economic dependence on tourism reached beyond our community and survey scope.

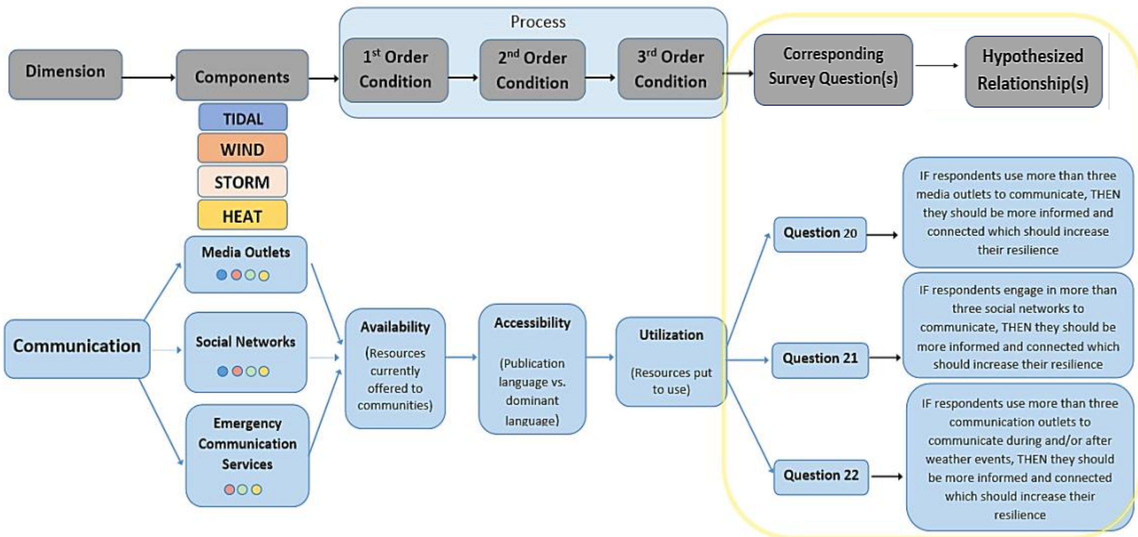

Figure 13. Environmental Hazard Resilience Roadmap with Corresponding Survey Questions- Communication

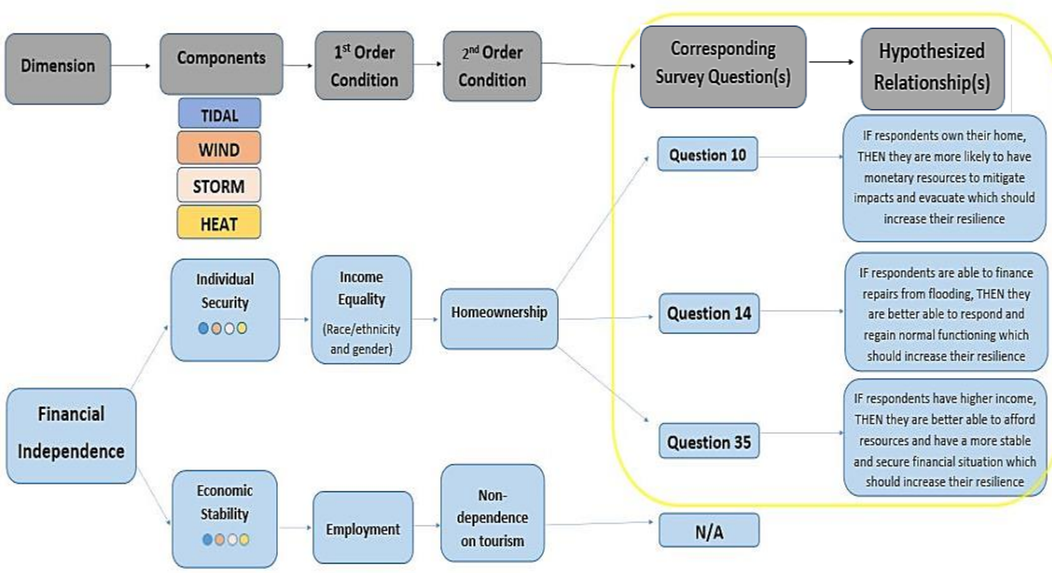

Figure 14. Environmental Hazard Resilience Roadmap with Corresponding Survey Questions- Financial Independence

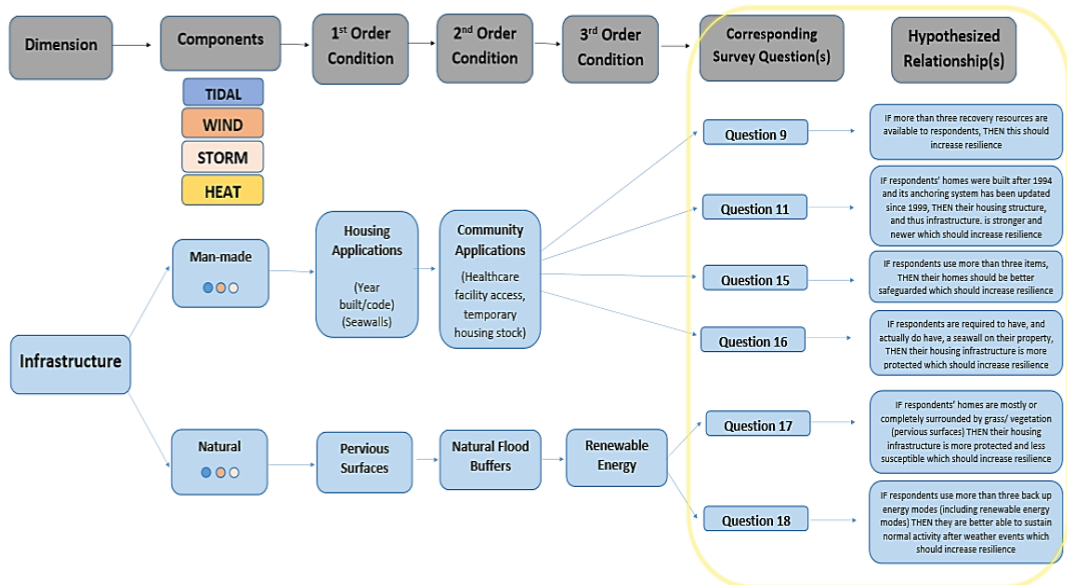

Figure 15. Environmental Hazard Resilience Roadmap with Corresponding Survey Questions- Infrastructure

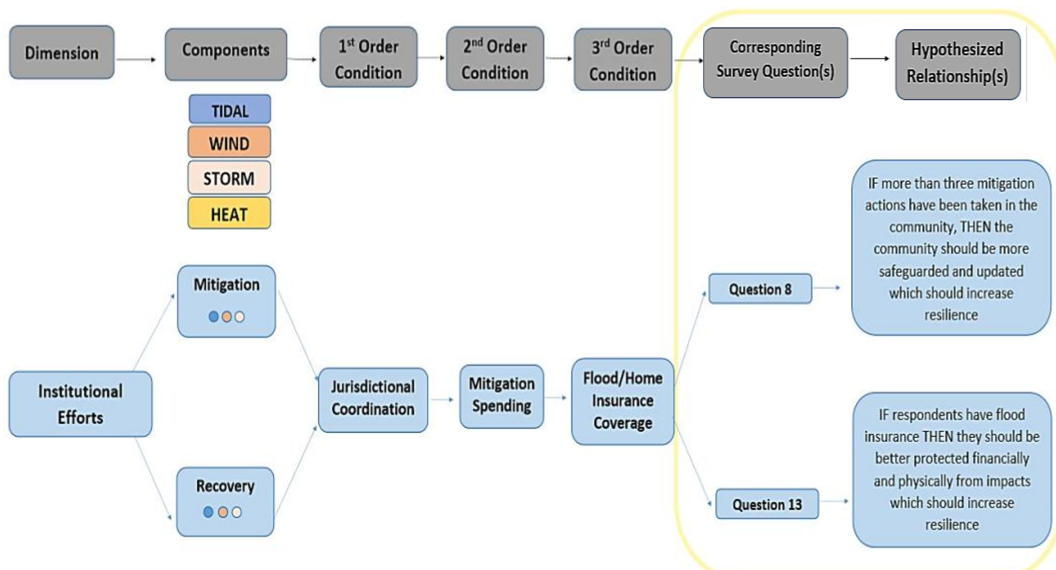

Figure 16. Environmental Hazard Resilience Roadmap with Corresponding Survey Questions- Institutional Efforts

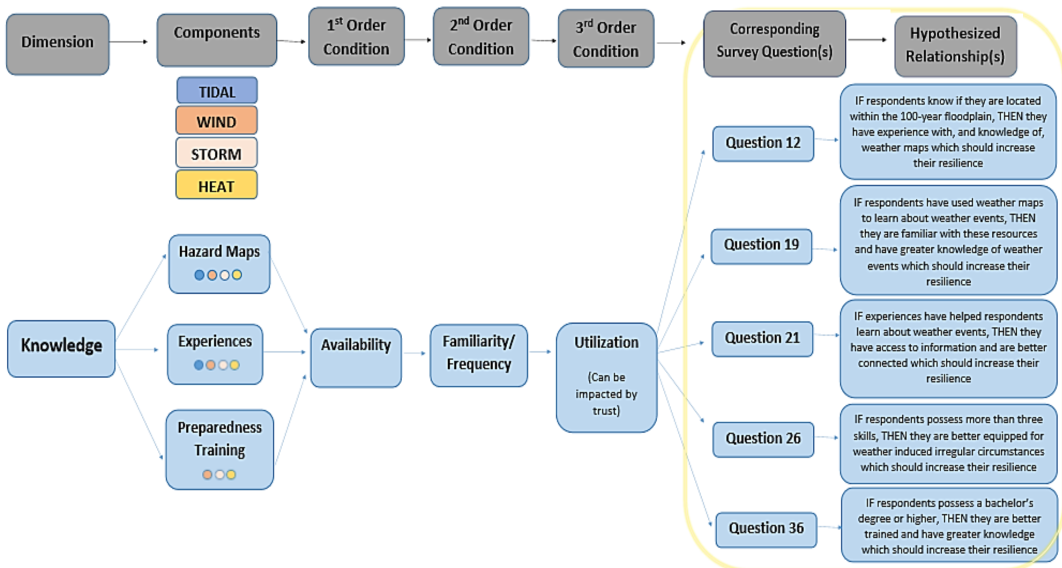

Figure 17. Environmental Hazard Resilience Roadmap with Corresponding Survey Questions- Knowledge

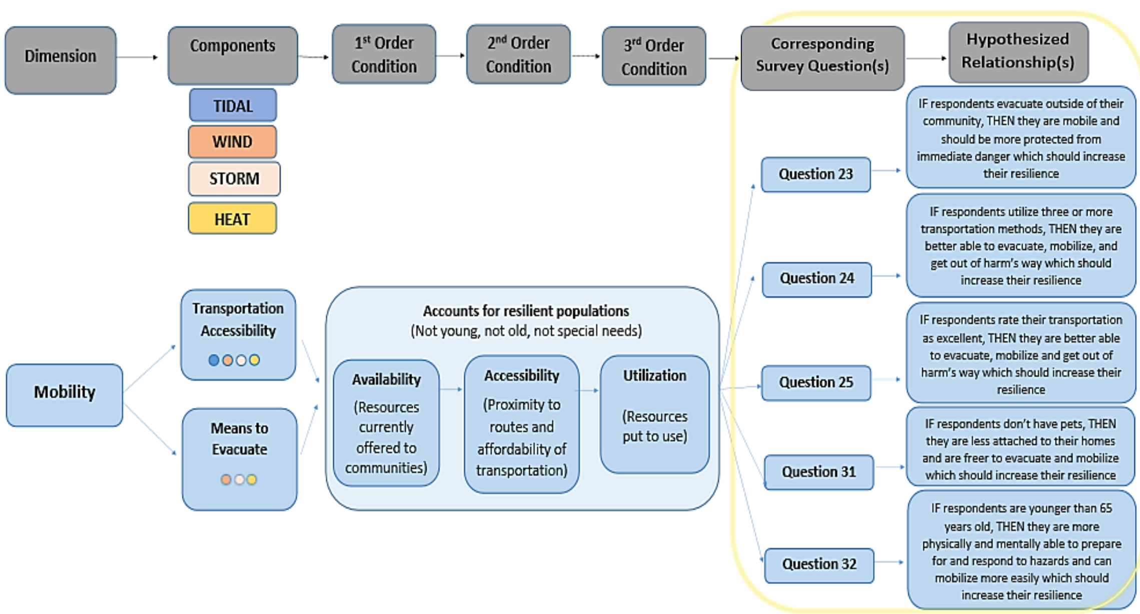

Figure 18. Environmental Hazard Resilience Roadmap with Corresponding Survey Questions- Mobility

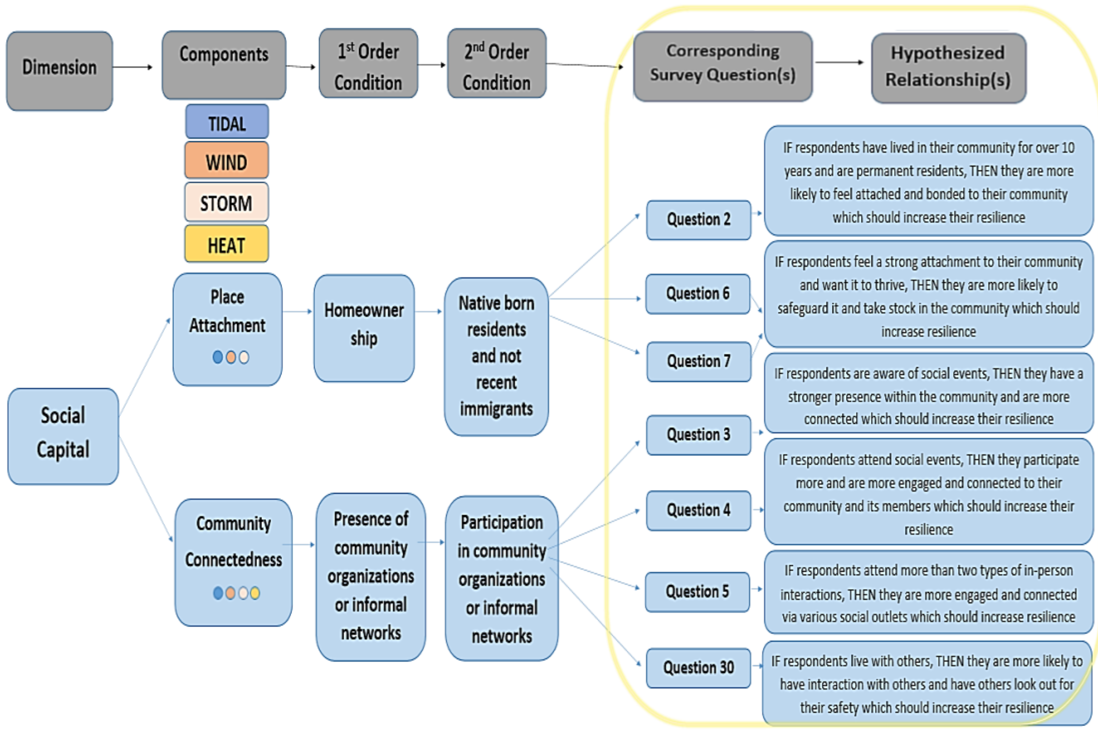

Figure 19. Environmental Hazard Resilience Roadmap with Corresponding Survey Questions- Social Capital

The instrument itself is divided into five sections based on the content of the questions- community, household, self, general and demographics. Each section has a combination of questions representing the various influential resilience dimensions. The individual questions prompt the varying reply types- single response, multiple response, yes/no, free response. The survey instrument was drafted but left open to influence by the community we were to select, as we wanted to ensure that the final product of the survey was tailored to the community of interest. The community specific input and influence is discussed under the “Community Specific Research” section. Once the survey was constructed, I distributed it amongst the lab team at the Center for Environmental Studies (CES) for final input and feedback, and made edits accordingly, that helped strengthen the content and structure of the final product. All questions of my survey instrument target key characterizations of Resilience, keeping in mind the study's overarching research question. See Appendix A and B for IRB related survey documentation. The survey instrument itself is available in Appendix C.

4.2 Community Selection Process

4.2.1 Gatekeeper Meetings

The community selection process for this resilience study was multifaceted. Multiple communities within Broward County, FL were initially pursued simultaneously in order to gain a comprehensive understanding of the area and to allow for the most advantageous selection for the pilot study. During this initial exploration of communities of potential interest, identified by their known exposure to environmental hazards, we conducted interviews with community key personnel to assess if the community would not only be appropriate for this study, but would benefit largely from our efforts.

The first post pivotal community/ organization lead interview took place at Temple Solel in Hollywood, Fl. The temple's Tikkun Olam group engages in environmental and activist work, with special projects revolving around King Tide events, sea level rise and green energy initiatives. Their efforts to undertake green programs and to engage community members in the process had been recognized throughout the surrounding area within Broward County, and thus, we felt the Temple was a great first entity to collaborate with and potentially work with on our study. Key personnel from the temple provided the Center for Environmental Studies (CES) team with multiple potential community leads of interest- communities they believed not only would be interested in our study and could really benefit from our work, but one's they had personal connections to. These organizations and communities included the Estates of Fort Lauderdale, the Jubilee center, South Lake in Hollywood and the Sistrunk neighborhood in Fort Lauderdale.

After a few weeks of phone calls, the Estates of Fort Lauderdale was one of the communities that seemed to be most conducive for our study and most accessible. Dr. Colin Polsky, Jan Booher and I met with a few key personnel from the community, during which we were able to discuss the project in depth and learn more about the community, community members and the community's needs and interests. Collaboration with the Estates of Fort Lauderdale community proved to be extremely effective and productive, as the community expressed invested interest in participating due to their challenging experiences with environmental hazards.

4.2.2 Demographic Makeup

Geographic analysis of the area validated the selection of the Estates of Fort Lauderdale for our resilience study. Utilizing ArcMap version 10, I was able to visually explore demographic geospatial data within the area to determine block groups of low to high vulnerability. Illustrative data sources to drive this analysis and assessment include the 2017 American Community Survey (ACS) Data and Esri's 2017/2022 US Demographic Updates. Utilizing this data, I generated vulnerability maps of the area to help further illuminate the circumstances within this identified community of interest. Social vulnerability data layers generated for this mapping were created consistent with foundational principles in vulnerability and environmental scholarly literatures, established by Cutter's method and analysis used to generate Social Vulnerability (SoVi) maps. Utilizing identified principle components of social vulnerability from the 2012 study, I worked to determine the vulnerability level of the Estates of Fort Lauderdale community, in relation to the surrounding area.

Component	Directionality	Name	% Variance explained	Most influential variables	
1	+	Poverty and race	22.1	Qpovty	0.849
				Qblack	0.798
				Qfhh	0.794
2	Absolute value	Age	13.8	Qpop65	0.930
				Qssben	0.928
				Medage	0.862
3	Absolute value	Urban/rural	12.2	Qurban	0.855
				Qrfrm	−0.805
				Qagri	−0.727
				Qmoho	−0.725
4	−	Wealth	6.0	Qrich	0.866
				Mhseval	0.853
				Percap	0.801
5	+	Gender	4.8	Qfemale	0.895
				Qfemlbr	0.670
6	+	Migration and renters	4.1	Qmigra	0.641
				Qrenter	0.517
7	+	Ethnicity-Hispanic	3.7	Qspanish	0.871
8	+	Special needs	3.4	Nrrespc	0.815
				Hosptpc	0.710
9	+	Race and ethnicity	3.1	Qindian	0.963
Total explained variance			73.2		

*$SoVI_{TR}$-SAD score = (principal component 1) + abs(principal component 2) + abs(principal component 3) – (principal component 4) + (principal component 5) + (principal component 6) + (principal component 7) + (principal component 8) + (principal component 9).

Figure 20. 2012 Social Vulnerability Index for the South Atlantic Division (SAD)

Utilizing the Social Vulnerability Index from Cutter's South Atlantic Division, shown in Figure 20, as a template, I narrowed down my application from nine components to three. I decided to consider the first three components- "Poverty and Race", "Age" and "Urban/Rural", as they were determined to have the most influence on vulnerability and were three components that were very applicable to my study area and population. From the "Poverty and Race" component, I chose to incorporate the "Qpovty" variable which represents the percent population living below the poverty line and proves to be the most influential for poverty. According to the 2019 federal poverty guidelines, a family or four with income less than $25, 750 and a family of three with income less than $21, 330 are considered to be living in poverty (HealthCare.gov). For this reason, I selected $24,999 to represent the poverty line for my analysis, as it is the high end of one of the census increments, that generally represents both poverty guidelines. From the “Age” component, I chose to incorporate the “Pop65” variable which represents percent population 65 years and older and proves to be the most influential for age. From the “Rural/Urban” component, I chose to incorporate the “Moho” variable which represents percent of housing units within each block group that are mobile homes, as the other variables within this component showed little variation within the study area so would not have helped to distinguish variability within vulnerability.

Social vulnerability data layers were created consistent with these foundational principles. The data was displayed with Natural breaks classification as this classification type showed greater granularity and accuracy among the data. Equal interval classification lost granularity between high percentages as well as the low percentages and didn’t highlight low income as only a few had over 75% poverty. Similarly, Quantile classification skewed and misrepresented data, causing block groups to appear at lower income status than they are in reality. The five natural break designations for both the income and age data sets were translated into five combined corresponding vulnerability categories (e.i the lowest break value bin became “low vulnerability”, the highest break value bin became “high vulnerability”, and the break value bins in between became “medium low vulnerability”, “medium vulnerability” and “medium high vulnerability”, in ascending order).

The resulting map, Figure 21, shows that the Estates of Fort Lauderdale falls within two Census block groups of varying vulnerability (Census Track 804.02, Block Group 1 and 2). According to the three influential demographic variables- poverty, elderly and mobile home- the first block group is classified as “Medium High Vulnerability” and the second block group is classified as “High Vulnerability”. Such vulnerability classifications helps to paint a picture of the sensitivity of the area and suggests that the Estates of Fort Lauderdale is financially, physically and structurally susceptible and vulnerable to environmental hazards. However, this analysis leaves variables and abilities unaccounted for, serving as a great visually starting point, but not a complete picture. This vulnerability map, created in accordance with SoVi’s most influential components, doesn’t incorporate the many other dimensions which I have mentioned that contribute to resilience, and thus potentially contribute to reducing vulnerability (see Figures 6-12 for dimension roadmaps). My study aims to account for the community’s abilities and actions that may in reality make them less vulnerable, and more resilient, than simple vulnerability assessments suggest.

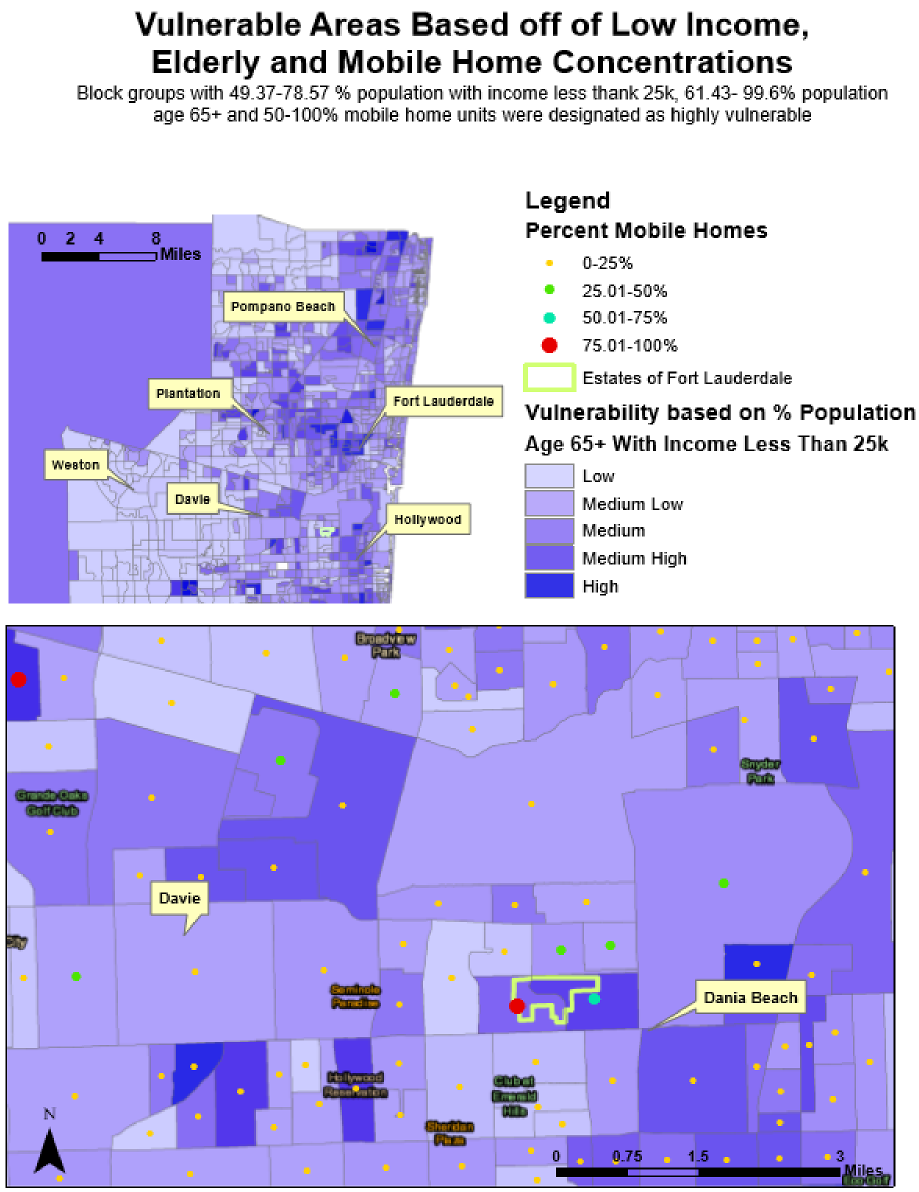

Figure 21. Estates of Fort Lauderdale Vulnerability Map

4.3 Study Area

The Estates of Fort Lauderdale community falls within the City of Dania Beach, Florida, and is located South West of the Fort Lauderdale- Hollywood International Airport. According to the neighborhood scout demographic database, the City of Dania Beach has a total population of 32,271 individuals, 21.4% of who are living below the poverty level and 27.3% of who are foreign born. With Dania Beach being Florida's oldest city, much of the infrastructure and establishments have been around for a while, and comprise dated, laid back, customary pockets of the City. However, when driving around, there are many new developments and updates being made intermittently within the City, as developers strive to strike a balance between preserving the city's historic charm and creating new, more modern and practical urban complexes.

The Estates of Fort Lauderdale is a part of a greater network within this Dania Beach area, known as the Griffin Civic Association. This association represents households from State Road 84 to Stirling Road and from Interstate 95 to Florida's Turnpike, and proves to be extremely impactful as it is the oldest continuous civic association in the county (Sykes, 2003). Consisting of over 150 families as of 2003, the association serves to connect the multiple communities within its geographic scope, helping to better the community and weave together the different pockets of Dania Beach, Florida.

As determined by the previously mentioned mapping exercise, the distinct study area of the Estates of Fort Lauderdale community falls within two distinct Census Blocks within Dania Beach. The exercise highlighted the high presence of mobile homes within the two Census Blocks as well as the high percentage of elderly individuals living below the poverty level. Specifically, according to the 2017 American Community Survey (ACS) Data and Esri's 2017/2022 US Demographic Updates, 66% of the housing units across both Census Blocks are mobile homes, 29% of the population across both Census blocks is 65 years or older and 32% of the population across both Census Blocks is living at or below an income of $25,000. The relevant Census Blocks seem to consist primarily of owned housing units, with 18% of the total 1,549 units across both Census

Blocks rented, 56% owned and the remaining units vacant. The diversity index for both Census Blocks consisting of the study area of the Estates of Fort Lauderdale are 41.1 and 59.3.

The Estates of Fort Lauderdale community that falls within these two Census Blocks is a mobile home community divided into a family section (82 homes) and an adult section (701 homes)**.** The community itself has a quaint and simplistic exterior, consisting of well groomed, modest mobile homes lining multiple blocks, with intermittent lakes throughout the property. The community center serves as the heart of the community, offering community members a place to socialize and foster relationships and bonds. Aside from housing the mail room, community pool and bowling alley, the center serves as the meeting spot for a multitude of community events and festivities, clubs, classes and meetings, and fosters an upbeat, bustling environment. Residents are able to frequent the center to obtain information, socialize and enjoy some recreational time.

4.4 Community Specific Research

Following the selection of the Estates of Fort Lauderdale community, it was extremely important to officially connect with the community, engage them in our efforts, and identify concerns they had regarding environmental hazards that could serve to shape the direction and specificity of my project. I worked with members of the research team at the Center for Environmental Studies, as well as with external project coordinator Jan Booher, to conduct a community Listening Session with key personnel within the Estates of Fort Lauderdale. This initial major interaction with the community members was essential as it served to introduce the purpose and goals of the project and allowed for the communication of current climate issues and instances. The primary objectives were to identify community leaders that were willing and able to: 1) address resilience issues, 2) identify community assets and vulnerabilities, and 3) initiate relationships that would inspire community action and community involvement in the study. Those leaders assumed the roles project Outreach Team leaders and Outreach Team members within the community that would be instrumental in the data collection process.

Equally as important, was documenting the perceptions of, and experiences with, hazards in the Estates of Fort Lauderdale, which helped me identify vulnerabilities, impacts and important topics specific to this community. Utilizing a multitude of resources, including the Broward County Emergency Management's Enhanced Local Mitigation Strategy (ELMS) 2017, Broward County's Hurricane Preparedness Guide and FEMA Flood Safety information, I created hazard information tools that speak to the major concerns and information gaps within the community. Outlined in these tools, are mobile home specific hazard impacts and recommended preparedness actions, as well as locations specific locally available resources. This tool will be disbursed amongst the community during survey response collection so that the community can gain a sense of preparedness and increased resilience through knowledge and communication.

The perceptions and experiences of community members also served to influence the survey instrument. A few questions were altered, or added in their entirety, in response to specific concerns and areas of uncertainty discussed in the session.

Particularly of concern for this community were evacuation protocol, shelter availability and flooding related to surface porosity and infrastructure.

4.5 Data Collection Methods

The data for this study takes the form of environmental hazard resilience paper surveys, which each participant completed one time, in an open-ended response manner. Participants were members of the Estates of Fort Lauderdale community who chose to engage in our efforts voluntarily. Written consent was obtained before surveys were administered and each of the 36 question surveys took approximately 20-30 minutes to complete. This survey was administered at community events, such as the Community Club Meeting and Women's Club Meeting, and in the community's common areas, with permission of the local governing body. One hundred participants were surveyed from September to October 2019 in order to assure a sufficient and quality representation of the area.

Outreach team members within the community, identified at the Listening Session, were responsible for collecting the survey responses. Each team member followed the protocol process of introducing themselves, having participants sign the consent form, introducing the survey and its components, going over the fact sheet handout, and checking for legibility. Team members were trained to sit beside or in front of participants and to go through the survey question by question, reading the questions aloud along with the corresponding responses and marking the participants responses on paper.

4.6 Data Input and Quality Assurance and Quality Control

Once each survey was completed, the outreach team members were responsible for giving the team leads their completed surveys for input. Corresponding team leads were responsible for inputting the responses electronically into a customized survey template online that I created through the FulcrumApp. The FulcrumApp is a data collection platform that allows for form design, personal management, and data collection across multiple mediums. Team leads were trained on the data input protocol to assure the quality of the data and the accuracy of the recorded results. The data was then able to be stored and exported for coding and analysis.

For single choice questions, each possible answer choice was assigned a number value that would correspond to each qualitative option under that question (e.i answer choices a-d were assigned values of 1-4 respectively). Multiple choice questions proved to be a bit more complicated to code and assign values. When exporting the data, it was necessary that each question only produce one response so that responses weren't jumbled together under the same heading and column which would have prevented the isolation of individual responses for analysis later on. Thus, for multiple choice questions, each possible answer choice was essentially isolated as its own question and was given a possible selection of yes or no for applicability (e.i team leads would select "0" if respondents did not select the corresponding answer choice or would select "1" if respondents did select the corresponding answer choice). Qualitative responses were left open ended and were not assigned numerical values, as these responses would be assessed individually later on.

Once the one hundred survey responses were inputted into Fulcrum, I then followed the same data input protocol and inputted the one hundred survey responses a second time to then be able to compare both sets of the survey response data. I worked to duplicate the data in order to control the quality of the data that would be used for actual analysis. I was then able to compare both sets of data to cross reference the responses and locate discrepancies that would then be rectified by referencing the paper surveys for accuracy.

4.7 Data Analysis

The Statistical Package for Social Sciences (SPSS) was used to perform statistical analysis on the data. To perform the analysis, a shell first had to be created within SPSS that serves as a template for the survey responses and allows for recognition of responses and meaning once the raw data is also inputted into SPSS. The template allowed me to outline the possible values for each survey question and the values for each coded fulcrum response per question, so that the software would be able to recognize not only the numerical values but also the corresponding qualitative values that trace back to the individual answer choices from the survey (pre fulcrum coding).

Once the template was finalized, I was able to import the raw data file of the survey responses into SPSS. The goal here was to test for statistical correlation of, and between, responses to test if the distribution of responses is or is not random. Frequency and contingency tables were constructed, and chi square tests were conducted using the raw data to be able to identify basic trends and initial correlations. Based on these results, I was then able to further organize questions and responses by grouping or binning responses together, isolating specific responses, etc, to acquire more meaningful multifaceted trends.

Respondents were able to receive a maximum of one point per dimension based on the answer choices they selected, for a total of seven maximum points for the entire survey and all seven dimensions. The answer choices for each of the thirty six questions had a varying weighted contribution to the overall weight of the question (e.i answer choices contributing to greater resilience received more weight/points). The exact scoring protocol for each dimension, question and corresponding responses can be seen in Tables 2-4.

For each of the seven dimensions, the points earned for each of the corresponding questions that were based on the selected answer choices of the respondents were added up. The totaled points were then divided by the corresponding number of questions for the applicable dimension (question number, and thus dividend, ranged from three to nine depending on the dimension) to produce an average dimension score per household on a scale of zero to one. These 100 household level scores were then averaged to produce a dimension specific aggregated score for the entire community and then those seven dimension scores were averaged to produce a final community level resilience composite score. Questions 33 and 34 were omitted for this quantitative portion of the analysis as they proved to be ambiguous and their links to resilience were neither direct nor concrete in manner. Questions 27-29 were also omitted for this portion of the analysis as I was unable to validate the baseline understanding of resilience terminology needed to meaningfully answer these questions. Moreover, many respondents did not provide explanations for those ratings provided for questions 27-29.

Table 2. Question Scoring System

Dimension	Total Possible Score Per Dimension	Number of Questions	Corresponding Questions	Question Type	Binning/ Reordering Answer Choices	Answer Choices	Score Earned Via Response	To Determine Score Per Dimension
COMMUNICATION	1	3	Question 20	Multiple Response	Sum	0 (none)	0	Add up corresponding weights/points and divide by 3
						1-3	.5	
					Bin	4+	1	
			Question 21	Multiple Response	Sum	0 (none)	0	
						1-3	.5	
					Bin	4+	1	
			Question 22	Multiple Response		0 (none)	0	
					Bin	1-3	.5	
						4+	1	
FINANCIAL INDEPENDENCE	1	3	Question 10	Single Response	N/A	Rent	0	Add up corresponding weights and divide by 3
						Own	1	
			Question 14	Multiple Response	Reorder	Yes, unable	0	
						Idk	0	
					Bin all Yes and financed	Yes, financed (binned)	.5	
						No	1	
			Question 35	Single Choice	N/A	<15k	0	
						15k<x<25k	.2	
						25k<x<50k	.4	
						50k<x<75k	.6	
						75k<x<100k	.8	
						100k+	1	
INFRASTRUCTURE	1	6	Question 9	Multiple Response	Sum	0 (none)	0	Add up corresponding weights and divide by 6
					Bin	1-3	.5	
						4+	1	
			Question 11	Single Choice	Reorder least to most resilient	No and not updated	0	
						No but updated	.5	
						Yes but not updated	.5	
						Yes and updated	1	
			Question 15	Multiple Response	Sum	None (0)	0	
						1-3	.5	
					Bin	4+	1	
			Question 16	Single Choice	Bin	IDK	0	
						No	.5	
					Reorder	Yes (grouped)	1	

Table 3. Question Scoring System (cont.)

			Question 17	Single Choice	N/A	All pvmt	0	
						Mostly pvmt	.25	
						Equal	.5	
						Mostly veg	.75	
						All veg	1	
			Question 18	Multiple Response	Sum	None (0)	0	
						1-3	.5	
					Bin	4+	1	
INSTITUTIONAL EFFORTS	1	2	Question 8	Multiple Response	Bin Combine none and I don't know	0 (none and I don't know)	0	Add up corresponding weights and divide by 2
						1-3	.5	
						4+	1	
			Question 13	Single Choice	Reorder least to most resilient	Idk	0	
						No, but req	0	
						No, not req	.5	
						Yes, req	.75	
						Yes, not req	1	
KNOWLEDGE	1	5	Question 12	Single Choice	Bin Reorder least to most resilient	I don't know	0	Add up corresponding weights and divide by 5
						Yes or No	1	
			Question 19	Multiple Response	Bin	No	0	
						Yes	1	
			Question 21	Multiple Response	Sum	0 (none)	0	
						1-3	.5	
					Bin	4+	1	
			Question 26	Multiple Response	Sum	0 (none)	0	
						1-3	.5	
					Bin	4-7	.75	
						8+	1	
			Question 36	Single Choice	N/A	Some HS	0	
						HS	.25	
						Some college	.5	
						Bachelors	.75	
						Masters	1	
MOBILITY	1	5	Question 23	Single Choice	Combine	Don't	0	Add up corresponding weights and divide by 5
						In EOF	0	
						Out EOF but in BC	.5	
						Shelter out of EOF AND In EOF and outside BC AND hotel AND out of town	1	

Table 4. Question Scoring System (cont.)

			Question 24	Multiple Response	Sum Bin	0	0	
						1-2	.5	
						3-4	1	
			Question 25	Single Choice	N/A	Poor	0	
						Average	.5	
						Excellent	1	
			Question 31	Single Choice	Bin	1+	0	
						0	1	
			Question 32	Single Choice	Reverse order	80+	0	
						65-79	.25	
						50-64	.5	
						35-49	.75	
						18-34	1	
SOCIAL CAPITAL	1	9	Question 2 (Actually two questions via fulcrum)	Part 1: Single Choice	Divide into two questions	Less than 1 yr	0	Add up corresponding weights and divide by 9
						1-5 yrs	.25	
						6-10 yrs	.5	
						11-25 yrs	.75	
						25+ yrs	1	
				Part 2: Single Choice		Yes	0	
						No	1	
			Question 6	Single Choice	N/A	Weak	0	
						Semi Weak	.25	
						Fair	.5	
						Semi Strong	.75	
						Strong	1	
			Question 7	Single Choice	Reorder	No	0	
						Idc	0	
						Yes	1	
			Question 10	Single Choice	N/A	Rent	0	
						Own	1	
			Question 3	Single Choice	Reorder	No	0	
						Yes	1	
			Question 4	Single Choice	Reorder least to most resilient	No	0	
						Sometimes	.5	
						Yes	1	
			Question 5	Multiple Response	Sum Bin	0 (none)	0	
						1-2	.5	
						3-4	1	
			Question 30	Single Choice	Bin	1	0	
						1+	1	

5 RESULTS

5.1 Descriptive Sample Statistics: Sociodemographic Results and Distributions

The responses to the sociodemographic survey questions for this study provided us with descriptive sample statistics for SoVi/BRIC like variables. Specifically, we are able to generate counts and distributions for five variables- age, income, education, gender and race-which correspond to survey questions 32 to 36. Moreover, we were able to compare the distributions of these variables within the community to those of the same variables at the Census Block Group scale as well as the County scale. As mentioned previously, the Estates of Fort Lauderdale community falls almost symmetrically within two Census Block Groups- Census Block Group 1 and Block Group 2 of Census Tract 804.02.

By comparing the distributions of variables across geographic scale, we are able to see if the grander scale distributions at the Block Group level as well as the County level are similar, are representative of what we are seeing at a finer, geographic scale at the community level. These findings help to quantitatively explore the motivation for this study, as often times variables at grander scales do not translate in a representative nature to those at a community level and thus, these grander scaled variables that are used to generate metrics such as SoVi and BRIC scores, may not be representative of those communities that are comprised within those geographic units.

5.1.1 Age

The distribution of age across geographic scale within Broward County is evident in Figure 22, with age displayed as percent of applicable population within each relevant age binning. The age distribution of 18-34 actually represents ages 20-34 for Broward County, but for the purposes of this comparison we utilized consistent binning to generate a side by side meaningful comparison. Here, we can see that the age distribution of the Estates of Fort Lauderdale is roughly represented by the age distribution at the larger scales of Census Block Group and County.

The major discrepancy within the distribution lies within the age bin of 18-34, as the Estates of Fort Lauderdale community scores lower than the other geographic scales. Because the Estates of Fort Lauderdale is a mobile home community, we expected the majority of the sampled population, and total population, to fall in the larger age bins. Older populations are generally less physically able, so this quantitative comparison helps to realize the need for greater attention and potentially resources for this more elderly subset of the grander populations of the Census Block Groups and Broward County as a whole.

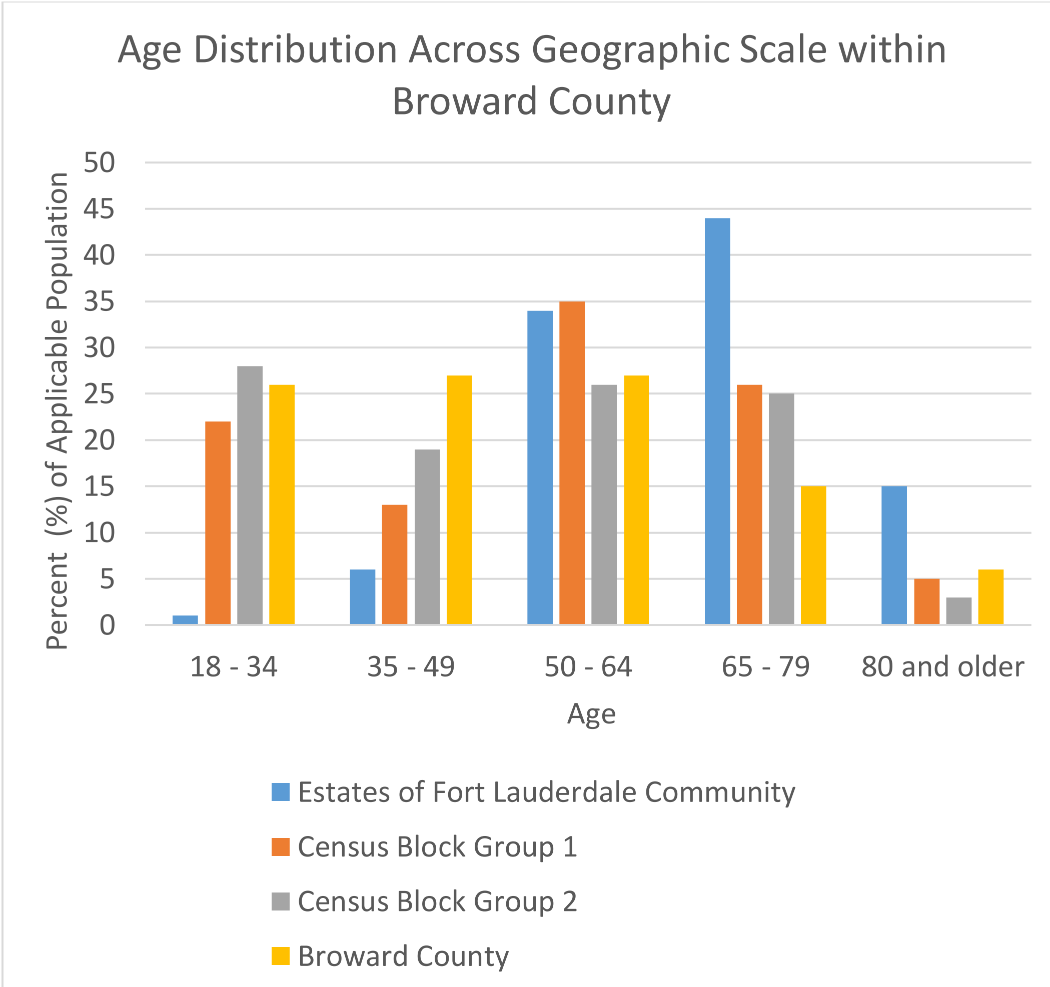

Figure 22. Age Distribution

5.1.2 Income

The distribution for middle range income seems to be rather consistent across geographic scales (see Figure 23). However, the minimum and maximum income bins are where the inconsistencies lie. It is evident that the Estates of Fort Lauderdale community has a greater proportion of the population (based on the sample) living with income less than $15,000 and a significantly lower proportion of the population living with income of $100,000 or more. This difference between income distributions at the community scale versus the Block Group or County scale is noteworthy and important to pinpoint. This community could be misrepresented in the income field if approximations were based off of income distributions at larger scales, rather than this type of community level income data. The bins within this distribution are aligned with Census data binning. This required us to shift the income bins which we used for surveying purposes by one dollar in order for bins to be aligned across all scales and in order for this side by side comparison to be constructed.

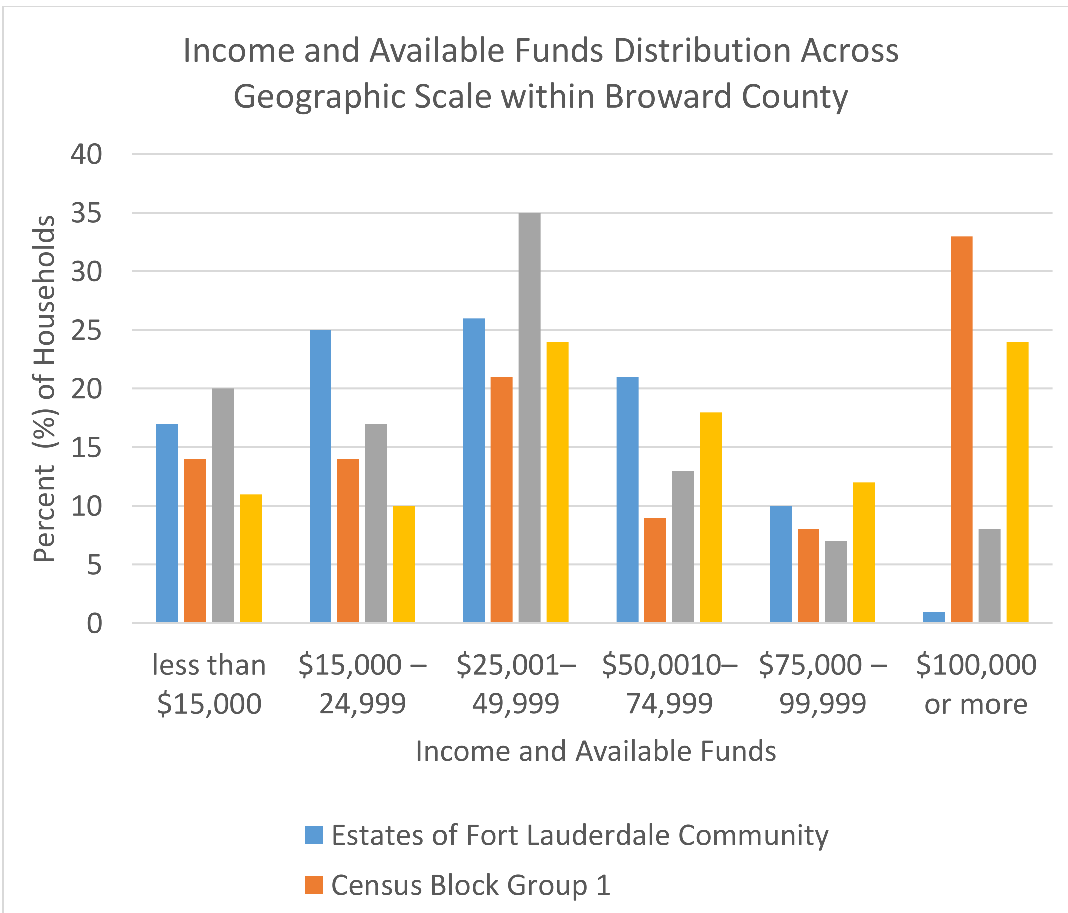

Figure 23. Income Distribution

5.1.3 Education

Educational attainment distribution was grouped into three broad categories for the purpose of the side by side comparison seen in Figure 24. The distribution for this variable across geographic scale seems to be fairly aligned, with no extreme differences. The only potential areas of noteworthiness would be the greater percent of population with high school education or less within Census Block Group 2 as well as the greater percent of population with some college education or associates degree within the Estates of Fort Lauderdale.

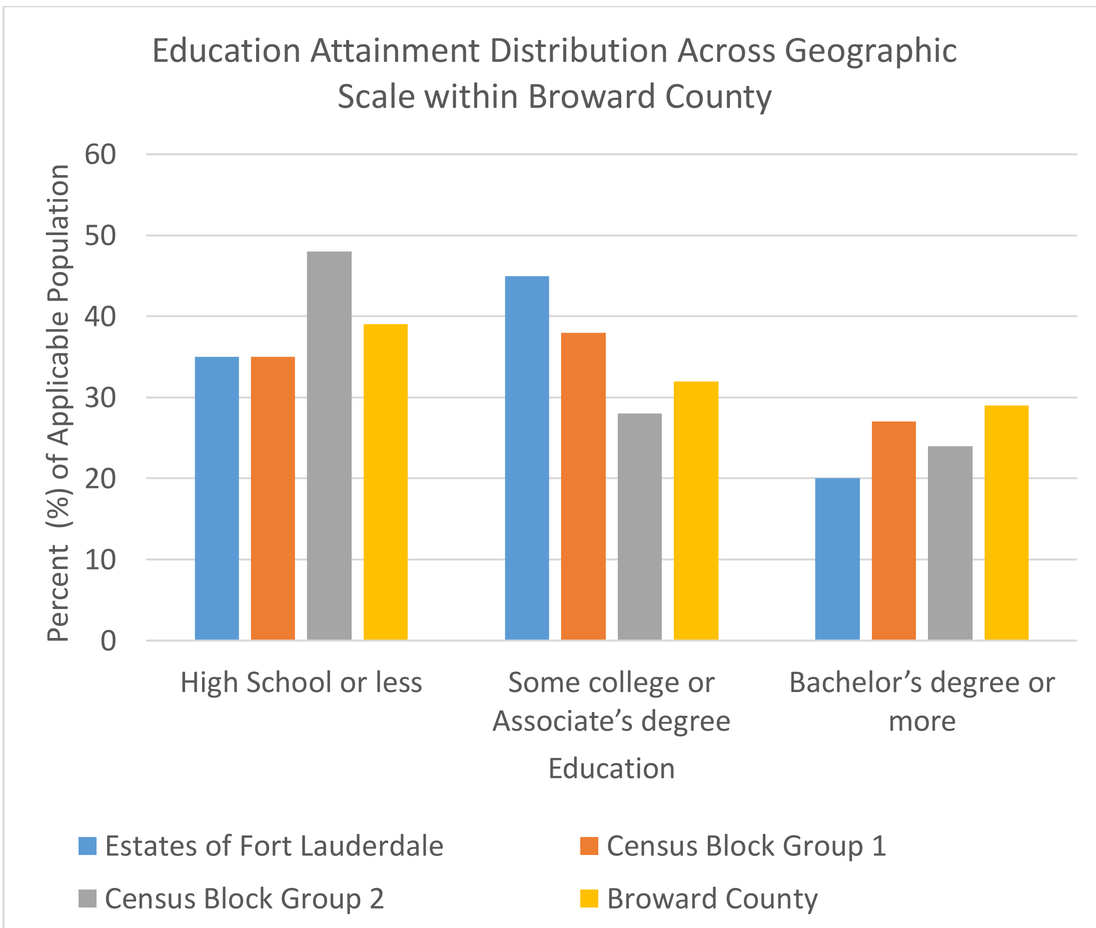

Figure 24. Education Distribution

5.1.4 Gender

Across all three geographic scales-community, Census Block Group and County-gender distributions reflect a higher percentage of females over males (see Figure 25). However, we do see that this trend is exacerbated at the community level, with a greater female to male ratio present within the Estates of Fort Lauderdale community. In Broward County, the female dominant trend is less extreme, as the percent of females and males are almost equal, representing a near 50/50 distribution.

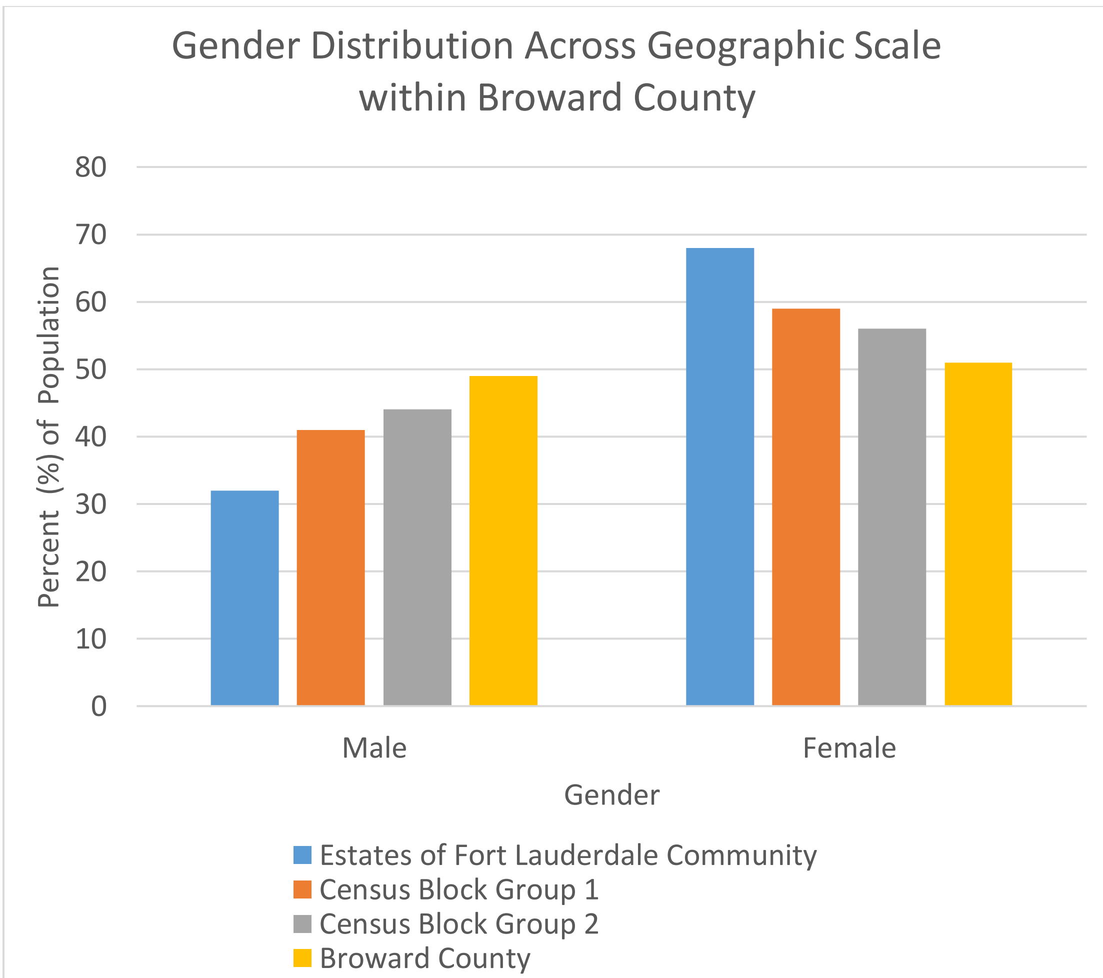

Figure 25. Gender Distribution

5.1.5 Race

The two most prominent races across all three geographic scales are White or Causation and Hispanic or Latino (see Figure 26). Moreover, there seems to be a greater percentage of White or Causation individuals than there are Hispanic or Latinos individuals. While the race distribution seems to be somewhat aligned across scales, this trend does appear to be more extreme at the community level, with a greater White or Caucasian to Hispanic or Latino ratio present within the Estates of Fort Lauderdale community. Also noteworthy, is the race distribution present within Broward County, as it is almost equally distributed in thirds across White and Caucasian, Hispanic and Latino and Black or African American, with a slightly greater proportion of White and Caucasian individuals.

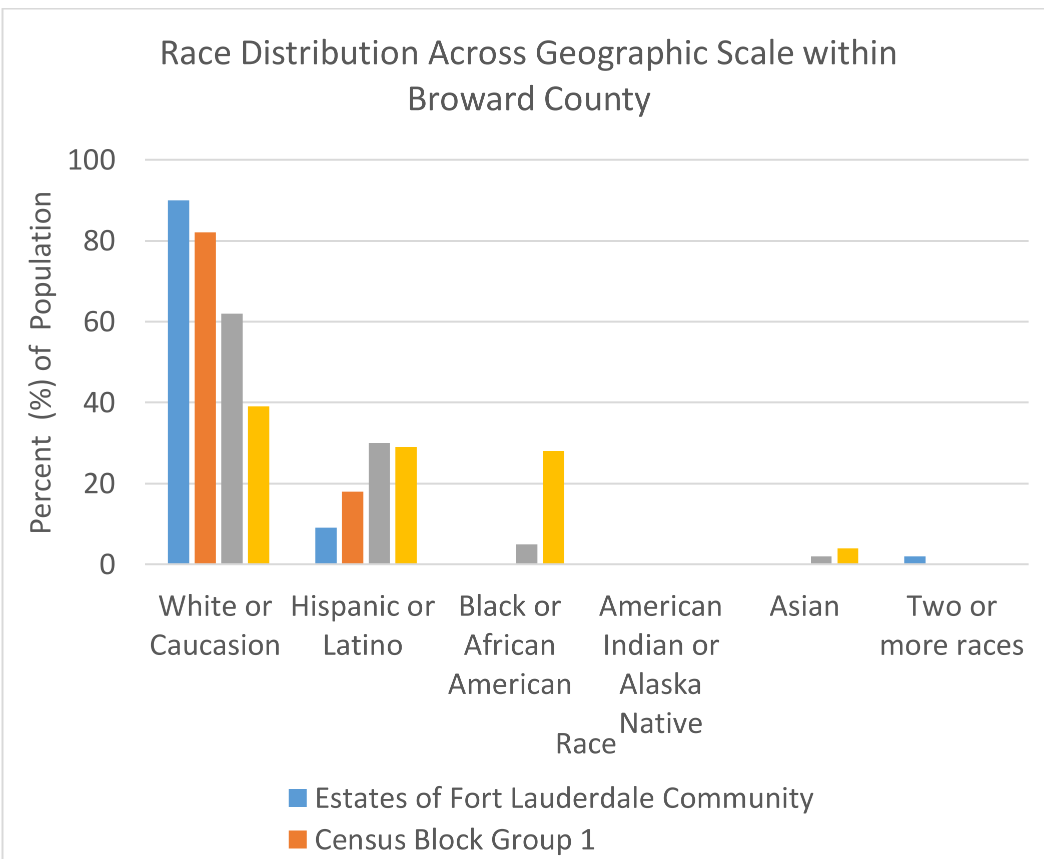

Figure 26. Race Distribution

5.2 Overall Community Resilience Score and Distribution

Table 5 displays the overall resilience score for the Estates of Fort Lauderdale (.6) as well as the score breakdown across the seven dimensions. As mentioned, all thirty six survey questions were divided amongst the seven dimensions based on topic and subject matter. Questions within dimensions were scored on a scale of 0-1 and answer choices that contributed higher to resilience received greater scores. The scores for the relevant questions within each dimension were then averaged to also be weighted equally on a scale of 0-1 with higher scores (closer to 1) representing greater resilience. Community dimension scores were then generated by averaging the household (survey) level scores. Finally, these community dimension scores were then averaged (added up and divided by seven) to generate a community resilience score of .6.

Table 5. Overall Community Resilience Score

Dimension	**Dimension Score (0-1)**	**Overall Estates of Fort Lauderdale Score (0-1)**
Institutional Efforts	0.3	0.6 Average of seven dimension scores
Financial Independence	0.5	
Infrastructure	0.5	
Mobility	0.5	
Knowledge	0.5	
Communication	0.7	
Social Capital	0.8	

The seven community dimension scores are ordered from least to greatest within Table 5 to help highlight those dimensions or areas of strength as well as dimensions or areas that could use improvement. Further exploration of the data will allow us to pinpoint how the various dimensions are related and potentially work together to impact resilience. The distribution of the one hundred overall household resilience scores of the Estates of Fort Lauderdale can be in seen in Figure 27. Here, it is evident that the majority of household scores falls within the third quarter of scoring, of .5 to .75, which is above the midpoint of the distribution. This translates into the average score of .6. Moreover, this distribution calls attention to the fact that nearly all one hundred households scored at least above .25.

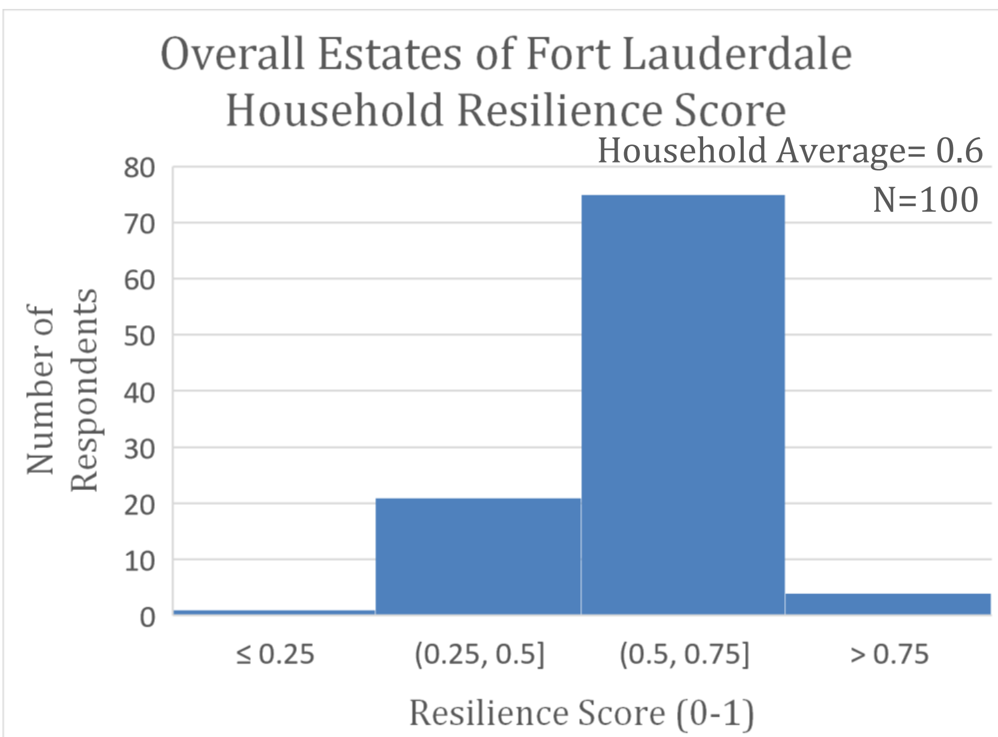

Figure 27. Overall Resilience Score Distribution

5.3 Breakdown of Overall Score by Dimension

As mentioned previously, the overall resilience score for the Estates of Fort Lauderdale community results from the averaging of all seven community dimension scores. While our survey metric isn't perfect or all encompassing, some conclusions can be made via the results and dimension score distributions. The distribution of community scores for each specific dimensions are displayed in Figures 28-34 within this section.

5.3.1 Communication

The communication dimension was the second highest scoring dimension for the Estates of Fort Lauderdale community. An overall community dimension score of .7 supports the notion that weather event related information and resources are adequately being communicated within the majority of the community. In Figure 28, we see that almost half, or forty eight, of the one hundred respondents score within the highest quarter of the score distribution of .75 or greater. Moreover, nearly none of the respondents score within the lowest quarter.

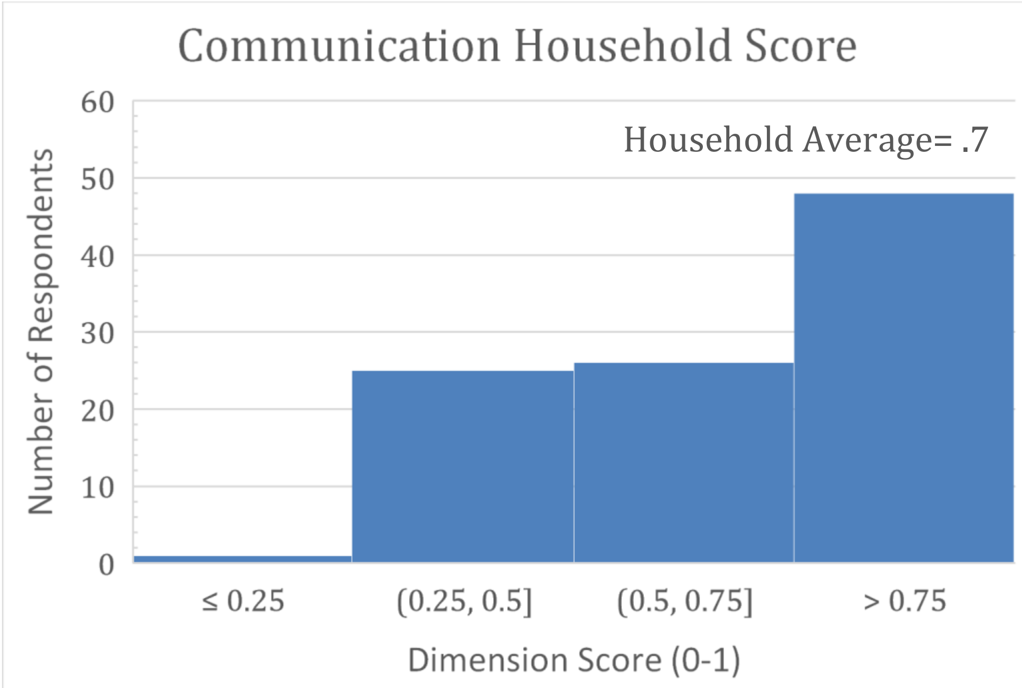

Figure 28. Communication Household Score Distribution

5.3.2 Financial Independence

The overall community scored a .6 for the Financial Independence dimension of resilience. Figure 29 depicts that 62% of household scores fell within the third quarter of the distribution of scores of .5 to 75. This represents fairly stable and adequate financial standing within the community. However, ideally, more that 12% of the households would have scored within the highest quarter.

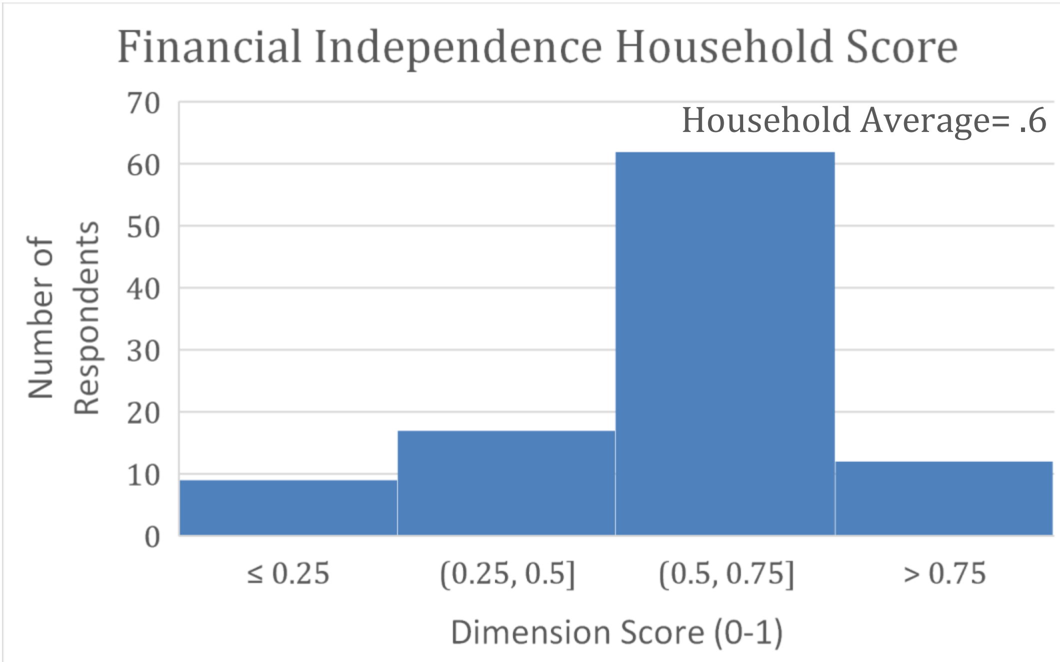

Figure 29. Financial Independence Household Score Distribution

5.3.3 Infrastructure

While the Estates of Fort Lauderdale community scored a .5 for the Infrastructure dimension, as it did for the majority of other dimensions, the distribution of household scores for this dimension is a bit different in nature. Within Figure 30, you can see how the majority of scores fell within the lowest quarter on the scale, which indicates that many households may not know of, or are not employing, safeguards or preparedness techniques when it comes to weather events. The large proportion of the remainder of the households do fall within the second highest quarter, which thus translates into that average score of .5

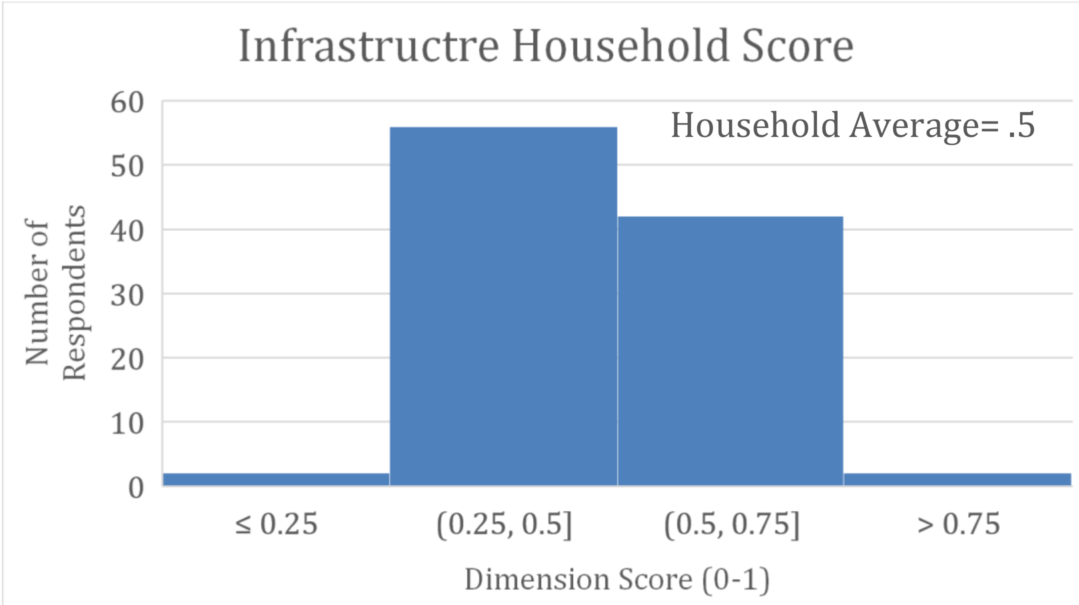

Figure 30. Infrastructure Household Score Distribution

5.3.4 Institutional Efforts

Figure 31 showcases the distribution of the lowest scoring community dimension, Institutional Efforts. Sixty seven of the one hundred households surveyed fall within the lowest quarter of the score range, which indicates that this dimension may represent an overall area of improvement for the community. While these results are meaningful in nature, we must also keep in mind that this dimension does represent the dimension with fewest incorporated questions, and the low score could be the result of the lack of dimension robustness. This concept will be explored in greater detail later on within the limitations and future recommendation sections.

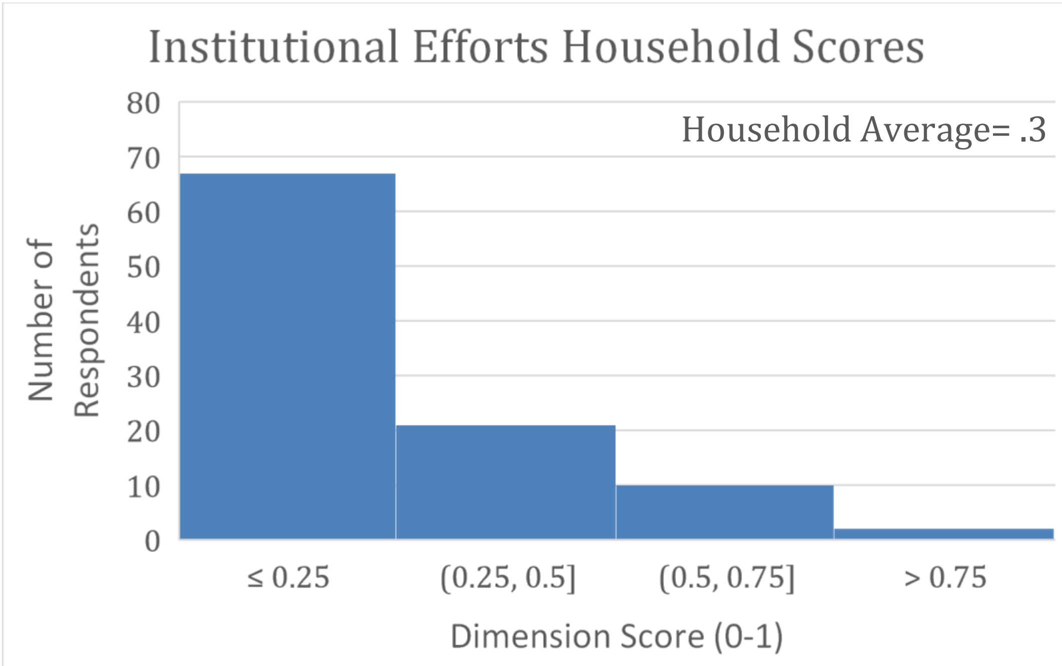

Figure 31. Institutional Efforts Household Score Distribution

5.3.5 Knowledge

The distribution of community scores for the knowledge dimension can be seen in Figure 32. From the distribution, it is evident that the majority of household scores fall within the second and third quarters of distribution, with minimal household scores extremely high or low. Overall, the community scored fairly average for knowledge, with a score of .5 out of 1. A greater channeling of resources into information sharing within the community could help shift the score distribution, resulting in a greater overall community knowledge score.

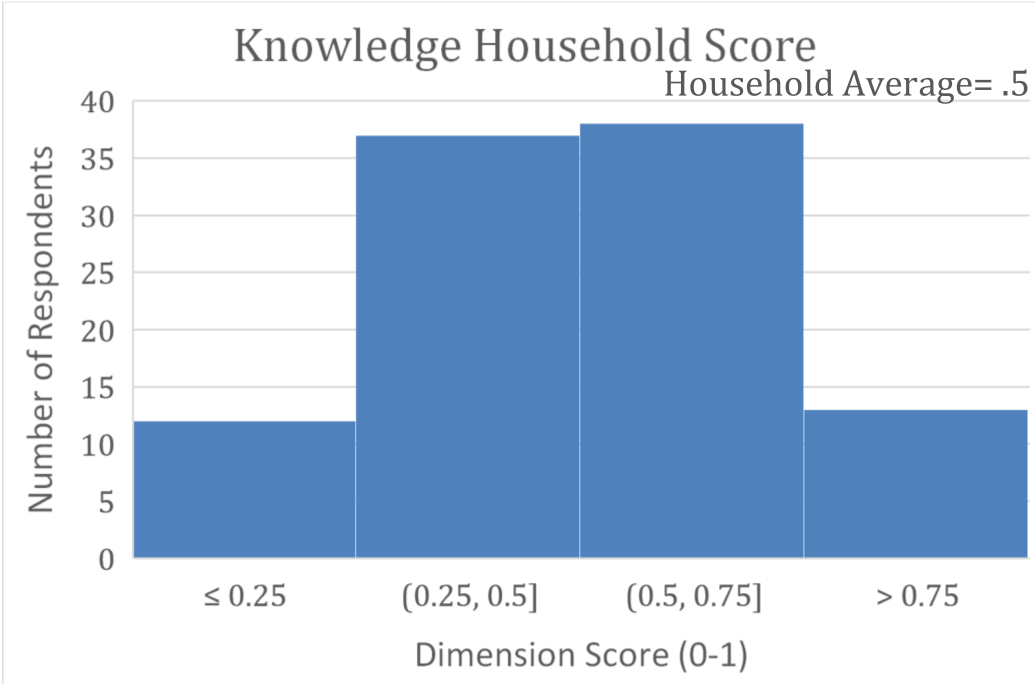

Figure 32. Knowledge Household Score Distribution

5.3.6 Mobility

Similar in distribution shape and trend to the distribution of household knowledge scores, the distribution of household Mobility scores can be seen in Figure 33. Very few households scored very high or very low within this dimension, resulting in a household average of .5. Mobilization proves to be a very vital concept when dealing with weather related events that require evacuation or temporary relocation. Thus, channeling effort into providing greater access to or awareness about various evacuation protocols and transportation methods could be instrumental in increasing Mobility scores across the community.

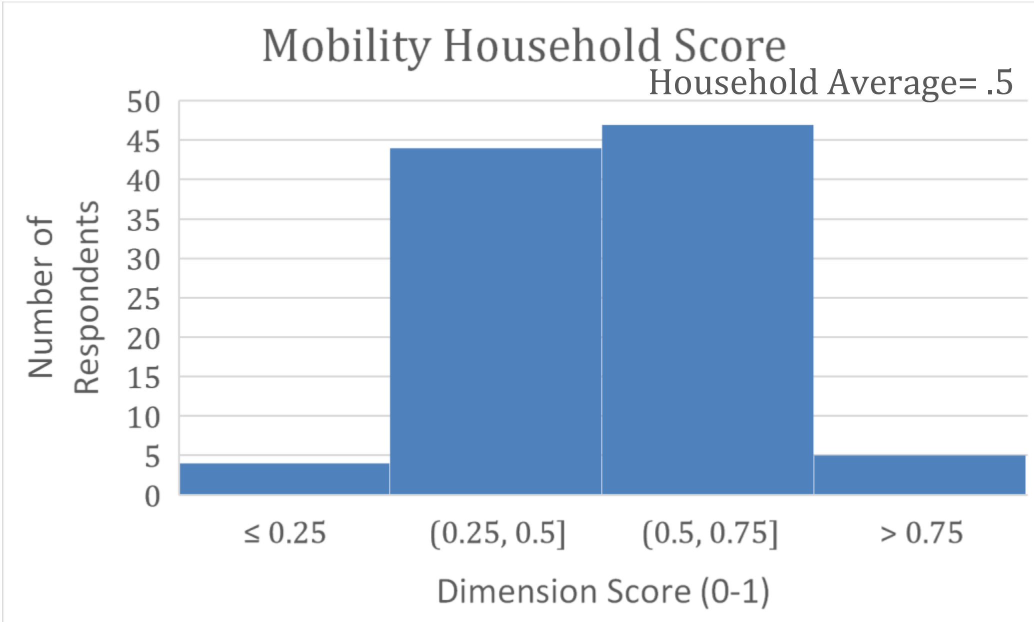

Figure 33. Mobility Household Score Distribution

5.3.7 Social Capital

The Estates of Fort Lauderdale community scored highest in the Social Capital dimension. When looking at the distribution of household scores for the Social Capital dimension in Figure 34, it becomes very evident that the bulk of the scores fall within the greatest quarter, and almost all households scored above average. High social capital reflects a strong presence of place attachment and social connectedness which often serves as a foundational tool for communities. The community's strong social capital could thus be capitalized on and channeled towards other areas of improvement or dimensions as a whole.

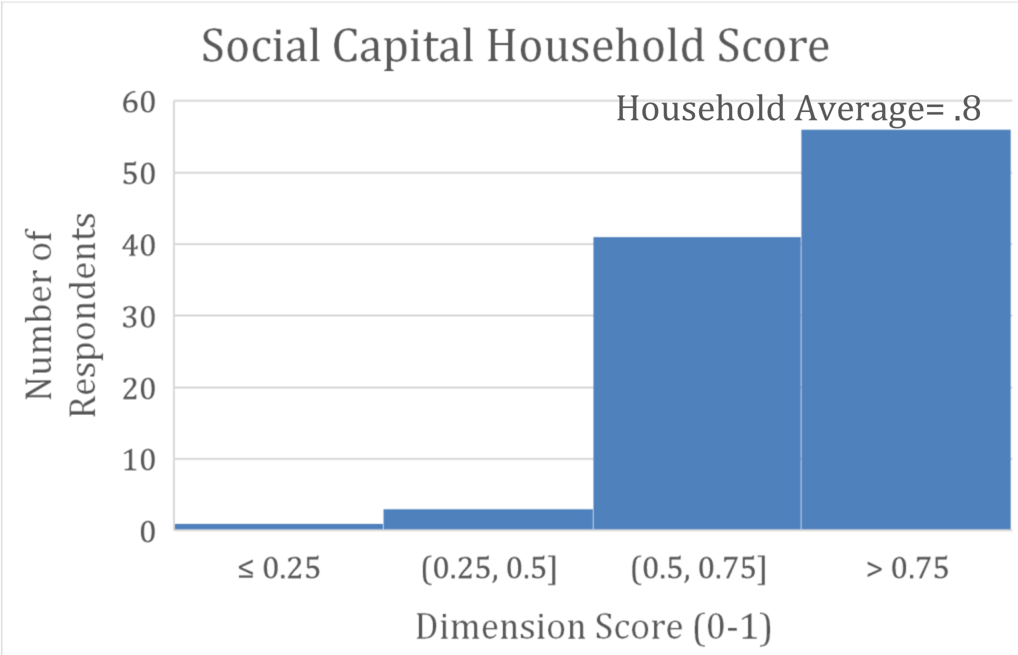

Figure 34. Social Capital Household Score Distribution

5.4 Paired Dimension Correlations

The focus of the analysis then shifted, as I examined the data to see if any pairs of dimensions exhibited interesting patterns. Instead of looking at the distribution of household responses within a dimension, I now was examining if and how the distributions of responses between two dimensions were correlated. Pearson's Correlation Coefficient tests were conducted for all twenty one possible dimension pairs to test for association, correlation and statistical relationship, the results of which can be seen in Table 6. The twelve resulting significant correlations amongst dimension pairs are highlighted.

Table 6. Dimension Correlations

Correlations

		COMMUNI-CATION	FINANCIAL INDEP.	INFRA-STRUCTURE	INSTIT. EFFORTS	KNOW-LEDGE	MOBILITY	SOCIAL CAPITAL
COMMUN-ICATION	**Pearson Correlation**	1	.071	.499**	.140	.580**	-.079	.317**
	Sig. (2-tailed)		.482	.000	.164	.000	.437	.001
FINANCIAL INDEP.	**Pearson Correlation**		1	.042	.228*	.247*	-.279**	.393**
	Sig. (2-tailed)			.675	.022	.013	.005	.000
INFRA-STRUCTURE	**Pearson Correlation**			1	.157	.338**	.022	.253*
	Sig. (2-tailed)				.119	.001	.826	.011
INSTIT. EFFORTS	**Pearson Correlation**				1	.125	-.225*	.246*
	Sig. (2-tailed)					.213	.025	.014
KNOWLEDGE	**Pearson Correlation**					1	-.021	.175
	Sig. (2-tailed)						.838	.081
MOBILITY	**Pearson Correlation**						1	-.230*
	Sig. (2-tailed)							.021
SOCIAL CAPITAL	**Pearson Correlation**							1
	Sig. (2-tailed)							

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Predictions about whether or not specific paired associations would be significant or not were made prior to testing based off of previous literature as well as trends and patterns present within the community and some associations proved to be significant that had not been predicted. Each of the twenty-one dimension pairs and their relationship fall within a specific categorization- significant (expected), significant (unexpected), non-significant (expected) and non-significant (unexpected)- as is depicted in Table 7. The "expected" versus "unexpected" binning represents expectations based on informed judgment and knowledge of literature and dimension composition.

The five correlations highlighted in Table 7 were selected for further inspection based on the substantive nature of the incorporated dimensions as well as their potential to provide concrete and meaningful insights. Question cross tabulations (cross tabs) were conducted between relevant dimensions within the five highlighted correlations, for a total of 132 possible cross tabulations across all five correlations. Twelve of these crosstabs will be explored in depth within the discussion section and the remainder of crosstabs can be found in Appendix E.

Table 7.Selected Correlations for Exploration

	SIGNIFICANT	NON-SIGNIFICANT
EXPECTED	Communication & Social Capital Communication & Knowledge (overlap Q21) Financial Independence & Knowledge	Financial Independence & Communication Financial Independence & Infrastructure Mobility & Communication (-) (H Com~ L Mob) Mobility & Infrastructure
UNEXPECTED	Mobility & Financial Independence (-)(H Fin ~ L Mob) Mobility & Social Capital (-) (H Soc Cap~ L Mob) Infrastructure & Communication Infrastructure & Knowledge Infrastructure & Social Capital Institutional Efforts & Mobility (-)(H Mob ~ L Inst Eff) Institutional Efforts & Financial Independence Institutional Efforts & Social Capital Financial Independence & Social Capital (overlap Q10)	Knowledge & Social Capital Knowledge & Institutional Efforts Knowledge & Mobility (-)(H Know ~ L Mob) Institutional Efforts & Communication Institutional Efforts & Infrastructure

A total of 666 crosstabs could be generated for the entirety of the survey questions, determined by the equation $n!/(r!\,(n-r)!)$ where *n* is the number of things to choose from, and we choose *r* of them with no repetition and with order not mattering (Lane, 2019). Because question two was split into two questions for the purpose of dimension scoring, n is thirty seven and r is two, and the relevant equation is 37!/(2!x35!). Furthermore, as mentioned previously, five survey questions were not incorporated into scoring, and thus four hundred and ninety six crosstabs can be generated for just those questions included for scoring purposes, resulting from the equation 32!/(2!x30!) (Lane, 2019).

The data for this survey is categorical in nature, and thus the responses to many survey questions were binned for scoring purposes. Furthermore, for the purpose of generating meaningful crosstabs, some answer choices or binning utilized for scoring purposes were combined. Crosstabs needed to be condensed into fewer answer options or bins in some cases in order to better understand the trend or meaning of the comparison.

Table 8 is an example of an instance where the answer choices and bins used for scoring needed to be combined for crosstab purposes. Here you see some specific answer choices for question 23 about evacuation were combined as there was a clear grouping that could be made to better consolidate and exemplify any trend that exists. Likewise, answer choices for question 35 were grouped were there was not high distinction and the crosstab called for a combination of options. The Chi Square Test results for this cross tabulation can be seen in Table 9. Conversely, in Table 10, you see that the exact same answer choice options used for scoring questions 10 and 24 were used when generating crosstabs. The Chi Square Test results are displayed in Table 11.

Table 8. Q35 x Q23 Cross tabulation

Q35 (Income) * Q23 (Evacuation)

			In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?					
			I do not evacuate and seek shelter within the Estates of Fort Lauderdale	I seek shelter at a friend or family members home OUTSIDE of the Estates of Fort Lauderdale but in or near Broward County	I seek shelter at a friend or family members home outside of the Estates of Fort Lauderdale NOT in or near Broward County	I seek shelter at a hotel OR shelter outside of the Estates of Fort Lauderdale OR leave town	I haven't been here	Total
Income	25k and below	Count	11	15	9	7	0	42
		Expected Count	12.6	13.4	8.4	7.1	.4	42.0
	25k-50k	Count	7	8	6	4	1	26
		Expected Count	7.8	8.3	5.2	4.4	.3	26.0
	50k-75k	Count	8	6	5	2	0	21
		Expected Count	6.3	6.7	4.2	3.6	.2	21.0
	75k and above	Count	4	3	0	4	0	11
		Expected Count	3.3	3.5	2.2	1.9	.1	11.0
Total		Count	30	32	20	17	1	100
		Expected Count	30.0	32.0	20.0	17.0	1.0	100.0

Table 9. Q35xQ23 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.764a	12	.637
Likelihood Ratio	11.292	12	.504
N of Valid Cases	100		

a. 11 cells (55.0%) have expected count less than 5. The minimum expected count is .11.

Table 10. Q10 x Q24 Cross Tabulation

Q10 (Do you rent or own your home?) * Q24 (Transportation Methods)

			Number of Transportation Methods Used before and/or After Weather Event			
			0	1-2	3-5	Total
Do you rent or own your home?	Rent	Count	0	10	3	13
		Expected Count	1.2	10.4	1.4	13.0
	Own	Count	9	70	8	87
		Expected Count	7.8	69.6	9.6	87.0
Total		Count	9	80	11	100
		Expected Count	9.0	80.0	11.0	100.0

Table 11. Q10 x Q24 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.344[a]	2	.188
Likelihood Ratio	4.103	2	.129
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.17.

This is important to note as this reorganization and different representation of data within answer choices for some questions can result in a deviation between specific crosstab significance and relevant dimension correlation significance. With some changes to data binning, the data set was interpreted by software a bit differently for crosstab correlations and significances as compared to the correlations and significances generated by the Pearson Correlation which were based on the data binned in alignment with the answer bins and choices utilized for survey scoring.

6 DISCUSSION

6.1 Unpacking Paired Dimension Correlations

Twelve question to question cross tabulations spanning across the five highlighted correlations in Table 7 will be found in this section. Here, the Statistical Package for Social Sciences (SPSS) was employed to generate the results of the individual crosstabs, as well as to run Chi-squared tests on the question pairings to test for significance. For each of the twelve resulting crosstab tables, the independent question and its corresponding responses comprise the rows and the dependent question and its corresponding responses comprise the columns. The resulting cells within the table represent the distribution of responses that fall within each combination of paired responses between both questions.

The "count" versus "expected count" subheadings helps to display the actual frequencies of responses from the data in each cell as compared to the frequencies that would be expected in each cell if there was no association between the corresponding question responses and the distribution was just random. Correlations between each of the twelve sets of questions being explored proved to be significant according to the Pearson's chi square test. The significance is highlighted within each table. Also highlighted are those cells that result in the unbalanced distribution of responses and represent the link between both categorical questions. The trends and findings supported by these unbalanced distributions, as well by the frequencies of responses of independent questions, will be discussed in the remainder of this section.

6.1.1 *Communication x Social Capital (Significant Expected)*

Table 12. Communication and Social Capital Corresponding Questions and Correlation and Crosstab Summary

Communication (3Q)	Social Capital (9Q)
Question 20: Select all of the following media outlets, if any, you have used to stay informed about weather events in the past few years: **Question 21:** Select all of the following experiences that have helped you learn how to prepare for, and respond to, weather events in the past few years: **Question 22:** Select all of the following communication outlets, if any, you have used to communicate during and/or after weather events in the past few years:	**Question 2 Part 1:** How long have you lived in the Estates of Fort Lauderdale? (Select all that apply) **Question 2 Part 2**: Are you a seasonal resident? **Question 3:** Are you aware of social events being offered in your community? **Question 4:** Do you attend these social events? **Question 5:** Select all type(s) of in-person interactions, if any, that you have engaged in within the past few months: **Question 6:** How would you rate your level of attachment to the Estates of Fort Lauderdale? **Question 7:** Do you want the Estates of Fort Lauderdale to thrive and be enjoyed by future generations? **Question 10:** Do you rent or own your home? **Question 30:** How many individuals live in your home?
DIMENSION CORRELATION: .317** **P-Value: .001** Possible Number of Crosstabs: 27 Crosstabs explored: 3	

Table 13. Q21 x Q6 Cross Tabulation

Q21 (Experiences) * Q6 (Level of attachment)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
How would you rate your level of attachment to the Estates of Fort Lauderdale?	Fair	Count	0	15	3	18
		Expected Count	1.4	9.7	6.8	18.0
	Somewhat strong	Count	5	23	12	40
		Expected Count	3.2	21.6	15.2	40.0
	Very strong	Count	3	16	23	42
		Expected Count	3.4	22.7	16.0	42.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Table 14. Q21 x Q6 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.352[a]	4	.010
Likelihood Ratio	14.713	4	.005
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.44.

In Figure 13, we see how place attachment relates to individuals engaging in experiences that help them prepare for, or respond to, weather events. Specifically, the stronger the attachment respondents have to their community, the greater number of experiences they engage in. This cross tabulation proved to be statistically significant (see Figure 14). This result supports the general consensus found in relevant literature that attachment to place tends to cause people to bond to their community and take efforts to protect it and engage in it. 82% of the sampled population rated their level of attachment to the Estates of Fort Lauderdale community as somewhat or very strong, which indicates, as mentioned previously, that a strong sense of place attachment persists among the majority of the community. Of those individuals that rated their attachment as very strong, 38% engaged in one to three experiences and 55% engaged in four or more.

Conversely, of those individuals that rated their attachment as fair, 83% engaged in one to three experiences, while only 2% engaged in four or more. Engaging in experiences such as community club events, trainings and past weather events help individuals attain information about how to plan for, and recover from, weather events. Even more, it allows individuals to stay connected with each other and provides them with local updates and information to communicate and protect their home.

Through interaction with the individuals within the community, it was not surprising that a high proportion of them both feel strongly attached to the community and engage in a large number of preparedness and/or response experiences. The individuals I have interacted with in the Estates of Fort Lauderdale community pride themselves on their involvement within, and connection to, their home and each other. They love the community, want to protect it and feel extremely passionate about it not only surviving, but thriving. Strong place attachment can serve as a resource to the community and can be used as a foundation to channel other community actions and initiatives. In this case, the place attachment could fuel the community to work towards increasing their involvement in specific preparedness and response experiences that seem to not be as prominent within the community, such as officially trainings.

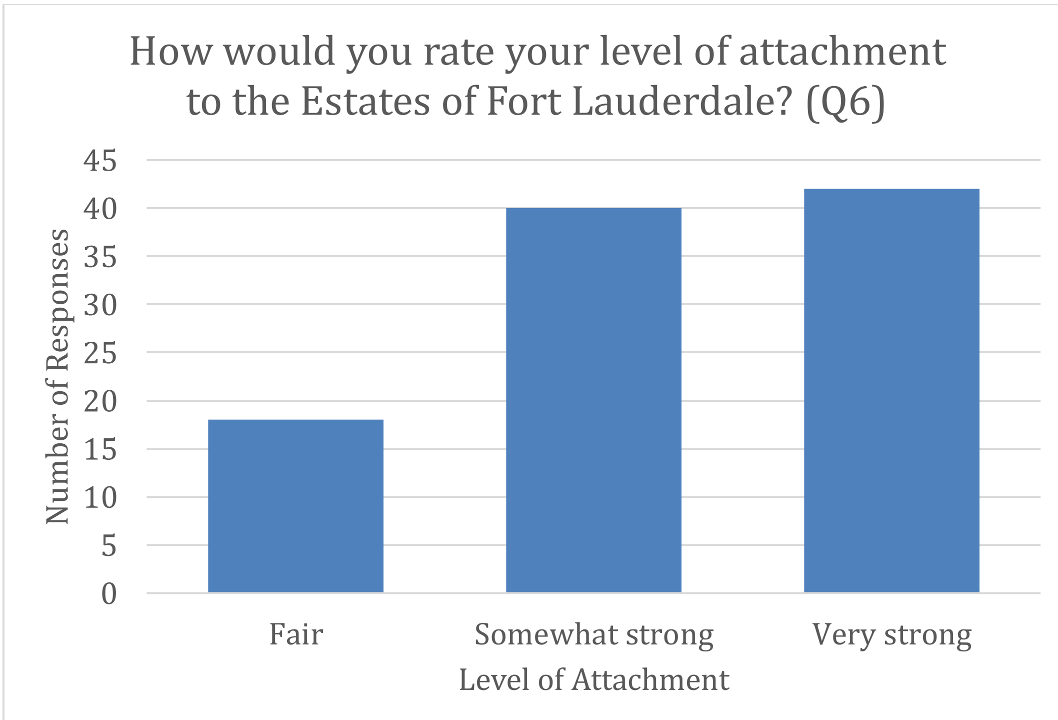

Figure 35. Question 6 Frequency Distribution

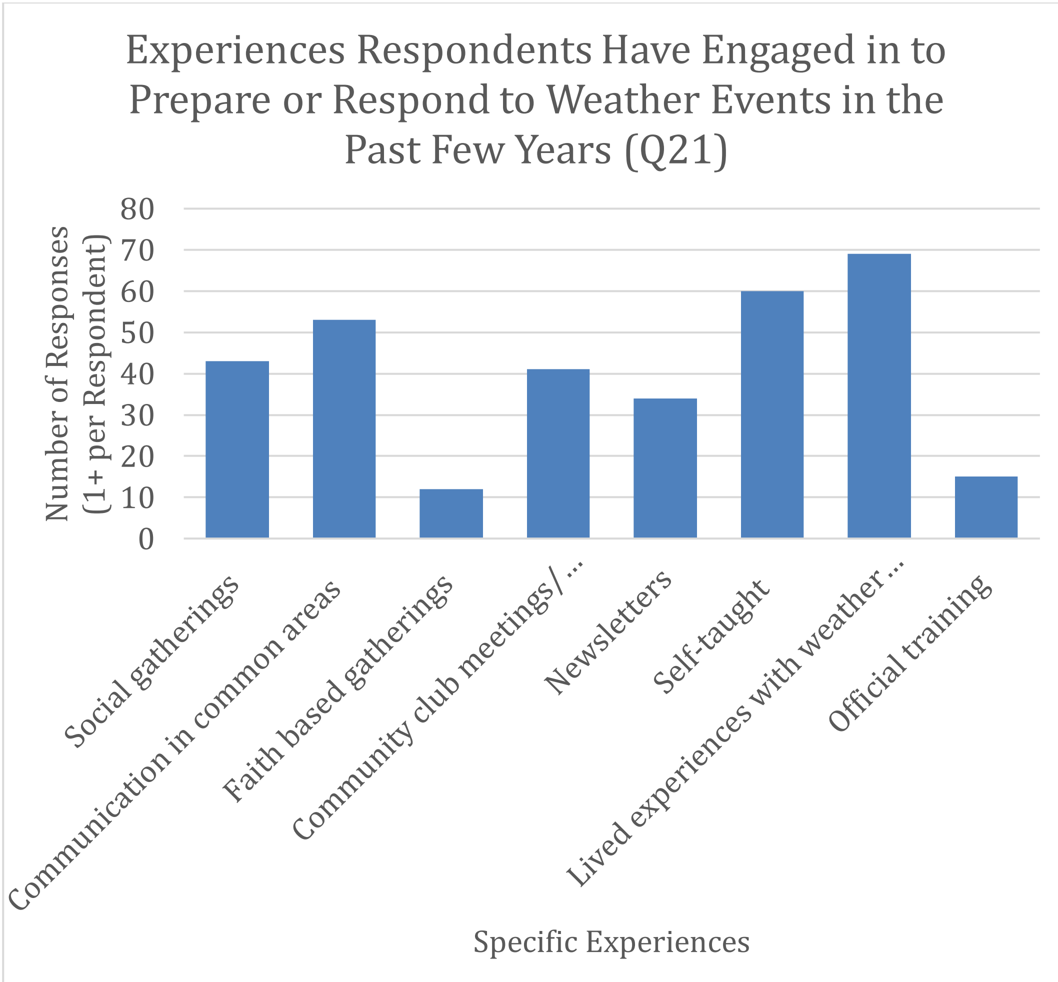

Figure 36. Question 21 Frequency Distribution

Table 15. Q22 x Q3 Cross Tabulation

Q22 (Communication outlets) * Q3 (Are you aware of social events in the Estates of Fort Lauderdale?)

			Number of communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
Are you aware of social events in the Estates of Fort Lauderdale?	Yes	Count	40	55	95
		Expected Count	42.8	52.3	95.0
	No	Count	5	0	5
		Expected Count	2.3	2.8	5.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Table 16. Q22 x Q3 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.433a	1	.011		
Continuity Correctionb	4.306	1	.038		
Likelihood Ratio	8.308	1	.004		
Fisher's Exact Test				.016	.016
N of Valid Cases	100				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.25.

b. Computed only for a 2x2 table

From Table 15, it seems that respondents that are not aware of social events within the community use fewer communication outlets to communicate during and/ or after weather events. This significant association (see Figure 16) helps to support the literature-backed assumption that decreased social awareness and connectivity can inhibit communication, just as increased social awareness and connectivity promotes and helps support communication. 100% of respondents that use four or more communication outlets during or after a weather event are also aware of social events within the Estates of Fort Lauderdale community, while 100% of respondents that are not aware of social events use three or fewer communication outlets. Utilization frequencies for the varying communication outlets can be seen in Figure 38.

While there is some evidence supporting the extremes of this trend, it is also worth noting that 100% of respondents, that either are or are not aware of social events, use at least one form of communication outlet. More specifically, this means that every surveyed individual is communicating at least via once outlet such as a landline, cellphone, computer, video broadcast, social media, email or fax. So while awareness of events does seem to have some impact on the quantity of outlets being used, it does not seem to have an overall impact on whether or not respondents communicate during or after a weather event in general.

From observing this community, it seems that its connectedness and continuous effort to assist and bond community members, is the underlying reason that all respondents at least engage in one form of communication outlet. This connectedness and information sharing via events, meetings, newsletters and bulletins also contributes to 95% of respondents reporting that they are in fact aware of social events taking place (evident in Figure 37).

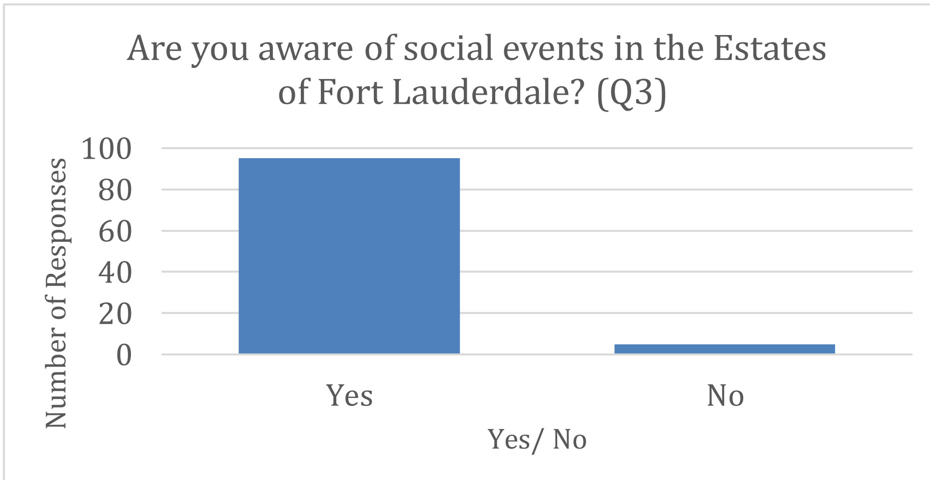

Figure 37. Question 3 Frequency Distribution

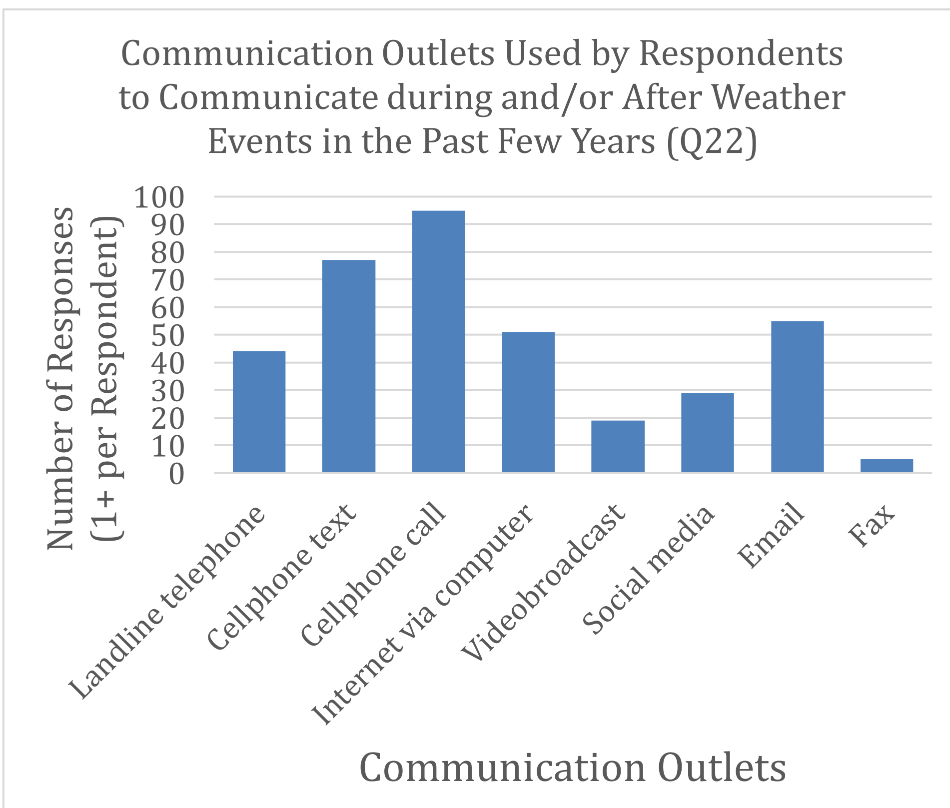

Figure 38. Question 22 Frequency Distribution

Table 17. Q30 x Q22 Cross Tabulation

Q30 (Number of individuals in home) * Q22 (Communication Outlets)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
How many individuals live in your home?	1	Count	18	12	30
		Expected Count	13.5	16.5	30.0
	1+	Count	27	43	70
		Expected Count	31.5	38.5	70.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Table 18. Q30 x Q22 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.896[a]	1	.048		
Continuity Correction[b]	3.078	1	.079		
Likelihood Ratio	3.896	1	.048		
Fisher's Exact Test				.078	.040
N of Valid Cases	100				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.50.

b. Computed only for a 2x2 table

Table 17 depicts that those individuals that live alone within the Estates of Fort Lauderdale community use a fewer number of communication outlets. This conclusion, drawn from the significance of the cross tabulation (see Table 18), is aligned with the widely supported finding within common literature that living alone can isolate people, resulting in a lack of, or reduction in, communication and social contact. Here we see some evidence that individuals living alone within the Estates of Fort Lauderdale community-30% of the entire sample population-are connecting less with others via outlets such as telephones and social media during and/or after weather events.

Specifically, 60% of individuals living alone utilize three or fewer communication outlets. Conversely, 78% of those individuals utilizing four or more communication outlets during and/or after an event do not live alone. Communicating and connecting with others during and/or after weather events helps to increase information sharing, support, and resource and aid allocation, and thus, those individuals may not be receiving the adequate information and assistance that they need during a dangerous situation.

From my experience with, and exposure to, the Estates of Fort Lauderdale community, this sense of connection and communication shined through, as individuals seem very social, involved and aware of community events and information. The fact that those individuals that do live alone all reported that they at least use one communication outlet speaks to this connection which could be utilized to further promote their utilization of outlets. Specifying which specific outlets those living alone are using could help shine a light on outlets the community can leverage and channel more information and assistance through to reach these individuals. Similarly, it can help shine a light outlets not being utilized by those individuals that the community can work to support more and make more easily accessible.

Lastly, many individuals chose texting as their mode of communication with me during the study and were very easy to get a hold of and exchange information with which is supported by the finding that 77% of the sample population do engage in text messaging during and/or after a weather event (see Figure 38). This cross tabulation helped to account for those individuals that live alone and maybe aren't as well connected or social like the majority of this community, which is an extremely important population to be aware of for future communication purposes. The distribution of number of individuals living in each household can be seen in Figure 39.

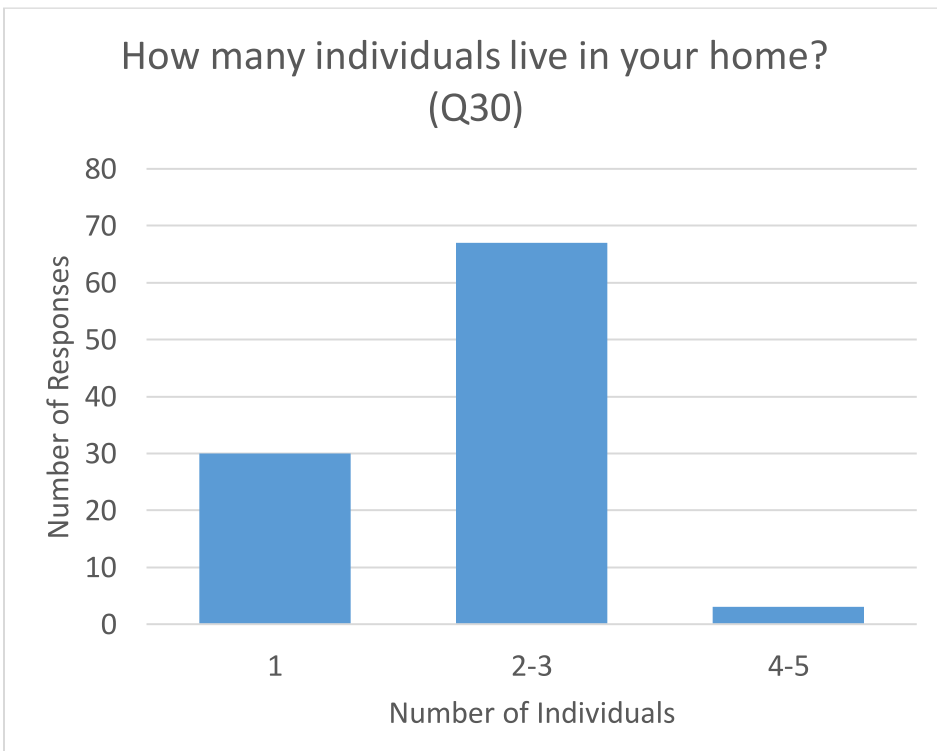

Figure 39. Question 30 Frequency Distribution

6.1.2 Mobility x Financial Independence (Significant Unexpected)

Table 19. Mobility and Financial Independence Corresponding Questions and Correlation and Crosstab Summary

Mobility (5Q)	**Financial Independence (3 Q)**
Question 23: In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all? **Question 24:** Select all of the following transportation methods, if any, that you have used before and/or after a weather event in the past few years: **Question 25**: How would you rate the quality of your transportation during and after weather events? **Question 31**: How many pets do you have in your home? **Question 32**: What is your age?	**Question 10:** Do you rent or own your home? **Question 14:** Has your home been damaged from flooding within the past few years? And if so, how were the repairs financed? (Select all that apply) **Question33:** Which of the following best describes your race and ethnicity? (Select all that apply)* **Question 34:** What is your gender?* **Question 35**: What is your annual household income (including social security)? *Not included in composite score calculation
DIMENSION CORRELATION: -.279** **(-)(H Fin ~ L Mob)** **P-Value: .005** Possible Number of Crosstabs: 15 Crosstabs Explored: 1	

Table 20. Q32 x Q10 Cross Tabulation

Q32 (Age)* Q10(Rent or Own)

			Do you rent or own your home?		
			Rent	Own	Total
Age	18-49	Count	2	5	7
		Expected Count	.9	6.1	7.0
	50-64	Count	8	26	34
		Expected Count	4.4	29.6	34.0
	65-79	Count	2	42	44
		Expected Count	5.7	38.3	44.0
	80 and older	Count	1	14	15
		Expected Count	2.0	13.1	15.0
Total		Count	13	87	100
		Expected Count	13.0	87.0	100.0

Table 21. Q32 x Q10 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.146[a]	3	.043
Likelihood Ratio	8.181	3	.042
N of Valid Cases	100		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .91.

The results in Table 20 indicate that that elderly respondents (age 65+) tend to own their home within the Estates of Fort Lauderdale community. This association is significant (see Figure 21) and the conclusion seems to be aligned with the widely accepted trend that individuals having greater resources acquired over time are better able to invest in a home, as compared to younger individuals ranging in age from 18-49. Figure 41 displays the age distribution within the sampled population.

While we expected this trend we did not expect the large majority of 87% of respondents in general to own their homes, regardless of age (see Figure 40). We would expect a greater percentage of home ownership to indicate individuals have adequate income and resources that could be mobilized if need be. However, owning a home can also potentially contribute to someone becoming more attached to their place of residence and could lead to them wanting to stay and protect their homes in the event of a hazardous situation. Moreover, this sample could also be a misrepresentation of the entire community, and we can't conclude that this proportion of the entire Estates of Fort Lauderdale community does in fact own their home.

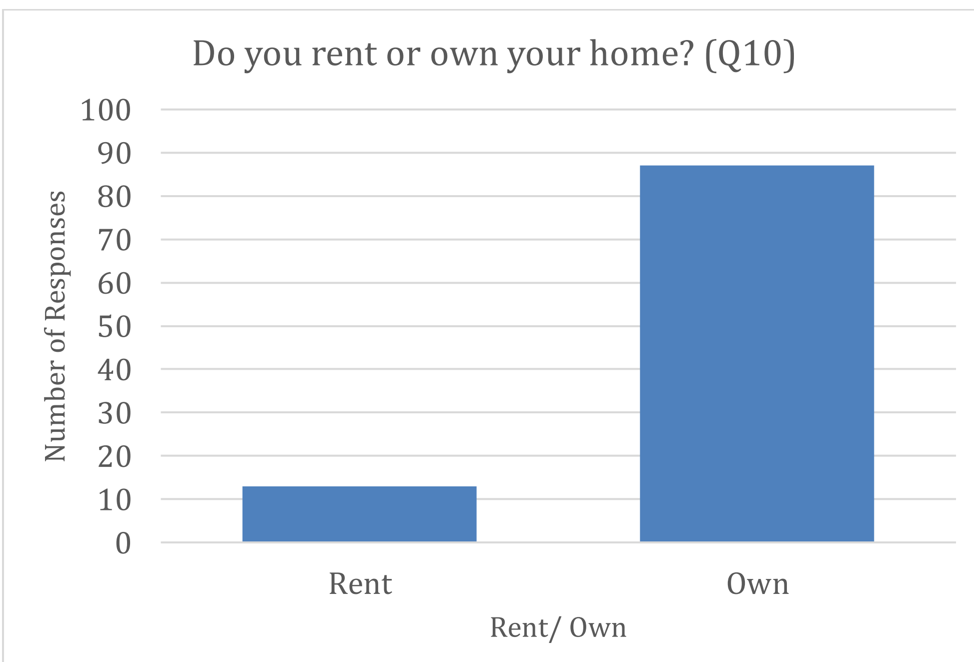

Figure 40. Question 10 Frequency Distribution

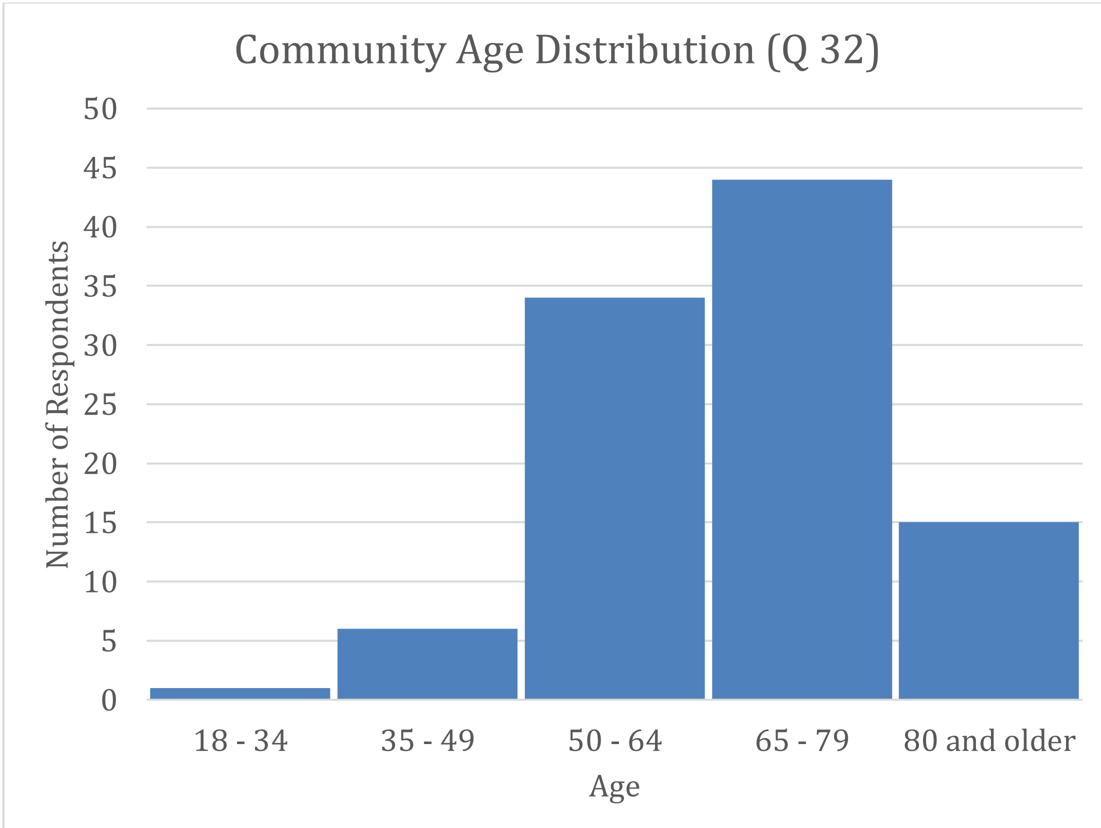

Figure 41. Question 32 Frequency Distribution

6.1.3 Infrastructure x Knowledge (Significant Unexpected)

Table 22. Infrastructure and Knowledge Corresponding Questions and Correlation and Crosstab Summary

Infrastructure (6Q)	**Knowledge (5Q)**
Question 9: Do you know if any of the following recovery resources are adequately available after a weather event within your community?(Select all that apply) **Question 11:** Was your home built after 1994? And has its anchoring system been updated since 1999? **Question 15:** Which of the following do you use to protect your family and home during a weather event? (Select all that apply) **Question 16:** Do you have a seawall on your property? If so, are you required by local building codes to maintain it? **Question 17:** Which best describes the area directly surrounding your mobile home? **Question 18:** Select all of the following back up energy modes that you use after a storm:	**Question 12**: Is your home located within the 100-year floodplain? **Question 19**: Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years? **Question 21:** Select all of the following experiences that have helped you learn how to prepare for, and respond to, weather events in the past few years: **Question 26**: Select all of the following, if any, skills that you have gained through jobs or experiences: **Question 36:** What is your highest level of education?
DIMENSION CORRELATION: .338** **P-Value: .001** Possible Number of Crosstabs: 30 Crosstabs Explored: 4	

Table 23. Q9 x Q21 Cross Tabulation

Q9 (Recovery resources) * Q21 (Experiences)

			Number of recovery resources respondent knows is available after a weather event			
			0	1-3	4-11	Total
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	7	0	1	8
		Expected Count	1.8	3.0	3.3	8.0
	1-3	Count	10	24	20	54
		Expected Count	11.9	20.0	22.1	54.0
	4+	Count	5	13	20	38
		Expected Count	8.4	14.1	15.6	38.0
Total		Count	22	37	41	100
		Expected Count	22.0	37.0	41.0	100.0

Table 24. Q9 x Q21 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	24.143a	4	**.000**
Likelihood Ratio	21.052	4	.000
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.76.

This cross tabulation in Table 23 strongly suggests the notion that respondents that have engaged in fewer preparedness and response experiences are less aware of resources that are available within the community after a weather event. The cross tabulation is extremely significant (see Table 24). Relevant experiences range from social gatherings and community meetings to experiences with previous hazards and official trainings, while relevant resources range from medical services and food to cooling centers and debris clearing assistance (see Figure 36). Exactly 88% of sampled individuals that have not engaged in any such experiences are completely unaware of resources available within their community after a weather event, whereas 53% of those very involved individuals that have engaged in four or more such experiences are aware of four or more resources available.

This correlation highlights the importance of information attainment and sharing within a community and highlights how such sharing impacts larger scale functioning and safeguarding. Here we see how participating in gatherings and experiences helps individuals connect to their community and gain awareness of resources available to them in general and in times of trouble. Having the knowledge of resource availability after a weather event can make a difference in someone's life, especially when referring to basic necessities such as food, water, and air conditioning that are essential for people's health and safety. Less than 30% of the sampled population is aware of the availability of both food and water after a weather event and less than 10% of the sampled population is aware of the availability of nearby cooling centers (see Figure 42).

Information attainment is often fostered by a strong sense of community and a great presence of social interaction within a community, as people are more likely to provide information and engage in learning**.** This is highly evident within the Estates of Fort Lauderdale Community, both through the survey results and interaction with the community, which could be the reasoning that while there is a correlation between zero experiences and knowledge of zero resources, 92% of the sampled population do engage in at least one experience that helps them learn to prepare or respond to weather events.

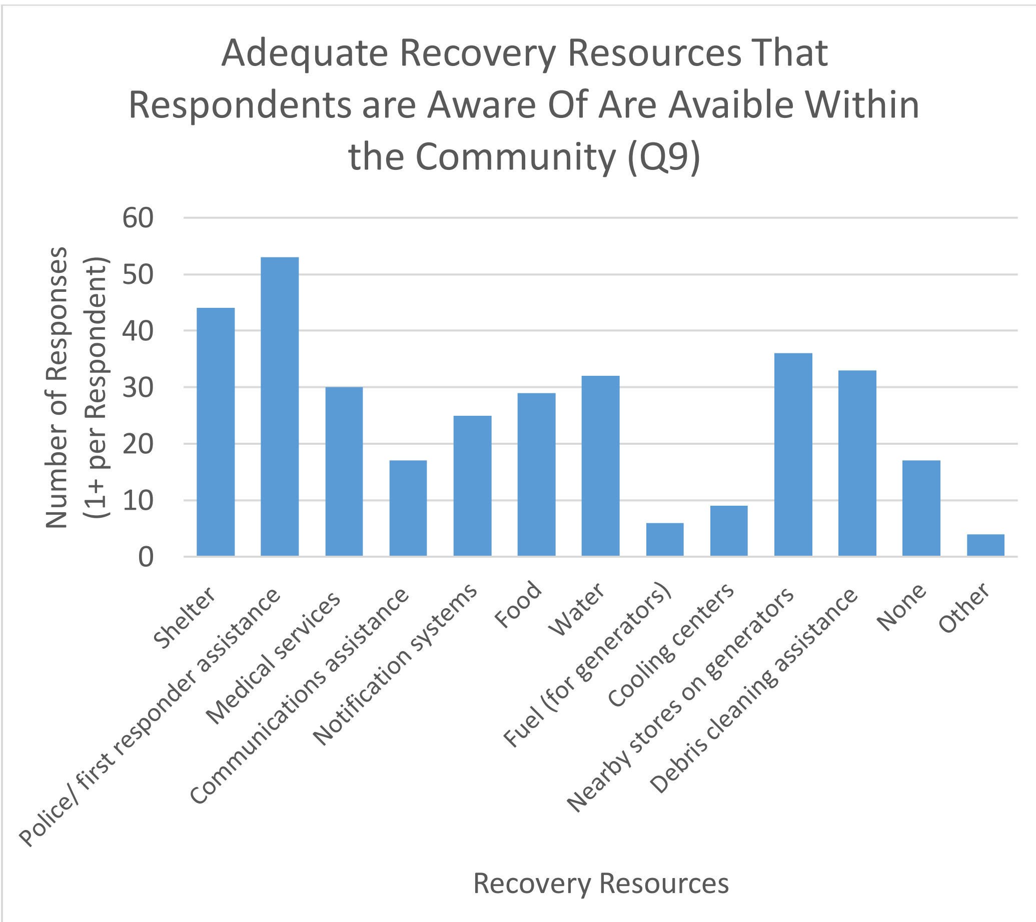

Figure 42, Question 9 Frequency Distribution

Table 25. Q15 x Q21 Cross Tabulation

Q15 (Safeguards) * Q21 (Experiences)

			Number of safeguards used to protect respondents home during a weather event			
			0	1-3	4-7	Total
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	3	4	1	8
		Expected Count	.6	7.0	.5	8.0
	1-3	Count	3	50	1	54
		Expected Count	3.8	47.0	3.2	54.0
	4+	Count	1	33	4	38
		Expected Count	2.7	33.1	2.3	38.0
Total		Count	7	87	6	100
		Expected Count	7.0	87.0	6.0	100.0

Table 26. Q15 x Q21 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.691[a]	4	.002
Likelihood Ratio	12.020	4	.017
N of Valid Cases	100		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .48.

The results from Table 25 imply that respondents that engage in a fewer number of preparedness and response experiences are less likely to use safeguards to protect their homes and families. Likewise, individuals engaging in a small number of experiences (1-3) tend to utilize a small number of safeguards when it comes to their homes and weather events (1-3), as 50% of the sampled population fell within this trend. This significant trend (see Table 26) would support the common understanding that as individuals increase their preparedness and response knowledge, they are more likely to know how to take more steps to protect their homes and families. Recall Figure 36 for the frequency distribution of preparedness and response experiences.

According to the results, only 6% of the entire sampled population are utilizing four or more safeguards to protect their homes. Ideally, this percentage would be greater, as the greater number of safeguards being utilized, the more protected and safe an individual's home would generally be in theory. The goal would be to have all individuals within the community using 4-7 safeguards. To accomplish this, the histogram distribution within Figure 43 can be employed to pinpoint those safeguards being underutilized within the community. Those safeguards could then serve as specific points of intervention for the community to boost safeguard usage. This effort could simultaneously help to reduce the percentage of individuals that currently aren't utilize any safeguards.

When looking at the specific safeguards individuals are using within the community, they tend to be choosing to use stronger, more protective options to safeguard their homes in some cases-73% of individuals are utilizing metal shutters, while 15% are using plywood as shutters and only 11% are using plastic as shutters. However, some other efficient forms of safeguarding are being underutilized by the community. Only 27% of the sampled population are employing tie down and anchoring systems to protect their homes and only 5% of the population are employing tarps. The community could channel efforts to spread knowledge about, and accessibility of, these safeguards, cost permitting, to help increase safeguard use within the community and shift the distribution within the community to have more individuals use more safeguards.

Safeguarding ones home against severe winds and rain, and accompanied flooding, helps to reinforce infrastructure and lessen the chance of damage and loss. Overtime, as weather events change, the importance of this information spreading and attainment by individuals within the community will be even more important, as people will be able to learn, adapt and better improve their safeguarding actions.

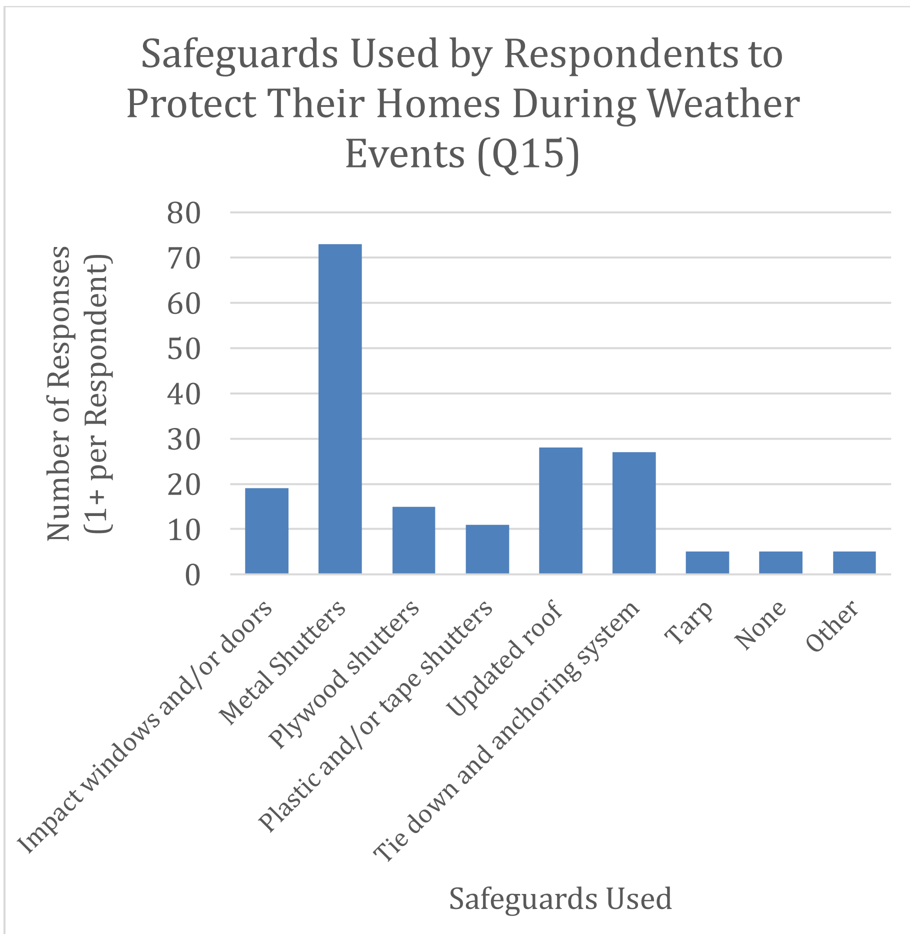

Figure 43. Question 15 Frequency Distribution

Table 27. Q15 x Q26 Cross Tabulation

Q15 (Safeguards) * Q26 (Skills)

			Number of safeguards used to protect respondents home during a weather event			
			0	1-3	4-7	Total
Number of skills that respondents have gained through jobs or experiences	0	Count	1	14	1	16
		Expected Count	1.1	13.9	1.0	16.0
	1-3	Count	6	21	0	27
		Expected Count	1.9	23.5	1.6	27.0
	4-7	Count	0	29	2	31
		Expected Count	2.2	27.0	1.9	31.0
	8-17	Count	0	23	3	26
		Expected Count	1.8	22.6	1.6	26.0
Total		Count	7	87	6	100
		Expected Count	7.0	87.0	6.0	100.0

Table 28. Q15 x Q26 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.325[a]	6	**.012**
Likelihood Ratio	18.361	6	.005
N of Valid Cases	100		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .96.

In Table 27 we see that the fewer number of skills respondents have gained through jobs or experiences, the fewer safeguards they use to protect their home. Skills range from more technical skills such as electrician experience, mechanic experience and survival experience to more health and personal skills such as medical experience, first aid training and cooking experience (see Figure 44). Many of the skills inventoried directly relate to having the knowledge about, and ability to, structurally install the safeguards that were also inventoried, which is why the resulting correlation was expected. However, the distinctiveness of this correlation was surprising, as all 100% of respondents that do not safeguard their homes possess three or fewer skills, which supports the notion that skill abundance supports more proactive preparedness. Once again, the cross tabulation within this table is significant, the specifics of which can be seen in Table 28. Recall Figure 43 for the frequency distribution of safeguards.

Experience with heavy equipment, survival training, tree removal experiences, and similar skills help support individuals in physically protecting their homes and loved ones from weather events. Many of the surveyed skills, such as communication skills also help individuals aid and support in other ways. 84% of the sampled population are equipped in at least one way to aid or assist community members during times of weather events or danger. While this is a good majority, possessing a greater skillset would be more advantageous to individuals, and the community as a whole.

A skills inventory such as this is a vital resource for communities to have to help channel efforts and pinpoint areas of needed growth and development. Specifically, we see here that low scoring skills within the sampled population include mental health experience (12%), engineering background (8%), CERT experience (8%) and electrical background (6%). The inventory also highlights that 16% of the population possesses none of the surveyed skills. Is these proportions are representative of the entire Estates of Fort Lauderdale community, they serve as areas for improvement. Channeling efforts at the community level to hold trainings or information session to help foster these skills would be extremely beneficial to residents, providing them with valuable knowledge and tools that help to promote more prepared mindsets and actions, such as safeguarding, in terms of weather events.

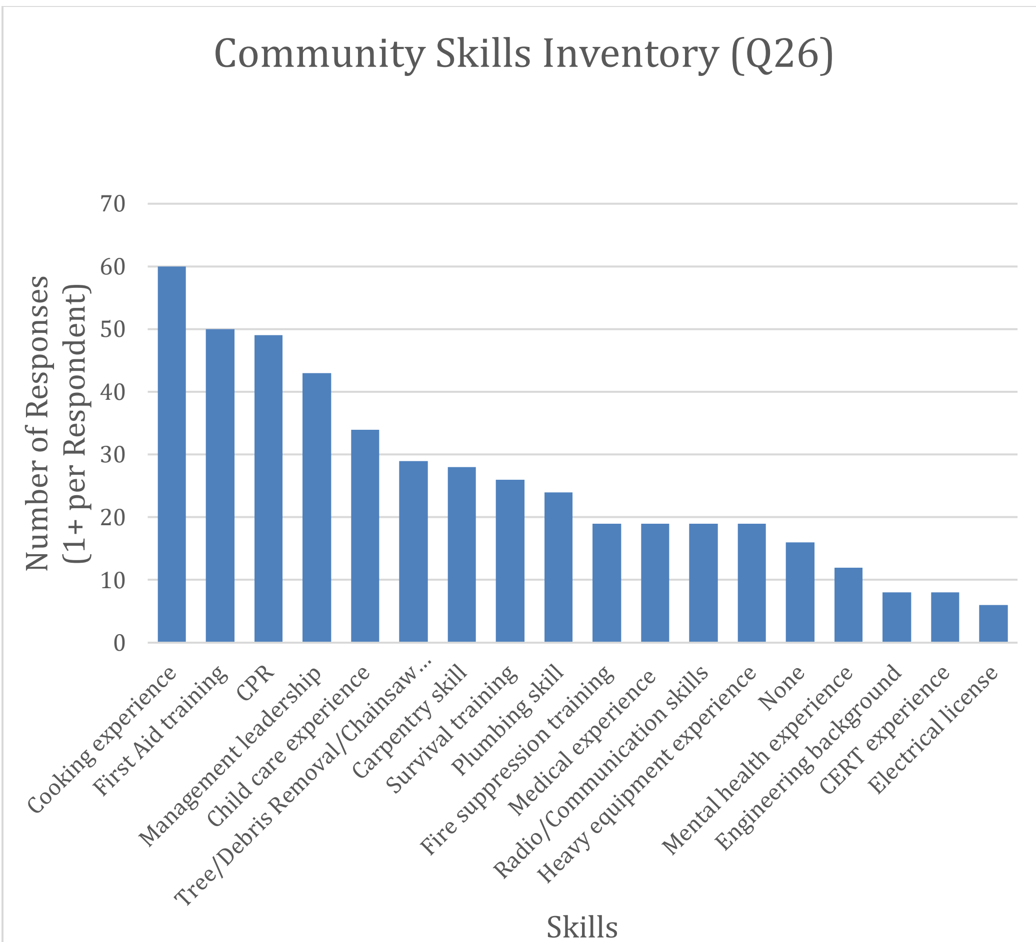

Figure 44. Question 26 Frequency Distribution

Table 29. Q18 x Q26 Cross Tabulation

Q18(Back up energy modes)* Q26(Skills)

			Number of backup energy modes used by respondents after a storm			
			0	1-3	4-10	Total
Number of skills that respondents have gained through jobs or experiences	0	Count	5	11	0	16
		Expected Count	2.7	11.4	1.9	16.0
	1-3	Count	2	23	2	27
		Expected Count	4.6	19.2	3.2	27.0
	4-7	Count	8	19	4	31
		Expected Count	5.3	22.0	3.7	31.0
	8-17	Count	2	18	6	26
		Expected Count	4.4	18.5	3.1	26.0
Total		Count	17	71	12	100
		Expected Count	17.0	71.0	12.0	100.0

Table 30. Q18 x Q26 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.386a	6	.054
Likelihood Ratio	13.943	6	.030
N of Valid Cases	100		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is 1.92.

The cross tabulation in Table 29 suggests that respondents with fewer skills gained through jobs or experiences use fewer back up energy modes after a storm. Back up energy modes include generators, gas stoves and solar or battery powered lights. This proposes that possessing skills, such as first aid training and leadership management, provide individuals with the resources and knowledge to be better prepared for the aftermath of weather events such as severe storms. After a storm, when electricity can often go out, possessing some form of back up energy mode allows individuals to continue functioning at least semi normally, providing them with a form of light or fuel. Of those individuals not utilizing any back up energy modes, 30% of them also state that they do not possess any relevant skills. Refer to Figure 44 for the distribution of skill frequencies and Table 30 for the results of the Chi-squared test for this cross tabulation.

Communicating with residents within the Estates of Fort Lauderdale, it did become apparent to me that while many residents are aware of weather events and of ways to mitigate their impacts, some residents were new to the weather event discussion and did not seem to have weather related experience, skills or exposure.

Across all quantities of skills, 17% of individuals stated that they do not use any back up energy modes and only 12% use four or more modes (see Figure 45). The distribution of responses across both questions within this crosstab indicate that the majority, or 71%, of respondents utilize 1-3 backup energy modes after a storm. While it is more beneficial to utilize some modes, rather than none, we would ideally like more individuals to fall within the upper range of utilization.

Accordingly to the histogram of responses, three back up energy modes that seem to be widely used across the community are portable generators (gas or diesel), outdoor propane or charcoal grills and battery operated radios, lights, phones or small appliances. Specifically, 42% of the sample population use gas or diesel generators, 54% use propane or charcoal grills and 66% use battery operated radios, lights, etc (see Figure 45). The remainder of potential back up modes seem to be underutilized throughout the sample population, if used at all. Specifically, none of the respondents stated that they utilize portable solar generators or partial or whole house solar energy, and less than 10% are using whole house generators, portable solar lights or indoor gas stoves.

With a concentration of low scores related to solar energy resources, this could serve as a concentration for leaders within the community. The community could tackle the topic as a whole and strategize how to spread information and resources within the community, if resources and finances permit. Boosting the utilization of solar related energy modes could require spreading information, increasing accessibility, or providing funding information or assistance to individuals. Increasing the use of these low scoring energy modes, could help shift the population's usage to incorporate more modes of back up energy modes.

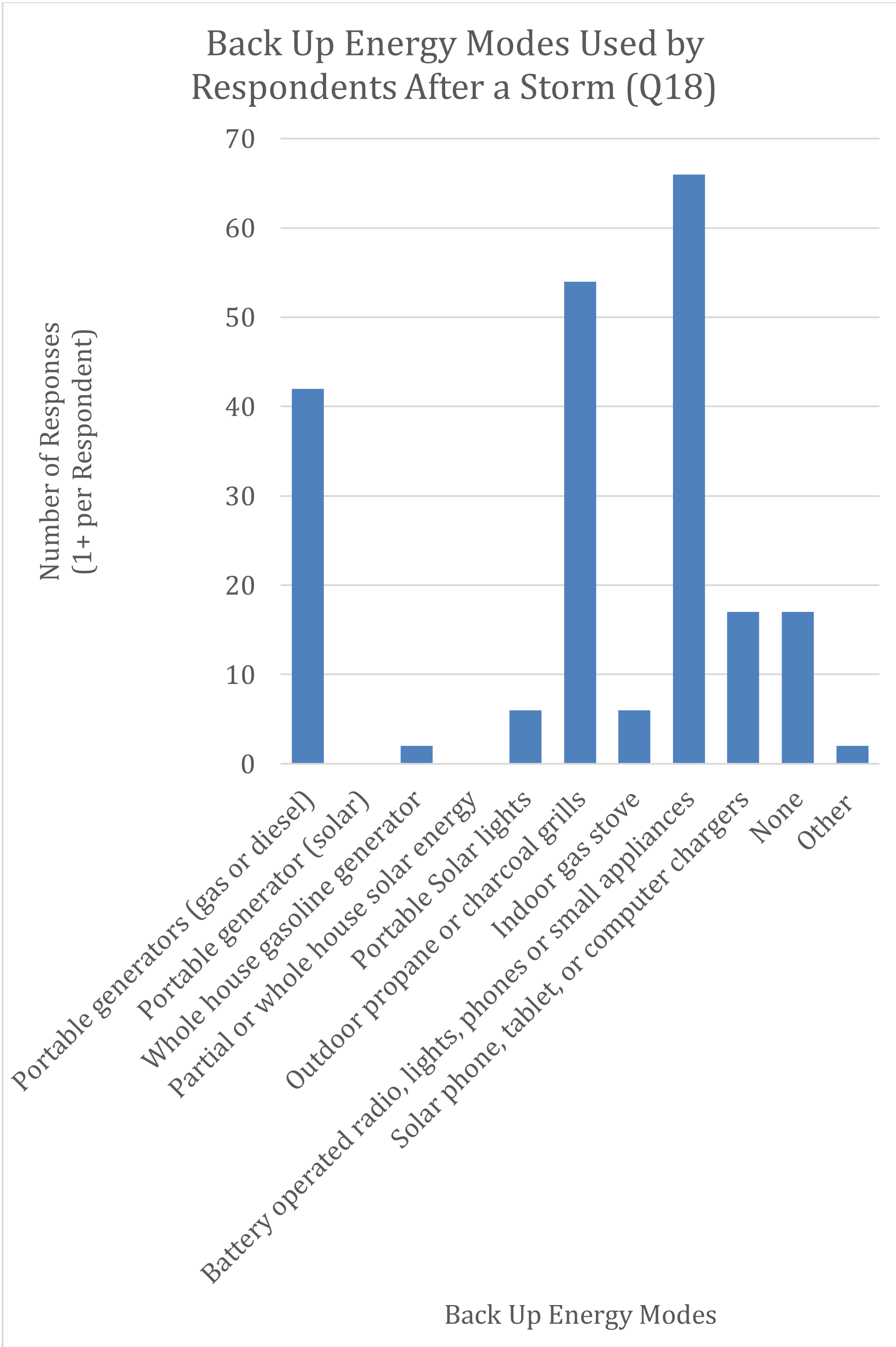

Figure 45. Question 18 Frequency Distribution

6.1.4 Mobility x Communication (Non Significant Expected)

Table 31. Mobility and Communication Corresponding Questions and Correlation and Crosstab Summary

<table>
<tr><th>Mobility (5Q)</th><th>Communication (3 Q)</th></tr>
<tr><td>Question 23: In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?

Question 24: Select all of the following transportation methods, if any, that you have used before and/or after a weather event in the past few years:

Question 25: How would you rate the quality of your transportation during and after weather events?

Question 31: How many pets do you have in your home?

Question 32: What is your age?</td><td>Question 20: Select all of the following media outlets, if any, you have used to stay informed about weather events in the past few years:

Question 21: Select all of the following experiences that have helped you learn how to prepare for, and respond to, weather events in the past few years:

Question 22: Select all of the following communication outlets, if any, you have used to communicate during and/or after weather events in the past few years:</td></tr>
<tr><td colspan="2">DIMENSION CORRELATION: -.079
P-Value: .437
Possible Number of Crosstabs: 15
Crosstabs Explored: 2</td></tr>
</table>

Table 32. Q21 x Q23 Cross Tabulation

Q21 (Experiences) * Q23 (Evacuation)

			In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?					
			I do not evacuate and seek shelter within the Estates of Fort Lauderdale	I seek shelter at a friend or family members home OUTSIDE of the Estates of Fort Lauderdale but in or near Broward County	I seek shelter at a friend or family members home outside of the Estates of Fort Lauderdale NOT in or near Broward County	I seek shelter at a hotel OR shelter outside of the Estates of Fort Lauderdale OR leave town	I haven't been here	Total
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	2	1	0	5	0	8
		Expected Count	2.4	2.6	1.6	1.4	.1	8.0
	1-3	Count	13	20	13	7	1	54
		Expected Count	16.2	17.3	10.8	9.2	.5	54.0
	4+	Count	15	11	7	5	0	38
		Expected Count	11.4	12.2	7.6	6.5	.4	38.0
Total		Count	30	32	20	17	1	100
		Expected Count	30.0	32.0	20.0	17.0	1.0	100.0

Table 33. Q21 xQ23 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.862[a]	8	.032
Likelihood Ratio	15.107	8	.057
N of Valid Cases	100		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is .08.

From Table 32, it can be concluded that the greater number of experiences that respondents engage in to prepare for, and respond to, weather events, the more likely they are to seek shelter within their immediate community and not evacuate. This is supported by the significant results of the Chi-squared test in Table 33. At first, this seemed surprising and contradictory to established trends within common literature. It was expected that the more experiences, ranging from social gatherings to trainings, that individuals engaged in to help them prepare and respond, the more likely they would follow evacuation orders and be proactive in leaving their community. Because 69% of the surveyed individuals have experienced weather events before, this conclusion would have been especially likely.

However, 40% of surveyed individuals that engage in four or more experiences actually do not evacuate and stay in the Estates of Fort Lauderdale community in the event of a weather event, while 63% of individuals that do not engage in such experiences do properly evacuate and seek shelter outside of the Estates of Fort Lauderdale. This finding could be the result of respondents actively choosing to not evacuate even though they are aware they are supposed to or potentially those experiences respondents are engaging in are not clearly communicating evacuation protocol.

Moreover, it is possible that those individuals that are engaging in a greater number of such experiences are being provided with an exaggerated sense of preparedness and are choosing to stay in their homes during a weather event to use these experiences to safeguard themselves and their community. The frequency distributions for experiences and for evacuation can be seen in Figures 36 and 47, respectively. The inverse relationship between experiences and evacuation reflects the overall inverse correlation between the two encompassing dimensions of communication and mobility. In Figure 46, just like in this specific cross tabulation, greater communication is associated with lower mobility, which is an unexpected correlation all together.

Overall, almost one third of the entire community, regardless of number of experiences, re not evacuating for hurricanes. The current and relevant protocol mandates that individuals living in mobile homes need to evacuate for hurricanes of any category, as mobiles homes have proved to be less structurally resilient against strong winds and rain, especially if not tied down and anchored and safeguarded correctly. Thus, individuals not evacuating are putting themselves in a more vulnerable and risky situation, which could be the result of the lack of proper or effective evacuation information, lack or mobilizing resources or personal decision making. Channeling efforts into providing evacuation information, resources, and plans, and concentrating on reducing residents misinterpretation of information and protocol, is essential in assuring more individuals are evacuating and getting themselves out of harm's way.

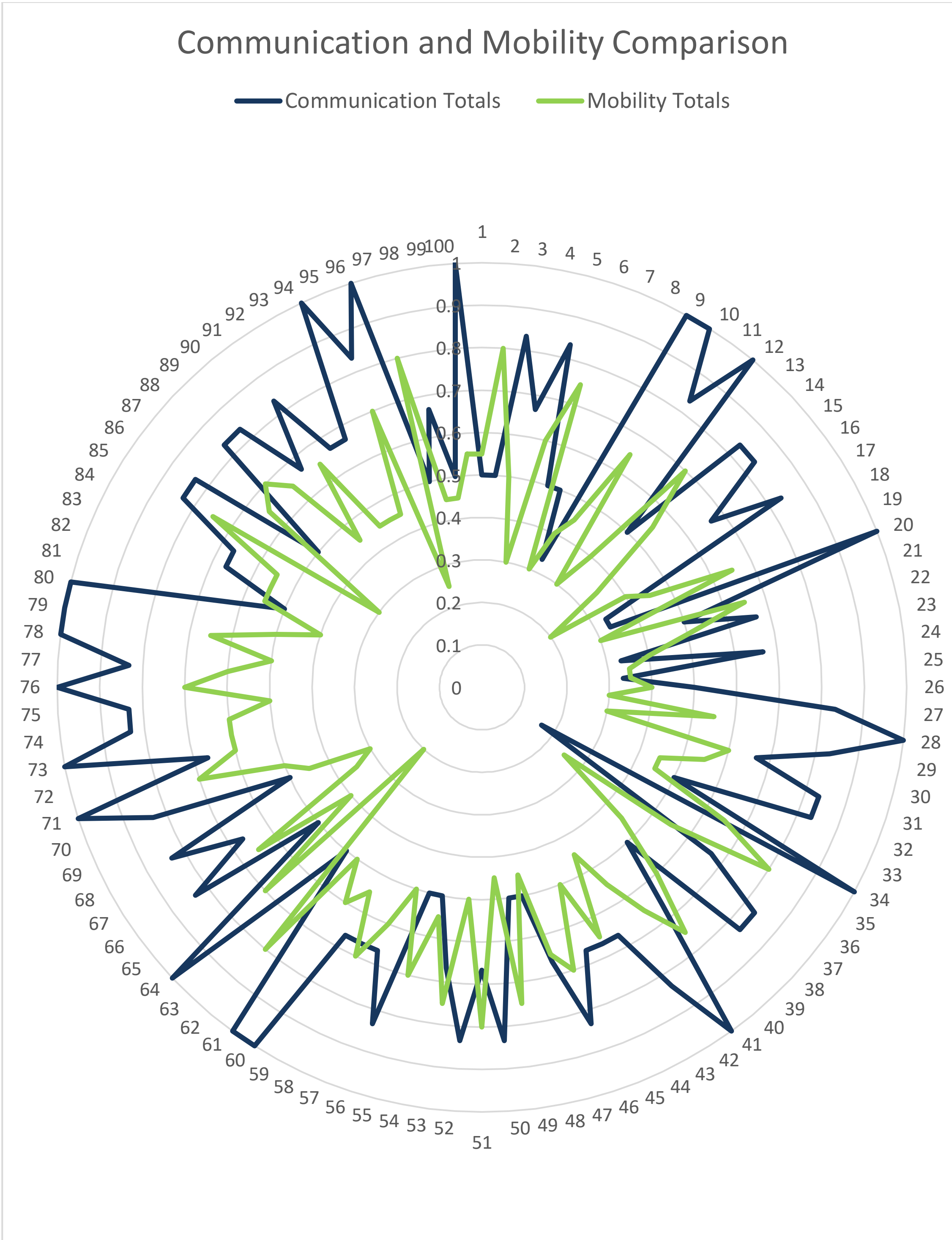

Figure 46. Mobility and Communication Radar Chart

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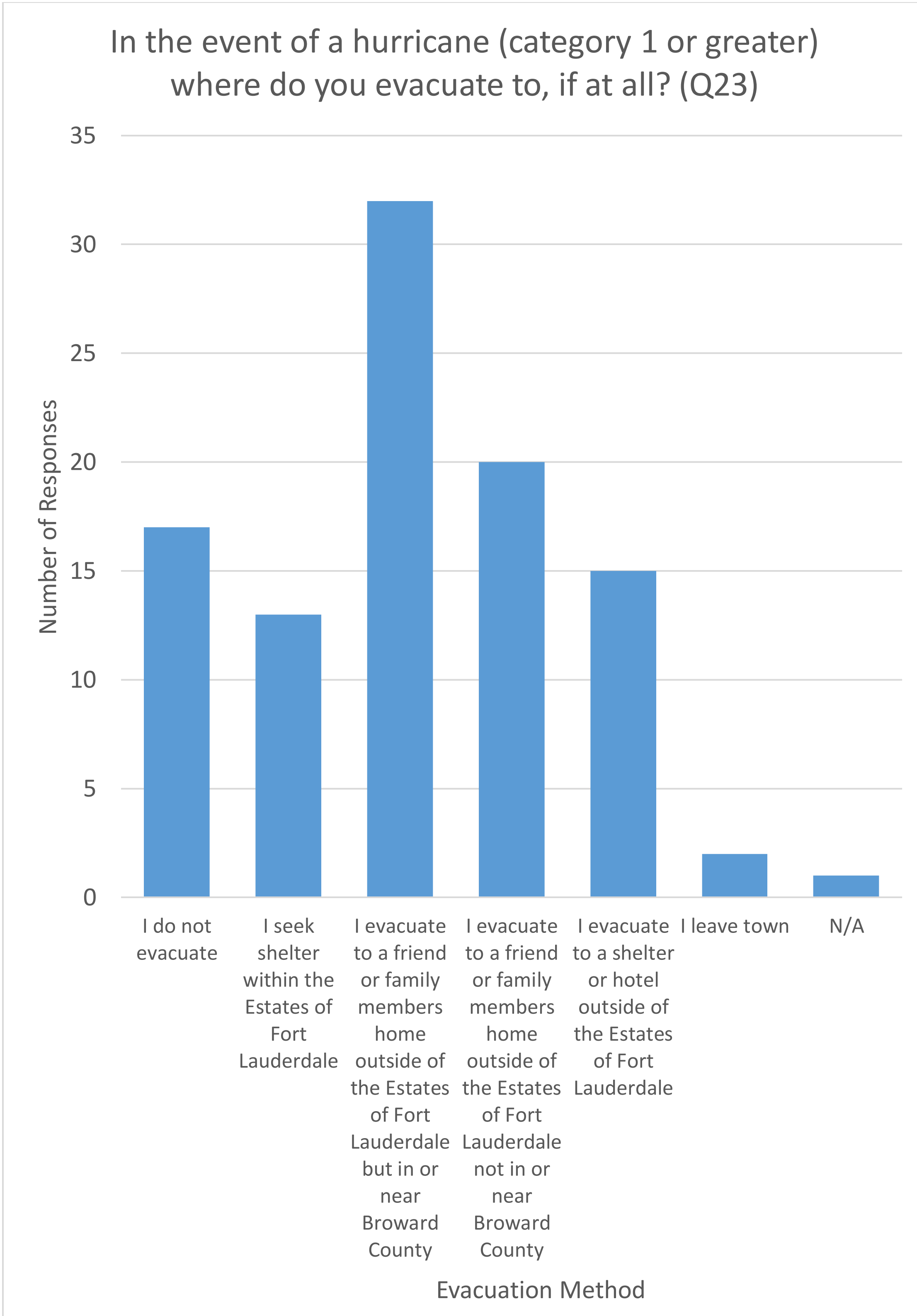


Figure 47. Question 23 Frequency Distribution

Table 34. Q21 x Q24 Cross Tabulation

Q21 (Experiences) * Q24 (Transportation Methods)

			Number of Transportation Methods Used before and/or After Weather Event			
			0	1-2	3-5	Total
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	6	2	0	8
		Expected Count	.7	6.4	.9	8.0
	1-3	Count	2	48	4	54
		Expected Count	4.9	43.2	5.9	54.0
	4+	Count	1	30	7	38
		Expected Count	3.4	30.4	4.2	38.0
Total		Count	9	80	11	100
		Expected Count	9.0	80.0	11.0	100.0

Table 35. Q21 x Q24 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	49.095[a]	4	.000
Likelihood Ratio	28.155	4	.000
N of Valid Cases	100		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .72.

The responses for the two questions within the cross tabulation of Table 34 prove to have a very significant direct correlation (see Table 35). Namely, the fewer the number of experiences that respondents engage in to help them prepare for or respond to weather events, the fewer transportation methods they are likely to use. Generally, we would expect this, as engaging in preparedness and response experiences should help provide individuals with more information and resources, making them better able to efficiently plan for and respond to events. One such result of engaging in more experiences such as social gatherings, trainings and reading community newsletters can be increased evacuation and mobility in general (recall Figure 36 for the frequency distribution of preparedness and response experiences within the sampled population).

When weather events strike, it is important that individuals within a community know how to get around and have access and the ability to move themselves to either leave or gather resources. 75% of surveyed individuals that do not engage in any experiences do not use any transportation methods right before or after a weather event. Of those individuals that tend to use four or more transportation methods, 64% reported that they engaged in four or more preparedness and response experiences.

Access to, and utilization of, transportation methods such as evacuation routes and private or public transportation is a key element in assuring the safety of people in regards to weather events. People need to be able to move and avoid dangerous situations and be able to actively seek help or resources, especially when referring to hurricanes. As a mobile home community, the Estates of Fort Lauderdale especially requires greater access to transportation, as individuals are technically required to evacuate for any category hurricane. Manufactured homes are particularly vulnerable to hurricane-force winds and thus evacuating and mobilizing is critical to the safety of community residents. While there is a direct correlation with preparedness and response experiences and use of transportation methods, the majority, or 80%, of respondents are using one or two transportation methods. The frequency distribution of transportation routes used within the sampled population can be seen in Figure 48.

Depending on which methods are mostly being used, this could prove to be an insufficient number of methods, as individuals need to be able to have access to, and be able to utilize, various resources to evacuate and mobilize. Only 24% of all the surveyed individuals are utilizing evacuation routes and 33% are using alternative routes. Meanwhile, 72% of respondents did indicate that they use private transportation right before or after a weather event.

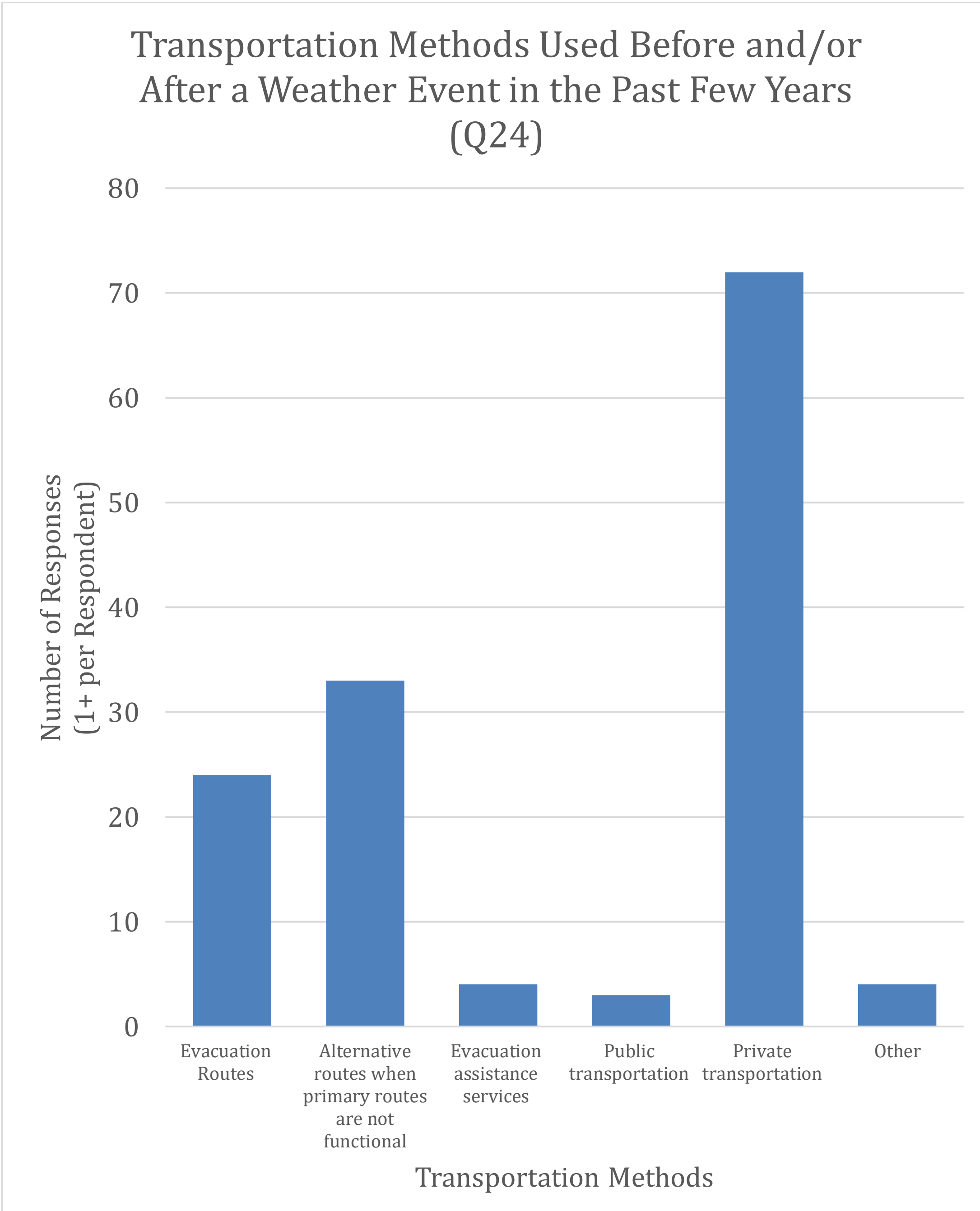


Figure 48. Question 24 Frequency Distribution

6.1.5 Social Capital x Knowledge (Non Significant Unexpected)

Table 36. Social Capital and Knowledge Corresponding Questions and Correlation and Crosstab Summary

Social Capital (9Q)	Knowledge (5Q)
Question 2 Part 1: How long have you lived in the Estates of Fort Lauderdale? (Select all that apply) **Question 2 Part 2**: Are you a seasonal resident? **Question 3:** Are you aware of social events being offered in your community? **Question 4:** Do you attend these social events? **Question 5:** Select all type(s) of in-person interactions, if any, that you have engaged in within the past few months: **Question 6:** How would you rate your level of attachment to the Estates of Fort Lauderdale? **Question 7:** Do you want the Estates of Fort Lauderdale to thrive and be enjoyed by future generations? **Question 10:** Do you rent or own your home? **Question 30:** How many individuals live in your home?	**Question 12**: Is your home located within the 100-year floodplain? **Question 19**: Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years? **Question 21:** Select all of the following experiences that have helped you learn how to prepare for, and respond to, weather events in the past few years: **Question 26**: Select all of the following, if any, skills that you have gained through jobs or experiences: **Question 36:** What is your highest level of education?
DIMENSION CORRELATION: .175 **P-Value: .081** Possible Number of Crosstabs: 45 Crosstabs Explored: 2	

Table 37. Q2 P2 x Q21 Cross Tabulation

Q2 P2 (Seasonal resident)* Q21 (Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			Total
			0	1-3	4+	
Are you a seasonal resident?	Yes	Count	4	3	4	11
		Expected Count	.9	5.9	4.2	11.0
	No	Count	4	51	34	89
		Expected Count	7.1	48.1	33.8	89.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Table 38. Q2 P2 x Q21 Cross Tabulation Chi-Squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.073a	2	.001
Likelihood Ratio	9.467	2	.009
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .88.

According to Table 37, seasonal respondents have engaged in a fewer number of experiences that helped them learn how to prepare for, and respond to, weather events in the past year. The significance of this cross tabulation (see Table 38) was expected and seems to be aligned with common literature. Individuals that do not live in their community full time and leave for months out of the year are less connected and involved within their community, and consequently can often be less prepared for weather events. Exposure to community specific experiences such as trainings and informational club meetings and gatherings where community protocols and updates can be discussed provides residents with up to date information and a sense of connectedness. This is evident through the distribution of responses within this crosstab, as 36% of respondents that are seasonal residents don't engage in any relevant experiences, whereas only 4% of respondents that are permanent residents don't engage. See Figure 36 for preparedness and response experiences sample distribution and Figure 49 for seasonal versus permanent resident sample distribution.

Our sample consisted of eighty nine permanent residents and eleven seasonal residents (see Figure 49) which could potentially be an underestimate of the actual proportion within the entire Estates of Fort Lauderdale community. Speaking with many members of the community, it became evident that there is a significant Canadian population living in the community who don't live in the community for part of each year. This underestimation could have been the result of the time of year we sampled and I believe the actual proportion of seasonal to permanent residents within the Estates of Fort Lauderdale community is greater than what is represented here. A greater number of seasonal residents works to further reduce consistent engagement within the community, especially when it comes to preparedness and response related experiences.

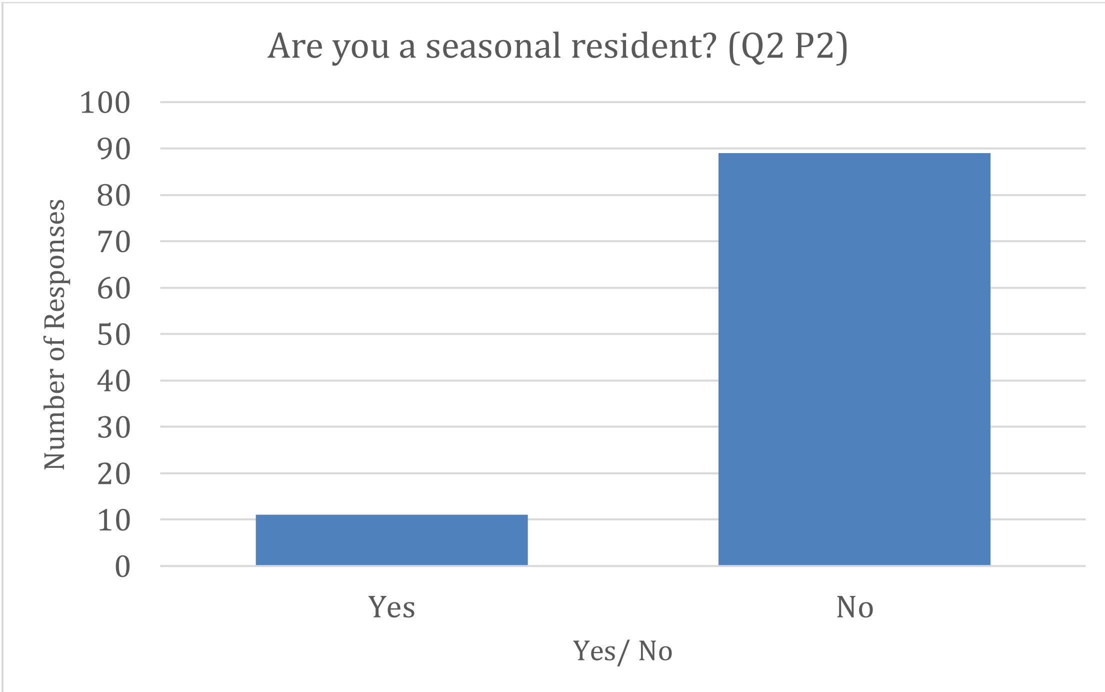


Figure 49. Question 2 Part 2 Frequency Distribution

Table 39. Q30 x Q12 Cross Tabulation

Q30 (Individuals in home)* Q12(Floodplain)

			Is your home located within the 100-year floodplain?			
			Yes	No	I don't know	Total
How many individuals live in your home?	1	Count	6	2	22	30
		Expected Count	3.9	9.0	17.1	30.0
	1+	Count	7	28	35	70
		Expected Count	9.1	21.0	39.9	70.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Table 40. Q30 x Q12 Cross Tabulation Chi-squared Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.399a	2	.003
Likelihood Ratio	13.505	2	.001
N of Valid Cases	100		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.90.

From Table 39, it can be concluded that those individuals that live with others are more likely to know that their home is not located within the 100 year floodplain. According to literature, living alone can often cause social distancing or isolation, resulting in individuals not receiving information or assistance. This notion is evident by the significant distribution of responses here (see Table 40), as individuals living alone seem to be unaware of their flood risk and current flood situation or unaware of the concept altogether. Of the thirty respondents that live alone (see Figure 39), only 7% of them know that their home is not within the 100 year flood plain. Of the seventy respondents that do not live alone, 40% of them know that their home is not within the 100 year flood plain. Figure 50 depicts the frequency distribution of responses regarding the respondents' flood plain knowledge.

When looking at the sample in its entirety, regardless of living arrangement, 70% of residents either answered incorrectly or completely did not know how to answer. Respondents not knowing if their home is within the 100 year flood plain inhibits their assessment of their flood risk and can cloud decision making when it comes to safeguarding their homes during a storm or major flooding events. More importantly, it can translate into them being unaware or misinformed of other important weather related information and precautionary resources. Community leaders can help to minimize this unawareness and promote the dispersion of weather and hazard related information by providing information at club and community meetings, including information in the community newsletter and on the community bulletin and potentially even targeting those individuals living alone one by one to assure their connectedness and information attainment.

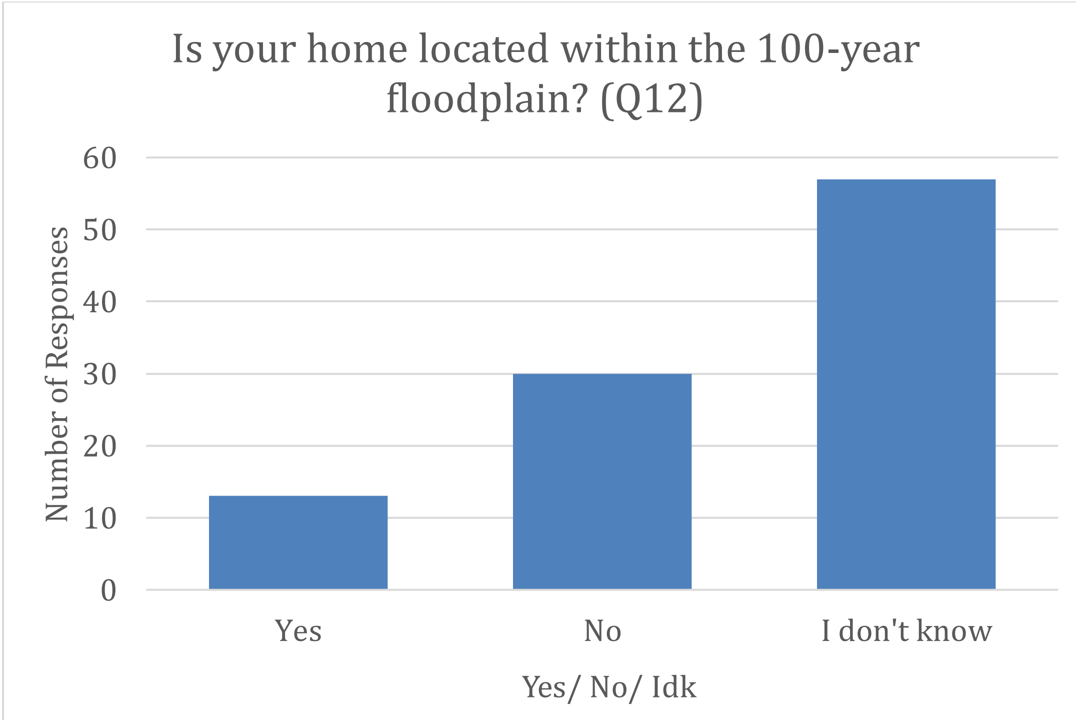


Figure 50. Question 12 Frequency Distribution

6.2 Emergent Themes

Following the exploration and summarization of these twelve individual crosstabs, it was then time to assess the crosstabs as a whole, rather than individually, to extricate abstract meaning from the overall correlations and trends. Pinpointing commonalities or links amongst various crosstabs would allow larger storylines to emerge that are engrained within the makeup of the community and could help guide future planning. The twelve crosstabs were thus bucketed by thematic nature, resulting in the designation of three overall prominent themes within this portion of the data. Themes blend across dimension lines, as multiple dimensions work together to provide richer, community wide, insights. The themes and corresponding crosstabs are outlined in Table 41.

The table depicts the major concepts and data driven conclusions that contributed to the construction of the three major themes. The five correlations that were explored for the purpose of these results, highlighted in Table 7, are depicted within the first column of the table and the vertical transition from correlation to correlation is depicted by the variation in shading. The relevant Pearson's correlation coefficients for each of the five correlations, introduced earlier in Table 6, make up the second column.

The focus of the table then narrows, as the next two columns are comprised of the specific corresponding question to question cross tabulations for each correlation, along with their Chi-squared test P values. The "Crosstab Sentence Summary" column depicts a one sentence take away message that was created for each of the twelve cross tabulations according to the crosstab's significance as well as the distribution of responses among both questions within each crosstab. These sentence summaries were then streamlined and consolidated across relevant dimension to dimension correlations to produce more conclusive and encompassing conclusions (labeled in Table 41 as "Theme Components"). Lastly, the entirety of the table was assessed at a more abstract level in order to translate those theme components into overall, universal, storylines that represent their corresponding cross tabulations as well as corresponding dimensions. The three resulting storylines or "Themes" are depicted within the final column of the Table 41.

Table 41. Emerging Themes from Dimension Correlations and Corresponding Cross Tabulations

Dimension Correlation	**Corr. Coef. (P Value)**	**Corresponding Crosstabs**	**Chi-sq test P Value**	**Crosstab Sentence Summary**	**Theme Components**	**Themes**
Social Capital x Communication	.317* (.001)	Q6 *(Level of attachment)* x Q21 *(Experiences)*	.010	Respondents with strong attachment to their community engage in a greater number of preparedness and response experiences	Respondents with strong place attachment and those permanently living in the community engage in more preparedness and response experiences (Q6 x Q21) (Q2 P2 x Q21)	**THEME 1:** **Place attachment and community connectedness encourages weather related information sharing**
		Q3 *(Awareness of social events)* x Q22 *(Communication outlets)*	.011	Respondents that are aware of social events in their community (95% of sample) utilize more communication outlets to communicate during and/ or after weather events		
		Q30 *(Individuals in home)* x Q22 *(Communication Outlets)*	.048	Respondents that live with others utilize more communication outlets	Respondents that live with others and those that are aware of social events utilize more communica-tion outlets (Q3 x Q22) (Q30 x Q22)	
Social Capital x Knowledge	.175 (.081)	Q2 P2 *(Seasonal resident)* x Q21 *(Experiences)*	.001	Non seasonal respondents (89% of sample) engage in more preparedness and response experiences		
		Q30 *(Individuals in home)* x Q12 *(Floodplain)*	.003	Respondents that live with others are more likely to know that their home is not located within the 100 year floodplain	Respondents not live with others have more flood based knowledge (Q30 x Q12)	

Knowledge x Infrastructure	.338* (.001)	Q9 *(Recovery resources)* x Q21 *(Experiences)*	.000	Respondents that engage in fewer preparedness and response experiences are less aware of resources that are available within the community	Respondents that engage in fewer preparedness and response experiences are less aware of resources and utilize fewer safeguards to protect their homes (Q9 x Q21) (Q15 x Q21)	**THEME 2: Limited preparedness and response experiences and skills impede weather preparedness and response actions**
		Q15 *(Safeguards)* x Q21 *(Experiences)*	.002	Respondents that engage in fewer preparedness and response experiences are use fewer safeguards to protect their homes		
		Q15 *(Safeguards)* x Q26 *(Skills)*	.012	Respondents with fewer skills gained through jobs or experiences, use fewer safeguards to protect their homes	Respondents with fewer skills utilize fewer safeguards and energy back up modes (Q15 x Q26) (Q18 x Q26)	
		Q18 *(Backup energy modes)* x Q26 *(Skills)*	.054	Respondents with fewer skills gained through jobs or experiences use fewer back up energy modes after a storm		

<table>
<tr><td rowspan="2">Mobility
x
Communication</td><td rowspan="2">-.079
(.437)</td><td>Q21
(Experiences)
x
Q23 (Evacuation)</td><td>.032</td><td>Respondents that engage in a greater number of preparedness and response experiences are more likely to seek shelter within their immediate community and not evacuate</td><td rowspan="3">Respondents that engage in a greater number of preparedness and response experiences evacuate less (Q21 x Q23), and while they use a greater number of transportation methods, the use of evacuation routes is still low
(Q21 x Q24)

Older respondents tend to own their homes which can inhibit mobilization
(Q32 x Q10)</td><td rowspan="3">THEME 3:

Weather preparedness and response experiences associated with less evacuation than expected</td></tr>
<tr><td>Q21
(Experiences)
x
Q24
(Transportation Methods)</td><td>.000</td><td>Respondents that engage in a greater number of preparedness and response experiences tend to use a greater number of transportation methods, however use of evacuation routes is low all around (only 24% of entire sample)</td></tr>
<tr><td>Mobility
x
Financial Independence</td><td>-.279*
(.005)</td><td>Q32 (Age)
x
Q10 (Rent or Own)</td><td>.001</td><td>Elderly respondents (over 50 years old) are more likely to own their home</td></tr>
</table>

6.2.1 Theme 1

There seemed to be a majority consensus that residents within the Estates of Fort Lauderdale feel attached to their community and its people and are bonded by the sharing of their sense of home and their will to help protect it. Specifically, 82% of the surveyed population stated their attachment was somewhat to very strong and 99% want the Estates of Fort Lauderdale to thrive and be enjoyed by future generations. We also see that the majority, or 95%, of residents sampled are aware of social events happening within the community. These sentiments expressed by the majority of respondents represent a deep social interaction and investment among the community, which is evidently working to facilitate information transfer and attainment.

This storyline, supported by the five crosstabs indicated within Table 41, emphasizes the relationship and interconnectedness that exists between the concepts of the social capital dimension and those of the knowledge and communication dimensions. It is evident that a strong presence of place attachment and community connectedness exists within the Estates of Fort Lauderdale and works to foster involvement in experiences and events which in turn provide community members with heightened weather related communication and information sharing.

Specifically, we see that 92% of the respondents engage in at least one preparedness or response experience and 100% of the respondents utilize at least one form of communication outlet to communicate during and after a weather event. A subset of the population that tend to be more socially isolated by nature, seem to be less communicative and informed when dealing with weather events. So, while the majority of the community is socially active and engaged and thus is more informed and communicative, there is a small portion of the community that highlight the opposite end of this thematic spectrum. The overall process map for theme 1 can be seen in Figure 51.

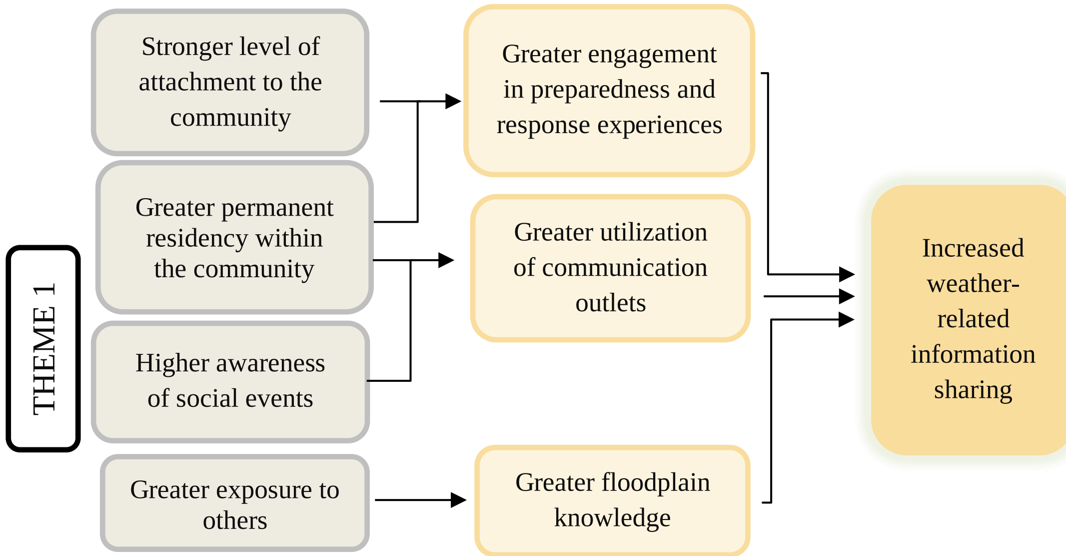


Figure 51. Theme 1 Process Map

6.2.2 Theme 2

The acquirement and utilization of information then serves to relate to involvement in preparedness and response actions throughout this community. We see here that residents that are less engaged in preparedness and response experiences and have acquired fewer skills over time have cultivated less information exchange. This then has resulted in less informed decision making and less awareness within the Estates of Fort Lauderdale community**.** Of those respondents that don't engage in any preparedness and response experiences, 88% of them are not aware of any recovery resources within their community and 38% of them do not utilize any safeguards to protect their homes**.** Additionally, of those respondents that possesses three or fewer skills, 100% of them do not utilize any safeguards to protect their homes and 41% of them do not utilize any back up energy modes after a storm. This direct correlation between information attainment and weather related proactive and resourceful behavior cements the link between the concepts of the knowledge resilience dimensions and infrastructure resilience dimension. See Figure 52 for the resulting process map for theme 2.

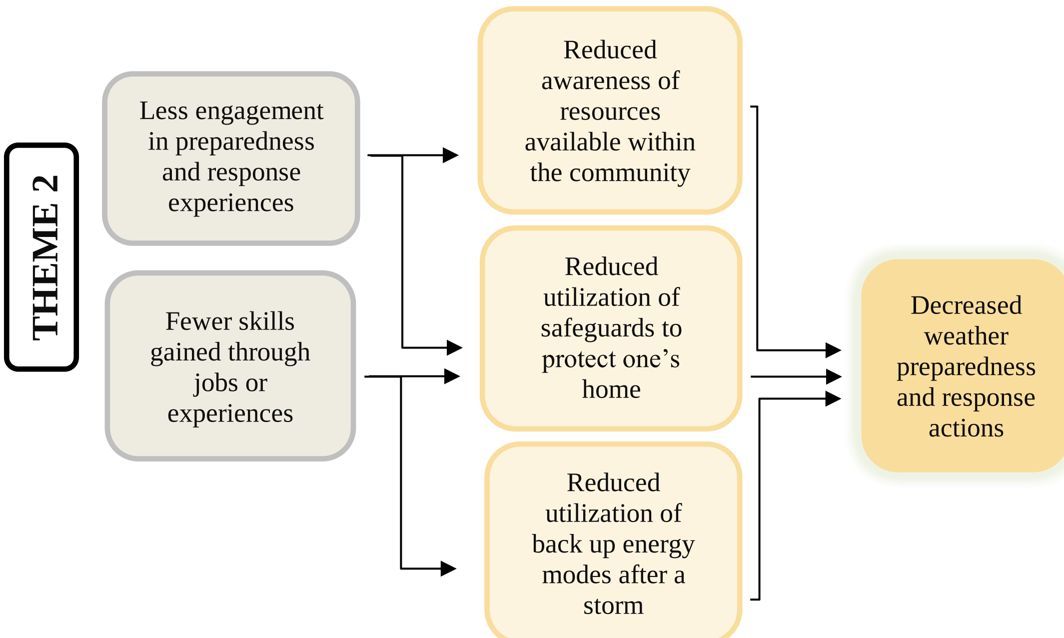


Figure 52. Theme 2 Process Map

6.2.3 Theme 3

Another major theme tells a bit of a different story. While again, the topic of involvement in experiences serves as the foundation of the consensus, here we see how greater involvement seems to inhibit mobilization, as compared to it serving to promote knowledge and commutation. Strikingly, 30% of the entire sampled population of the Estates of Fort Lauderdale community do not evacuate in the event of a hurricane and rather seek shelter within the community and only 24% of the population are utilizing evacuation routes in general. This low rate of evacuation, regardless of the respondent's preparedness and response experience, suggests that community members either aren't receiving adequate relevant information communication or are actively choosing to stay within their homes no matter the consequence. The strong sense of place attachment paired with the large proportion of homeowners within the community, could be working to confound this trend of decreased evacuation, as respondents may feel motivated to stay and protect their community and homes and assets. See Figure 53 for the resulting process map for theme 3.

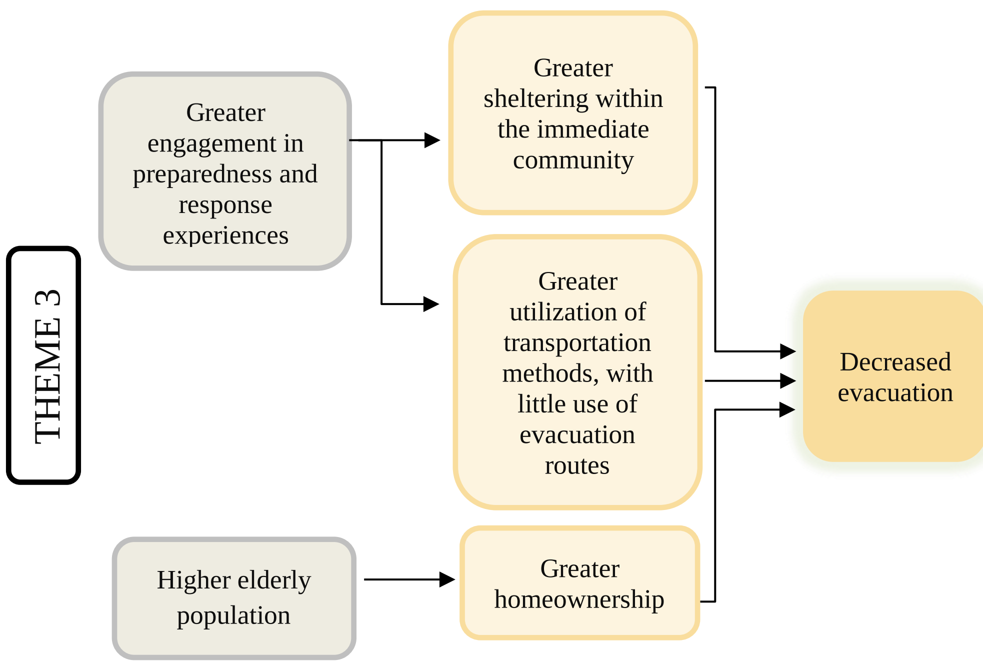


Figure 53. Theme 3 Process Map

6.3 Implications

6.3.1 Tying Results to Study Motivation

When assessing the results and conclusions of this study it is important to circle back to the overarching motivating research question behind the production of this study- How accurate and representative are multivariate census driven composite resilience indicators (such as SoVi and BRIC) in characterizing the climate resilience of local communities to environmental hazards? Current vulnerability and resilience assessments, such as SoVi and BRIC respectively, have been extremely helpful in identifying large scale areas of low and high concern and in pinpointing populations in need of greater resource flow and mitigation efforts. However, as discussed, these assessments are based off of census data and, thus, it was unclear if such assessments allow for helpful and complete local application.

The main purpose of this study was to determine if, and how, the results of a locally tailored survey instrument, based on concepts derived from assessments such as SoVi and BRIC, align with those results and conclusions generated from broader, census driven assessments, such as SoVi and BRIC. Essentially, we sought to determine if these broader type assessments could accurately and completely translate to smaller scales. The Estates of Fort Lauderdale community is enveloped by grander Census Blocks, Census Block Groups, Census Tracts and a County, and we believed community specific actions and capacities were potentially being lost in the bigger picture, and grander assessment, which could be leading to a misrepresentation of the resilience within individual communities.

When comparing distributions of the sociodemographic variables of age, income, education, gender and race, at these broader scales to those that were recorded via our results, the distributions are not wildly different. While some discrepancies exist, such that the Estates of Fort Lauderdale population tends to be older with lower income, for the most part trends at the community scale seemed align with those of broader scales.

6.3.2 Richer Representation of Resilience

However, when we shift our focus to the remainder of the results (produced from the majority of our survey questions) we see the detail and value that a specific and localized assessment provides. Individual survey questions, rooted in tailored conceptual resilience dimensions, allowed for the characterization of the local landscape and of those processes that work together to foster or inhibit resilience. In all, this helped to provide a richer, more granular, representation of the lived experiences and capacities of local citizens in the community, which is not fully represented or accounted for in broader assessments such as SoVi and BRIC.

Specifically, the survey responses of this study weaved together to produce three comprehensive storylines or themes. Responses indicate that place attachment and community connectedness encourage weather-related information sharing, limited experiences and skills impede weather preparedness and response actions, and weather preparedness and response experiences are unexpectedly associated with low evacuation. Such meaningful, interwoven, themes and storylines account for the multidimensional processes that contribute to characterizing resilience more completely and could not have been produced solely through census driven assessments, such as SoVi and BRIC. These storylines are specific to the community of the Estates of Fort Lauderdale and offer a richness and granularity that other assessments at grander scales do not have the capacity to do.

The response frequencies of survey questions as well as the dimension scores, correlations and cross tab comparisons provided an abundance of detail, measure and insight that work to uncover capacities and processes that go beyond what sociodemographic variables have the capacity to account for. We now not only have accurate counts of those sociodemographic variables at this much granular scale, but can push beyond these variables to really account for those varying capacities of people within the community that contribute to resilience. Capacities of people within the community that were uncovered by the implementation of this survey include the safeguards they use, resources they know of, skills and experiences they have, if they live alone, if they evacuate, if they attend social events, etc. Moreover, the relationships and interconnectedness of these capacities were able to be accounted for, which serve to paint a more complete, dynamic, picture of resilience.

6.3.3 Comparison of Study Results to Multivariate Indicator Results

Various hazard vulnerability maps of Broward county, FL and/ or its applicable Census Tracts and Census Block Groups exists that help to pinpoint areas most at risk. The Flood Hazard SoVi assessment represented in Figure 2 is one such map that depicts flood risk vulnerability at the Census Tract level. Broward County, and more specifically, the Estates of Fort Lauderdale community, is depicted as ranking “Moderate” to “High Vulnerability”. Our more general mapping exercise depicted in Figure 21,which is based off of three of SoVi's most influential indicators (age, income and mobile home presence), while not a complete vulnerability assessment, also depicts the community within Census Block Groups of "Medium" to "High Vulnerability". These assessments suggest that the Estates of Fort Lauderdale community, based off of grander scale measurements, would be fairly vulnerable, and thus less resilient. However, our findings suggest that the community proves to be less vulnerable than SoVi assessments suggest.

Additionally, while the numeric resilience score of the community itself seems to align with BRIC's classification of Broward County as Medium to High Resilience, the results of this study help to complete the resilience picture and provide a more dimensional view as to how interconnected processes within the community work together to produce this level of resilience. We are able to see how the community's' resilience dimensions and components work together, either in a direct or inverse manner, to shape its overall resilience.

6.3.4 More Policy and Program Actionable Results

The results of this study also help to reveal community specific strengths such as community connectedness, place attachment, use of communication outlets and the possession of a varied skillset across the community. Additionally, they pinpoint areas for improvement including use of evacuation routes, back up energy modes and safeguards and flood knowledge. These findings can help shape resilience based actions and efforts and allow for better channeling of time and resources, based on what is taking place specifically within the community.

Moreover, the themes resulting from this study prove to be more policy and program actionable than do results such as “Low” or “High” resilience from assessments like BRIC. This is because they pinpoint dynamic processes within the study area, the components of which can be augmented or leveraged to produce greater resilience For example, based off the results, community leaders now can specifically see that supporting community attainment of experiences and skills can help to foster preparedness and response actions in the future

6.3.5 Uncovering New Resilience Dynamics and Variables

The themes produced by this study also highlight elements of resilience that are not included within BRIC. For example, while BRIC accounts for transportation via the Census data of percent households with at least one vehicle and presence of major roads per 10,000 persons, this does not account for actual evacuation dynamics nor those factors impeding or fostering greater rates of evacuation. Thus, the evacuation based process that proved to be an essential storyline that emerged from the unpacking of correlations and crosstabs, is missed by Census-driven assessments. Community resilience assessments, such as the one in the study, can help fuel future local mitigation, preparedness and recovery efforts.

6.4 Limitations

6.4.1 Some Questions Omitted for Quantitative Analysis

This study serves as a helpful method for characterizing resilience to environmental hazards at the local level. However, some limitations did arise throughout the completion of the study which elicit future examination and direction. While the majority of the constructed survey questions were incorporated within the computation of the composite community resilience score, a few of the originally constructed questions had to be omitted as they eventually proved to be ambiguous and their links to resilience were neither direct nor concrete in manner. Specifically, questions 33 and 34, regarding race and gender respectively, were not included within the quantitative portion of the analysis for the Financial Independence dimension as intended. Future studies characterizing resilience should work to streamline applicable survey questions to better capture and quantify the way in which these variables play into income equality and overall resilience.

Questions 27-29, about rating one's resilience, were also omitted within the quantitative portion of the analysis as I was unable to validate the baseline understanding of resilience terminology needed for residents to meaningfully answer these questions. Many respondents also did not provide explanations for those ratings provided for questions 27-29. If future researchers are inclined to account for such individual rating questions, they should make sure to provide more in depth resilience based information and potentially have survey respondents undergo an information session before completing surveys to establish a baseline understanding.

6.4.2 Comprehensiveness of Survey

While the survey was created with the intention of being meaningful and wide ranging, it also needed to be streamlined so that respondents would not get easily deterred or fatigued from completing it in its entirety. Thus, the survey itself is not all encompassing and was consolidated into a manageable set of 36 questions. The Institutional Efforts dimension is one such area that proved to be underdeveloped for the purposes of analysis. As an effect of the streamlining process of consolidating questions, the resulting dimension utilized for this study consisted of two applicable survey questions, which did not seem substantive enough to draw major conclusions and themes from. Thus, although this dimension and corresponding survey questions, were incorporated into the quantitative analysis, no major conclusions or themes were produced based off of the relevant data gathered or scores generated. Future inquiry is needed to further develop this dimension so that its components and key findings can more confidently be incorporated into major storylines.

6.4.3 Partially Subjective Scoring Method

The method for scoring the survey questions may also be improved or altered in future studies, as some specific delineations or binning groups were subjective in nature. While I believe the scoring system utilized to generate the resilience score follows a sound methodical process, future inquiry and similar studies may serve to revise the process. Moreover, other concepts and dynamics may contribute to resilience that are not accounted for via this survey and study and further inquiry and streamlining could work to incorporate other measures of resilience deemed influential.

6.4.4 Nonprobability Sample

Lastly, the sampling for this study consisted of 100 households which participating outreach team members helped to pinpoint and select. While the sample proved to be dynamic and wide ranging based on the demographic results, I realize that it does serve as a nonprobability sample and isn't perfectly representative of the entire community population which could be limiting. Nonprobability convenience or network samples, such as the one in this study, are sometimes used in cases where securing probability samples would decrease response rates or study time efficiency and inferences are assumption based (Valliant and Dever, 2018). Time, skill and resource permitting, future studies based off of this study, could conduct relevant analysis and methodology to assure representativeness, as is ideally recommended for surveying.

6.5 Future directions

6.5.1 Findings Help Guide Future Community Efforts

The findings of this study could help inform future decision making at the community level and beyond. The specific scoring of resilience dimensions help to pinpoint strengths of the community as well as areas for improvement. Moreover, the correlations between dimensions and cross tabulations highlight interdependencies and connections that exist within the community. Thus, community leaders can capitalize on the strengths, or higher scoring dimensions, to help foster other correlated dimensions.

The community's strong social capital and communication can be capitalized on and utilized as tools to help better spread information and allocate resources. Specifically, these strengths can be channeled into cultivating more proactive evacuation within the community. Additionally, the knowledge dimension of resilience can be cultivated by community leaders through trainings and informational meetings and events to help increase preparedness and response actions within the community. See Figure 54 for the outline and linkage between themes and suggested future directions. Community policies and programs can also be tailored to fit the needs of the community to help foster resilience, which can later be incorporated into policies and programs at grander scales.

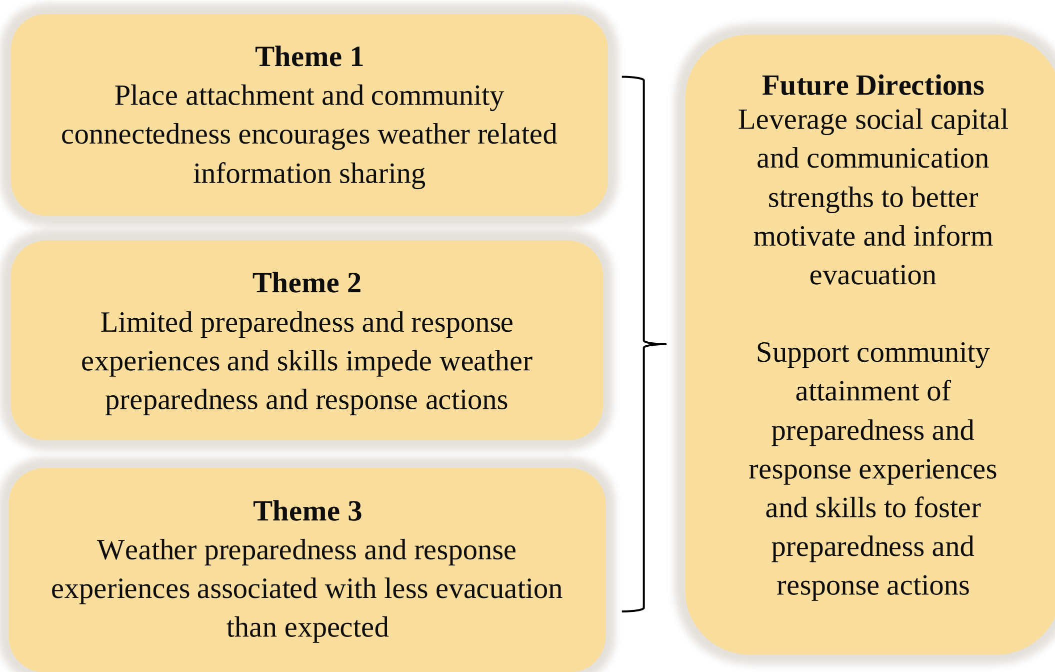


Figure 54. Future Directions Derived From Study Themes

6.5.2 Diving Deeper Into Understanding and Grounding Themes

6.5.2.1 Theme 1

The elements of place attachment and community connectedness that serve as the catalyst of theme 1 comprise the social capital dimension of this study. The specific questions within the social capital dimension that helped to fuel the construction of this theme accounted for individuals' sense of attachment to the community, their awareness of social events, their permanent residency and number of individuals they live with. Overall, the results helped to determine that greater place attachment and community connectedness helped to inspire greater information sharing and knowledge attainment within the community. While this relationship may have been anticipated based on common hazard literature, and our indicators for both place attachment and community connectedness were designed to be representativeness and meaningful, there may be other components of social capital that may be contributing to, or working against, this outcome that were not fully accounted for through the survey questions.

An initial exploration of literature after the construction of theme 1 indicates that individual networks not only influence the sharing of knowledge, but the sharing of sentiments and attitudes as well. Specific sentiments and interests, based on past experiences, values and cultural or political views, can circulate within a community that can impact the quantity and quality of information sharing (Maidl et al., 2019). Thus, qualifying the information that residents have acquired through experiences and skills could be helpful for determining the efficiency of information sharing.

Common literature also highlights the importance of trust in the facilitation and transfer of information. Trust helps to build a foundation among individuals that nurtures an environment for information sharing and communal knowledge building (Maidl et al., 2019). The basic logic of hazard communication is that changes in knowledge provided by information sharing motivate populations to change their behavior, often encouraging more proactive preparedness and response actions (Maidl et al., 2019). However, this link between information and behavior requires individuals to trust, and have confidence in, the information being shared. Often times, individuals are reluctant to trust information from one way communication outlets, so although the results indicate greater information sharing, further would be useful to determine the actual trust in and use and effectiveness of the information being obtained through experiences and communication outlets (Maidl et al., 2019).

6.5.2.2 Theme 2

Theme 2 highlights how engaging in preparedness and response experiences and possessing fewer skills seems to result in less awareness of resources and the utilization of fewer safeguards and back up energy modes within the community. Overall, this trend results in community members engaging in fewer preparedness and response actions. While the specific questions and topics utilized to fuel this conclusion are concrete, it was worthwhile to revisit literature after the theme was generated, to explore other possible contributing factors to this overall outcome.

Upon reviewing hazard and preparedness and response literature, it became evident that a few varying factors could be simultaneously working within the community to decrease preparedness and response actions, aside from the many that arose from our study results. Specifically, research acknowledges how strong social capital within a population can result in individuals tending to copy peer behavior in case of an hazard event (Maidl et al., 2019). Thus, if there is a sub population that chooses to not utilize safeguards, back up energy modes or stay informed, this behavior could impact other individuals that are tightly bonded within the community. This finding highlights the influence of social surrounding on individual preparedness (Maidl et al., 2019).

Another factor that can contribute to individuals engaging in fewer preparedness and response actions is a personal negative cost-benefit evaluation (Maidl et al., 2019). If individuals within a community view preparedness actions as futile, unnecessary, too expensive or time consuming, they may actively choose to not engage in proactive preparedness and response actions. Studies show individuals that have experienced suffering and damage from hazard events in the past are more likely to engage in readying and protecting themselves for future events. They also show that emotional affection by media reports was negatively correlated to awareness and preparedness (Maidl et al., 2019). Measuring emotions of past experiences with hazard events as well as emotions induced by exposure to media can help to gauge if and why individuals choose to engage in safeguarding actions (Weinstein et al., 2000).

6.5.2.3 Theme 3

According to the results of this study it appeared that involvement in preparedness and response experiences were actually associated with less evacuation. This conclusion was not anticipated before analysis, as we believed the more engaged and prepared an individual is, the more likely it is that they would be proactive in evacuating and following mandates. This finding prompted an exploration of evacuation literature in order to determine what other factors could be resulting in this trend of reduced evacuation.

Upon reviewing evacuation literature, multiple factors were highlighted that could be contributing to this trend. One major element impacting whether or not people evacuate is their previous experience with hurricanes. Research shows that individuals are more likely to respond appropriately to a hurricane and evacuate if they have recently experienced a hurricane themselves (Morrow and Gladwin 2005). While this was a major finding, it is also important to note that this relationship is less impactful with time, as people forget the intensity or effectiveness of their actions in response to hurricanes (Morrow, 2012).

Moreover, the quality of peoples experiences with past hurricanes dictates whether or not they will choose to evacuate in the future. Research shows that if individuals have experienced high traffic, problematic and traumatizing evacuation or reentry delays, then they tend to try and avoid making the same choice again, in fear of experiencing that difficulty again (Morrow, 2012). This is especially true if they evacuated and storms were less intense and damaging than was anticipated, and the cost of evacuating did not outweigh the risk of staying put at home. Negative evacuation experiences seem to even impact people not directly involved, as media reports of standstill traffic and inhibited movement away from a storm can cause viewers to also choose to not evacuate as well (Morrow, 2012). The attainment of this ‘‘virtual’’ knowledge proves to be a factor in individuals decision-making process when it comes to evacuating (Dash & Morrow, 2000).

6.5.3 Suggested Dimension Correlations for Future Exploration

The results of this study are rooted in the five dimension correlations highlighted in Table 7 that were selected due to their dimension robustness and corresponding question quality and quantity. Given that the main findings of this study do not encompass the entirety of the viable dimension correlations and cross tabulations possible, further inquiry and study could be conducted to explore other dimension to dimension correlations and their corresponding cross tabulations. This inquiry could be conducted in the same systematic manner that was utilized for those correlations and cross tabulations included within this study and could serve to produce additional storylines.

Correlations highlighted within Table 42 represent the correlations I would recommend for future exploration, based on the results of my study, and the additional direction I would have taken had time permitted. The highlighted dimension correlations represent significant correlations that, based on the current findings of the study, could help to further illuminate processes and provide depth and detail to the dynamics within the community. The five correlations accompanied by an asterisk represent those five correlations that have already been explored within the results. Thus, by exploring the six correlations outlined here for future direction, a total of eleven correlations would be explored. Those correlations consisting of the institutional efforts dimension are worth exploring for potential insight on bigger picture policy and programming processes, however as mentioned previously, this dimension serves to be the least substantive of the seven, and thus conclusions will be tentative.

	SIGNIFICANT	NON-SIGNIFICANT
EXPECTED	Communication & Social Capital* Communication & Knowledge (overlap Q21) Financial Independence & Knowledge	Financial Independence & Communication Financial Independence & Infrastructure Mobility & Communication (-) (H Com~ L Mob)* Mobility & Infrastructure
UNEXPECTED	Mobility & Financial Independence (-)(H Fin ~ L Mob)* Mobility & Social Capital (-) (H Soc Cap~ L Mob) Infrastructure & Communication Infrastructure & Knowledge* Infrastructure & Social Capital Institutional Efforts & Mobility (-)(H Mob ~ L Inst Eff) Institutional Efforts & Financial Independence Institutional Efforts & Social Capital Financial Independence & Social Capital (overlap Q10)	Knowledge & Social Capital* Knowledge & Institutional Efforts Knowledge & Mobility (-)(H Know ~ L Mob) Institutional Efforts & Communication Institutional Efforts & Infrastructure

Table 42.Future Dimension Correlation Exploration

7 CONCLUSION

7.1 Study Motivation

Environmental hazards refer to a vast array of weather induced events that have the potential to not only threaten the natural environment around us but people's health and safety as well. While efforts have been made to assess how people will fair against environmental hazards as the climate continues to change, they are often under theorized. Many of the variables included within vulnerability and resilience assessments are solely based off easily downloadable census data, which often is not a good, relevant reflection, of what is taking place at a more local level. Generating local resilience assessments, like the one produced within this study that account for varying capabilities and expand on already incorporated variables, is necessary to truly characterize how individuals and communities will fare against a changing climate

7.2 Study Purpose

This study serves to examine the factors and dynamics that influence resilience to local environmental hazards including flooding (tidal + heavy precipitation+ storm surge), wind and heat, at the community level in Broward County, FL. More specifically, through this study I investigated if and how the following dimensions- Communication, Infrastructure, Institutional Efforts, Financial Independence, Knowledge, Mobility and

Social Capital- serve to characterize resilience within the Estates of Fort Lauderdale community within Dania Beach. FL.

Circling back, the overarching study question for this work was as follows: How useful are multivariate Census-driven composite resilience indicators (such as SoVi and BRIC) in characterizing the climate resilience of local communities to environmental hazards?

a) What processes, underpinned by the following locally tailored dimensions, produce resilience to environmental hazards at the community level within Broward County? Communication

   i. Communication
   ii. Financial Independence
   iii. Infrastructure
   iv. Institutional Efforts
   v. Knowledge
   vi. Mobility
   vii. Social Capital

7.3 Methods Recap

Data collection involved the administration of a customized resilience survey, consisting of 36 dimension related questions, to 100 households within the Estates of Fort Lauderdale community. The responses of all household surveys were scored according to their contribution to resilience within their appropriate resilience dimensions and then were averaged across households to produce community resilience dimension scores.

This then allowed for the production of an overall resilience composite indicator score for the entire community.

I then examined the data to determine if, and how, the seven dimensions were correlated to each other. Pearson's Correlation Coefficient tests were conducted for all twenty one possible dimension pairs to test for association, correlation and statistical relationship. Five correlations were further explored through the construction of question to question cross tabulations, which allowed for finer examination of processes and components at play within dimension correlations, which serve to contribute to overall resilience.

7.4 Emergent Themes

Through an in depth quantitative and qualitative interpretation of the data, dimension scores, dimension to dimension correlations and question to question cross tabulations, key concepts and takeaways began to arise. The unbalanced nature of the distribution of responses within each of the twelve main cross tabulations explored within this study prompted the realization of linkages between specific question to question responses. Trends and findings supported by these unbalanced distributions, as well by the frequencies of responses of independent questions, helped to generate conceptual conclusions. Consolidation and abstraction of these key cross tabulation conclusions lead to the creation of three major community storylines or themes.

Theme 1 states that place attachment and community connectedness encourage weather-related information sharing. Specifically, greater presence and awareness within the community help to inspire greater engagement in preparedness and response experiences, greater utilization of communication outlets and greater floodplain knowledge. This in turn leads to increased weather-related information sharing. After spending time with community members, their connectedness became apparent immediately, so this finding was not surprising. The bond that exists between various individuals and between individuals and the community itself is evident in the language and demeanor residents utilize when speaking about their homes and fellow community members. It was apparent that this connectedness fosters maintenance of community events, clubs, and newsletter updates, aiding in information transfer, which further aligns with this theme that emerged from the data.

Theme 2 concludes that limited preparedness and response experiences and skills impede weather preparedness and response actions. Specifically, less engagement in preparedness and response experiences and less attainment of skills results in the reduction of awareness of recovery resources and in the utilization of safeguards and back up energy modes. This results in decreased weather preparedness and response actions. The link between experiences and skills and preparedness and response actions seemed to also align with my perception of the community which I gained through my many community based interactions. I interacted with some residents that did not possess strong experience and skill based backgrounds and who consequently seemed to be less proactive and engaged within this weather conversation. Conversely, I also interacted with residents who couldn’t wait to talk to me about their lived experiences with storms, or about the training or skills they’ve picked up along the way, along with the innovative ideas they had to become more resilient.

Theme 3 affirms that weather preparedness and response experiences are associated with less evacuation than expected. Specifically, greater engagement in preparedness and response experiences and a greater elderly population results in greater sheltering within the community, greater utilization of transportation methods (with little use of evacuation routes) and greater homeownership. Together, this results in decreased evacuation within the community. I had imagined that with greater experiences and skills, residents would be better equipped to make resilient decisions and take proactive measures. However, it appears that the opposite is the case which seems to be the result of the strong social capital existing within the community. During our listening session and community events in the Estates of Fort Lauderdale, many residents mentioned how they didn't want to leave their homes or neighbors and how they felt that their community could safeguard them from storms or hazards. It seems that place attachment and community connectedness have fostered a false sense of physical security, which works to produce the decreased overall evacuation we see in theme 3.

7.5 Significance of Results and Findings

These overall themes from the results, as well as the question specific information gathered and compiled, provide evidence that this type of community based assessment results in richer, more detailed, findings, as compared to those produced by SoVi and BRIC like assessments. The community survey instrument allowed for the gathering of specific qualitative and quantitative data that helps to paint a fuller picture of what is taking place at the local level. Specific capacities, actions and resource and information flow dynamics existing within the community were able to be accounted for through the survey. Moreover, we are able to pinpoint strengths and areas for improvement within the community, based off of sound and dynamic local level data which more accurately portrays resilience than do those sociodemographic variables used to account for resilience via other broader scale assessments.

The major storylines produced from the results of this study help to pinpoint areas and concentrations for future development within the community (see Figure 54). Community leaders can look to the results and big picture themes for illustrative guidance in further cultivating resilience. Such future directions include leveraging the community's social capital and communication strengths to better motivate and inform evacuation, as well as supporting the community's attainment of experiences and skills to better foster preparedness and response actions,

8 APPENDICES

8.1 Appendix A: IRB Approved Study Consent Form

TITLE: BROWARD COUNTY RESILIENCE MAPPING

Investigators: Dr. Colin Polsky (PI) and Bridget Huston (Co-Investigator)

Thank you for your interest in participating in our research study. The purpose of the study is to gather community information about preparedness for, and responses to, environmental hazards, including flooding (tidal, heavy precipitation and storm surge), wind and heat to further understand factors related to community resilience. You will participate in a one-time, open-ended response survey. The survey questions will inquire about public knowledge of, and experience with, local environmental hazards within your community. It should take you no more than 20-30 minutes to complete this survey. Your participation in this study is your choice. You may skip any questions that make you feel uncomfortable and you are free to withdraw from the study at any time without penalty. Participation in this survey presents minimal risks to you, but no more than one would expect in everyday life. The subject matter of this survey includes common and innocuous topics related to environmental hazard preparation and mitigation. No sensitive topics will be discussed and no deception or discomfort is involved. You may not initially benefit from this study but your participation may be useful to you and provide you with information to increase your community's resilience. Results from this study have the potential to transform your understanding of which factors make areas more resilient, which could potentially enhance local management efforts.

If you experience problems or have questions regarding your rights as a research subject, contact the Florida Atlantic University Division of Research at (561) 297-1383. For other questions about the study, you may call the principal investigator, Colin Polsky, at (954) 236-1104 or email him at cpolsky@fau.edu. By completing and returning the attached survey, you give consent to participate in this study. If you choose, we can provide you with a copy of the consent statement for personal records.

Consent Statement:

I have read or had read to me the information describing this study. All my questions have been answered to my satisfaction. I am 18 years of age or older and freely consent to participate. I understand that I am free to withdraw from the study at any time without penalty. I have received a copy of this consent form.

I agree ____ I do not agree ____

Printed Name of Participant: ____

Signature of Participant:______________________________ Date: ________________

Sample Survey Questions

1. How many years and/or months have you lived in this community?
2. Do you think people in your neighborhood are willing to help one another?
3. Do opportunities to meet neighbors and work on solving community problems exist within your neighborhood?
4. Do you feel connected to your community?
5. Are you aware of any local mitigation efforts in your community?
6. Are there publicly available recovery resources after a hazard event?
7. Are you Hispanic or Latino?
8. Are you currently employed full-time, a full-time student, employed part-time, or not employed?

FAU Institutional Review Board

1461291-1	
Approved On:	July 26, 2019
Expires On:	Not Applicable

8.2 Appendix B: IRB Exempt Letter

FLORIDA ATLANTIC UNIVERSITY

Institutional Review Board
Division of Research
777 Glades Rd.
Boca Raton, FL 33431
Tel: 561.297.1383
fau.edu/research/researchint

Charles Dukes, Ed.D., Chair

DATE:	July 26, 2019
TO:	Colin Polsky
FROM:	Florida Atlantic University Social, Behavioral and Educational Research IRB
PROTOCOL #:	1461291-1
PROTOCOL TITLE:	[1461291-1] Broward County Resilience Mapping
SUBMISSION TYPE:	New Project
REVIEW CATEGORY:	Exemption category # *A2*
ACTION:	DETERMINATION OF EXEMPT STATUS
EFFECTIVE DATE:	July 26, 2019

Thank you for your submission of New Project materials for this research study. The Florida Atlantic University Social, Behavioral and Educational Research IRB has determined this project is EXEMPT FROM FEDERAL REGULATIONS. Therefore, you may initiate your research study.

We will keep a copy of this correspondence on file in our office. Please keep the IRB informed of any substantive change in your procedures, so that the exemption status may be re-evaluated if needed. Substantive changes are changes that are not minor and may result in increased risk or burden or decreased benefits to participants. Please also inform our office if you encounter any problem involving human subjects while conducting your research.

If you have any questions or comments about this correspondence, please contact Donna Simonovitch at:

Institutional Review Board
Research Integrity/Division of Research
Florida Atlantic University
Boca Raton, FL 33431
Phone: 561.297.1383
researchintegrity@fau.edu

* Please include your protocol number and title in all correspondence with this office.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within our records.

8.3 Appendix C: Community Survey Instrument

Neighborhood Weather Resilience Survey

{Opening statement}

Today, we'd like to talk with you about your resilience to weather events. **Weather resilience** describes the ability of people to recover from difficult weather events.

We will focus on flooding, windy storms, and extreme heat. Many factors impact our abilities to respond to these events, and this study will help to paint a picture of what resilience looks like in your community.

{Prompt}
We'd like to learn more about the *community* you live in.

1. **What is your Estates of Fort Lauderdale home address?**

____

2. **How long have you lived in the Estates of Fort Lauderdale?** ***(Select all that apply)***
   - ❑ Less than 1 year
   - ❑ 1-5 Years
   - ❑ 6-10 Years
   - ❑ 11-25 Years
   - ❑ 25+ Years
   - ❑ I am a seasonal resident

3. **Are you aware of social events being offered in your community?**
   a. Yes
   b. No

4. **Do you attend these social events?**
   a. Yes
   b. Sometimes
   c. No, please specify why not: ________________________________

5. **Select all type(s) of in-person interactions, if any, that you have engaged in within the past few months:**
   - ❑ POA meetings
   - ❑ Faith-based gatherings
   - ❑ Local group/ club meetings
   - ❑ Gatherings with friends, family and/or neighbors
   - ❑ None
   - ❑ Other, please specify: ________________________________

6. How would you rate your level of attachment to the Estates of Fort Lauderdale?
   a. Weak
   b. Somewhat weak
   c. Fair
   d. Somewhat strong
   e. Very strong

7. Do you want the Estates of Fort Lauderdale to thrive and be enjoyed by future generations?
   a. Yes
   b. No
   c. I don't care

8. Do you know if any of the following actions have occurred in your community over the last few months? *(Select all that apply)*
- ❑ Storm drain installation/ maintenance
- ❑ Seawall installation/ maintenance
- ❑ Paving at higher elevations across entire community
- ❑ Policy changes
- ❑ Updates to community buildings (for example impact doors/windows, updated roof)
- ❑ Increased access to information and/or recovery resources
- ❑ Better planning for emergencies and weather events
- ❑ None
- ❑ I don't know
- ❑ Other, please specify: ______________________________

9. Do you know if any of the following recovery resources are adequately available after a weather event within your community? *(Select all that apply)*
- ❑ Shelter
- ❑ Police/ first responder assistance
- ❑ Medical services
- ❑ Communications assistance
- ❑ Notification systems
- ❑ Food
- ❑ Water
- ❑ Fuel (for generators)
- ❑ Cooling centers
- ❑ Nearby stores on generators
- ❑ Debris cleaning assistance
- ❑ None
- ❑ Other, please specify: ______________________________

{Prompt}
Next, we'd like to ask you a few questions about your *household*.

10. Do you rent or own your home?

a. Rent
b. Own
c. Other, please specify: ______________________________

11. Was your home built after 1994? And has its anchoring system been updated since 1999?

a. Yes and anchoring has been updated
b. Yes but anchoring has not been updated
c. No but anchoring has been updated
d. No and anchoring has not been updated

12. Is your home located within the 100-year floodplain?

a. Yes
b. No
c. I don't know

13. Does your home have flood insurance? And are you required to have it?

a. Yes, and I'm required to have it
b. Yes, but I'm not required to have it
c. No, but I'm required to have it
d. No, I'm not required to have it
e. I don't know

14. Has your home been damaged from flooding within the past few years? And if so, how were the repairs financed? ***(Select all that apply)***

- ❑ Yes, I financed the repair
- ❑ Yes, My insurance financed the repair
- ❑ Yes, Friends and/or family financed the repair
- ❑ Yes, I have been unable to finance the repair
- ❑ No
- ❑ I don't know

15. Which of the following do you use to protect your family and home during a weather event? ***(Select all that apply)***

- ❑ Impact windows and/or doors
- ❑ Metal Shutters
- ❑ Plywood shutters
- ❑ Plastic and/or tape shutters
- ❑ Updated roof
- ❑ Tie down and anchoring system
- ❑ Tarp

- ❑ None
- ❑ Other, please specify: ___________________________________

16. Do you have a seawall on your property? If so, are you required by local building codes to maintain it

a. Yes, and I am required to maintain it
b. Yes, but I am not required to maintain it
c. No
d. I don't know

17. Which best describes the area directly surrounding your mobile home?

a. All pavement
b. Mostly pavement
c. Equal parts pavement and grass/vegetation
d. Mostly grass/vegetation
e. All grass/vegetation

18. Select all of the following back up energy modes that you use after a storm:

- ❑ Portable generators (gas or diesel)
- ❑ Portable generator (solar)
- ❑ Whole house gasoline generator
- ❑ Partial or whole house solar energy
- ❑ Portable Solar lights
- ❑ Outdoor propane or charcoal grills
- ❑ Indoor gas stove
- ❑ Battery operated radio, lights, phones or small appliances
- ❑ Solar phone, tablet, or computer chargers
- ❑ None
- ❑ Other, please specify: ____

{Prompt}
Now, we'd like to talk about how *you* practice resilience.

19. Have you <u>used</u> weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?

- ❑ Yes
- ❑ No- Please specify why not *(Select all that apply)*
  - ❑ Maps are not available to me
  - ❑ Maps are not accessible in a language I understand
  - ❑ Maps are too complicated, even though I understand English
  - ❑ Maps are not helpful, even though I can understand them
  - ❑ I do not have internet access
  - ❑ N/A (not needed in the past few years)
  - ❑ I don't know
  - ❑ Other: ____

20. Select all of the following <u>media</u> outlets, if any, you have used to stay informed about weather events in the past few years:

- ❑ Online web pages
- ❑ Newspapers
- ❑ Magazines
- ❑ Newsletters
- ❑ Satellite radio
- ❑ Public radio (FM/AM)
- ❑ NOAA radio stations
- ❑ Local television channels
- ❑ Cable television channels
- ❑ None- Please specify why not
    - ❑ Media outlets are not available to me
    - ❑ Media outlets are not accessible in a language I understand
    - ❑ Media outlets are too complicated, even though I understand English
    - ❑ Media outlets are not helpful, even though I can understand them
    - ❑ I do not have internet access
    - ❑ N/A (not needed in the past few years)
    - ❑ Other: ____

21. Select all of the following <u>experiences</u> that have helped you learn how to prepare for, and respond to, weather events in the past few years:

- ❑ Social gatherings
- ❑ Communication in common areas
- ❑ Faith based gatherings
- ❑ Community club meetings/ events
- ❑ Newsletters
- ❑ Self-taught
- ❑ Lived experiences with weather events
- ❑ Official training
- ❑ None- please elaborate
    - ❑ Experiences and/or trainings are not offered in my community
    - ❑ Experiences and/or trainings are not available to me
    - ❑ I don't remember
    - ❑ N/A (not needed in the past few years)
    - ❑ Other: ____

22. **Select all of the following <u>communication outlets</u>, if any, you have used to communicate during and/or after weather events in the past few years:**
    - ❑ Landline telephone
    - ❑ Cellphone text
    - ❑ Cellphone call
    - ❑ Internet via computer
    - ❑ Video/broadcast
    - ❑ Social media
    - ❑ Email
    - ❑ Fax
    - ❑ None- Please specify why
        - ❑ Resources are not offered to me in my community
        - ❑ I do not have these resources
        - ❑ Resources are not accessible in a language I understand
        - ❑ Other : ____

23. **In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?**
    a. I do not evacuate
    b. I seek shelter within the Estates of Fort Lauderdale
    c. I evacuate to a friend or family members home outside of the Estates of Fort Lauderdale but in or near Broward County
    d. I evacuate to a friend or family members home outside of the Estates of Fort Lauderdale not in or near Broward County
    e. I evacuate to a shelter outside of the Estates of Fort Lauderdale
    f. Other, please specify: ____

24. **Select all of the following transportation methods, if any, that you have used before and/or after a weather event in the past few years:**
    - ❑ Evacuation Routes
    - ❑ Alternative routes when primary routes are not functional
    - ❑ Evacuation assistance services
    - ❑ Public transportation
    - ❑ Private transportation
    - ❑ Other: ____

25. **How would you rate the quality of your transportation during and after weather events?**
    a. Poor
    b. Average
    c. Excellent

26. **Select all of the following, if any, skills that you have gained through jobs or experiences:**
- ❑ First Aid training
- ❑ CPR
- ❑ Mental health experience
- ❑ Management leadership
- ❑ Fire suppression training
- ❑ Plumbing skill
- ❑ Carpentry skill
- ❑ Electrical license
- ❑ Engineering background
- ❑ Childcare experience
- ❑ Survival training
- ❑ Medical experience
- ❑ Radio/Communication skills
- ❑ Heavy equipment experience
- ❑ Cooking experience
- ❑ CERT experience
- ❑ Tree/Debris Removal/Chainsaw experience
- ❑ None
- ❑ Other, please specify: ___

____

{Prompt}
Now that you have a better understanding of what resilience means, we would like to talk about what it means to you…

27. **In the face of <u>flooding</u>, how would you rate the resilience of your household?**
   a. Poor
   b. Average
   c. Excellent
   d. Not applicable

   Explain your reasoning: ____

28. **In the face of <u>extreme wind</u>, how would you rate the resilience of your household?**
   a. Poor
   b. Average
   c. Excellent
   d. Not applicable

   Explain your reasoning: ____

29. In the face of <u>extreme heat</u>, how would you rate the resilience of your household?

a. Poor
b. Average
c. Excellent
d. Not applicable

Explain your reasoning: ____

{Prompt}
Last, we would like to collect demographic information from you. This information will NOT be linked back to you.

30. How many individuals live in your home?

a. 1
b. 2-3
c. 4-5
d. 6+

31. How many pets do you have in your home?

a. 0
b. 1
c. 2-3
d. 4+

32. What is your age?

a. 18 - 34
b. 35 - 49
c. 50 - 64
d. 65 - 79
e. 80 and older

33. Which of the following best describes your race and ethnicity? *(Select all that apply)*

❏ Hispanic or Latino of any race
❏ White or Caucasian
❏ Black or African American
❏ American Indian or Alaska Native
❏ Asian
❏ Some other race alone
❏ Two or more races

34. What is your gender?

a. Male
b. Female
c. Other

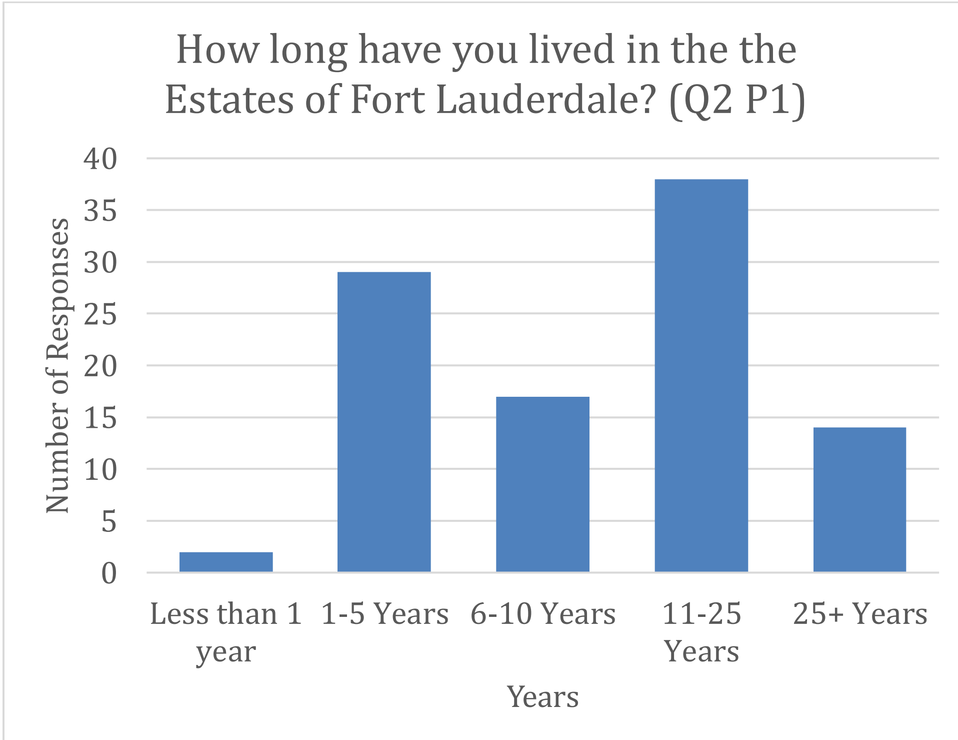
35. What is your annual household income (including social security)?

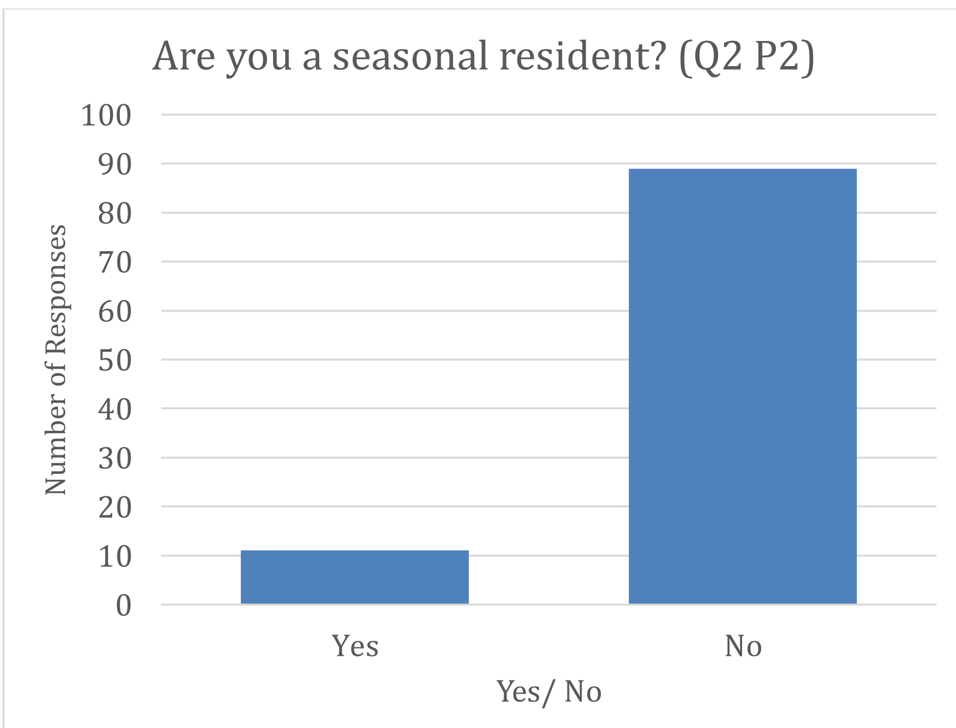
a. less than $15,000
b. $15,001 – 25,000
c. $25,001 – 50,000
d. $50,001 – 75,000
e. $75,001 – 100,000
f. More than $100,000

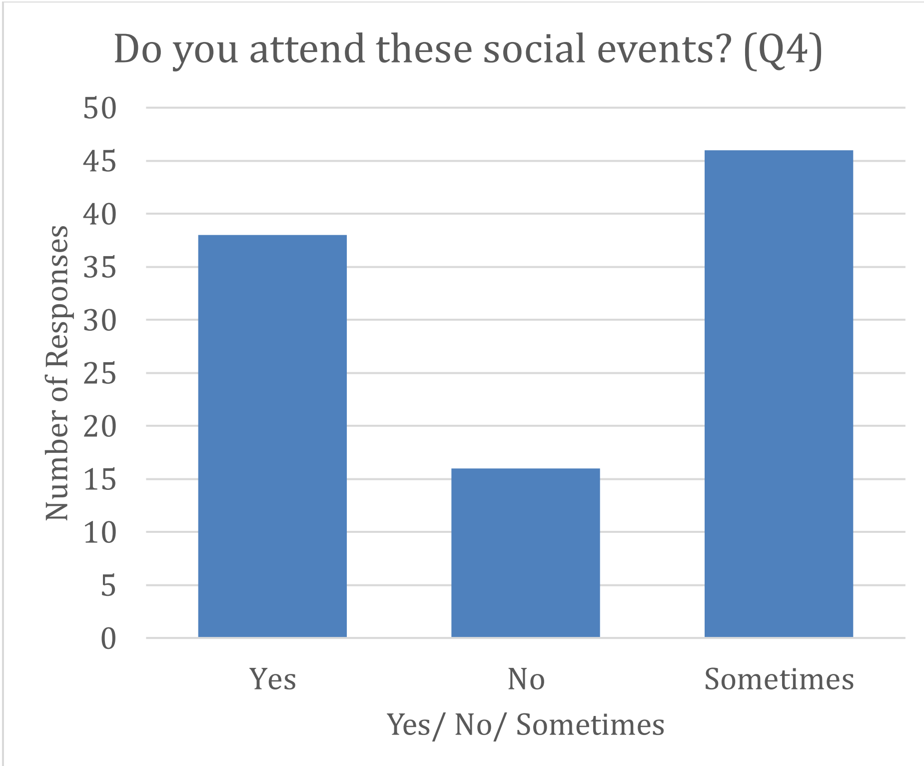
36. What is your highest level of education?

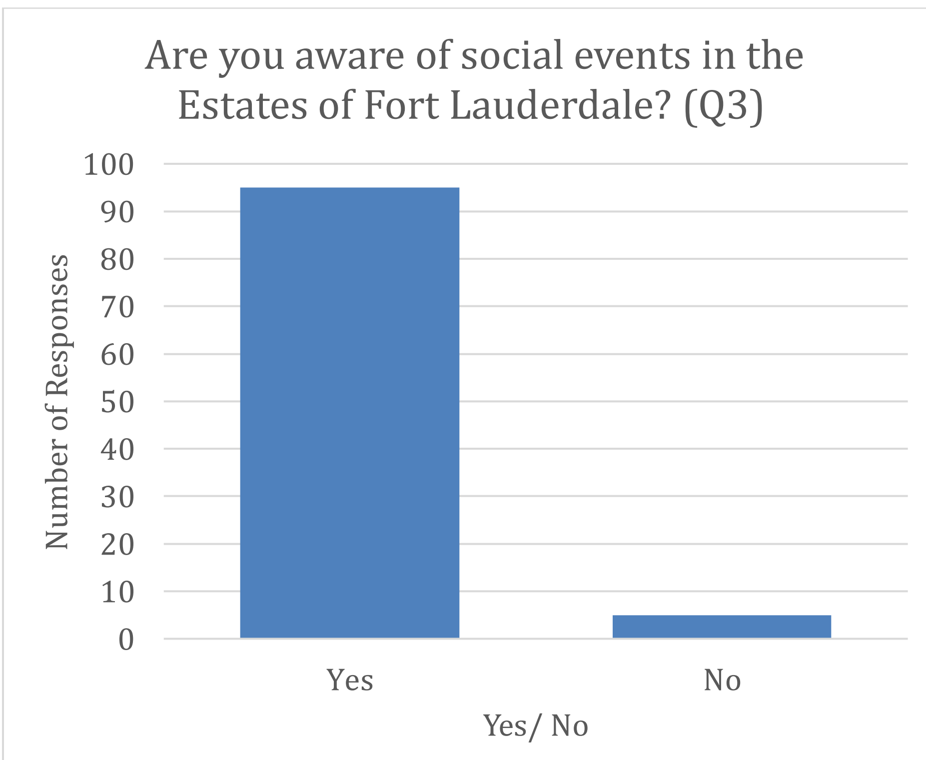
a. Some high school
b. High school
c. Some college or Associate's degree
d. Bachelor's degree
e. Master's degree or higher

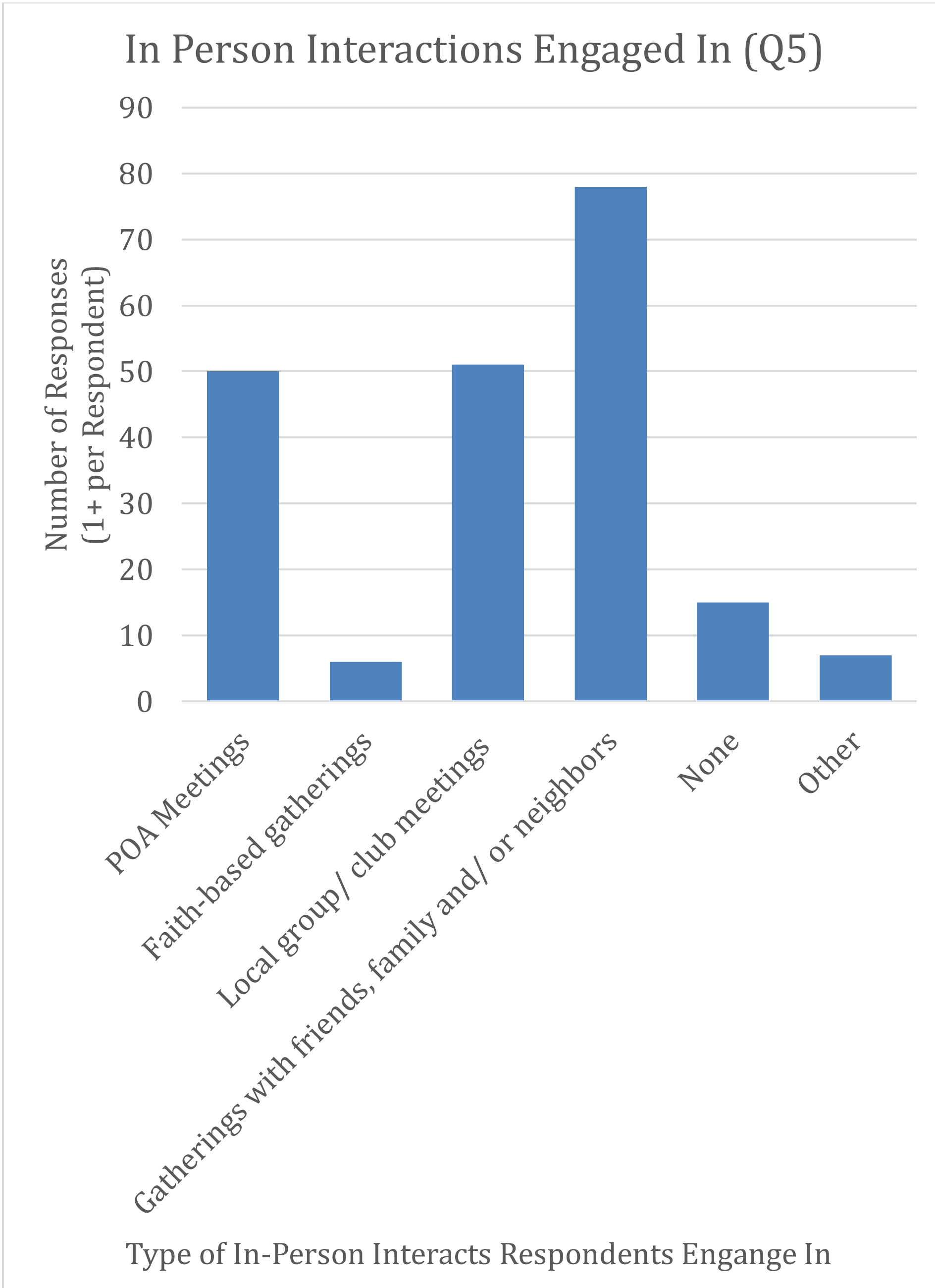
8.4 Appendix D: Complete Set of Survey Question Response Histograms

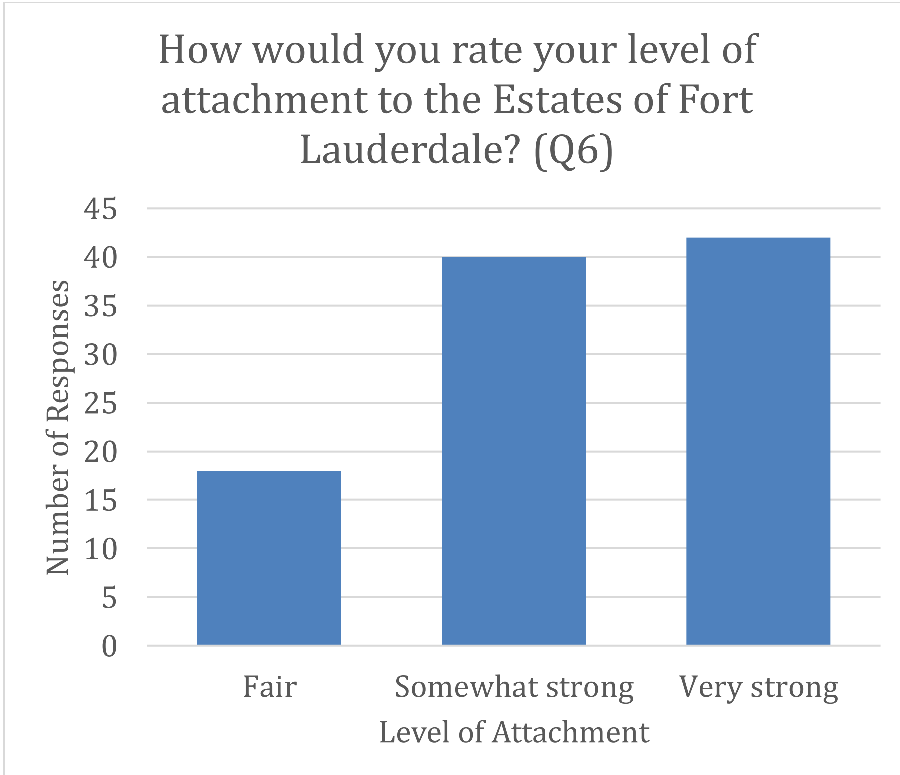


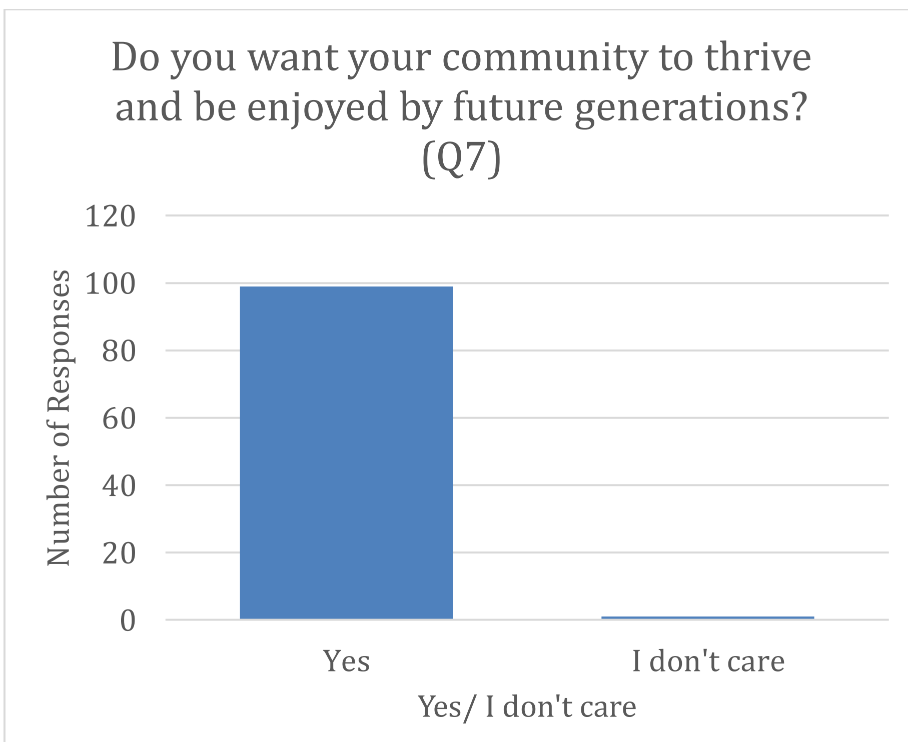


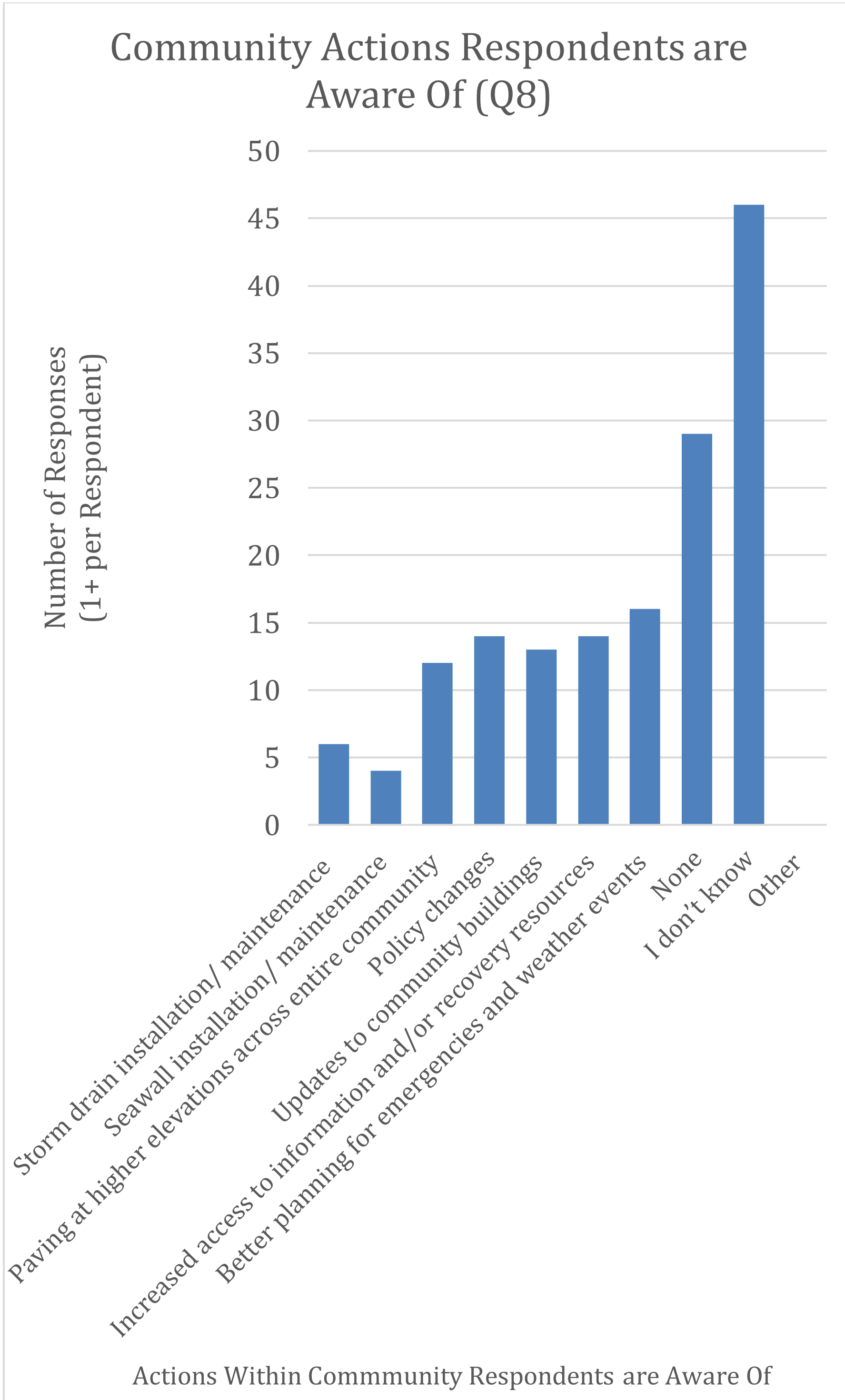

Do you attend these social events? (Q4)
Number of Responses
50
45
40
35
30
25
20
15
10
5
0
Yes
No
Sometimes
Yes/ No/ Sometimes


Are you aware of social events in the Estates of Fort Lauderdale? (Q3)
Number of Responses
100
90
80
70
60
50
40
30
20
10
0
Yes
No
Yes/ No

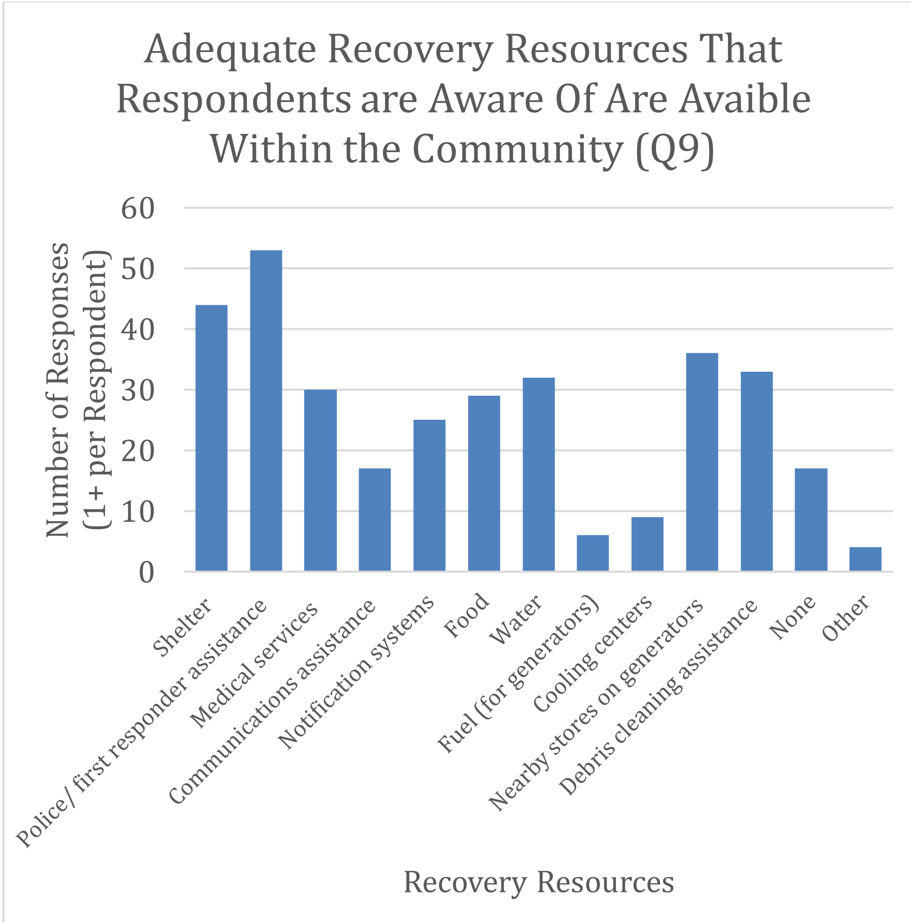

In Person Interactions Engaged In (Q5)
90
80
70
60
50
40
30
20
10
0
Number of Responses
(1+ per Respondent)
POA Meetings
Faith-based gatherings
Local group/ club meetings
Gatherings with friends, family and/ or neighbors
None
Other
Type of In-Person Interacts Respondents Engange In

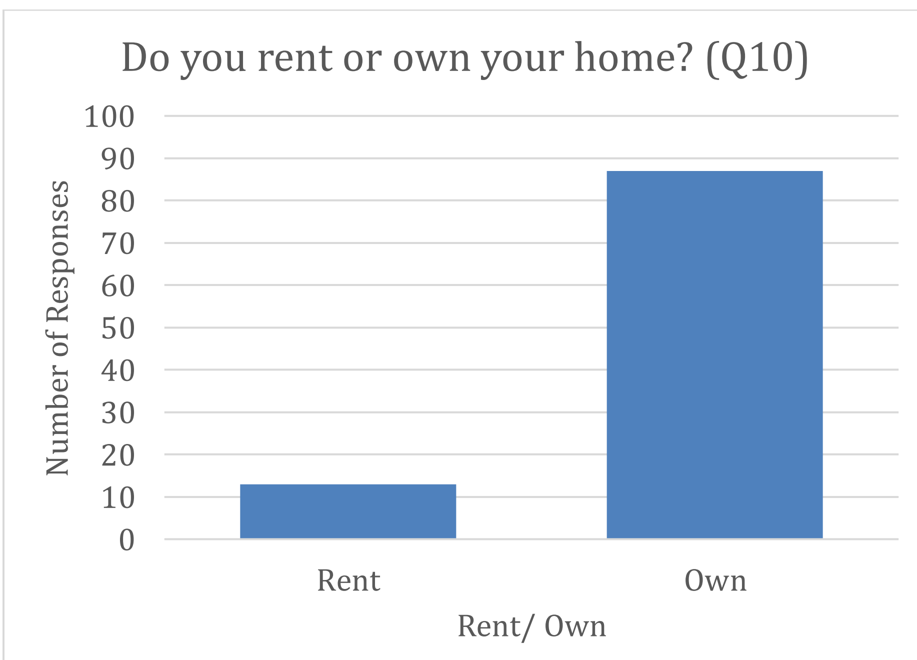

How would you rate your level of attachment to the Estates of Fort Lauderdale? (Q6)
Number of Responses
45
40
35
30
25
20
15
10
5
0
Fair
Somewhat strong
Very strong
Level of Attachment

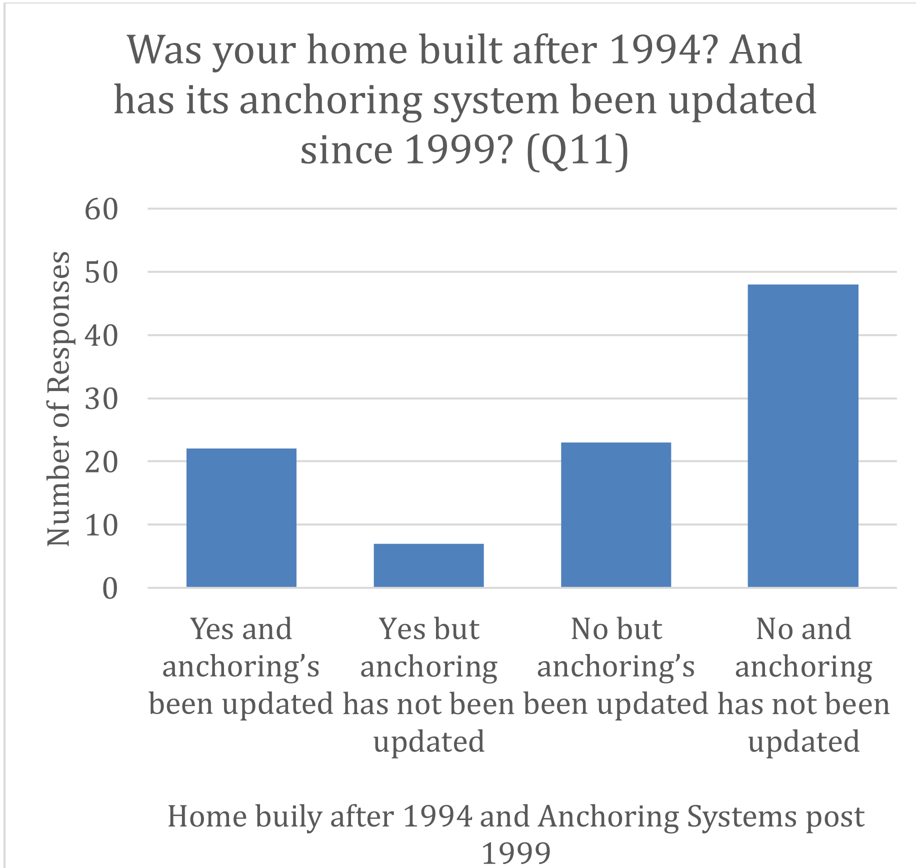

Do you want your community to thrive and be enjoyed by future generations? (Q7)
Number of Responses
120
100
80
60
40
20
0
Yes
I don't care
Yes/ I don't care



Community Actions Respondents are Aware Of (Q8)
Number of Responses (1+ per Respondent)
50
45
40
35
30
25
20
15
10
5
0
Storm drain installation/ maintenance
Seawall installation/ maintenance
Paving at higher elevations across entire community
Policy changes
Updates to community buildings
Increased access to information and/or recovery resources
Better planning for emergencies and weather events
None
I don't know
Other
Actions Within Commmunity Respondents are Aware Of


Adequate Recovery Resources That Respondents are Aware Of Are Avaible Within the Community (Q9)
Number of Responses (1+ per Respondent)
60
50
40
30
20
10
0
Shelter
Police/ first responder assistance
Medical services
Communications assistance
Notification systems
Food
Water
Fuel (for generators)
Cooling centers
Nearby stores on generators
Debris cleaning assistance
None
Other
Recovery Resources


Do you rent or own your home? (Q10)
Number of Responses
100
90
80
70
60
50
40
30
20
10
0
Rent
Own
Rent/ Own



Was your home built after 1994? And has its anchoring system been updated since 1999? (Q11)
60
50
40
30
20
10
0
Number of Responses
Yes and anchoring’s been updated
Yes but anchoring has not been updated
No but anchoring’s been updated
No and anchoring has not been updated
Home buily after 1994 and Anchoring Systems post 1999

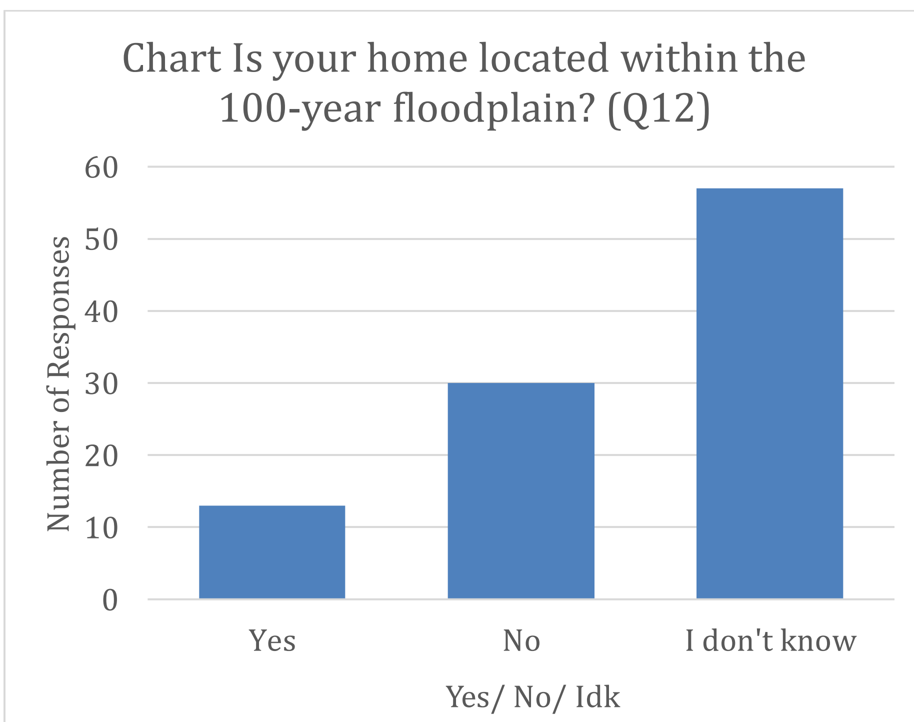
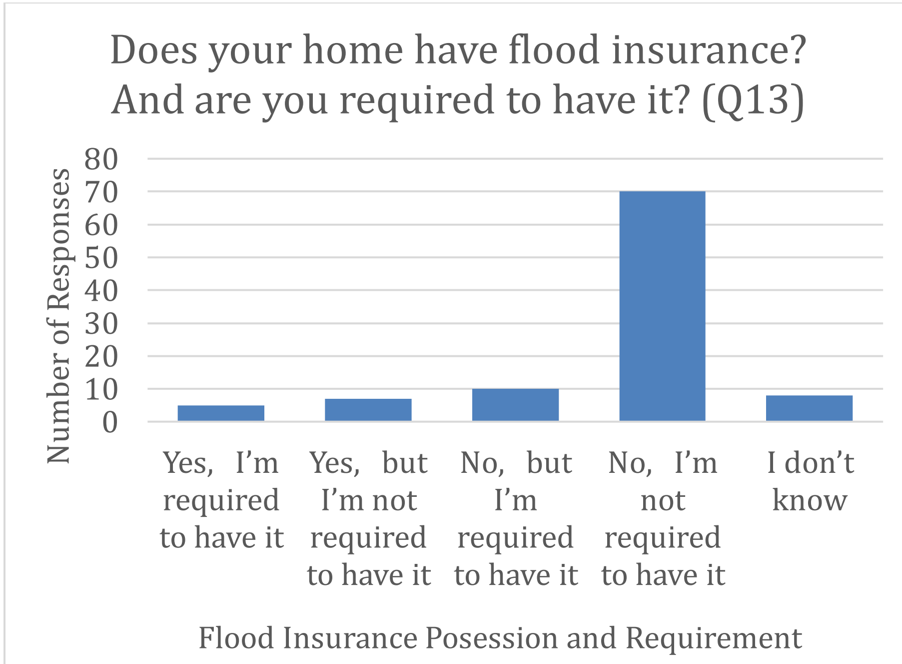
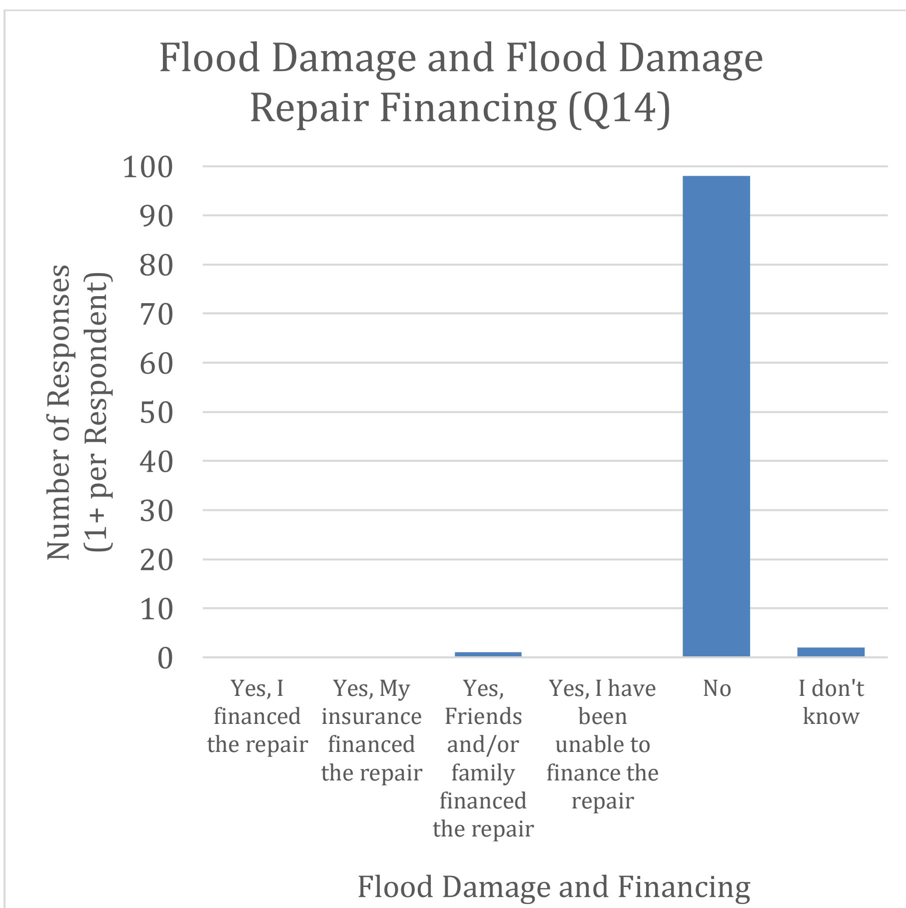
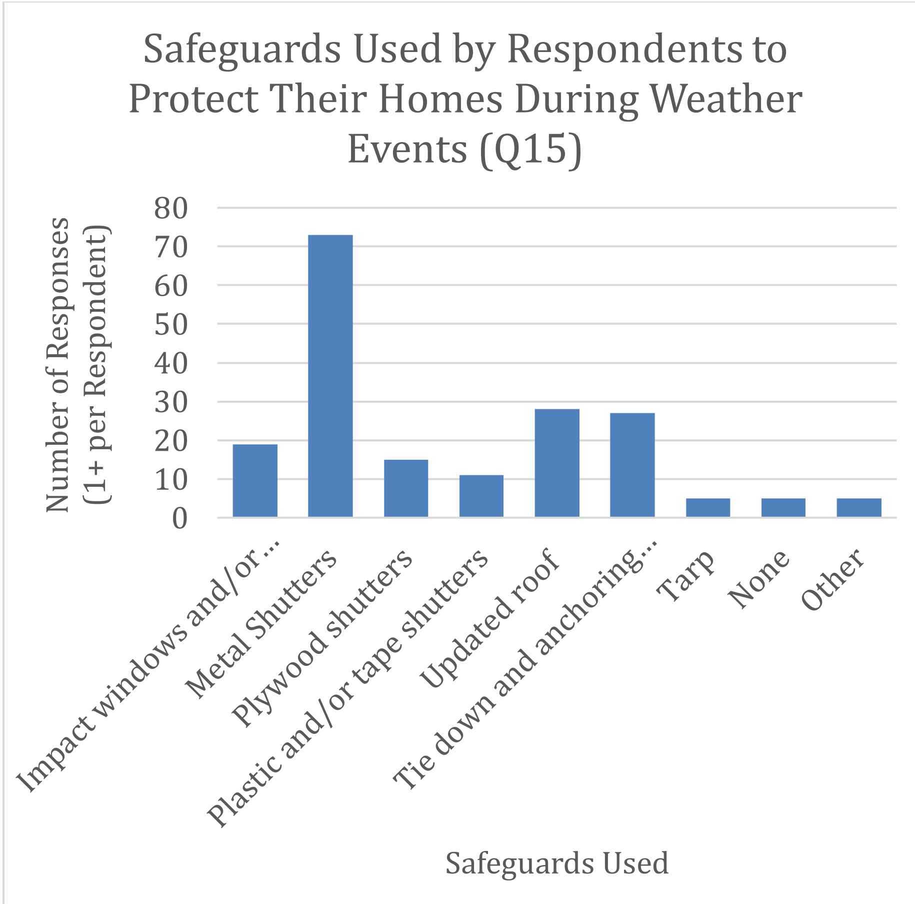
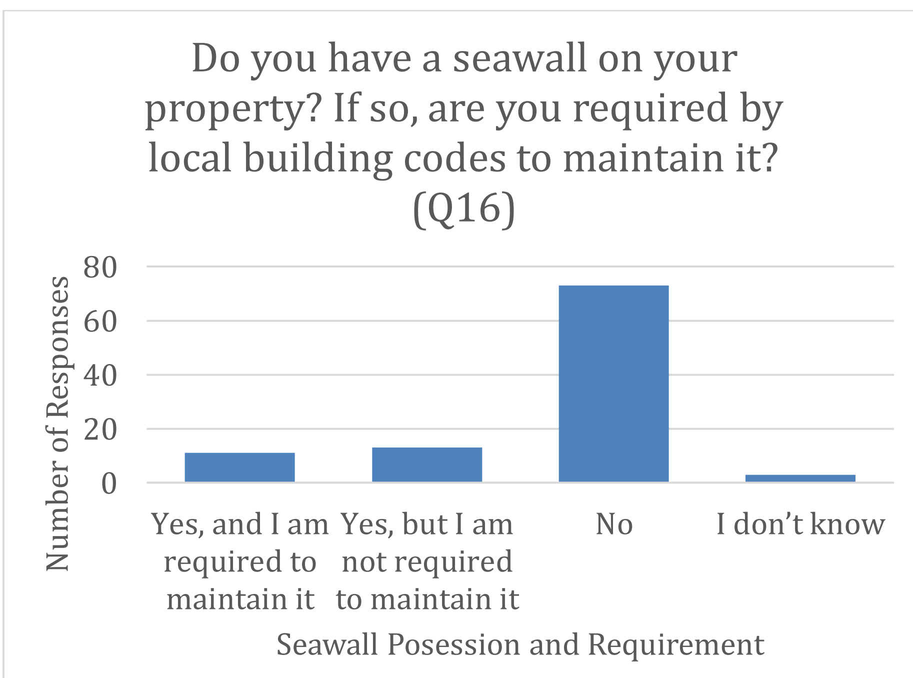


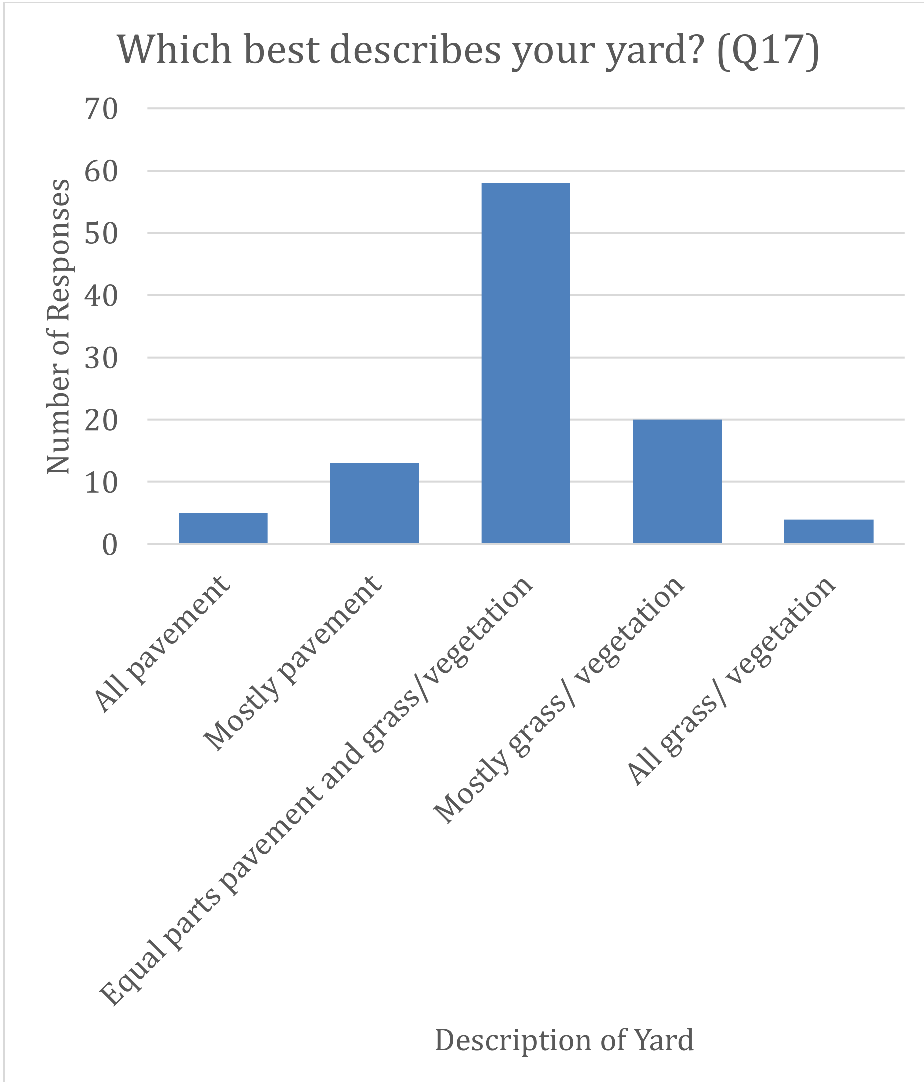
Chart Is your home located within the 100-year floodplain? (Q12)
60
50
40
30
20
10
0
Number of Responses
Yes
No
I don't know
Yes/ No/ Idk

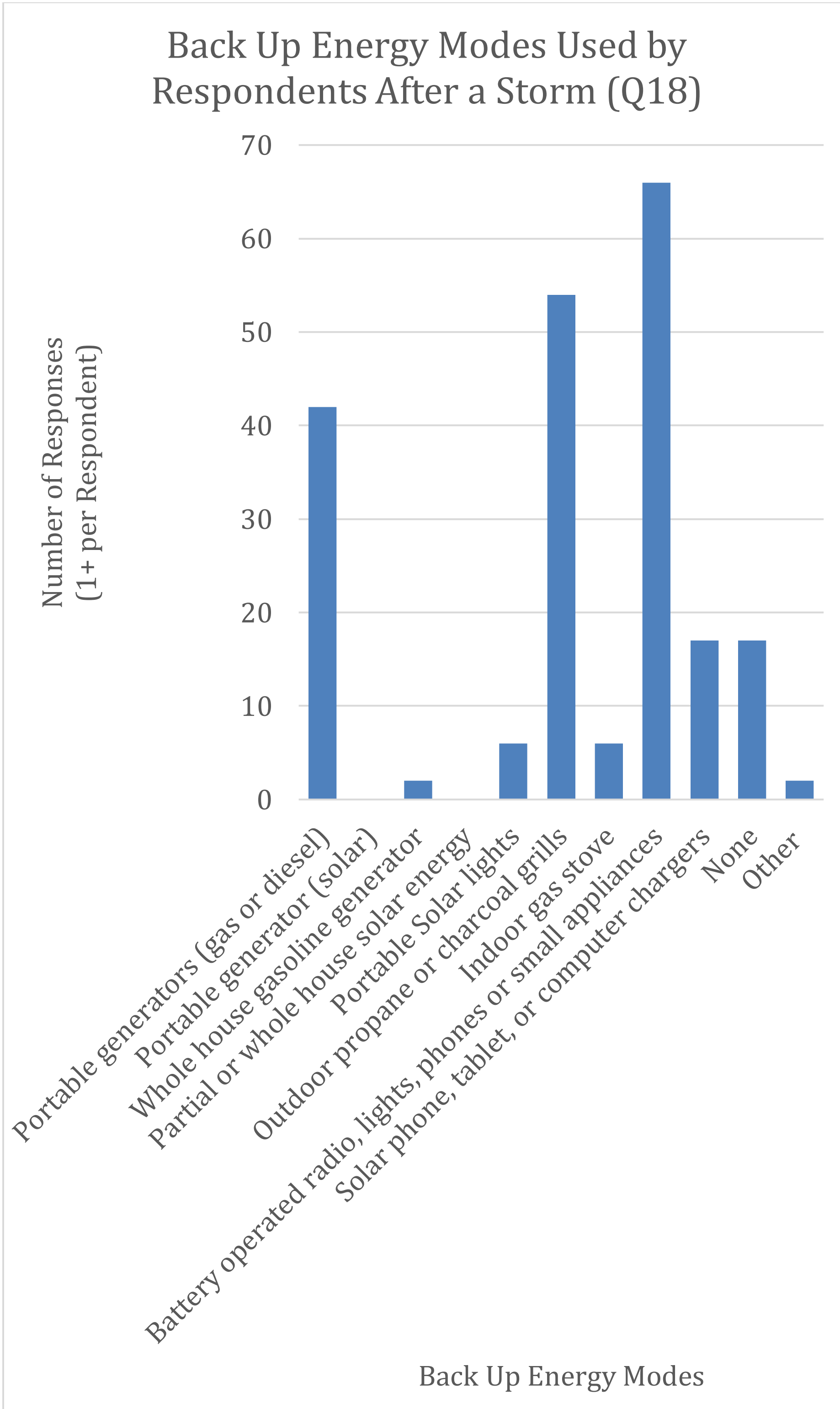

Does your home have flood insurance? And are you required to have it? (Q13)
Number of Responses
80
70
60
50
40
30
20
10
0
Yes, I'm required to have it
Yes, but I'm not required to have it
No, but I'm required to have it
No, I'm not required to have it
I don't know
Flood Insurance Posession and Requirement


Flood Damage and Flood Damage Repair Financing (Q14)
Number of Responses (1+ per Respondent)
100
90
80
70
60
50
40
30
20
10
0
Yes, I financed the repair
Yes, My insurance financed the repair
Yes, Friends and/or family financed the repair
Yes, I have been unable to finance the repair
No
I don't know
Flood Damage and Financing

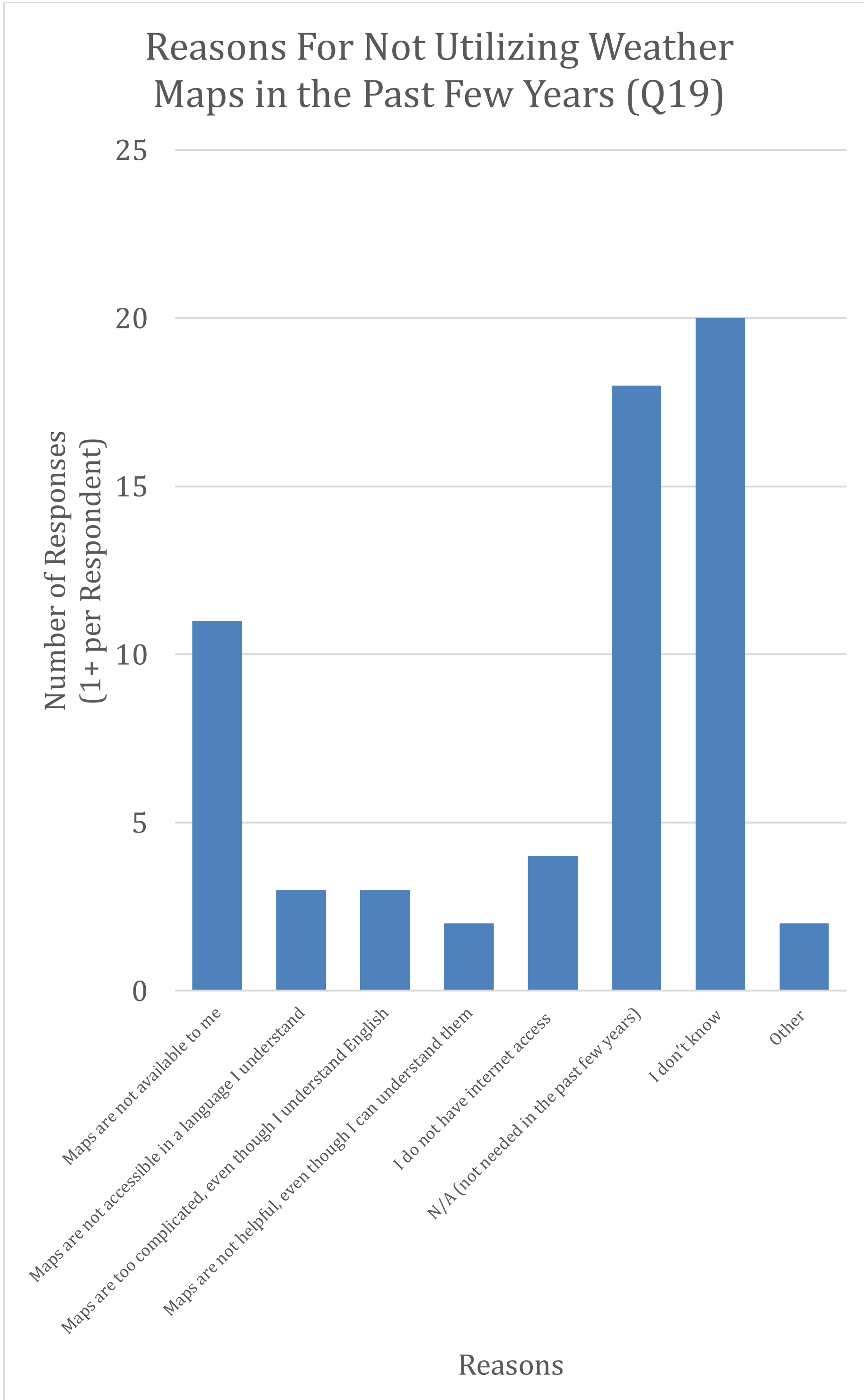

Safeguards Used by Respondents to Protect Their Homes During Weather Events (Q15)
Number of Responses (1+ per Respondent)
80
70
60
50
40
30
20
10
0
Impact windows and/or ...
Metal Shutters
Plywood shutters
Plastic and/or tape shutters
Updated roof
Tie down and anchoring...
Tarp
None
Other
Safeguards Used

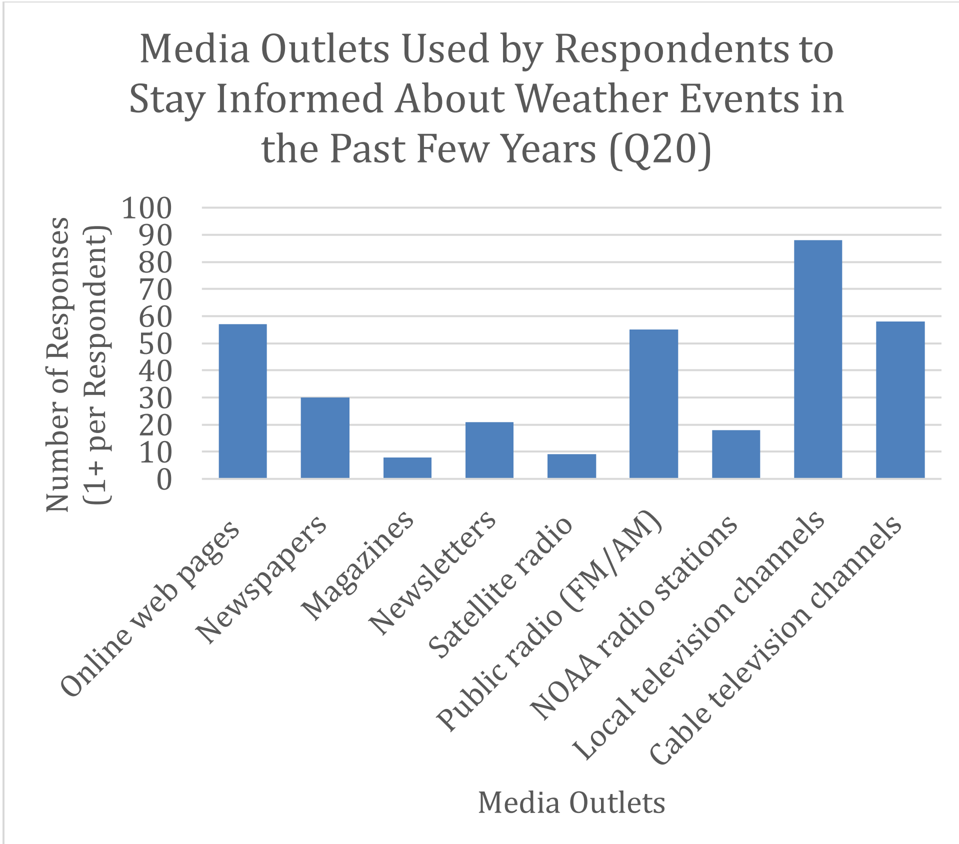

Do you have a seawall on your property? If so, are you required by local building codes to maintain it? (Q16)
Number of Responses
80
60
40
20
0
Yes, and I am required to maintain it
Yes, but I am not required to maintain it
No
I don't know
Seawall Posession and Requirement

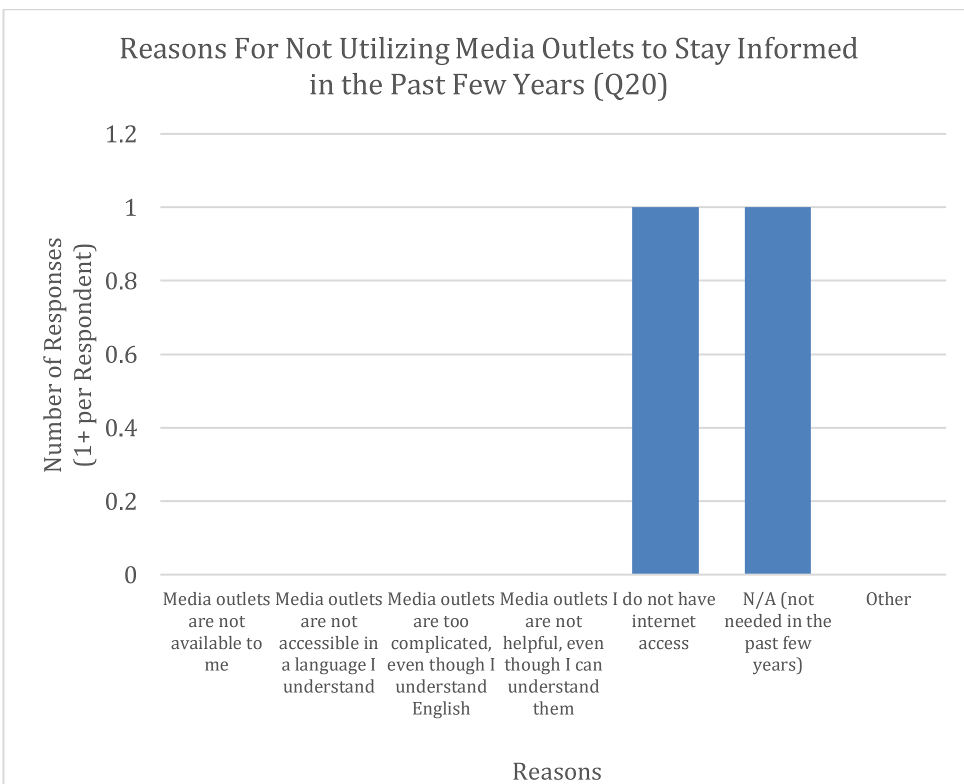

Which best describes your yard? (Q17)
Number of Responses
70
60
50
40
30
20
10
0
All pavement
Mostly pavement
Equal parts pavement and grass/vegetation
Mostly grass/ vegetation
All grass/ vegetation
Description of Yard

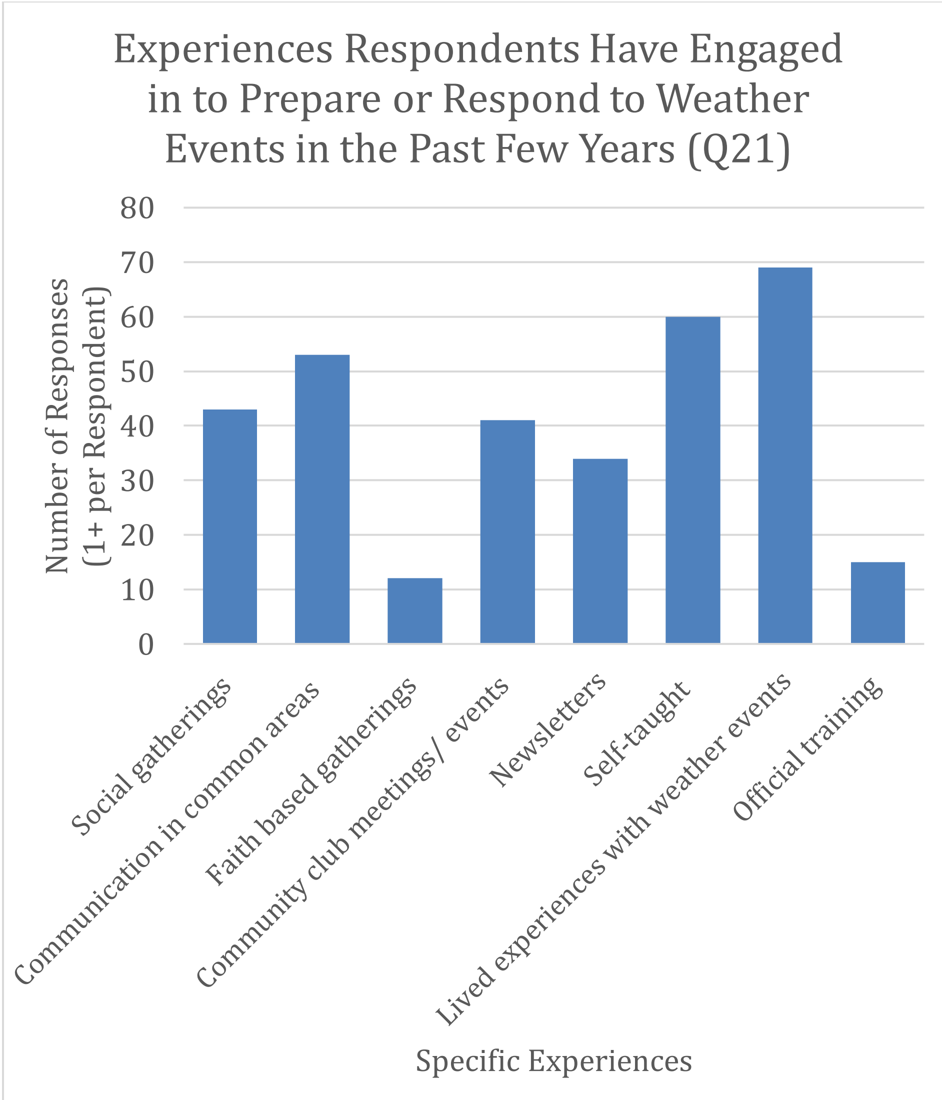


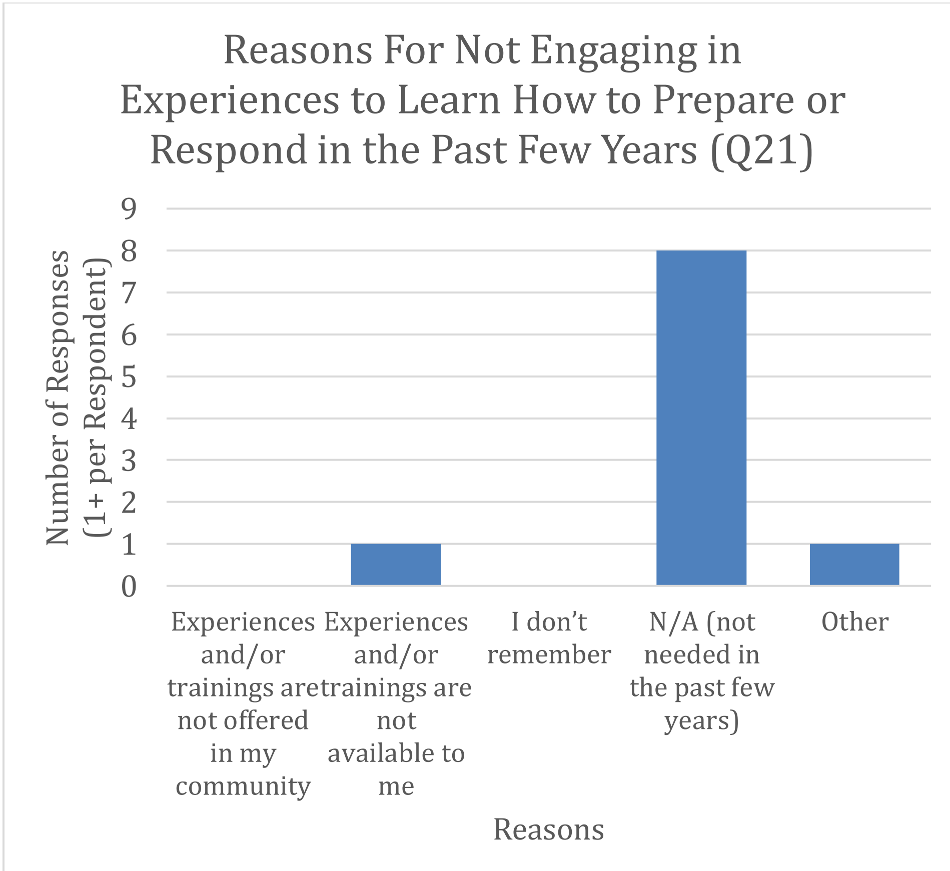
Back Up Energy Modes Used by Respondents After a Storm (Q18)
Number of Responses (1+ per Respondent)
70
60
50
40
30
20
10
0
Portable generators (gas or diesel)
Portable generator (solar)
Whole house gasoline generator
Partial or whole house solar energy
Portable Solar lights
Outdoor propane or charcoal grills
Indoor gas stove
Battery operated radio, lights, phones or small appliances
Solar phone, tablet, or computer chargers
None
Other
Back Up Energy Modes

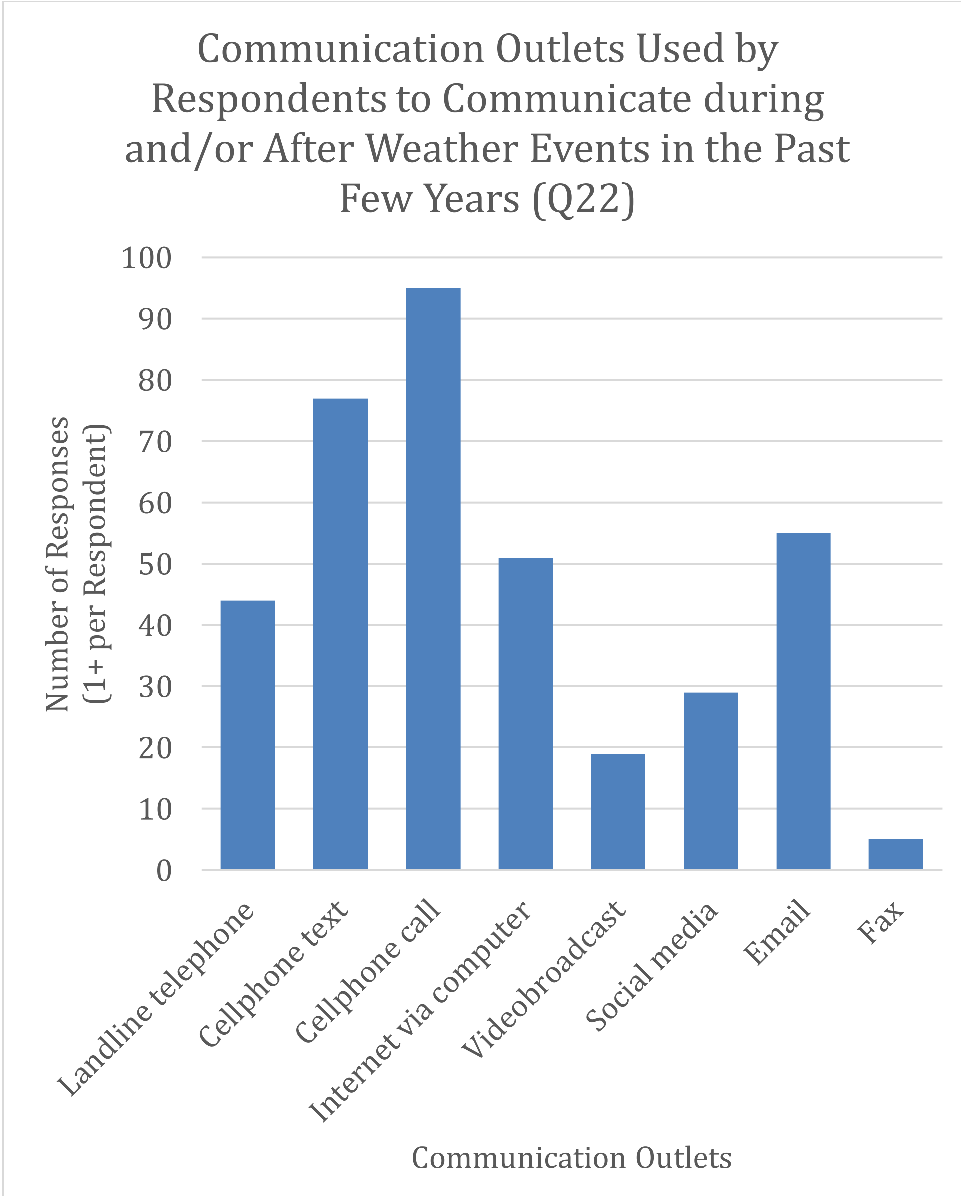

Reasons For Not Utilizing Weather Maps in the Past Few Years (Q19)
25
20
15
10
5
0
Number of Responses (1+ per Respondent)
Maps are not available to me
Maps are not accessible in a language I understand
Maps are too complicated, even though I understand English
Maps are not helpful, even though I can understand them
I do not have internet access
N/A (not needed in the past few years)
I don't know
Other
Reasons

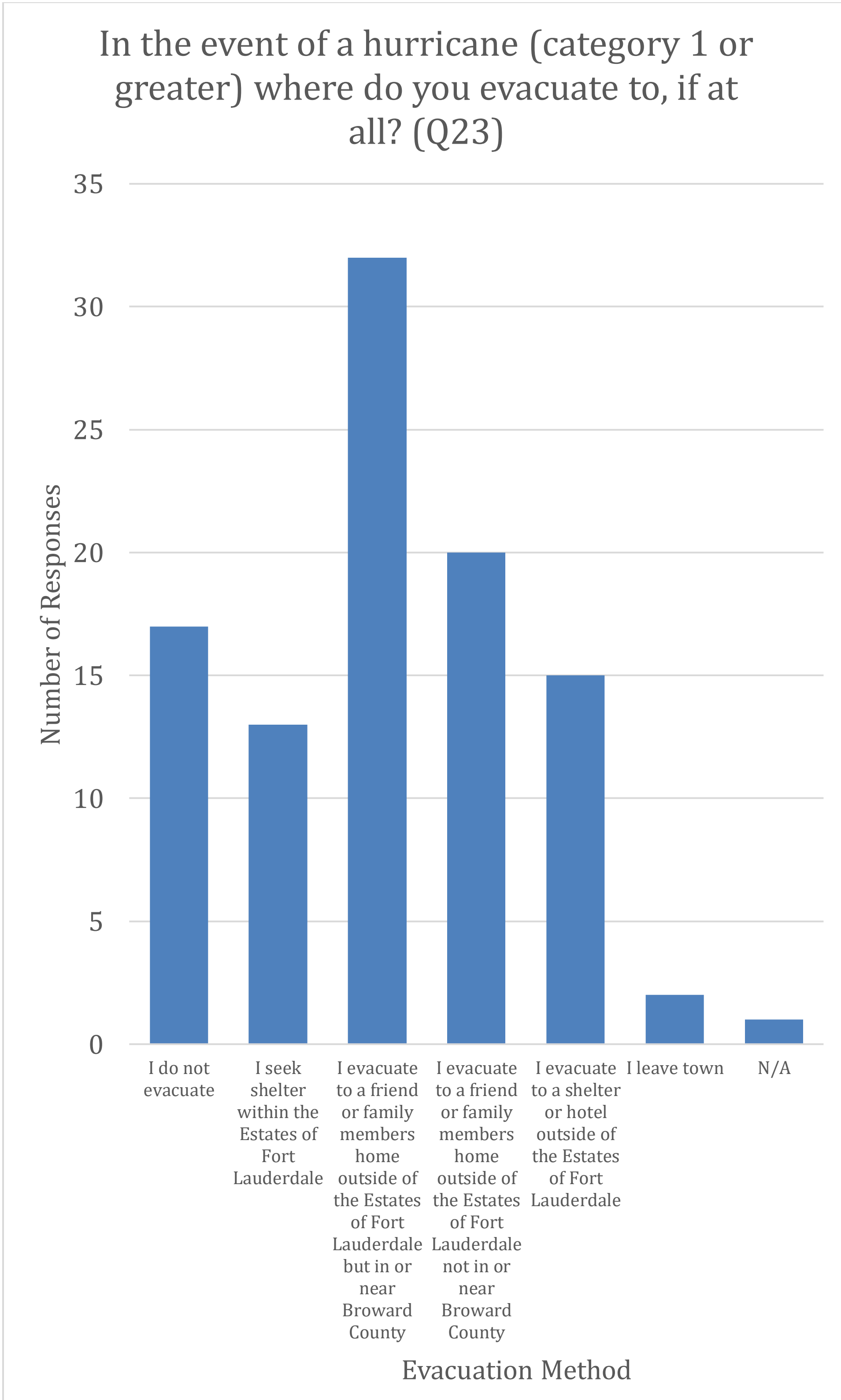

Media Outlets Used by Respondents to Stay Informed About Weather Events in the Past Few Years (Q20)
Number of Responses (1+ per Respondent)
100
90
80
70
60
50
40
30
20
10
0
Online web pages
Newspapers
Magazines
Newsletters
Satellite radio
Public radio (FM/AM)
NOAA radio stations
Local television channels
Cable television channels
Media Outlets

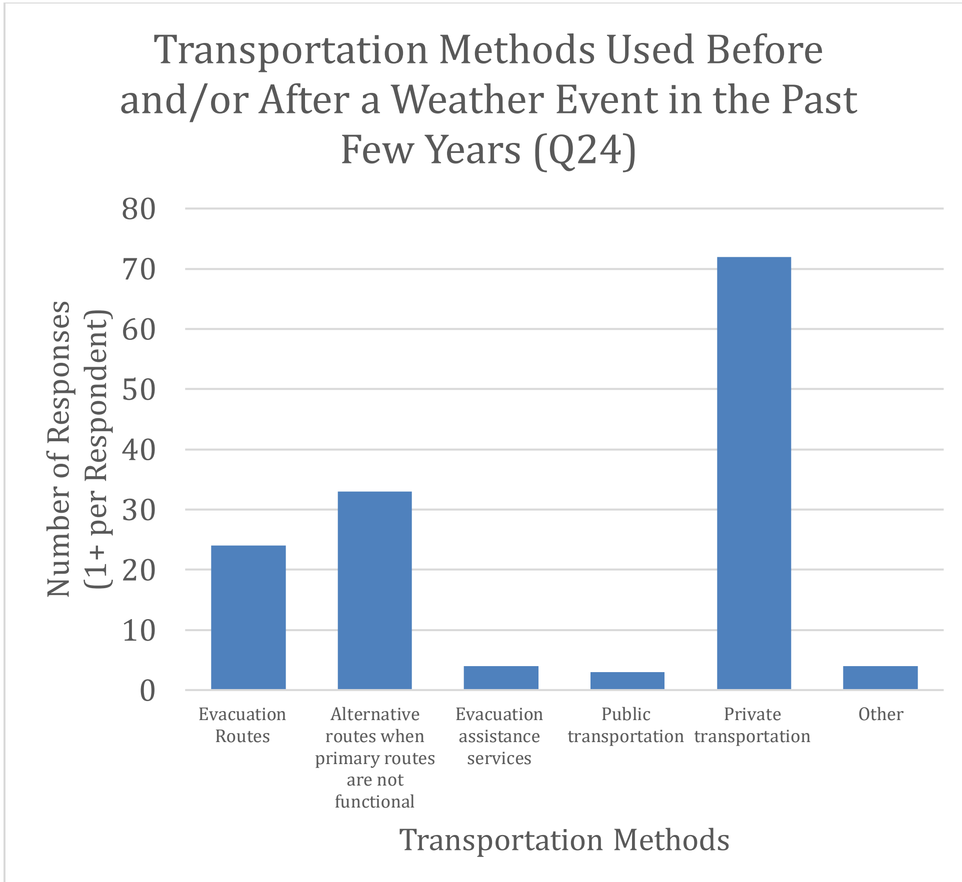

Reasons For Not Utilizing Media Outlets to Stay Informed in the Past Few Years (Q20)
Number of Responses (1+ per Respondent)
1.2
1
0.8
0.6
0.4
0.2
0
Media outlets are not available to me
Media outlets are not accessible in a language I understand
Media outlets are too complicated, even though I understand English
Media outlets are not helpful, even though I can understand them
I do not have internet access
N/A (not needed in the past few years)
Other
Reasons

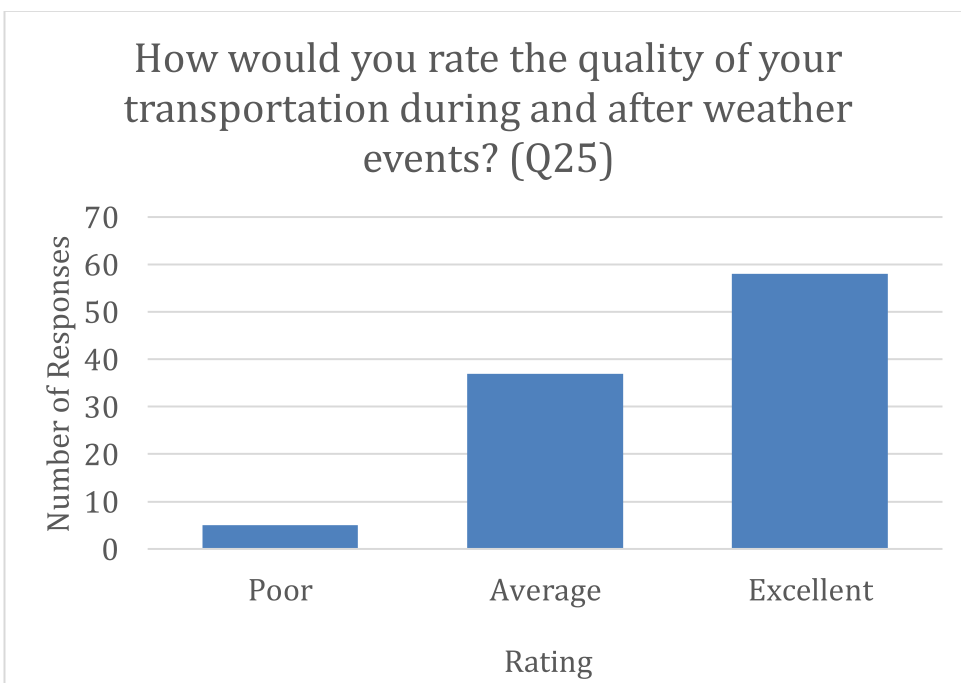

Experiences Respondents Have Engaged in to Prepare or Respond to Weather Events in the Past Few Years (Q21)
Number of Responses (1+ per Respondent)
0
10
20
30
40
50
60
70
80
Social gatherings
Communication in common areas
Faith based gatherings
Community club meetings/ events
Newsletters
Self-taught
Lived experiences with weather events
Official training
Specific Experiences

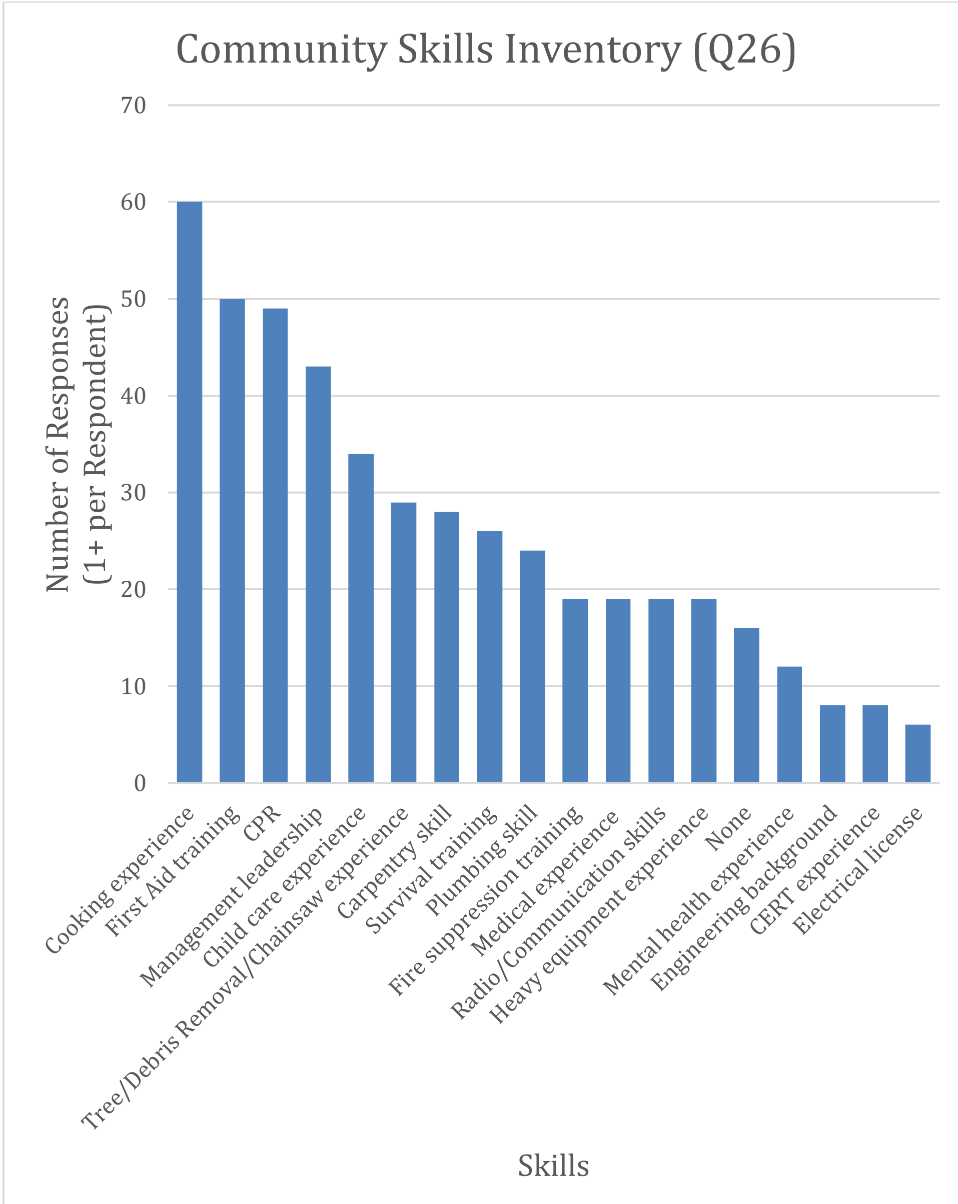

Reasons For Not Engaging in Experiences to Learn How to Prepare or Respond in the Past Few Years (Q21)
Number of Responses (1+ per Respondent)
9
8
7
6
5
4
3
2
1
0
Experiences and/or trainings are not offered in my community
Experiences and/or trainings are not available to me
I don't remember
N/A (not needed in the past few years)
Other
Reasons

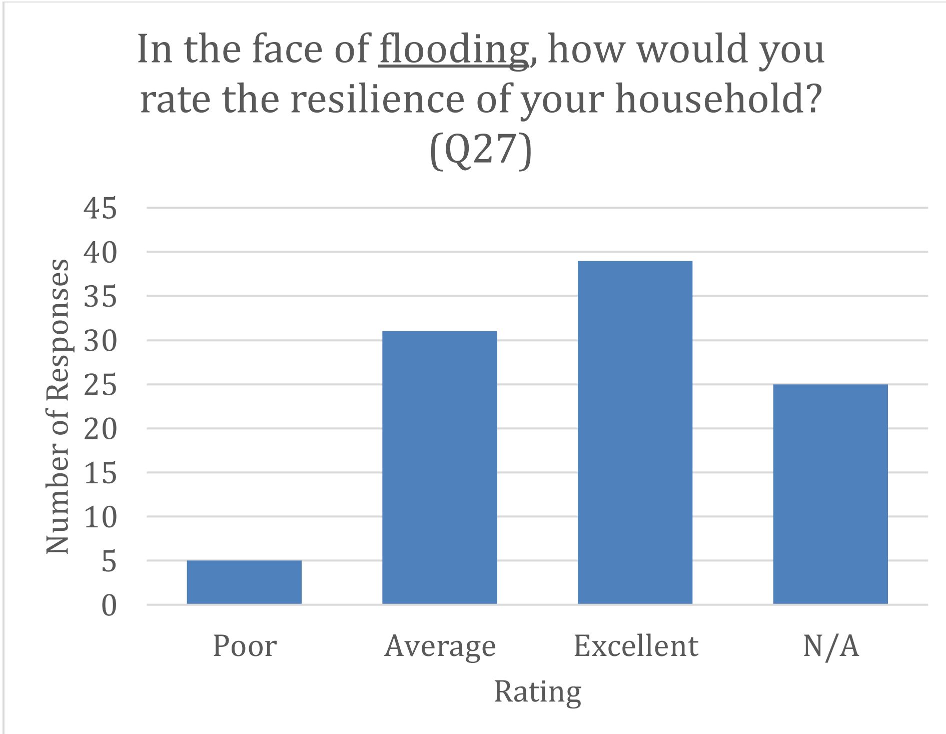

Communication Outlets Used by Respondents to Communicate during and/or After Weather Events in the Past Few Years (Q22)
Number of Responses (1+ per Respondent)
100
90
80
70
60
50
40
30
20
10
0
Landline telephone
Cellphone text
Cellphone call
Internet via computer
Videobroadcast
Social media
Email
Fax
Communication Outlets

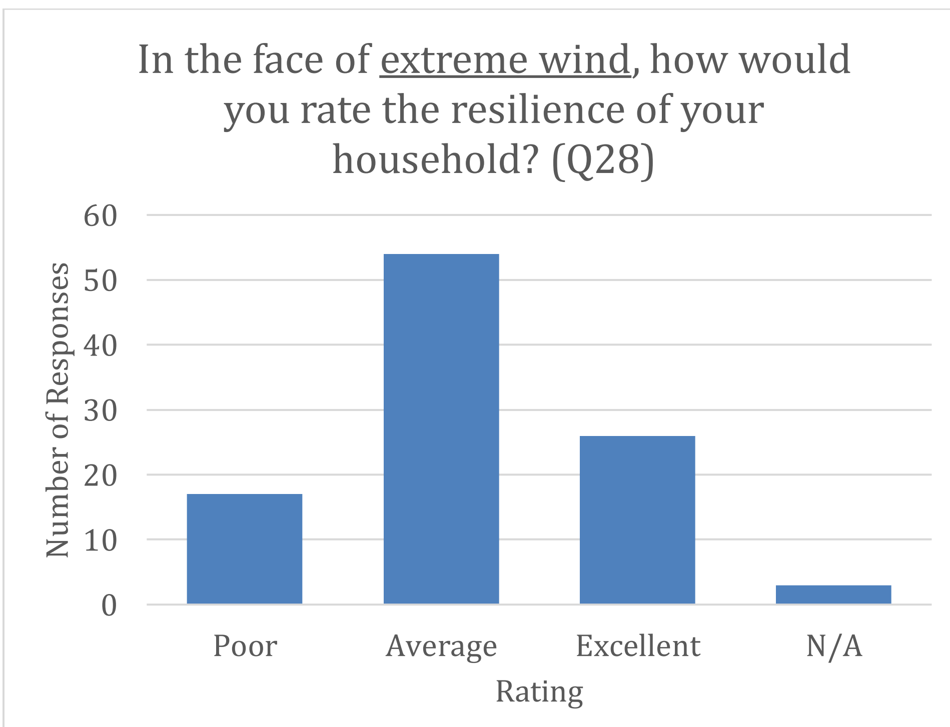

In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all? (Q23)
35
30
25
20
15
10
5
0
Number of Responses
I do not evacuate
I seek shelter within the Estates of Fort Lauderdale
I evacuate to a friend or family members home outside of the Estates of Fort Lauderdale but in or near Broward County
I evacuate to a friend or family members home outside of the Estates of Fort Lauderdale not in or near Broward County
I evacuate to a shelter or hotel outside of the Estates of Fort Lauderdale
I leave town
N/A
Evacuation Method

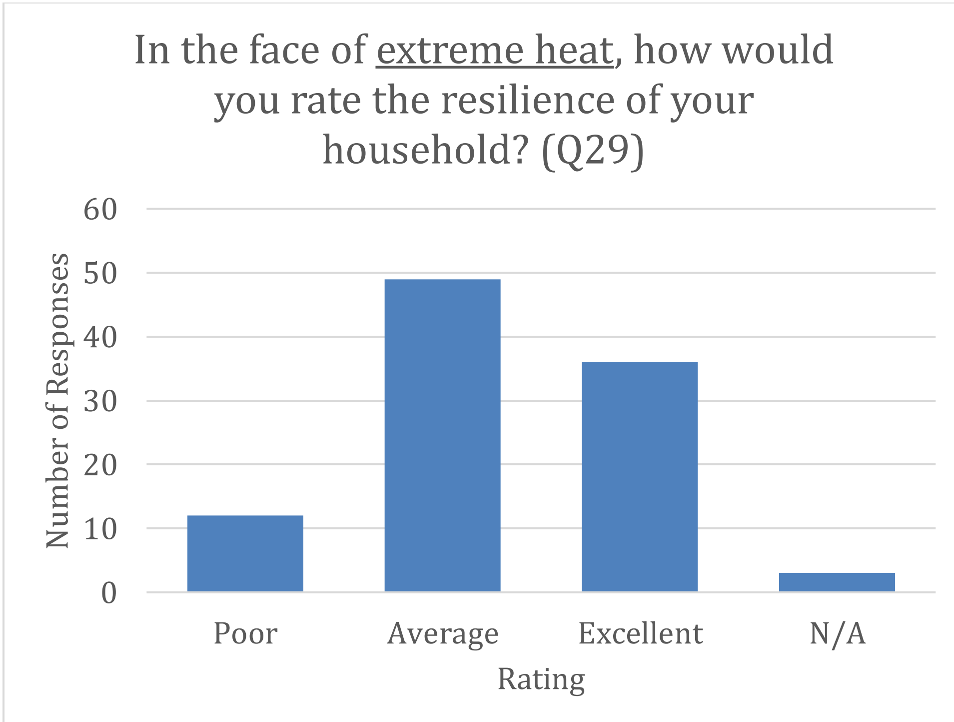

Transportation Methods Used Before and/or After a Weather Event in the Past Few Years (Q24)
Number of Responses (1+ per Respondent)
80
70
60
50
40
30
20
10
0
Evacuation Routes
Alternative routes when primary routes are not functional
Evacuation assistance services
Public transportation
Private transportation
Other
Transportation Methods

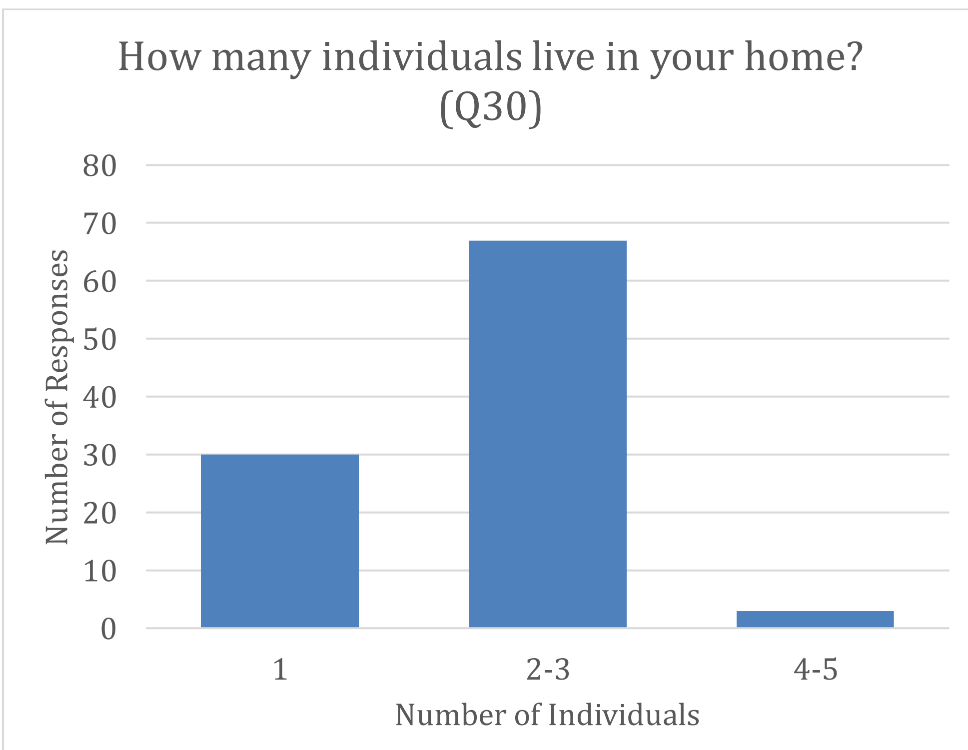

How would you rate the quality of your transportation during and after weather events? (Q25)
Number of Responses
70
60
50
40
30
20
10
0
Poor
Average
Excellent
Rating

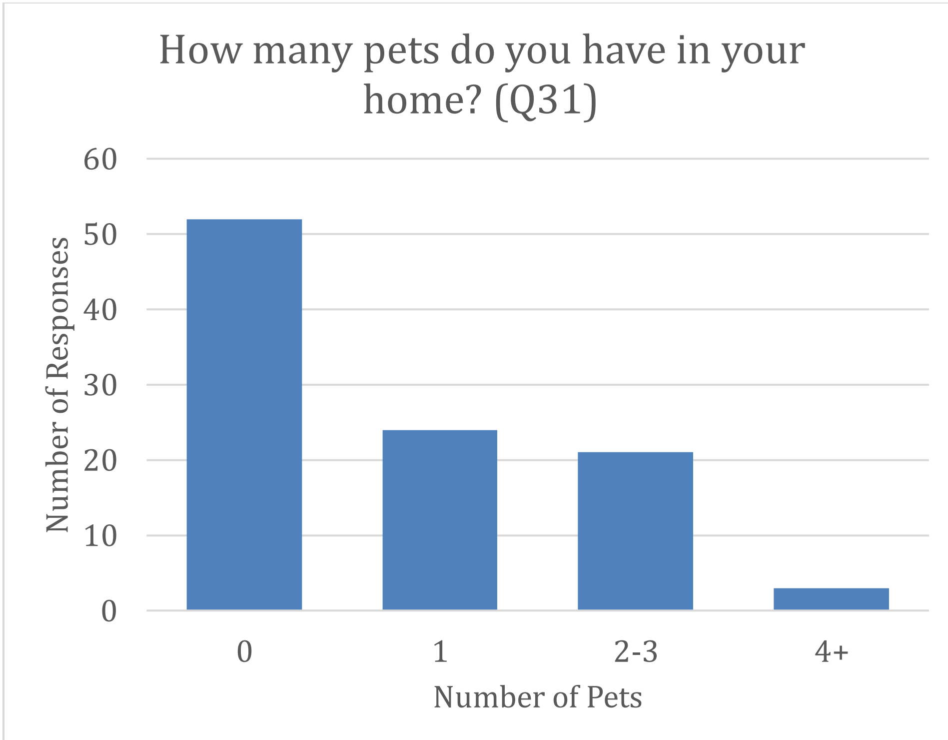

Community Skills Inventory (Q26)
70
60
50
40
30
20
10
0
Number of Responses
(1+ per Respondent)
Cooking experience
First Aid training
CPR
Management leadership
Child care experience
Tree/Debris Removal/Chainsaw experience
Carpentry skill
Survival training
Plumbing skill
Fire suppression training
Medical experience
Radio/Communication skills
Heavy equipment experience
None
Mental health experience
Engineering background
CERT experience
Electrical license
Skills

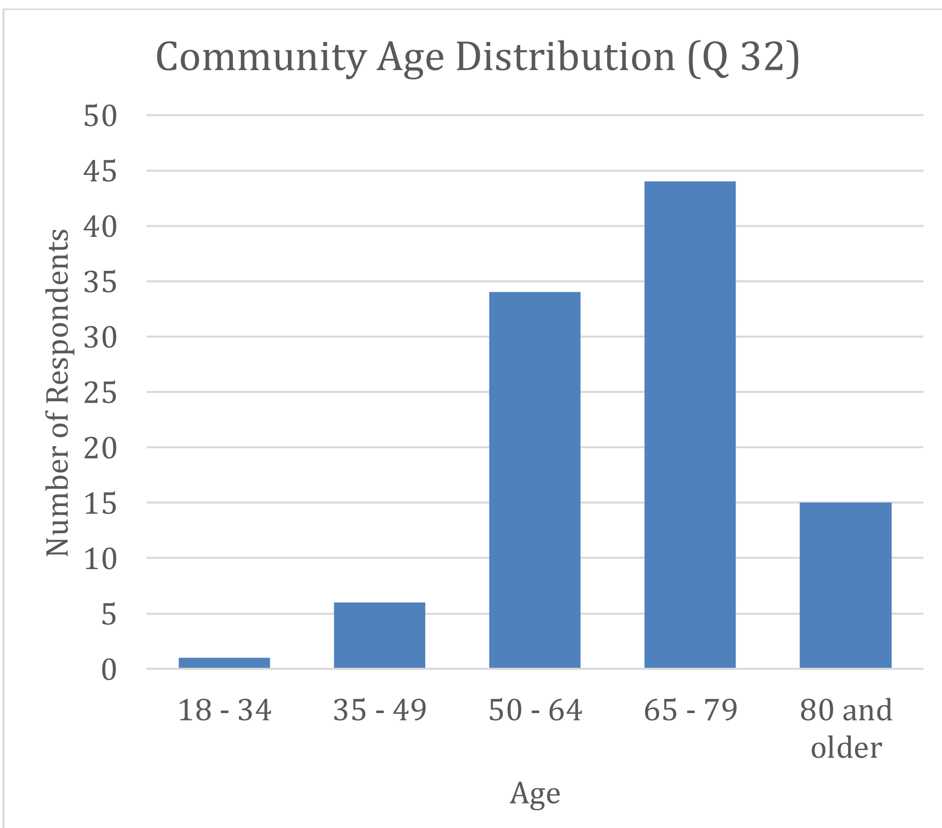

In the face of flooding, how would you rate the resilience of your household? (Q27)
Number of Responses
45
40
35
30
25
20
15
10
5
0
Poor
Average
Excellent
N/A
Rating

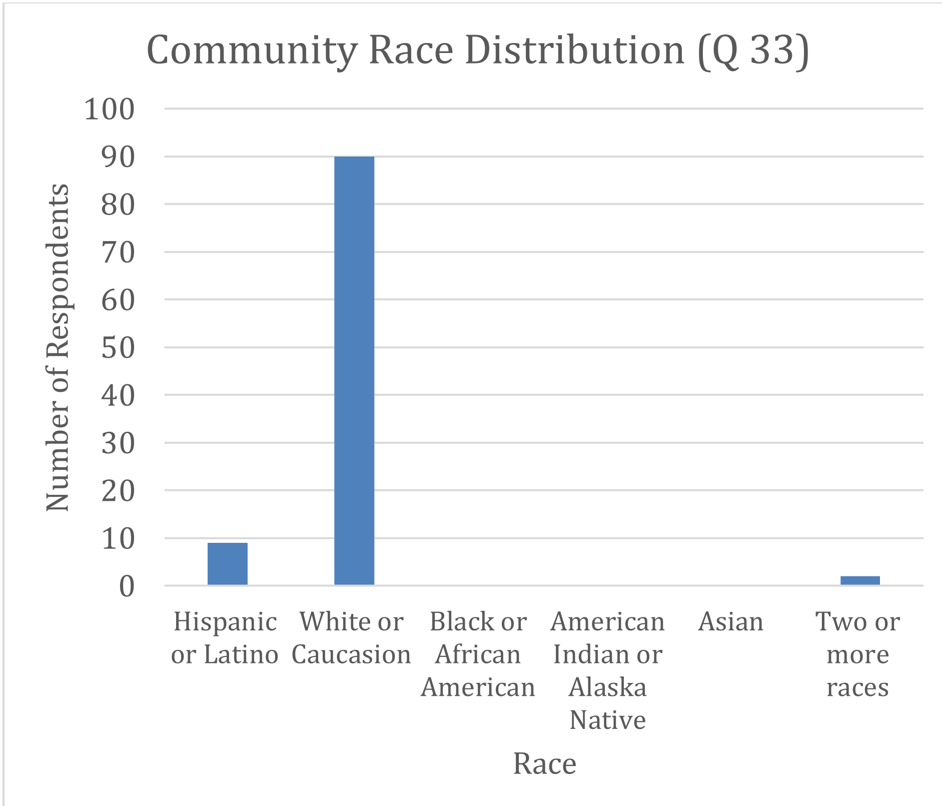

In the face of extreme wind, how would you rate the resilience of your household? (Q28)
Number of Responses
60
50
40
30
20
10
0
Poor
Average
Excellent
N/A
Rating

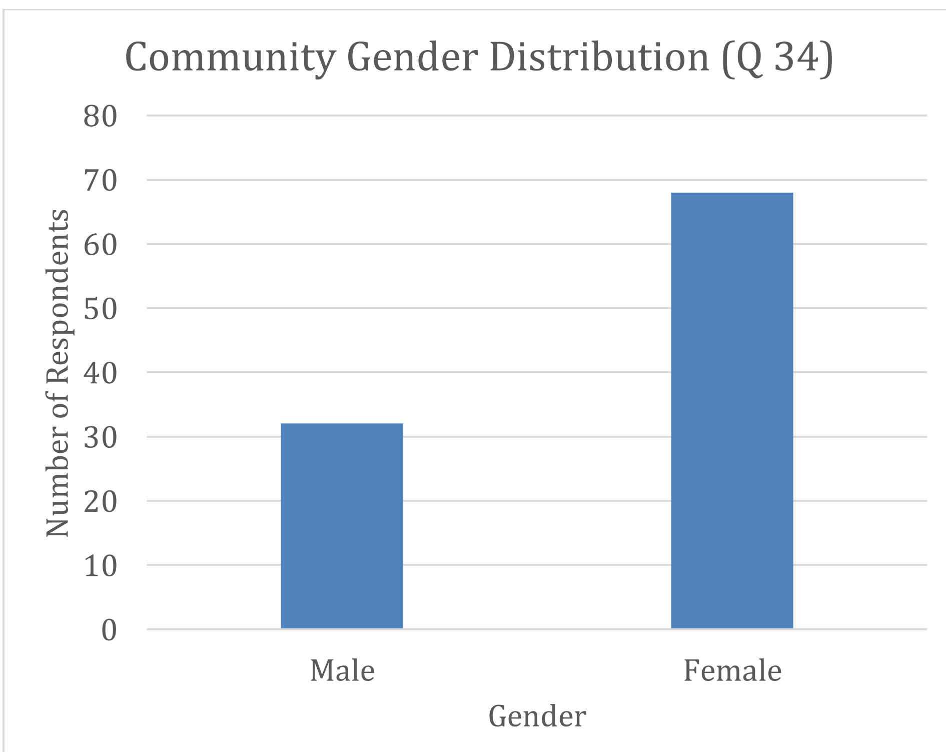

In the face of extreme heat, how would you rate the resilience of your household? (Q29)
Number of Responses
60
50
40
30
20
10
0
Poor
Average
Excellent
N/A
Rating

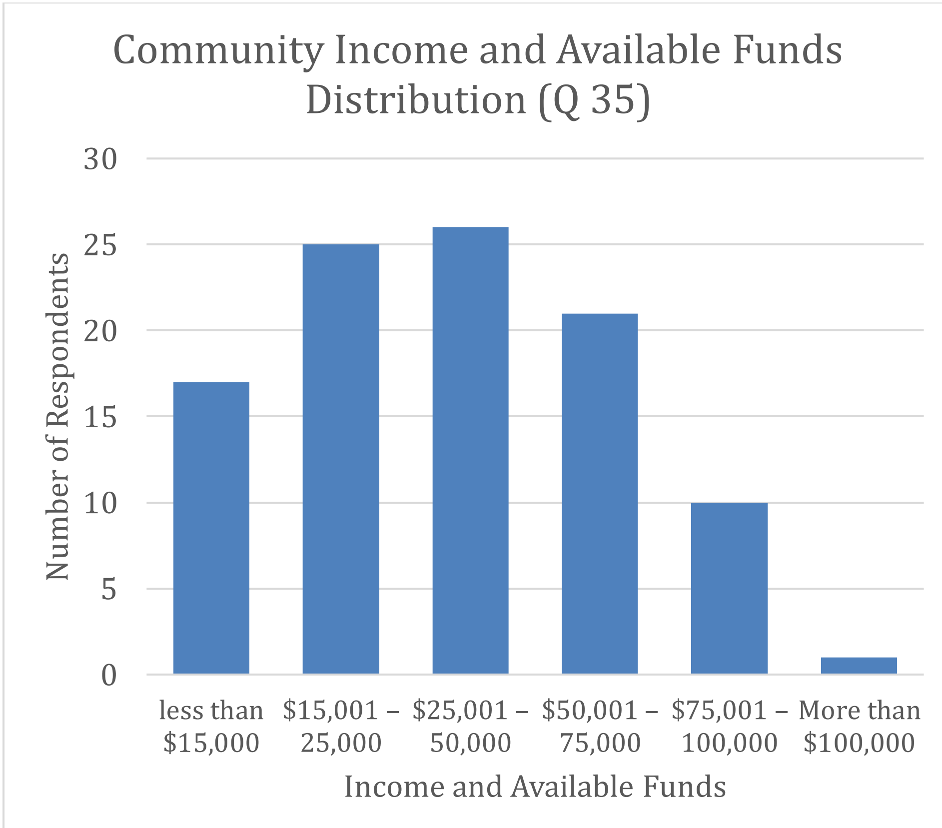

How many individuals live in your home? (Q30)
Number of Responses
80
70
60
50
40
30
20
10
0
1
2-3
4-5
Number of Individuals

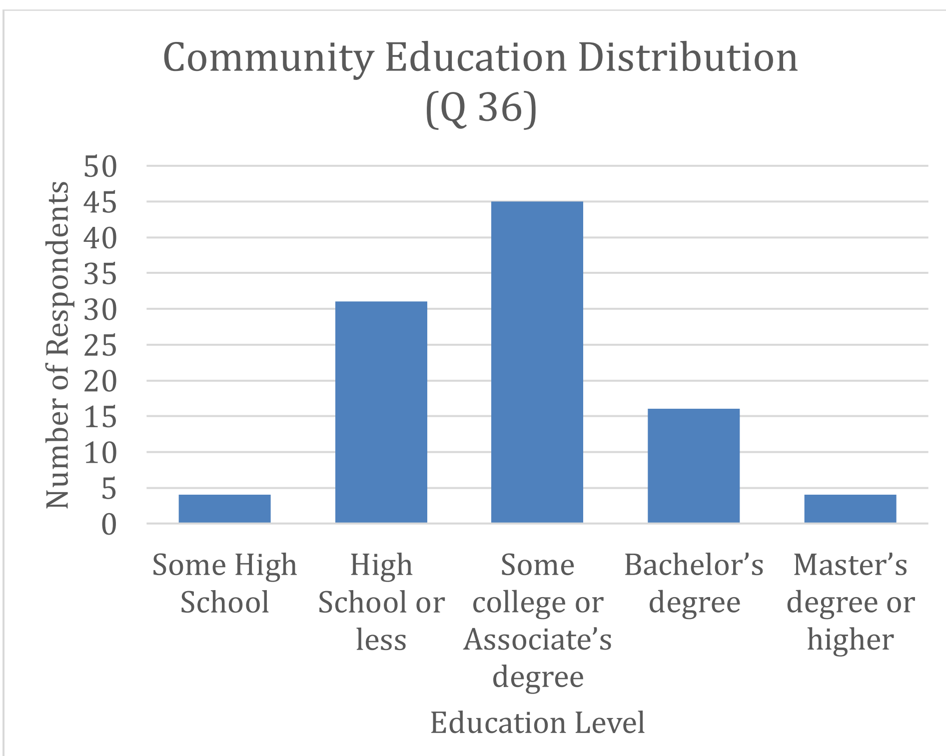

How many pets do you have in your home? (Q31)
60
50
40
30
20
10
0
Number of Responses
0
1
2-3
4+
Number of Pets


Community Age Distribution (Q 32)
50
45
40
35
30
25
20
15
10
5
0
Number of Respondents
18 - 34
35 - 49
50 - 64
65 - 79
80 and older
Age


Community Race Distribution (Q 33)
Number of Respondents
100
90
80
70
60
50
40
30
20
10
0
Hispanic or Latino
White or Caucasion
Black or African American
American Indian or Alaska Native
Asian
Two or more races
Race


Community Gender Distribution (Q 34)
Number of Respondents
80
70
60
50
40
30
20
10
0
Male
Female
Gender


Community Income and Available Funds Distribution (Q 35)
Number of Respondents
30
25
20
15
10
5
0
less than $15,000
$15,001 – 25,000
$25,001 – 50,000
$50,001 – 75,000
$75,001 – 100,000
More than $100,000
Income and Available Funds


Community Education Distribution (Q 36)
Number of Respondents
50
45
40
35
30
25
20
15
10
5
0
Some High School
High School or less
Some college or Associate's degree
Bachelor's degree
Master's degree or higher
Education Level

8.5 Appendix E: Remaining Crosstabs for Five Explored Dimension Correlations

COMMUNICATION AND SOCIAL CAPITAL

Q20(Media outlets)* Q2 P1(Time lived in EOF)

			Number of in-person interactions, if any, that respondents have engaged in within the past few months			
			0	1-3	4+	Total
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	0	1	1	2
		Expected Count	.0	1.0	1.0	2.0
	1-5 Years	Count	0	15	14	29
		Expected Count	.3	14.2	14.5	29.0
	6-10 Years	Count	0	9	8	17
		Expected Count	.2	8.3	8.5	17.0
	11-25 Years	Count	1	19	18	38
		Expected Count	.4	18.6	19.0	38.0
	25+ Years	Count	0	5	9	14
		Expected Count	.1	6.9	7.0	14.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.913a	8	.940
Likelihood Ratio	3.221	8	.920
N of Valid Cases	100		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is .02.

Q20(Media outlets)* Q2 P2(Seasonal resident)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
Are you a seasonal resident?	Yes	Count	1	5	5	11
		Expected Count	.1	5.4	5.5	11.0
	No	Count	0	44	45	89
		Expected Count	.9	43.6	44.5	89.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.174a	2	.017
Likelihood Ratio	4.499	2	.105
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .11.

Q20 (Media outlets)* Q3 (Awareness of social events)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
Are you aware of social events in the Estates of Fort Lauderdale?	Yes	Count	1	44	50	95
		Expected Count	1.0	46.6	47.5	95.0
	No	Count	0	5	0	5
		Expected Count	.1	2.5	2.5	5.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.478a	2	.065
Likelihood Ratio	7.408	2	.025
N of Valid Cases	100		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .05.

Q20(Media Outlets)* Q4 (Social events)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
Do you attend these social events?	Yes	Count	0	16	22	38
		Expected Count	.4	18.6	19.0	38.0
	No	Count	0	12	4	16
		Expected Count	.2	7.8	8.0	16.0
	Sometimes	Count	1	21	24	46
		Expected Count	.5	22.5	23.0	46.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.372a	4	.173
Likelihood Ratio	6.892	4	.142
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .16.

Q20(Media outlets)* Q5 (In-person interactions)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
Number of in-person interactions, if any, that respondents have engaged in within the past few months	0	Count	0	13	4	17
		Expected Count	.2	8.3	8.5	17.0
	1-2	Count	1	18	24	43
		Expected Count	.4	21.1	21.5	43.0
	3-4	Count	0	18	22	40
		Expected Count	.4	19.6	20.0	40.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.395[a]	4	.116
Likelihood Ratio	7.969	4	.093
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .17.

Q20(Media outlets)* Q6 (Place attachment)

			Number of media outlets used by respondents to stay informed about weather events			Total
			0	1-3	4+	
How would you rate your level of attachment to the Estates of Fort Lauderdale?	Fair	Count	0	9	9	18
		Expected Count	.2	8.8	9.0	18.0
	Somewhat strong	Count	1	23	16	40
		Expected Count	.4	19.6	20.0	40.0
	Very strong	Count	0	17	25	42
		Expected Count	.4	20.6	21.0	42.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.278a	4	.370
Likelihood Ratio	4.634	4	.327
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .18.

Q20(Media outlets)* Q7 (Community thriving)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
Do you want your community to thrive and be enjoyed by future generations?	Yes	Count	1	48	50	99
		Expected Count	1.0	48.5	49.5	99.0
	I don't care	Count	0	1	0	1
		Expected Count	.0	.5	.5	1.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.051[a]	2	.591
Likelihood Ratio	1.437	2	.487
N of Valid Cases	100		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .01.

Q20 (Media outlets)* Q10(Rent or own)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
Do you rent or own your home?	Rent	Count	0	9	4	13
		Expected Count	.1	6.4	6.5	13.0
	Own	Count	1	40	46	87
		Expected Count	.9	42.6	43.5	87.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.503a	2	.286
Likelihood Ratio	2.662	2	.264
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .13.

Q20 (Media outlets)* Q30(Individuals in home)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
How many individuals live in your home?	1	Count	0	16	14	30
		Expected Count	.3	14.7	15.0	30.0
	1+	Count	1	33	36	70
		Expected Count	.7	34.3	35.0	70.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.688a	2	.709
Likelihood Ratio	.971	2	.615
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .30.

Q21(Experiences)* Q2 P1(Time lived in EOF)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			Total
			0	1-3	4+	
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	0	2	0	2
		Expected Count	.2	1.1	.8	2.0
	1-5 Years	Count	2	19	8	29
		Expected Count	2.3	15.7	11.0	29.0
	6-10 Years	Count	1	8	8	17
		Expected Count	1.4	9.2	6.5	17.0
	11-25 Years	Count	3	19	16	38
		Expected Count	3.0	20.5	14.4	38.0
	25+ Years	Count	2	6	6	14
		Expected Count	1.1	7.6	5.3	14.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.284a	8	.727
Likelihood Ratio	5.966	8	.651
N of Valid Cases	100		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is .16.

Q21(Experiences)* Q2 P2 (Seasonal resident)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Are you a seasonal resident?	Yes	Count	4	3	4	11
		Expected Count	.9	5.9	4.2	11.0
	No	Count	4	51	34	89
		Expected Count	7.1	48.1	33.8	89.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.073a	2	.001
Likelihood Ratio	9.467	2	.009
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .88.

Q21(Experiences)* Q3 (Awareness of social events)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Are you aware of social events in the Estates of Fort Lauderdale?	Yes	Count	7	50	38	95
		Expected Count	7.6	51.3	36.1	95.0
	No	Count	1	4	0	5
		Expected Count	.4	2.7	1.9	5.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.606[a]	2	.165
Likelihood Ratio	5.157	2	.076
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .40.

Q21(Experiences)* Q4 (Social events)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Do you attend these social events?	Yes	Count	5	9	24	38
		Expected Count	3.0	20.5	14.4	38.0
	No	Count	0	16	0	16
		Expected Count	1.3	8.6	6.1	16.0
	Sometimes	Count	3	29	14	46
		Expected Count	3.7	24.8	17.5	46.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.205[a]	4	.000
Likelihood Ratio	35.784	4	.000
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.28.

Q21(Experiences)* Q5(In-person interactions)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Number of in-person interactions, if any, that respondents have engaged in within the past few months	0	Count	2	14	1	17
		Expected Count	1.4	9.2	6.5	17.0
	1-2	Count	2	28	13	43
		Expected Count	3.4	23.2	16.3	43.0
	3-4	Count	4	12	24	40
		Expected Count	3.2	21.6	15.2	40.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.278a	4	.001
Likelihood Ratio	21.599	4	.000
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.36.

Q21(Experiences)* Q7(Community thrive)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Do you want your community to thrive and be enjoyed by future generations?	Yes	Count	8	53	38	99
		Expected Count	7.9	53.5	37.6	99.0
	I don't care	Count	0	1	0	1
		Expected Count	.1	.5	.4	1.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.860a	2	.650
Likelihood Ratio	1.241	2	.538
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .08.

Q21(Experiences)* Q10 (Rent or own)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Do you rent or own your home?	Rent	Count	0	7	6	13
		Expected Count	1.0	7.0	4.9	13.0
	Own	Count	8	47	32	87
		Expected Count	7.0	47.0	33.1	87.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.457[a]	2	.483
Likelihood Ratio	2.475	2	.290
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.04.

Q21(Experiences)* Q30(Individuals in home)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
How many individuals live in your home?	1	Count	1	17	12	30
		Expected Count	2.4	16.2	11.4	30.0
	1+	Count	7	37	26	70
		Expected Count	5.6	37.8	26.6	70.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.268[a]	2	.530
Likelihood Ratio	1.474	2	.479
N of Valid Cases	100		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.40.

Q22(Communication outlets)* Q2 P1 (Time lived in EOF)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	0	2	2
		Expected Count	.9	1.1	2.0
	1-5 Years	Count	10	19	29
		Expected Count	13.1	16.0	29.0
	6-10 Years	Count	9	8	17
		Expected Count	7.7	9.4	17.0
	11-25 Years	Count	20	18	38
		Expected Count	17.1	20.9	38.0
	25+ Years	Count	6	8	14
		Expected Count	6.3	7.7	14.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.286a	4	.369
Likelihood Ratio	5.062	4	.281
N of Valid Cases	100		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .90.

Q22(Communication outlets)* Q2 P2 (Seasonal resident)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
Are you a seasonal resident?	Yes	Count	4	7	11
		Expected Count	5.0	6.1	11.0
	No	Count	41	48	89
		Expected Count	40.1	49.0	89.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.372[a]	1	.542		
Continuity Correction[b]	.084	1	.773		
Likelihood Ratio	.378	1	.539		
Fisher's Exact Test				.750	.390
N of Valid Cases	100				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.95.

b. Computed only for a 2x2 table

Q22(Communication outlets)* Q4(Social events)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
Do you attend these social events?	Yes	Count	16	22	38
		Expected Count	17.1	20.9	38.0
	No	Count	8	8	16
		Expected Count	7.2	8.8	16.0
	Sometimes	Count	21	25	46
		Expected Count	20.7	25.3	46.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.298a	2	.861
Likelihood Ratio	.298	2	.862
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.20.

Q22(Communication outlets)* Q5(In-person interactions)

			Q22 Communication outlets used by respondents to communicate during and/ or after weather events in bins		
			1-3	4+	Total
Number of in-person interactions, if any, that respondents have engaged in within the past few months	0	Count	11	6	17
		Expected Count	7.7	9.4	17.0
	1-2	Count	16	27	43
		Expected Count	19.4	23.7	43.0
	3-4	Count	18	22	40
		Expected Count	18.0	22.0	40.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.722a	2	.156
Likelihood Ratio	3.737	2	.154
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.65.

Q22(Communication outlets)* Q6(Place attachment)

			Communication outlets used by respondents to communicate during and/or after weather events		
			1-3	4+	Total
How would you rate your level of attachment to the Estates of Fort Lauderdale?	Fair	Count	8	10	18
		Expected Count	8.1	9.9	18.0
	Somewhat strong	Count	21	19	40
		Expected Count	18.0	22.0	40.0
	Very strong	Count	16	26	42
		Expected Count	18.9	23.1	42.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.720[a]	2	.423
Likelihood Ratio	1.725	2	.422
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.10.

Q22(Communication outlets)* Q7 (Community to thrive)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
Do you want your community to thrive and be enjoyed by future generations?	Yes	Count	44	55	99
		Expected Count	44.6	54.5	99.0
	I don't care	Count	1	0	1
		Expected Count	.5	.6	1.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.235[a]	1	.267		
Continuity Correction[b]	.010	1	.920		
Likelihood Ratio	1.609	1	.205		
Fisher's Exact Test				.450	.450
N of Valid Cases	100				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .45.

b. Computed only for a 2x2 table

Q22(Communication outlets)* Q10(Rent or own)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
Do you rent or own your home?	Rent	Count	5	8	13
		Expected Count	5.9	7.2	13.0
	Own	Count	40	47	87
		Expected Count	39.2	47.9	87.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.258[a]	1	.611		
Continuity Correction[b]	.044	1	.834		
Likelihood Ratio	.261	1	.610		
Fisher's Exact Test				.768	.420
N of Valid Cases	100				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.85.

b. Computed only for a 2x2 table

Q35 (Income) * Q23 (Evacuation)

			In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?					
			I do not evacuate and seek shelter within the Estates of Fort Lauderdale	I seek shelter at a friend or family members home OUTSIDE of the Estates of Fort Lauderdale but in or near Broward County	I seek shelter at a friend or family members home outside of the Estates of Fort Lauderdale NOT in or near Broward County	I seek shelter at a hotel OR shelter outside of the Estates of Fort Lauderdale OR leave town	I haven't been here	Total
Income	25k and below	Count	11	15	9	7	0	42
		Expected Count	12.6	13.4	8.4	7.1	.4	42.0
	25k-50k	Count	7	8	6	4	1	26
		Expected Count	7.8	8.3	5.2	4.4	.3	26.0
	50k-75k	Count	8	6	5	2	0	21
		Expected Count	6.3	6.7	4.2	3.6	.2	21.0
	75k and above	Count	4	3	0	4	0	11
		Expected Count	3.3	3.5	2.2	1.9	.1	11.0
Total		Count	30	32	20	17	1	100
		Expected Count	30.0	32.0	20.0	17.0	1.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.764a	12	.637
Likelihood Ratio	11.292	12	.504
N of Valid Cases	100		

a. 11 cells (55.0%) have expected count less than 5. The minimum expected count is .11.

Q10 (Do you rent or own your home?) * Q23 (Evacuation)

			In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?					
			I do not evacuate and seek shelter within the Estates of Fort Lauderdale	I seek shelter at a friend or family members home OUTSIDE of the Estates of Fort Lauderdale but in or near Broward County	I seek shelter at a friend or family members home outside of the Estates of Fort Lauderdale NOT in or near Broward County	I seek shelter at a hotel OR shelter outside of the Estates of Fort Lauderdale OR leave town	I haven't been here	Total
Do you rent or own your home?	Rent	Count	4	3	6	0	0	13
		Expected Count	3.9	4.2	2.6	2.2	.1	13.0
	Own	Count	26	29	14	17	1	87
		Expected Count	26.1	27.8	17.4	14.8	.9	87.0
Total		Count	30	32	20	17	1	100
		Expected Count	30.0	32.0	20.0	17.0	1.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.260a	6	.220
Likelihood Ratio	9.453	6	.150
Linear-by-Linear Association	.129	1	.719
N of Valid Cases	100		

a. 9 cells (64.3%) have expected count less than 5. The minimum expected count is .13.

Q14(Flood damage) * Q23 (Evacuation)

			In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?					
			I do not evacuate and seek shelter within the Estates of Fort Lauderdale	I seek shelter at a friend or family members home OUTSIDE of the Estates of Fort Lauderdale but in or near Broward County	I seek shelter at a friend or family members home outside of the Estates of Fort Lauderdale NOT in or near Broward County	I seek shelter at a hotel OR shelter outside of the Estates of Fort Lauderdale OR leave town	I haven't been here	Total
Has your home been damaged from flooding within the past few years? And if so, how were the repairs financed?	No	Count	1	0	0	0	0	1
		Expected Count	.3	.3	.2	.2	.0	1.0
	Yes and financed	Count	28	32	20	17	1	98
		Expected Count	29.4	31.4	19.6	16.7	1.0	98.0
	Yes, unable to finance OR idk	Count	1	0	0	0	0	1
		Expected Count	.3	.3	.2	.2	.0	1.0
Total		Count	30	32	20	17	1	100
		Expected Count	30.0	32.0	20.0	17.0	1.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.762[a]	8	.783
Likelihood Ratio	4.912	8	.767

Q10 (Do you rent or own your home?) * Q24 (Transportation Methods)

			Number of Transportation Methods Used before and/or After Weather Event 0	1-2	3-5	Total
Do you rent or own your home?	Rent	Count	0	10	3	13
		Expected Count	1.2	10.4	1.4	13.0
	Own	Count	9	70	8	87
		Expected Count	7.8	69.6	9.6	87.0
Total		Count	9	80	11	100
		Expected Count	9.0	80.0	11.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.344a	2	.188
Likelihood Ratio	4.103	2	.129
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.17.

Q14 (Flood damage) * Q24 (Transportation Methods)

			Number of Transportation Methods Used before and/or After Weather Event			Total
			0	1-2	3-5	
Has your home been damaged from flooding within the past few years? And if so, how were the repairs financed?	No	Count	0	1	0	1
		Expected Count	.1	.8	.1	1.0
	Yes and financed	Count	9	78	11	98
		Expected Count	8.8	78.4	10.8	98.0
	Yes, unable to finance OR idk	Count	0	1	0	1
		Expected Count	.1	.8	.1	1.0
Total		Count	9	80	11	100
		Expected Count	9.0	80.0	11.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.510a	4	.973
Likelihood Ratio	.903	4	.924
N of Valid Cases	100		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .09.

Q35 (income/ Available Funds) * Q24 (Transportation Methods)

			Number of Transportation Methods Used before and/or After Weather Event			
			0	1-2	3-5	Total
Income/ Available Funds	25k and below	Count	4	30	8	42
		Expected Count	3.8	33.6	4.6	42.0
	25k-50k	Count	2	23	1	26
		Expected Count	2.3	20.8	2.9	26.0
	50k-75k	Count	2	19	0	21
		Expected Count	1.9	16.8	2.3	21.0
	75k and above	Count	1	8	2	11
		Expected Count	1.0	8.8	1.2	11.0
Total		Count	9	80	11	100
		Expected Count	9.0	80.0	11.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.556[a]	6	.272
Likelihood Ratio	9.741	6	.136
N of Valid Cases	100		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .99.

Q35 (Income/ Available Funds)* Q25 (Transportation Quality)

			How would you rate the quality of your transportation during and after weather events?			
			Poor	Average	Excellent	Total
Income/ Available Funds	25k and below	Count	1	17	24	42
		Expected Count	2.1	15.5	24.4	42.0
	25k-50k	Count	1	5	20	26
		Expected Count	1.3	9.6	15.1	26.0
	50k-75k	Count	2	8	11	21
		Expected Count	1.1	7.8	12.2	21.0
	75k and above	Count	1	7	3	11
		Expected Count	.6	4.1	6.4	11.0
Total		Count	5	37	58	100
		Expected Count	5.0	37.0	58.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.861a	6	.131
Likelihood Ratio	10.143	6	.119
N of Valid Cases	100		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .55.

Q14 (Flood Damage)* Q25 (Transportation Quality)

			How would you rate the quality of your transportation during and after weather events?			
			Poor	Average	Excellent	Total
Has your home been damaged from flooding within the past few years? And if so, how were the repairs financed?	No	Count	1	0	0	1
		Expected Count	.1	.4	.6	1.0
	Yes and financed	Count	4	37	57	98
		Expected Count	4.9	36.3	56.8	98.0
	Yes, unable to finance OR idk	Count	0	0	1	1
		Expected Count	.1	.4	.6	1.0
Total		Count	5	37	58	100
		Expected Count	5.0	37.0	58.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.905a	4	.001
Likelihood Ratio	7.273	4	.122
N of Valid Cases	100		

a. 7 cells (77.8%) have expected count less than 5. The minimum expected count is .05.

Q10 (Rent or Own)* Q25 (Transportation Quality)

			How would you rate the quality of your transportation during and after weather events?			
			Poor	Average	Excellent	Total
Do you rent or own your home?	Rent	Count	0	3	10	13
		Expected Count	.7	4.8	7.5	13.0
	Own	Count	5	34	48	87
		Expected Count	4.4	32.2	50.5	87.0
Total		Count	5	37	58	100
		Expected Count	5.0	37.0	58.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.453a	2	.293
Likelihood Ratio	3.129	2	.209
Linear-by-Linear Association	2.425	1	.119
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .65.

Q31 (Pets)* Q5 (Income/Available Funds)

			How many pets do you have in your home?				
			0	1	2-3	4+	Total
Income/ Available Funds	25k and below	Count	23	8	10	1	42
		Expected Count	21.8	10.1	8.8	1.3	42.0
	25k-50k	Count	18	3	4	1	26
		Expected Count	13.5	6.2	5.5	.8	26.0
	50k-75k	Count	7	9	4	1	21
		Expected Count	10.9	5.0	4.4	.6	21.0
	75k and above	Count	4	4	3	0	11
		Expected Count	5.7	2.6	2.3	.3	11.0
Total		Count	52	24	21	3	100
		Expected Count	52.0	24.0	21.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.850a	9	.286
Likelihood Ratio	11.034	9	.273
N of Valid Cases	100		

a. 7 cells (43.8%) have expected count less than 5. The minimum expected count is .33.

Q31 (Pets)* Q14 (Flood Damage)

			How many pets do you have in your home?				
			0	1	2-3	4+	Total
Has your home been damaged from flooding within the past few years? And if so, how were the repairs financed?	No	Count	0	0	0	1	1
		Expected Count	.5	.2	.2	.0	1.0
	Yes and financed	Count	51	24	21	2	98
		Expected Count	51.0	23.5	20.6	2.9	98.0
	Yes, unable to finance OR idk	Count	1	0	0	0	1
		Expected Count	.5	.2	.2	.0	1.0
Total		Count	52	24	21	3	100
		Expected Count	52.0	24.0	21.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	33.575[a]	6	.000
Likelihood Ratio	8.678	6	.193
N of Valid Cases	100		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .03.

Q31(Pets)*Q10 (Rent or Own)

			How many pets do you have in your home?				
			0	1	2-3	4+	Total
Do you rent or own your home?	Rent	Count	7	3	3	0	13
		Expected Count	6.8	3.1	2.7	.4	13.0
	Own	Count	45	21	18	3	87
		Expected Count	45.2	20.9	18.3	2.6	87.0
Total		Count	52	24	21	3	100
		Expected Count	52.0	24.0	21.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.494a	3	.920
Likelihood Ratio	.881	3	.830
Linear-by-Linear Association	.063	1	.803
N of Valid Cases	100		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .39.

Q32 (Age)* Q14 (Flood Damage)

			Has your home been damaged from flooding within the past few years? And if so, how were the repairs financed?			
			No	Yes and financed	Yes, unable to finance OR idk	Total
Age	18-49	Count	0	7	0	7
		Expected Count	.1	6.9	.1	7.0
	50-64	Count	1	32	1	34
		Expected Count	.3	33.3	.3	34.0
	65-79	Count	0	44	0	44
		Expected Count	.4	43.1	.4	44.0
	80 and older	Count	0	15	0	15
		Expected Count	.2	14.7	.2	15.0
Total		Count	1	98	1	100
		Expected Count	1.0	98.0	1.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.962a	6	.682
Likelihood Ratio	4.395	6	.623
N of Valid Cases	100		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .07.

Q32(Age)* Q35(Income/ Available Funds)

			Income/ Available Funds				Total
			25k and below	25k-50k	50k-75k	75k and above	
Age	18-49	Count	2	3	2	0	7
		Expected Count	2.9	1.8	1.5	.8	7.0
	50-64	Count	15	7	7	5	34
		Expected Count	14.3	8.8	7.1	3.7	34.0
	65-79	Count	16	13	10	5	44
		Expected Count	18.5	11.4	9.2	4.8	44.0
	80 and older	Count	9	3	2	1	15
		Expected Count	6.3	3.9	3.2	1.7	15.0
Total		Count	42	26	21	11	100
		Expected Count	42.0	26.0	21.0	11.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.527[a]	9	.786
Likelihood Ratio	6.170	9	.723
N of Valid Cases	100		

a. 9 cells (56.3%) have expected count less than 5. The minimum expected count is .77.

Q9(Recovery resources)* Q12(Floodplain)

			Is your home located within the 100-year floodplain? Yes	No	I don't know	Total
Number of recovery resources respondent knows is available after a weather event	0	Count	1	7	14	22
		Expected Count	2.9	6.6	12.5	22.0
	1-3	Count	5	12	20	37
		Expected Count	4.8	11.1	21.1	37.0
	4-11	Count	7	11	23	41
		Expected Count	5.3	12.3	23.4	41.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.207a	4	.698
Likelihood Ratio	2.566	4	.633
N of Valid Cases	100		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 2.86.

Q9(Recovery resources)* Q19(Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years? No	Yes	Total
Number of recovery resources respondent knows is available after a weather event	0	Count	16	6	22
		Expected Count	10.8	11.2	22.0
	1-3	Count	19	18	37
		Expected Count	18.1	18.9	37.0
	4-11	Count	14	27	41
		Expected Count	20.1	20.9	41.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.658a	2	.013
Likelihood Ratio	8.898	2	.012
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.78.

Q9(Recovery resources)* Q26(Skills)

			Number of skills that respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Number of recovery resources respondent knows is available after a weather event	0	Count	5	8	4	5	22
		Expected Count	3.5	5.9	6.8	5.7	22.0
	1-3	Count	7	10	14	6	37
		Expected Count	5.9	10.0	11.5	9.6	37.0
	4-11	Count	4	9	13	15	41
		Expected Count	6.6	11.1	12.7	10.7	41.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.870a	6	.248
Likelihood Ratio	8.091	6	.232
N of Valid Cases	100		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 3.52.

Q9 (Recovery resources)* Q36(Education)

			Number of recovery resources respondent knows is available after a weather event			
			0	1-3	4-11	Total
What is your highest level of education?	High School or less	Count	8	14	13	35
		Expected Count	7.7	13.0	14.4	35.0
	Some College	Count	7	20	18	45
		Expected Count	9.9	16.7	18.5	45.0
	Bachelor's degree or more	Count	7	3	10	20
		Expected Count	4.4	7.4	8.2	20.0
Total		Count	22	37	41	100
		Expected Count	22.0	37.0	41.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.306[a]	4	.177
Likelihood Ratio	6.869	4	.143
N of Valid Cases	100		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.40.

Q15(Safeguards)* Q12(Floodplain)

			Is your home located within the 100-year floodplain?			
			Yes	No	I don't know	Total
Number of safeguards used to protect respondents home during a weather event	0	Count	0	4	3	7
		Expected Count	.9	2.1	4.0	7.0
	1-3	Count	12	23	52	87
		Expected Count	11.3	26.1	49.6	87.0
	4-7	Count	1	3	2	6
		Expected Count	.8	1.8	3.4	6.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.854a	4	.303
Likelihood Ratio	5.400	4	.249
N of Valid Cases	100		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .78.

Q15(Safeguards)* Q19(Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
Number of safeguards used to protect respondents home during a weather event	0	Count	7	0	7
		Expected Count	3.4	3.6	7.0
	1-3	Count	39	48	87
		Expected Count	42.6	44.4	87.0
	4-7	Count	3	3	6
		Expected Count	2.9	3.1	6.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.894[a]	2	.019
Likelihood Ratio	10.597	2	.005
N of Valid Cases	100		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is 2.94.

Q15 (Safeguards)* Q36 (Education)

			Number of safeguards used to protect respondents home during a weather event			
			0	1-3	4-7	Total
What is your highest level of education?	High School or less	Count	5	29	1	35
		Expected Count	2.4	30.5	2.1	35.0
	Some College	Count	2	39	4	45
		Expected Count	3.2	39.2	2.7	45.0
	Bachelor's degree or more	Count	0	19	1	20
		Expected Count	1.4	17.4	1.2	20.0
Total		Count	7	87	6	100
		Expected Count	7.0	87.0	6.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.926[a]	4	.205
Likelihood Ratio	6.826	4	.145
N of Valid Cases	100		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is 1.20.

Q17(Yard)* Q12(Floodplain)

			Is your home located within the 100-year floodplain?			
			Yes	No	I don't know	Total
Which best describes your yard?	All pavement	Count	0	2	3	5
		Expected Count	.7	1.5	2.9	5.0
	Mostly pavement	Count	1	6	6	13
		Expected Count	1.7	3.9	7.4	13.0
	Equal parts pavement and grass/vegetation	Count	7	17	34	58
		Expected Count	7.5	17.4	33.1	58.0
	Mostly grass/ vegetation	Count	4	5	11	20
		Expected Count	2.6	6.0	11.4	20.0
	All grass/ vegetation	Count	1	0	3	4
		Expected Count	.5	1.2	2.3	4.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.385a	8	.716
Likelihood Ratio	6.913	8	.546
Linear-by-Linear Association	.138	1	.711
N of Valid Cases	100		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .52.

Q17(Yard)* Q19(Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
Which best describes your yard?	All pavement	Count	4	1	5
		Expected Count	2.5	2.6	5.0
	Mostly pavement	Count	9	4	13
		Expected Count	6.4	6.6	13.0
	Equal parts pavement and grass/vegetation	Count	26	32	58
		Expected Count	28.4	29.6	58.0
	Mostly grass/ vegetation	Count	9	11	20
		Expected Count	9.8	10.2	20.0
	All grass/ vegetation	Count	1	3	4
		Expected Count	2.0	2.0	4.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.506a	4	.239
Likelihood Ratio	5.730	4	.220
N of Valid Cases	100		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 1.96.

Q17(Yard)* Q21(Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Which best describes your yard?	All pavement	Count	2	2	1	5
		Expected Count	.4	2.7	1.9	5.0
	Mostly pavement	Count	2	9	2	13
		Expected Count	1.0	7.0	4.9	13.0
	Equal parts pavement and grass/vegetation	Count	3	31	24	58
		Expected Count	4.6	31.3	22.0	58.0
	Mostly grass/ vegetation	Count	1	11	8	20
		Expected Count	1.6	10.8	7.6	20.0
	All grass/ vegetation	Count	0	1	3	4
		Expected Count	.3	2.2	1.5	4.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.593[a]	8	.093
Likelihood Ratio	11.084	8	.197
N of Valid Cases	100		

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is .32.

Q17(Yard)* Q26(Skills)

			Number of skills that respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Which best describes your yard?	All pavement	Count	2	2	1	0	5
		Expected Count	.8	1.4	1.6	1.3	5.0
	Mostly pavement	Count	3	5	3	2	13
		Expected Count	2.1	3.5	4.0	3.4	13.0
	Equal parts pavement and grass/vegetation	Count	8	15	17	18	58
		Expected Count	9.3	15.7	18.0	15.1	58.0
	Mostly grass/ vegetation	Count	3	3	9	5	20
		Expected Count	3.2	5.4	6.2	5.2	20.0
	All grass/ vegetation	Count	0	2	1	1	4
		Expected Count	.6	1.1	1.2	1.0	4.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.120a	12	.605
Likelihood Ratio	11.385	12	.496
N of Valid Cases	100		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .64.

Q17(Yard)* Q36(Education)

			Which best describes your yard?					
			All pavement	Mostly pavement	Equal parts pavement and grass/veg-etation	Mostly grass/ vegetat-ion	All grass/ vegetati-on	Total
What is your highest level of education?	High School or less	Count	4	4	17	8	2	35
		Expected Count	1.8	4.6	20.3	7.0	1.4	35.0
	Some College	Count	1	7	28	9	0	45
		Expected Count	2.3	5.9	26.1	9.0	1.8	45.0
	Bachelor's degree or more	Count	0	2	13	3	2	20
		Expected Count	1.0	2.6	11.6	4.0	.8	20.0
Total		Count	5	13	58	20	4	100
		Expected Count	5.0	13.0	58.0	20.0	4.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.112a	8	.257
Likelihood Ratio	11.792	8	.161
N of Valid Cases	100		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .80.

Q16(Seawall)* Q12(Floodplain)

			Do you have a seawall on your property? If so, are you required by local building codes to maintain it?				
			Yes, and I am required to maintain it	Yes, but I am not required to maintain it	No	I don’t know	Total
Is your home located within the 100-year floodplain?	Yes	Count	0	5	8	0	13
		Expected Count	1.4	1.7	9.5	.4	13.0
	No	Count	3	1	24	2	30
		Expected Count	3.3	3.9	21.9	.9	30.0
	I don't know	Count	8	7	41	1	57
		Expected Count	6.3	7.4	41.6	1.7	57.0
Total		Count	11	13	73	3	100
		Expected Count	11.0	13.0	73.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.070a	6	.042
Likelihood Ratio	13.228	6	.040
Linear-by-Linear Association	.335	1	.563
N of Valid Cases	100		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .39.

Q16(Seawall)* Q19(Weather maps)

			Do you have a seawall on your property? If so, are you required by local building codes to maintain it?				Total
			Yes, and I am required to maintain it	Yes, but I am not required to maintain it	No	I don't know	
Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?	No	Count	8	7	32	2	49
		Expected Count	5.4	6.4	35.8	1.5	49.0
	Yes	Count	3	6	41	1	51
		Expected Count	5.6	6.6	37.2	1.5	51.0
Total		Count	11	13	73	3	100
		Expected Count	11.0	13.0	73.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.754a	3	.289
Likelihood Ratio	3.847	3	.278
N of Valid Cases	100		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.47.

Q16(Safeguards)* Q21(Experiences)

			Do you have a seawall on your property? If so, are you required by local building codes to maintain it?				
			Yes, and I am required to maintain it	Yes, but I am not required to maintain it	No	I don't know	Total
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	2	0	4	2	8
		Expected Count	.9	1.0	5.8	.2	8.0
	1-3	Count	5	7	41	1	54
		Expected Count	5.9	7.0	39.4	1.6	54.0
	4+	Count	4	6	28	0	38
		Expected Count	4.2	4.9	27.7	1.1	38.0
Total		Count	11	13	73	3	100
		Expected Count	11.0	13.0	73.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.779[a]	6	.007
Likelihood Ratio	11.736	6	.068
N of Valid Cases	100		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .24.

Q16(Seawall)* Q26(Skills)

			Do you have a seawall on your property? If so, are you required by local building codes to maintain it?				
			Yes, and I am required to maintain it	Yes, but I am not required to maintain it	No	I don't know	Total
Number of skills that respondents have gained through jobs or experiences	0	Count	2	1	12	1	16
		Expected Count	1.8	2.1	11.7	.5	16.0
	1-3	Count	5	2	20	0	27
		Expected Count	3.0	3.5	19.7	.8	27.0
	4-7	Count	1	4	24	2	31
		Expected Count	3.4	4.0	22.6	.9	31.0
	8-17	Count	3	6	17	0	26
		Expected Count	2.9	3.4	19.0	.8	26.0
Total		Count	11	13	73	3	100
		Expected Count	11.0	13.0	73.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.059a	9	.346
Likelihood Ratio	11.505	9	.243
N of Valid Cases	100		

a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is .48.

Q16(Seawall)* Q36(Education)

			Do you have a seawall on your property? If so, are you required by local building codes to maintain it?				
			Yes, and I am required to maintain it	Yes, but I am not required to maintain it	No	I don't know	Total
What is your highest level of education?	High School or less	Count	4	3	28	0	35
		Expected Count	3.9	4.6	25.5	1.0	35.0
	Some College	Count	6	7	31	1	45
		Expected Count	5.0	5.9	32.9	1.4	45.0
	Bachelor's or more	Count	1	3	14	2	20
		Expected Count	2.2	2.6	14.6	.6	20.0
Total		Count	11	13	73	3	100
		Expected Count	11.0	13.0	73.0	3.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.470a	6	.373
Likelihood Ratio	6.484	6	.371
N of Valid Cases	100		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .60.

Q11(Home updates)* Q12(Floodplain)

			Was your home built after 1994? And has its anchoring system been updated since 1999?				
			Yes and anchoring's been updated	Yes but anchoring has not been updated	No but anchoring's been updated	No and anchoring has not been updated	Total
Is your home located within the 100-year floodplain?	Yes	Count	2	1	1	9	13
		Expected Count	2.9	.9	3.0	6.2	13.0
	No	Count	4	5	8	13	30
		Expected Count	6.6	2.1	6.9	14.4	30.0
	I don't know	Count	16	1	14	26	57
		Expected Count	12.5	4.0	13.1	27.4	57.0
Total		Count	22	7	23	48	100
		Expected Count	22.0	7.0	23.0	48.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.477a	6	.075
Likelihood Ratio	11.754	6	.068
Linear-by-Linear Association	1.282	1	.258
N of Valid Cases	100		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .91.

Q11(House updates)* Q19(Weather maps)

			Was your home built after 1994? And has its anchoring system been updated since 1999?				
			Yes and anchoring's been updated	Yes but anchoring has not been updated	No but anchoring's been updated	No and anchoring has not been updated	Total
Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?	No	Count	7	4	13	25	49
		Expected Count	10.8	3.4	11.3	23.5	49.0
	Yes	Count	15	3	10	23	51
		Expected Count	11.2	3.6	11.7	24.5	51.0
Total		Count	22	7	23	48	100
		Expected Count	22.0	7.0	23.0	48.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.488[a]	3	.322
Likelihood Ratio	3.556	3	.314
N of Valid Cases	100		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 3.43.

Q11(Home updates)* Q21(Experiences)

			Was your home built after 1994? And has its anchoring system been updated since 1999?				
			Yes and anchoring's been updated	Yes but anchoring has not been updated	No but anchoring's been updated	No and anchoring has not been updated	Total
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	2	3	3	0	8
		Expected Count	1.8	.6	1.8	3.8	8.0
	1-3	Count	13	1	16	24	54
		Expected Count	11.9	3.8	12.4	25.9	54.0
	4+	Count	7	3	4	24	38
		Expected Count	8.4	2.7	8.7	18.2	38.0
Total		Count	22	7	23	48	100
		Expected Count	22.0	7.0	23.0	48.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	23.214[a]	6	.001
Likelihood Ratio	22.765	6	.001
N of Valid Cases	100		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .56.

Q11(House updates)* Q26(Skills)

			Was your home built after 1994? And has its anchoring system been updated since 1999?				Total
			Yes and anchoring's been updated	Yes but anchoring has not been updated	No but anchoring's been updated	No and anchoring has not been updated	
Number of skills that respondents have gained through jobs or experiences	0	Count	3	1	7	5	16
		Expected Count	3.5	1.1	3.7	7.7	16.0
	1-3	Count	4	2	8	13	27
		Expected Count	5.9	1.9	6.2	13.0	27.0
	4-7	Count	9	3	3	16	31
		Expected Count	6.8	2.2	7.1	14.9	31.0
	8-17	Count	6	1	5	14	26
		Expected Count	5.7	1.8	6.0	12.5	26.0
Total		Count	22	7	23	48	100
		Expected Count	22.0	7.0	23.0	48.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.396[a]	9	.402
Likelihood Ratio	9.588	9	.385
N of Valid Cases	100		

a. 6 cells (37.5%) have expected count less than 5. The minimum expected count is 1.12.

Q11(House updates)* Q36(Education)

			Was your home built after 1994? And has its anchoring system been updated since 1999?				
			Yes and anchoring's been updated	Yes but anchoring has not been updated	No but anchoring's been updated	No and anchoring has not been updated	Total
What is your highest level of education?	High School or less	Count	9	3	7	16	35
		Expected Count	7.7	2.4	8.0	16.8	35.0
	Some College	Count	11	2	11	21	45
		Expected Count	9.9	3.2	10.4	21.6	45.0
	Bachelor's degree or more	Count	2	2	5	11	20
		Expected Count	4.4	1.4	4.6	9.6	20.0
Total		Count	22	7	23	48	100
		Expected Count	22.0	7.0	23.0	48.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.923[a]	6	.818
Likelihood Ratio	3.265	6	.775
N of Valid Cases	100		

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is 1.40.

Q18(Back up energy modes)* Q12(Floodplain)

			Number of backup energy modes used by respondents after a storm			
			0	1-3	4-10	Total
Is your home located within the 100-year floodplain?	Yes	Count	0	11	2	13
		Expected Count	2.2	9.2	1.6	13.0
	No	Count	4	22	4	30
		Expected Count	5.1	21.3	3.6	30.0
	I don't know	Count	13	38	6	57
		Expected Count	9.7	40.5	6.8	57.0
Total		Count	17	71	12	100
		Expected Count	17.0	71.0	12.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.363a	4	.359
Likelihood Ratio	6.457	4	.167
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.56.

Q18(Back up energy modes)* Q19(Weather maps)

			Number of backup energy modes used by respondents after a storm			
			0	1-3	4-10	Total
Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?	No	Count	9	39	1	49
		Expected Count	8.3	34.8	5.9	49.0
	Yes	Count	8	32	11	51
		Expected Count	8.7	36.2	6.1	51.0
Total		Count	17	71	12	100
		Expected Count	17.0	71.0	12.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.046a	2	.011
Likelihood Ratio	10.462	2	.005
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.88.

Q18(Back up energy modes)* Q21(Experiences)

			Number of backup energy modes used by respondents after a storm			Total
			0	1-3	4-10	
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	2	6	0	8
		Expected Count	1.4	5.7	1.0	8.0
	1-3	Count	13	36	5	54
		Expected Count	9.2	38.3	6.5	54.0
	4+	Count	2	29	7	38
		Expected Count	6.5	27.0	4.6	38.0
Total		Count	17	71	12	100
		Expected Count	17.0	71.0	12.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.886a	4	.096
Likelihood Ratio	9.617	4	.047
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .96.

Q18 (Backup energy modes) * Q36 (Education)

			Number of backup energy modes used by respondents after a storm			
			0	1-3	4-10	Total
What is your highest level of education?	High School or Less	Count	11	18	6	35
		Expected Count	5.9	24.8	4.2	35.0
	Some College	Count	3	37	5	45
		Expected Count	7.7	32.0	5.4	45.0
	Bachelors or More	Count	3	16	1	20
		Expected Count	3.4	14.2	2.4	20.0
Total		Count	17	71	12	100
		Expected Count	17.0	71.0	12.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.692a	4	.020
Likelihood Ratio	11.980	4	.018
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 2.40.

Q20 (Media outlets) * Q23 (Evacuation)

			In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?					
			I do not evacuate and seek shelter within the Estates of Fort Lauderdale	I seek shelter at a friend or family members home OUTSIDE of the Estates of Fort Lauderdale but in or near Broward County	I seek shelter at a friend or family members home outside of the Estates of Fort Lauderdale NOT in or near Broward County	I seek shelter at a hotel OR shelter outside of the Estates of Fort Lauderdale OR leave town	I haven't been here	Total
Number of media outlets used by respondents to stay informed about weather events	0	Count	0	0	0	1	0	1
		Expected Count	.3	.3	.2	.2	.0	1.0
	1-3	Count	17	9	13	9	1	49
		Expected Count	14.7	15.7	9.8	8.3	.5	49.0
	4+	Count	13	23	7	7	0	50
		Expected Count	15.0	16.0	10.0	8.5	.5	50.0
Total		Count	30	32	20	17	1	100
		Expected Count	30.0	32.0	20.0	17.0	1.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.712a	8	.065
Likelihood Ratio	13.921	8	.084
N of Valid Cases	100		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is .01.

Q20 (Media Outlets) * Q24 (Transportation Methods)

			Number of Transportation Methods Used before and/or After Weather Event			
			0	1-2	3-5	Total
Number of media outlets used by respondents to stay informed about weather events	0	Count	0	1	0	1
		Expected Count	.1	.8	.1	1.0
	1-3	Count	8	36	5	49
		Expected Count	4.4	39.2	5.4	49.0
	4+	Count	1	43	6	50
		Expected Count	4.5	40.0	5.5	50.0
Total		Count	9	80	11	100
		Expected Count	9.0	80.0	11.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.455a	4	.168
Likelihood Ratio	7.348	4	.119
N of Valid Cases	100		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .09.

Q20 (Media outlets)* Q25(Transportation quality)

			How would you rate the quality of your transportation during and after weather events?			
			Poor	Average	Excellent	Total
Number of media outlets used by respondents to stay informed about weather events	0	Count	0	0	1	1
		Expected Count	.1	.4	.6	1.0
	1-3	Count	4	16	29	49
		Expected Count	2.5	18.1	28.4	49.0
	4+	Count	1	21	28	50
		Expected Count	2.5	18.5	29.0	50.0
Total		Count	5	37	58	100
		Expected Count	5.0	37.0	58.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.239a	4	.519
Likelihood Ratio	3.709	4	.447
N of Valid Cases	100		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .05.

Q20(Media outlets)* Q31(Pets)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
How many pets do you have in your home?	0	Count	1	30	21	52
		Expected Count	.5	25.5	26.0	52.0
	1	Count	0	11	13	24
		Expected Count	.2	11.8	12.0	24.0
	2-3	Count	0	6	15	21
		Expected Count	.2	10.3	10.5	21.0
	4+	Count	0	2	1	3
		Expected Count	.0	1.5	1.5	3.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.894a	6	.331
Likelihood Ratio	7.395	6	.286
N of Valid Cases	100		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .03.

Q20(Media outlets)* Q32(Age)

			Number of media outlets used by respondents to stay informed about weather events			
			0	1-3	4+	Total
Age	18-49	Count	0	6	1	7
		Expected Count	.1	3.4	3.5	7.0
	50-64	Count	1	16	17	34
		Expected Count	.3	16.7	17.0	34.0
	65-79	Count	0	21	23	44
		Expected Count	.4	21.6	22.0	44.0
	80 and o	Count	0	6	9	15
		Expected Count	.2	7.4	7.5	15.0
Total		Count	1	49	50	100
		Expected Count	1.0	49.0	50.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.287[a]	6	.392
Likelihood Ratio	6.855	6	.334
N of Valid Cases	100		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .07.

Q21(Experiences)* Q25(Transportation quality)

			How would you rate the quality of your transportation during and after weather events?			
			Poor	Average	Excellent	Total
Number of experiences that have helped respondents prepare for, and respond to, weather events	0	Count	2	1	5	8
		Expected Count	.4	3.0	4.6	8.0
	1-3	Count	2	21	31	54
		Expected Count	2.7	20.0	31.3	54.0
	4+	Count	1	15	22	38
		Expected Count	1.9	14.1	22.0	38.0
Total		Count	5	37	58	100
		Expected Count	5.0	37.0	58.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.452a	4	.076
Likelihood Ratio	5.847	4	.211
N of Valid Cases	100		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .40.

Q21(Experiences)* Q31(Pets)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
How many pets do you have in your home?	0	Count	6	26	20	52
		Expected Count	4.2	28.1	19.8	52.0
	1	Count	2	14	8	24
		Expected Count	1.9	13.0	9.1	24.0
	2-3	Count	0	11	10	21
		Expected Count	1.7	11.3	8.0	21.0
	4+	Count	0	3	0	3
		Expected Count	.2	1.6	1.1	3.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.952a	6	.429
Likelihood Ratio	8.644	6	.195
N of Valid Cases	100		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .24.

Q21(Experiences)* Q32(Age)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Age	18-49	Count	0	5	2	7
		Expected Count	.6	3.8	2.7	7.0
	50-64	Count	3	18	13	34
		Expected Count	2.7	18.4	12.9	34.0
	65-79	Count	4	24	16	44
		Expected Count	3.5	23.8	16.7	44.0
	80 and older	Count	1	7	7	15
		Expected Count	1.2	8.1	5.7	15.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.732a	6	.943
Likelihood Ratio	2.257	6	.895
N of Valid Cases	100		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .56.

Q22 (Communication outlets)* Q23 (Evacuation)

			In the event of a hurricane (category 1 or greater) where do you evacuate to, if at all?					
			I do not evacuate and seek shelter within the Estates of Fort Lauderdale	I seek shelter at a friend or family members home OUTSIDE of the Estates of Fort Lauderdale but in or near Broward County	I seek shelter at a friend or family members home outside of the Estates of Fort Lauderdale NOT in or near Broward County	I seek shelter at a hotel OR shelter outside of the Estates of Fort Lauderdale OR leave town	I haven't been here	Total
Communication outlets used by respondents to communicate during and/ or after weather events	1-3	Count	17	10	9	9	0	45
		Expected Count	13.5	14.4	9.0	7.7	.5	45.0
	4+	Count	13	22	11	8	1	55
		Expected Count	16.5	17.6	11.0	9.4	.6	55.0
Total		Count	30	32	20	17	1	100
		Expected Count	30.0	32.0	20.0	17.0	1.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.346[a]	4	.254
Likelihood Ratio	5.791	4	.215
N of Valid Cases	100		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .45.

Q22 (Communication Outlets) * Q24 (Transportation Methods)

			Number of Transportation Methods Used before and/or After Weather Event			
			0	1-2	3-5	Total
Number of Communication outlets used by respondents to communicate during and/ or after weather events	1-3	Count	4	39	2	45
		Expected Count	4.1	36.0	5.0	45.0
	4+	Count	5	41	9	55
		Expected Count	5.0	44.0	6.1	55.0
Total		Count	9	80	11	100
		Expected Count	9.0	80.0	11.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.652[a]	2	.161
Likelihood Ratio	3.978	2	.137
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 4.05.

Q22(Communication outlets)* Q25(Transportation quality)

			How would you rate the quality of your transportation during and after weather events?			
			Poor	Average	Excellent	Total
Communication outlets used by respondents to communicate during and/ or after weather events	1-3	Count	2	17	26	45
		Expected Count	2.3	16.7	26.1	45.0
	4+	Count	3	20	32	55
		Expected Count	2.8	20.4	31.9	55.0
Total		Count	5	37	58	100
		Expected Count	5.0	37.0	58.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.065a	2	.968
Likelihood Ratio	.065	2	.968
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.25.

Q22(Communication outlets)* Q31(Pets)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
How many pets do you have in your home?	0	Count	28	24	52
		Expected Count	23.4	28.6	52.0
	1	Count	9	15	24
		Expected Count	10.8	13.2	24.0
	2-3	Count	6	15	21
		Expected Count	9.5	11.5	21.0
	4+	Count	2	1	3
		Expected Count	1.3	1.7	3.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.049[a]	3	.168
Likelihood Ratio	5.147	3	.161
N of Valid Cases	100		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.35.

Q22(Communication outlets)* Q32(Age)

			Communication outlets used by respondents to communicate during and/ or after weather events		
			1-3	4+	Total
Age	18-49	Count	1	6	7
		Expected Count	3.2	3.9	7.0
	50-64	Count	15	19	34
		Expected Count	15.3	18.7	34.0
	65-79	Count	23	21	44
		Expected Count	19.8	24.2	44.0
	80 and older	Count	6	9	15
		Expected Count	6.8	8.3	15.0
Total		Count	45	55	100
		Expected Count	45.0	55.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.771[a]	3	.287
Likelihood Ratio	4.127	3	.248
N of Valid Cases	100		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 3.15.

Q2 P1 (Time lived in EOF)* Q12 (Floodplain)

			Is your home located within the 100-year floodplain?			
			Yes	No	I don't know	Total
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	0	2	0	2
		Expected Count	.3	.6	1.1	2.0
	1-5 Years	Count	2	8	19	29
		Expected Count	3.8	8.7	16.5	29.0
	6-10 Years	Count	2	4	11	17
		Expected Count	2.2	5.1	9.7	17.0
	11-25 Years	Count	6	10	22	38
		Expected Count	4.9	11.4	21.7	38.0
	25+ Years	Count	3	6	5	14
		Expected Count	1.8	4.2	8.0	14.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.411a	8	.309
Likelihood Ratio	9.678	8	.288
Linear-by-Linear Association	2.160	1	.142
N of Valid Cases	100		

a. 8 cells (53.3%) have expected count less than 5. The minimum expected count is .26.

Q2 P1 (Time lived in EOF)* Q19 (Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	0	2	2
		Expected Count	1.0	1.0	2.0
	1-5 Years	Count	15	14	29
		Expected Count	14.2	14.8	29.0
	6-10 Years	Count	6	11	17
		Expected Count	8.3	8.7	17.0
	11-25 Years	Count	19	19	38
		Expected Count	18.6	19.4	38.0
	25+ Years	Count	9	5	14
		Expected Count	6.9	7.1	14.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.610a	4	.330
Likelihood Ratio	5.419	4	.247
N of Valid Cases	100		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .98.

Q2 P1 (Time Lived in EOF)* Q21(Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	0	2	0	2
		Expected Count	.2	1.1	.8	2.0
	1-5 Years	Count	2	19	8	29
		Expected Count	2.3	15.7	11.0	29.0
	6-10 Years	Count	1	8	8	17
		Expected Count	1.4	9.2	6.5	17.0
	11-25 Years	Count	3	19	16	38
		Expected Count	3.0	20.5	14.4	38.0
	25+ Years	Count	2	6	6	14
		Expected Count	1.1	7.6	5.3	14.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.284a	8	.727
Likelihood Ratio	5.966	8	.651
N of Valid Cases	100		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is .16.

Q2 P1 (Time lived in EOF)* Q26 (Skills)

			Number of skills that respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	0	1	0	1	2
		Expected Count	.3	.5	.6	.5	2.0
	1-5 Years	Count	3	7	9	10	29
		Expected Count	4.6	7.8	9.0	7.5	29.0
	6-10 Years	Count	2	3	9	3	17
		Expected Count	2.7	4.6	5.3	4.4	17.0
	11-25 Years	Count	7	11	10	10	38
		Expected Count	6.1	10.3	11.8	9.9	38.0
	25+ Years	Count	4	5	3	2	14
		Expected Count	2.2	3.8	4.3	3.6	14.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.475a	12	.574
Likelihood Ratio	10.844	12	.542
N of Valid Cases	100		

a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is .32.

Q2 P1 (Time lived in EOF)* Q36 (Education)

			What is your highest level of education?			
			High School or less	Some College	Bachelors or more	Total
How long have you lived in the Estates of Fort Lauderdale?	Less than 1 year	Count	1	1	0	2
		Expected Count	.7	.9	.4	2.0
	1-5 Years	Count	9	13	7	29
		Expected Count	10.1	13.1	5.8	29.0
	6-10 Years	Count	5	9	3	17
		Expected Count	6.0	7.7	3.4	17.0
	11-25 Years	Count	14	16	8	38
		Expected Count	13.3	17.1	7.6	38.0
	25+ Years	Count	6	6	2	14
		Expected Count	4.9	6.3	2.8	14.0
Total		Count	35	45	20	100
		Expected Count	35.0	45.0	20.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.974a	8	.982
Likelihood Ratio	2.355	8	.968
N of Valid Cases	100		

a. 6 cells (40.0%) have expected count less than 5. The minimum expected count is .40.

Q2 P2 (Seasonal resident)* Q12(Floodplain)

			Is your home located within the 100-year floodplain?			Total
			Yes	No	I don't know	
Are you a seasonal resident?	Yes	Count	2	5	4	11
		Expected Count	1.4	3.3	6.3	11.0
	No	Count	11	25	53	89
		Expected Count	11.6	26.7	50.7	89.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.163a	2	.339
Likelihood Ratio	2.140	2	.343
Linear-by-Linear Association	1.611	1	.204
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.43.

Q2 P2 (Seasonal resident)* Q19 (Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
Are you a seasonal resident?	Yes	Count	7	4	11
		Expected Count	5.4	5.6	11.0
	No	Count	42	47	89
		Expected Count	43.6	45.4	89.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.060a	1	.303		
Continuity Correctionb	.504	1	.478		
Likelihood Ratio	1.070	1	.301		
Fisher's Exact Test				.352	.240
N of Valid Cases	100				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.39.

b. Computed only for a 2x2 table

Q2 P2(Seasonal resident)* Q26(Skills)

			Number of Skills respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Are you a seasonal resident?	Yes	Count	2	3	3	3	11
		Expected Count	1.8	3.0	3.4	2.9	11.0
	No	Count	14	24	28	23	89
		Expected Count	14.2	24.0	27.6	23.1	89.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.100[a]	3	.992
Likelihood Ratio	.101	3	.992
N of Valid Cases	100		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 1.76.

Q2 P2 (Seasonal resident)* Q36 (Education)

			What is your highest level of education? High School or less	Some College	Bachelor's or more	Total
Are you a seasonal resident?	Yes	Count	4	3	4	11
		Expected Count	3.9	5.0	2.2	11.0
	No	Count	31	42	16	89
		Expected Count	31.2	40.1	17.8	89.0
Total		Count	35	45	20	100
		Expected Count	35.0	45.0	20.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.524[a]	2	.283
Likelihood Ratio	2.366	2	.306
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 2.20.

Q3 (Awareness of social events)* Q12 (Floodplain)

			Is your home located within the 100-year floodplain?			
			Yes	No	I don't know	Total
Are you aware of social events in the Estates of Fort Lauderdale?	Yes	Count	13	29	53	95
		Expected Count	12.4	28.5	54.2	95.0
	No	Count	0	1	4	5
		Expected Count	.7	1.5	2.9	5.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.348a	2	.510
Likelihood Ratio	1.968	2	.374
Linear-by-Linear Association	1.333	1	.248
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .65.

Q3 (Awareness of social events)* Q19(Weather events)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
Are you aware of social events in the Estates of Fort Lauderdale?	Yes	Count	44	51	95
		Expected Count	46.6	48.4	95.0
	No	Count	5	0	5
		Expected Count	2.5	2.6	5.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.478[a]	1	.019		
Continuity Correction[b]	3.540	1	.060		
Likelihood Ratio	7.408	1	.006		
Fisher's Exact Test				.025	.025
N of Valid Cases	100				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.45.

b. Computed only for a 2x2 table

Q3 (Awareness of social events)* Q21 (Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Are you aware of social events in the Estates of Fort Lauderdale?	Yes	Count	7	50	38	95
		Expected Count	7.6	51.3	36.1	95.0
	No	Count	1	4	0	5
		Expected Count	.4	2.7	1.9	5.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.606[a]	2	.165
Likelihood Ratio	5.157	2	.076
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .40.

Q3 (Awareness of social events)* Q26 (Skills)

			Number of skills that respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Are you aware of social events in the Estates of Fort Lauderdale?	Yes	Count	14	25	31	25	95
		Expected Count	15.2	25.7	29.5	24.7	95.0
	No	Count	2	2	0	1	5
		Expected Count	.8	1.4	1.6	1.3	5.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.929[a]	3	.269
Likelihood Ratio	4.910	3	.178
N of Valid Cases	100		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .80.

Q3 (Awareness of social events)* Q36 (Education)

			Are you aware of social events in the Estates of Fort Lauderdale?		
			Yes	No	Total
What is your highest level of education?	High School or less	Count	32	3	35
		Expected Count	33.3	1.8	35.0
	Some College	Count	44	1	45
		Expected Count	42.8	2.3	45.0
	Bachelor's Degree or more	Count	19	1	20
		Expected Count	19.0	1.0	20.0
Total		Count	95	5	100
		Expected Count	95.0	5.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.671[a]	2	.434
Likelihood Ratio	1.696	2	.428
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.00.

Q4 (Social events)* Q12(Floodplain)

			Is your home located within the 100-year floodplain?			
			Yes	No	I don't know	Total
Do you attend these social events?	Yes	Count	8	15	15	38
		Expected Count	4.9	11.4	21.7	38.0
	No	Count	0	4	12	16
		Expected Count	2.1	4.8	9.1	16.0
	Sometimes	Count	5	11	30	46
		Expected Count	6.0	13.8	26.2	46.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.477[a]	4	.050
Likelihood Ratio	11.353	4	.023
Linear-by-Linear Association	3.199	1	.074
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 2.08.

Q4 (Social events)* Q19 (Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
Do you attend these social events?	Yes	Count	24	14	38
		Expected Count	18.6	19.4	38.0
	No	Count	9	7	16
		Expected Count	7.8	8.2	16.0
	Sometimes	Count	16	30	46
		Expected Count	22.5	23.5	46.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.105[a]	2	.029
Likelihood Ratio	7.203	2	.027
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.84.

Q4 (Social events)* Q21 (Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Do you attend these social events?	Yes	Count	5	9	24	38
		Expected Count	3.0	20.5	14.4	38.0
	No	Count	0	16	0	16
		Expected Count	1.3	8.6	6.1	16.0
	Sometimes	Count	3	29	14	46
		Expected Count	3.7	24.8	17.5	46.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.205[a]	4	.000
Likelihood Ratio	35.784	4	.000
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.28.

Q4 (Social events)* Q26 (Skills)

			Number of skills that respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Do you attend these social events?	Yes	Count	6	9	14	9	38
		Expected Count	6.1	10.3	11.8	9.9	38.0
	No	Count	3	5	5	3	16
		Expected Count	2.6	4.3	5.0	4.2	16.0
	Sometimes	Count	7	13	12	14	46
		Expected Count	7.4	12.4	14.3	12.0	46.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.910[a]	6	.928
Likelihood Ratio	1.923	6	.927
N of Valid Cases	100		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 2.56.

Q4 (Social events) * Q36(Education)

			Do you attend these social events?			
			Yes	No	Sometimes	Total
What is your highest level of education?	High School or less	Count	15	4	16	35
		Expected Count	13.3	5.6	16.1	35.0
	Some College	Count	18	7	20	45
		Expected Count	17.1	7.2	20.7	45.0
	Bachelors or more	Count	5	5	10	20
		Expected Count	7.6	3.2	9.2	20.0
Total		Count	38	16	46	100
		Expected Count	38.0	16.0	46.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.723[a]	4	.605
Likelihood Ratio	2.737	4	.603
N of Valid Cases	100		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 3.20.

Q5 (In person interactions)* Q12(Floodplain)

			Is your home located within the 100-year floodplain?			
			Yes	No	I don't know	Total
Number of in-person interactions, if any, that respondents have engaged in within the past few months	0	Count	1	4	12	17
		Expected Count	2.2	5.1	9.7	17.0
	1-2	Count	4	10	29	43
		Expected Count	5.6	12.9	24.5	43.0
	3-4	Count	8	16	16	40
		Expected Count	5.2	12.0	22.8	40.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.246[a]	4	.083
Likelihood Ratio	8.353	4	.079
N of Valid Cases	100		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 2.21.

Q5 (In person interactions)* Q19 (Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
Number of in-person interactions, if any, that respondents have engaged in within the past few months	0	Count	10	7	17
		Expected Count	8.3	8.7	17.0
	1-2	Count	14	29	43
		Expected Count	21.1	21.9	43.0
	3-4	Count	25	15	40
		Expected Count	19.6	20.4	40.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.225[a]	2	.016
Likelihood Ratio	8.363	2	.015
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.33.

Q5 (In person interactions)* Q21(Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Number of in-person interactions, if any, that respondents have engaged in within the past few months	0	Count	2	14	1	17
		Expected Count	1.4	9.2	6.5	17.0
	1-2	Count	2	28	13	43
		Expected Count	3.4	23.2	16.3	43.0
	3-4	Count	4	12	24	40
		Expected Count	3.2	21.6	15.2	40.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.278[a]	4	.001
Likelihood Ratio	21.599	4	.000
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.36.

Q5 (In person interactions)* Q26 (Skills)

			Number of Skills respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Number of in-person interactions, if any, that respondents have engaged in within the past few months	0	Count	2	10	3	2	17
		Expected Count	2.7	4.6	5.3	4.4	17.0
	1-2	Count	8	7	16	12	43
		Expected Count	6.9	11.6	13.3	11.2	43.0
	3-4	Count	6	10	12	12	40
		Expected Count	6.4	10.8	12.4	10.4	40.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.821a	6	.066
Likelihood Ratio	10.996	6	.088
N of Valid Cases	100		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 2.72.

Q5 (In person interactions)* Q36 (Education)

			Number of in-person interactions, if any, that respondents have engaged in within the past few months			
			0	1-2	3-4	Total
What is your highest level of education?	High School or less	Count	7	12	16	35
		Expected Count	5.9	15.1	14.0	35.0
	Some College	Count	7	20	18	45
		Expected Count	7.7	19.4	18.0	45.0
	Bachelor's or more	Count	3	11	6	20
		Expected Count	3.4	8.6	8.0	20.0
Total		Count	17	43	40	100
		Expected Count	17.0	43.0	40.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.383[a]	4	.666
Likelihood Ratio	2.403	4	.662
N of Valid Cases	100		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 3.40.

Q6 (Place attachment)* Q12(Floodplain)

			Is your home located within the 100-year floodplain? Yes	No	I don't know	Total
How would you rate your level of attachment to the Estates of Fort Lauderdale?	Fair	Count	3	6	9	18
		Expected Count	2.3	5.4	10.3	18.0
	Somewhat strong	Count	4	14	22	40
		Expected Count	5.2	12.0	22.8	40.0
	Very strong	Count	6	10	26	42
		Expected Count	5.5	12.6	23.9	42.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.813[a]	4	.770
Likelihood Ratio	1.844	4	.764
Linear-by-Linear Association	.427	1	.514
N of Valid Cases	100		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 2.34.

Q6 (Place attachment)* Q19 (Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
How would you rate your level of attachment to the Estates of Fort Lauderdale?	Fair	Count	8	10	18
		Expected Count	8.8	9.2	18.0
	Somewhat strong	Count	21	19	40
		Expected Count	19.6	20.4	40.0
	Very strong	Count	20	22	42
		Expected Count	20.6	21.4	42.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.378[a]	2	.828
Likelihood Ratio	.378	2	.828
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.82.

Q6(Place attachment)* Q21(Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
How would you rate your level of attachment to the Estates of Fort Lauderdale?	Fair	Count	0	15	3	18
		Expected Count	1.4	9.7	6.8	18.0
	Somewhat strong	Count	5	23	12	40
		Expected Count	3.2	21.6	15.2	40.0
	Very strong	Count	3	16	23	42
		Expected Count	3.4	22.7	16.0	42.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.352a	4	.010
Likelihood Ratio	14.713	4	.005
N of Valid Cases	100		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.44.

Q6 (Place attachment)* Q26 (Skills)

			Number of skills that respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
How would you rate your level of attachment to the Estates of Fort Lauderdale?	Fair	Count	3	6	5	4	18
		Expected Count	2.9	4.9	5.6	4.7	18.0
	Somewhat strong	Count	7	11	13	9	40
		Expected Count	6.4	10.8	12.4	10.4	40.0
	Very strong	Count	6	10	13	13	42
		Expected Count	6.7	11.3	13.0	10.9	42.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.341a	6	.969
Likelihood Ratio	1.323	6	.970
N of Valid Cases	100		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 2.88.

Q6 (Place attachment)* Q36 (Education)

			How would you rate your level of attachment to the Estates of Fort Lauderdale?			
			Fair	Somewhat strong	Very strong	Total
What is your highest level of education?	High School or less	Count	4	15	16	35
		Expected Count	6.3	14.0	14.7	35.0
	Some College	Count	10	16	19	45
		Expected Count	8.1	18.0	18.9	45.0
	Bachelor's or more	Count	4	9	7	20
		Expected Count	3.6	8.0	8.4	20.0
Total		Count	18	40	42	100
		Expected Count	18.0	40.0	42.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.097a	4	.718
Likelihood Ratio	2.204	4	.698
N of Valid Cases	100		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 3.60.

Q7 (Community to thrive)* Q12 (Floodplain)

			Is your home located within the 100-year floodplain?			Total
			Yes	No	I don't know	
Do you want your community to thrive and be enjoyed by future generations?	Yes	Count	13	30	56	99
		Expected Count	12.9	29.7	56.4	99.0
	I don't care	Count	0	0	1	1
		Expected Count	.1	.3	.6	1.0
Total		Count	13	30	57	100
		Expected Count	13.0	30.0	57.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.762[a]	2	.683
Likelihood Ratio	1.132	2	.568
Linear-by-Linear Association	.619	1	.431
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .13.

Q7 (Community to thrive)* Q19 (Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years? No	Yes	Total
Do you want your community to thrive and be enjoyed by future generations?	Yes	Count	49	50	99
		Expected Count	48.5	50.5	99.0
	I don't care	Count	0	1	1
		Expected Count	.5	.5	1.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.970[a]	1	.325		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	1.356	1	.244		
Fisher's Exact Test				1.000	.510
N of Valid Cases	100				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .49.

b. Computed only for a 2x2 table

Q7 (Community to thrive)* Q21 (Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Do you want your community to thrive and be enjoyed by future generations?	Yes	Count	8	53	38	99
		Expected Count	7.9	53.5	37.6	99.0
	I don't care	Count	0	1	0	1
		Expected Count	.1	.5	.4	1.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.860a	2	.650
Likelihood Ratio	1.241	2	.538
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .08.

Q7 (Community to thrive)* Q26 (Skills)

			Number of Skills respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Do you want your community to thrive and be enjoyed by future generations?	Yes	Count	16	27	30	26	99
		Expected Count	15.8	26.7	30.7	25.7	99.0
	I don't care	Count	0	0	1	0	1
		Expected Count	.2	.3	.3	.3	1.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.248a	3	.522
Likelihood Ratio	2.365	3	.500
N of Valid Cases	100		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .16.

Q7(Community to thrive)* Q36(Education)

			Do you want your community to thrive and be enjoyed by future generations?		Total
			Yes	I don't care	
What is your highest level of education?	High School or less	Count	34	1	35
		Expected Count	34.7	.4	35.0
	Some College	Count	45	0	45
		Expected Count	44.6	.5	45.0
	Bachelor's or more	Count	20	0	20
		Expected Count	19.8	.2	20.0
Total		Count	99	1	100
		Expected Count	99.0	1.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.876a	2	.391
Likelihood Ratio	2.118	2	.347
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .20.

Q10(Rent or own)* Q12(Floodplain)

			Do you rent or own your home?		
			Rent	Own	Total
Is your home located within the 100-year floodplain?	Yes	Count	2	11	13
		Expected Count	1.7	11.3	13.0
	No	Count	3	27	30
		Expected Count	3.9	26.1	30.0
	I don't know	Count	8	49	57
		Expected Count	7.4	49.6	57.0
Total		Count	13	87	100
		Expected Count	13.0	87.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.358[a]	2	.836
Likelihood Ratio	.372	2	.830
Linear-by-Linear Association	.014	1	.907
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.69.

Q10 (Rent or own)* Q19(Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years? No	Yes	Total
Do you rent or own your home?	Rent	Count	7	6	13
		Expected Count	6.4	6.6	13.0
	Own	Count	42	45	87
		Expected Count	42.6	44.4	87.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.140a	1	.708		
Continuity Correctionb	.006	1	.938		
Likelihood Ratio	.140	1	.708		
Fisher's Exact Test				.772	.469
N of Valid Cases	100				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.37.

b. Computed only for a 2x2 table

Q10(Rent or own)* Q21(Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
Do you rent or own your home?	Rent	Count	0	7	6	13
		Expected Count	1.0	7.0	4.9	13.0
	Own	Count	8	47	32	87
		Expected Count	7.0	47.0	33.1	87.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.457a	2	.483
Likelihood Ratio	2.475	2	.290
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.04.

Q10 (Rent or own)* Q26(Skills)

			Number of skills that respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
Do you rent or own your home?	Rent	Count	3	3	3	4	13
		Expected Count	2.1	3.5	4.0	3.4	13.0
	Own	Count	13	24	28	22	87
		Expected Count	13.9	23.5	27.0	22.6	87.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.986[a]	3	.805
Likelihood Ratio	.961	3	.811
N of Valid Cases	100		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 2.08.

Q10 (Rent or own)* Q36(Education)

			Do you rent or own your home?		
			Rent	Own	Total
What is your highest level of education?	High School or less	Count	4	31	35
		Expected Count	4.6	30.5	35.0
	Some College	Count	8	37	45
		Expected Count	5.9	39.2	45.0
	Bachelor's or more	Count	1	19	20
		Expected Count	2.6	17.4	20.0
Total		Count	13	87	100
		Expected Count	13.0	87.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.116[a]	2	.347
Likelihood Ratio	2.339	2	.310
N of Valid Cases	100		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.60.

Q30(Individuals in home)* Q19 (Weather maps)

			Have you used weather maps such as flood, tropical storm/hurricane, and heat index maps to learn about weather events in the past few years?		
			No	Yes	Total
How many individuals live in your home?	1	Count	14	16	30
		Expected Count	14.7	15.3	30.0
	1+	Count	35	35	70
		Expected Count	34.3	35.7	70.0
Total		Count	49	51	100
		Expected Count	49.0	51.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.093[a]	1	.760		
Continuity Correction[b]	.008	1	.930		
Likelihood Ratio	.093	1	.760		
Fisher's Exact Test				.829	.466
N of Valid Cases	100				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.70.

b. Computed only for a 2x2 table

Q30 (Individuals in home)* Q21 (Experiences)

			Number of experiences that have helped respondents prepare for, and respond to, weather events			
			0	1-3	4+	Total
How many individuals live in your home?	1	Count	1	17	12	30
		Expected Count	2.4	16.2	11.4	30.0
	1+	Count	7	37	26	70
		Expected Count	5.6	37.8	26.6	70.0
Total		Count	8	54	38	100
		Expected Count	8.0	54.0	38.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.268[a]	2	.530
Likelihood Ratio	1.474	2	.479
N of Valid Cases	100		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.40.

Q30(Individuals in home)* Q26(Skills)

			Number of Skills respondents have gained through jobs or experiences				
			0	1-3	4-7	8-17	Total
How many individuals live in your home?	1	Count	3	7	11	9	30
		Expected Count	4.8	8.1	9.3	7.8	30.0
	1+	Count	13	20	20	17	70
		Expected Count	11.2	18.9	21.7	18.2	70.0
Total		Count	16	27	31	26	100
		Expected Count	16.0	27.0	31.0	26.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.885[a]	3	.597
Likelihood Ratio	1.961	3	.580
N of Valid Cases	100		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.80.

Q30(Individuals in home)* Q36(Education)

			How many individuals live in your home?		
			1	1+	Total
What is your highest level of education?	High School or less	Count	11	24	35
		Expected Count	10.5	24.5	35.0
	Some College	Count	13	32	45
		Expected Count	13.5	31.5	45.0
	Bachelor's or more	Count	6	14	20
		Expected Count	6.0	14.0	20.0
Total		Count	30	70	100
		Expected Count	30.0	70.0	100.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.060[a]	2	.970
Likelihood Ratio	.060	2	.970
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.00.

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