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# Exploring Disaster Preparedness for the Aging Population

GladysMarie W.R. Harris  
*Walden University*

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# Walden University

College of Social and Behavioral Sciences

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GladysMarie W.R. Harris

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## Review Committee

Dr. George Larkin, Committee Chairperson,  
Public Policy and Administration Faculty

Dr. Mi Young Lee, Committee Member,  
Public Policy and Administration Faculty

Dr. Amanda Deerfield, University Reviewer,  
Public Policy and Administration Faculty

Chief Academic Officer  
Eric Riedel, Ph.D.

Walden University  
2018

Abstract

Exploring Disaster Preparedness for the Aging Population

by

GladysMarie W.R. Harris

MNO, Case Western Reserve University, 1996

BBA, Kent State University, 1993

AA, Cuyahoga County Community College, 1990

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Policy Administration

Walden University

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## Abstract

Older adults are encountering harsh recovery after disasters, and compounding this problem is the lack of research on older adults' perceptions on disaster preparedness as aging affects the ability to react to emergency situations. To partially address that gap, the purpose of this general qualitative research study was to use Rotter's spectrum of locus of control theory to examine the level of preparation regarding disaster preparation of older adults who were living independently in single-family homes in a state affected by Hurricane Sandy. Data were collected through a qualitative survey distributed to adults aged 65 to 80-years (N=88) and publicly available documents from federal and state emergency management agencies. These data were inductively coded and subjected to a thematic analysis procedure. Findings identified 3 themes that consisted of (a) delayed acceptance, (b) defective instinct, and, (c) unexpected effects of disasters. This study contributes to social change by helping emergency management officials understand the deficiencies in preparedness by an aging population which may in turn improve the quality of life for older adults by stressing proper preparation for sheltering in place or evacuation in the event of a disaster.

Exploring Disaster Preparedness for the Aging Population

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## Dedication

This dissertation is dedicated to the older adults and their families whom have endured the impact of natural disasters without having the knowledge and resources to properly prepare for survival. Recovering from the aftermath of a disaster is overwhelming with resources and impossible without resources. I am inspired by all the heroic efforts of volunteers during and after natural disasters. I hope factors identified from my study help transform public policy for the older adult population.

## Acknowledgments

My journey of life has encountered many hills and valleys along the way, although through each adversity, I continued to expand my résumé of life including the completion of my doctoral journey. First, thank you to my Lord and Savior Jesus Christ, for with Him everything is possible. I would like to thank my husband, Albert Douglas Rogers, for his support, encouragement and love throughout this entire process. I thank my parents, Freddy Marie Harris and Eugene Samson Harris for their continued love and support throughout my life. I thank my late grandmother, Ida Belle Williams for her love and guidance. I thank my entire church family, who are too numerous to mention individually, but who were supportive and very much a part of my success. Finally, I want to express my gratitude to my committee chair, Dr. George Larkin and committee member, Dr. MiYoung Lee for the constructive feedback in the completion of my dissertation.

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## Chapter 1: Introduction to the Study

### **Introduction**

Over the past few decades, natural disasters such as snowstorms, ice storms, floods, tornadoes, hurricanes and earthquakes have been increasing in frequency and magnitude due to climate change (Ellenwood, Dilling, & Milford, 2012; Field, 2012). In the United States in recent years, many individuals, families, and communities have been affected by catastrophes such as Hurricane Sandy, winter storm Athena (Federal Emergency Management Agency [FEMA], 2012), or the Alabama tornado outbreak (Chui et al., 2013), each resulting in individual and family health risks and vulnerability, in addition to prolonged community recovery timeframes (Gowan, Sloan, & Kirk, 2015; MacInnis et al., 2015). Survival and resiliency can be limited without disaster preparedness education available to those with cognitive and physical impairments living independently in their own homes. Unlike older adults who live in senior apartments and complexes, those living independently in single-family homes are responsible for themselves when a disaster threatens. In many cases, aging affects the ability to react to emergency situations such as disasters. Being able to understand and cope with unexpected physical, mental, and emotional challenges occurring in this stage of life is essential in emergency situations (Diament, 2014; Langer, 2012).

As people age, their health usually declines, including their physical and cognitive abilities (Langer, 2012; Pande, Gillespie & Stapleton, 2016). According to the U.S. Census Bureau, the elderly population is expected to continue to increase as a percentage of the population, a factor that supports the need for more federal, state, and local resources for this population (Onder & Schlunk, 2015). Every day, approximately 10,000

baby boomers reach the age of 65, an occurrence that is predicted to be true for the next 19 years (“Baby Boomers Retire,” n.d.). Researchers have identified typical physical impairments in both sight and hearing for this population (Pande et al., 2016) in addition to degenerative arthritis, osteoporosis, diabetes, hypertension, stroke, and heart disease, any of which can limit quick physical reaction (Al Khayyal, El Geneidy, & El Shazly, 2016; Dye, Williams, Kemper, McGuire, & Aybar-Damali, 2012). By age 65, most people will be battling at least one chronic health condition or disease, resulting in an increase in the need for medication or physical assistance to maintain their ability to take care of themselves (Lassman, Hartman, Washington, Andrews, & Catlin, 2014).

Cognitive impairments in the population continue to increase from the mentally and physically debilitating illnesses of dementia or Alzheimer’s. Daily activities of life become difficult when cognitive challenges affect people’s ability to care for themselves (Ducharme & Geldmacher, 2011). Undiagnosed cognitive issues may also place individuals in greater danger when natural disasters occur. The ability to process the severity of an impending disaster and the best plan of action is needed for survival. Those with cognitive impairment may fail to comprehend the magnitude of a disaster, which will affect their chances of survival as well as their resiliency during recovery if they survive (Al-rousan, Rubenstein & Wallace, 2014; Gowan et al., 2015; Tuohy et al., 2014).

Disasters occurring in areas not typically affected by disasters are increasing such as increased numbers of hurricanes, tsunamis, earthquakes, tornadoes, and storms, which increases the concern for the elderly population who might not be prepared for such disasters. The Intergovernmental Panel on Climate Change (2012) has discussed

potentially adverse results for the ways humans respond to natural disasters, (Liu, Smith, & Safi, 2014). For instances, natural disasters have claimed the lives of older adults at high rates. Hurricane Sandy in 2012 resulted in, 45% of deaths by drowning in flooded homes whose occupants averaged 60 years and had a median age of 65. Hurricane Katrina in 2005, resulted in 71% of the deaths of those over the age of 60 and 47% over the age of 75 (Center for Disease Control [CDC], 2013). The five-state tornado event in Alabama, Arkansas, Georgia, Mississippi, and Tennessee that occurred from April 25 to 28 resulted in the death of 338 persons. Thirty-three percent were adults 65 years and older that had a median age of 55 (CDC, 2013).

Preparation allows people to manage the risks of natural disasters (Intergovernmental Panel on Climate Change, 2012). MacInnis et al., (2015) categorized the purpose of preparation into six main areas, but only four are relevant to natural disasters, which are (a) reducing risk, (b) reducing vulnerability, (c) increasing resilience, and (d) increasing readiness. Those who are prepared endure less property damage and physical harm by reducing their vulnerability (Curry, 2011).

The intent of this study was to examine whether the population consisting of those between the age of 65 to 80 living in single-family homes in the community are prepared for disasters. This chapter will provide the background of the study, problem statement, research question, theoretical framework, nature of the study, definitions, assumptions, scope, inclusion, criteria, limitations, significance, and the potential for social change.

### **Background**

This research adds to the body of knowledge on how disaster preparedness informs the locus of control theory (Rotter, 1966). This theory is effective for predicting

disaster preparedness and identifying effective and efficient strategies for increasing survival, resiliency and recovery, and improving quality of life during and after a disaster (Al-rousan et al., 2014; Tuohy et al., 2014). Identifying how the young old population, those 65 to 80 years, process the need to prepare for natural disasters proactively may increase options before, during and after the event. This study may also lead to recommendations to reduce fear and confusion during disasters as well as determining if the control of survival is within this populations control or results in elements outside of their control.

After an extensive literature review of disaster preparedness, no research was found focused on disaster preparedness for the subgroup of the older population such as those living independent in single-family homes. Limited research has been conducted on the quality of life before, during, and after a disaster, which directly relates to the level of preparedness of the older population.

However, the literature suggested that many cognitive, physical and emotional factors contribute to quality of life, particularly after a disaster (Castro-Monteiro et al., 2014). Preparation has been shown to have a significant influence on survival and follow-up afterwards to reduce the unexpected (Al-rousan, et al., 2014). The literature review was also informed by the locus of control theory, which indicates that external locus of control directs a person's belief that outcomes and consequences in life are uncontrollable, where outside forces dictate the results of events and situations (Rotter, 1966). Developing a lower level of external locus of control reduces the magnitude of the outside forces in a person's life (Hamwi, Rutherford, Boles, & Madupalli, 2014). Internal locus of control indicates that a person's individual actions influence outcomes.

Those with more internal control reflect a strong sense of self-efficacy to accomplish goals while challenging adversity (Palanisamy, 2015).

This research adds to the body of knowledge on challenges that have an adverse effect on the older population living independently in single-family homes. As the largest U.S. population group continues to age and, an increasing amount live outside of care facilities in their own homes, there is a need to understand the driving factors of disaster preparedness toward resiliency, survival, and recovery. Understanding these factors can help lead to recommendations to prepare those who are able to age independently in this older population.

### **Problem Statement**

There is a problem with limited disaster preparedness for 65 to 80 year olds with possible cognitive and physical impairments living independently in single-family homes in areas not typical to disasters has proved to be a significant problem. Few researchers have examined the quality of life before, during, and after a disaster that relates to the level of preparedness of the older population. Disasters are difficult to predict and impossible to prevent especially in areas not accustomed to hurricanes, ice and snow storms, or flooding. Climate change reportedly is causing more unexpected weather events such as Hurricane Sandy superstorm that devastated the Northeast coast of the United States. Not since 1870 has a hurricane the size of Sandy moved up the east coast of the United States and made landfall. This storm was as large as the Category 5 Hurricane Katrina that devastated New Orleans. The most vulnerable members of the population in both cases had the fewest resources and were most severely affected by wind and flooding (Langan & Palmer, 2012). These people were generally poor, elderly,

and lacked the means to escape. The states had emergency preparedness plans, but nothing of the magnitude that might have saved more of the 1,600 people who perished in New Orleans or the 147 in New Jersey and New York who perished from Hurricane Sandy. Of the latter fatalities, 49% were 65 and older (FEMA, 2013).

Despite emergency warnings of impending disasters, most individuals 65 to 80 fail to prepare for disasters, which often result in worse outcomes for their survival (Al-rousan et al., 2014; Casey-Lockyear et al., 2012; Chui et al., 2013; Donahue, 2014; Heldman, 2011; Tuohy et al., 2014). People 65 to 80 have more physical and cognitive challenges, and many ignore emergency warnings or are unable to process the severity of the disaster (Al-rousan et al., 2014; Casey-Lockyear et al., 2012; Chui et al., 2013; Donahue, 2014; Langan & Palmer, 2012; Nix-Stevenson, 2013; Shrira, Palgi, Hamama-Raz, Goodwin, & Ben-Ezra, 2014; Tuohy et al., 2014;).

The least prepared population during a disaster are those 65 to 80 with cognitive and health challenges (Al-rousan et al., 2014; Casey-Lockyear et al., 2012; Chui et al., 2013; Donahue, 2014; Greenberg, 2013; Langan & Palmer, 2012). Although proper preparation decreases the loss of life and improves mental health during disaster recovery (Donahue, 2014; Shrira et al., 2014), individuals 65 to 80 with physical and cognitive needs are more severely affected during emergencies (Langan & Palmer, 2012; Thiede & Brown, 2013; Wistow, Dominelli, Oven, Dunn, & Curtis, 2015).

City infrastructures impose additional hardship on the residents in communities not typical to flooding and high winds from hurricanes (FEMA, 2013). To develop improved disaster preparedness and to ultimately save the lives of those 65 to 80, it is

necessary to know the level of disaster knowledge, if individualized disaster plans and preparations exist and the communication networks that are available.

Natural disasters such as snow and ice storms, floods, tornadoes, hurricanes, and earthquakes are escalating each year and are devastating communities with high winds, rain and flooding (“United States of America–Disaster Statistics,” n.d.) yet many individuals 65 to 80 are not able to escape because they lack a plan and personal resources, or emergency management communications (Al-rousan et al., 2014; Greenberg, 2013; Langan & Palmer, 2012). Events during Hurricane Sandy in 2012 suggest that not much had changed in personal disaster preparedness as 46% of the deaths occurred from drowning of those ages 62 to 91 (CDC, 2013). Although prepared cannot save everyone, it is essential to saving more lives of those between the ages 65 to 80. It is particularly important when the population is largely comprised of vulnerable older adults.

### **Purpose of the Study**

In this study, I assessed the level of preparation and identify personal and community resources of those 65 to 80 who were living independently in single-family homes in New Jersey during Hurricane Sandy. Proper preparation would have included: plan to stay or leave home, available personal resources, and communication networks. To determine the level of preparedness, I developed questionnaires to assess not only participants’ personal disaster plans but also their knowledge of resources to assist in an emergency.

### **Research Questions**

RQ1: What are the perceptions of the disaster preparedness of elders 65 to 80 who live independently in single-family homes and may have cognitive and physical impairments?

RQ2: How does current public policy conform to the perceptions of the participants identified in Research Question #1?

### **Theoretical Framework**

The theoretical framework was the locus of control theory, which helps explain that people believe either they or outside factors have power over the events in their lives. The locus of control includes learning what people have control over and what they do not as well as identifying what options are available (Ahlin & Antunes, 2015). Although locus of control is generally stable, it can change from experiences such as aging and knowing personal limitations (Ahlin & Antunes, 2015).

Having an internal locus of control means people feel full responsibility for the consequences of their behavior. An external locus of control is the feeling that other factors are responsible for their circumstances and is beyond their control (Crick & Dodge, 1994; Mirowsky & Ross, 1990; Rotter, 1966). Strong external locus of control involves attributing success to luck or chance or fate, which is outside people's ability to control and renders individuals powerless and hopeless in challenging and adverse situations (Ahlin, 2014; Mirowsky & Ross, 1990).

Locus of control theory relates to people's sense of preparedness, as they may prepare differently depending on what locus of control attributed to a natural disaster. If people 65 to 80 lack preparedness, and their personal resources affect the chances of

survival during or in anticipation of a disaster, there is a need to reduce the potential loss and harm from threats (O'Brien, 2003). Available resources available to vulnerable communities drive disaster prevention and risk reduction (Nix-Stevenson, 2013). Preparedness and identification of personal resources determine how human and financial resources can affect the results of disasters (Nix-Stevenson, 2013; Shrira et al., 2014; Thiede & Brown, 2013).

### **Nature of the Study**

In this research study, I followed a qualitative method employing case study to analyze the data from interviews (see Yin, 2013) and the records from FEMA and Office of Emergency Management in New Jersey. With an emphasis on identifying effective and efficient strategies for increasing survival, resiliency and recovery, and improving quality of life during and after a disaster (Al-rousan et al., 2014; Tuohy et al., 2014). Through this process, I identified themes that explain the reasons those age 65 to 80 failed to prepare for a disaster.

### **Definitions of Terms**

*Aging in Place:* Refers to older adults staying in their own homes as they continue to age while living with health challenges and identifying and supplementing the needed services in their homes to maintain their quality of life (Lindquist, et al., 2016).

*Coping:* Refers to the behaviors and practices used to reduce or eliminate an event or situation that is causing stress (Lazarus & Folkman, 1984). Coping with a disaster is described as the methods of managing the stress of disaster that threatens the chances of survival (Onuma, Shin, & Managi, 2016).

*Disaster preparedness:* “Refers to measures taken to prepared for and reduce the effects of disasters. To predict the magnitude of a disaster to reduce vulnerability and loss of life” (International Federation of Red Cross and Red Crescent Societies, n.d., para. 1).

*Emergency:* Any natural or human made event requiring responsive action for the protection of life or property. Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Pub. L. No. 93-288), an emergency is “any occasion determined by the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives, to protect property, public health and safety, or to lessen or avert the threat of catastrophe in the United States” (Department of Homeland Security, 2016, p. 1).

*Independent Living:* “Safely and comfortably maintain a high quality of life in one’s own home” (Godfrey, 2017). One’s own home could mean, townhouse, single-family house or apartment complex, excluding any health care facility.

*Mild cognitive impairment:* Significant memory loss without the loss of other cognitive functions that enables a person to function independently and not show other signs of dementia, such as impaired reasoning or judgment (Alzheimer’s Association, n.d.).

*Natural disaster:* Hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, drought, fire, or other catastrophe that causes or may cause substantial damage or injury to civilian property or persons (Tuohy, et al., 2014).

*Physical impairment:* Decreased muscular power and balance and limited motor performance relating to a person's physical functioning, mobility, dexterity or stamina that negatively impact activities of daily living (Dunsky, Yahalom, Arnon, & Lidor, 2017).

*Preparedness:* "Actions taken to plan, organize, equip, train, and exercise to build and sustain the capabilities necessary to prevent, protect against, mitigate the effects of, respond to, and recover from those threats that pose the greatest risk to the security of the Nation" (Presidential Policy Directive 8, 2011, p. 5)

*Quality of life:* People's happiness related to their standard of physical health, mental health, and social relationships within their environment (Lin et al., 2017).

*Recovery:* Individuals and communities working in a coordinated effort to return to normal. This includes "Actions of development and execution of services to repair physical infrastructure and restoration of emotional social, economic, and physical well-being" (Department of Homeland Security, National Response Plan, n.d., para. 17).

*Resiliency:* The power or ability to return to the original routine of life after experiencing an unexpected event. Chronological age and experience assist in allowing individuals to return to normality faster (Tuohy & Stephens, 2012).

*Vulnerability:* "A set of prevailing or consequential conditions composed of physical, socioeconomic, and/or political factors that adversely affect the ability to respond to disasters" (Tuohy & Stephens, 2012).

### **Assumptions**

The following assumptions guided this study:

1. All participants will answer the survey questions truthfully, and to the best of their ability and will not introduce any type of bias into their responses.
2. All participants will be unbiased in their answers on the survey.
3. The responses are reported correctly in survey questionnaire.
4. Not all participants will have experienced negative consequences as a result of Hurricane Sandy.

This study is also based on the assumption that all participants experienced some natural disaster that negatively affected their quality of life and caused them to have less confidence in their ability to survive and recover from a disaster.

### **Scope and Delimitations**

The results of this study can provide insight into emergency preparedness within the context of preparation for natural disasters for those ages 65 to 80 with cognitive and physical impairments. Insights from this study can assist researchers and emergency management offices in identifying and developing effective and efficient resources for managing disaster preparedness and increasing survival and recovery. Without education and training, this population will continue to be unprepared for emergencies and may have to rely on community resources rather than their own.

This study might be generalized to those with cognitive or physical impairments who are older than 65 to 80. Emergency management officials, government officials and policy makers may also find these research findings useful.

### **Limitations**

The limitations of the study are that the questions chosen from the survey were based on theory, similar research, and face validity. Another limitation was that

participants may have not answered the survey honestly and without bias. Additionally, participants may not have remembered all aspects of what transpired before, during, and after Hurricane Sandy struck.

### **Significance**

As a result of a disaster, those ages 65 older typically undergo significant mental and physical suffering in catastrophes because of their age and level of cognition as well as their lack of preparedness (Al-rousan, et al., 2014; Durant, 2011). This research can help to identify methods to increase preparation and knowledge of personal and community resources by filling the gap in the knowledge about the level of preparation and resources for this population. This may decrease loss of life and minimize the drain on community resources so cities can recover quicker from a disaster.

### **Positive Social Change**

This study's implications for social change include the possibility to promote an increased level of preparedness, resiliency, and survival and reduce recovery time in the community. Changes in emergency management preparation increasingly require that individuals with minimum health needs remain at home and stay informed during disasters. Therefore, those prepared for a disaster should have a shorter recovery time from the disaster.

This research also adds to the body of knowledge on how disaster preparedness informs the locus of control theory (Rotter, 1966). It illustrates the effectiveness of this theory for predicting disaster preparedness and identifying effective and efficient strategies for increasing survival, resiliency, recovery, and improving quality of life during and after a disaster (Al-rousan et al., 2014; Tuohy et al., 2014). This study may

also lead to recommendations that may reduce fear and confusion. Therefore, the identification of the study population's processes and the need to prepare for natural disasters increased options before, during, and after the event. The results might also help determine if the control of survival is within people's control or results from elements outside of their control.

### **Summary**

This study called for an examination of emergency preparedness for the older population living independent of apartment complexes and social service agencies.

In Chapter 1, a background to the study was provided; the research question, problem statement, theoretical framework, and significance of the study were also discussed. Chapter 2 will include a review of the scholarly literature on natural disasters, cognitive and physical impairments and disaster preparedness. Chapter 3 will include a description of the research design and methodology of the study.

## Chapter 2: Literature Review

### **Introduction**

This chapter includes the theoretical and developmental factors related to disaster preparedness, a condition that has been associated with increased levels of resiliency before and during a disaster and human survival after a disaster. Resiliency is associated with various physical, emotional and psychological effects of survival and recovery. Although emergency alerts are announced by the emergency office of management through television and radio media before a disaster to determine the course of safety for individual preparation decisions. The information and medium of announcements may not be informed by analysis of disaster preparedness of those ages 65 to 80 who may or may not process the severity of the disaster and may be limited in their efforts to evacuate quickly.

### **Prevalence of Problem and Impact**

The purpose of this research was to examine whether the older population living independently in single-family homes are prepared for disasters. Individuals 65-80 years old typically experience physical and cognitive impairments during their daily activities. However, these physical and cognitive impairments magnify themselves when weather-related disasters affect their basic needs of shelter, food, clothing, and medication. Challenges are significant when they are not prepared or if they do not comprehend the seriousness of the disaster (Al-rousan et al., 2014; Curry, 2011; Tuohy et al., 2014) compared to those who live in senior housing with designated personnel to assist them with problems. The consequences of their not being prepared may even lead to death (Gowan et al., 2014; Kamo, Henderson, & Roberto, 2011; Naser-Hall, 2013; Nirupama,

Popper, & Quirke, 2015). Many of this population are not connected to community social service programs because their physical and cognitive impairments have been manageable under normal circumstances (See, 2013; Subaiya, Moussavi, Velasquez, & Stillman, 2014). Social service agencies and housing management facilities often supply educational programs to prepare residents for potential disasters, but most who live in single family homes fail to connect to social service agencies until there is a need.

The results of this study can provide greater insight into disaster preparation of the elderly population within the context of locus of control theory (see Rotter, 1966) as well as insight into what degree of disaster preparation is necessary for resiliency and survival. Insights from this study can assist offices of emergency management and social service agencies in identifying and developing effective and efficient resources for reducing the unknown of not being prepared. With the increase of worldwide disasters due to climate change, individuals living alone may have to assume more responsibility for disaster preparation and recovery time after a disaster than those living in senior apartments (Gowan, et al., 2014; Naser-Hall, 2013).

### **Relevance of the Problem**

Individuals who proactively protect themselves and their families can ensure greater sustainability and safety from natural disasters. Being proactive reduces the uncertainty during a disaster versus being reactive, which increases the level of uncertainty and possible death. The focus of survival and recovery in the United States was triggered by the needs of the citizens that resulted in the creation of the FEMA. As natural disasters increase, emergency measures must continue to evolve to stay ahead of preparation for survival and recovery. Each natural disaster throughout the world allows

FEMA and the Office of Emergency Management to learn new recovery techniques while evaluating what works. Droughts, heatwaves, hurricanes, typhoons, floods, volcanoes, wild fires and winter storms continue to affect the world (Field, 2012).

The year 2012 registered many natural disasters throughout the world, killing thousands and costing billions of dollars in property and infrastructure damage. These disasters especially affect older adults between 65 to 80 who are vulnerable due to aging, which reduces their ability to respond quickly to impending disasters.

### **Hurricane Sandy**

Hurricanes and tropical storms typically affect the Southeastern United States each year. However, storms have struck the northeastern coastline like Hurricane Sandy on October 29, 2012. Sandy's tropical storm winds covering 900 miles created storm surges and destruction killing 117 in the United States and 71 people in the Caribbean. Forty-five percent of the deaths occurred from drowning in flooded homes, with those living in them having a median age of 65 and an average age of 60 (CDC, 2013).

Changes in the statistical distribution of weather that extends longer than average weather conditions have created a noticeable climate change. After the events of Hurricane Sandy, FEMA (2013) released a follow-up report entitled "Hurricane Sandy FEMA After-Action Report," which detailed that a total of \$62 billion in infrastructure damages resulted from Hurricane Sandy.

### **Typhoon Bopha**

In the Philippines, on December 3, 2012, a Category 5 super typhoon hit the Southern Philippine island of Mindanao and made landfall as the strongest tropical cyclone with winds of 175 mph. On November 29<sup>th</sup>, the Palau National Emergency

Management Office (NEMO) issued an announcement informing the public to prepare for an impending disaster with emergency supplies such as food and water, in addition to portable radios and spare batteries, flashlights and first-aid kits for 3 days. More than 170,000 people fled to evacuation centers. President Benigno S. Aquino III instructed regional emergency management directors to minimize casualties, as much as possible.

The results of Typhoon Bopha were over 1,067 deaths and 834 people missing. A total of 80,000 were left homeless. Many deaths and injuries occurred from flying debris and falling trees. The storm caused widespread destruction on Mindanao creating landslides from heavy rain and flooding while power outages occurred in many provinces. (National Hurricane Center, n.d.).

### **Hurricane Isaac**

In Louisiana in 2012, Hurricane Isaac originated from a tropical wave that began on the western coast of Africa and eventually made landfall at two points on the coast of Louisiana. Flooding came from several inches of rainfall in a short period along with power outages caused by strong winds and waves that also caused minor beach erosion.

As a result of the hurricane, there were 41 fatalities and \$2.39 billion in damage, including major damage to infrastructure. Heavy rainfall, floods and high winds also affected Florida, Mississippi, and Alabama. (International Federation of Red Cross and Red Crescent Societies, n.d.)

As climate change continues to affect the weather, individuals and communities also continue to age. Although aggregate knowledge generally increases from each disaster, aging also causes more individual physical and cognitive challenges. The older adult population also experiences higher mortality and morbidity rates as a result of

natural disasters (Al-rousan et al., 2014). The largest generation, the baby boomers, continues to age and enjoy longer life expectancy, but it also creates a larger and more vulnerable population affected by inevitable medical needs.

### **Literature Search Strategy**

The search terms and the combination of search terms used in this research were *disasters, aging, older adults, disaster preparation, disaster planning, climate change, resiliency, coping* and *the elderly*. The literature search included literature on disaster preparation and aging published between 2000 to 2017. The literature search involved several literary data sources including ABI/INFORM Collection, CINAHL Plus, Expanded Academic ASAP, Google Scholar, Medline, National Academies Press, ProQuest Central, PsycArticles, SAGE Journal, and Academic Search Complete, which produced 112 articles for evaluation on the topic of perceptions of disaster preparedness and the effects of natural disasters regarding those unprepared.

### **Theoretical Foundations of this Research**

The overarching theoretical framework for this research is the locus of control defined by Julian Rotter (1966), a concept that helps to explain the phenomenon.

Rotter defined and described locus of control as

The effects of reward or reinforcement on preceding behavior [that] depends in part on whether the person perceives the reward as contingent on his own behavior or independent of it. Acquisition and performance differ in situations perceived as determined by skill versus chance.

Persons may also differ in generalized expectancies for internal versus external control of reinforcement. (p.1)

Locus of control is a key variable in a person's determination and perseverance (Halpert & Hill, 2011) and is likely to affect the level of preparedness for disasters. Understanding preparedness behavior through the theory of locus of control increased the level of surviving a disaster. Those with high internal locus of control believed they were in control of their entire situation, but this was not accurate. A person's ability to control the entire situation to produce the desired outcome cannot operate during a disaster, as it cannot be contained or controlled. The only safe action was to seek safety until the disaster ends. Those with a high internal locus of control believed they controlled the outcome of a situation by manipulating their behavior and not the variables of the situation (Halpert & Hill, 2011).

A high internal locus of control indicates that having prepared for a disaster led to their belief they controlled the situation and experienced a good outcome. For example, preparation can create a sense of control based upon the type and estimated magnitude of a disaster, which alter the course of action from staying at home to immediate evacuation. Constant reassessment of the situation was imperative in a case such as this. In the case of an impending flood, most people recognize that no amount of preparation inside their home lead to believing food, water, and extra flashlight batteries while safely locked in doors produces a good outcome, as rising flood waters eliminate most control. This sense of control manifests itself in the beliefs of adults that they were prepared for a disaster because they were secure in their homes. This sense of control promotes a false sense of security in those living in their homes.

Those with a high external locus of control believe external forces such as fate, luck, or their birth sign will control the outcome of their situation or destiny (Rotter,

1966). A high external locus of control indicates a person lacks control of the situation driven by external forces such as God or luck, forces they believed are beyond anyone's control. Their thinking was that no preparation could alter the inevitable. Those who believed in luck, hoped they would have the good fortune to be spared; the remaining individuals left it in the hands of fate.

Rotter's (1966) locus of control theory has been fundamental in determining level of control and how that control is leveraged. Some have suggested lack of control is shaped by successes and failures (Ahlin et al., 2015; Hamwi et al., 2012; Palanisamy, 2015). Formulations of successes and failures examined the resiliency of those surviving a disaster, including having lived longer and coped with life experiences that increase resiliency (Miller & Brockie, 2015).

The ability to balance the high internal and high external loci of control was imperative for survival. Disaster preparedness includes constant re-evaluations of the storms to determine safety. The preparation must factor the ability to prepare for an impending disaster, enduring it, and follow-up. Each phase involves reassessment of the safety variables. Flooding, compromised shelter, or an unsafe environment may force people to abruptly evacuate to a safe location.

There is a need to learn the disaster preparation on these older adults, particularly those with physical and cognitive challenges that reduce their ability to respond appropriately to a disaster. Tuohy et al. (2014) offered a perspective on the lack of research on disaster preparedness for independent older adults living in a retirement community. When disasters occur, vulnerable older adults may suffer poor outcomes, including death. Research is needed to determine their preparedness.

Those failing to evacuate reported not knowing where they should go if they were evacuated. Subaiya et al. (2014) concluded additional storm preparation was needed, including medication refills, food availability at distribution centers, and neighborhood security. Food supply was a concern for 29% of the responding households in Rockaway Peninsula in New York City after Hurricane Sandy. Individual lack of preparedness for prescription drugs, exacerbated by closed clinics, resulted in lack of prescription medications.

It was also determined from a study that the need for personal and family preparedness planning and enhanced messaging to inform the public is essential to reducing the risk of death. Chiu et al. (2013) noted that women and the elderly were at highest risk of tornado-related deaths from the outbreak in Alabama in April of 2011. Unfamiliarity with warning terminology also contributed to the confusion of those 60 and older.

Research also indicated those who live in those dwellings had not identified a safe location to go to if their homes were damaged or destroyed. Casey-Lockyer et al. (2012) revealed that one-third of tornado deaths are those 65 years and older who live in mobile homes or single-family homes. Limitations of meteorology preclude having warnings about the potential impact and strength until after a tornado has passed, which forces families to be prepared for the highest-level storm strength.

The lack of adequate planning for the older adult community resulted in health burdens, physiological distress, and other specific problems after Hurricane Katrina. Langan et al., (2012) determined that 75% of the deaths from Hurricane Katrina were older adults, whose vulnerabilities include reduced physical mobility, diminished sensory

ability, and chronic health issues that can prevent sufficient preparation for disasters. The focus of the Langan et al., (2012) research was to identify barriers to evacuation and recommendations to improve disaster preparation for older adults.

Severe flooding and power outages resulted in closed pharmacies in New Jersey. See (2013) stated that there was no plan for determining medication needs for residents of Hoboken, New Jersey, in the aftermath of Hurricane Sandy. Despite emergency plans, no contingencies existed to facilitate and assess medication needs within the community, specifically in senior citizen buildings.

Background and contextual factors were also significant variables in the locus of control theory (Rotter, 1966), which included high internal control where older adults prefer remaining in their own homes, rather than choosing options such as evacuation (Lindquist et al., 2016).

### **Background and Context**

Researchers suggested characteristics that are fundamental to influencing disaster preparedness included an increase in the number and kind of vulnerable populations, evacuation restrictions and use of available resources. The following provides more background information.

**Vulnerable populations.** Researchers suggested that aging plays a significant role in how a person reacts in a disaster. With aging comes concern for one's mental and physical abilities to adequately respond during a disaster (Langan et al., 2012 Tuohy et al., 2014). Durant (2011) stated the elderly population was more vulnerable to disasters because of diminished health conditions that may reduce physical and cognitive awareness. The magnitude of a disaster also dictates the severity of the impact upon the

elderly population, which may also have to contend with poverty, diminished cognitive capacity, and the reliance on others for basic needs. The results of many studies were the need for an increased understanding of the elderly.

The hearing-impaired may also be unable to hear warning sirens or announcements made by emergency teams. Diament (2014) indicated problems with emergency communication systems resulted in language that was confusing for those with intellectual and developmental disabilities. Such confusion decreases the possibility of successful survival outcomes after a natural disaster.

Greenberg (2013a) stated no assistance had been planned for older adults who had to leave New Orleans during and after Hurricane Katrina. Greenberg also noted a distinction between levels of risk for those between 65 to 74 years and those older than 75 years. During the hurricane, 538 older adults drowned, became dehydrated, had a stroke or heart attack, or lacked medical supplies.

**Evacuation concerns.** Researchers identified reasons individuals chose not to evacuate; lack of transportation, lack of money, ignorance of where to go, needing care for someone too sick to travel, wanting to protect their homes and possessions, or the hope the storm would not be as severe as predicted (Onuma et al.; 2016; Strang, 2014).

Thiede et al. (2013) identified factors that affected the decision of some residents to stay in New Orleans rather than be evacuated. Twenty-two percent of those 60 years old and older failed to evacuate due to socioeconomic status and race. The researchers also analyzed factors of transportation, money, and protecting home possessions of two distinct groups: those who chose not to evacuate and those who wanted to leave but were

unable to do so. Additional constraints were lack of local social networks and information on where to evacuate.

**Resource utilization.** Researchers indicated disaster information and programs to prepare populations for them are available, although; very few older adults participate in such programs. Low and middle-income neighborhoods with limited political clout found themselves dealing with inadequate resources and responses from FEMA and city agencies (Greenberg, 2013b).

Al-rousan et al. (2014) determined that only 34.3% of those 50 years and older in the United States had participated in an educational preparedness program or read materials about disaster preparedness. Seventy-five percent of those that died in Hurricane Katrina were 60 years of age and older. Many older adults in the study used electrically powered medical devices, suffered from hearing impairment, or had limited mobility and no access to transportation.

Individuals have shared responsibilities for protection and safety for their well-being and others before, during, and after a disaster. Donahue (2014) determined that people's preparedness choices also influence their safety and security during disasters. Many Americans continue to be ill-prepared for disasters, a factor that increases dependency upon government agencies for help and reduces the speed of repairing infrastructure and public utilities. Donahue also identified a correlation between a person's perceived risk assessment and his or her preparedness for disaster.

### **Summary**

Disaster preparedness is important particularly for vulnerable older adults. Many older adults sought ways to maximize their physical and mental well-being (Lin et al.,

2017) to remain independent and active as they age in their homes in the community. A continuous growth in the numbers of older adults and cognitive and physical aging impairments place this population in harm if unprepared for a disaster (Nix-Stevenson, 2013; Tuohy, Stephens, & Johnston, 2014).

In Chapter 2, examination of the literature on disaster preparedness, the aging population and cognitive and physical impairments that affect the well-being of that population were discussed. The literature also revealed that more natural disasters were occurring each year while the population of older adults with physical and mental limitations are increasing simultaneously.

## Chapter 3: Research Method

### **Purpose**

The purpose of this study was to learn how the level of preparedness relates to the spectrum of the locus of control (see Rotter, 1966). In this qualitative study, I sought to determine whether an individual's locus of control determines the level of preparedness for those between 65 to 80 years old. Additionally, I sought to identify other variables that might limit the preparedness of this population.

In this chapter, I will outline and explain the research design, rationale behind the chosen design, data collection, instrumentation, procedure, participants, threats to validity, and data analysis. The research question will also be reexamined to defend the overall research design. The ethical issues and considerations in the research will also be presented and discussed.

### **Research Questions**

RQ1: What are the perceptions of the disaster preparedness of elders 65 to 80 who live independently in single-family homes and may have cognitive and physical impairments?

RQ2: How does current public policy conform to the perceptions of the participants identified in Research Question #1?

### **Research Design and Rationale**

The research method selected for the study was qualitative case study. The qualitative research design was chosen instead of a quantitative design because few research studies are available on disaster preparedness for older adults who live alone in single-family homes. In qualitative research, the benefits of the intimate case study

design to acquire depth from the information, and, provide the opportunity for identifying meaningful themes (Yin, 2013). The case study design was more appropriate for this research to explore the issue in detail within a real-world context (see Yin, 2013). This design was deemed effective because there is a clear connection between the problem and the research questions. A representative sample of the population (Yin, 2013) was selected for analysis. The qualitative design was used to establish whether preparedness is related to internal or external locus of control variables. I also sought to learn which variables determine the spectrum of locus of control. Potential concerns relative to the case study design include a lack of structure and the difficulty to compare to other types of research (Yin, 2013). I considered alternative qualitative approaches; however, the purpose of the study and the research questions made a case study approach appropriate. A quantitative approach would not have been appropriate for this research study, as I wanted to find reasons for human behavior, which is information that cannot be quantified.

This study was based on surveys in which I examined the variables that determine the existing internal and external loci of control. Having an internal locus enables a person to influence both events and the outcomes of events. While an external locus places a person's outcomes as uncontrollable with outside forces dictating the results of events.

### **Data Collection**

Ten participants were the intended selection from each of the four Eastern counties impacted most by Hurricane Sandy. The counties were Monmouth, Middlesex, Ocean and Atlantic. A total sample size of 40 were intended, however, a total of 88

qualified for the research study. There are no set rules for sample size in a qualitative research study (Robinson, 2014). Sample size requires consideration of the purpose of the study, reliability and available resources to the researcher (Robinson, 2014). However, too small of a sample size in a case study may compromise the ability to generalize the themes of the findings or may minimize the reliability of the research study (Yin, 2013).

Surveys were included from those who qualified based upon the criteria of the research. Participants must have been between the ages of 65 to 80 and lived in a single family home on or near the New Jersey coast in 2012 during Hurricane Sandy. Participants should have also been present in New Jersey and were affected by Hurricane Sandy in 2012. The other criterion was between 65 to 80 year old during Hurricane Sandy; living in a single family home that was located in Monmouth, Middlesex, Ocean or Atlantic Counties of New Jersey. Although, only Monmouth, Middlesex and Ocean counties were included in the final study.

After approval by the University Research Review and the Institutional Review Board (IRB), data were collected and recorded.

In qualitative research, the benefits of the case study design to acquire depth from the information and provide the opportunity for identifying meaningful themes (Yin, 2013). Data were organized to ensure confidentiality and systematic handling to analyze the responses. Data were sorted to identify any themes or keywords (see Yin, 2013). Computer software will assist in maintaining credibility, reliability and validity of the study (Yin, 2013). Organizing data began by grouping all question responses to scan for shared themes or patterns for coding purposes.

Researchers must identify their role in the research collection process and their ability to maintain integrity of the qualitative process (Sanjari, Bahramnezhad, Fomani, Shoghi, & Cheraghi, 2014). It is imperative to not influence the participants in the study when administering the questionnaire (Sanjari et al., 2014). My role as the researcher was to administer the questionnaire to the participants and review each completed questionnaire to insure no discrepancies occur. If participants were unable to read or write legible to complete the questionnaire, I would read and mark the questionnaire based upon the answers given by the participants.

### **Development of the Survey Instrument**

A two-part survey instrument was given to each participant. Creation of survey instruments utilized best practices in addition to research questions by Al-rousan et al., (2014), Gowan, et al., (2015), and Strang (2014). Part I consist of 28 questions inquiring level of emergency preparedness assessing before, during and after Hurricane Sandy. Each question utilized clear language, directed to gather information about a specific idea per question. Part II consist of a 14 question demographic survey to obtain personal characteristics and level of health. This survey was used to collect data age, gender, grade level, health conditions and health limitations.

Part I of the survey instrument consist of a series of open-ended and close-ended questions to determine variables of preparation and the level of preparation. The open ended questions assist in determining how they learned about Hurricane Sandy and the potential impact of the storm, whether they prepared, what type of preparation they made, how soon after hearing about the impending storm did they begin to prepare and whether or not they would prepare differently if they had to do it again. In addition, they were

asked if their health restricted their ability to prepare and what resources they had that helped them to survive. Their survey answers assisted me in determining whether they had an internal or external locus of control.

Part II consist of demographic questions such as age, gender, health conditions, city and county where they lived in 2012.

### **Distribution of the Survey**

Individuals were identified by visiting and speaking with individuals at local senior centers in Middlesex, Monmouth, Ocean and Atlantic counties. Although, only one senior center from Middlesex, Monmouth and Ocean counties agreed to participate. No senior center in Atlantic county agreed to participate. Surveys were included in the research study from participants that lived in single-family homes during 2012 Hurricane Sandy and met the age requirement. An anticipated average of 10 individuals from each county were expected to participate in the research study. Each of the counties selected were impacted differently and many had forced mandatory evacuation.

### **Participants**

The participants selected were between 65-80 years of old in 2012 during Hurricane Sandy natural event and also lived in single-family homes on or near the New Jersey coast in 2012 during Hurricane Sandy. Participants were also present in New Jersey during Hurricane Sandy. Those individuals that chose to evacuate outside Middlesex, Monmouth, Ocean or Atlantic counties were not included in the research study.

### **Protection of Human Subjects**

Each senior center was contacted to secure approval of the executive director before distributing the survey packets. The data collection began after IRB approval was obtained on May 6th, 2019 (IRB # 05-07-18-0385443). The participants in the study were adults aged 65 to 80 who are in the vulnerable category of humans requiring a full board review and approval. Maintaining confidentiality and privacy of participants and securing informed consent were essential for the integrity of this study. Each participant received a consent form along with the 2-part survey in the packet and self-addressed stamped envelope. Those who voluntarily agreed to participate were asked to respond to the survey questions on their own time and return the survey with the self-addressed stamped envelope. All research data will be stored for 5 years in a secure place in my home and will be destroyed at the end of that period.

### **Data Analysis**

I used a qualitative method employing case study to analyze the data from interviews (Yin, 2013). I also identified themes regarding why those 65 to 80 might fail to prepare for disasters. The data generated was theme-based and interval-based from Parts I and II. Data were sorted in order to identify any themes or keywords (Yin, 2013). Computer software assisted in maintaining credibility, reliability and validity of the study (Yin, 2013). Organizing data began by grouping all responses to scan for shared themes or patterns for coding purposes.

### **Ethical Considerations**

The confidentiality of participants was maintained by adhering to strict guidelines. Data integrity, confidentiality and ethical concerns of Protected Health

Information and Informed Consent were reviewed prior to conducting this research.

With regard to informed consent, Health and Human Services Policy for the Protection of Human Subjects specifies that: Approval from the IRB of Walden University was not exempted; therefore, IRB approval was received to conduct this research.

### **Summary**

In Chapter 3, I discussed the proposed research design, the criteria used for sample selection, and the proposed sampling method. This chapter also discussed distribution of the survey and participants needed for the study and the method of data analysis. The chapter concluded with the ethical procedures implemented for the purpose of protecting confidentiality as well as compliance with Walden University's IRB guidelines.

In Chapter 4, I presented the data, data analysis, and the interpretation of the results of the data analyses.

## Chapter 4 – Results

### **Introduction**

The purpose of this qualitative study was to learn how level of preparedness related to the locus of control of those living in areas not usually affected by natural disasters such as hurricanes. In this research, I also sought to determine whether locus of control determined the level of preparedness of a population between 65 and 80 years old who were living independently in single-family homes in Middlesex, Monmouth and Ocean counties in New Jersey during Hurricane Sandy in 2012.

Participants were residents of local communities who survived the effects of Hurricane Sandy in 2012 that reached the coast of New Jersey. Many lost electrical power for longer than 2 days and were unable to communicate and receive messages from local authorities during and after the storm. Fifty-eight percent did not prepare or believed themselves to be always prepared for disasters with no extra preparation needed. Those who did prepare varied in their preparation from purchasing extra food and water, extra batteries for flashlights, and buying gasoline before they decided to evacuate, believing those were their best options for surviving the storm. It was not known whether the hurricane would create life-threatening situations and many believed it was unlikely to affect New Jersey because it is seldom affected by hurricanes.

I wanted to learn the perceptions of seniors who were affected by a natural disaster as preparation allows people to better manage the risks of anticipated disasters (Intergovernmental Panel on Climate Change, 2012). MacInnis et al. (2015) categorized preparation into six main areas, but only four are relevant to natural disasters: (a) reducing risk, (b) reducing vulnerability, (c) increasing resilience, and (d) increasing

readiness. Those who are prepared typically endure less property damage and physical harm by reducing their vulnerability (Curry, 2011)

The following are the results of the study, including a summary of the settings used for data collection and the methods I used to record responses. The research questions focused on those between the age of 65 to 80 at the time the effects of Hurricane Sandy began, whether they prepared for the storm, whether they were prepared for emergency, and the current public policy for the elderly community. The research questions were as follows:

RQ1: What are the perceptions of the disaster preparedness of elders 65 to 80 who live independently in single-family homes and may have cognitive and physical impairments?

RQ2: How does current public policy conform to the perceptions of the participants identified in Research Question #1?

### **Research Setting**

A total of 247 surveys were distributed with 51% completed to some degree and returned. Each participant received a consent form and survey to complete on their own time along with a self-addressed envelope to return the survey. One hundred twenty-six surveys were returned, although only 70% met the criteria of the research study. In all, 88 participants were included in the study with 84% in Middlesex County, 7% in Monmouth County; and 9% in Ocean County returning surveys.

I met potential participants at three senior centers, one in each county, and presented a brief summary of the information on the consent form that included the topic of the study, background information, voluntary nature of the study along with any risks

and benefits of being in the study. I then distributed survey packets that included the consent form, survey questionnaire and self-addressed stamped envelope between May 18 and July 10, 2018, following receipt of the Walden University Institutional Review Board (IRB) approval (approval no.# 05-07-18-0385443) of the research on May 6th, 2018. The individuals that received the packets were those interested in contributing their personal experience before, during, and after Hurricane Sandy in 2012.

### **Demographics**

I distributed 247 surveys at the three senior centers, one in each county. There was extensive flooding in some areas, but none of the centers were located in flooded communities. One hundred and twenty-seven surveys were returned, but 39 did not meet the criteria and were excluded because they did not list age, were outside the age criteria or had not lived in a single-family home at the time of Hurricane Sandy. A total of 88 participants met the criteria for the research study: 74 from Middlesex County, 6 from Monmouth County and 8 from Ocean County. Middlesex County residents received very little flooding due to the population living more inland. Most were without electrical power for between a few hours to 14 days because of the high winds that downed power lines, poles and trees. A few participants did not lose electrical power but thought the hurricane warnings by local authorities and media were neither credible nor applicable to New Jersey. However, parts of Monmouth County had severe flooding caused by storm surges that caused major flooding of homes and high winds that caused electrical outages. Little electric power was available in Monmouth County after Hurricane Sandy, resulting in no lights, heat, refrigeration or hot water for an average of 4.5 days. Electrical power outages also resulted in a limited gasoline supply because many stations lacked

generators to extract gas from tanks underground. As a result, no fuel was available in large areas of Monmouth County. Supermarkets and pharmacies were closed due to electrical outages, which resulted in no replenishing of nonperishable food items or medication refills. Ocean County had little to no flooding or electrical outages. However, in all three counties, cell towers collapsed from high winds resulting in limited communication with local authorities, family members, or emergency services.

Demographic data included females outnumbering males in completing the surveys by 4 to 1 with 33% married and 67% single, divorced or widowed. Eighty-three percent rated themselves as having good to excellent health during 2012. Seventeen percent rated themselves as having fair health, where none rated themselves as being in poor health.

## **Data Collection**

### **Time Frame for Data Collection**

Data collection should be systematic when gathering information and measuring results (Yin, 2016). To follow the requisite protocols and ensure credibility, I pursued the following after receiving IRB approval for the study: (a) distributed the survey, (b) selected returned survey that met the research criteria, (c) ensured data accuracy when recording, (d) arranged and categorized the data, and (e) interpreted and reported the findings (see Yin, 2016).

I met all purposes, intentions, and scope of the study. Moreover, I presented at agreed upon venues and distributed survey packets to all individuals wanting to provide information about their experience for the purpose of the research study. Only the returned surveys that met the criteria of the study were included in the results. Those

who were included were between the ages of 60 to 85 in 2012 who had lived in single family housing in the three New Jersey counties during Hurricane Sandy. No names were on the surveys and there were no noticeable distinguishing marks on surveys. The self-addressed envelopes included the county where the senior center was located.

I made a brief presentation at each of the three local senior centers. The presentation reiterated the information that was listed on the consent form describing the focus of the research study, background, procedures, voluntary nature of the study and benefits of being in the study. Appendix A is a copy of the two-part survey.

### **Unknown Discrepancies in Data Collection**

Data were compiled from the received surveys that met the criteria for the study. There was no way to verify if participants submitted more than one survey, but I was careful to give a single packet to each person requesting. Some were concerned they might not remember everything that transpired in 2012 and many surveys were not completed, but it is unknown if questions were intentionally not answered or accidentally skipped over. A few indicated vision problems might have prevented them from completing the written survey, but there was no option for those with vision impairment.

### **Data Analysis**

This section of the research come from analysis and interpretation of the data collected from the 88 surveys. Data used included only the surveys received from those who met all criteria of the research study. The analysis process occurred over a 3-week period, which included evaluation and interpretation of the closed-ended questions on the survey and hand-coding of open-ended questions. The open-ended questions were recorded by development of lists of statements, and repeated words or phrases that

emerged from each accepted survey. I used these hand-codes as nodes in NVivo, which provided the basis for queries in NVivo. The hand-coding process continued with the development of themes as identified in the next section.

For the purpose of the analysis, three key themes were extrapolated with the aid of NVivo qualitative software. These included (a) delayed acceptance, (b) defective instinct, and (c) unexpected effects of disasters.

With the first theme, I wanted to understand the sense of urgency and the person's ability to process the effects of an impending disaster. With the second theme, I wanted to understand the efficacy of strategies initiated because the disaster that could force some to evacuate and others to shelter in place. With the third theme, I wanted to understand the participants' resilience because disasters will likely drain many resources during the process of a prolonged community recovery. Problems are magnified for those who are older, as age increases vulnerability and reduces the ability to respond quickly. The problems outlined in the next section may affect anyone in the path of an impending storm or other emergency to some degree but are more serious in older people:

### **Themes and Key Concepts**

#### 1. Delayed Acceptance Theme

##### Key Concepts

- (a) Not registering with the local authorities
- (b) Not thoroughly preparing for disaster
- (c) Inadequate preparation time
- (d) Dismissing local news warnings before, during and after disaster

(e) Not attending disaster preparedness program prior to disaster

(f) Not understanding resources offered at the senior centers

## 2. Defective Instinct Theme

### Key Concepts

(a) Not understanding the purpose of a written emergency evacuation plan

(b) Not knowing the locations of the local shelters

(c) Not understanding why local authorities requested evacuating certain areas

(d) Not following the recommendation to evacuate

## 3. Unexpected Effects of Disasters Theme

### Key Concepts

(a) Not having communication means to hear details after the disaster

(b) Not realizing electrical power could be lost

(c) Not realizing that electrical power would not immediately be repaired

(d) Not understanding drinking water could be contaminated

(e) Not realizing supermarkets and pharmacies would not be available after the disaster

Failure to address any of the themes increases both risk and vulnerability. To reduce risk, each of the concepts must be weighed according to health as well as with mobility, vision, and hearing to properly assess the seriousness of the situation. The goal is to reduce risk and vulnerability and increase resilience and readiness for the targeted population.

## **Evidence of Trustworthiness**

### **Credibility**

For the purpose of credibility, I secured IRB approval in May of 2018 and followed the Walden guidelines throughout the study. I also documented the consistency in the presentations to ensure accurate research information, distribution of data collection instruments, and the data analysis process (see Yin, 2016). I supported credibility by employing both hand-coding and NVivo computer software to analyze data.

### **Transferability**

As described in Chapter 3, I used detailed data collection and analysis processes to ensure transferability. Selection of the sample included self-selection of participants to complete the survey instrument, but final selection was based upon specific criteria. Thorough descriptions of the selection process, research setting, and data collection also enhanced transferability.

### **Dependability**

A dependable study requires accuracy and consistency (Hayes et al., 2016). I have declared and explained the extent to which I followed proper research practices and have given future researchers a prototype for repeated studies. I have also enhanced my own learning through the process of research, data collection, and the multiple phases of coding and theme development.

### **Confirmability**

Patton (2002) argued that true objectivity is not attainable, so fairness in reporting research should be the aim, which requires a reasonable account for research bias. To

reduce the impact of bias, each survey completed for this study was unidentified by another person and returned anonymously. I made the same brief presentation to residents at each of the three senior centers. In the presentation, I reiterated the information that was listed on the consent form describing the focus of the research study, background, procedures, voluntary nature of the study, and potential benefits of participating in the study.

### **Study Results**

The purpose of this qualitative study was to learn how the level of preparedness related to the spectrum of the locus of control of those living in areas not usually affected by natural disasters such as hurricanes. The central research question for this study was, “What are the perceptions of the disaster preparedness of elders 65 to 80 who live independently in single-family homes and may have cognitive and physical impairments?” In this research study, I sought to determine whether an individual’s locus of control determines the level of preparedness for those between 65 to 80 years old who were living independently in single-family homes in New Jersey during Hurricane Sandy in 2012.

This study included 88 participants that met the research criteria. Following Yin’s (2013) strategy, I organized the data by grouping all responses for shared themes for coding purposes. I considered how ideas were connected and grouped these into themes. I recorded the different ideas they conveyed and set them side by side for comparison.

In this results section, the responses shared by the participants are shown as grouped into three main categories: (a) emergency preparedness, (b) evacuation planning,

and, (c) disaster aftermath. Each summary of results is followed by a brief description of the intent and an analysis that connects similar and meaningful data into more developed ideas that emerged along with the spectrum of the locus of control.

### **Results on Emergency Preparedness**

The survey questions were designed to learn the respondents' assessment of the impending disaster and their perception of their readiness for it. This enabled me to understand their sense of urgency and their ability to process the potential consequences of the storm.

Table 1

#### *How Participants Heard About Hurricane Sandy*

Media Type	Participants	Percentage
Television	84	65
Newspapers	19	14
Radio	21	16
Other	6	5

The purpose of this question was to determine whether all were aware of the hurricane. None lived off-grid or lacked regular interaction with his or her community. In asking this question, I was interested in understanding if they had heard the warnings of the impending danger of a hurricane approaching the coast of New Jersey. This question also identified how they received the news alerts.

All 88 participants confirmed receiving the news of the impending Hurricane Sandy from at least one media type. The three most popular frequent types of media

were television, newspaper and radio, with 95% hearing the message from those sources. Each also knew that flooding and high winds would be part of the effects of the hurricane with 84% getting their information from television.

Question 6 pertained to how participants prepared for Hurricane Sandy (35 participants or 42% said they did prepare, and 49 participants or 58% said they did not). In asking this question, I was interested in understanding if the participants understood the media warnings of Hurricane Sandy and the possible implications for the New Jersey coast. All participants were aware of the hurricane, but not all were prepared for it.

Over half made no preparation for the hurricane in the belief that it would not occur or that someone else would handle preparations for them. Participants even appeared to have believed that abdicating responsibility for a potentially life-threatening situation could result in a positive outcome. Forty-two percent heeded the warnings and prepared at various levels. This group illustrated a high internal locus of control, understanding they needed to rely on their own abilities. Moreover, 58% utilized the external locus of control believing luck or fate would contribute to a positive outcome. Four did not answer this question.

Question 5: Did you register with the local police or emergency center for disaster help? Five participants (6%) said that they did, whereas 82 participants (94%) answered that they did not. The purpose of this question was to learn if those living in the wake of the storm would make local authorities aware of their presence in the community. In asking this question, I was also interested in knowing if they were aware they could register with the local police or emergency center. And, secondly, did they

register with local authorities in the event they might have needed assistance during or after the storm.

Ninety-four percent were not aware of the local police or emergency center registry for residents who may need assistance in an emergency. Those that were registered were less than 6% of total. One person did not answer the question. The number of participants who registered, by county are as follows: Middlesex (3), Monmouth (one), Ocean (one).

One participant registered the year she became wheelchair dependent in her home to inform the local authorities in case of an emergency. Another participant's son is a fireman who encouraged her to register when her husband died. Eighty-two exhibited external locus of control in the hope that fate would provide a positive outcome for their survival.

Table 2

*Participants Prepared for Hurricane Sandy*

Time	Participants	Percentage
Same day	29	36.0
Following day	14	17.5
Day before Hurricane Sandy reaching NJ	24	30.0
Other: 2 days before	2	2.5
Other: Never	11	14.0

The purpose of Question 7 was to expand on the question regarding preparation, remembering that only 35 of the 88 prepared. In this question, I was interested in knowing how soon before Sandy's anticipated landfall they decided to begin to prepare.

Warnings to prepare began 10 days before Hurricane Sandy reached the southern tip of New Jersey. Fifty-four percent of the respondents began preparing 9-10 days before the hurricane got to the coast of New Jersey. Almost 33% decided to prepare in some form one or two days before it reached New Jersey. Some felt that something as simple as moving garbage cans inside the garage was the only needed preparation. Those participants preparing at the last moment encountered bare grocery shelves and little available gasoline for their vehicles. Fourteen percent chose not to prepare or believed they were always prepared for any disaster. The majority exhibited external locus of control, leaving the outcome to luck and fate. Eight did not answer this question.

Table 3

*How Participants Prepared for Hurricane Sandy*

Results	Participants	Percentage
I am always prepared; no extra preparation needed,	21	12
Purchased additional food,	43	25
Picked-up medication,	18	10
Filled bath tub with water,	12	7
Purchased additional water,	43	25
Packed emergency bag or to-go bag	12	7
Prepared home (i.e., boards, sand bags, etc.)	6	3
Left for safer inland location	7	4
Other: Purchased other emergency supplies	5	3
Other: Evacuated	2	1
Other: Did not prepare	5	3

The answers shown in Table 3 illustrate how participants had prepared. In asking this question, I was interested in understanding their level of preparation for the expected hurricane. This question allowed for choosing all that applied during their preparation with degree of preparation ranging from the minimum of placing their garbage cans inside the garage to purchasing water and packing an emergency or to-go bag in the event it might be necessary to evacuate at a moment's notice.

Only 15% said no preparation was needed and/or chose not to prepare prior to Hurricane Sandy's impact. Forty-three seemed to believe that purchasing additional food and water was the only preparation they needed. Participants related hurricane preparation with other weather warnings that did not associate power outages with high winds. Most exhibited external locus of control because needs beyond the food and water would be left to luck or fate.

Question 9: Did health reasons restrict you from preparing for Hurricane Sandy? Three participants (4%) said *yes*, and 81 participants (96%) said *no*. The purpose of this question was to determine if those that failed to prepare were unable to prepare because of physical limitations. In asking this question, I was interested in understanding why 49 chose not to prepare as indicated in Question 6, although 43 had chosen to prepare as early as 9-10 days prior to the anticipated impact.

Ninety-six percent stated health reasons did not restrict them from preparing and eliminated the possibility that health reasons prevented their preparing. Eighty-three percent self-rated themselves as having good to excellent health during 2012, with 17% self-rated themselves as having fair health, and none rating themselves as having poor health. One participant chose to evacuate because of being wheelchair bound and another

because of concerns about evacuating during the night. Both of them understood their limitations and chose a plan to promote safety. Four did not answer this question.

Question 20 pertained to whether participants lost power during the hurricane. Sixty-two (70%) said yes, 20 (23%) said no, and six (7%) were unknown. The power outage ranged from 1 hour to 14 days. In asking this question, I was interested in understanding if they lost power anytime during the storm. If so, the importance of preparation as identified in Table 3 became more pertinent to reduce risk. The purpose of this question was to determine how long was the power outage.

Of the 62 who lost power during the storm, outages ranged from an hour to 14 days depending upon how damaged electrical lines were in the community. One participant became overly concerned because her insulin required refrigeration. Others were concerned not having capabilities of a television or radio to monitor the storm, particularly if flooding occurred. Of those whose length of power loss was unknown, the storm may have made landfall while they were sleeping and was restored before they awoke.

The results that 36 (58%) of the 62 who lost power did not prepare meant that 36 participants had drastically reduced their chance of survival. While 26 (42%) lost power, but were prepared. As mentioned earlier, no question was asked regarding available funds to purchase extra items to prepare. These participants exhibited an external locus of control, leaving the outcome to chance because they did not prepare.

I asked participants if they were able to receive news communications during the hurricane because I was interested in learning if the participant who lost power during the hurricane, were able to hear news alerts. Sixty-seven (79%) participants said *yes*, and 18

(21%) participants said *no*. The purpose of asking this question is to identify those that rely on television alerts but were unable to receive alerts due to power outage. Only those who had an alternative option, such as a battery-operated radio, were able to hear news alerts during the power outage.

Only 21% were not able to receive news communications during the Hurricane. One town issued an alert to boil water before consumption; however, those not able to receive news communications during the hurricane may not have known this. Three did not answer the question.

The purpose of asking whether participants participated in a disaster preparedness program was to determine how many sought to attend a disaster preparedness program. In asking this question, I was interested in understanding if any individuals ever attended a disaster preparedness program since severe weather changes continue to occur due to climate change. Three weeks after Hurricane Sandy, the Northeastern United States had an unexpected ice storm, and there was still no heat in many homes, rationed gasoline, and limited food at grocery stores.

Eighty-nine percent or 65 participants never participated in a disaster preparedness program, many did not know how to prepare an emergency bag or other steps to take to prepare for an emergency. Only eight participants (11%) said they participated in a disaster preparedness program. Perhaps because few replied that they were in poor health, only 4% mentioned ways to manage their health needs with a healthcare professional. Strangely, since the question required only a straightforward yes or no, it was unclear the reason 15 did not answer this question. Most exhibited external locus of control failing to proactively participate in a disaster preparedness program.

## **Result Tables – Evacuation Planning**

Each of the following survey questions was designed to evaluate the ability to evacuate quickly if required. The following section includes the number of participants who answered each question. I wanted to understand the efficacy of strategies initiated since the natural disaster could require some to evacuate and others to shelter in place.

Question 2: Did you have a written emergency plan for Hurricane Sandy? Three participants (3%) said *yes*, and 84 participants (97%) said *no*. In asking this question, I wanted to know if any one had created a written emergency evacuation plan prior to the impending hurricane or within the few days prior to it. A written plan is best when an emergency such as flooding occurs. This plan would identify necessary items to gather for a to-go bag, emergency supplies, where the local shelters were, and whether to shelter in place rather than evacuate.

Ninety-seven percent of the 87 who answered this question did not have a written emergency evacuation plan even though they lived in single-family homes within the community. Most participants indicated that they lived alone and were single, widowed, or divorced. External locus of control was manifested by their not choosing to have developed an emergency evacuation plan prior to Hurricane Sandy reaching New Jersey. One did not answer the question.

Question 3 also addressed the evacuation process by determining if participants knew where local shelters were set up. In asking this question, I wanted to know if participants had planned for other housing if flooding occurred or if mandatory evacuation was required before Hurricane Sandy reached New Jersey.

Fifty-one percent of those who answered this question (44 participants) did not know where local shelters were located in the community, whereas 43 participants (49%) said that they did. I hoped to discover whether those that attend senior center events regularly knew the location of local shelters, as senior centers presented its regular attendees with information about preparation and shelter locations prior to the approach of the hurricane. Over half of the regular senior center attendees must not have attended the information session about preparing for Hurricane Sandy's approach, which may have caused them not to know about emergency community resources.

Only 49% knew where the community shelters were, with those that knew having heard about them from the following sources:

1. Robo calls from local authorities to cell phone;
2. Information from the senior centers;
3. Newspapers listing the locations of the shelters;
4. Local police knocking on doors within community;
5. Radio and television stations reporting location information;
6. Word of mouth from friends and neighbors; and,
7. Internet postings on social media.

The many different sources that informed about shelter locations and services were designed to reach as many individuals as possible. The majority of the participants exhibited external locus of control because they chose not to plan for emergency shelter if forced evacuation was necessary. One did not answer this question.

Table 4

*Where Participants Would Evacuate*

Results	Participants	Percentage
Local Shelter	29	28
Friends	20	19
Family	44	43
Hotel	8	8
Other	2	2

Question 17 was designed to learn where respondents would go if forced to evacuate. In asking this question, I wanted to know if participants had additional resources to assist them during an emergency.

Many had a variety of places to choose from if it had been necessary to leave their homes, but 10% lacked other options to assist them or would not have felt comfortable in a shelter because of their physical limitations or having a pet. Because shelters did not accept pets, some remained in their homes with their animals despite the warnings. Forty-three percent stated family and nineteen percent stated friends would accept them. However, 28% stated they would go to the local shelter.

Question 14 was designed to learn if limitations would prevent immediately evacuating. In asking this question, I was interested in understanding if the participants were able to perform an emergency evacuation without assistance. In cases of flooding warnings, those who judged themselves unable to immediately leave unassisted were in

danger of losing their lives and endangering the lives of anyone who might have to go into the area to assist with an evacuation.

Forty-eight percent (42 participants) stated they would need help to evacuate at a moment's notice, whereas over a quarter stated transportation could come from family members predominantly their children or friends, neighbors, church members, or community resources like the police or fire department. Twenty-seven percent (24 participants) stated they did not believe they could undertake an emergency evacuation without the help of another person. Twenty-five percent (22 participants) did not answer this question.

In Ocean County, 38% would not have been able to make an emergency evacuation without help. One, however, had chosen to evacuate prior to the impact of Hurricane Sandy because of anticipated high tide. In Monmouth County, 17% would not have been able to perform an emergency evacuation without help. In Middlesex County, 26% said they would not be able to evacuate without help.

If those needing assistance were not registered with local police or emergency services, their chances of survival would be significantly reduced. Those who chose to stay in their homes without someone to assist them in an evacuation exhibited external locus of control because they chose not to plan for an emergency.

This question is a follow-up to participants being able to evacuate. In asking this question, I was interested in understanding if the respondents believed they could have evacuated at night, particularly in the rain. Those that knew they could not evacuate at a moments notice would risk their lives if flooding occurred.

Forty-three percent (35 participants) of the 82 that answered this question believed themselves incapable of driving in a rainstorm at night, and 47 participants (57%) said that they could. A few stated restrictions that prevented them from driving at night. Some stated health restrictions that included wheelchair or cane usage that restricted mobility and vision limitations while others stated self-restrictions for safety reasons. The 35 that could not drive through a rainstorm at night exhibited external locus of control because they chose not to evacuate before the disaster or to move with family or friends who would be able to assist with an evacuation. Six did not answer this question.

In asking this Question 11, I was interested in understanding if the participants received recommendations from local authorities to evacuate prior to Hurricane Sandy reaching New Jersey. Not many lived in a potential flood zone or were told to evacuate.

Ten percent (eight participants) stated they were told to evacuate due to possible flooding, whereas 70 participants (90%) said they were not told. Only a few heeded the warning and evacuated. One stated, "I would feel better in a home that is handicap ready rather than going to a shelter or hotel that would not be as convenient." Another stated, "I won't leave my cats behind." External locus of control was exhibited in those who left it up to fate or luck to determine their survival if flooding occurred. Ten did not answer this question.

I was also interested in learning if mandatory evacuation was imposed anytime during or after Hurricane Sandy due to flooding or unsafe dwellings.

Only seven participants were forced to evacuate their homes due to flooding in their community that impacted their chances of survival. Five were forced to evacuate

during the hurricane and two were evacuated after the hurricane passed. The five that were evacuated during the storm were able to drive in the rainstorm, and three of the five had not prepared. The two that evacuated afterwards could not drive and were not prepared. A strong external locus of control existed with those who evacuated during or afterwards. Nine did not answer the question regarding evacuating *during* the hurricane and 18 did not answer the question regarding evacuating *after* the hurricane.

### **Results on Disaster Aftermath**

Each of the following survey questions was designed to evaluate the elders' ability to sustain living or resilience without electrical power and communications. I wanted to understand the resilience of the elders since natural disasters drain many resources in the process of a community returning to normal.

The purpose of this question was to assess if participants were able to receive news alerts since many encountered power outages. In asking this question, I was interested in understanding if the participants were prepared to obtain news alerts after Hurricane Sandy. The ability to hear news alerts is imperative during the hurricane.

Eighty-nine percent of those who answered this question (71 participants) were able to receive news communications after Hurricane Sandy. However, 11% (nine participants) were not able to receive new communications nor had any way of receiving news alerts. One utilized the car radio to listen to news alerts. Another with no access to news alerts realized after the power returned that the tap water was contaminated. Leaving news communications to fate or luck instead of preparing for power outages displayed external locus of control in these participants. Eight did not answer this question.

Table 5

*Length of Power Outage*

Power Outage	Participants	Percentage
1 to 5 hours	7	11
6 to 12 hours	2	3
1 to 3 days	21	34
4 to 7 days	14	23
8 to 10 days	7	11
Longer than 10 days	2	3
Did not indicate time	9	15

As indicated earlier, 62 participants in the survey lost power at sometime during the hurricane. The shortest amount was 1 hour, while the longest was 14 days. However, when electricity is out, it is not always possible to know the length of time in hours without a battery-operated timepiece. The largest number of participants was without power from 1 to 3 days.

A total of 71% of the respondents, lost electrical power due to high winds and flooding from Hurricane Sandy striking the coast of New Jersey. The biggest concern was refrigeration and the need to charge cell phones for communication with family, friends and emergency services. Failure to have a battery-operated radio resulted in not all people receiving consistent emergency alerts, such the warning to boil water before using it for drinking or cooking. One who prepared by purchasing extra water and canned food felt prepared until she realized that she needed a manual can opener.

Proper planning for a disaster such as Hurricane Sandy is essential because of the likelihood of power outages. Disruption in communications, closing of grocery stores, pharmacies, gas stations, and banks; causes of food spoilage and water contamination; and use of medical devices all occur because of unexpected power outages. Leaving survival to chance, luck or fate – whatever label you ascribe to the attitude as described in external locus of control is likely to produce serious consequences.

### **Evaluation of Findings**

A few authors (Yin 2016) indicated that evaluating findings of a study strengthen both an understanding and the importance of the data collected. The target population was between the ages of 65 to 85 in 2012 during Hurricane Sandy, six years later, they were between the ages of 71 to 91, but most vividly remembered how they prepared and what occurred during the event. Fifty-eight percent did not prepare for Hurricane Sandy. Eighty-nine percent stated they had never participated in a disaster preparedness program. Only 11% felt prepared and equipped to handle the impending disaster, but only 3% had a written emergency evacuation plan.

This study was framed around one key theory: the locus of control (Rotter 1954), which addresses two spectrums: internal and external. Internal locus of control indicates the person has a sense of control over outcomes resulting from behavior and that each person is the master of his or her own fate. External locus of control directs one's belief that outcomes and consequences in life are uncontrollable, and that outside forces dictate the results of events and situations (Rotter, 1966).

Research indicates that having an external locus of control as opposed to an internal locus of control is a protective factor for elders. Several factors can influence an

elder's locus of control and whether they gravitate toward the internal or external end of the spectrum. Data indicated that external locus of control drove factors that elders failed to prepare for the impending hurricane, lacked an emergency plan to shelter-in-place did not know the locations of local shelters, and had not registered with local authorities for assistance that would be required during or after the hurricane.

Those who lost electricity more than one day accepted the situation and “did what I needed to do to survive” stated one participant. Seventy-seven percent stated they would prepare the same way if another disaster occurred. However, because 14% did not lose power longer than 12 hours, they thought that justified their not needing to prepare. Moreover, there was no way they could have known they would have power through the storm, a factor that seemed to diminish the sense of their reasoning. There was also a correlation between changes in the way they prepared and the number of days they had been without electrical power. Those that lost power for a longer time said they would prepare better if another disaster threatened their homes. Their suggestions are listed below in their own words.

#### **Future Changes in Preparation**

1. Prepare a to-go bag.
2. Have more water.
3. Find a pet friendly shelter.
4. Be better prepared.
5. Buy extra food and be prepared to evacuate.
6. Identify more information resources.
7. Purchase more flashlights, candles, water and non-refrigerated foods.

8. Coordinate transportation early.
9. Have more information about preparation.
10. Have battery-operated radio to hear emergency information – did not find out about contaminated water.
11. Implement preparation instructions.
12. Purchase a manual can opener.
13. Pay more attention to the seriousness of the storm.
14. Leave the area before the storm hits.
15. Home is handicap assessable, no change, concerned shelter would not be easy.
16. Buy more food.
17. Prepare better for emergency evacuation.

A few stated they did not take the warnings seriously because weather conditions such as hurricanes seldom impact New Jersey. Only one said the experience of living through Hurricane Floyd in 1997 encouraged her to attend a disaster preparedness program.

### **Public Policy**

Changes in New Jersey public policy since Hurricane Sandy have been enacted to address gaps in disaster preparation for areas not prone to disasters. After Hurricane Sandy, the following policies, were proposed to solve the problems of filling stations inability to pump gasoline without power, closed grocery stores, lack of emergency public transportation, homes in low lying areas, downed power lines, need for a central registry to maintain contact between citizens and public safety agencies, solutions to

problems such as looting, burglary and theft were proposed to support communities and provide additional safety. Many additional policies were proposed, however, I only selected policies that were relevant to older adults living in single-family homes. Each of the policies was focused on developing resilience and options for individuals during a disaster.

### **New Jersey State Legislature Bills**

The legislature proposed new bills after Hurricane Sandy to help provide solutions to many problems faced by the population under the study in the event of another disaster such as that storm. Among other services and laws, these provided the following applicable to older adults living in single-family homes:

- A2930/S1919 – “Blue Acres Floodplain Protection and Home Elevation Bond Act of 2013”, authorizes bonds for \$100 million, and appropriates \$5,000.
- A3445/S1804 – Permits pet owners to board public transportation with domesticated animals during emergency evacuation (*passed 2014*)
- S1730/A1199 – Requires electric distribution lines be located underground in areas affected by severe weather or natural disasters.
- S2351/A3647 – Makes looting during a state of emergency an aggravating circumstance in sentencing.
- S2356/A3487 – Establishes mandatory penalties for committing burglary and theft during a state of emergency.
- S2357/A3486 – Requires newly constructed grocery stores to have generators.
- S2361 – Requires gas stations to install generators.

- S2436/A3784 – Establishes central registry of residents with special needs for use during emergencies.

### **Protection**

Local police were concerned with individuals attempting to take advantage of communities by looting and robbing when homeowners evacuate due to severe weather or a disaster. Legislation was proposed to provide peace of mind for homeowners to address looting during a state of emergency as an aggravating circumstance in sentencing. Legislation also established mandatory penalties for committing burglary and theft during a state of emergency. These measures are designed to have thieves think twice before participating in a criminal act. No participants mentioned a fear of looting or robbery during evacuation.

Another legislature bill establishes a central registry of residents with special needs for use during emergencies. This registry will aid local agencies in knowing which residents within the community may need extra assistance during emergencies. Also, during emergency evacuation, pet owners will be permitted to board public transportation with their domesticated animals. This would encourage the elderly to evacuate because they will be permitted to bring their pets with them during evacuation.

### **Rebuilding**

The rebuilding phase focus on planning and preparation for the next disaster. Legislation was proposed to relocate electric distribution lines underground in areas affected by severe weather or natural disasters. This would prevent those lines from being damaged in the next disaster. Many grocery stores and gas stations did not have generators that reduced resources in the community for residents. Grocery stores could

not open or receive new groceries because they lacked electrical power. The same occurred with gas stations that had gas, but were unable to pump the gas out of tanks without electrical power. Legislature bills were proposed for newly constructed grocery stores to have generators and requiring gas stations to install generators.

Finally, The “Blue Acres Floodplain Protection and Home Elevation Bond Act of 2013”, authorizes bonds for \$100 million, and appropriates \$5,000 for expenses allows cities to purchase homes flooded in 2012 and demolish the flooded home to create community land. Those homeowners that wish to rebuild are required to elevate the property as required based upon FEMA flood zone requirements. The \$25,000 to \$75,000 cost of elevating a home is not financially feasible to many elders.

### **Summary**

In response to the research questions for this study, I analyzed 88 surveys that met the criteria of the research study. Three counties included in this research were Middlesex, Monmouth & Ocean. I sought to determine the perceptions of disaster preparedness of elders 65 to 80 who live independently in single-family homes and may have cognitive and physical impairments. Next, I sought to analyze how current public policy conform to the perceptions of the participants identified in RQ1. In this chapter, I presented a qualitative study to learn how the level of preparedness related to the spectrum of the locus of control in areas not prone to natural disasters.

The central research question for this study was, “What are the perceptions of disaster preparedness of elders 65 to 80 who live independently in single-family homes and may have cognitive and physical impairments?” Participant perceptions about disaster preparedness were grouped into three key themes from the data collected. These

include: (a) delayed acceptance, (b) defective instinct, and, (c) unexpected effects of disasters. These perceptions are consistent with others who have not lived through disasters.

Many respondents exhibited a high external locus of control based upon their preparation for Hurricane Sandy. Those that did not prepare for an extended power loss let chance determine the outcome of the condition. Those who experienced extended power outages realized that that condition caused severe hardships and the need for external assistance and support. Such hardships included not eating everyday, others cooked on their outside grill, coats were worn inside their home around the clock and blankets were layered at night while sleeping in their clothes. The purpose of preparing for a disaster is to reduce risk and vulnerability and increase resiliency and readiness. There is a distinct correlation between proper preparation and minimizing physical harm.

In Chapter 5, I provided a summary of why I performed this research and further interpret the results. I also included implications for social change, and suggest recommendations for future research.

## Chapter 5: Discussion, Recommendations, and Conclusion

### **Introduction**

In this final chapter, I will provide a summary of why I performed this research. Disaster preparedness continues to be a concern of those living in areas that are likely to suffer from natural disasters associated with weather, particularly older citizens living alone who lack the ability to provide for their own care in the event of an emergency. Natural disasters are likely to increase in frequency and magnitude because of global climate change, and surviving them further limited without adequate preparation.

In many cases, aging affects a person's ability to react quickly to emergency situations such as disasters. The purpose of this qualitative study was to learn how level of preparedness related to the spectrum of the locus of control (Rotter, 1966) of those affected by Hurricane Sandy in 2012. I asked a series of questions to explore the perceptions of disaster preparedness of those aged 65 to 80 who lived independently in single-family homes and may have had cognitive and physical impairments. The population was identified from a group that regularly meets at a senior center that serves three counties in New Jersey.

I conducted this qualitative case study to discover the level of preparation and factors that might limit preparation. In Chapter 4, I analyzed the collected data from 88 questionnaires and learned the essential understanding of participants regarding disaster preparation. I provided the results for each pertinent question from the questionnaire and identified three main themes that emerged from the data. All three themes addressed specific gaps in reducing risk and vulnerability and increasing resilience and readiness.

In the three themes, I showed how the participants were able to connect key concepts to the listed themes.

In this chapter, I will present the interpretations of the data collected from the participants and will present the way the themes regarding disaster preparation matched the locus of control theory. I will also include the limitations of this study and recommendations for further research. Finally, I will describe the potential of positive social change.

### **Interpretation of the Results**

The findings of this study are consistent with some of the literature describing disaster preparation among older adults. However, this study provides new findings showing the level of disaster preparedness related to the locus of control as a new factor for preparation. In this study, three themes emerged from the participants describing the factors lacking in survival skills. The themes consisted of (a) delayed acceptance, (b) defective instinct, and, (c) unexpected effects of disasters.

### **Connection to Locus of Control**

The locus of control is a key variable in a person's determination and perseverance and is likely to affect the level of preparedness for disasters (Halpert and Hill, 2011). The locus of control theory (Rotter, 1966) is effective for predicting disaster preparedness and identifying effective and efficient strategies for increasing survival, resiliency and recovery, and improving the quality of a potential victim's life during and after a disaster (Al-rousan et al., 2014; Tuohy, et al., 2014). The theory may also lead to recommendations for preparation that could reduce fear and confusion. Understanding preparedness behavior through the theory of locus of control helps explain how a strong

external locus of control before the storm shifts a person's perception while experiencing hardship in surviving the storm. If people are prepared for the potential negative consequences of any emergency, they are more likely to survive or suffer less from its consequences.

Those with high internal locus of control believe they are in control of the situation, but the belief alone will not keep them safe during a disaster, as the effects of the disaster cannot be contained or controlled. Those with a high internal locus of control believe they can control the outcome of a situation by manipulating their behavior and not the variables of the situation (Halpert & Hill, 2011). However it is better to seek safety until the disaster ends, as the effects of a hurricane, wildfire, or other unexpected and potentially devastating events are beyond human control.

Those with a high external locus of control believe external forces such as fate, luck, or their birth sign will control the outcome of their situation or destiny (Rotter, 1966). Having a high external locus of control indicates a person lacks control of a situation that is driven by external forces such as nature or luck, forces they believe are beyond anyone's control. Their thinking is that no preparation can alter the inevitable, so they may be less prepared even though it can alter outcomes. Those who believe in luck hope they will have the good fortune to be spared and leave it in the hands of fate or nature.

### **Locus of Control Theory and Delayed Acceptance**

I sought to understand the preparedness of older adults in handling the kind of disaster they had never experienced in New Jersey, and as a result, did not know what the effects of the storm might be. Preparedness has been shown to have a significant and

positive influence on human survival and follow-up, as it suggests people are realistic and informed about imminent and potential after effects (Al-rousan et al., 2014). I hoped to understand the sense of urgency and the older individuals' ability to process an impending disaster. Most were consistent in presenting a delayed acceptance of the it, but many did not undertake measures that might have minimized risk and vulnerability. A strong level of external locus of control weighed on their not being prepared to shelter in place. For those living in a single family dwelling, isolation can add to the effects of the frightening aspects of a storm. Although no participants indicated lack of finances influenced their delayed acceptance that the hurricane was approaching or lacked the means to escape, they still seemed not to accept the potential for the worst-case scenario of being without power, food, heat, water that was safe to drink, or the means to drive away from home to safety.

### **Locus of Control Theory and Defective Instinct**

I wanted to learn potential strategies that could be initiated at the time of evacuation. Older adult vulnerabilities include reduced physical mobility and diminished sensory ability (Langan et al., 2012). Defective instinct is not realizing the need to evacuate prior to a pending disaster and denying their physical or cognitive limitations that would prevent them from evacuating independently.

Flooding, compromised shelter, or an unsafe environment force people to evacuate to a safe location without being ready to leave their homes. Evacuation during a storm required additional assessment variables to ensure safety. Unplanned evacuations or “deciding what to do as you go along” can be more life threatening than staying in a home without power, food, or water or a compromised home structure. Flash floods,

ocean surges or falling trees could strand individuals in compromised situations and turn deadly fast. Here, a strong level of external locus of control weighed heavily in the areas of failing to be proactive rather than reactive. Although no participants indicated fear of looting or robbery after evacuating influenced the delayed acceptance that the hurricane was approaching in retrospect many were probably frightened of these events occurring.

### **Locus of Control Theory and Unexpected Effects of Disasters**

My intent and emphasis was to clearly identify the duration, situation, and effects on participants after the disaster. Unexpected results after a disaster may sideline regularly scheduled plans. I also wanted to understand the resilience of the population, since any emergency may drain resources in the process of a community returning to normal. The strong level of external locus of control was manifested during power outages that forced individuals to face what they had never expected to experience. While locus of control is generally stable, it can change from experiences such as aging and knowing and accepting one's limitations (Ahlin & Antunes, 2015).

### **Limitations of the Study**

In this study, I explored the perceptions of disaster preparedness of elders 65 to 80 who live independently in single-family homes and may have cognitive and physical impairments. I limited myself to the subjective understandings and experiences of the participants. The experiences explored were designated to this particular context. Additional research is needed in regard to the larger expression of disaster preparation.

There were also several limitations in regard to context. The first limitation was that the study included more people from Middlesex County than the other two counties: Monmouth and Ocean. A much larger group in Middlesex County felt empowered to

share their experiences of Hurricane Sandy and assist in contributing to future disaster preparation for the aging population. The second limitation was not having participants that had lived in the flooded communities during Hurricane Sandy. The third limitation was that many senior centers were not able to schedule me to present to the elders until 2019, which limited this research study to only three sites. The final limitation was the survey instrument, as I failed to include questions that asked about whether they had the finances to prepare for the disaster and if they did not fear death. As many in this age group may not have believed they would live past their 70s, they might have thought death would be a welcomed relief from the struggles of their lives.

### **Recommendations**

Significant openings for future research exist as a result of this topic. The setting might be in apartment complexes rather than single-family residences, and the population may have cognitive and physical impairments. An extended analysis could further analyze emergency preparation perceptions, if the perceptions of those living in this setting had similar perceptions about personal disaster preparedness. If the results are not consistent across this housing variable, this inconsistency might prompt the development of a more accurate assessment tool to ascertain perceptions of disaster preparedness regardless of dwelling type.

The findings of the current study could help offices of emergency management to develop programs that would teach an aging population how to prepare for an emergency by including the following in its instruction: (a) the need for disaster preparation, (b) the types of potential disasters (natural and man-made), (c) how to prepare to shelter in place, and, (d) how to undertake thorough evacuation planning.

### **Social Change**

This research revealed the need for emergency preparedness education for older adults in many geographic areas, particularly those living in areas that rarely experience natural disasters, as many have begun to experience emergencies that had never occurred where they live. This recommendation arises from the fact that those prepared for a disaster should have increased survival and resiliency as well as a shorter recovery time from its effects. This research illustrates for emergency management agencies that a large sector of the older adult community does not live in senior housing. The participants in this research study were active in their local senior center; however, not all older adults have a connection to an agency that exists to support them and their interests and needs.

The implications for social change include the fact that offices of emergency management must continually promote an increased level of preparedness, resiliency, survival, and reduced recovery time in the community during non-disaster times. Moreover, utilizing the results of this research study to design educational programs to change the strong external locus of control exhibited by the participants in this study.

### **Conclusion**

In the United States in recent years, natural disasters such as snowstorms, ice storms, floods, tornadoes, hurricanes and earthquakes have been increasing in frequency and magnitude as a result of climate change (Ellenwood, Dilling, & Milford, 2012; Field, 2012). According to the U.S. Census Bureau, the elderly population is expected to continue to grow as a percentage of the population, a factor that should compel all levels

of government to recognize the need to provide more federal, state, and local resources for this population (Onder & Schlunk, 2015).

Modern assumptions about physical and cognitive impairments affecting disaster preparation exist within the locus of control theory (Rotter, 1954) and there continues to be a search for ways to continue to reduce the risk factors and vulnerability of the older population. At the same time, there is a need to increase the resilience and readiness of that population so they may be safe despite their increased vulnerability to misfortune (Curry, 2011).

Local and state authorities will need to provide additional resources for older adults that live in single-family housing. As the largest U.S. population group continues to age, remain independent, and chooses to age in their own homes, there will be increasing numbers of those living outside of care facilities. This will propel the driving factors of disaster preparedness toward resiliency, survival and recovery. This group manifests a strong external locus of control that can be attributed to luck, chance, fate, or elements outside of their ability to control. These factors can render people powerless and hopeless in challenging and adverse situations (Ahlin, 2014; Mirowsky & Ross, 1990). Perhaps there needs to be a study of disaster preparedness from a different perspective, and to look past the reasons these people had such a strong external locus of control reduces the magnitude and significance of the negative outside forces in one's life.

Unless local and state authorities follow several practical approaches, older adults' chances of changing the locus of control spectrum from high external to low external or internal are highly unlikely. Local and state authorities should create learning

opportunities to teach this population to heed and prepare for impending disasters now rather than when there is a broadcast that a disaster is imminent. Doing so could contribute to positive social change by reducing the instances of emergencies in which older adults are stranded in their homes without food or power.

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## Appendix A: Survey

## General Questions

1. Gender:     Male         Female
  
2. Age: \_\_\_\_\_
  
3. Marital Status:     Married                     Single                     Divorced  
                                  Separated                     Widowed
  
4. Self-reported race/ethnicity:  
       White, non-Hispanic  
       Black, non-Hispanic  
       Hispanic  
       Asian  
       Other
  
5. What is the highest level of education completed or the highest degree you have received?  
       Less Than high school  
       Completed some high school  
       High school graduate or GED  
       Completed some college, but no degree  
       Completed college  
       Completed some graduate school, but no degree  
       Completed graduate school
  
6. Where did you live at the time of Hurricane Sandy in 2012? City?  
       Single Family home -- \_\_\_\_\_

\_\_\_ Townhome/Condo -- \_\_\_\_\_

\_\_\_ Apartment -- \_\_\_\_\_

\_\_\_ Other -- \_\_\_\_\_

7. Health condition in 2012?

\_\_\_ Excellent

\_\_\_ Good

\_\_\_ Fair

\_\_\_ Poor

8. Have you been diagnosed with any of the following? (circle all that applies)

ALS or Lou Gehrig's

Alzheimer's disease

Cancer

COPD

Diabetes

Emphysema

Heart disease

Hypertension

Lupus

Multiple sclerosis

Osteoporosis

Parkinson's disease

Rheumatoid Arthritis

Stroke

Other \_\_\_\_\_

- |   |     |    |
|---|-----|----|
| 9. Do you use a cane, walker or wheelchair? | Yes | No |
| 10. Do you use a hearing aide?              | Yes | No |
| 11. Do you have problems with your sight?   | Yes | No |

## Disaster Preparedness/Hurricane Sandy

1. How did you hear of the impending Hurricane Sandy?

TV       Newspapers       Radio       Other

2. Did you have a written emergency evacuation plan for Hurricane Sandy?

Yes     No

3. Did you know where the local shelters set-up in the community during Hurricane Sandy?

Yes     No

4. How did you know about the shelters?

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5. Did you register with the local police or emergency center for disaster help?

Yes     No

6. Did you prepare for Hurricane Sandy?

Yes     No

7. How soon after hearing about Hurricane Sandy did you begin to prepare?

Same day

Following day

Day before Hurricane Sandy reaching NJ

Other: \_\_\_\_\_

8. How did you prepared for Hurricane Sandy? (select all that apply)

I am always prepared, no extra preparation needed

Purchase additional food

- Pick-up medication
- Fill bath tub with water
- Purchase additional water
- Pack an emergency bag or to-go bag
- Prepare home (i.e., boards, sand bags, etc.)
- Leave for safer inland location
- Other: \_\_\_\_\_

9. Did health reasons restrict you from preparing for Hurricane Sandy? If so, Explain.

Yes No

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10. Which of the community services do you receive? (check all that apply)

- Meals on Wheels       Transportation       Therapy (PT or OT)
- Bathing/Showering       Dressing       Mobility (walking/transferring)
- Meal preparation       Other: \_\_\_\_\_

11. Did local emergency departments recommend leaving the area prior to Hurricane Sandy reaching NJ?

Yes No

12. Were you informed to evacuate anytime during or after Hurricane Sandy?

During:      Yes      No

After:      Yes      No

Why? \_\_\_\_\_

13. Were you able to receive news communications during the Hurricane?

Yes No

14. Could you have performed an emergency evacuation without the help of another person?

\_\_\_\_\_

15. Could you have driven through a rainstorm at nighttime? If no, what limits your ability?

Yes No

16. If you are unable to drive, could you have secured transportation to evacuate in case of a disaster? If yes, how?

Yes, \_\_\_\_\_

No

17. If you evacuated, where would you go?

\_\_\_ Local Shelter

\_\_\_ Friends

\_\_\_ Family

\_\_\_ Hotel

\_\_\_ Other \_\_\_\_\_

18. Were you able to receive news communications after the Hurricane?

Yes No

19. Does your home have multiple exits in case of blockage?

Yes, how many? \_\_\_\_\_

No

20. Did you lose electrical power at any time during the Hurricane?

Yes No

If yes, how long? \_\_\_\_\_

21. Have you participated in a disaster preparedness program? If yes, where and when?

Yes, \_\_\_\_\_, year \_\_\_\_\_

No

22. Would you change the way you prepared if you could do it again? If so, how? If not, Why?

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23. Has your doctor or other health professionals discussed what to do in case of natural disaster?

Yes No



8. Have you been diagnosed with any of the following? (circle all that applies)

ALS or Lou Gehrig's

Alzheimer's disease

Cancer (qty: 15)

COPD (qty: 7)

Diabetes (qty: 17)

Emphysema

Heart disease (qty: 10)

Hypertension (qty: 38)

Lupus

Multiple sclerosis (qty: 1)

Osteoporosis (qty: 10)

Parkinson's disease

Rheumatoid Arthritis (qty: 12)

Stroke (qty: 5)

Other \_\_\_\_\_ (qty: 6)

9. Do you use a cane, walker or wheelchair? 17 Yes 71 No

10. Do you use a hearing aide? 17 Yes 71 No

11. Do you have problems with your sight? 21 Yes 65 No

## Disaster Preparedness/Hurricane Sandy

1. How did you hear of the impending Hurricane Sandy?

Media Type	Participants	Percentage
Television	84	65
Newspapers	19	14
Radio	21	16
Other	6	5

2. Did you have a written emergency evacuation plan for Hurricane Sandy?

Yes (three participants, or 3%)

No (84 participants, or 97%)

3. Did you know where the local shelters set-up in the community during Hurricane Sandy?

Yes (43 participants, or 49%)

No (44 participants, or 51%)

4. How did you know about the shelters?

- Robo calls from local authorities to cell phone
- Information from senior centers
- Shelters listed in local newspaper
- Communication by local police knocking on doors in community
- Information from local media: radio and television stations
- Word of mouth from friends and neighbors
- I-pad postings

5. Did you register with the local police or emergency center for disaster help?

Yes (five participants, or 6%)

No (82 participants, or 94%)

6. Did you prepare for Hurricane Sandy?

Yes (35 participants, or 42%)

No (49 participants, or 58%)

7. How soon after hearing about Hurricane Sandy did you begin to prepare?

Results	Participants	Percentage
Same day	29	36.0
Following day	14	17.5
Day before Hurricane Sandy reaching NJ	24	30.0
Other: Never	11	14.0
Other: 2 days before	2	2.5

8. How did you prepared for Hurricane Sandy? (select all that apply)

Results	Participants	Percentage
I am always prepared, no extra preparation needed	21	12
Purchase additional food	43	25
Pick-up medication	18	10
Fill bath tub with water	12	7
Purchase additional water	43	25
Pack an emergency bag or to-go bag	12	7
Prepare home (i.e., boards, sand bags, etc.)	6	3
Leave for safer inland location	7	4
Other: Purchase other emergency supplies	5	3
Other: Evacuate	2	1
Other: Did not prepare	5	3

9. Did health reasons restrict you from preparing for Hurricane Sandy? If so, Explain.

Yes (three participants, or 4%)

No (81 participants, or 96%)

10. Which of the community services do you receive? (check all that apply)

Results	Participants	Percentage
Meals on Wheels	4	29
Bathing/Showering	0	
Meal preparation	1	7
Transportation	9	64
Dressing	0	
Therapy (PT or OT)	0	
Mobility (walking/transferring)	0	
Other:	0	

11. Did local emergency departments recommend leaving the area prior to Hurricane Sandy reaching NJ?

Yes (eight participants, or 10%)

No (70 participants, or 90%)

12. Were you informed to evacuate anytime during or after Hurricane Sandy?

During:

Yes (five participants, or 6%)

No (74 participants, or 94%)

After:

Yes (two participants, or 3%)

No (68 participants, or 97%)

13. Were you able to receive news communications during the Hurricane?

Yes (67 participants, or 79%)

No (18 participants, or 21%)

14. Could you have performed an emergency evacuation without the help of another person?

Yes (42 participants, or 48%)

No (24 participants, or 27%)

No answer (22 participants, or 25%)

15. Could you have driven through a rainstorm at nighttime? If no, what limits your ability?

Yes (47 participants, or 57%)

No (35 participants, or 43%)

16. If you are unable to drive, could you have secured transportation to evacuate in case of a disaster? If yes, how?

Yes (29 participants, or 54%)

No (25 participants, or 46%)

17. If you evacuated, where would you go?

Results	Participants	Percentage
Local Shelter	29	28
Friends	20	19
Family	44	43

Hotel	8	8
Other	2	2

18. Were you able to receive news communications after the Hurricane?

Yes (71 participants, or 89%)

No (nine participants, or 11%)

19. Does your home have multiple exits in case of blockage?

Average exits = 2.5

20. Did you lose electrical power at any time during the Hurricane?

Yes (62 participants, or 70%)

No (20 participants, or 23%)

Unknown (six participants, or 7%)

If yes, how long? Range: few hours to eleven days

21. Have you participated in a disaster preparedness program? If yes, where and when?

Yes (eight participants, or 11%)

No (65 participants, or 89%)

22. Would you change the way you prepared if you could do it again? If so, how? If not, Why?

- Prepare a to-go bag
- Needed more water
- Find a pet friendly shelter

- Be more prepared
- Needed extra food, be prepared to evacuate
- Needed more resource information
- Needed more flashlights, candles, water and non-refrigerated sandwiches
- Coordinated transportation early
- Needed more information about preparation
- Ability to Communicate – did not find out about contaminated water
- Implement preparation instructions
- Purchase a manual can opener
- Pay more attention to the seriousness of the storm
- Leave the area before the storm hit
- Home is handicap assessable, no change, concern shelter would not be easy
- Buy more food
- Had to evacuate home due to high tide, prepare better for emergency evacuation

23. Has your doctor or other health professionals discussed what to do in case of natural disaster?

Yes (three participants, or 4%)

No (78 participants, or 96%)