

A QUALITATIVE STUDY OF HOUSEHOLD EMERGENCY PREPAREDNESS OF
THE ELDERLY AND THE MEDICALLY FRAIL LIVING IN COASTAL URBAN
ENVIRONMENTS

by

Tara N. Heagele

A Dissertation submitted to the

Graduate School - Newark

Rutgers, The State University of New Jersey

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Graduate Program in Nursing

written under the direction of

Karen D'Alonzo, PhD, RN, APN-c, FAAN

and approved by

Newark, New Jersey

January 2018

© 2018

Tara N. Heagele

ALL RIGHTS RESERVED

ABSTRACT OF THE DISSERTATION

A Qualitative Study Of Household Emergency Preparedness Of The Elderly And The Medically Frail Living In Coastal Urban Environments

By Tara N. Heagele

Dissertation Director:

Karen D'Alonzo, PhD, RN, APN-c, FAAN

Rationale for Study: As more chronically ill people are living in the community and disasters are occurring frequently, the elderly and the medically frail vulnerable populations are experiencing significantly more disaster-related morbidity and mortality than the rest of the population. A failure to adequately address these vulnerabilities has been shown to have negative effects on both the response to the disaster and the community as a whole. The purpose of this research was to understand how older and/or medically frail adults have experienced disaster and how this experience impacts what they do now to prepare for disaster. A second purpose of the study was the generation of theory regarding the process through which community members prepare for disasters.

Method: This study employed a qualitative descriptive methodology, Situational Analysis, to explore the social processes of disaster preparedness in older and/or medically frail adults. **Results:** Thirty-three elderly and/or medically frail participants described their experiences with disaster, how those experiences impacted the way they prepared for subsequent disasters, and their current state of household emergency

preparedness. The core category was “Experience is the Best Teacher.” Based on the findings, it was theorized that coastal urban elderly and medically frail community members are generally considered unprepared for disaster. Their lack of preparedness is due in large part to a lack of education on how best to prepare. Once educated, motivation for self-responsibility of household emergency preparedness can be expected. However, community interventions like distributing disaster supply kits and offering evacuation assistance help overcome their situational impediments to preparedness and provide the best chance for these vulnerable community members to survive disasters without becoming ill or injured or experiencing a decline in their baseline functional status. If elderly and medically frail community members are incidentally prepared, it is largely due to their past experience with disaster or their professional experience.

Conclusion: The results from this study could inform emergency plans and policy efforts to better meet the needs of elderly and medically frail community members during disaster. This study should motivate nurses to prepare themselves and their vulnerable community members prior to disaster as a prevention measure.

Keywords: disaster preparedness, frail elderly, independent elderly, nurses, public health

Author Note

Portions of the literature review have been previously published (Heagele, 2016a, 2016b). For this dissertation, the literature review was updated with additional evidence.

Acknowledgements

I thank the participants of this study, who volunteered their time to share their experiences with me. The lessons gleaned from your experiences will inform public policy to better meet the needs of the community before, during, and after disasters. Your input will save lives in future disasters and motivate nurses to take a more active role in the household emergency preparedness of elderly and medically frail community members.

I thank Karen D'Alonzo, PhD, RN, APN-c, FAAN, Teri Lindgren, PhD, RN, FAAN, Sabrina Chase, PhD, Michael Lindell, PhD, Charlotte Thomas-Hawkins, PhD, RN, Dula Pacquiao, EdD, MA, CTN-A, TNS, Frances Munet-Vilaro, PhD, RN, David Eisenman, MD, MSHS, and Adele Clarke, MA, PhD who encouraged me, mentored me, and provided expertise that greatly assisted with this doctoral dissertation.

I thank my community partners, the Long Branch Senior Center, Long Branch Housing Authority, Long Branch Office of Emergency Management, Long Branch City Council, Long Branch Police Department, and the Monmouth County Sheriff's Office for serving as information sources and providing venues to recruit and interview participants. I thank CJ Rubin, Edward Thomas, and David Wells, the administrators of three private social media groups, for permitting me to recruit through these groups.

I thank my family and friends for your understanding and encouragement. I am most thankful for my husband, Firefighter Christopher Heagele. Without your support, I would have taken much longer to complete my studies and we would have lived in a dirty house, eating fast food every day. You kept me grounded, sane, healthy, and on track.

Table of Contents

Abstract	ii
Acknowledgements	iv
List of Tables	xi
List of Figures	xii
Chapter One: Introduction and Theoretical Perspective	1
The Phenomena of Interest	13
Disaster	13
Household Emergency Preparedness	13
Elderly and Medically Frail	14
Coastal Urban Environment in Mid-Atlantic Region of the U.S.	15
The Purpose of the Research	15
Foundational Assumptions	15
Significance of the Study	19
Chapter Two: Literature Review	21
Purpose of the Literature Review in Qualitative Inquiry	21
The Experience of Disaster in Coastal Urban New Jersey	22
Background of the Phenomenon of Household Emergency Preparedness	26
Situational Impediments to Household Emergency Preparedness	38
Situational Facilitators to Household Emergency Preparedness	41
Household Emergency Preparedness Outcomes	42
Implications for Research	45

Research Question	46
Chapter Three: Methods	47
In Support of Method	47
Description of Research Settings	48
Characteristics of the Participants	49
Protection of Human Subjects	50
Informed Consent	51
Data Source and Collection	51
Participant Recruitment	51
Demographic Data Form	54
Data Collection	55
Data Analysis	57
Trustworthiness	58
Rigor	58
Validity	59
Summary	60
Chapter Four: Context and Informants	62
Historical and Sociocultural Context of the Research	62
Introduction to the Participants	63
Introduction to the Data Sources	67
Description of the Audit Trail	69
Principal Investigator Reflexivity	77

Summary	81
Chapter Five: Discussion of the Findings: How have Older and/or Medically Frail Adults Experienced Disaster...?	82
Core Category: Experience is the Best Teacher	82
Causal Condition Category: Past Experience	83
Most Memorable Disaster Experience	87
Home Conditions	89
Electricity	92
Light and Darkness	93
Heat and Cold	93
Elevators	94
Food and Cooking	95
Things Lost in Disaster	96
Ill or Injured During Disaster	97
Disaster Distractions	98
Isolated During Disaster	100
Rescue During Disaster	101
Evacuation	103
Seasonal Differences in Weather	104
Causal Condition: Vicarious Experience	105
Causal Condition: Geography and Climate Change	109
Causal Condition: Preparedness, Response, Relief, and Recovery Efforts of	

Responders	111
Preparedness and Response Efforts	111
Disaster Responders	112
Community Partners	115
Relief and Recovery Efforts	116
American Red Cross	116
Federal Emergency Management Agency	118
Insurance Companies	119
Volunteers	122
Post-Katrina Emergency Management Reform Act of 2006	122
Summary	126
Chapter Six: Additional Findings and Discussion: ...And How Does This Experience Impact What They Do Now to Prepare for Disaster?	127
Strategy Category: Household Emergency Preparedness Process	127
Household Emergency Preparedness Supplies	130
Information Sources	134
Situational Facilitators and Impediments	137
Household Emergency Preparedness Education	138
Knowledge of Household Emergency Preparedness	138
Disaster Supply Checklists	143
Household Emergency Preparedness Classes	144
American Association of Retired Persons	146

Children	146
Fatalism	146
Preparedness Perceptions	147
Social Support	149
Pets	149
Trusted Information Sources	151
Risk Perception	153
Community Interventions	155
Evacuation Orders	155
Priority Utility Registries	158
Special Needs Registries	158
Transportation Assistance	160
Responsibility	161
Nurses	163
Consequences of Household Emergency Preparedness	166
Contribution of Findings	167
Chapter Seven: Conclusion	171
Summary	171
Conclusions	172
Strengths and Limitations	173
Implications and Recommendations	174
Implications for Practice	177

Predisaster Interventions	178
Disaster Interventions	181
Postdisaster Interventions	182
Implications for Knowledge Generation	183
Elderly and Medically Frail Community Members as Assets	184
References	185
Appendix A: Subject Consent To Take Part In A Research Study	201
Appendix B: Demographic Data	207
Appendix C: Interview Guide	210
Appendix D: FEMA Checklist	212
Appendix E: Table 4: Household Emergency Preparedness Supplies of Participants ..	213

List of Tables

Table 1. Quantitative Research on Household Emergency Preparedness of Elderly and Medically Frail Individuals in the U.S.	27
Table 2. Qualitative Research on Household Emergency Preparedness of Elderly and Medically Frail Individuals in the U.S.	35
Table 3. Demographic Data of the Participants.	63
Table 4. Household Emergency Preparedness Supplies of Participants	213
Table 5. Ordered Situational Map: Household Emergency Preparedness of the Elderly and Medically Frail Living in a Coastal Urban Community in the Mid-Atlantic Region of the U.S.	72
Table 6. Mitigation, Preparedness, and Response Actions of Disaster Responders	113
Table 7. Relief and Recovery Efforts of Disaster Responders	116
Table 8. Disclosed Past and Intended Future Preparedness Actions of Participants	128
Table 9. Participants' Information Sources	135
Table 10. Preparedness Recommendations Found in the Journalism Data Sources	139

List of Figures

Figure 1. Lindell and Perry's (2012) Protective Action Decision Model	18
Figure 2. Potential Storm-Surge Flooding by Hurricane Size for the City of Long Branch	110

Chapter One: Introduction and Theoretical Perspective

The elderly and the medically frail remain two of the most vulnerable populations to the negative effects of natural and manmade disasters. The public health and emergency management literature contains many recommendations for how the elderly and the medically frail can be protected. However, evidence that the recommendations are implemented, and that they improve outcomes, is lacking.

Since 1975, the number of Americans affected, injured, and killed by disaster has steadily risen (A. Miller & Arquilla, 2008). Worldwide, more people are developing and living in coastal areas, which increases the threat of hurricanes, flooding, and tsunamis (DeVos, 2011). Since 1995, the frequency of hurricanes on the East Coast of the United States (U.S.) has grown by almost 40% (Cherniack, Sandals, Brooks, & Mintzer, 2008). From 2004 to 2014, the U.S. experienced 178 natural disasters and 32 man-made disasters (Ko, Allweiss, & Strine, 2014). Worldwide, there is a growing frequency of extreme weather events, man-made disasters, and humanitarian crises (Chan & Theodosis, 2011; Crook & Vu, 2011; Kapur & Smith, 2011; Powell, Plouffe, & Gorr, 2009).

It is important to address the needs of the elderly and the medically frail before, during, and after a disaster. The U.S. population is aging and critical medical services are being provided in individuals' homes more frequently (Fernandez, Byard, Lin, Benson, & Barbera, 2002). It is estimated that the U.S. healthcare system enables 54.5 million medically frail individuals to live in the community with the assistance of home healthcare services, rather than in long-term care centers (Jan & Lurie, 2012). In the U.S., an estimated 47.5 million people with disabilities may not be able to take

appropriate protective measures for an impending disaster (Bethel, Foreman, & Burke, 2011). What's more, 133 million people in the U.S. are living with a chronic illness that could be exacerbated by disaster conditions, such as temperature extremes, or lack of water, food, medications, supplemental oxygen sources, medical supplies, or electricity (Bethel et al., 2011). Even among otherwise healthy individuals, disaster situations promote increased cardiovascular-associated morbidity and mortality in the general population (A. Miller & Arquilla, 2008).

Research conducted on recent disasters has yielded sobering results for the elderly and the medically frail. Several researchers with data from both U.S. and worldwide disasters concluded that postdisaster mortality and morbidity outcomes for the elderly and the medically frail are disproportionate to the rest of the population residing in the same disaster zone (Al-Rousan, Rubenstein, & Wallace, 2014; Apte, Heath, Pico, & Tan, 2015; Benson, 2007; Cherniack et al., 2008; Colten, Kates, & Laska, 2008; Doran et al., 2016; Fernandez et al., 2002; Keller, 2012; Nicogossian et al., 2012; Pekovic, Seff, & Rothman, 2007; Powell et al., 2009; Tuohy, Johnston, & Stephens, 2014; Tuohy & Stephens, 2015; Tuohy, Stephens, & Johnston, 2014). During the 1995 heat wave in Chicago, 73% of the people who died were elderly (Crook & Vu, 2011). A rapid needs assessment conducted in Florida after Hurricane Charley in 2004 found that one-third of the households interviewed contained one or more adults with a chronic health condition that had been exacerbated by the disaster conditions (Pekovic et al., 2007). During Hurricane Katrina in 2005, three quarters of those who died in the Gulf Coast region were older than 60 years, while 24.3% of emergency room visits in New Orleans were related to chronic conditions, and nearly 70% of all medications dispensed in one shelter were

prescribed for chronic illnesses (Al-Rousan et al., 2014; Bethel et al., 2011; Heslin, Gin, Afable, Ricci, & Dobalian, 2013). Hurricane Katrina resulted in at least a one-week closure of 94 dialysis centers affecting 5,849 patients, 148 of whom died within a month after the storm (Foster et al., 2011). Cranmer and McKay (2011) state that the population who sought shelter in the Superdome during Hurricane Katrina was the “most chronically ill displaced population the world has ever seen” (p. 187).

In 2012, Hurricane Sandy damaged or destroyed hundreds of thousands of homes and killed at least 162 people on the East Coast of the U.S. (Federal Emergency Management Agency, 2013). Hurricane Sandy was twice the size of Hurricane Katrina and the combination of high tide at landfall coinciding with an inopportune lunar phase resulted in exceptionally high storm surges (Abramson et al., 2015b). Home-based care was nearly impossible due to transportation issues, fuel shortages, and lack of electricity (Christopher & Goldstein, 2014; Plan NYC, 2013; Trento & Allen, 2014). In New York City, thousands of elderly and medically frail residents were trapped on the upper floors of high rise buildings for days, often without functioning plumbing (Manuel, 2013). In New Jersey, special medical needs shelters were opened to assist the elderly and the medically frail. The few medical needs shelters available to New Jersey community members were underutilized for a variety of reasons; residents had to wait several days after the storm before services were available, there was a lack of clarity over who was eligible to receive services, and the shelters were established in inconvenient locations too far from individuals' homes (O'Dowd, 2012; Ryan, 2012; Saccenti, 2012). The medical needs shelters were also faced with a number of challenges, including shelter space limitations, too few beds, unclear policies for disposal of medical waste, and the

inability to provide food to meet the diverse dietary needs of the population served (Delery, 2015; Gibbs & Holloway, 2013). Some individuals who presented to the medical needs shelters came from institutionalized care settings, while others lived within the community. Many required personal attendants, prescription medication, or electricity to operate devices needed to carry out health-related activities of daily living. Many arrived at the shelters without medical records or supplies of medications (Gibbs & Holloway, 2013; Jan & Lurie, 2012). Individuals with chronic medical conditions proceeded to emergency rooms to address issues such as methadone services, dialysis, oxygen tank replacements, respiratory treatments, medication refills, medical supplies, and recharging batteries of medical devices (Doran et al., 2016; Gibbs & Holloway, 2013; Jan & Lurie, 2012; O'Dowd, 2012; Ryan, 2012). It became readily apparent that the medical needs shelters were ill prepared to deal with the postdisaster health needs of the elderly and medically frail.

The question that must be answered is what are the physical and social determinants that render elderly and medically frail individuals vulnerable in disaster situations? The review of the literature revealed 15 determinants of the elderly and the medically frail that make them highly vulnerable in disasters. The more determinants that an individual has from this list, the more vulnerable he or she is likely to become:

- Advanced age
- Chronic illnesses
- Dependence on others or objects
- Mobility deficits
- Cognitive deficits

- Sensory deficits
- Lack of social support
- Low socioeconomic status
- High-risk geographical location
- Low education level
- Lack of native-language speaking ability
- Female gender
- Adverse shelter conditions
- Poor condition of home
- Experience with disaster

Articles broadly mentioned advanced age as a predictor to vulnerability in disaster (Al-Rousan et al., 2014; Ardalan et al., 2010; Cranmer & McKay, 2011; Crook & Vu, 2011; Durant, 2011; HelpAge International, 1999, 2012; Henderson, Roberto, & Kamo, 2010; Lamb, O'Brien, & Fenza, 2008; Levac, Toal-Sullivan, & O'Sullivan, 2012; Mayhorn, 2005; Pekovic et al., 2007; Powell et al., 2009; Prasad, 2012; Smith & Notaro, 2009; Tuohy, Johnston, & Stephens, 2015; Tuohy & Stephens, 2015). As individuals age, they become less tolerant of temperature extremes due to circulatory problems, loss of subcutaneous tissue and sweat glands, reduced ability to perceive heat, delayed thirst and perspiration mechanisms, and medications that influence body temperature regulation (Ardalan et al., 2010; Crook & Vu, 2011; Fernandez et al., 2002; Lamb et al., 2008).

Having a chronic illness is a predictor to vulnerability in disaster, with diabetes, stroke, heart attack, chronic lung conditions, hereditary blood disorders, end-stage renal disease, high blood pressure, arthritis, and dementia being mentioned most frequently

(Al-Rousan et al., 2014; Ardalan et al., 2010; Benson, 2007; Bethel et al., 2011; Crook & Vu, 2011; DeVos, 2011; Doran et al., 2016; Durant, 2011; Eisenman, Glik, Ong, et al., 2009; Fernandez et al., 2002; Finch, Emrich, & Cutter, 2010; Fonseca et al., 2009; Foster et al., 2011; Gershon, Sherman, & Raveis, 2013; HelpAge International, 1999, 2012; Henderson et al., 2010; Inui et al., 1998; Lamb et al., 2008; A. Miller & Arquilla, 2008; Mokdad et al., 2005; Pekovic et al., 2007; Powell et al., 2009; Thompson et al., 2014; Trento & Allen, 2014; Tuohy, Johnston, et al., 2014; Tuohy et al., 2015; Tuohy & Stephens, 2015). Individuals living with chronic illnesses are at risk due to disruptions in their routine medical care, including difficulty with gaining access to their care providers and healthcare facilities (Fernandez et al., 2002; HelpAge International, 1999; Lamb et al., 2008). Two studies conducted on individuals with diabetes post-disaster found that the stress related to the disaster may have had considerable effects on glycemic control resulting in negative health outcomes (Fonseca et al., 2009; Inui et al., 1998). Articles identified reliance on others or objects as predictors of vulnerability in disaster (Benson, 2007; DeVos, 2011; Dostal, 2015; Durant, 2011; Fernandez et al., 2002; Jan & Lurie, 2012; Lamb et al., 2008; Levac et al., 2012; Pekovic et al., 2007; Powell et al., 2009; Rooney & White, 2007; Thompson et al., 2014; Trento & Allen, 2014; Tuohy & Stephens, 2015; Uscher-Pines et al., 2009; Zidek, West, Holmes, & Crytzer, 2014). Reliance refers to the need for assistance with activities of daily living (e.g., bathing, dressing, grooming, using the toilet), meals or medical care, electricity for medical devices, supplemental oxygen, or refrigeration for medications (e.g., insulin for diabetics).

Mobility, cognitive, and sensory deficits all lead to disability in the elderly and

the medically frail. Mobility deficits, or conditions where it would be difficult for the individual to quickly evacuate or take cover, particularly increase that individual's vulnerability in sudden-onset disasters (Al-Rousan et al., 2014; Apte et al., 2015; Ardalan et al., 2010; Benson, 2007; Crook & Vu, 2011; Dostal, 2015; Eisenman et al., 2014; Fernandez et al., 2002; Finch et al., 2010; HelpAge International, 1999, 2012; Henderson et al., 2010; Lamb et al., 2008; McClure et al., 2011; Powell et al., 2009; Rooney & White, 2007; Smith & Notaro, 2009; Thompson et al., 2014; Tuohy et al., 2015; Zakour, 2015). When successfully evacuated, if the individual with a mobility deficit is forced to leave behind his or her mobility device (e.g., wheelchair, walker, or cane), the individual will no longer be self-sufficient (HelpAge International, 1999; Rooney & White, 2007). Articles mentioned the presence of cognitive deficits, such as memory disorders, dementia, delayed reaction times, and psychological distress, as a predictor to vulnerability in disaster (Al-Rousan et al., 2014; Ardalan et al., 2010; Benson, 2007; Christensen & Castaneda, 2014; Clay, Goetschius, Papas, & Kendra, 2014; Durant, 2011; Lamb et al., 2008; Mayhorn, 2005; Mokdad et al., 2005; Pekovic et al., 2007; Smith & Notaro, 2009; Tuohy, Johnston, et al., 2014; Tuohy et al., 2015; Zakour, 2015). Articles mentioned sensory deficits, or the inability or difficulty for the individual to see, hear, taste, or smell, as a predictor to vulnerability in disaster (Al-Rousan et al., 2014; Benson, 2007; Fernandez et al., 2002; HelpAge International, 2012; Lamb et al., 2008; Mayhorn, 2005; Pekovic et al., 2007; Smith & Notaro, 2015; Thompson et al., 2014). Sensory deficits can impair an individual's ability to see warning signs, hear emergency instructions and alerts, and navigate in unfamiliar environments. Individuals with sensory impairments are also more likely to eat food that has been contaminated or

spoiled during the disaster.

Elderly and medically frail individuals with adequate social support receive assistance from family, friends, and the community to obtain disaster information, evacuate, find shelter, food and healthcare, and to rebuild after disaster situations (Colten et al., 2008; HelpAge International, 1999; Render-Cohen & Render-Dinerstein, 2005; Seplaki, Goldman, Weinstein, & Lin, 2006; Zakour, 2015). House-bound and socially isolated individuals are vulnerable to disaster because they are less likely to receive disaster information or ask for assistance, which can render them invisible to responders. (Abramson et al., 2015b; Al-Rousan et al., 2014; Benson, 2007; Crook & Vu, 2011; Durant, 2011; Eisenman et al., 2014; Fernandez et al., 2002; HelpAge International, 1999, 2012; Henderson et al., 2010; Lamb et al., 2008; Pekovic et al., 2007; Powell et al., 2009; Seplaki et al., 2006; Smith & Notaro, 2009; Smith & Notaro, 2015; Tuohy, Johnston, et al., 2014; Tuohy et al., 2015; Tuohy & Stephens, 2015).

Low socioeconomic status is a predictor to vulnerability in disaster (Abramson et al., 2015a; Abramson et al., 2015b; Ardalan et al., 2010; Benson, 2007; Christensen & Castaneda, 2014; DeVos, 2011; Durant, 2011; Fernandez et al., 2002; Fonseca et al., 2009; HelpAge International, 1999; Henderson et al., 2010; Hoopes-Haplin, 2013; Jhung et al., 2007; Lamb et al., 2008; Levac et al., 2012; Mokdad et al., 2005; Nicogossian et al., 2012; Pekovic et al., 2007; Powell et al., 2009; Prasad, 2012; Seplaki et al., 2006; Smith & Notaro, 2009; Tuohy et al., 2015; Zakour, 2015). Most elderly and medically frail individuals live on fixed incomes and have poor credit-worthiness. This gives them little room to afford the expenses related to disaster such as fuel, food, and lodging related to evacuation, to make protective home improvements, to purchase generators, or

to rebuild postdisaster. They are also less able to purchase supplies for a household emergency preparedness supply kit (Al-Rousan et al., 2014; Levac et al., 2012).

The next seven attributes were mentioned less in the literature, but still warrant attention by public health and emergency management professionals. Disaster vulnerability is increased among those living in a high-risk geographical location, such as areas that are isolated, urban, and flood-prone with poorly developed physical infrastructure, have a high concentration of poverty, and/or limited access to social services (Cherniack et al., 2008; Colten et al., 2008; Crook & Vu, 2011; DeVos, 2011; Durant, 2011; Prasad, 2012). The coastal Northeast and Mid-Atlantic regions of the U.S. are especially vulnerable to disaster because they are densely populated urban centers and considered the economic center of the world. A disaster in this region would have wide negative impacts on the country and world economy (Prasad, 2012). This makes the region a target for deliberate disasters, such as acts of terrorism. The region is also at risk for natural disasters. Climate change has resulted in more frequent and intense hurricanes, while at the same time structures are constructed closer to the shoreline, leaving them more vulnerable to the effects of natural disasters (Cherniack et al., 2008; Colten et al., 2008).

Elderly or medically frail individuals who have a low education level are vulnerable in disaster due to their difficulty or inability to access quality information resources (Durant, 2011; Levac et al., 2012; Seplaki et al., 2006). Elderly and medically frail individuals with language barriers experience the same lack of access to quality information resources as those with low education level (Eisenman, Glik, Ong, et al., 2009; FEMA Emergency Management Institute, 2014; Lamb et al., 2008; Thompson et

al., 2014). Elderly and medically frail women are more vulnerable in disaster than men because they live longer, making them more likely to live in poverty and inadequate housing (Cranmer & McKay, 2011; Durant, 2011; Levac et al., 2012; Powell et al., 2009; Seplaki et al., 2006). Due to cultural prohibitions, older women may also be less likely to evacuate to shelters that do not separate individuals by gender (HelpAge International, 2012). Shelter conditions are also a reason for the elderly and the medically frail to be vulnerable in disaster (Benson, 2007; Christopher & Goldstein, 2014; HelpAge International, 2012; Powell et al., 2009; Zakour, 2015). Shelters may lack ramps, railings, health services, medications, medical equipment, have inaccessible toilets, inadequate lighting, poor bedding, inappropriate food, be excessively noisy, and promote separation from family support. Older adults and the medically frail may choose to stay home instead of enduring the shelter conditions. However, the condition of the home is also a predictor to vulnerability in disaster, with older people tending to live in older homes of low structural quality and with no means to make storm-resilient improvements (Powell et al., 2009; Tuohy et al., 2015). One factor that may predispose the elderly and the medically frail to subsequent disasters is their previous experience managing such disasters (Durant, 2011; Fernandez et al., 2002). If the individual has survived a previous disaster with minimal negative impacts, he or she may underestimate the consequences of future disasters and not take appropriate protective actions. If the individual has not recovered from a recent disaster, he or she becomes even more susceptible to subsequent disasters. Elders are also less likely to recover economically from the expenses related to the disaster, making an already vulnerable population impoverished (Henderson et al., 2010; Pekovic et al., 2007).

The medical needs of the elderly and the medically frail exacerbated by disasters become a severe strain on already stretched community resources (Baker & Cormier, 2013; DeSalvo et al., 2014; Dostal, 2015; Fernandez et al., 2002; Foster et al., 2011; Ko et al., 2014; Lamb et al., 2008; True, Adedoyin, Shofer, Hasty, & Brice, 2013; Uscher-Pines, Chandra, Acosta, & Kellerman, 2012). To summarize, more chronically ill people are living in the community, disasters are occurring frequently, and the elderly and the medically frail vulnerable populations are experiencing significantly more disaster-related morbidity and mortality than the rest of the population. A failure to adequately address these vulnerabilities has been shown to have negative effects on both the response to the disaster and the community as a whole.

In public health and emergency management literature, adequate household emergency preparedness is strongly encouraged in order to decrease the negative consequences of the disaster and permit individuals to survive on their own for at least three days postdisaster. However, studies that have examined age and medical frailty as predictors for adequate household emergency preparedness have revealed opposing findings. Several studies found that increasing age or medical frailty had a negative association with preparation for disaster (Al-Rousan et al., 2014; Baker & Cormier, 2013; Bethel et al., 2011; Cherniack et al., 2008; Foster et al., 2011; Ge, Peacock, & Lindell, 2011; Gershon et al., 2013; Ko et al., 2014; Smith & Notaro, 2009; Smith & Notaro, 2015; Xie, McCormick, & Pevear, 2013). Other studies found a positive association with preparation for disaster among the elderly or the medically frail (Ablah, Konda, & Kelley, 2009; Clay et al., 2014; DeBastiani & Strine, 2012; Murphy, Cody, Frank, Glik, & Ang, 2009; Reininger et al., 2013; Seplaki et al., 2006; Uscher-Pines et al., 2009;

Zidek et al., 2014). Regardless of preparedness level, these vulnerable populations remain at highest risk for disaster-related morbidity and mortality.

The majority of disaster research studies focused on individual or household preparedness have concluded that the greater part of the U.S. population is unprepared for a disaster (Ablah et al., 2009; Al-Rousan et al., 2014; Baker & Cormier, 2013; Bethel et al., 2011; Brown, Horner, Fankhauser, Roth Jr, & Victoroff, 2012; Cherniack et al., 2008; Columbia University, 2011; Der-Martirosian et al., 2014; Diekman, O'Neil, MacK, & Kearney, 2007; Eisenman, Maranon, et al., 2009; Glik, Eisenman, Zhou, Tseng, & Asch, 2014; McCormick, Pevear, Rucks, & Ginter, 2014; Murphy et al., 2009; Schmidt et al., 2011; True et al., 2013). Only four studies were identified where a majority of the participants were considered prepared for disaster. Three of those studies had disclosed limitations for the timing of the data collection. Two were conducted shortly after a hurricane (Chen, Banerjee, & Liu, 2012; Reininger et al., 2013), and one was conducted after a household emergency preparedness media campaign with a subsequent tornado outbreak (McCormick et al., 2014). The fourth was an experimental study that started with a sample that demonstrated some preparedness skills before the intervention, but participants became better prepared post intervention (Eisenman et al., 2014). However, empirical evidence is lacking to support the claim that having a disaster supply kit results in self-sufficiency or contributes to disaster-related resilience (Heagele, 2016b). There is a need for future studies to determine if there is an association between being prepared for disaster with a supply kit and surviving the disaster without the need for rescue or outside assistance, without an acute exacerbation of a chronic illness, and with no change in baseline functional status.

Household emergency preparedness is a contemporary concept that offers several opportunities for nursing knowledge development. It is an ethical imperative that nurse scholars promote, advocate for, and strive to protect the health, safety, and rights of the patient, whether an individual, family, group or community (Fowler, 2008). Nurses can do more to advocate for and assist the elderly and the medically frail in disaster by contributing to household emergency preparedness knowledge development.

The Phenomena of Interest

Disaster.

Disasters are calamitous events that cause great damage, suffering, or loss to many people (Merriam-Webster, 2016; Oxford University Press, 2016). Natural disasters include hurricanes, tornadoes, wildfires, tsunamis, earthquakes, landslides, volcanic eruptions, floods, blizzards, droughts, heat waves, and epidemics. Manmade disasters include explosions, industrial accidents, riots, terrorist incidents, engineering failures (bridge, building, tunnel, or stadium collapses), mass casualty incidents, genocides, wars, and the use of weapons of mass destruction.

Household emergency preparedness.

To date there is no single accepted definition for household emergency preparedness. In the literature, the concept has been used to describe either an individual's preparedness or a household's preparedness for a disaster. The most popular definition in the literature comes from the Federal Emergency Management Agency's (FEMA) *Ready* campaign. FEMA (2014) states that an individual or household is prepared for a disaster if: (a) they have thought about and planned for the types of disasters for which they are most at risk; (b) have developed a family communication and

evacuation plan in the event of a disaster, and; (c) have assembled a complete disaster supply kit (battery-powered weather radio, flashlight and extra batteries, first aid kit, whistle, dust mask, plastic sheeting, duct tape, personal sanitation items, wrench, pliers, manual can opener, and local maps) that can sustain each member of the household with food, water, and medication for up to three days without any outside assistance. FEMA's disaster supply list recommends essential supplies to enable households to safely endure the common conditions that any natural or manmade disaster would likely present, regardless of location. These common conditions include living without power, limitations on drinking water, and/or being unable to leave the home to acquire additional supplies for a few days.

Elderly and medically frail.

An individual can be considered elderly when he or she is greater than 65 years of age (Fernandez et al., 2002). Medically frail individuals include those with serious and complex medical conditions and those with physical and/or mental disabilities that significantly impair their ability to perform one or more activities of daily living (Clay et al., 2014; Heslin et al., 2013; Jhung et al., 2007; State of New Jersey Department of Human Services, 2014). While an individual can be medically frail without being elderly, and can be elderly without being medically frail, the elderly are frequently also medically frail. The FEMA Emergency Management Institute (2014) describes individuals with access or functional needs during disaster as: (a) individuals with disabilities (physical, sensory, behavioral, mental health, intellectual, developmental, and cognitive); (b) seniors with or without disabilities; (c) those with pharmacological dependence; (d) pregnant women, and; (e) individuals with limited access to

transportation, and/or with limited access to financial resources to prepare for, respond to, and recover from the disaster. The medically frail and the elderly are considered to have access or functional needs during disaster and are considered vulnerable populations. A vulnerable population is a population who is prone to being overlooked or underserved even before the disaster occurs (Shah, 2011). Arguably, these populations are the most vulnerable, as they are the most susceptible to the negative effects of disaster. Adults 65 years of age or older and medically frail adults 18 years of age or older were eligible to participate in this doctoral dissertation study.

Coastal urban environment in Mid-Atlantic region of the U.S.

Participants in this study were recruited from a coastal urban community in the Mid-Atlantic region of the U.S. heavily damaged by Hurricane Sandy in 2012. This region is susceptible to flooding, snowstorms, heat stresses, hurricanes, nor-easters, and rising sea levels (Manuel, 2013; Prasad, 2012). This region is also considered the population core of the U.S., with just 17 percent of the contiguous land area housing half of the country's population (Abramson et al., 2015b; Prasad, 2012). It is physically vulnerable due to exposure to natural and manmade hazards and socially vulnerable due to its large and dense population (Prasad, 2012).

The Purpose of the Research

The purpose of this research was to understand how older and/or medically frail adults have experienced disaster and how this experience impacts what they do now to prepare for disaster. A second purpose of the study was the generation of theory regarding the process through which community members prepare for disasters.

Foundational Assumptions

The discursive constructions found in the literature that form the foundational assumptions of household emergency preparedness research emphasize the role of community members to: (a) know how to prepare for disasters; (b) take responsibility for their household emergency preparedness, and; (c) not expect federal assistance for at least three days postdisaster. The literature revealed that public health and emergency management professionals expect community members to prepare adequately for disaster in order to mitigate their vulnerabilities. An additional assumption was that adequate household emergency preparedness prevents the need for rescue, prevents exacerbation of chronic conditions, and prevents loss of life.

This study attempts to generate theory regarding the process through which community members prepare for disasters. The Protective Action Decision Model (PADM) is a theory that attempts to explain why community members may or may not prepare for disasters and is useful for conducting theory-based research on the phenomenon of household emergency preparedness (Lindell & Perry, 2012). The PADM (Figure 1) is a socially and theoretically significant theory that has been discussed and empirically tested for nearly 30 years. The PADM is a parsimonious middle-range theory that both explains and predicts implementation of protective actions to hazardous situations (Lindell & Perry, 1992; Lindell & Perry, 2012). The nursing metaparadigm concepts addressed by the theory include human beings, the environment, health, and potential interventions (nursing actions). The PADM expressly speaks about human experiences within the environment, risk perception, and self-efficacy. The PADM describes a series of information-processing stages pertaining to the adoption of protective measures for disasters, and the typical activity performed, questions asked, and

outcome for each stage (Lindell & Perry, 2012). The authors disclose that their model is the “typical way” that people will make decisions, but that few people are likely to follow every step in the exact sequence (Lindell & Perry, 2012). Researchers most often use the theory in disaster-related studies attempting to assess, evaluate, or predict effective risk communication, actual evacuation, or adoption of long-term protective measures.

The theory propositions are observable, measurable, and testable. However, based on the equivocal findings of studies that tested PADM propositions, it is evident that some PADM theoretical assertions cannot be concluded as empirically adequate at this time. Findings from four studies fully supported the theoretical propositions of the PADM (Apatu, Gregg, Richards, Sorensen, & Wang, 2013; de Boer, Wouter Botzen, & Terpstra, 2015; Ge et al., 2011; Huang, Lindell, Prater, Wu, & Siebeneck, 2012) and the findings of five other studies mostly supported the theoretical propositions (Horney, MacDonald, Van Willigen, Berke, & Kaufman, 2010; Lindell & Hwang, 2008; Peacock, 2003; Perry & Lindell, 2008; Terpstra & Lindell, 2013). All of the latter studies mentioned were conducted before the PADM was revised in 2012.

The propositions that were not supported included demographic characteristics of the participants did not predict outcomes as hypothesized based on past research (Horney et al., 2010), hurricane experience did not predict the specific protective action of shutter usage (Peacock, 2003), inland participants perceived impact threat to be more severe than coastal participants (Peacock, 2003), risk perception did not predict the number of long-term hazard adjustments (Perry & Lindell, 2008), and living in an area at risk was not correlated with risk perception (Terpstra & Lindell, 2013). These studies were all conducted in specific geographic locations and the findings may or may not be replicated

in different geographic areas. All of the other PADM propositions tested in those five studies were supported.

There is much more evidence in support of the propositions of the PADM than against. This makes the theory both falsifiable and empirically valid, and increases researchers' confidence about the validity of the empirical referents used in the testing process (Walker & Avant, 2011). However, Walker and Avant (2011) caution that overall credibility will depend on the quantity and quality of accumulated evidence. Additional studies testing the propositions of the PADM are needed to both increase the credibility of the theory and address the gaps in the current knowledge. The PADM is an evolving theory. This theory generating study may inform future modifications of the PADM.

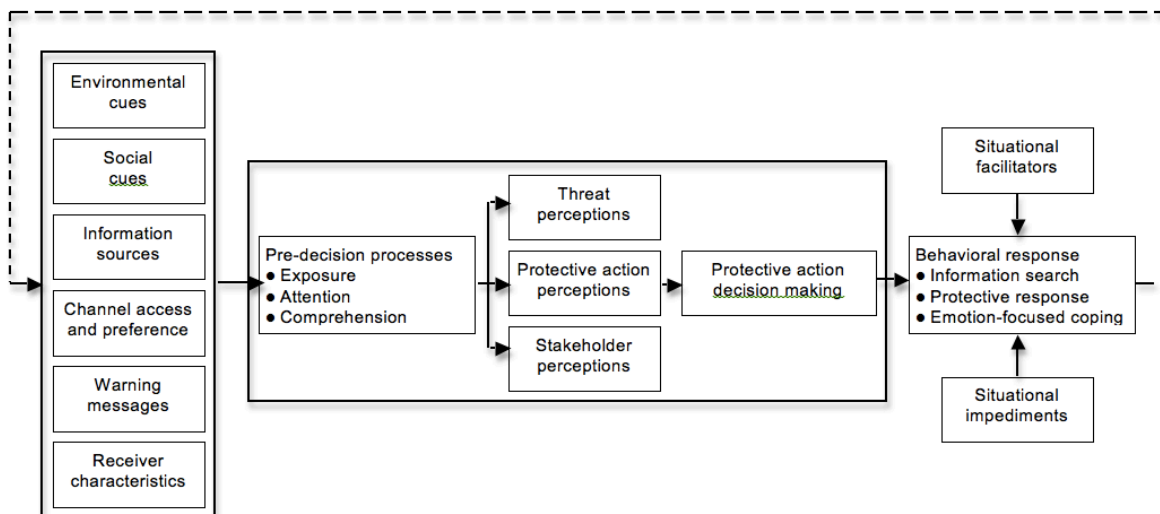


Figure 1. Lindell and Perry's (2012) Protective Action Decision Model.

This study employed a qualitative descriptive methodology, Situational Analysis, to explore the social processes of disaster preparedness in older and/or medically frail adults. Situational Analysis is a nascent form of Grounded Theory (Clarke, 2005).

Grounded Theory is suited for the overarching aim of the study because it is a systematic, yet flexible method for collecting and analyzing qualitative data for the purpose of constructing theory grounded in the data (Charmaz, 2014). Situational Analysis methods enhance traditional Grounded Theory by incorporating discourse and agency, action and structure, image, text and context, history, and the present moment in both data collection and analysis (Clarke, 2005, p. xxii). Situational Analysis goes beyond interviews with “knowing subjects” as the main source of data and includes culture, technology, media, geography, and nonhuman animate and inanimate objects that make the usually invisible social features of a situation more visible as data (Clarke, 2005). Situational Analysis is suited for household emergency preparedness and disaster-related community resilience research because in addition to the participants’ risk perceptions and experiences with disaster, the Situational Analysis researcher will include nonhuman actants such as geography, weather, disaster plans, public policies, recent or past disasters, climate change, socioeconomic status, community assets, and disaster preparedness media campaigns to name a few.

Significance of the Study

Household emergency preparedness is a public health concern. Lack of preparedness, especially in elderly and medically frail populations, diverts responders’ attention from relief and recovery efforts and can easily deplete community health resources (Baker & Cormier, 2013; True et al., 2013). Better household emergency preparedness could save lives and decrease the likelihood of responders’ exposures to dangerous situations in order to assist those in need. The results from this study could

inform policy efforts to better meet the needs of elderly and medically frail community members during disaster.

The role of nurses in disaster preparedness efforts is conspicuously absent in the literature concerning emergency preparedness. Public health nurses work with limited budgets and need to make decisions about how to best protect the greatest number of vulnerable community members while using minimal resources. Research on the effectiveness of community interventions is greatly needed. The research-based evidence generated would assist nurses in making evidence-based decisions on which interventions to implement in their communities and enable them to demonstrate support for their funding requests. Public health nurses need research-based evidence to inform household emergency preparedness recommendations and to demonstrate the role preparedness plays in mitigating the impact of a disaster. Additional studies are needed to determine the factors that influence household emergency preparedness in the elderly and medically frail living in the community. More qualitative research is needed to inform the theoretical underpinnings of why people do or do not prepare for disaster.

Nurses are urged to demonstrate leadership, seek ways to advance nursing autonomy and accountability, collaborate with healthcare consumers, and partner with others to effect change and produce positive outcomes through the sharing of knowledge of the healthcare consumer and/or situation (American Nurses Association, 2010a). Nurses are also encouraged to take an active leadership role in public health by increasing responsibility for basic self-help measures by the individual, family, group, or community (American Nurses Association, 2010b). Research related to household emergency preparedness will allow the nurse to accomplish these goals.

Chapter Two: Literature Review

In this chapter, the role of the literature review in qualitative inquiry will be discussed first. Second, a review of the literature will provide background information on: (a) the experience of recent disaster in a coastal urban community in New Jersey; (b) what is known about household emergency preparedness of the elderly and medically frail; (c) situational impediments and facilitators to household emergency preparedness, and; (d) household emergency preparedness outcomes. Next implications for research will be provided. Chapter two will be concluded with the research question for the study.

Disasters are occurring frequently and the majority of the U.S. population is not considered prepared for disaster. More elderly and medically frail people live in the community and experience significantly more disaster-related morbidity and mortality than the rest of the population due to their physical and social vulnerabilities. The discursive constructions found in the literature emphasize that community members should know how to prepare for disasters and take responsibility for their household emergency preparedness. A review of the literature, delimited to the vulnerable populations of interest to this study, was conducted to determine the role of disaster experience in preparedness, why individuals are unprepared, and if preparedness efforts actually result in positive outcomes.

Purpose of the Literature Review in Qualitative Inquiry

The Principal Investigator (PI) conducted a thorough review of the literature for this study. Traditional Grounded Theory researchers do not believe in conducting a literature review before collecting data, as prior exposure to the literature could alter how they interpret their data and render them unable to develop “fresh” theories unaltered by

their preconceived notions about the phenomenon (Charmaz, 2006; Creswell, 2013; Holloway & Wheeler, 2010). However, contemporary Grounded Theory researchers have come to accept a literature review as beneficial for documenting the importance of the research problem, understanding what work has already been done, and for informing interview questions and data collection sites (Corbin & Strauss, 2015; Creswell, 2013; Holloway & Wheeler, 2010; Rubin & Rubin, 2012). Yet, Grounded Theory places the data from the field, not from the preexisting theories or hypotheses, in the foreground for the analysis (Creswell, 2013; Rubin & Rubin, 2012). Creswell (2013) asserts that Grounded Theory methodology is especially good to use when current theory is inadequate. The limitations of current theory cannot be determined without a thorough literature review. The PADM is particularly intuitive for explaining how and why people prepare for disasters. In this study, the PI used the PADM to inspire the original interview guide and initial coding of the data. However, the PI did not force the data into categories designated by the PADM.

The Experience of Disaster in Coastal Urban New Jersey

In Situational Analysis Grounded Theory methods, the researcher uses the situation of the research phenomena as the site of analytic grounding (Clarke, 2005). The PI must situate the experience of recent disaster in the study setting. The following section illuminates the experience of Hurricane Sandy for community members in coastal urban New Jersey.

Nearly half of the individuals who died in Hurricane Sandy were 65 years of age or older (Keller, 2012). The low-income and elderly populations in the hardest hit communities in New Jersey during Hurricane Sandy experienced disproportionate health

effects after the storm. Abramson et al. (2015a) conducted an observational cohort study of 1,000 randomly selected New Jersey residents and found that poorer residents were more likely to come in contact with mold, and report poor physical and mental health status, weak or absent social support networks, and poor family functioning as compared to households with an annual income greater than \$20,000. They found that poorer residents, regardless of the extent of home damage, experienced the same economic devastation as wealthier residents whose homes were completely destroyed. Lower income residents had the greatest housing needs, but were much less likely to apply for assistance than wealthier residents. The authors also found that the elderly reported poorer health status as compared to residents under the age of 65. However, the authors disclosed that this health status finding may have been a normal part of aging (Abramson et al., 2015a).

The City of Long Branch, a coastal urban community in New Jersey heavily damaged by Hurricane Sandy in 2012, was used as the setting for this study. The city accommodates a socially vulnerable population in a physically vulnerably geographical location. In the City of Long Branch, 11.3% of residents are over the age of 65; 8.3% of residents are under the age of 65 years but live with a disability; 28.9% of residents do not have health insurance; and 17.8% of residents live in poverty (United States Census Bureau, 2015). The city is located in Monmouth County, New Jersey, which is considered one of the hardest hit counties during Hurricane Sandy in terms of power outages, residential damage, shelter usage, and fuel shortages (Hoopes-Haplin, 2013; Manuel, 2013). Monmouth County received the largest dollar amount of FEMA public assistance, housed the most number of people in shelters, and had the largest lost income

rate for low-income residents in New Jersey (Hoopes-Haplin, 2013).

The City of Long Branch was the 23rd hardest hit out of 553 municipalities in New Jersey on the Community Hardship Index, an instrument that measures economic and physical damage in residential, commercial, and municipal sectors (Hoopes-Haplin, 2013). Despite the city's social and geographical vulnerabilities and heavy damage, no residents or disaster responders lost their lives or became injured during the initial impact of Hurricane Sandy (Long Branch Office of Emergency Management Coordinator, personal communication, October 11, 2016). Prior to the disaster, the city implemented several emergency preparedness social interventions. One intervention included opening four geographically low-risk, Americans with Disabilities Act (ADA)-compliant storm shelters for community members. One of these shelters was a medical needs shelter and one was designated as pet-friendly. Two additional shelters were on standby, to be opened if needed. In the days leading up to the anticipated time of impact, police officers went door to door in the geographically highest-risk areas to inform residents that evacuation was mandatory and to offer assistance. The city provided free transportation to the shelters for any community member who requested it. Residents were picked up from their homes or their neighborhood firehouses.

Both the Office of Emergency Management (OEM) and the Mayor disseminated risk communication messages and directives in English and Spanish via the Code Red Alert system at least daily, if not more often. This telephone alert system is offered at no cost to residents upon request by the City of Long Branch. The system works with landline and cellular phones, alerts up to two phone numbers per resident, and is available in Telecommunication Device for the Deaf (TDD) and teletypewriter (TTY) for the

hearing impaired. Residents have the choice of receiving either emergency alerts or general city notifications, or both.

A disaster preparedness class was offered at the city's senior center and attendees received a disaster supply bucket. Attendees also received a booklet where they were instructed to write their medical history, medications, physician contact information, next of kin contact information, and insurance policy numbers, and to keep this booklet on their person during the disaster. The booklet also provided a disaster supply checklist that listed everything in the supply bucket and other items that needed to be added, such as food and water. The Monmouth County Sheriff's Office offered the class, disaster supply bucket, and information booklet at no cost to the senior center or the attendees. The office continues to schedule this class at the senior center on an annual basis since Hurricane Sandy. Additionally, the City of Long Branch OEM Coordinator offers emergency preparedness education and materials for free to community- and faith-based organizations at least nine times per year (Long Branch Office of Emergency Management Coordinator, personal communication, October 11, 2016).

After the disaster, most of the city's critical physical infrastructure (i.e., firehouses, schools, and hospitals) was undamaged. Only one firehouse sustained severe damage and was declared uninhabitable for several weeks postdisaster. However, no police, fire, or emergency medical service apparatus was damaged. The entire community lost power for several days, but the city hospital maintained power with generators. The City of Long Branch OEM Coordinator shared that through previously established partnerships, he was able to secure enough food, water, and ice to meet the needs of the responders and community members (Long Branch Office of Emergency

Management Coordinator, personal communication, October 11, 2016). Several cell phone charging stations were set up throughout the city so that residents could maintain contact with family, friends, and authorities. The city's emergency plans were not altered after Hurricane Sandy. The responders and citizens were pleased with the response and everything went as smoothly as could be expected in a disaster (Long Branch Office of Emergency Management Coordinator, personal communication, October 11, 2016). As evidenced by the no loss of life or injuries, the social interventions in the City of Long Branch appeared to be successful in mitigating much of the residents' situational impediments and vulnerabilities from the initial impact of the hurricane.

Prior to starting this study, the PI sought to understand if this experience was unique to this community or if other communities have implemented similar social interventions and experienced similar outcomes. The literature search was focused on the experience of the elderly and medically frail community members in disasters.

Background of the Phenomenon of Household Emergency Preparedness

A review of the literature was conducted to understand: (a) what is known about the situational impediments and facilitators for household emergency preparedness of elderly and medically frail community members and (b) how disaster experience affects household emergency preparedness. References were located by searching all of the databases available to the university, but mainly the Elton B. Stephens Company, Cumulative Index of Nursing and Allied Health Literature, Scopus, and Medline databases. The literature on the phenomenon of household emergency preparedness increased after the attacks on the World Trade Center in New York City in 2001, and then greatly increased after the devastation of the Gulf Coast from Hurricane Katrina in

2005. The key terms used in the search were disaster planning, household emergency preparedness, emergency preparedness, preparedness, older, elderly, elders, adult, ill, frail, vulnerable, disability, disabilities, disabled, disaster kit, emergency supply kit, quantitative, and qualitative. The searches included peer-reviewed research, journal articles, news articles, education materials, governmental reports, and reports from senior advocacy groups. Eligible materials had abstracts in the English language and were published between 2001 and 2016. Citation trails were also followed. Relevant peer-reviewed quantitative studies and qualitative studies delimited to household emergency preparedness of non-institutionalized elderly and/or medically frail U.S. populations are summarized in Tables 1 and 2, respectively. Studies were delimited to the U.S. because disaster experience in the U.S. may be fundamentally different than in other parts of the world. All peer-reviewed research, journal articles, news articles, education materials, governmental reports, and reports from senior advocacy groups were used to glean the situational impediments, situational facilitators, and outcomes of household emergency preparedness from the literature. Due to the scant number of qualitative studies on household emergency preparedness of non-institutionalized elderly and/or medically frail populations, relevant peer-reviewed research from global studies were also included in the discussion below. The anecdotal evidence and expert opinions are synthesized with the peer-reviewed research in the following sections of chapter two.

Table 1

Quantitative Research on Household Emergency Preparedness of Elderly and Medically Frail Individuals in the U.S.

Author and Year	Participants	Relevant Conclusions
(Ablah et al., 2009)	Cross-sectional,	78% (“somewhat well prepared” 55.3%,

	<p>logistic regression</p> <p>Sample size: 15,630</p> <p>Arizona, Connecticut, Montana, Nevada, Tennessee</p> <p>Eligibility criteria: ≥ 18 years of age, non-institutionalized, with telephone access</p>	<p>95% CI = 54.1, 56.6 and “well prepared” 22.2%, 95% CI = 21.2, 23.2) of respondents were subjectively prepared for a disaster, but just 45% (95% CI = 41.3, 49.4) were actually prepared by objective measures. Older participants ($\beta = .585$, $p < 0.001$, OR = 1.794) and participants who required special medical equipment ($\beta = .261$, $p < 0.01$, OR = 1.298) were more likely to be prepared than the general population.</p>
(Al-Rousan et al., 2014)	<p>Cross-sectional, frequencies, percentages, regression analyses</p> <p>Sample size: 1,304</p> <p>Contiguous U.S.</p> <p>Eligibility criteria: non-institutionalized adults aged 50 years or older</p>	<p>Increasing age, physical disability, and lower educational attainment were independently associated with worse overall preparedness. Two thirds of the participants had no emergency plans, had never participated in a disaster preparedness educational program, and were not aware of the availability of relevant resources. More than one third did not have a basic supply of food, water, or medical supplies.</p>
(Bethel et al., 2011)	<p>Cross-sectional, univariate analyses, bivariate analyses, logistic regression, descriptive, secondary data analysis</p> <p>Sample size: 37,303</p> <p>Delaware, Georgia, Louisiana, Montana, Nevada, Tennessee</p>	<p>Vulnerable populations (“fair/poor health” OR = 0.76, 95% CI = 0.65, 0.89; “activity limitation” OR = 0.81, 95% CI = 0.73, 0.90; “three or more chronic illnesses” OR = 0.77, CI = 0.58, 1.02) were less likely to have household preparedness items but more likely to have medication supplies than their counterparts.</p>

	Eligibility criteria: ≥18 years of age, non- institutionalized, with telephone access	
(Cherniack et al., 2008)	Cross-sectional, frequencies, logistic regression, chi- square Sample size: 547 Florida Eligibility criteria: ≥65 years of age, ambulatory, veterans	67.6% of participants had not performed at least one necessary aspect of household emergency preparedness steps. There was no correlation between the participants' age, race, income, education, or prior experience and their possession of the suggested disaster supplies.
(Clay et al., 2014)	Cross-sectional, Chi square, logistic regression Sample size: 23,868 Louisiana, New Hampshire, Mississippi Eligibility criteria: ≥18 years of age, non- institutionalized, with telephone access	46.9% of respondents were prepared based on the summary measure of preparedness, 29% had an evacuation plan, and 91.2% had a 3-day supply of medication. Individuals who were prepared were older (mean = 55.88, SD = 15.63). Individuals with a non-specific serious psychological disorder were 61% more likely to be unprepared compared to those without a serious psychological disorder (AOR = 1.61, 95% CI = 1.41, 1.84). Respondents with a serious psychological disorder were also 66% more likely to not have a 3-day supply of medication and 22% more likely to lack an evacuation plan (AOR = 1.66, 95% C =: 1.39, 1.99; AOR = 1.22, 95% CI = 1.05, 1.42; respectively).
(Eisenman et al., 2014)	Experimental, two- group pretest- posttest, randomized control design, delayed- intervention comparison group,	Comparing pretest to posttest scores, participants in the experimental intervention group significantly improved their preparedness knowledge by eight percentage points, from 79% to 87% (p = .001) and increased their preparedness activities by 19 percentage points, from

	community-participatory research, t test, Fisher's exact test, Wilcoxon signed rank test, exact McNemar test	56% to 75% ($p < .0001$). The effect of the intervention was significantly greater on the experimental group than on the control group ($p = .0003$). There were no differences in the effect of the intervention by age, gender, race/ethnicity, or living alone or with a roommate or family.
	Sample size: intervention group $n = 42$, control group $n = 40$, total participants $n = 91$	
	California	
	Eligibility criteria: clients of an agency that serves people with developmental disabilities, ≥ 18 years of age, non- institutionalized, English speaking	
(Foster et al., 2011)	Cross-sectional prevalence study, chi-square, frequencies, percentages Sample size: 311 North Carolina Eligibility criteria: ≥ 18 years of age, patients receiving dialysis care at six regional dialysis centers	Participants were largely unprepared for disaster. Lack of preparedness was independent of any demographic variable examined, including literacy, education, income level, race, gender, or age ($P > 0.05$), with the exception that peritoneal dialysis patients were better prepared than hemodialysis patients ($P = 0.01$). Approximately 60% of participants had not discussed the possibility of evacuation with a relative, had no knowledge of other dialysis centers, and did not have their medical records easily accessible to take with them on short notice. Distributed household emergency preparedness brochures were not effective in ensuring adequate household emergency preparedness.
(Gershon et al., 2013)	Cross-sectional, frequency	The mean score for the emergency preparedness scale was 2.32 (SD = 2.74),

	<p>distributions, Pearson's chi-square, odds, ratios</p> <p>Sample size: 253</p> <p>Contiguous U.S.</p> <p>Eligibility criteria: community residents with cognitive and/or physical disabilities receiving personal assistance services</p>	<p>range 0-7. Even though 62.8% of the participants had previously experienced one or more large-scale emergencies, only 47.4% of the entire sample and 55.3% of those with actual emergency experience reported preparing an emergency plan. 63% of those reporting a plan had involved their personal assistant in its development. Participants who reported such involvement were significantly more likely to have higher scores on the emergency preparedness scale ($p < 0.001$). Participants who had experienced a prior emergency were also more likely to score higher on the emergency preparedness scale ($p < 0.001$). In general, participants reported limited attention to other basic preparedness recommendations: only 28% had prepared a "go-bag" with necessary supplies, 29% had developed a strategy for communicating with their personal assistant during emergencies, and 32% had stockpiled emergency supplies. Of particular importance, only 26% had made alternative back-up plans for personal assistance.</p>
(Heslin et al., 2013)	<p>Cross-sectional, univariate analyses, multivariate logistic regression, adjusted odds ratios</p> <p>Sample size: 28,167</p> <p>California</p> <p>Eligibility criteria: one adult per household</p>	<p>With each successively older age group, there were increases in the percentage of respondents who had at least a two-week supply of medications ("50-59 year olds" 76.9%, CI = 74.8, 78.9; "60-69 year olds" 81.7%, CI = 79.9, 83.5; "≥ 70 years old" 83.3%, CI = 80.2, 86.3). Respondents with asthma were less likely than those without asthma to have emergency medication supplies (72.9%, CI = 70.1, 75.7, $p = .004$), but respondents who had diabetes were more likely than those without diabetes to have them (80.2%, CI = 77.7, 82.7, $p = .002$).</p>
(Ko et al., 2014)	<p>Cross-sectional, univariate analyses, Chi-square, logistic regression</p>	<p>Respondents with chronic illnesses (diabetes, cardiovascular disease, or asthma) were generally not more prepared for disaster than the general population.</p>

	<p>Sample size: 104,654</p> <p>Connecticut, Montana, Nebraska, Tennessee, Delaware, Louisiana, Maryland, New Hampshire, Georgia, New York, Pennsylvania, North Carolina</p> <p>Eligibility criteria: ≥18 years of age, non- institutionalized, with telephone access</p>	
(McClure et al., 2011)	<p>Cross-sectional, descriptive statistics, chi- square, Fisher exact tests, Mann- Whitney tests</p> <p>Sample size: 487</p> <p>Contiguous U.S.</p> <p>Eligibility criteria: Age ≥ 16 years, at least one year post- spinal cord injury, uses wheelchair at least 40 hours per week</p>	<p>A large discrepancy existed between the perception that one can evacuate their city/town (69.1%) for a natural disaster and actually having a plan (31.5%). A large discrepancy existed between the perception that one can evacuate their city/town (72.6%) for an emergency event such as a terrorist attack and actually having a plan (31.1%). In a natural disaster, 63.7% of individuals would rely on assistance from other individuals to evacuate. In an emergency, 63.7% of individuals would rely on assistance from other individuals to evacuate.</p>
(McCormick et al., 2014)	<p>Cross-sectional, univariate analyses, bivariate analyses, logistic regression,</p>	<p>The number of participants with a complete disaster kit almost doubled from 2010 to 2012 ($P < .0001$), and there were significant increases in the number of</p>

	<p>two surveys (2010 and 2012)</p> <p>Sample size: Pre-tornado n = 1603, post-tornado n = 1602</p> <p>Alabama</p> <p>Eligibility criteria: ≥18 years of age, non-institutionalized, with telephone access</p>	<p>participants having each one of the recommended kit items ($P < .0001$ for each item). 73.97% of pharmacologic-dependent participants reported having a 30-day supply of medication. 76.25% of participants with diabetes and 69.29% of participants with coronary heart disease or angina reported having a 30-day supply of medication. Participants older than 64 years ($P = .0136$, $OR = 1.670$, $CI = 1.070$, 2.605) were more likely to have a complete disaster preparedness kit in the 2012 survey.</p>
(Murphy et al., 2009)	<p>Cross-sectional, bivariate analyses, multiple linear regression</p> <p>Sample size: 1,629</p> <p>Contiguous U.S.</p> <p>Eligibility criteria: ≥18 years of age, non-institutionalized, with telephone access</p>	<p>Participants had an average of 8.1 of 18 recommended disaster preparedness supplies and 0.65 of four recommended emergency plans. The number of disaster supplies increased as a function of increasing age, with those ≥ 60 years with a mean of 9.6 supplies.</p>
(Smith & Notaro, 2009)	<p>Cross-sectional, chi-square, logistic regression</p> <p>Sample size: total n = 777,665, individuals with an activity limitation n = 188,288</p> <p>Montana, Nevada, Tennessee, Delaware,</p>	<p>Persons with a disability were 1.22 times ($CI = 1.1, 1.4$) more likely to be unprepared for an emergency than those without a disability. Persons with a disability were also less likely to have a 3-day supply of water (42.1% versus 40.4%), a working battery-operated radio (25.6% versus 20.9%), a working flashlight (5.8% versus 4.0%), and to evacuate in an emergency situation (8.1% versus 6.0%).</p>

	Louisiana, New Hampshire	
	Eligibility criteria: ≥18 years of age, non-institutionalized, with telephone access	
(Smith & Notaro, 2015)	Cross-sectional, logistic regression, chi-square Sample size: persons with activity limitations 23,172 Contiguous U.S. Eligibility criteria: ≥18 years of age, non-institutionalized, with telephone access	People with disabilities were significantly less prepared for an emergency than persons without disabilities (“activity limitation” OR = 1.24, CI = 1.2-1.3; “needs specialized equipment” OR = .99, CI = .9-1.1). These results have been consistent across time, showing little to no improvement from 2006 to 2012. Persons who have a mental health (OR = 1.81, CI = 1.7-1.9) condition are significantly less prepared for emergencies than persons without a mental health condition.
(Uscher-Pines et al., 2009)	Cross-sectional, multiple logistic regression Sample size: 501 Pennsylvania Eligibility criteria: not disclosed	Households with a special-needs member had greater odds of having arranged a place to meet (OR = 2.2; 95% CI = 1.26, 3.88); located a shelter (OR = 1.8; 95% CI = 1.05, 3.24); or packed a bag (OR = 1.8; 95% CI = 1.02, 3.21). No significant differences were identified with respect to awareness of evacuation routes, purchasing of food and water, or creation of an emergency plan to guide evacuation decision-making.
(Xie et al., 2013)	Cross-sectional, logistic regression Sample size: 1,502 Alabama	38.74% of the sample had a complete disaster preparedness kit. At risk populations were no more likely to have a preparedness kit than the general population ($\chi^2 = 0.188$, $p = .6646$). No association was found between having a preparedness kit and familiarity with

	Eligibility criteria: ≥ 18 years of age, non-institutionalized, with telephone access	general family preparedness campaigns ($\chi^2 = 2.745$, $p = .0976$).
(Zidek et al., 2014)	<p>Cross-sectional, frequencies, percentages</p> <p>Sample size: rural respondents $n = 128$, urban respondents $n = 179$</p> <p>Pennsylvania</p> <p>Eligibility criteria: adults who use electronic medical equipment and have access to a landline telephone</p>	<p>74% of the rural residents and 82% of the urban residents using electronic medical equipment were unaware of the state's disaster preparedness media campaign.</p> <p>77% of rural respondents and 55% of urban respondents had some disaster preparedness plans. The most frequently preferred preparedness plans were use of generators, batteries, leaving the home, or seeking assistance from hospitals, nurses, emergency services, or medical suppliers.</p>

Table 2

Qualitative Research on Household Emergency Preparedness of Elderly and Medically Frail Individuals in the U.S.

Author and Year	Participants	Relevant Conclusions
(Christensen & Castaneda, 2014)	<p>Grounded theory, participant observation, individual semi-structured interviews</p> <p>Sample size: 12</p> <p>Florida</p> <p>Eligibility criteria: adult caregivers of</p>	<p>Purpose: To better understand how families affected by ADRD make decisions for disaster preparedness and to explore the challenges that these families might face during hurricanes. Results: Two major themes were identified, with three subthemes each. <i>Neutral Hurricane Experiences</i>: (a) those affected with ADRD but who assisted with hurricane preparation or recovery; (b) activities and distractions during the hurricane, and; (c) those affected with ADRD who did not notice the hurricane. <i>Hurricane-Related Problems</i></p>

	individuals with Alzheimer's or a related dementia (ADRD) who have caregiving experience during a hurricane	<i>for the Person with ADRD:</i> (a) the progression of the disease, rendering the person with ADRD less able to assist in preparations; (b) the person with ADRD resisting evacuation, and; (c) difficulty with recovery.
(Dostal, 2015)	<p>Content analysis, structured interview with open-ended and closed-ended questions, coded into categories</p> <p>Sample size: homebound older adults n = 36, surrogate decision-makers n = 20, total n = 56</p> <p>Philadelphia, Pennsylvania</p> <p>Eligibility criteria: homebound older adults and their surrogate decision-makers</p>	<p>Purpose: To assess the willingness and ability of homebound older adults to comply with a mandatory evacuation order, as well as categorize their medical needs in the event that they are to be cared for in an emergency shelter. Results: The most common concerns for a mandatory evacuation were how to physically exit the home, followed by having no place to go. Many participants had not thought about the possible difficulties of evacuation. 9% of participants reported that they would be unlikely to be willing to evacuate, 19% would not be willing to evacuate to an emergency shelter, and 7% would not evacuate if they had to leave their pets. 40% of participants would not be able to leave their neighborhood without public assistance. The medical needs of these homebound older adults were on par with care given in nursing homes.</p>
(Henderson et al., 2010)	<p>Content analysis, stress process model, face-to-face interviews with open- and closed-ended questions, coded into categories</p> <p>Sample size: 122</p> <p>Louisiana</p> <p>Eligibility criteria: displaced adults</p>	<p>Purpose: To explore how older adults prepared for and coped with the aftermath of Hurricane Katrina. Results specific to household emergency preparedness: Displaced older persons prepared for the hurricane by having water and nonperishable foods (58%), batteries (50%), transistor radio (43%), and cellular phone (41%). Fewer put gas in their cars, identified the safest place in the house, boarded up windows, had a generator or travel trailer, or determined the safest route for evacuation. More than 60% left before the storm.</p>

aged 60 and older		
(Rooney & White, 2007)	<p>Narrative analysis, “key informant” sample, Internet with open-ended questions, constant comparative analysis, coded to correspond with emerging themes</p> <p>Sample size: 56</p> <p>Contiguous U.S.</p> <p>Eligibility criteria: persons with mobility impairments who experienced firsthand a natural or manmade disaster</p>	<p>Purpose: To gain a better understanding of disaster preparedness for and the difficulties faced by persons with mobility impairments to guide future research and policy development. Results: Three themes regarding what was helpful for survival were identified: preplanning experiences (having an assembled disaster supply kit, disability-related or specific medical supplies, equipment, and medications, evacuation plans, preregistration for emergency assistance, disaster preparedness training, charging electronic medical equipment, evacuating early, and self assessments of possible hazards or disasters), social support networks, and help from first responders during and after disaster.</p>

All but one of the quantitative studies were non-experimental and therefore could not determine causality of household emergency preparedness levels. The quantitative studies also had conflicting results, with some authors concluding that elderly and medically frail individuals were better prepared, were worse prepared, or had no difference in preparedness levels than the general population. This conflicting evidence suggests that the true correlation between age or medical frailty and household emergency preparedness may actually be zero or that there is an effect of a moderating variable. The authors of the one experimental study were able to infer that increased preparedness levels were a result of a household emergency preparedness educational intervention. However, this study did not explore the role that disaster experience has on

preparedness or what motivated the participants to participate in the educational intervention. The qualitative studies offered insights on both community members' and responders' perceived situational impediments and potential solutions to increase household emergency preparedness, but none used a coastal urban U.S. sample. The only qualitative study with a similar research question to the proposed study was conducted in New Zealand with a focus on earthquake preparedness. The purpose of that study was to explore older adults' personal and social resources to contribute to broader understandings of age-specific disaster preparedness and to understand meanings of preparedness in older adults who experienced earthquakes in order to inform age specific preparedness planning (Tuohy et al., 2015; Tuohy, Stephens, et al., 2014). This study filled some of the gaps in the literature on how coastal urban older and/or medically frail adults have experienced disaster in the U.S. and how this experience impacts how they prepare for disaster.

Situational impediments to household emergency preparedness.

The PADM concepts explored in this literature review are the receiver characteristics and the situational impediments and facilitators that encompass the nonrelational propositions of the environmental and social contexts. Some receiver characteristics that render elderly and medically frail individuals vulnerable to disaster were discussed in chapter one. The situational impediments and facilitators concept of the PADM is an acknowledgement that actual implementation of protective actions depends “not only on people’s intentions to take those actions but also on conditions in their physical and social environment that can impede actions that they intended to take or that can facilitate actions that they did not intend to take” (Lindell & Perry, 2012, p.

624). The following section discusses additional receiver characteristics and situational impediments and facilitators found in the literature.

An individual's ability to procure an adequate disaster supply kit may be hindered by lack of knowledge on how best to prepare (Powell et al., 2009; Thompson et al., 2014; Tuohy et al., 2015) and lack of means to purchase and maintain necessary supplies (Al-Rousan et al., 2014; Baker & Cormier, 2013; Becker, Johnston, Paton, & Ronan, 2013; Chesser et al., 2006; Eisenman, Glik, Maranon, Gonzales, & Asch, 2009; Fernandez et al., 2002; Hilfinger-Messias & Lacy, 2007; Kim & Kang, 2010; Levac et al., 2012; Lindell, Prater, & Perry, 2006; Murphy et al., 2009; Perman, Shoaf, Kourouyan, & Kelley, 2011; Powell et al., 2009; True et al., 2013; Tuohy, Johnston, et al., 2014; Tuohy, Stephens, et al., 2014).

Some individuals may be hindered by the inconvenience of maintaining necessary supplies (Al-Rousan et al., 2014; Eisenman, Glik, Maranon, et al., 2009; Fernandez et al., 2002; Heslin et al., 2013; Hilfinger-Messias & Lacy, 2007; Kim & Kang, 2010; Levac et al., 2012; Lindell & Perry, 2012; Lindell et al., 2006; Murphy et al., 2009; Perman et al., 2011; Powell et al., 2009; Tuohy et al., 2015), as well as the lack of adequate space to store disaster supply kits (DeBastiani & Strine, 2012; Eisenman, Glik, Maranon, et al., 2009; Perman et al., 2011).

The impediments may be inherent in the information disseminated on household emergency preparedness. Individuals may lack the ability to process household emergency preparedness information which is often written only in English (Diekman et al., 2007; Lindell & Perry, 2012; Lindell et al., 2006; Thompson et al., 2014; Tuohy et al., 2015; Tuohy, Stephens, et al., 2014), and at an advanced literacy level (DeBastiani &

Strine, 2012; Eisenman, Glik, Maranon, et al., 2009; Hilfinger-Messias & Lacy, 2007; Lindell & Perry, 2012; Smith & Notaro, 2009). Some people lack Internet access that prevents them from receiving Internet-based household emergency preparedness education campaigns (Eisenman, Glik, Maranon, et al., 2009; Smith & Notaro, 2009). Additionally, there is a lack of consensus in the content and recommendations of household emergency preparedness information (Ardalan et al., 2010; Bethel et al., 2011; Clay et al., 2014; Fernandez et al., 2002; Perman et al., 2011; Powell et al., 2009).

Individual beliefs may influence decisions regarding household emergency preparedness. Some individuals may believe that they are not at risk for death, injury, property damage, or disruption of their daily activities (Eisenman, Glik, Maranon, et al., 2009; Perman et al., 2011), or that they can effectively mitigate risks (Levac et al., 2012; Lindell & Perry, 2012). Some people may have an unrealistic sense of optimism, may feel prepared but are not actually prepared objectively, may not take threats seriously, or may deny vulnerability to risks (McClure et al., 2011; Muller, Burke, Berg, Lin, & Upperman, 2014).

Medical frailty limits ones' ability to be prepared for events (Ablah et al., 2009; Becker et al., 2013; Hilfinger-Messias & Lacy, 2007; Levac et al., 2012; Lindell et al., 2006; Perman et al., 2011; Tuohy & Stephens, 2015; Tuohy, Stephens, et al., 2014). Individuals who are already struggling to survive may not take on the extra burden of preparing for an event that may never happen (Levac et al., 2012; Lindell & Perry, 2012; Thompson et al., 2014). Loss of personal valuables from a previous disaster may reduce motivation to prepare for future disasters (Tuohy et al., 2015). Some individuals see no point in assembling a disaster supply kit that may not be accessible because a building

may collapse, become flooded, or burned, forcing a precipitous evacuation (Levac et al., 2012; Perman et al., 2011). Some older adults may feel that their lives are drawing to an end and accept death as a result of the disaster (Tuohy & Stephens, 2015).

The literature also revealed situational impediments to evacuation of the elderly and the medically frail. Some of them may not have accessible transportation nor the financial resources to evacuate (Dostal, 2015; Smith & Notaro, 2009; Tuohy & Stephens, 2015). In general, people are emotionally attached to their homes and, motivated by having survived a previous disaster with minimal negative impacts, they are more likely to underestimate the consequences of future disasters (Henderson et al., 2010). Most people do not want to leave their pets or service animals behind (Benson, 2007; Dostal, 2015; Smith & Notaro, 2009; Thompson et al., 2014). Individuals are less likely to evacuate if they have an older family member in their household, especially one with Alzheimer's or a related dementia (Christensen & Castaneda, 2014). Resistance to evacuation may be due to lack of trust or confidence in scientific or political authorities (Abramson et al., 2015b), and the ability of shelters to meet their health needs (Christopher & Goldstein, 2014). Individuals may not evacuate because they feel that their empty homes would be at increased risk for looting (Abramson et al., 2015b; Eisenman, Cordasco, Asch, Golden, & Glik, 2007; Horney et al., 2010) or that receiving evacuation assistance would place others at risk (Tuohy et al., 2015).

Situational facilitators to household emergency preparedness.

Previous experience with a disaster may increase the likelihood that an individual will prepare for future disasters (Gershon et al., 2013; Lindell, 2013). Individuals are most likely to implement protective measures when they have identified that a risk exists

and perceive their high vulnerability and self-efficacy, as well as low costs of self-protection (Becker et al., 2013; Christensen & Castaneda, 2014; de Boer et al., 2015; DeVos, 2011; Diekman et al., 2007; Kim & Kang, 2010; Levac et al., 2012; Lindell & Perry, 2012; Lindell et al., 2006; Murphy et al., 2009; Terpstra & Lindell, 2013).

Caregiving responsibilities for children, family members, and pets have been shown to motivate preparedness (Levac et al., 2012). Existence of a communication infrastructure in the community is needed to deliver clear, concise, timely and accurate messages about the threat and appropriate responses in a manner that people of all ages, literacy levels, and native language-speaking abilities receive the message (Becker et al., 2013; Bergstrand, Mayer, Brumback, & Zhang, 2015; Chandra et al., 2013; Colten et al., 2008; Diekman et al., 2007; FEMA Emergency Management Institute, 2014; Fernandez et al., 2002; Hoopes-Haplin, 2013; Houston, Spialek, Cox, Greenwood, & First, 2015; Jones, 2010; Kim & Kang, 2010; Norris & Stevens, 2007; Perman et al., 2011; Pfefferbaum, Pfefferbaum, Nitiéma, Van Horn, & Houston, 2015; Plough et al., 2013). Messages could be formal or informal through various means such as interpersonal communications, social media, community organizations, local media, or other residents (Hilfinger-Messias & Lacy, 2007; Houston et al., 2015; Kim & Kang, 2010). In disaster situations, there is little time to check information; thus, messages need to arrive via a trusted source to facilitate coordination, cooperation and adherence to recommendations and directives (Bergstrand et al., 2015; Houston et al., 2015; Jhung et al., 2007; Kulig, Edge, Townshend, Lightfoot, & Reimer, 2013; Lindell & Perry, 2012; Muller et al., 2014; Norris & Stevens, 2007).

Household emergency preparedness outcomes.

Using the disaster supply kit as a variable in household emergency preparedness research can be problematic. Literature is lacking to support the claims that having a disaster supply kit results in self-sufficiency or contributes to disaster-related resilience. Additionally, literature is lacking on how the contents of the kits were determined. Perman et al. (2011) conducted a literature review to examine published disaster supply kit lists to determine differences, commonalities, specificity, and comprehensiveness. They discovered 71 different published checklists, with a huge disparity in the number of recommended contents, the specificity of the items, and the timeframe needed to be self-sufficient. The only common item that all 71 of the checklists recommended was water.

It has been established that no evidence exists for determining what should be in the disaster supply kits or determining whether having the kits results in self-sufficiency or disaster resilience. Nonetheless, the kits are still used as one of the primary variables for household emergency preparedness research. The quantitative studies used surveys, instruments, and objective disaster preparedness checklists to determine whether respondents were prepared. They sought to assess the degree of household emergency preparedness and establish associations between demographic characteristics and levels of preparedness. One major limitation is that most of these studies were observational and non-experimental, so that causation cannot be established. Also, none of the researchers have been able to describe the majority of the variance for why people are or are not prepared. Quantitative studies are unable to glean the social, economic, and environmental influences that have an impact on preparing for disaster (Tuohy, Johnston, et al., 2014).

Knowledge of the factors that affect how individuals prepare for a disaster would be advanced with qualitative studies (Gershon et al., 2013; Tuohy, Johnston, et al., 2014). Although often criticized for not being generalizable, qualitative studies provide participants a venue to voice their concerns and make suggestions that could persuade the consumer of the research to take action based on the findings. Qualitative methodologies are credible research designs because they can identify plausible causal relationships of situational impediments to household emergency preparedness that participants face; these methodologies identify meanings, beliefs, and contexts that lead to actual processes that result in specific outcomes (Holloway & Wheeler, 2010; Maxwell, 2012). Few qualitative studies on the topic of household emergency preparedness with elderly and/or medically frail community members have been conducted in the U.S. (Christensen & Castaneda, 2014; Dostal, 2015; Henderson et al., 2010; Rooney & White, 2007). These studies offered insights on both community members' and responders' perceived situational impediments and potential solutions to increase household emergency preparedness. The authors of these qualitative studies also found that a majority of their participants were unprepared for a disaster.

Although it is clear there is an expectation that people will take responsibility for their own disaster preparedness, the literature has largely not taken into account contextual influences on disaster preparedness (Tuohy, Johnston, et al., 2014). The composition and use of disaster supply kits has not been empirically tested. Instruments with items that represent the contents of a disaster supply kit to determine level of household emergency preparedness may not actually be valid measures of household emergency preparedness. Disaster supply kit recommendations are not uniformly

defined, but contents needed during the most crucial postdisaster period include water, food, first aid, hygiene, and clothing (Perman et al., 2011). Disaster supply kits are difficult for people to assemble because of significant barriers. The situational facilitators to assembling a kit include clear and consistent recommendations for the contents, people understanding that a risk exists, and people understanding that they are able to do something to help alleviate that risk, as long as it is convenient and not too costly.

Implications for research.

The receiver characteristics, situational impediments and facilitators, and social interventions previously discussed largely come from anecdotal evidence and expert opinions. All but one of the quantitative studies were observational, and thus causality of preparedness could not be established. Few qualitative studies specifically addressed how older and/or medically frail adults experienced disaster and how this experience impacts what they do now to prepare for disaster. None of the qualitative studies were conducted in a coastal urban setting in the U.S.

The research on household emergency preparedness is still mostly in the assessment stage, with plenty of work still to be done to discover which populations are prepared or unprepared and how to target specific populations for communication about disaster preparedness. Information on household emergency preparedness planning among elderly and/or medically frail individuals and individuals living with a disability is extremely limited (Gershon et al., 2013; McClure et al., 2011; Smith & Notaro, 2009; Uscher-Pines et al., 2009). The research needs to address culturally appropriate efforts on the part of public health and emergency management agencies to determine if

preparedness gaps are rooted in anticipation of future disasters, a distrust in the government and public health officials, ineffective communication, or as-yet unidentified factors (Ablah et al., 2009; Al-Rousan et al., 2014; Chesser et al., 2006; Der-Martirosian et al., 2014; McClure et al., 2011; Muller et al., 2014; Reininger et al., 2013). Bethel, Foreman and Burke (2011) call for studies to investigate why vulnerable groups do not have complete disaster preparedness kits, particularly in areas prone to natural disasters. McCormick, Pevear and Xie (2014) suggest exploring the impact of a disaster event on the levels of personal preparedness. Gershon et al. (2013) request that research be conducted to better understand the factors that motivate people to prepare for disasters and the barriers to preparedness efforts. This study adds new knowledge to fill these gaps in the literature.

Research Question

How have older and/or medically frail adults experienced disaster and how does this experience impact what they do now to prepare for disaster?

Chapter Three: Methods

In this chapter, support for the research method will be offered first. Second, a description of the study methods is provided, including the research setting, characteristics of the participants, human subject protection, consent process, recruitment, data collection, and data analysis. The chapter is concluded with a discussion on the trustworthiness of the study design.

In Support of Method

A qualitative research method was selected for this study because there is a lack of empirical research on the situational impediments and facilitators of household emergency preparedness, the role that disaster experience has on preparedness efforts, and the outcomes of preparedness. Furthermore, to the PI's knowledge, this study's research question has not been investigated qualitatively in the U.S. or on a coastal urban elderly and medically frail sample. This study used the qualitative interpretive methodology Situational Analysis Grounded Theory to explore the social processes of household emergency preparedness in older and/or medically frail adults residing in a coastal urban community in the Mid-Atlantic region of the U.S. (Clarke, 2005). Data collection aimed to uncover the beliefs and meanings that underlie peoples' actions, interactions, behavior, logic and social processes (Corbin & Strauss, 2015; Creswell, 2013). The PI sought to illuminate the "causal conditions (what factors caused the core phenomenon), strategies (actions taken in response to the core phenomenon), contextual and intervening conditions (broad and specific situational factors that influence the strategies), and consequences (outcomes from using the strategies)" (Creswell, 2013, p. 86; Holloway & Wheeler, 2010). Situational Analysis was a good fit for the research

question because it allowed the PI to define the household emergency preparedness process, demonstrate its context, specify the conditions under which it occurred, theorize about its phases and what contributes to its stability and change, and describe the consequences of being prepared and of not being prepared for disaster (Clarke, 2005). This methodology also allowed the PI to discover variables of household emergency preparedness that preexisting theory may have not been able to discover yet (Rubin & Rubin, 2012). Data was collected and constantly compared via interviews from purposive samples, observations, films, documents, memos, memoirs, Internet postings, the researcher's experience, and literature reviews (Charmaz, 2014; Corbin & Strauss, 2015; Creswell, 2013; Holloway & Wheeler, 2010). With household emergency preparedness research, the participants' experiences in the world that they live must be situated in factors such as geography, household emergency preparedness media campaigns, experience with disaster, socio-economic status, types of homes that they live in, and community resilience mitigation activities to name a few. What mattered the most in the PI's decision to use Situational Analysis methodology for this study was the goal of making explicit interpretations of how and why elderly and/or medically frail community lay people prepare for disaster in order to generate a theory of the process.

Description of Research Setting(s)

A coastal urban community in New Jersey heavily damaged by Hurricane Sandy in 2012 was used as the setting for this study. The city accommodates a socially vulnerable population in a physically vulnerable geographical location. The city is located in one of the hardest hit counties during Hurricane Sandy in terms of power outages, residential damage, shelter usage, and fuel shortages (Hoopes-Haplin, 2013;

Manuel, 2013). A sample of elderly and medically frail individuals was purposively sampled because they have experienced higher mortality rates related to disaster. Based on emerging theories, a sufficiently large sample was sought to help the PI best form the theory (Creswell, 2013). This theoretical sampling was not planned beforehand and was guided by ideas with significance for the emerging theory (Holloway & Wheeler, 2010). That is, additional participants and data were sought throughout the study, based on emerging categories, in order to offer additional information on those categories. All residents who met eligibility criteria were eligible to participate in the study, but active recruitment took place at the city's senior center, low-income apartment complexes for seniors and adults with disabilities, and social media sites. These venues were targeted for recruitment because they provided a variety of participants, including healthy elders, homebound elders, and young and middle-aged adults with disabilities.

Characteristics of the Participants

The target population was elderly and medically frail adults living in a coastal urban community in New Jersey who did not have experience working or volunteering as disaster responders. For this study, participants considered elderly were 65 years of age or older. Medically frail participants included adults of all ages with serious and complex medical conditions, physical and/or mental disabilities, or with pharmacological dependence. The FEMA Emergency Management Institute (2014) states that these individuals have access or functional needs during disaster and are considered vulnerable populations. Participants were non-institutionalized (e.g. not living in a skilled nursing facility, prison or mental institution), English-speaking adults. No specific race, ethnicity, gender, socioeconomic status, employment status, marital status, or education

level were targeted for recruitment. Citizen, disease, and pregnancy status was not ascertained for recruitment purposes.

Disaster responders were excluded from this study. Disaster responders are defined as police officers, firefighters, emergency medical workers, government agency officials, non-government agency volunteers (e.g. from the American Red Cross or the Citizen Corps), public health department employees, or healthcare workers working in hospitals, nursing homes, or rehabilitation facilities. They were excluded because responders generally receive formal training in emergency preparedness and response to disasters and are therefore likely to be knowledgeable and prepared for disasters. Non-English-speaking persons were excluded only because the PI does not speak another language.

The sample size for this study was not to exceed 40 participants. The PI interviewed until saturation of the data was reached. According to Creswell (2013), a Grounded Theory researcher typically conducts 20 to 30 interviews to saturate their categories with rich data. The PI achieved saturation at 33 participants.

Protection of Human Subjects

The research study protocol was submitted to the Institutional Review Board (IRB) of Rutgers, the State University of New Jersey Newark to ensure that the rights of human subjects were protected prior to data collection. The design of this study was such that there was no more than minimal risk to subjects participating in the study. The participants may have become tired or may have had some unpleasant memories when answering the questions during the interviews. Precautions were taken to minimize the risk to the participants and included emphasizing that participation was voluntary, that

the participants could stop the interview at any time, and that the participants could skip or refuse to answer any questions. There were no financial costs to participants for participating in this study, nor were participants compensated for their participation. However, participants received a household emergency preparedness educational brochure during the interview to keep.

Informed consent.

Before beginning the interview, the PI read or had the participant read the informed consent (Appendix A) and answered any questions that the potential participant may have had. The informed consent included: (a) an explanation of the purpose of the study; (b) an explanation that there will be no direct benefits and minimal risks to participation; (c) an assurance of confidentiality; (d) an assurance of the participant's right to choose not to participate or to terminate participation at any time during the interview; and, (e) an audio/videotape addendum asking permission to allow the PI to audio-record the interview. The consent also stated that, should the potential participant decide not to participate in this research study, his or her relationship with the Long Branch Senior Center, the Long Branch Housing Authority, or the study team would not change and he or she would not lose any benefits to which he or she was otherwise entitled. After signing the informed consent, the participant was given the demographic data form, after which the in-depth interview was conducted. The informed consent was kept in a separate locked file. The interview, demographic data form, and transcribed interview were not linked with the consent form.

Data Source and Collection

Participant recruitment.

The PI recruited potential participants by asking the Director of the Long Branch Department of Senior Affairs and Senior Center to distribute a recruitment flyer to older adults without cognitive impairments, inviting them to participate in this research study. The PI's telephone number and e-mail address was included on the flyer, along with a request for potential participants to contact the PI if interested in participating in the study.

The PI also recruited potential participants by posting a recruitment message on three private Facebook groups with the permission of the administrators of those groups: (a) Hometown Long Branch, NJ; (b) Historic Long Branch, and; (c) You Know You're From Long Branch When.... During recruitment, it was impossible to disable the comments section or the like button of posts on Facebook. However, potential participants were directed to contact the PI via private message on Facebook in the original post. If any questions were asked in the comments section of the recruitment post, the PI answered via private message to the potential participant and deleted the comment. Additionally, the social media recruitment strategy involved The City of Long Branch posting the IRB-approved social media recruitment message to their public page on the PI's behalf, with the condition that they added that the study was not their survey and in no way affiliated with the city.

The PI also recruited potential participants by distributing a recruitment flyer to residents of four low-income apartment complexes for seniors and adults with disabilities operated by the Long Branch Housing Authority. The PI's telephone number and e-mail address was included on the flyer, along with a request for potential participants to contact the PI if interested in participating in the study.

The PI also utilized the snowball sampling technique where participants suggested other potential participants (Holloway & Wheeler, 2010). The PI provided extra flyers to the participants with the hope that they would share them with other potential participants.

Once potential participants responded to the flyer, the PI determined if the potential participant was eligible to participate by having him or her answer two questions:

1. Are you 64 years of age or younger?
2. Have you worked or volunteered as a police officer, firefighter, emergency medical worker, government agency official, non-government agency volunteer (e.g. from the American Red Cross or the Citizen Corps), public health department employee or a healthcare worker in a hospital, nursing home or home health agency?

If the answer was no to both questions, the PI informed the potential participant about the study, verified their interest in participating, and arranged for a face to face, in person interview. If the answer was yes to question one, the PI inquired about medical frailty status of the potential participant. Medical frailty status was self-reported. The potential participant was asked if he or she had a serious and complex medical condition, was considered disabled, or was dependent on at least one prescription medication. An affirmative answer to any of those three questions qualified the individual to participate in this study. If he or she was not considered medically frail, the PI informed the potential participant that he or she was not eligible to participate in this study. If the answer to question two was yes, the PI informed the potential participant that he or she

was not eligible to participate in this study.

Eight (24%) participants were recruited from the senior center. Seven (21%) participants were recruited from the Long Branch Housing Authority. Six (18%) participants were recruited via the snowball sampling technique. Twelve (36%) participants were recruited from social media. Of the 12 participants recruited from social media, seven did not see the recruitment posts on their own. Friends or family members saw the recruitment post and shared the information with the participants.

The interview was conducted at a time that was convenient for the participant, with the location of the interview either at the Long Branch Senior Center, a public place of the participant's choosing, or the community rooms of each of the apartment complexes operated by the Long Branch Housing Authority.

Demographic data form.

A demographic data form (Appendix B) was used to collect data that described the demographic characteristics of the sample. This data included gender, age, race/ethnicity, marital status, employment status, education level, zip code, and household income. Demographics that could potentially affect how a respondent prepared for disaster, based on previous research, were also collected. These included whether or not the subject takes medications daily, has a medical condition that requires special equipment, or has a disability that requires assistance from another person. The subject was also asked if he or she has served in the military, speaks English as a first language, has children in the household, owns or rents his or her home, type of home, and how many years lived in both the home and the community. The interviews were connected with the demographic data forms by pseudo name only. Participants were

asked to choose a pseudo name from the National Oceanic and Atmospheric Administration's 2016 and 2017 Atlantic Tropical Cyclone names to assist with transcription and confidentiality of the data. True names were not included on either the demographic data form or the interview transcript. Signed consents were not labeled with the pseudo names.

Data collection.

The interview guide (Appendix C) consists of a series of questions used by the researcher to guide the interview process. These questions were based upon the theoretical propositions of the PADM (Lindell & Perry, 2012).

Data was collected through audio-recorded in-depth interviews with elderly and medically frail adults who volunteered to participate in the study. The recording device was checked that it was operational prior to each interview. Data was collected in a quiet and private environment, to the extent possible.

Interviews began during the spring 2016 semester via an IRB-approved pilot study of 11 adults aged 65 years and older recruited from the research setting of the doctoral dissertation study. The goal of the pilot study was for the PI to gain experience in qualitative interviewing and field test the interview guide. The purpose, methods, and analysis of the pilot study were the same as the doctoral dissertation study and the intent was to evolve the pilot study into the dissertation study. All of the pilot study participants met inclusion criteria for the dissertation study and their interviews were included as data in the dissertation study. Five minor changes were sought on the IRB-approved pilot study application for the doctoral dissertation study:

1. Interview guide questions were revised for clarity and to gather data for the

emerging theories.

2. In addition to elderly participants, recruitment of medically frail adults of all ages was included. This theoretical sampling was based on the first 11 participants of the pilot study, who were relatively healthy, mobile, and had strong social support networks. The PI needed housebound older adults and medically frail adults of all ages to gather data for the emerging theory.
3. The four low-income apartment complexes for senior and disabled adults operated by the Long Branch Housing Authority were added as recruitment sites.
4. Member checking was added to support the validity of the findings.
5. Recruitment was increased to 40 participants.

After the IRB modifications were approved, interviews recommenced and continued until saturation was reached in June of 2017. It was anticipated that the interviews would be up to 60 minutes in length. The shortest interview was 11 minutes, the longest was 52 minutes, and the mean interview time was 25 minutes. The audio file interviews were uploaded to a computer and transcribed into Word documents by the PI. Once the transcripts were checked for accuracy, the audio-recordings were erased from both the recording device and the computer. The PI understood that, with qualitative research, the data collection methods had to remain flexible and changes from the initial plan could be expected (Creswell, 2013). Field notes and memos on observations, conversations, interpretations, and suggestions for future information to be gathered were written promptly and regularly. Films, documents, memoirs, and books were located via word of mouth, literature reviews, and Internet searches to provide additional data about the

situation.

Data Analysis

The interview transcripts were uploaded into NVivo software, which was used to organize the data for analysis. The transcribed interviews were thematically analyzed. Analysis of interview transcripts was an iterative process. The transcripts were read and reread to develop codes. The codes emerged from the data and were later grouped using categories and concepts. Analysis of early data from the pilot study revised the interview guide questions for the doctoral dissertation study.

Situational Analysis methods for analyzing and describing findings include codes, maps, and memos. Data collection and analysis occur simultaneously. In this study, the PI explored how the situation facilitated or impeded the subjects' ability to prepare for disaster according to FEMA recommendations. The PI identified why the study was important, who and what were involved in this situation, who and what mattered in this situation, and what elements "made a difference" in this situation (Clarke, 2005, p. 86). The PI extracted codes from the collected data and placed the codes into three types of maps. These codes represented both the human and non-human factors that mattered to the situation (Clarke, 2005). The PI used the PADM to inspire the initial coding of the data. As the study progressed, codes were determined according to the emerging theory. The maps that were drafted were the situational map, social worlds/arenas map, and positional maps (Clarke, 2005). Situational maps portray the major human, nonhuman, discursive, historical, symbolic, cultural, political, and other elements in the research situation of concern in order to provoke analysis of the relationships among them (Clarke, 2005, p. xxxv). Social worlds/arenas maps portray the "collective actors, key nonhuman

elements and the arena(s) of commitment within which they are engaged in ongoing discourse and negotiations” (Clarke, 2005, pp. xxxv-xxxvi). Positional maps plot the major positions articulated and not articulated in discourses regarding areas of variation, focus, and controversy on these issues (Clarke, 2005). Once the maps were drafted, the PI specified the relationships of the elements (Clarke, 2005).

The PI had the experience of being both a community member and a disaster responder in the study setting and began a draft ordered situational map prior to data collection. The items contained on the draft situational map changed based on the actual data collected and analyzed. Once the maps were completed, the PI wrote memos about the most interesting, important, and complicated relationships of the elements, the contents of the discourse, and any unanswered questions (Clarke, 2005).

Collaborative data analysis occurred with IRB-approved dissertation committee members only. The PI met periodically with these faculty mentors and frequently shared electronic copies of her memos, field notes, and written interview transcripts to discuss the coding, emerging categories, and themes. Written interview transcripts that were shared with the dissertation committee members were de-identified. The PI entered demographic data into NVivo software, which was installed on a laptop computer that was password-protected. Sample characteristics were analyzed using descriptive statistics (e.g., means and frequencies).

Trustworthiness

Rigor.

Authors who present an iterative research process describe their methods in such a way that the consumer of the research would easily understand what was done to collect

and analyze the data, and how it was accomplished. In the following chapters, the PI describes how the methods evolved as the study continued, how she collected and analyzed the data simultaneously, paid attention to actions and processes according to the participants' views, used comparative methods, used the data to develop categories, used theoretical sampling, field notes, codes, memos, and maps, purposely searched for variation and alternative cases, and constructed a new theory about household emergency preparedness (Charmaz, 2014; Corbin & Strauss, 2015; Creswell, 2013). The PI's operational and methodological memos can be used as an audit trail for consumers to follow the rationale for the PI's decisions and actions (Birks, Chapman, & Francis, 2008; Charmaz, 2014). The PI collaborated with the dissertation committee members on the coding and thematic analysis of the written interview transcripts. To facilitate transferability, the analysis process and the results are described in sufficient detail so that readers have a clear understanding of how the analysis was carried out (Elo & Kyngas, 2007). Thick description is supported with authentic quotes. This demonstrates a link between the results and the data, which increases the trustworthiness of the findings (Elo & Kyngas, 2007).

Validity.

Validity in qualitative research does not have a rigid procedure or set of criteria (Sparkes, 2001). The PI's stance on validity is that if the study is evocative, reflexive, and has an audit trail, it can be considered valid. The PI demonstrates reflexivity by acknowledging that she is a part of the world that she is studying and not an unbiased data collector, by describing her background and how her past and present experiences informed her interpretations, and by disclosing her personal agenda for conducting this

study via reflexive memos (Agar, 1996; Charmaz, 2014; Creswell, 2013; Doyle, 2013). The PI also validated the accuracy of her findings via member checking or triangulation of her data (Creswell, 2013; Hoffmann, 2007). Member checking of the participants ensured that the PI truly captured the voice of the sample, which increases the rigor and credibility of the study and findings. Member checking was done at the conclusion of the study via providing five participants a copy of the findings, interpretations, and recommendations. This gave the participants a venue to analyze and comment on the findings. Two participants responded with comments and informed the PI that their voices were accurately represented. The PI also included alternative cases that do not support the working theory, and described how those cases either added to or changed the data analysis or recommendations (Holloway & Wheeler, 2010).

Summary

Household emergency preparedness is a dynamic, multifaceted, large-scale public health concern that needs to be addressed. It shows promise for collaboration between the responders, government agencies, and the community, as preparedness is a universal concern (Wells et al., 2013). Research on the household emergency preparedness of independent older or medically frail adults is greatly needed, as the population ages and more critical medical services are delivered in the community (Fernandez et al., 2002; Tuohy, Johnston, et al., 2014). The disproportionate vulnerability to the consequences of disaster for older and medically frail adults has been attributed to a failure to include them in the preparation phases (Tuohy, Johnston, et al., 2014). Through Situational Analysis qualitative research, the PI described the contextual influences on household emergency preparedness of this population and generated theory concerning the reasons

why older or medically frail coastal urban community members do or do not prepare for disaster. The PI became the conduit for the concerns of the elderly and medically frail to be heard (Denzin & Lincoln, 2011). These theories will provide public health and emergency management professionals information on how to best assist this population in preparing for, living through, and recovering from disaster.

Chapter Four: Context and Informants

Historical and Sociocultural Context of the Research

I was watching TV. And that's when the power went out. And that's when we knew. It's here.

- Ian (56-year-old male)

In the late evening of October 29, 2012, a monstrous “Frankenstorm” formerly known as Hurricane Sandy arrived just in time for Halloween in the coastal urban community of the City of Long Branch, New Jersey. An elderly gentleman stood outside of his high-rise apartment building located a few blocks from the angry Atlantic Ocean and the surging Shrewsbury River. He watched the storm as best as he could in the dark, his drenched clothing flapping in the roaring wind. Listening to this account, the PI was horrified that the gentleman risked his life to observe the tempest. The gentleman replied, “What was it gonna do? Get me wet?”

This Situational Analysis Grounded Theory study explored how elderly and medically frail community members in one coastal urban community experienced disaster and how that experience affected how they prepared for future disasters. This study tells the story of how elderly and medically frail community members prepared for and survived Hurricane Sandy and other storms. Situational impediments and facilitators that the participants faced to household emergency preparedness and the outcomes of their preparedness efforts are provided. Not all of the participants made it through these disasters unscathed, but they all provided valuable lessons for emergency managers, healthcare professionals, and fellow community members to learn from. This chapter includes a description of these participants, an introduction to the PI and other data sources used in this study, and a description of the audit trail.

Introduction to the Participants

Thirty-three elderly and/or medically frail participants described their experiences with disaster, how those experiences impacted the way they prepared for subsequent disasters, and their current state of household emergency preparedness. These participants lived independently in the City of Long Branch, New Jersey (n=27, 82%) and the city's suburbs (n=6, 18%). Twenty (60%) participants were female and 13 (39%) were male. Nine participants (27%) were under the age of 65 and considered medically frail or disabled. The rest (n=24, 73%) were 65 years of age or older and considered elderly. All of the elderly participants and 94% (n=31) of the total sample required daily prescription medications. A few participants disclosed that they took prescription medicines on a daily basis but did not disclose for which medical conditions. Participants were not asked about presence of specific medical conditions, but Table 3 contains a listing of disclosed medical conditions. Eight (24%) participants required special medical equipment and four (12%) required assistance with at least one activity of daily living. Fourteen (42%) participants lived in housing designated for the elderly and persons with disabilities. Twenty-one (64%) participants were considered low-income according to U.S. federal standards. Most of the participants (n=30, 91%) had lived in the community for five or more years. Additional demographic data of the participants are displayed in Table 3.

Table 3
Demographic Data of the Participants

Demographic	n = 33	Percent
Gender		
Female	20	60%
Male	13	39%

<u>Age</u>		
Less than 65 years	9	27%
65 to 69 years	8	24%
70 to 79 years	9	27%
80 to 89 years	5	15%
90 to 99 years	2	6%
<u>Race / Ethnicity</u>		
Black or African American	8	24%
Hispanic or Latino	1	3%
White or Caucasian	24	73%
<u>Relationship Status</u>		
Divorced	8	24%
Domestic Partner	1	3%
Married	8	24%
Separated	2	6%
Single, Living with Significant Other	1	3%
Single, Never Married	3	9%
Widowed	10	30%
<u>Employment Status</u>		
Disabled	8	24%
Employed Full-Time	2	6%
Retired	23	70%
<u>Education</u>		
Less Than High School	2	6%
High School Diploma	8	24%
Some College, No Degree	9	27%
Associates Degree	3	9%
Bachelors Degree	6	18%
Graduate Degree	5	15%
<u>Annual Household Income</u>		
Less than \$20,000	13	39%
\$20,000 to \$34,999	5	15%
\$35,000 to \$49,999	3	9%
\$50,000 to \$74,999	8	24%
\$75,000 to \$99,000	2	6%
\$100,000 to \$149,999	2	6%
<u>Daily Prescription Medication</u>		
Yes	31	94%

No	2	6%
<u>Requires Medical Equipment</u>		
Yes	8	24%
No	25	76%
<u>Requires Assistance with Activities of Daily Living</u>		
Yes	4	12%
No	29	88%
<u>Military Experience</u>		
Yes	5	15%
No	28	85%
<u>English is the First Language</u>		
Yes	32	97%
No	1	3%
<u>ZIP Code</u>		
Eatontown	1	3%
Long Branch	27	82%
Monmouth Beach	1	3%
Ocean Township	1	3%
Oceanport	2	6%
West Long Branch	1	3%
<u>Lives in Housing for Elderly and Persons with Disabilities</u>		
Yes	14	42%
No	19	58%
<u>Home Ownership</u>		
Other	1	3%
Own	13	39%
Rent	19	58%
<u>Years in Home</u>		
0 to 5 Years	10	30%
Greater than 5 Years	23	70%
<u>Years in Community</u>		
0 to 5 Years	3	9%
Greater than 5 Years	30	91%

<u>Type of Home</u>		
Detached Single Family	14	42%
Multi-Family One or Two Stories	3	9%
Multi-Family Three or More Stories	15	45%
Other	1	3%
<u>Children in Home</u>		
Yes	0	0%
No	33	100%
<u>Disclosed Medical Conditions</u>		
Cancer	4	12%
Cerebral Palsy	1	3%
Diabetes	7	21%
Enlarged Prostate	1	3%
Heart Problems	6	18%
Hepatitis	1	3%
High Blood Pressure	10	30%
Lung Problems	5	15%
Mental Illness	5	15%
Mobility Deficit	12	36%
Multiple Sclerosis	1	3%
Recent Falls	1	3%
Seizures	1	3%
Sensory Deficit (Hearing)	6	18%
Sensory Deficit (Vision)	20	60%
Sleep Apnea	1	3%
Speech Problem	2	6%
Stomach Problem	2	6%
Stroke	1	3%
Thyroid Problem	1	3%
<u>Recruitment Source</u>		
Housing Authority	7	21%
Senior Center	8	24%
Snowball	6	18%
Social Media	12	36%

FEMA recommends that disaster supply kits should be stocked in households at all times, not just in the days leading up to a predicted disaster. During the interview, the

participants were asked if they currently had the recommended basic disaster supply kit items on the FEMA checklist (see Appendix D). Results are displayed in Table 4 (see Appendix E). If the participant did not specifically speak about an item, it was marked as “unknown” and considered a “no” for the preparedness calculation. Percent prepared was calculated by counting the number of items currently in the home, divided by the 15 total items on the checklist. At the time of the interview, none of the participants had 100% of the recommended disaster supply kit items. Just 15% (n=5) of the participants had an actual supply kit and all five of those participants received that kit for free by attending a household emergency preparedness class at the senior center.

Introduction to the Data Sources

In addition to 33 interviews with knowing participants, the data sources for this study included field notes, memos (methodological, observational, operational, reflexive, and theoretical), peer-reviewed research and journal articles, emergency management text books, 143 newspaper articles, television broadcasts, eight documentaries, household emergency preparedness educational materials (Internet postings, brochures, pamphlets, posters, and swag), reports from senior advocacy groups, attendance at two emergency preparedness conferences, attendance at a community festival, four coffee table books, three non-fiction books, one memoir, one cookbook, emergency management plans, public policy, and flood maps. The purpose of collecting non-interview data was to perform discourse analysis on what was disseminated about natural disasters, with a focus on household emergency preparedness recommendations.

The newspaper articles were gathered from five local papers, the *Asbury Park Press*, *Star Ledger*, *Two River Times*, *Word on the Shore*, and *The Link*, and one

international newspaper, *The New York Times*. The PI gathered articles that were published in the days leading up to the potential local impact of five recent hurricanes (Irene in 2011, Sandy in 2012, Joaquin in 2015, Matthew in 2016, and Hermine in 2016), and one winter storm (Stella in 2017). Most of these articles came from the *Asbury Park Press*, followed by the *New York Times*. The PI paid for subscriptions to those newspapers and had full access to the content. The PI obtained articles from the other newspapers until maximum free content without a subscription was achieved. The purpose of collecting these articles was to perform discourse analysis on what was published in the days leading up to predicted disasters, with a focus on preparedness recommendations. The PI also collected household emergency preparedness media campaign articles that were published at the start of hurricane season or in celebration of national preparedness month.

The documentaries, coffee table books, and the memoir were about Hurricane Sandy. One of the non-fiction books was about Hurricane Katrina, one was about Hurricane Sandy, and the other was a collection of historical case studies of nurses in disasters (including Hurricane Sandy). The cookbook only included recipes for food items that did not require a heat source or refrigeration. The television broadcasts were from The Weather Channel and were watched in the days leading up to the U.S. landfall of the 2017 Hurricane Irma.

Additionally, the PI interviewed an emergency manager and a homecare nurse who worked in the study setting to ask what professionals with their titles do to prepare community members for disasters. Because these interviews were not about the opinions, characteristics, or behaviors of these two individuals, they did not meet the regulatory

definition of research with human subjects. The PI did not need to obtain consent, nor were the interviews audio recorded. The PI wrote an observational memo after each interview and coded the memos.

The PI included her thoughts, history, and motivations as data. Readers will see reflexivity sprinkled throughout the findings, discussion, and recommendations. The PI feels passionately about the nurse's role in household emergency preparedness of elderly and medically frail community members and does not promise a balanced and objective tone when advocating for community interventions for these individuals.

Description of the Audit Trail

The PI did not deviate from the research protocol. All modifications to the study, based on theoretical sampling needs, were submitted and approved by the IRB prior to implementation in the study. The PI obtained access to a range of diverse participants from various sites via various recruitment venues (see Table 3). Purposeful sampling of elderly and medically frail individuals was used from the start of the study, followed by theoretical sampling of homebound elders and adults of all ages with disabilities. Additional non-interview data sources were also theoretically sampled. For example, the PI sought data to ascertain the role of the American Association of Retired Persons (AARP), FEMA, the American Red Cross (ARC), the New Jersey Office of Emergency Management (NJOEM), medical insurance companies, home care nurses, and emergency managers in the household emergency preparedness of elderly and medically frail community members. Journalism data sources were sought to explore their role as educators, information sources, and risk communicators.

The following section is a description of the audit trail for this research study.

The PI wrote and analyzed memos and field notes throughout every step of the process. Data collection and analysis occurred simultaneously and all data sources were read and reread to assure thorough coding. NVivo software for Mac version 11.4.1 was used to store, organize, code, and query all forms of data used in this dissertation study.

The PI began the study with an extensive review of the literature to determine what was known about the household emergency preparedness of elderly and medically frail community members, the research question, and to select a study design. The PI then chose a theoretical framework to inspire the research question and interview guide. The first three chapters of this dissertation study were written prior to the start of interview data collection and updated after data collection was completed. The PI created the first draft of the ordered situational map based on her own experience as a community member and disaster responder within the study setting.

An IRB-approved pilot study of 11 older adults was conducted to field test the interview guide and to provide the PI with interview experience. The PI transcribed and analyzed the first 11 interviews. The research protocol was modified to include medically frail adults of all ages and additional recruitment sites. The interview guide and demographic data form were revised slightly for clarity.

After IRB approval, the PI conducted the next 22 interviews over a 13-month period. Transcription and preliminary analysis of each interview occurred during the same time frame. The PI felt that she had reached saturation with the discomforts of the disaster experience, motivation for preparedness actions, and recommended community interventions after interview 26. However, the PI continued to interview with the hope of gleaning more information about risk perception, preferred information sources, and

disaster preparedness self-efficacy. Interviews were halted at 33 because, hearing no new answers, and having alternative cases to enrich the data, the PI reached saturation. The coding of these interviews was greatly inspired by the theoretical framework used for the study. However, other codes grounded in the data also emerged.

The PI then collected, analyzed, and coded non-interview data that needed to be included in the situational analysis of household emergency preparedness of elderly and medically frail community members. The PI made note that no new elements were added to the situational map and few, if any, codes were added after analysis of the Hurricane Hermine coverage in the journalism data sources. After that memo, the PI analyzed the Hurricane Matthew and Winter Storm Stella coverage to be sure that she would not miss anything.

Codes were grouped under concepts, and concepts were grouped under categories on the situational map (see Table 5) (Clarke, 2005, pp. 90-101). The PI wrote memos about the relationships between the major and minor concepts and categories on the situational map. These memos answered the following questions: (a) who and what was in the situation; (b) what material things were involved and required for household emergency preparedness; (c) how were various technological devices involved; (d) what elements “made a difference” in household emergency preparedness; (e) what social institutions were involved; (f) what cultural discourses were evoked by the impending disaster situations; (g) were any preparedness issues controversial, and if so, to whom; (h) who and what things were involved in producing knowledge about household emergency preparedness, and; (i) what discourses, ideas, scientific criteria, and concepts shape how community members and disaster responders think about, conceive, and define the nature

of household emergency preparedness (Clarke, 2005, pp. 87-100)? This exercise also created the content for the social worlds arena map and positional maps. Because the content of these maps was discussed in the situational map, the PI did not feel that visual representations of those maps were necessary. Drafts of the social worlds arena map and positional maps can be provided upon request.

The maps evolved over several drafts as the data was analyzed and concepts began to overlap. By the time the PI reached the bottom categories of the situational map, new content for the memos was scarce because it was already discussed under other categories. The PI reached saturation with her situational analysis maps. The core category, or major theme, of the study was then decided.

The elements of the situational map are discussed throughout the next three chapters, but they do not necessarily follow the same order or fall under the same headings of the situational map. The situational map is a means to display all of the elements of the situation of household emergency preparedness of elderly and medically frail community members in one place. In the narrative, each element is discussed under the theoretical category or concept that it was designated to.

Table 5

Ordered Situational Map: Household Emergency Preparedness of the Elderly and Medically Frail Living in a Coastal Urban Community in the Mid-Atlantic Region of the U.S.

Individual Human Elements/Actors e.g., key individuals and significant (unorganized) people in the situation	Older adults. Medically frail adults. Families, friends and neighbors. Children. Pets. Building managers and landlords. Building activities directors and social workers.
--	---

	Senior Center staff. Office of Emergency Management Coordinator. Mayor. Governor. President of the U.S.A.
--	---

Collective Human Elements/Actors e.g., particular groups; specific organizations	<p>Community Partners:</p> <ul style="list-style-type: none"> • Faith-based organizations. • Community-based organizations. • Meals-On-Wheels. • Pharmaceutical and medical supply companies. • The Multiple Sclerosis Association of America. • HMOs, state and private insurers. <p>Disaster responders (police officers, firefighters, emergency medical workers, government agency officials, non-government agency volunteers, public health department employees or healthcare workers working in hospitals, nursing homes, or rehabilitation facilities, pharmacists).</p> <ul style="list-style-type: none"> • American Red Cross. • Medical Reserve Corps. • FEMA. • National Guard. • Coast Guard. • Monmouth County Sheriff's Office. • Long Branch Office of Emergency Management. • Monmouth County Office of Emergency Management. • New Jersey Office of Emergency Management. • Long Branch Police Department. • New Jersey State Police. • New Jersey Office of Homeland Security. • NJ State Feeding Task Force. • Salvation Army. • Southern Baptist Convention. • Community Food Banks of New Jersey. • Monmouth County Office on Aging • Feeding America. • New Jersey Department of Health. • Utility companies. • Home owner's insurance companies. <p>Information Sources:</p> <ul style="list-style-type: none"> • Meteorologists and climatologists. • Reporters.
---	--

	<ul style="list-style-type: none"> • Journalists. • Public information officers. • NOAA. • National Weather Service. • National Hurricane Center. • National Centers for Environmental Prediction. • United States Geological Survey. • CDC.
Discursive Constructions of Individual and/or Collective Human Actors (as found in the situation)	<p>Preparedness as prevention.</p> <ul style="list-style-type: none"> • If an individual prepares for disaster according to the FEMA definition of disaster preparedness, he or she should be able to survive any type of disaster without need for outside assistance for at least three days. • If an individual does not prepare for a disaster and suffers ill effects because of it, it is that individual's fault. • Individuals should not rely on the government for assistance after disaster, because assistance is not guaranteed. <p>Self versus community versus governmental responsibility for preparedness activities. Individuals do not know how to prepare for disasters.</p>
Political/Economic Elements e.g., the state, particular industry/ies; local/regional/global orders; political parties; NGOs; politicized issues	<p>Climate change. Disaster declarations.</p>
Temporal Elements e.g., historical, seasonal, crisis, and/or trajectory aspects	<p>Past experience with disaster. Seasonal differences in weather. Years lived in the community. Years lived in the home.</p>
Major Issues/Debates (as found in the situation; and see positional map)	<p>Household emergency preparedness activities are good and necessary versus there is little point in preparing for something that you have little control over.</p>
Nonhuman Elements Actants (e.g., technologies; material infrastructures; specialized information and/or knowledges; material	<p>Community interventions.</p> <ul style="list-style-type: none"> • Evacuation orders. • Household emergency preparedness checklists. • Household emergency preparedness media

“things”)	<p>campaigns.</p> <ul style="list-style-type: none"> • Household emergency preparedness classes. • Memorandum Of Understanding agreements with community partners. • Priority utility registries. • Special needs registries. <p>Disaster supplies.</p> <ul style="list-style-type: none"> • Disaster supply kits. • Medications. • Supplemental oxygen. • Food. • Water. • Clothing, blankets, towels. • Light sources. <p>Information sources.</p> <ul style="list-style-type: none"> • Television. • Radio. • Newspapers. • Newsletters. • Weather alerts. • Weather predictions. • Internet. • Code Red Alert system. • Cellular phones. • Landlines. • Telephone alerts. <p>Insurance</p> <ul style="list-style-type: none"> • Flood insurance • Home insurance • Medical insurance <p>Reliable electricity.</p> <ul style="list-style-type: none"> • Refrigeration. • Electronic medical devices. • Generators. • Elevators. • Heat. <p>Shelter (e.g., free standing permanent structure, mobile home, apartment, condominium, townhouse).</p> <p>Transportation (e.g., personal vehicle, buses, trains, shuttles).</p>
<p>Implicated/Silent Actors/Actants (as found in the situation)</p>	<p>American Association of Retired Persons. Climate change. Funding for community interventions.</p>

Nurses.	
Sociocultural/Symbolic Elements (e.g., religion, race, sexuality, gender, ethnicity, nationality, logos, icons, other visual and/or aural symbols)	Physical attributes. <ul style="list-style-type: none"> • Chronic illness. • Cognitive deficits. • Gender. • Mobility deficits. • Prescription medication reliance. • Sensory deficits.
	Social attributes. <ul style="list-style-type: none"> • Assistive person reliance. • Caregiving responsibilities. • Education level. • Economic status. • Ethnicity • Expectations of being rescued. • Fatalism. • Freedom to choose. • Knowledge deficits. • Marital status. • Native language speaking abilities. • Owning versus renting the home. • Race. • Religion. • Presence of children in the household. • Presence of pets in the household. • Social support.
Spatial Elements (e.g. spaces in the situation, geographical aspects, local, regional, global spatial issues)	Geography. <ul style="list-style-type: none"> • City of Long Branch, New Jersey. • Suburbs of Long Branch (Eatontown, Monmouth Beach, Oceanport, Ocean Township, Sea Bright, West Long Branch). • Monmouth County, New Jersey. • State of New Jersey. • East Coast. • United States of America.
	Flood zones. <ul style="list-style-type: none"> • Atlantic Ocean. • Lake Takanassee. • Neighborhood of North Long Branch. • Neighborhood of West End. • Shrewsbury River and creeks.
	Places of refuge.

	<ul style="list-style-type: none"> • Community rooms. • Evacuation sites (friend/family homes and storm shelters). • Faith-based organizations. • Individuals' homes.
	Sources of supplies. <ul style="list-style-type: none"> • Department stores. • Gas stations. • Grocery stores. • Hardware and home improvement stores. • Pharmacies.
Other Key Elements (as found in the situation)	Disaster plans of the community. Federal policy: Emergency Support Function #6 - Mass Care, Emergency Assistance, Housing, and Human Services. Post-Katrina Emergency Reform Act of 2006.

Principal Investigator Reflexivity

The PI became interested in the topic of household emergency preparedness for several reasons that must be disclosed, as they absolutely contribute to her assumptions, perspectives, biases, and understandings of the data. In the postmodern Situational Analysis Grounded Theory methodology, the researcher acknowledges the she is directly in the situation that she is studying as an actor, designer, interpreter, and coconstructor of data. Her prior knowledge of the situation is valuable, rather than hindering (Clarke, 2005). The following section is an introduction to the PI.

The PI had the experience of a white middle-class upbringing in the study setting and lived through several extreme natural weather events as a child. The most memorable event for her was the nor'easter of 1992. She was in fifth grade. Two days prior, she had moved 10 blocks from her original childhood home to a riverfront house in the neighborhood of North Long Branch. This nor'easter created a storm surge that completely flooded her street. The water surrounded her house, creating a little island.

The PI witnessed neighbors using boats to row to the main road that the street connected to. A house near the PI's home caught fire and the fire trucks could not get to the house due to the flooding. A woman jumped out of her second story window to escape the flames. The PI and her younger brother cried and begged their parents to go back to their old home.

The PI's mother still lived in this home during Hurricane Sandy. The house flooded to a depth of two feet with her mother still inside.

At 14-years-old, the PI joined the local ambulance squad as a junior volunteer and then as an Emergency Medical Technician (EMT) at 16. Instead of being just a community member living through severe weather events, the PI was now also a responder. The PI witnessed life-threatening events as a result of medically frail community members not being prepared for disaster. Two events were especially memorable. One happened during a severe thunderstorm that knocked out power to much of the city. A patient with renal failure was receiving a dialysis treatment at home when the power went out. There was no backup battery and no generator in the house. Her machine shut off mid-treatment. It took the PI longer than usual to get to her house due to a backlog of emergency calls related to the severe storm and downed trees preventing access to her street. Fortunately, the patient was successfully transported to the city hospital without incident.

The PI was on duty when a severe thunderstorm knocked out power to an entire nursing home. The nursing home's generators did not turn on and the staff did not know how to troubleshoot them, or even where they were. The patients were extremely frightened. The PI and other EMTs had to assess each patient via flashlight and obtain

enough portable oxygen tanks to evacuate them. The PI was astounded that a healthcare facility that assumed care and responsibility for medically frail patients was so completely unprepared.

September 11, 2001 occurred when the PI was a college student. She volunteered as an EMT on campus. Every other EMT departed the campus to volunteer their services in New York City. The PI was the only EMT left on campus to provide emergency medical services to extremely frightened young adults. The PI was also extremely frightened and sat in front of her television obsessively, watching the disaster unfold. The PI felt helpless, which was perpetuated by her inability to do anything more meaningful during the disaster than provide basic emergency medical care to frightened college students.

Hurricane Katrina in 2005 also made an impression on the PI. Living in New Jersey, the PI was not physically affected by the hurricane. The PI had just graduated from nursing school. She again obsessively watched the news and felt overwhelming empathy for the community members, the hospitalized patients, and the healthcare providers working through the disaster. She was heartbroken that such devastation could take place in this country, not the damage to the physical infrastructure, but the massive loss of lives. The PI followed news coverage about the alleged euthanasia that took place in a flooded hospital in New Orleans. As a new nurse, the PI hoped to never have to be in a situation where she would have to make the decisions that those healthcare providers made. The PI hoped that no healthcare providers would ever have to make those decisions again.

The PI must also disclose that she is a fan of disaster supply kits. She has one, has had to use it, and it made her feel empowered to survive the disaster. During Hurricane Sandy, the PI was able to assist three other households in her family with her supplies.

The PI has worked as both an EMT and a nurse for 18 years in New Jersey, and has either volunteered or worked throughout every local disaster during that time. She has shouldered the burden of unprepared community members during disaster. She and her coworkers have put themselves at risk when rescuing people during dangerous storm conditions. The PI has cared for scores of patients who arrived at the hospital as a result of acute exacerbations of chronic conditions related to not being adequately prepared for disaster. They came for an oxygen source, to have prescription medications refilled, to charge their electronic medical devices, and to receive dialysis treatments. Many patients came for the simple reason that they did not want to be alone during the disaster. The surge of patients placed a burden on the healthcare staff who were working in less than optimal conditions, such as short-staffed or on generator power, or worrying about their own families and homes located in the same affected community.

The PI began this study with mild frustration with her unprepared community members. She wondered why they were unprepared and felt that staying in the comfort of your own home would be more desirable than in a hospital. However, from the start of the research journey, the PI quickly transitioned from frustration to understanding. There are several physical and social circumstances that render the elderly and medically frail community members less prepared than they could be. The PI hopes that this study will help other nurses transition to understanding and become passionate about their role in

the household emergency preparedness of fellow community members and resilience of their communities.

Summary

The data collection methods are clearly specified, extensive, and the PI is able to deliver the complete audit trail of six field notes, two operational memos, 38 methodological memos, 66 observational memos, 21 theoretical memos, 33 interview transcripts, the drafts of the situational map, positional maps, and the social worlds map, and the reference database upon request. The PI described the research protocol, data collection, and analysis methods in great detail to encourage readers to replicate the study or confidently apply the findings to other settings and populations. The findings are realistic and accurate, which the following chapters will verify. Findings are demonstrated in narrative discussions, tables, figures, maps, and via authentic quotes. Quotes from the participants may have been mildly altered, with the speech disfluencies (i.e., “ums” and “uhs”) discarded, but the quote would be recognizable to the participant. The participants chose their pseudo names from the National Oceanic and Atmospheric Administration’s 2016 and 2017 Atlantic Tropical Cyclone names. Some chose pseudo names typically associated with the opposite gender. The PI refers to the participants by their pseudo names, but uses pronouns that match their disclosed gender.

Chapter Five: Discussion of the Findings

How Have Older and/or Medically Frail Adults Experienced Disaster...?

The PI went directly to the “expert” source on household emergency preparedness, the community lay people, and explored their reasons for preparing or not preparing for disaster. Situational Analysis Grounded Theory researchers embrace this situated knowledge; it provides those who have previously been excluded a venue to record their histories, voice their concerns, and make recommendations. After situating the participants’ experiences in the world that they live in, the PI theorized about (a) the causal conditions of household emergency preparedness; (b) the strategies, or actions taken, in response to those causal conditions; (c) the situational facilitators and impediments to those strategies, and; (d) the consequences of the strategies (Clarke, 2005; Creswell, 2013; Holloway & Wheeler, 2010). The categories and concepts displayed on the situational map are discussed under those headings.

Core Category: Experience is the Best Teacher

I guess experience is one of your better teachers.

- Colin (67-year-old male)

The core category was “Experience is the Best Teacher.” The choice of this theme as the core category was evident with both participants and disaster responders. Based on the findings, the PI theorizes that coastal urban elderly and medically frail community members are generally considered unprepared for disaster according to FEMA standards. Their lack of preparedness is due in large part to lack of education on how best to prepare. Once educated, motivation for self-responsibility of household emergency preparedness can be expected. However, community interventions like distributing disaster supply kits and offering evacuation assistance help overcome their

situational impediments to preparedness and provide the best chance for these vulnerable community members to survive disasters without becoming ill or injured or experiencing a decline in their baseline functional status. If elderly and medically frail community members are incidentally prepared, it is largely due to their past experience with disaster or their professional experience.

Responders constantly review past response efforts and update policies and plans to better meet the needs of the community based on those experiences. Responders used lessons learned in past disasters to improve response, relief, recovery, and resilience efforts. Nurses are key actors in disaster relief and recovery efforts of the community, but can participate more in preparedness efforts.

Past experience with disaster was a focal point in this study. It was the first half of the research question, the interview guide was designed to glean information about it, and the core category of the theory generated by this study was “Experience is the Best Teacher.” Past experience was the third most commonly coded concept, behind “information sources” and “household emergency preparedness education,” and tied with “preparedness actions.” Past experience was referenced in 249 statements in 67 data sources. The concepts of “most memorable disaster experience,” “home conditions,” “food and cooking,” “things lost in disaster,” “ill or injured during disaster,” “disaster distractions,” “isolated during disaster,” “rescue during disaster,” “evacuation,” and “seasonal differences in weather,” were placed under the category “Past Experience.”

Causal Condition Category: Past Experience

From January 1, 2001 to September 1, 2017 there were 18 major disaster declarations and six emergency declarations in New Jersey. The state required federal

assistance with response to and recovery from disasters on average more than once a year for the last 17 years. During a disaster declaration, the state receives federal funds for programs that assist both individuals and public infrastructure for emergency and permanent work. During an emergency declaration, the state receives up to five million dollars to protect lives, property, and public health and safety in order to lessen or avert catastrophe (Federal Emergency Management Agency, 2017a). The participants in this study, all long terms residents of New Jersey, were exposed to disasters frequently.

How have elderly and medically frail community members experienced disaster and how has this experience affected what they do now to prepare or not prepare for disasters? Interview data revealed that none of the participants were 100% prepared for disasters according to FEMA recommendations. Few were purposely prepared for disasters with supply kits and those few received their kits by attending an emergency preparedness class at the senior center. The majority of the participants were incidentally prepared.

Cindy, Fiona, Julia, Philippe, and Tammy said that they had never experienced a storm like Hurricane Sandy, did not know what to expect, and were shocked by the destruction. Four participants said that they learned how to prepare for disasters by observing their families' preparations when they were children. Otto said that he used to be an avid camper and that living without power after a storm is "kind of the same thing." Gert grew up five houses from the beach, lived through many storms, and was not bothered by them.

Vince said that he grew up in a "rough and tumble" neighborhood and had to learn how to survive as a child. He said that household emergency preparedness actions

were “just common sense” to him because of how and where he grew up. As a young adult, Vince owned a business and had to make sure that his business remained operational during weather events. Vince said that both common sense and past experience taught him how to prepare for disasters.

Before he was placed on disability, Gaston was the contingency officer for his company. As part of his work duties, he had to think of all the worst-case and “what if” scenarios and develop plans on how to address those scenarios. Gaston does the same thing for his home when preparing for predicted storms.

Hermine, Tobias, and Whitney worked in schools and assisted with storm shelter set-ups in the past. They said that they had an idea of what supplies to stock in their homes from what they were supplying in the school shelters.

Seven participants said that they learned how to prepare for disasters from their experiences with past storms. Danielle said that, because of Hurricane Sandy, to prepare for predicted storms in the future she would purchase freeze-dried meals and accept water supplies from the distribution centers. After the Hurricane Sandy storm surge flooded his finished basement, Don elevated his hot water heater and furnace, purchased a generator and walkie-talkies, and would set up sand bags around his home for future storms. Don also decided not to refinish his basement. During the nor’easter of ’92, a large tree in Emily’s front yard tilted toward the house. Because of that, Emily and his wife stayed in a back bedroom of their house during Hurricane Sandy. After Hurricane Sandy, Fiona purchased lanterns, and purchases extra food supplies and puts ice in a cooler for predicted storms in the event that she loses power (even for snowstorms). Fiona also said that if she was ever told to evacuate again, she would take her electric wheelchair, the

few cherished belongings that she has left, and never come back.

Jose learned preparedness lessons from each disaster that she lived through. After September 11, 2001, Jose kept cash and a dust mask in her home. She built her evacuation “go bag” after Hurricane Irene and used it for Hurricane Sandy. After Hurricane Sandy, Jose maintained a stockpile of water in her home and added a disaster supply kit. Lisa and Tammy also obtained disaster supply kits after Hurricane Sandy.

Many years ago, Tammy had to evacuate to a storm shelter in the midst of a hurricane, in dangerous conditions, with her small children. She said, “I’ll never do that again!” and has since volunteered her services in storm shelters during major storms. Ophelia ended up moving to a second-floor apartment, which she proudly informed the PI is approximately 40 feet above sea level. Due to the long gas station lines during Hurricane Sandy, Matthew said that she fuels up her personal vehicle and gas cans before predicted storms. Tobias said that she would buy more wine for future disasters.

This was the second time we were told to evacuate. First time, we didn’t, and it wasn’t such a- it came up like half the driveway. I almost didn’t want to go this time. I think had I been there, I would’ve had a heart attack.

- Fiona (80-year-old female)

Past experience also decreased the risk perception of some of the participants and deterred preparedness actions. Don admitted that his home did not flood during the nor’easter of ’92, which lead him to believe that his home would be fine during Hurricane Sandy. He was in a mandatory evacuation zone, but he did not evacuate. His home was flooded in Hurricane Sandy. Don did not regret staying home and said that he would not evacuate for future disasters. However, he does regret not setting up sand bags around his home.

Because his home escaped major damage, Gaston said that in the future he would

likely only evacuate for “super storms like Hurricane Sandy” and not hurricanes. Harvey said that he is not concerned about Category 1 hurricanes because they happen frequently and he has “never suffered any losses as a result” of them.

I sat upstairs in the top, second floor of the apartment, and watched the water come down and all that. Wasn't exciting or nothing like that 'cause I was just used to it. I mean, you know, when you live in coastal areas you're used to all that!

- Whitney (66-year-old female)

Don and Tammy said that because “the media hyped up past storms and nothing happened,” they were caught off guard with the storm conditions and destruction from Hurricane Sandy.

Most Memorable Disaster Experience.

One question on the interview guide was written to solicit the participants' most memorable experience with a natural disaster. Hurricane Sandy was the most frequently mentioned memorable disaster experience (n=26, 79%), followed by Hurricane Irene, the nor'easter of '92, a snowstorm, a 1974 hurricane, and “a horrible hurricane when I was in high school.” Harvey had two most memorable disasters. In addition to Hurricane Sandy, he reminisced about an ice storm in 1974 where he and his young family were trapped in their freezing home for days without power.

Walter said that the September 11, 2001 World Trade Center disaster was her most memorable disaster experience, even though it was not a natural disaster. Sean said that September 11 was the worst disaster he had ever lived through, especially since he was supposed to teach a seminar in one of the buildings the morning of the attacks. Luckily, his seminar was delayed to the afternoon and he had not yet arrived when the first plane hit. He watched the buildings collapse from a few blocks away. Jose also

mentioned September 11 because her husband was in the building when it was hit. Fortunately he made it out alive.

Hurricane Sandy was described by the participants as awful, big, bad, crazy, devastating, horrible, scary, terrible, tough, traumatic, too strong, the worst, unbelievable, unimaginable, wild, and a disaster. Participants recounted storm conditions and intensity, destruction and devastation that they had never witnessed before. Don said the aftermath of Hurricane Sandy was “mass chaos.” Fiona repeated throughout her interview that Hurricane Sandy and the following recovery period was “a nightmare.” The two eldest participants, both in their 90’s, had this to say about Hurricane Sandy:

Oh my God! That was so uncalled for! That was something in all my life I never witnessed!

- Nicole (91-year-old female)

Sandy! That was a disaster! It was really, really horrible. I never had a storm like that! Never never.

- Paula (95-year-old female)

Whitney, at 66 years old, had lived through extreme weather events in the past and said that Hurricane Sandy was the first “disaster” that she had ever endured. Colin said, “Sandy never happened before and it was quite a surprise.” Ophelia felt that Hurricane Sandy was worse than her cancer diagnosis.

I’ve, it was, that was, that was, I don’t know if Sandy was, I think Sandy was more traumatic than having cancer. That’s possible. Or they were just on an even...level. They were both traumatic, but I knew that I could recover from the cancer.

- Ophelia (66-year-old female)

The participants witnessed community damage, described as streets flooded with water, trees blocking the roads, the boardwalk ripped up, roofs and signs torn off, collapsed houses, and massive piles of debris on the beach. Danielle said, “...seeing

all... people's lives on the sidewalks. That was just, that was, that was just so sad...So incredibly sad." Several participants mentioned that the Sandy recovery took the longest of all the other storms that they lived through.

Just the, the loss of power, the destruction. You know? And it wasn't just us. It was everybody! I mean within three days everybody had a pile of garbage in the front of their yard, you know?

- Don (48-year-old male)

It was like the end of the world after, after that storm because no stores were open, no gas stations could pump gas. I mean it was, there was nothing! It was like really the end of the world. I never saw anything like that in my, all my years.

- Walter (female in her 70s)

Even after recounting the storm and aftermath of Hurricane Sandy, several of the participants felt blessed (Danielle, Lisa, Tobias), fortunate (Danielle, Harvey, Hermine, Lisa, Walter), and lucky (Emily, Gaston, Hermine, Lisa, Ophelia, Virginie) that they had not suffered worse damage. They compared their experiences to the devastation that others suffered in the community, and felt that they fared better. Ophelia, whose entire apartment and most of her belongings were destroyed, still mentioned that friends from Union Beach suffered worse damage than she.

Home Conditions.

Well, we had a lot of wind and the old house sort of shook, rattled, and rolled, but it stayed here. Um the following morning I went out and found, we've got a, you might've noticed it, a great big maple tree in the back yard. A big old grandma maple tree. A big branch came down from way up high and landed on the roof of my shed and put a big hole in it. But other than that, thank God, it didn't land on one of our cars or do any great big uh damage. It was mostly just um, a big storm.

- Emily (87-year-old male)

While the participants tried to keep a positive outlook on their Hurricane Sandy experience, they did experience hardship. Participants described the discomforts of conditions within their homes as a result of Hurricane Sandy. The homes of Alex, Cindy,

Don, Fiona, Nicole, Ophelia, Paula, and Walter were flooded during Hurricane Sandy.

Karl and Shary's homes were flooded in past storms, Hurricane Irene and the nor'easter of '92 respectively. Fiona, Nicole, Ophelia, and Paula had evacuated prior to the storm and did not witness the flooding of their homes as it was happening. Alex was home, but her home was flooded via groundwater.

...and my basement got completely flooded... then I was down there bailing water for weeks on end, trying to get that out of there.

- Alex (69-year-old female)

Don, Cindy, and Whitney were home when floodwaters rushed toward their homes.

Whitney lived in an upstairs apartment, which was not damaged by the flood, but she spoke about seeing fish swimming next to her building.

And then it just start, kept on coming. And it came quite, pretty quickly. Just like all of sudden it was all there. And we had the cars in the driveway. We had the cars across the street. So we had to get all of the cars up on the front lawn and hope that it wouldn't go any farther than that. And it didn't. Which is good. But we have a, a ranch. It's a raised ranch. But the basement is a little underground so it completely filled with water. I mean it was like a swimming pool down there.

- Don (48-year-old male)

Nicole said that she was "in shock" when she went home the day after Hurricane Sandy and found all of her belongings still floating in three feet of water. Don, Fiona, and Paula mentioned the evidence of the height of the floodwaters in their homes. Paula and Cindy recounted the stench of their flooded apartments. Paula had to wear a mask just to go inside of her home. Mold became a big issue.

Matthew's apartment did not become flooded, but water seeped in through the cracks of her windows and came down her walls. The winds from Hurricane Sandy ripped a hole in the roof of Matthew's upstairs neighbor's apartment. This was the source of most of Matthew's water damage.

In the midst of the storm, Lisa risked her life by tying down an aluminum awning that was threatening to rip off her house. Tammy feared that her neighbor died because a foul odor was emanating from the apartment and no one answered the door. Fortunately, the neighbor had evacuated, but left meat out, which spoiled. Danielle, Maria, and Whitney experienced broken windows. Danielle, Emily, Lisa, and Virginie described how Hurricane Sandy's strong winds shook their homes, which was frightening to them.

The next morning I went out and walked around. I had no damage on the house and I thought, "oh this is really great!" Then I looked at my car and my windshield was broken.

- Otto (male in his 70s)

The morning after the storm, participants went outside to survey their damage. Hermine described an "enormous tree" that fell, narrowly missing her house by mere inches. A tree branch fell through the roof of Emily's garage. A portion of Alex's roof and her front storm door were ripped off. Fiona came home to see a pile of debris from the storm surge in her yard.

Fiona lived in Monmouth Beach, a small strip of land between the Atlantic Ocean and the Shrewsbury River located just over the northern border of the City of Long Branch. It is possible that Fiona suffered the most of all of the participants. She evacuated to a hotel for Hurricane Sandy, but checked out of her room before seeing her home. Her home was completely flooded, yet she and her medically frail husband had to move back in a day after Hurricane Sandy hit because their hotel room was already rebooked and she felt she "had nowhere else to go." She had no power, no heat, lots of mold, and her electric wheelchair (which was stored in her garage) was destroyed. Her home's foundation was compromised but no one prevented her from moving back in

because “nobody was coming around” to inspect it. Fiona was diagnosed with chronic bronchitis after Hurricane Sandy, which she attributed to the mold.

Electricity. The entire City of Long Branch and every participant lost electricity during Hurricane Sandy. Participants described the discomfort resulting from lack of electricity in the days, and in some cases weeks, after Hurricane Sandy hit. Light, heat, and operational elevators (or lack thereof) were the most discussed discomforts. Preservation and loss of refrigerated and frozen food, the ability to cook with gas, and the inability to cook with electric ranges and ovens also came up frequently.

At the time of Hurricane Sandy, Gert lived with and was the sole caretaker of her elderly father who had Alzheimer’s disease. Their apartment was in a high-rise building designated for seniors and individuals with disabilities. The building had no backup generator and the elevators were inoperable. Gert described how difficult it was to keep her father calm and make him understand why their apartment was so dark and cold. At one point, she became so frustrated and hopeless with her caregiver duties that she called 911 with the goal that her father would be brought to the city hospital. The EMTs talked Gert out of sending her father to the hospital. Without an actual medical complaint, she was told that he would likely be sent right back home and she would have to figure out how to get him back up the stairs. They offered to arrange transportation to the local medical needs shelter, but Gert declined their offer. She felt that her father would not have gone willingly and would have become more agitated if he were in an unfamiliar shelter environment. She spent much of her time worrying that her father was going to accidentally set the apartment on fire because she was using candles as her light source. She also said, “It wasn’t really warm enough, it wasn’t.” Gert was asked if there was

anything that people could have done to help her with him during Hurricane Sandy. She said, “No, daddy didn’t know nobody but me.”

Light and darkness.

I thought I was gonna be a bat! And hang up on, hang on the ceiling and just...
(laughs) so dark!

- Philippe (61-year-old male)

Darkness was the most commonly discussed discomfort from lack of electricity. Participants frequently described their sources of light (candles, flashlights, lanterns, oil lamps, a wireless portable light bulb, and a wireless portable light switch), how they arranged activities of daily living to be completed during the daylight, and how disconcerting the darkness was. Participants with generators made sure to power their electric light sources. Gert said that people in her building left their apartment doors open at night to get light from the emergency lights in the hallways. Sean and Philippe had no source of light and both described how they sat in the dark. This was especially disturbing to Philippe. He mentioned it several times during the interview.

Heat and cold.

And then I remembered that [mink] coat. I put it on and let me tell you, I had no complaints after that ‘cause I knew once I went up, that was going on. I had, I was like this (participant pulls sweatshirt up to cover her head and holds her collar tightly). And it was big. So I had it wrapped around and I said if anybody walked in, they would think there was a bear on the couch. But let me tell you, slept like a baby.

- Tammy (69-year-old female)

The next most commonly discussed discomfort from power loss was lack of heat. A few fortunate participants (Alex, Emily, Hermine, Jose, Katia, and Walter) had fireplaces or wood burning stoves in their homes, which kept them warm. Danielle and Gert, both caretakers of an elderly parent, were concerned about keeping their loved ones

warm in their chilly homes. Harvey kept a large pot of water boiling on the stove for warmth, which subsequently destroyed all of the artwork in his home.

A generator powered the heat in the community room of Tammy's high-rise building for seniors and individuals with disabilities. However, none of the apartments in that building had power. Tammy said that most of the residents spent their days in the community room to stay warm and went back to their cold apartments at night.

Otto lived in a single family home. Donned in a sweater, Otto sat in front of his large picture window in the sunlight or in the basement, next to his gas furnace, which still had a pilot light burning, for warmth. When he was unable to get his home's temperature above 53 degrees, he evacuated to his daughter's house.

Jose had to re-evacuate to her daughter's house when she could no longer stay warm in her townhouse. Harvey's children insisted that he leave his freezing apartment. When he declined, they gave him their extra blankets.

Elevators. One of the most disturbing findings from this study was that two high-rise buildings designated for seniors and individuals with disabilities did not have backup generators prior to Hurricane Sandy. These buildings did not have operational elevators, which trapped many residents with mobility deficits on their floors. A third high-rise building for seniors and individuals with disabilities did have a backup generator for the elevators, hallway lights, and the community room. However, there were times when these elevators were not powered in the days after Hurricane Sandy. The participants did not know why the elevators were not working at times. Fortunately, after Hurricane Sandy, all of the buildings that the participants resided in obtained backup generators to run their elevators.

Ian, who was probably in the poorest health of all the participants, said that he would have been better off in Hurricane Sandy if he had not moved into senior housing. His previous residence was at ground level. His current apartment was on the sixth floor and completely without power. Ian fretted that, had he needed assistance during Hurricane Sandy, he would have been in trouble. He had sleep apnea and “a bad heart, knees and feet,” among several other comorbidities. His sleep apnea machine was not battery operated, so it was not functional. Ian also struggled to get up and down the stairs. He made the trip at least once a day to charge his cell phone in the community room. However, even charged, his cell phone would not make outgoing calls in the days after Hurricane Sandy hit. His cellular phone service was down and the emergency pull string in his apartment was not functional due to lack of power. He said that he “would’ve been in a real bad way” if his “heart would’ve acted up.” He also could not walk to the local food and supply distribution center.

Food and cooking.

We have a house. It’s an old-fashioned house. And unlike the new houses, it has a large, walk-in pantry. And Ms. [spouse’s name] keeps it tolerably well. So we ain’t gonna starve to death in a hurricane.

- Emily (87-year-old male)

None of the participants said that they went hungry in the days after Hurricane Sandy. They had enough food in their homes, were able to resupply before they ran out, or received food from neighbors and relief organizations. In the days after Hurricane Sandy, Earl, Fiona, Gert, Maria, Matthew, Philippe, Tammy, and Whitney restocked their food supplies from distribution centers. Colin, Gert, Hermine, and Whitney restocked their water supplies from distribution centers. Emily picked up ice from a distribution center. Harvey resupplied at a grocery store. Virginie said that he was, “too nervous

really to eat.” Some participants preserved their refrigerated and frozen food by storing it in coolers with ice. Fiona kept her milk out in the open on her back porch.

Several participants had to throw away their frozen and refrigerated food. Katia said that, because she had to throw away so much food with Hurricane Sandy, to this day she no longer keeps much perishable food in her home. Conversely, Tammy, citing pest problems in her high-rise building, only keeps food in her refrigerator or freezer. On a day-to-day basis, she mostly eats fast food outside of her apartment. During Hurricane Sandy, she volunteered in a storm shelter during the day and ate her meals there.

One of the resident’s in Tammy’s building had family who owned a restaurant. That family would bring a hot meal to the community room every day. Residents would bring plates up to their less-mobile neighbors. Many participants, especially those who resided in the high-rise buildings, cooked whatever they had in their refrigerators and freezers before it spoiled and shared it with their neighbors.

Participants who had ranges fueled by natural gas were still able to cook inside their homes. The stoves in Gert’s high-rise building were natural gas powered, but had electric igniters. Gert said that many of her neighbors were unaware that they could manually light their stoves. She went around and lit their stoves for them.

Some participants used grills to cook their food. Alex even made a pizza on her grill. Participants who had electric ranges struggled to eat warm meals. One of the high-rise buildings for seniors and individuals with disabilities only had electric ovens and stoves.

Things lost in disaster.

You work your whole life for this, you know? And you think, at the end of your life, here everything is gone that you’ve treasured. It’s not that easy.

- Fiona (80-year-old female)

While discarded spoiled food was a hot topic, participants also discussed losing cherished belongings and, in some cases, their homes. Belongings were either stolen or destroyed in floodwaters. Generators were stolen from residents of Matthew's apartment complex. Gaston's house was robbed during Hurricane Sandy. Fortunately, he and his wife had emptied their safe and brought their cherished antique glassware with them when they evacuated. Vince was irate as he described that an individual stole donated items that Vince brought back to his high-rise building for his less-mobile neighbors. Vince believed that this individual sold the stolen items in a different neighborhood. The interviews were conducted four to five years after Hurricane Sandy hit. Several participants still had not recovered financially and were unable to replace all of the material items that they had lost.

Some participants temporarily or permanently lost their homes. Cindy stayed at a neighbor's house for a few days while her apartment was rehabilitated. Nicole and Paula stayed with their family members for six months before they were able to move back into their apartments. Ophelia stayed at a friend's house for three months and then moved to a new apartment in a different town. Since Hurricane Sandy, Cindy, Ophelia, and Whitney moved. Walter was owner and landlord of a house that was flooded. Because of her Hurricane Sandy experience, she sold that home.

Ill or injured during disaster.

Unfortunately, five participants became ill or injured as a result of Hurricane Sandy. These illnesses or injuries did not occur during the storm itself, but in the days and weeks after it hit. Tammy was knocked over by leftover strong winds while walking

in the parking lot of her building. She suffered abrasions and said, “I got hurt, but not bad.” Tammy also injured her back while climbing the stadium stairs in a storm shelter. Cindy, Maria, Ophelia, and Fiona all developed respiratory problems from the mold in their homes. Cindy was treated and released from the emergency department and Maria was hospitalized for a few days with acute exacerbations of their asthma. Fiona and Ophelia were both treated as outpatients for bronchitis. Ophelia was also diagnosed with Post-Traumatic Stress Disorder and was treated as an outpatient by mental health professionals for a year after Hurricane Sandy. In addition, five months after Hurricane Sandy hit, Ophelia was diagnosed with an aggressive form of breast cancer. She attributed the source of the breast cancer to the stress of Hurricane Sandy.

Sadly, there was at least one likely preventable death in the City of Long Branch as a result of Hurricane Sandy. The death occurred in the days after Hurricane Sandy had departed (The Star Ledger, 2013, p. 200):

Robert Mayberry loved the ocean. Sailing, boating, fishing and surfing. It all came naturally. His Long Branch apartment was a block from the beach, and he’d point his specially made beach-cruiser bicycle to the sand whenever he could.

The 61-year-old man died of hypothermia in his unheated apartment.

Disaster distractions.

And we tied [the lanterns]! My chandelier! (laughs) We tied the two to the chandelier (laughs harder) and all that! Then we were playing games! What’d we play? Scrabble or something. I don’t know. But we were at the dining room table playing games.

- Lisa (73-year-old female)

While Hurricane Sandy battered the community, participants hunkered down and passed the time with disaster distractions. Jose and Lisa played board games and cards

with their families. Lisa also baked pies with her grandchildren. Danielle and Otto read books and listened to the radio. Whitney did crossword puzzles. Gaston played games on his laptop computer and cellular phone. Sean could not recall doing much of anything besides snuggling with his dog. Vince stood just outside the doorway of his building and watched the storm. Philippe and Virginie passed the time with prayer. Virginie also read his “old newspapers” and magazines. Don and his family went to bed and tried to sleep through the storm.

After Hurricane Sandy passed, Don had 10 friends at his house for 10 days and, smiling while he reminisced said, “we just had fun.” Don did not elaborate. Tobias looked forward to her recorded phone calls from the mayor, saying it was like sitting around the radio in times past.

For participants who did not evacuate their homes and lived in an apartment complex with a community room, the community room became a space for information, electricity, social support, heat, food, and supplies. This was the case in three separate buildings that the participants resided in. Tammy said that several of the residents in her building would congregate every morning around a large coffee pot in their heated community room, talking and taking turns charging their cell phones.

Yes, everything anyone need, we had it to pass out, to give to them. And that was a great thing! That was an enjoyable moment.

- Katia (79-year-old female)

Many of these elderly and medically frail community members assisted with relief and recovery efforts of the community in the days and weeks after Hurricane Sandy. Jose helped clear her daughter’s lot of downed trees and branches. Earl checked on an elderly neighbor daily, and after that man’s family evacuated him, Earl watched

over his apartment. Earl also checked on, visited, and kept several of his other homebound neighbors company. Gert, Tammy, and Vince collected food, water, and supplies from distribution centers, stores, and their buildings' community rooms and brought them to their homebound neighbors. Sitting in a recliner next to the window, Danielle performed neighborhood watch duties and kept an eye on her evacuated neighbors' homes.

Tammy volunteered in a storm shelter. Hermine tried to volunteer in a storm shelter, but was told that it was fully staffed. Emily said that if he ever did evacuate to a storm shelter, he would want to help out with feeding the other evacuees. Colin volunteered to clean up and rebuild a yacht club where he was a member.

Matthew took a disaster assistance relief course with the American Red Cross (ARC) and began distributing cleaning supplies with the organization immediately after. Matthew also donated brand new towels to people in need and did some demolition and rebuilding work as a volunteer with her church. Ian distributed food and supplies at his church and Katia did the same with the city's housing authority. Ophelia volunteered by serving hot meals at one of her local churches.

Sean said that his church sheltered out-of-the-area volunteers. Due to the power outage, the church's fire alarms were not functional. Sean performed fire watch duties. He stayed awake at night and watched the church, and if the volunteers needed anything, he was there to help.

Isolated during disaster.

The, the only thing, you, you are kind of isolated from the world. It's, it's a little scary because I kept thinking my husband was not well. And I, who don't walk, like, we couldn't get out in an emergency. What would happen? That was very scary.

- Fiona (80-year-old female)

Eight participants either felt isolated during Hurricane Sandy or feared that they would be alone in future disasters. None of them viewed the isolation as a positive experience. Two used the adjective “scary” to describe how they felt.

Walter’s husband had died shortly before Hurricane Sandy. He had always handled their homes’ storm preparations. For the first time, Walter had to perform the preparations on both her home and the second home where she had tenants. She did well, but she was scared.

Ian, Karl, Maria, Sean, and Whitney said that they had no family or friends nearby that they could stay with. Harvey’s town was barricaded by the police and he was unable to “venture beyond the borders” for more than a week.

Nicole fretted about future disasters because she had outlived all of her family and could not think of a place to go if she had to evacuate again (Nicole did have a living daughter who resided in the same apartment complex as she did, so the daughter would have to evacuate too). Tobias joked that because she would be alone for future disasters now that her daughter lived in another state, she “might as well just drink.”

Rescue during disaster.

And you know you can’t rely on your rescue people ‘cause you’re putting them in danger if you, you stay in your home.

- Jose (69-year-old female)

Fortunately, only one participant had to be rescued during Hurricane Sandy. Maria left her motel to buy more food just before Hurricane Sandy hit. On the way back from the store, she struggled to walk because the wind was so strong. A fellow community member picked her up and drove her back to the motel.

None of the participants needed to be rescued by police, the fire department, or emergency medical services during Hurricane Sandy. Matthew called emergency services to report water coming down her walls in the midst of Hurricane Sandy, but was told that other emergencies had priority. Jose and Tobias both spoke about other community members putting disaster responders at risk when they do not adhere to evacuation orders and need to be rescued during storm conditions.

Every time you pull a, a cord on the wall, wherever the nearest one is, police come and an ambulance comes.

- Sean (77-year-old male)

The code “trust in emergency services,” as it related to expectations of being rescued, revealed various opinions from the participants, most leaning toward trust that they would be rescued in a timely manner by professional responders if they needed it. Gaston did not trust that there would be someone to provide evacuation assistance prior to the storm, but he owned a wheelchair accessible van and could evacuate himself. Gaston and Virginie expected that the National Guard would rescue them in the midst of a storm or from floodwaters in the days after the storm.

See you, you say you can use this service and that service, but how many people are you going to get, as you said earlier, to come in to do their jobs when there’s a disaster approaching? If I was a driver...I would’ve been like, “Later! I got to go take care of my family.”

- Gaston (57-year-old male)

Harvey had less trust that he would be rescued during disaster than the rest of the respondents. He said that his town (a suburb of the City of Long Branch) relied on volunteer EMTs and fire personnel to provide emergency services. Harvey said that there were too few of these individuals to evacuate him and his 130 plus neighbors in their building in a timely manner. He had the personal experience of a neighbor not being

rescued by responders during a bomb scare at their high-rise building for seniors and individuals with disabilities. Emergency personnel went door to door to inform residents that they had to evacuate. Harvey said his neighbor was in a wheelchair, tethered to his oxygen source, and could not answer the door. Assuming that no one was home, the emergency personnel left the neighbor alone in his apartment. Fortunately he was able to contact Harvey on his cellular phone and ask for assistance. Harvey rescued his neighbor and once outside, was told that they had to walk to an evacuation site at a senior center a mile away. Harvey was promised that the center would have an oxygen source for his neighbor when they got there. Harvey, who also had chronic obstructive pulmonary disease (COPD), pushed his oxygen-dependent neighbor in a wheelchair a mile up the road, in hot weather, only to find that there was no oxygen available as promised. Harvey was very disappointed in his emergency services and did not feel that they could be relied on for rescue in future disasters.

Evacuation.

Well a lot would depend on what my options were and if my children weren't, if my children had to evacuate as well, then I'd have to go to plan B. Uh... (extra long pause) I don't have a plan B. (laughs)

- Harvey (70-year-old male)

Ten (30%) participants evacuated their homes for Hurricane Sandy. Jose, Julia, Nicole, Ophelia, and Paula evacuated to their family or friends' homes. Fiona, Gaston, Katia, and Maria evacuated to hotels. Gaston, who required an electric wheelchair, had the foresight to request a first floor room in the event that his hotel lost power.

Trees fell against the side of Katia's hotel and the management attempted to evict their guests in the midst of the storm. Fortunately, an emergency official informed management that they could not do that. However, the guests were asked to leave very

early the next morning, just hours after Hurricane Sandy departed.

Tammy volunteered in a storm shelter the night Hurricane Sandy hit. After her apartment began to flood, Cindy evacuated in the middle of the storm and drove to a storm shelter. Seven participants hosted family and friends in their homes during Hurricane Sandy.

A few participants disclosed that they did not or would not evacuate. Reasons for non-evacuation included not wanting to leave the house alone, caring for a loved one with dementia, difficulty evacuating a non-ambulatory family member, not having a place to go to, fear of looters, and belief in the sturdiness of one's home.

PI: What would be a good reason? What would they have to say?

Colin: Oh, tidal wave!

PI: Tidal wave? Okay.

Colin: 'Cause that's the only thing water-wise that would really affect me.

Seasonal differences in weather.

Seasonal difference in weather provided regular experience with temperature extremes for the participants. None of the participants mentioned heat waves or arctic blasts in their interviews. They were far less concerned with snowstorms than they were with hurricanes and nor'easters.

When asked about the most memorable experience with disaster, Sean was the only participant to talk about a snowstorm. Sean almost died when he fell into a large snow bank while on his way to check on a neighbor. He eventually got himself out, but if he had not, he may not have been found for a while.

I went out of my house and I fell down and couldn't get up. And (laughs) the snow was above me. (whispers) That was scary. Scary, scary, scary.

- Sean (77-year-old male)

Cindy said that she purposely drives in snowstorms. Whitney said that she worked through every snowstorm throughout her career. Vince dismissed snowstorms, saying that he experienced many blizzards growing up. Otto and Don admitted that they did nothing to prepare for snowstorms.

...A snowstorm, I mean, you know, I, I always laugh when people, when there's a snowstorm and everyone runs to the store to get milk and bread. I never do that. There's always stuff in the house. Maybe not always milk because we don't drink milk. But um... yea, for snow I really wouldn't do terribly much.

- Don (48-year-old male)

Emily and Alex just make sure that their snow shovels are accessible. Lisa relies on her children to dig her out. Fiona was the only participant to say that she prepares for the possibility that she and her husband will be snowed in for a few days. Her interview was conducted shortly after the 2017 Winter Storm Stella:

We just made sure that we had all the food. And we bought lanterns. We made sure now we have... you know, light up, uh, new beautiful lanterns. (laughs) So we have some light and uh, I'm trying to think what else we did. That, we, we like prepared ourselves with like clothing and things. We made sure that we had everything that we would need in case we were stuck in the house.

- Fiona (80-year-old female)

Causal Condition Category: Vicarious Experience

I'm not a fool. There's a lot of people, well especially bringing up like Katrina, a lot of people, when they said get out, even though they knew, they just wouldn't leave! And how many people died? I'm not trying, nah. I'll be stubborn later. I would [evacuate].

- Ian (56-year-old male)

Participants shared stories about friends or family members' experiences in disaster, or what they saw on the television or heard on the radio. These stories were grouped under the concept of "vicarious experience." These experiences are vicarious because they did not happen directly to the participants, but they still made an

impression. Vicarious experience was thus labeled as a causal condition of household emergency preparedness.

Emily shared a story of a former coworker who was told to evacuate, but did not. When the floodwaters entered her house, she called 911. The responders would not rescue her until it was safe for them to do so much later. Emily advised the PI that if the authorities say it is mandatory, one should evacuate.

Ian recalled the thousands of preventable deaths that occurred from Hurricane Katrina. He also shared a story about a woman from his church that did not evacuate for Hurricane Sandy. The floodwaters made it to the ceiling of the first floor in her home and she was trapped on her second floor. Ian said, had the water gone any higher, she would have had nowhere to go. Ian said that he would absolutely evacuate if he were told to do so, rather than risk injury or death.

In the days before Hurricane Sandy, Jose and her children were sitting in her home, looking through the book *Great Storms of the Jersey Shore* while discussing their household emergency preparedness plans. A police officer knocked on her door to inform her that she was in a mandatory evacuation zone. Because of the photographs of the destruction of the Jersey Shore in the book, Jose knew that she had to take this storm seriously. Jose also shared that she read articles about people who could not obtain their medications after a disaster because they did not know which medications they were on. Jose made a list of her and her husband's medications and doses after reading that article.

After Hurricane Sandy, Jose attended a household emergency preparedness class at the senior center. The guest speaker, a city police officer, relayed to the class a story about the rescue of local community members via high water vehicles after Hurricane

Sandy. The current was so strong that it caused this heavy vehicle, loaded with 30 people, to veer off course. Jose ominously warned the PI that people should evacuate when they are told and not put themselves and their rescuers at risk.

Jose also recalled seeing footage of an entire neighborhood burning during Hurricane Sandy and wondered if she should turn off her gas when she evacuates in the future. She also recalled seeing neighbors' outdoor furniture "become missiles" and always made sure to bring all of her outdoor furniture and decorations inside before storms. Jose's evacuation plan for severe hurricanes involved traveling, "far inland, but some place high." She recalled seeing the inland community of Bound Brook, New Jersey completely flooded by Hurricane Floyd in 1999.

Tobias recalled the "terrible conditions" of the storm shelters in Hurricane Katrina and said that she would prefer not to have to stay in a storm shelter. Her evacuation plan involved staying with family or friends rather than in a storm shelter.

The journalism data sources (television broadcasts, documentaries, books, and newspaper articles) provided plenty of vicarious disaster experience for consumers to learn from. The journalism data sources constantly referred to past disasters (earthquakes, hurricanes, heat waves, nor'easters, acts of terrorism, and snowstorms) to give readers or viewers an idea of what to expect for the disaster that they were currently reporting on. Consumers were reminded about storm conditions, loss of life, financial impact, destruction, and injured or displaced pets in past storms. Consumers were reminded that people new to the area might not understand their risk and that new construction has taken place in geographically high-risk areas since the last big storm. Consumers were warned not to become complacent if they had not experienced a strong

storm recently. Sometimes residents were interviewed about their preparations (or lack thereof), and their past experiences with large storms (what they observed, how they felt, and what they did).

If “experience is the best teacher” and an individual has not had the personal experience of a major hurricane, it is beneficial for them to hear from other community members that this has happened before, it was bad, and it can happen again. Sharing past experiences and current preparedness activities role models good preparedness behaviors for readers. However, sharing the stories of residents who refused to evacuate even when an evacuation was ordered role models bad preparedness behaviors. Some articles did not have information about household emergency preparedness, but served as reminders that this phenomenon has occurred locally before.

Photographs from past disasters were also included with the newspaper articles, providing readers with a visual cue of the destruction potentially to come. Often photographs of residents, business owners, and responders engaged in preparedness activities accompanied the newspaper articles. These articles were meant to alert readers that they are at risk for injury, death, and property damage and that they should prepare accordingly. A few published newspaper articles were “lessons learned” articles written by survivors of past disasters. There were articles about “doomsday preppers” that described what these folks do and purchase in preparation of surviving “off the grid” for a length of time.

Articles were written about and photographs were included of the damage that the current storm already inflicted in other parts of the world, providing readers a glimpse of what was potentially to come. Photographs of the choppy ocean and dark skies in the

days leading up to impact were also included, demonstrating the power of the storm before it even made local landfall.

The book and documentary data sources provided plenty of vicarious experience for consumers via pictures of response efforts, shelters, rescues during the disaster, and horrific home and community damage from Hurricane Sandy. However, these data sources did not have household emergency preparedness information. With pictures and footage such as these, the authors have a captive audience for household emergency preparedness education.

Causal Condition Category: Geography and Climate Change

The geography category encompassed the micro and macro communities that the participants were situated in, The City of Long Branch (and surrounding suburbs) and the State of New Jersey, respectively. The social geography of these communities was thoroughly described in the review of the literature. Physical geography and climate change were labeled causal conditions of household emergency preparedness because they provided the participants with frequent exposure to flooding and severe weather events.

The Atlantic Ocean, Lake Takanassee, Shrewsbury River and creeks are the main sources of flooding in the City of Long Branch (see Figure 2). The neighborhoods most at risk for flooding are North Long Branch (located on a long branch of the Shrewsbury River, thus the name of the city) and West End (which is actually on the southeast side of the city). The West End neighborhood is oceanfront and accommodates Lake Takanassee, which became one with the Atlantic Ocean during Hurricane Sandy. The mandatory evacuation zone in the city for Hurricane Sandy included Atlantic Avenue at

Branchport Avenue to the oceanfront (North Long Branch). The city's evacuation zones and FEMA's flood maps have been updated since Hurricane Sandy.



Figure 2. Potential storm-surge flooding by hurricane size for the City of Long Branch.

Red areas indicate the predicted storm surge in Category 1 hurricanes, orange in Category 2, light yellow in Category 3, and bright yellow in Category 4 (Keefe & Hill, 2017).

The sea level has been rising in New Jersey more rapidly than the global average due to a combination of warming oceans (thermal expansion), melting of land ice, and the

land actually sinking. Trends also show that sea level rise is accelerating (K. Miller, Kopp, Browning, & Horton, 2013).

Climate change was reported on frequently in the journalism data sources, but was not mentioned at all by the participants. According to the journalism data sources, climate change is expected to result in more frequent and powerful storms.

Consequently, the risk for flooding and severe weather events in the City of Long Branch may be increasing.

Causal Condition Category: Preparedness, Response, Relief, and Recovery Efforts of Responders

Preparedness, response, relief, and recovery efforts of disaster responders were designated as a causal condition because their goal was to create a safe environment for community members to endure disaster conditions. The participants and journalism data sources frequently commented on what actions responders and relief organizations did to promote disaster-related community resilience. Participants commented on what they saw (i.e., police officers going door to door, military trucks, and supply distribution centers to name a few) and the food, water, ice, and supplies that they received during Hurricane Sandy. Participants who received assistance from disaster responders and relief organizations may expect the same treatment in future weather events. The same could be said for those who did not receive help; they may have less faith in their disaster responders. The concepts of “preparedness and response efforts,” “relief and recovery efforts,” and the “Post-Katrina Emergency Management Reform Act of 2006,” were placed under the category “preparedness, response, relief, and recovery efforts.”

Preparedness and response efforts.

Collective Human Actors on the situational map were grouped under the concepts Disaster Responders and Community Partners according to their role in the disaster response that may or may not have contributed to the household emergency preparedness of the elderly and medically frail.

Disaster responders. The actors under the Disaster Responder concept are individuals such as police officers, firefighters, emergency medical workers, government agency officials, non-government agency volunteers, utility company employees, public health department employees, and healthcare workers. The organizations represented in the data were the ARC, Medical Reserve Corps, FEMA, National Guard, Coast Guard, Monmouth County Sheriff's Office, Long Branch OEM, Monmouth County OEM, NJOEM, Long Branch Police Department, New Jersey State Police, New Jersey Office of Homeland Security, New Jersey State Feeding Task Force, the Salvation Army, Southern Baptist Convention, Community Food Banks of New Jersey, Monmouth County Office on Aging, Feeding America, New Jersey Department of Health, utility companies, and homeowner's insurance companies. These Collective Human Actors were engaged in all phases of disaster response at the community level- mitigation, preparedness, response, and recovery. The goal of these responders was to prevent loss of life and preserve property (State of New Jersey Office of Emergency Management, 2016; Texas A&M Engineering Extension Service, 2015). These Collective Human Actors contributed to the household emergency preparedness of the elderly and medically frail by creating the best possible environment in the community to keep residents safe and informed. They readied the community prior to disaster, showed up to work during the disaster, and

assisted in relief and recovery efforts after the disaster. Mitigation, preparedness, and response actions found in the data are listed in Table 6 in no particular order.

Table 6
Mitigation, Preparedness, and Response Actions of Disaster Responders

Mitigation	<ul style="list-style-type: none"> School and businesses closures. Open floodgates. Power companies arrange out-of-state help. Beach replenishment. Distribute free sandbags. Build berms, barriers, and dunes. Remove projectiles (benches, trash cans, lifeguard stands, billboards, parking meters). Cancel/reschedule community events. Pre-landfall disaster declarations. State of emergency declarations. Beach closers. Lower water level of flood-prone lakes. Removal of debris and leaves from curb lines and storm drains.
Preparedness	<ul style="list-style-type: none"> Attend training and educational sessions (drills and table-top exercises). Information sources. Form partnerships with emergency contractors. Ready equipment prior to disaster. Issue household emergency preparedness education and recommendations. Offer special needs registries. Meet to discuss preparations. Assemble and train swift water rescue teams. Consider the elderly and the medically frail in disaster plans, especially when sheltering them. Flag homes in the 911 system that are located in a Tier 1 flood zone and any 911 calls from those homes result in the dispatch of at least a police car and a high water response team in storm situations. Risk communication.
Response	<ul style="list-style-type: none"> Shelter in place protocols (no one leaves work during the storm). Road and bridge closures and/or redirections. Issue evacuations orders. Transportation assistance. Close mass transit system. Police patrol in evacuation zones.

	<p>Announce evacuation orders via loudspeaker while driving through neighborhoods.</p> <p>Evacuate nursing homes and hospitals.</p> <p>Open, stock, staff storm shelters (including medical needs shelters).</p> <p>FEMA's ESF #6 - Mass Care, Emergency Assistance, Housing, and Human Services Annex.</p> <p>Shut down and secure the nuclear power plant.</p> <p>Check on homebound residents and the elderly, ensure that they have what they need if they have to remain in their homes.</p> <p>Position commodities in armories in the event of power loss.</p>
--	---

The Collective Human Actors mentioned most frequently in this study were the disaster responders of the City of Long Branch, FEMA, ARC, and insurance companies.

For Hurricane Sandy, the participants were generally satisfied with the City of Long Branch's response efforts.

PI: Is there anything that the, either your neighbors or the community or the police could have done better during Hurricane Sandy?

Shary: ...I don't know 'cause they did, they were pretty on the spot.

PI: Yea? You're pleased with how they responded?

Shary: Uh huh.

Things they could have done better during Sandy... I thought they did a very good job.

- Emily (87-year-old male)

I think they did very well with Sandy. They, they get the people out of the areas that they shouldn't have been in. They, I think they did well.

- Ian (56-year-old male)

Um, I think Long Branch did a great job of keeping people informed, passing out water. Uh, this is a great town!

- Jose (69-year-old female)

There was only one alternative view, Cindy, who felt that the city could have alerted residents better about the mandatory evacuation order. Cindy lived in an apartment complex that was in a mandatory evacuation zone, but she did not know it. She was home when her apartment flooded.

Community partners. The Collective Human Actors under the Community Partners heading were employees and volunteers of faith-based and community-based organizations who primarily assisted with relief and recovery efforts. Some organizations that these actors worked for were churches, Meals-On-Wheels, The Multiple Sclerosis Association of America, pharmaceutical and medical supply companies, and insurance companies.

These organizations assisted with some preparedness efforts. The Multiple Sclerosis Association of America was a source of household emergency preparedness information for one participant. The senior center provides meals for homebound seniors. Staff members informed the PI that they provide enough extra food prior to disasters to get the residents through the first few days after a storm. The Monmouth County Sheriff's Office provided extra disaster supply buckets to the senior center and staff members distributed them to homebound seniors.

The faith-based organizations were the most commonly mentioned Community Partner Collective Human Actors by the participants. However, five of the participants said that their church was not involved in household emergency preparedness education and did not assist in relief and recovery efforts for Hurricane Sandy.

My church really didn't say anything about being prepared and talk anything about it. You know, so I mean, you're talking about churches and I mean I think that they could've played maybe um... especially my church. It's very... skewed to the elderly.

- Tobias (female in her 60's)

Eight participants said that their churches assisted with mainly relief and recovery efforts. Churches helped parishioners rebuild, sheltered out-of town volunteers, collected donations, and fed community members.

Relief and recovery efforts.

Relief and recovery efforts found in the data are listed in Table 7 in no particular order. If the participants provided critique about the relief and recovery efforts, it was usually about ARC, FEMA, and insurance companies. These organizations received mixed reviews from the participants.

Table 7
Relief and Recovery Efforts of Disaster Responders

-
- Distribute food, water, clothing, blankets, toilet paper, cleanup supplies, and tarps.
 - Add and deploy additional staff at the insurance companies.
 - Disaster declarations.
 - Mental Health and Addiction Services in the shelters.
 - Offer computer/Internet assistance to apply for Disaster Assistance from FEMA.
 - Funding for repairs, rebuilding, and new furniture.
 - Offer warming stations.
 - Offer cell phone charging stations.
-

American Red Cross. Five participants expressed displeasure over ARCs' delayed or mediocre response in the days after Hurricane Sandy. Don witnessed ARC vehicles driving down his street regularly and said that no one ever stopped to make sure that he was okay.

They, they could've actually gone to the doors and said, "do you guys need anything? Do you know of anybody that needs anything?" But they were just driving around! And they wouldn't even, they never even bothered to stop!
- Don (48-year-old male)

Earl and Tammy lived in the same high-rise building for seniors and individuals with disabilities. Both mentioned that ARC did not deliver meals to them until several days after Hurricane Sandy hit the community. Tammy was told that the ARC responders could not find their oceanfront canary yellow building.

I don't think people knew [the residents] existed here. And I, I called the Red Cross. And I had one of the guys go, 'cause they couldn't find us, put a blanket

outside, so they can bring food! ‘Cause these people couldn’t cook. So they can eat.

- Tammy (69-year-old female)

This delayed response was especially concerning because this building had no natural gas. All of the ovens and stoves were electric and the residents had no power. Even after the ARC began distributing meals at Tammy’s building, the distribution was unreliable. Tammy said that the ARC would skip meals without warning. “We have diabetics in this building,” she told the PI.

Whitney lived in a two-story apartment complex in a different section of Long Branch and had the same experience with the ARC.

‘Cause they didn’t even know we was there. They assumed that we were all...most of the people over there were young and they could get out. But it wasn’t that way. We had a lot of old, old, older than me! And I’m 66!

- Whitney (66-year-old female)

Fiona said that ARC responders did not discover her and her husband until a week after Hurricane Sandy departed. After that, they would bring her warm dinners, but she and her husband were on their own for other meals. Fiona’s electric wheelchair was destroyed by floodwaters in her garage. She asked the ARC for help with obtaining a new one:

And then, at one point, the Red Cross called and they said if there’s anything, they could help. And I said, “Yes, I could use a wheelchair or a scooter.” And they asked me, “Where did you buy your scooter?” So I told them I bought it in...Toms River and the name of the place. And I had already called them. And they said I paid twenty-six hundred, they could, they would give it to me for twenty-one, their cost price if I wanted to get another one. And at that time, we weren’t able to do whatever. And so when the Red Cross called, I thought, “Wow, I’m gonna get some help.” So they called the place up and they called me back and they said, “We can get it for you for twenty-one.” So I says, “Oh I would love it, you know?” And they said, “Well how would you want to pay?” “I thought you were gonna pay for it,” I said. And they said no. So I says, “Well thank you Red Cross!” I mean, really if all the help you’re giving.

- Fiona (80-year-old female)

Other participants expressed gratitude for ARC's role in relief and recovery efforts. Vince said that ARC was at his high-rise for seniors and individuals with disabilities right away. Participants specified the supplies that they received: food, water, blankets, toilet paper, and clean up supplies. With the exception of Don (who received no assistance from ARC), even the participants who expressed displeasure with ARC were thankful for the food and supplies that they eventually received.

Federal Emergency Management Agency. FEMA had a large command post at the Monmouth Park Racetrack, just over the northwestern border of the City Of Long Branch. Harvey said that he saw "hundreds of military trucks and helicopters" dropping off supplies at the track, but questioned why it took almost a week for them to arrive. Hermine informed the PI that the track was also used for temporary housing, supply distribution, and a place for people to keep their vehicles. Hermine said, "they did a great job over there." Other praise for FEMA included their expedient cleanup of the storm debris and garbage.

The primary complaint about FEMA was the financial assistance (or lack of) that was provided to the participants. Emily recounted a story about a friend who was unable to move back into his home for year due to the delay in FEMA assistance. Jose informed the PI that people she knew were just receiving FEMA money now, five years later, to make repairs to their properties. Tobias heard that "contractors and FEMA people were stealing the money, working their hardest to prey on people who were desperate."

Ophelia received just \$2,600 for an entire apartment of destroyed belongings. FEMA representatives told Ophelia that she would receive assistance with her rent because she lost everything. She was to pay the first two months rent, which was \$300

more a month in her new apartment, send the receipts to FEMA, and she would be reimbursed. She did as she was instructed, but then FEMA declined the reimbursement due to Ophelia's income. Ophelia said, "they never said we're gonna look at your income and see if you qualify to get assistance." Five years later, Ophelia received a phone call that her FEMA case had been reopened. She now qualified to receive rental assistance.

I was still, I'm still recovering. I still don't have the furniture I had and I don't have, you know, all my things that I had, like right now!

- Ophelia (66-year-old female)

Karl was the only participant that was pleased with his low-interest rate FEMA loan. A FEMA representative came to his home, gave him an estimate, he accepted it, and repaired his home with the money. He said, "it was simple and you couldn't get a better deal." He also said that he was still paying it back.

Insurance companies. Few of the participants had positive comments to offer about their home insurance companies.

Um... the insurance companies are another thing. But they, they were just horrible to deal with. So just to get money out of them! And what's not covered, what is covered, and you know? Tough.

- Don (48-year-old male)

Jose mentioned that Hurricane Sandy was downgraded to a tropical storm just before impact, which changed insurance coverage. She exclaimed, "and that's terrible for people!"

Jose: And um I guess the confusion with, with the tropical storm. So we don't pay hurricane insurance. That's ridiculous! That was absolutely ridiculous!

PI: Has that been rectified? Or are they still fighting?

Jose: No it's, that's one of the problems, that people aren't getting the money. And they're devastated. They were hit with, it seemed like more than a (laughs), you know, Category 1 or 2, or 3 even.

None of the participants mentioned flood insurance specifically. However, obtaining flood insurance was a common recommendation published in the journalism data sources in the days leading up to the predicted time of impact of an impending storm. The PI wondered if the National Flood Insurance Program coverage was immediate or if three days prior to a storm was too late to insure a home. She found that there is typically a 30-day wait period between when a flood insurance policy is purchased and when it goes into effect. The only exceptions are: (a) if the home is in a newly designated Special Flood Hazard Area and the insurance policy is purchased within 13 months of the map revision; (b) if the insurance is purchased in connection with making, increasing, extending, or renewing a mortgage loan, and; (c) if flood insurance is selected as an additional option when renewing the insurance policy (Federal Emergency Management Agency, 2017b). For many residents, adding flood insurance in the days leading up to a hurricane is likely too late for protection.

The participants had somewhat better things to say about their medical insurance companies. The participants were asked if their insurance companies would permit early refills of medications prior to a predicted disaster. Most said yes, two said no, and eight had no idea.

In the days after Hurricane Sandy, some of the participants ran out of medications (Cindy, Fiona, Gert, and Maria), lost medications due to lack of refrigeration (Gaston and Harvey), or needed to go to the hospital for medications (Cindy). The four participants who ran out of medications would have benefited from an early refill prior to the disaster, especially Cindy, who had to be treated for an asthma exacerbation in the emergency department.

Three major medical insurance companies in New Jersey are AmeriHealth, Horizon Blue Cross Blue Shield, and Medicare. One participant (Paula) was adamant that Medicare does not fill prescriptions early, even if there is a predicted disaster. The PI called Medicare to verify Paula's claim. The PI was told that this information could not be provided on a general level, that each beneficiary would have to call his or her drug plan representative to ask for an early refill. However, the PI was informed that Medicare makes it easier for beneficiaries to receive medications and medical services after the disaster, even if he or she has evacuated to a different location, if the beneficiary is from an area affected by the disaster. The PI then called AmeriHealth and was told that they do allow beneficiaries to refill early when there is a predicted disaster.

Finally, the PI called Horizon Blue Cross Blue Shield of New Jersey and was told that they could not answer the early refill question generally, that it depended on each beneficiary's prescription drug plan, and that different members could have different prescription drug providers. The PI was a beneficiary with this insurance company and used Express Scripts as her prescription medication provider. With Express Scripts, the PI had "vacation refill" coverage where she could request an early refill (for an additional copay) up to five days before the next refill was due. The vacation refill applied to disaster evacuation situations. The PI was advised that Express Scripts also allows early refills for lost medications in the days after a disaster.

One major insurance company does allow early medication refills prior to disasters and the other two may or may not. Medicare, of all the medical insurance companies, should provide early medication refills to beneficiaries in the days leading up

to predicted disasters. One generally has to be aged 65 years or older to be eligible for Medicare.

Volunteers. Of all the Collective Human Actors involved in preparedness, response, relief, and recovery efforts, the participants were most thankful for community volunteers. As discussed under the concept “disaster distractions,” many of the participants were those community volunteers. Participants said that fellow community members provided more assistance to them than any of the disaster responders or relief organizations.

You, you just can’t even imagine how, how a nightmare it was. It was just like...when I think of all that we threw out and all that we had to give up, and all our whole lives that we worked so hard for all this. And, and they didn’t, you know, the government didn’t care, the insurance didn’t care, and thank God for volunteers.

- Fiona (80-year-old female)

They fed the whole community! People, volunteers were coming in from all over! You could see busses of people coming in. People would knock on your door, “do you need help taking things out?” They’d just come in and take all your furniture and throw it in the street.

- Ophelia (66-year-old female)

Post-Katrina Emergency Management Reform Act of 2006.

The participants and journalism data sources did not mention specific public policies that affect the household emergency preparedness of elderly and medically frail community members. However, there was one policy that likely impacted the participants’ experience with disaster, even if they were not aware: The Post-Katrina Emergency Management Reform Act of 2006 (PKEMRA).

This policy was enacted to mitigate elderly and medically frail individuals’ social pathways to health vulnerabilities related to disaster. The PKEMRA is an amendment to both the Homeland Security Act of 2002 and the Robert T. Stafford Disaster Relief and

Emergency Assistance Act of 1988. It was drafted and passed after recent disasters revealed weaknesses in federal, state, and local plans and preparations inclusive of people with disabilities, access, or functional needs (FEMA Emergency Management Institute, 2014). The PKEMRA reorganized FEMA, established the National Emergency Family Registry and Locator System, supports precautionary evacuations, provides transportation assistance for relocation and return of displaced individuals, and established a Disability Coordinator to develop guidelines to accommodate individuals with disabilities (Bea, 2007; Federal Emergency Management Agency, n.d.). For a complete summary of PKEMRA-facilitated changes to FEMA, readers are urged to peruse Bea's (2007) congressional report. Only those changes that are related to individuals with access or functional needs during disaster will be discussed in this section.

The Post-Katrina Emergency Management Reform Act of 2006 included provisions that amended the Stafford Act to better integrate consideration of all populations and needs into general emergency management planning, response, recovery, and mitigation. As such, those provisions amended Section 308 of the Stafford Act to extend protection of the rights of all populations, including individuals with disabilities, persons with limited English proficiency, children, and the elderly (FEMA Emergency Management Institute, 2014).

The PKEMRA addresses social determinants and equity by acknowledging that the access and functional needs of individuals with disabilities can and should be accommodated for with actions, services, equipment, and physical, architectural, programmatic, and communications modifications (FEMA Emergency Management Institute, 2014). The role of the Disability Coordinator is to serve as an advocate for

individuals with special needs by providing guidance to FEMA on matters related to individuals with disabilities in emergency planning and disaster relief (Bea, 2007; Jones, 2010). The Disability Coordinator actively participates on and provides training to federal, state, local, and tribal government committees and identifies disaster response gaps for individuals with special needs regarding training, transportation, and media outreach (Bea, 2007; Jones, 2010).

The PKEMRA outlines actions to be taken for individuals who are elderly, disabled, or medically frail regarding disaster drills, risk communication, evacuation, sheltering, service animals, housing, and FEMA disaster assistance funding. The PKEMRA requires that disaster drills designed to simulate the incapacitation of a local government must be realistic, based on current risk assessments, and be carried out with a minimum degree of notice in order to evaluate the preparedness and response requirements of populations with special needs (Bea, 2007).

The PKEMRA also established funding for evacuation programs, evacuation plans, and evacuation drills (Bea, 2007). According to the PKEMRA, it is the government's responsibility to plan and coordinate evacuation of all populations, including those with disabilities and service animals (Apte et al., 2015; Bea, 2007; Jones, 2010).

In addition to evacuation, the PKEMRA requires that emergency preparedness operational plans take into account the sheltering needs of individuals with service animals prior to, during, and following a major disaster or emergency (Bea, 2007). Under the PKEMRA, evacuation and sheltering of service animals is considered essential assistance (Bea, 2007). The PKEMRA also declares that a certain number of shelters

need to have back-up generators to keep medications refrigerated (Jones, 2010).

The PKEMRA adds FEMA assistance capabilities to meet the needs of those with disabilities in the days and weeks following the disaster. The PKEMRA places the housing needs of low income and special needs populations as a priority when funding repairs of rental housing (Bea, 2007). Prior to the PKEMRA, in order to be considered eligible for housing assistance, victims of major disasters or emergencies who were disabled had to have their homes declared uninhabitable. After the PKEMRA, their homes can be declared uninhabitable *or* inaccessible in order for them to receive housing assistance from FEMA (Bea, 2007). The PKEMRA also declares that all alternative housing sites offered to victims of disaster must meet physical accessibility requirements (Bea, 2007). In fact, any FEMA-funded infrastructure repairs post disaster must be Americans with Disabilities Act compliant (Jones, 2010). Finally, under the PKEMRA, any durable medical equipment destroyed during the disaster is considered an eligible form of essential assistance (Bea, 2007).

The PKEMRA is a step in the right direction for people who are elderly, medically frail, or living with a disability. However, these populations continue to experience disproportionate morbidity and mortality during disaster. Theoretically, it appears that the PKEMRA improved disaster response in the United States. Even though Hurricane Sandy was much larger and landed in a much more densely populated region than Hurricane Katrina, Sandy resulted in approximately 162 deaths, whereas Katrina resulted in approximately 1,883 deaths. Disaster response and recovery can still be improved for these populations. Individuals should not be trapped for days to weeks on upper floors of high rises with no power after a disaster, especially in housing designated

for seniors and individuals with disabilities. Fiona should have received financial assistance to replace her electric wheelchair destroyed in Hurricane Sandy. Apte et al. (2015) cautioned that even with the PKEMRA mandates for evacuation of people with disabilities, few local and state governments have actual plans in place for those who are mobility-challenged.

Summary

Chapter five answered the first half the research question: How have older and/or medically frail adults experienced disaster? The PI's new theory on household emergency preparedness of elderly and medically frail community members was introduced. The participants' experiences were situated in the world that they lived in and the causal conditions of household emergency preparedness actions were described. Concepts and lower-level concepts were grouped under the causal condition categories of "past experience," "vicarious experience," "geography and climate change," and "preparedness, response, relief, and recovery efforts of responders." The emergency preparedness actions undertaken by the participants were explained by these causal conditions. To complete the new theory, chapter six will answer the second half of the research question: How does this experience impact what they do now to prepare for disaster? The strategies taken in response to the causal conditions, the situational facilitators and impediments to those strategies, and the consequences of the strategies will be described.

Chapter Six: Additional Findings and Discussion

...And How Does This Experience Impact What They Do Now to Prepare for Disaster?

Chapter six describes the relationships among the categories and concepts to illuminate how the participants' past experiences and situational facilitators and impediments affected their household emergency preparedness actions. The consequences of their preparedness actions will also be described. These categories, grounded in the data, are labeled as strategies, situational facilitators or impediments, and consequences. The PI compares her findings to the extant literature and describes her contribution to household emergency preparedness research.

Strategy Category: Household Emergency Preparedness Process

This category defines the household emergency preparedness process of the participants. Table 8 is a combination list of the disclosed past and intended future preparedness actions of the participants in this study. This list consists of the preparedness strategies that were relevant for these elderly and medically frail community members. Particularly inspiring was that the number one preparedness action performed by the participants was checking on their neighbors, tied only with obtaining more food ahead of predicted disasters. The next most common preparedness actions undertaken by the participants were obtaining water and fueling up vehicles. Several participants hoped to assemble a disaster supply kit for future storms.

Table 8
Disclosed Past and Intended Future Preparedness Actions of Participants

Preparedness Actions		n = 33	Percent
Actual Risk / Risk Perception	Stay informed	2	6%
Communication Plan	Charge your mobile devices	2	6%
Disaster Supply Kit		12	36%
	Batteries	5	15%
	Blankets or sleeping bags	3	9%
	Candles	6	18%
	CB radio	1	3%
	Cooler	2	6%
	Dust mask	2	6%
	Escape latter	1	3%
	Fire extinguisher	1	3%
	First aid kit	2	6%
	Flares	1	3%
	Food	17	52%
	Fuel containers	1	3%
	Generator	5	15%
	Ice	3	9%
	Matches	1	3%
	Plastic sheeting	3	9%
	Portable lighting	9	27%
	Reference material	1	3%
	Safety goggles	1	3%
	Snow shovel	3	9%
	Tape	2	6%
	Tools	1	3%
	Towels	1	3%
	Water	12	36%
	Water containers	3	9%
	Weather alert radio	1	3%
	Whistle	1	3%
Elderly / Medically Frail / People with Special Needs	Ask family and friends to help you	4	12%
	Have a back up supply of medical supplies	1	3%
	Have a back up supply of medications	6	18%
	Have ice packs for refrigerated medications	1	3%
Evacuation	Assemble an emergency “go bag”	2	6%
	Comply with evacuation orders	5	15%

	Have a family meeting place in case of separation	1	3%
	Have a logical, achievable evacuation plan and set a threshold for activating it	5	15%
	Pack:		
	Clothing	3	9%
	Copies of important documents	2	6%
	Medications	4	12%
	Perishable food in coolers	1	3%
	Safe	1	3%
	Toiletries	1	3%
	Reserve room at inland hotel	2	6%
Home Preparations	Assemble a list of trusted contractors	1	3%
	Bring in and / or secure outdoor objects that may become projectiles	8	24%
	Check snow blower	1	3%
	Contract with snowplow company	1	3%
	Cover windows with plastic	1	3%
	Cover windows with plywood	2	6%
	Elevate furniture or move it to a higher floor	2	6%
	Fill bathtub with water	4	12%
	Fill pitchers and jugs with water	2	6%
	Fuel up vehicles	12	36%
	Install storm resilient windows and doors	1	3%
	Program insurance company phone numbers in the phone	1	3%
	Documents and valuables in a safe place	3	9%
	Moisture protect walls	1	3%
	Move vehicles out of danger	5	15%
	Raise wiring and utilities in homes in designated flood areas	1	3%
	Set up sandbags	1	3%
	Take pictures of important documents with cell phone	1	3%
	Tape the windows	8	24%
	Turn off utilities	1	3%
Money	Have cash, credit cards, traveler's checks, or change on hand	2	6%
Neighbors	Check on neighbors	17	52%
Pet Preparedness	Food	1	3%
	Have an evacuation plan	2	6%

Household emergency preparedness supplies.

One of the most common household emergency preparedness strategies employed by the participants was purchasing extra supplies in the days prior to impact. Both the participants and journalism data sources frequently mentioned department, grocery, hardware, and home improvement stores as places to obtain disaster supplies. Participants used these stores, along with gas stations and pharmacies, to obtain the supplies that they felt were needed to endure the impending storm. Harvey truly appreciated his local grocery store because employees created an emergency supplies section in the main aisle and reduced the prices of the items in that section.

Several participants said that they would simply purchase more of the same supplies for a Category 5 versus a Category 1 hurricane. Hermine and Ian said that their preparations would not change according to strength of hurricane. Ian said, “the same things happen, the power goes out, but the grief would be much worse.”

Only one participant, Jose, had assembled a “go kit” evacuation bag prior to Hurricane Sandy. After Hurricane Sandy, Jose attended a household emergency preparedness program for personal interest, where she received an additional disaster supply kit. With two kits, Jose still only had 80% of the FEMA-recommended items at the time of interview. Five participants had a disaster supply kit, which they received for free by attending an emergency preparedness class at the senior center after Hurricane Sandy. All of the other participants who had recommended supplies were incidentally prepared. They had the recommended items in their homes for daily use, not for the purpose of household emergency preparedness. Nine participants had 80% or more of

the recommended supplies. Nine participants had 53% or less of the recommended supplies.

Alex, who had attended the same household emergency preparedness program as Jose, had 87% of the recommended supply items. She believed that she would not be a quality informant because she “did nothing extraordinary to prepare.” Alex was objectively prepared, but not subjectively prepared. She attended a class and had most of the recommended supplies, but did not feel that she was prepared for a disaster. Colin, on the other hand, had volunteered to participate in the study because he felt prepared and hoped that others would learn from him. Colin only had 53% of the recommended supply kit items. He was subjectively, but not objectively, prepared.

Ian, Nicole, and Philippe were the three least prepared participants. Nicole was a female in her 90’s who lived alone in a regular apartment complex (i.e. not senior/disability housing). Nicole said that she had never seen a storm like Hurricane Sandy in her lifetime and did not anticipate seeing one again before she died. She did not feel that she was at risk for another Hurricane Sandy.

Ian and Philippe lived in the same high-rise building for low-income seniors and individuals with disabilities. Both gentlemen said that their health has deteriorated since Hurricane Sandy. Both freely admitted that they did not know about household emergency preparedness and volunteered to participate in the study to learn about it.

And you’re giving me some knowledge on stuff ‘cause I, this the first time I’ve been ill, like with this kind of sickness. And I want to learn everything I can, you know? I just don’t want to be stuck out there and don’t know which way to go, which way is up. And, you know, I just want to learn whatever there is out there for me to learn.

- Philippe (61-year-old male)

During the interview, the participants were given the FEMA disaster supply checklist that can be printed for free from the website ready.gov. Participants were asked if they had ever seen or used this checklist and if they would use a checklist to prepare for future disasters. None of the participants could recall seeing the FEMA checklist, but 45% (n=15) recalled seeing or hearing about checklists like it on the Internet (n=6), television (n=5), radio (n=3), or in the newspaper (n=5). Regarding seeing the checklist on the Internet, but not actually using it, Don said, “You need to beat these people over the head with stuff like this you know?”

Thirty-three percent (n=11) of the participants never saw or heard about a disaster supply kit checklist. Only one participant, Jose, had used a checklist to prepare for disasters in the past. However, once shown the FEMA checklist, 51% (n=17) of the participants appreciated it as a household emergency preparedness information source.

Well now that I have a checklist, I would definitely check the checklist.

- Hermine (77-year-old female)

I think it's very helpful!

- Katia (79-year-old female)

What would I do now to prepare? I would make sure what's on this list I have.
(laughs)

- Cindy (51-year-old female)

PI: And do you think this checklist is a good thing, or-
Vince: Yea!

Harvey: Definitely load up on water.

PI: Okay.

Harvey: Since I have a station wagon I could even keep a supply in the car.
...Gonna buy myself a whistle.

PI: (laughs)

Harvey: ...Dust supplies.

PI: Looks like you might use the checklist?

Harvey: Yea, I'd use the checklist and I'd uh confer with my neighbors and make sure everybody was on board.

I think that's perfect!

- Ophelia (66-year-old female)

It would be helpful.

- Gert (58-year-old female)

Yes! That's help, it's helpful.

- Shary (81-year-old female)

Philippe: Oh I'll, I'll go to the store and start stocking up on stuff. (laughs)

PI: Stocking up? Okay. Would you use that checklist do you think?

Philippe: Yes!

PI: Um, all right, so now if you heard that another major storm was coming to our community here, what would you do to prepare, if anything?

Ian: (laughs) Uh one thing, I'd make sure I got every, get everything that's on this list!

PI: So you'd use the checklist.

Ian: Yea!

I: Okay.

Ian: Oh definitely! That would be the first thing I did!

PI: So is this a good thing-

Jose: Definitely good.

PI: -or is it overboard?

Jose: No!

PI: Okay.

Jose: Definitely, definitely good. Absolutely.

Most of the participants thought that the FEMA checklist would be a useful tool to assist with future household emergency preparedness efforts. Just one participant, Gaston, did not think that a checklist would be useful.

Do I need one? I found out that these checklists and what not, spend, you spend more time going through them then just taking care of it. This is our checklist. "You have my Copaxone Hun? What about my insulin?" That's our checklist. That's faster.

- Gaston (57-year-old male)

Nicole thought that the FEMA checklist was helpful, but had no interest in using it, stating, "Not at my age. I don't want that. No."

When asked if the FEMA checklist items would be affordable for individuals who are low income or on fixed incomes, only 33% (n=11) of the participants said yes. They also provided recommendations for how to assemble a supply kit if finances were a concern.

PI: So do you think that this is, (flips to the basic side of the FEMA checklist) this side at least, is affordable for low-income people? Could they get that stuff?

Ophelia: Probably could. Like first aid kits are really, like you can always get them for free at a lot of craft fairs and things like that. That's where I got mine.

PI: Okay. Is it affordable for people who have limited incomes?

Ian: I think it, uh, it depends on how they go about it. See with me, I'm a smart one. 'Cause I am one, some of this stuff you can catch it on sale. Some of the stuff you don't catch on sale, it's either cheap or you just buy, like every month just buy like two of the things on the list if you can.

PI: Okay. So assemble the kit slowly and on sale.

Ian: Yea that's how I go about getting a lot of stuff. And people like, "how you getting all that?" I said, "Easy. I wait until I see it on sale and what I don't see on sale, I save for or I...just buy a few things at a time."

Lack of means to purchase supplies was designated as a situational impediment to household emergency preparedness in the scholarly literature (Al-Rousan et al., 2014; Baker & Cormier, 2013; Becker et al., 2013; Chesser et al., 2006; Eisenman, Glik, Maranon, et al., 2009; Fernandez et al., 2002; Hilfinger-Messias & Lacy, 2007; Kim & Kang, 2010; Levac et al., 2012; Lindell et al., 2006; Murphy et al., 2009; Perman et al., 2011; Powell et al., 2009; True et al., 2013; Tuohy, Johnston, et al., 2014; Tuohy, Stephens, et al., 2014). The participants of this study confirmed this impediment, but also offered strategies on how to overcome this impediment.

Information sources.

When the participants needed more information about an impending storm, they sought their preferred information sources as a strategy. Table 9 was compiled from the responses of the participants to the interview guide question, "how did you get

information?” It was a question asked generally about participants’ experience during their most memorable disaster, but most of the participants answered with their preferred information sources in the days leading up to Hurricane Sandy, when they still had power.

Table 9
Participants’ Information Sources

• Alex - Radio (preferred), television (specifically New Jersey News), Internet (specifically weather.com), Code Red Alert system telephone alert
• Cindy - Television (preferred), Code Red Alert system telephone alert
• Colin - Television (preferred), radio
• Danielle - Television (preferred), family/friends/neighbors, radio, newspapers
• Don - Television (specifically The Weather Channel) (preferred), radio, Code Red Alert system telephone alert, Internet
• Earl - Radio (preferred), Code Red Alert system telephone alert
• Emily - Television (specifically the New York ABC news channel) (preferred), radio (specifically Brookdale Community College’s station), family/friends/neighbors, Code Red Alert system telephone alert, newspaper, Internet
• Fiona - Telephone alerts (preferred), television
• Gaston - Television (specifically The Weather Channel) (preferred), family/friends/neighbors (specifically son), radio
• Gert - Television (specifically New Jersey News) (preferred), looked outside
• Harvey - Radio (specifically Brookdale Community College’s station) (preferred), newspapers (specifically the Asbury Park Press), television, Internet, family/friends/neighbors
• Hermine - Family/friends/neighbors (specifically nephew and son) (preferred), radio, Code Red Alert system telephone alert
• Ian - Television (specifically CNN) (preferred), family/friends/neighbors
• Jose - Newspaper (preferred), radio, Code Red Alert system telephone alert, television
• Julia - Code Red Alert system telephone alert (preferred), newspaper
• Karl - Television (specifically New Jersey News) (preferred), family/friends/neighbors
• Katia - Code Red Alert system telephone alert (preferred)
• Lisa - Code Red Alert system telephone alert (preferred), Internet
• Maria - Internet
• Matthew - Internet (specifically Facebook) (preferred), looked outside
• Nicole - Television (preferred), radio
• Ophelia - Internet (preferred), television, telephone alerts

-
- Otto - Radio (preferred)
 - Paula - Television (preferred), radio
 - Philippe - None
 - Shary - Television (specifically MSNBC) (preferred), family/friends/neighbors
 - Sean - Internet (preferred), television
 - Tammy - Internet (specifically Facebook) (preferred), television, Code Red Alert system telephone alert
 - Tobias - Radio (preferred)
 - Vince - Radio (preferred), Code Red Alert system telephone alert, television, newspapers, family/friends/neighbors
 - Virginie - Television (preferred), radio
 - Walter - Television (preferred)
 - Whitney - Television (preferred), Code Red Alert system telephone alert
-

Television was the most preferred information source for 45% of the participants (n=15). Radio was the next most popular information source, representing 18% (n=6) of the participants. The problem with television and radio is that one cannot print or possess a paper copy of preparedness recommendations. One can try to jot the recommendations down while viewing the broadcast, but none of the participants said that they did that. Without a tangible paper copy of preparedness and disaster supply kit recommendations, steps or items may be forgotten and missed. Specific television information sources mentioned by participants were New Jersey News (n=3), The Weather Channel (n=2), CNN (n=1), WABC-TV New York (n=1), and MSNBC (n=1). Only one specific radio information source was mentioned by participants, Brookdale Public Radio (n=2).

Representing 15% of the sample (n=5), the next most popular information source for the participants was the Internet. However, five participants (Colin, Gert, Hermine, Philippe, and Shary) specifically said that they do not use the Internet as an information source, representing another 15% of the sample. If the Internet was not recorded in Table 9, it was because the participant did not mention it at all. If those who did not mention Internet as an information source are taken into account, 18 more participants are added.

This means that 70% of the sample did not use the Internet as an information source for impending storms. The Collective Human Actors almost always referred residents to Internet sites and smart phone apps for additional and more detailed storm information. This would mean that 70% of the sample would likely not access or receive that quality information. Specific Internet information sources mentioned by participants were weather.com (n=1) and Facebook (n=2).

Less mentioned preferred information sources were telephone alerts (12%, n=4), the newspaper (3%, n=1), and family, friends, and neighbors (3%, n=1). The telephone alerts that the participants preferred were not smart phone apps. They were voicemails from the authorities disseminated via a reverse 911 system called Code Red Alert. One participant, Maria, said that she would prefer to receive information via telephone. However, she was not registered for the Code Red Alert system and did not know about it. While only four participants said that telephone alerts were their preferred information source, 45% (n=15) mentioned the Code Red Alert system as an information source that they used during Hurricane Sandy.

When considering all of the information sources used by the participants, not just the preferred information sources, 70% (n=23) used television, 48% (n=16) used radio, 30% (n=10) used the Internet, 27% (n=9) used family/friends/neighbors, 18% (n=6) used newspapers, and 6% (n=2) simply looked outside their windows for information. One participant (3%), Philippe, said that he did not seek information before Hurricane Sandy. He stated, “Uh there was no [information source], I just praying, that’s all.”

Situational Facilitators and Impediments

The household emergency preparedness process by elderly and medical frail

community members has been described. The factors that contribute to its stability or change, or what the PADM (Figure 1) calls situational facilitators and impediments, will now be revealed. These findings will be compared to the findings in the extant literature.

Household emergency preparedness education.

The PI's new theory states that elderly and medically frail community members are not adequately prepared for disaster due to lack of education on how best to prepare. Once educated, these community members will likely accept responsibility for their preparedness and engage in preparedness efforts. Education about recommended preparedness efforts is a situational facilitator of household emergency preparedness.

The PI felt that she was satisfactorily prepared when she began this study. However, she learned new preparedness actions and recommended supplies from both her journalism and interview data sources. The PI became better prepared for disasters because of this study. This is a consequence of household emergency preparedness education.

Knowledge of household emergency preparedness. Lack of knowledge on how best to prepare for disasters was a situational impediment to household emergency preparedness in the scholarly literature (Powell et al., 2009; Thompson et al., 2014; Tuohy et al., 2015). This situational impediment was confirmed by this study. The discursive construction evident in journalism data sources was also that people do not know how to prepare for disasters. Journalism was a great source of household emergency preparedness information and could be considered a situational facilitator. Preparedness recommendations were mentioned in the coffee table books, cookbook, memoir, newspaper articles, television broadcasts, and documentaries analyzed for this

study. However, the preparedness recommendations were not consistent, and great variability of comprehensiveness and specificity of recommendations was found. This lack of consensus was also cited in the scholarly literature as a situational impediment to household emergency preparedness (Ardalan et al., 2010; Bethel et al., 2011; Clay et al., 2014; Fernandez et al., 2002; Perman et al., 2011; Powell et al., 2009). See Table 10 for a complete list of preparedness recommendations found in the journalism data sources.

Table 10
Preparedness Recommendations Found in the Journalism Data Sources

Actual Risk / Risk Perception	<ul style="list-style-type: none"> • Cancel or reschedule plans • Know one's personal risk • Stay informed
Communication Plan	<ul style="list-style-type: none"> • Charge your mobile devices • Choose an out of area emergency contact • Have a family communication plan • Keep phones, chargers, and batteries in a waterproof case • Make a list of emergency contacts
Disaster Supply Kit	<ul style="list-style-type: none"> • Batteries • Blankets or sleeping bags • Bleach • Candles • Cooler • Disposable dishware • First aid kit • Food • Fuel containers • Garbage bags • Generator • Ice • Manual can opener • Matches • Paper maps • Periodically check that perishable disaster supplies are not expired • Portable lighting

	<ul style="list-style-type: none"> • Sanitation towelettes • Snow shovel • Solar charger • Tarps • Tools <ul style="list-style-type: none"> ○ Multi-tool ○ Pliers ○ Utility knife ○ Wrench • Water • Waterproof container • Weather alert radio • Whistle
Elderly / Medically Frail / People with Special Needs	<ul style="list-style-type: none"> • Ask family and friends to help you • Have a back up supply of medications • Have a copy of your medical history • Have a list of medications including dosages • Have a list of the style and serial numbers of your medical equipment • Have a list of your physicians • Have ice packs for refrigerated medications • Place yourself on a Special Needs Registry • Plan for an alternate power source • Preregister with utility companies for priority restoration
Evacuation	<ul style="list-style-type: none"> • Assemble an emergency “go bag” • Comply with evacuation orders • Forward home landline calls to mobile phone • Have a family meeting place in case of separation • Have a logical, achievable evacuation plan and set a threshold for activating it • Jumper cables and flares in vehicle • Know if you are in an evacuation zone • Know your shelter location • Notify the police department that you are evacuating • Pack: <ul style="list-style-type: none"> ○ Blanket ○ Books, games, and puzzles for children ○ Camera ○ Clothing ○ Copies of important documents ○ Driver’s license ○ Family photographs ○ Flashlights

-
- Infant formula and diapers
 - Insect repellent
 - Jewelry
 - Medical equipment
 - Medical supplies
 - Medications
 - Mess kits
 - Non-perishable food
 - Pillow
 - Portable chair
 - Rain gear
 - Spare glasses
 - Toiletries
 - Two sets of house and car keys
-

- Home Preparations
- Bring in and / or secure outdoor objects that may become projectiles
 - Clean gutters
 - Clear storm drains
 - Cover windows with plywood or install hurricane shutters
 - Document your valuables
 - Elevate furniture or move it to a higher floor
 - Find a place in the home that can withstand extreme wind
 - Fuel up vehicles
 - Have extra blankets to cover refrigerators and freezers for added insulation during power outages
 - Install a fireplace or supplementary heat source
 - Install a sump pump
 - Install storm resilient windows and doors
 - Program insurance company phone numbers in your phone
 - Put important documents and valuables in the safest place
 - Put valuables in garbage bags and place up off the floor
 - Make sure fire alarms work
 - Move vehicles out of danger
 - Raise wiring and utilities in homes in designated flood areas
 - Raise your home if it is in a designated flood area
 - Remove boats from water
 - Set up sandbags
 - Shut the windows
 - Store food well above floor level and away from windows
 - Tape the windows
 - Trim dead or weak branches from trees and bushes
 - Turn off propane tanks
 - Turn off utilities
 - Turn the freezer and refrigerator to their coldest settings
-

	<ul style="list-style-type: none"> • Unplug small appliances
Insurance	<ul style="list-style-type: none"> • Buy flood insurance • Know your insurance coverage
Money	<ul style="list-style-type: none"> • Have cash, credit cards, traveler's checks, or change on hand
Neighbors	<ul style="list-style-type: none"> • Check on neighbors
Pet Preparedness	<ul style="list-style-type: none"> • Create a disaster kit for pets <ul style="list-style-type: none"> ○ Food ○ Leash ○ Medications ○ Toy ○ Water • Get pets microchipped • Have a pet carrier or crate available for each pet • Have an evacuation plan • Have pet jackets or blankets • Label carriers with name and address of owner and pet's medical history • Provide shelter for pets

A second critique of the recommended preparedness actions found in the journalism data sources is that the authors and reporters assumed that their consumers were able-bodied enough or had the financial means to accomplish the recommended preparations. Many recommendations may not be relevant or possible for lower-income, elderly, or medically frail individuals.

A third critique of the journalism data sources was that the authors and reporters frequently directed consumers to Internet-based information resources, which were not relevant for individuals who do not use the Internet. Most of the participants in this study did not use the Internet as an information source. Dissemination of household emergency preparedness information via Internet, considered inaccessible to individuals that do not use the Internet, was cited as a situational impediment in the scholarly literature

(Eisenman, Glik, Maranon, et al., 2009; Smith & Notaro, 2009).

Well, I think the people, a lot of people, local people, don't know exactly what to do, where to go. Maybe they should inform somehow, tell people exactly where the facilities are, where to go, and any part of it. They should know what to do and where to go and be more, let them know who the local people are, the organizations, let them aware, bring the subject up in conversation and let them know where, where to go, and what to do at the, within the period of time they tell you. That's the only suggestions I could get.

- Karl (87-year-old male)

The journalism data sources revealed a few articles on household emergency preparedness education at the start of hurricane season and prior to predicted hurricanes. Readers were informed of recommended preparedness actions, evacuation zones, shelter locations, special needs registries, and pet preparedness. Cindy, Emily, and Karl recommended that more household emergency preparedness information be published in the newspapers or reported on in television and radio broadcasts.

Disaster supply checklists. Due to the participants' support for the disaster supply checklist, they were asked what would be the best person or place to obtain a checklist. Participants recommended visiting nurses, police officers, firefighters, EMTs, Meals-On-Wheels volunteers, and FEMA representatives as potential checklist distributors. The two most popular recommended distributors were building managers and family, friends or neighbors. Gert suggested, "give it to somebody in the building who won't mind walking around, passing them out." Philippe recommended family, friends, or neighbors, stating, "each one teach one." Vince and Whitney suggested that copies be posted on their building's community room bulletin board. Other spaces that the participants recommended as dissemination sites were the senior center, city hall, and the library. Checklists could also be published in newspapers or mailed directly to residents' homes (but none of the participants said who would be doing the mailing).

Gaston stated, “I would rather see some volunteers going around door to door with this kind of information, than having the guy come by seeing if I want solar panels.”

None of the participants recommended community- and faith-based organization newsletters as possible information sources without prompting. When the PI asked what they thought about dissemination via these newsletters, 27% (n=9) thought it was a good idea and that people would likely pay attention to it. However, 9% (n=3) were not convinced that anyone would pay attention to household emergency preparedness information in a newsletter.

Household Emergency Preparedness Classes.

I think they should run more public information seminars, probab-, possibly bringing it to the local senior communities.

- Harvey (70-year-old male)

There was strong support for the Seniors Taking On Readiness Measures (STORM) program offered by the Monmouth County Sheriff’s Office among participants who had attended the class and participants who were told about the class. This disaster preparedness class was offered at the senior center free of charge. Attendees received a free disaster supply bucket and a booklet where they were asked to fill out their medical history, medications, physician contact information, next of kin contact information, insurance policy numbers, and contact information.

The only participants who were prepared with an actual disaster supply kit were attendees of this program. When the other participants were informed about the class, they unanimously felt that the class was a great idea and said that they would like to attend one. During the interview, Harvey wrote down the information about the STORM program to give to his building’s social worker with the hope that she would schedule a

class at the building. These findings confirm the suggestion found in the scholarly literature that perceived low cost of self-protection is a facilitator of household emergency preparedness (Becker et al., 2013; Christensen & Castaneda, 2014; de Boer et al., 2015; DeVos, 2011; Diekman et al., 2007; Kim & Kang, 2010; Levac et al., 2012; Lindell & Perry, 2012; Lindell et al., 2006; Murphy et al., 2009; Terpstra & Lindell, 2013).

The PI wants to make sure that readers understand the enthusiasm that the participants showed for the assembled disaster supply kits provided from the STORM program. The participants who received the supply buckets considered them to be useful and stated that they would not have known what a disaster supply kit should contain without receiving a preassembled one. Julia said that when her family comes to evacuate her, they ask that she bring the bucket with her. The participants who had not yet received a bucket overwhelmingly agreed that the distribution of these buckets to vulnerable residents is a worthwhile community intervention. Jose recommended that any household that receives Meals-On-Wheels services should receive a disaster supply bucket too.

Another class offered a few times a years to city residents was the Citizen's Police Academy hosted by the Long Branch Police Department. Two participants (Jose and Shary) had attended the academy and said that they were taught about household emergency preparedness. The city's OEM Coordinator also offered emergency preparedness classes and materials for free to community organizations several times a year.

American Association of Retired Persons. The American Association of Retired Persons (AARP) was designated as a Silent Actor on the situational map because none of the participants or journalism data sources mentioned AARP. However, AARP is a large senior advocacy organization and a brief search on their website revealed several household emergency preparedness educational materials and articles. In fact, when the 2017 Hurricane Irma was targeting Florida, the top articles on their webpage were “How to Protect Your Valuables During a Disaster,” “How to Apply for FEMA Disaster Aid,” and “Preparing for an Emergency.” There is a print option on their website and the PI was able to access all of the material for free as a non-member. AARP was also designated as Collective Human Actor on the situational map due to its role in household emergency preparedness education and senior advocacy.

Children. Children were designated as Individual Human Actors on the situational map due to their potential role in motivation for and education of household emergency preparedness. Caregiving responsibilities for children, family members, and pets has been shown to motivate preparedness (Levac et al., 2012). None of the participants had children in their homes. However, Tobias and Jose mentioned children as potential information sources. They suggested that children be educated about household emergency preparedness and, in turn, they could educate their caregivers. The scholarly literature agreed. Disaster preparedness should be integrated in school so that children can educate their families.

Fatalism.

Fatalism was discussed in the scholarly literature as an impediment to taking protective actions for disasters (Levac et al., 2012; Lindell & Perry, 2012). The

participants in this study did not seem to follow suit. Fatalism did not end up being a code. All of the participants felt that there was something that they could do to prepare for disasters that would alleviate some danger or suffering. Even Gaston, who made a comment about supply checklists floating down the street with the disaster supplies, was one of the best prepared of all the participants.

The two participants who disclosed that they did nothing to prepare for disasters, Philippe and Sean, still did not feel that their fate was completely out of their control. Sean said that he had a “devil-may-care, whatever will be, will be” attitude. He put a lot of trust in his own resourcefulness and independence. Sean believed that he was at risk for disaster, but he did not worry about it. He said that he and God were “right with each other” and that he was not worried about what could happen to him as a result of a disaster. He even accepted death as a result of disaster. This finding corroborated Tuohy and Stephen’s (2015) findings that some elders do not prepare for disaster because they accept death as a consequence.

Before Hurricane Sandy, Philippe did nothing to prepare for the impending storm. He disclosed that he spent his time before, during, and after impact praying. However, Philippe said that he would prepare for futures storms, which was why he volunteered to participate in this study. Philippe wanted to learn how best to prepare.

Matthew said that faith in a higher power with adequate household emergency preparedness was a better combination for disasters than just faith alone. Fatalism was not found to be an impediment to household emergency preparedness for the participants in this study.

Preparedness perceptions.

The discursive construction of preparedness as prevention found in the literature was that if an individual prepares for disaster according to the FEMA definition of disaster preparedness, he or she should be able to survive any type of disaster without need for outside assistance for at least three days. Another discursive construction on preparedness as prevention was that if an individual does not prepare for a disaster and suffers ill effects because of it, it is that individual's fault. These constructions lead to the situational facilitator and impediment concept of preparedness perceptions. Preparedness perceptions ranged from "preparedness efforts are necessary and good and will help one to survive the disaster" to "there is little point in preparing for something that is out of one's control."

Journalism data sources were pro-preparedness, saying that preparedness is prevention, will make one feel secure and alleviate fear, that it is always better to be prepared and every family should be ready for the unexpected (before any disaster strikes), and that preparedness saves lives. The only instances where journalism did not demonstrate a positive view on preparedness was when community members were recorded doing or saying inadvisable actions like buying perishable food, refusing to evacuate, or not subscribing to the "hysteria."

Well the point is, you shouldn't have, see with me, I don't wait for an emergency. Sooner or later you know you're gonna come up against one. Be prepared for it.

- Vince (74-year-old male)

I mean, if they said we were gonna have ... you know, tornado winds, what can you do? You, where can you go? You can't predict where they're gonna end up. So I probably wouldn't do anything.

- Walter (female in her 70's)

Two participants said that preparedness could be pointless because all of the supplies might be lost in the disaster. Most said that preparedness was necessary, should

be a continuous activity, and that having disaster supplies made them feel “safer” and “better.” Otto said that because he knew that he had his supplies, the only thing that he worried about during Hurricane Sandy was home damage. Gaston said preparedness was useful in hurricane situations, but not tsunami situations.

Social support.

Families, friends, and neighbors are designated as situational facilitators because of the social support that they provided to the participants. These Individual Human Actors assisted participants with evacuation and shelter, provided them information, and obtained supplies for them after the disaster. Hermine relied heavily on her nephew for information about the predicted severity and conditions of approaching storms. Several participants were evacuated and sheltered by family or friends before Hurricane Sandy. Some participants had family stay with them during Hurricane Sandy. Gaston, who was wheelchair bound, relied on his wife to prepare the household for predicted storms. Some participants said that their neighbors, friends, and family members brought them supplies from the distribution centers in the days after Hurricane Sandy hit. Sean’s landlord drove him to a grocery store to get supplies after Hurricane Sandy. Lisa relied on her children to dig her out in snowstorms. Some participants were the ones providing social support to other elderly and medically frail neighbors. Social support was designated as a situational facilitator for household emergency preparedness of elderly and medically frail community members. The findings of this study confirmed this previous finding (Colten et al., 2008; HelpAge International, 1999; Render-Cohen & Render-Dinerstein, 2005; Seplaki et al., 2006; Zakour, 2015).

Pets.

Pets, as cherished members of the household, were designated as Individual Human Actors on the situational map due to their role in evacuation decisions. Several journalism data sources advised readers about pet preparedness, not to leave pets behind during evacuation, and provided pet-friendly shelter locations. Colin, Don, Matthew, and Sean sheltered in place with their pets during Sandy. Colin, Don, and Matthew said that they would bring their pets with them if they evacuated. Matthew said that if a storm shelter would not accept her cat, she would ride out the storm in her car, with her cat, near the shelter.

For Hurricane Sandy, Gaston made sure that his hotel was pet-friendly before he evacuated with his pets. Katia evacuated with her dog and admitted that she would not have evacuated if she could not bring her dog. Ophelia evacuated with her cats and would only stay in a shelter if pets were allowed.

Cindy left her turtles when she evacuated in the midst of Hurricane Sandy as her apartment filled with water. Cindy ended up rescuing her turtles in the days after Sandy. Cindy admitted that pets did not play a factor in her consideration to evacuate.

Maria said that if she had a pet-friendly shelter, she would bring her cat to it, but if there were no pet-friendly shelters, she'd leave the cat behind. Don said that he would not leave his pets, that if he could not find a place to stay with them, he would drop them off with someone who could hold them for him. Gert only recently obtained a pet (a dog), and had not thought about what would happen to the dog in disasters. She imagined that the dog would be fine at home, so long as it had food and water.

In the scholarly literature, pets were designated as a situational impediment to evacuation if they were not accommodated in places of refuge, such as hotels or storm

shelters (Benson, 2007; Dostal, 2015; Smith & Notaro, 2009; Thompson et al., 2014).

For all but two pet owners in this study, this finding was confirmed.

Trusted information sources.

The Collective Human Actors under the Information Source heading were individuals such as reporters, journalists, meteorologists, climatologists, and public information officers. Many of the Disaster Responder actors also served as information sources. The organizations whose main involvement in the household emergency preparedness of elderly and medically frail community members was as an information source were placed under this heading. The organizations that these actors worked for were newspapers, social media, television and radio broadcasts, NOAA, the National Weather Service, National Hurricane Center, National Centers for Environmental Protection, United States Geological Survey, and the Centers for Disease Control.

These Collective Human Actors conducted scientific studies about climate change, sea level rise, and forecast models. They issued warnings, watches, and made predictions of storm conditions and impacts to the community. They educated residents about risk, flood zones, evacuation orders, evacuation routes, shelter locations, how to receive evacuation and preparation assistance, how to receive emergency alerts, additional information sources, response efforts, and school and business closings. These Collective Human Actors reported on governmental press conferences, disseminated directives from authorities, and recommended preparedness actions.

Trusted information sources were found to be situational facilitators of household emergency preparedness in this study and in the scholarly literature (Bergstrand et al., 2015; Houston et al., 2015; Jhung et al., 2007; Kulig et al., 2013; Lindell & Perry, 2012;

Muller et al., 2014; Norris & Stevens, 2007). The PI designated the mayor and the OEM Coordinator as Individual Human Actors on the situational map due to their role as risk communicators and trusted information sources for city residents. Nearly all of the participants mentioned these gentlemen as information sources that they used, but Emily, Gert, Hermine, Jose, and Maria mentioned the mayor specifically as their preferred information source. They especially enjoyed his daily (and sometimes more frequent) voicemail messages distributed via the Code Red Alert telephone alert system before, during, and after Hurricane Sandy.

Governor Chris Christie was designated as an Individual Human Actor on the Situational Map due to his role as information source and risk communicator and his authority over response efforts. He was the Governor of New Jersey during Hurricanes Irene, Sandy, Joaquin, and Hermine, and during Winter Storm Stella. The governor ordered timely evacuations and declared states of emergencies, which secured federal resources and funds to assist New Jersey with response efforts. He was filmed for television broadcasts. He was interviewed frequently, reported on, and quoted in newspapers. He offered preparedness recommendations, communicated response efforts, and provided direct and frank risk communication messages. Governor Christie was especially famous for his “get the hell off the beach” quote regarding mandatory evacuations prior to Hurricane Sandy. This was another risk communication message published in the local newspaper before Hurricane Sandy (Symons & Oglesby, 2012):

“I saw some dope quoted... saying he was going down with the ship. He flatters himself,” Christie said. “If you’re staying there, you’re just stupid. It’s just plain stupid to stay. For any of those folks who are on the barrier islands right now, who still have power, yes, I’m calling you stupid. You should be out of there.”

The governor was predominantly mentioned in the journalism data sources. However, some of the participants also mentioned him. Colin appreciated it when the Governor changed gas station visits to odds and evens days after Hurricane Sandy to ease lines. Danielle appreciated his updates about Hurricane Sandy damage in the surrounding communities. Emily did not appreciate Governor Christie's comments to Hurricane Sandy victims during a meeting about allocating FEMA funds. Emily recalled the governor telling attendees to "sit down and shut up."

Former President of the U.S.A., Barack Obama was designated as an Individual Human Actor on the situational map due to his role as an information source and risk communicator, and his authority over federal funding and resources. He was the president during Hurricanes Hermine, Irene, Joaquin, Matthew, and Sandy. He was filmed for television broadcasts, and reported on and quoted in newspapers, albeit less often than the governor of New Jersey with hurricane coverage. He communicated federal response efforts and provided risk communication messages. He was not mentioned by the participants, but by the journalism data sources.

Risk perception.

Life is really precious and just to see, witness something like that, I thought I'd never see nothing like that in my life. You know? I was really, I never thought I'd see nothing like that in my life. Take it serious! You know? Damage can be done. You know, nature can turn, turn tide on you in a second.

- Philippe (61-year-old male)

Scholarly literature suggested that emotional attachment to the home and surviving previous disasters with minimal negative impacts, leading to the underestimation of consequences of future disasters, are situational impediments to household emergency preparedness (Eisenman, Glik, Maranon, et al., 2009; Perman et

al., 2011). For the most part, findings from this study confirmed these situational impediments. Two alternative views are provided to diversify the findings.

I feel pretty safe here. High and dry. I've been here for 35 years, so um you know, so nothing like that has ever happened. So I... feel pretty safe. Pretty smug.

- Walter (female in her 70's)

Fourteen participants felt that their current homes were sturdy and safe. All fourteen, with the exception of Jose, said they would likely stay home in future storms versus evacuate. Colin said the only natural event that he would evacuate for was a tsunami. Paula, whose entire apartment was flooded and most of her belongings were destroyed, said that she felt perfectly safe in that same apartment. Paula even remarked, "They fixed everything nice!" She did not feel that she was at risk for another storm like Hurricane Sandy. These participants demonstrated an unrealistic sense of optimism, which was cited as a situational impediment in the scholarly literature (McClure et al., 2011; Muller et al., 2014).

Hermine had an appropriate risk perception of the safety of her home. She knew that she did not live in a flood zone. Her home was on a wooded lot. She had two large trees fall, one in Hurricane Irene and the other in Hurricane Sandy. She worried that additional trees would fall and that her large picture window would blow in. She said that she would prepare for minor hurricanes and major hurricanes similarly, but "the angst would be totally different."

The variables "years lived in the community" and "years lived in the home" were included on the demographic data form because, according to quantitative studies, these were variables that could potentially affect how a respondent prepared for disaster. These variables had an effect on risk perception of home and evacuation decisions in this study.

These variables also had an effect on participants' lack of paper maps. FEMA recommends that paper maps be included in the disaster supply kit so that individuals can reference evacuation routes. Twenty-one participants did not own paper maps of their community. A few participants said that they would use the global positioning system on their phones if they get lost (assuming that cellular service is available during disaster and that their cell phone is charged). Most of the participants said that they have been in the community a long time, knew their way around, and did not need maps. The majority of the participants had lived in their homes (n=23, 70%) and in their community (n=30, 91%) for greater than five years.

Community interventions.

The concept of community interventions describes the nonhuman elements that served as situational facilitators of the household emergency preparedness of elderly and medically frail community members. Some community interventions such as household emergency preparedness checklists, household emergency preparedness classes, and household emergency preparedness media campaigns were already discussed under the concept of "household emergency preparedness education." This section provides evidence for the community interventions of evacuation orders, priority utility registries, and special needs registries.

Evacuation orders.

The cops came to the house and they said, "You have to get out. There's no two ways about it. You have to get out." So we did.

- Paula (95-year-old female)

The PI was unsure about the placement of evacuation orders under community interventions as it related to household emergency preparedness of elderly and medically

frail community members. Evacuation orders are more of a response effort than a household emergency preparedness actant. However, the PI decided to keep evacuation orders under community interventions because police and fire fighters notified residents of mandatory evacuations in person, provided storm shelter information, and offered evacuation assistance with time enough for residents to prepare.

If you know a storm is coming, it's, some of these people it's not just enough to announce it. It's not just, you need somebody to physically come. And some of these people don't have children close enough by to come and do it.

- Gert (58-year-old female)

Several participants spoke highly of the responders coming in person to notify them of their evacuation zone status. There were two participants who lived in the same apartment complex during Hurricane Sandy who did not know they were in a mandatory evacuation zone. They were both home when their apartment complex was flooded by the storm surge. Cindy had to wade through water to get to her car and evacuate in the midst of the storm. Whitney was in her second floor apartment and watched the flooding from her window.

PI: Were you in a mandatory evacuation zone?

Whitney: Yup!

PI: Yea? But you stayed.

Whitney: But we didn't know about it until after it was over with.

PI: Oh...

Whitney: 'Cause ain't nobody knocked on our door and I was home all day!

Gert was not in a mandatory evacuation zone during Hurricane Sandy, but when asked about possible community interventions, she recommended that responders come in person and alert people of their evacuation status.

Tobias recommended that residents should be made aware of their evacuation routes. Tobias said that there were evacuation route street signs, but that the signs may

not be enough for residents to understand how they should evacuate.

“Freedom to Choose” was a sociocultural element on the situational map mainly because of mandatory evacuation orders. Even in a mandatory evacuation, residents cannot be made to leave their homes. They can choose to stay. Hopefully they understand that they risk death, injury, or not being rescued until weather conditions are safe enough for responders to do so. Elderly or medically frail community members who are not aware that they are in a mandatory evacuation zone lack the freedom to choose to comply.

Prior to Hurricane Sandy, the governor of New Jersey, as quoted in many of the journalism data sources, advised residents in mandatory evacuations zones that they would be “stupid” to stay and that they would not be rescued in the midst of the storm. Most municipalities adopted the same stance; residents in mandatory evacuation zones would not be rescued in dangerous storm conditions. However, there were accounts of responders who did perform rescues in the midst of the storm. The lives of these responders were put at risk because community members did not comply with the evacuation orders. One coffee table book included narrative accounts of rescues and photographs of responders in chest-high floodwaters rescuing residents in the midst of Hurricane Sandy (Parents and Friends of Pascack Valley Learning Center, 2013).

Ian had strong feelings about and recommendations for responders assisting with mandatory evacuations. He had an elderly aunt who declined rescue and remained in her flooded apartment in a past storm (he did not say which storm, but it was not Hurricane Sandy). Her apartment was in a mandatory evacuation zone and was already flooded, but she refused to leave. Rather than argue with her, the responders left her in the flooded

apartment. Ian strongly felt that the responders gave up too easily and were putting the lives of those who were compliant over his aunt's life. He said that one life could not be more important than another just because the individual adheres to the advice of the authorities. He felt that the responders should have carried his aunt out against her will and dealt with the ramifications at a later time. He felt that this should apply to all the "old people set in their ways." Ian also pointed out that the responders would likely have felt remorse if they heard that the person that they "gave up on" later became injured or perished in the disaster.

You know, not "there's other people I could be helping besides you." How can one life mean more than the other? If you're doing it like that, like well the people that want me to come get 'em, their, I guess their lives are more. I'm wasting time when somebody else could be in line. I can understand their situation, but they need to look now because they need to put their self in this position. Now let's say they do that and the next day they find out that person that they left, that they didn't make come with 'em, died... How? How are they actually gonna, how would they actually feel?

- Ian (56-year-old male)

Priority utility registries. The scholarly literature revealed a recommendation that power utility companies develop priority restoration lists of medically frail customers reliant on power (Trento & Allen, 2014). Several participants also recommended priority utility registries, with medically frail individuals, senior citizen communities, hospitals, and nursing homes as the highest priorities for power restoration. The company that powered the City of Long Branch did not offer a priority restoration registry.

Special needs registries. Monmouth County, New Jersey has a Special Needs Registry and the state of New Jersey has a Register Ready list where elderly and medically frail community members can register and provide information about their

special needs. Should they require emergency services, notes about them will appear in the 911 system and the dispatchers will notify the responders about the special needs.

I think that's an awesome start. Um I don't know really how much energy has been put into making sure that people with special needs are registered. It's a good thought. But it's only a thought if it's not being implemented. And people really aren't knowing about it and signing up for it.

- Tobias (female in her 60's)

The Special Needs Registry was available in Monmouth County as of 2008, a full four years before Hurricane Sandy. According to the registry's informational flyer, it was "created to help police officers and other emergency service personnel better assist residents with special needs in the event of an emergency by providing those first responders with vital information regarding a registrant's special needs, emergency contact information, physical description, and current photograph of the registrant." The registry was mentioned in a few newspaper articles. However, only two participants, Katia and Tobias, knew about it.

Katia learned about the registry from the police department and was tasked with spreading the word in her apartment complex for seniors and individuals with disabilities. Katia said that her neighbors did not have much interest in putting themselves on it and she could not understand why.

They wanted the um, they gave me a flyer to give each resident, especially the ones that were in a wheelchair, a walker, hard of hearing, for them to fill out. And someone from the police station would come here, interview them, and their information would be at city hall so when we have a disaster, and we had to be, they had to be, we had to be evacuated, they could come right here, know where they are, their apartment, everything, and (snaps fingers) take them out. And I thought that was very good! But no one here wanted to. Only a couple of people took advantage of it

- Katia (79-year-old female)

When asked about possible community interventions for elderly and medically

frail community members, seven participants mentioned something like the Special Needs Registry, where individuals who were frail, elderly, or homebound would be placed on the list to be checked on and assisted with preparations and evacuation before and resupplied after predicted storms.

Have people go door-to-door for those shut-ins and make sure that they're prepared. You know, a lot of older people aren't aware of what's going on on the outside... And, you know, to be able to bring them food and see if they have the proper medication that they need... I'm trying to think what else they could possibly need if they have food and they have their medication, you know? ...And if they have heat.

- Alex (69-year-old female)

The scholarly literature supported this special needs registry recommendation (Dostal, 2015; Zidek et al., 2014). Findings from this study confirmed that the registry would be a situational facilitator to household emergency preparedness of elderly and medically frail community members.

Transportation assistance.

I think the critical point is somebody who, who doesn't drive anymore, can't drive themselves to assistance. And they're forgotten. You know? 'Cause they haven't been out at church, you know? You forget about [neighbor's name] in C4.

- Jose (69-year-old female)

Transportation refers to the participant's ability to evacuate or get to the stores and distribution centers to obtain supplies. Mode of transportation did not always come up during the interview, but four participants disclosed that they had their own vehicles and still drove. Six participants disclosed that they relied on family or friends to drive them.

The City of Long Branch provided free evacuation assistance to the city's shelters to any resident who requested it for Hurricane Sandy. Few participants (n= 7, 21%)

knew that the city offered this evacuation assistance. Without prompting, six participants recommended free evacuation assistance for elderly and medically frail residents as a worthwhile community intervention. Once the participants were informed that free evacuation assistance was offered in the city, none of them felt that this community intervention was outlandish. Even though none of them had used the city's evacuation assistance, they all appreciated that it was available to them should they need it in the future.

They should be the first ones to be helped to be evacuated. Get them to a safer place.

- Cindy (51-year-old female)

Gaston said that he was lucky to own a wheelchair van, but suggested that the Monmouth County Senior Citizen and Disabled Residents Transportation busses be used to bring other wheelchair-bound community members to the shelters. Gaston did not believe that the National Guard trucks would be suited for transporting wheelchair bound residents. He felt that it would be difficult and dangerous for the soldiers to lift less-mobile people into their trucks.

Scholarly literature identified that inaccessible transportation and lack of means to evacuate as situational impediments to evacuation (Dostal, 2015; Smith & Notaro, 2009; Tuohy & Stephens, 2015). Evacuation assistance was a situational facilitator. The study findings support the recommendation that evacuation assistance should be provided to community members.

Responsibility.

One discursive construction found in the scholarly literature and journalism data sources was that individuals should not rely on the government for assistance after

disaster, because assistance is not guaranteed. However, the participants often mentioned the expectation that the city, ARC, FEMA, and National Guard would be there to help them in the days after the storm. Many of the participants ended up relying on these organizations for food and supplies in the days after Hurricane Sandy.

Well I think that the government, FEMA, whoever it is, has to do more to prepare us. To, to, uh, even to help us...during the disaster. Like, you know, just sending someone over to see what the, the damage has been is not enough! I mean, you need people to, to help, to, to do things for you.

- Fiona (80-year-old female)

Responsibility for preparedness as a discursive construction consisted of opinions on self- versus community versus governmental responsibility for individuals' preparedness activities. All of the data sources (scholarly literature, journalism, and interviews) emphasized self-responsibility for household emergency preparedness. However, the community, and the government as a representative of the community, should implement interventions that assist individual community members with their situational impediments to preparedness efforts. Readers will recall the discussion on the PKEMRA, which explicitly stated that responders must accommodate the access and functional needs of individuals with disabilities with actions, services, equipment, and physical, architectural, programmatic, and communications modifications (FEMA Emergency Management Institute, 2014). Responsibility for household emergency preparedness of elderly and medically frail community members should be shared, with the expectation that each individual community member take the lead on his or her own preparedness. As the review of the literature and findings from this study demonstrated, there are social and physical situational impediments that elderly and medically frail community members need assistance with to survive impending weather events.

Nurses.

The role of nurses in the disaster preparedness of vulnerable community members was conspicuously absent in the scholarly literature concerning household emergency preparedness. Nursing's role in preparedness was also absent in the journalism data sources. If nursing was mentioned in the journalism data, it was their role in evacuation of nursing homes or hospitals. Few participants spoke about nursing's role in their preparedness efforts. Nursing was thus labeled a Silent Actor on the situational map.

If nurses understand the causes, facilitators, and impediments to household emergency preparedness of elderly and medically frail community members, then nurses can provide more meaningful assistance to these community members prior to disasters. This would increase disaster-related community resilience (Heagele, 2016a).

Hospitals could probably provide, if they're discharging people, you have information about their, their current status. Are they ambulatory? You know, ask them! What would you do in an emergency? Do you need to, would you like to be put on a list?

- Jose (69-year-old female)

A few of the participants had suggestions for nurses on how to help vulnerable community members prior to predicted disasters. Jose recommended that nurses provide household emergency preparedness information when they discharge patients from the hospital. She also recommended that nurses ask the patients if they would like to be added to the Special Needs Registry. Maria felt that visiting nurses could provide household emergency preparedness information, but only after PI mentioned nurses as a potential information source. Maria also felt that elderly and medically frail community members should be sheltered in a hospital or nursing home during disaster, where they would have access to medical professionals, medications, and supplies. Maria felt that

nurses should be the ones to provide evacuation assistance to elderly and medically frail community members. Danielle wished that a nurse had called her before Hurricane Sandy to see if she was okay with medical supplies. Her home care organization only called her after the storm to check on her. Gert also recommended that nurses at least call elderly and medically frail community members to see if they need assistance with evacuation, shelter, or supplies before, during, and after disaster.

The PI theoretically sampled five professional nursing associations' (the American Nurses Association, New Jersey State Nurses Association, Association of Public Health Nurses, Visiting Nurses Associations of America, and Society for the Advancement of Disaster Nursing) Internet content on disaster preparedness to see what they had to say about nursing's role in disaster preparedness. These websites revealed more of a focus on the nurse's role in disaster response and recovery, rather than preparedness. In a historical and global textbook (Keeling & Mann-Wall, 2015) about nurses and disasters, again the focus was on the role of nursing in response and relief efforts. A search of the Society for the Advancement of Disaster Nursing website revealed links to educational resources about emergency preparedness of vulnerable older adults and persons with special needs (Society for the Advancement of Disaster Nursing, 2017). Interestingly, the Visiting Nurses Association of America website revealed the policy recommendation for the Centers for Medicare and Medicaid Services that visiting nurses not be required to prepare individual patient emergency preparedness plans (Visiting Nurses Associations of America, 2014).

When disaster preparedness is discussed, it is most commonly that nurses should be educated about disaster response and recovery as undergrads and via continuing

education (American Nurses Association, 2017; American Red Cross, 2012; Gable, 2017; Goodwin Veenema et al., 2016; Minami, 2007; Schmidt et al., 2011). Nurses were also advised to prepare their own households for disaster conditions.

The PI had the experience of working as a specialty care transport nurse in the county adjacent to the study setting. The PI often transported ventilator, oxygen, and electronic medical device-dependent patients from hospitals to their homes. The PI asked her patients if they had been educated on household emergency preparedness by their visiting nurse organization. Not a single patient answered in the affirmative. Most of the patients did not have generators in their homes.

The PI wondered what visiting nurse agencies do to prepare or educate their clients about household emergency preparedness. The PI also wondered if visiting nurses have time to educate their clients about preparedness or if they can bill for that education. The PI theoretically sampled a visiting nurse from the study setting.

The PI was informed that the only time disaster preparedness was discussed with the home care patients was when there was an impending storm. The discussion only involved oxygen, medication, and medical supply quantities. The nurse's role was to ensure that the patient had "enough of these supplies," but did not specify how many days worth of extra supplies the organization provided. The nurse did conclude the conversation with an acknowledgement that all of their patients probably should be educated about household emergency preparedness. She did not mention if household emergency preparedness education was billable.

Home care nurses should accept responsibility of ensuring that their patients have adequate household emergency preparedness plans (Christopher & Goldstein, 2014;

Smith & Notaro, 2009; Trento & Allen, 2014; Zidek et al., 2014). On FEMA's household emergency preparedness informational brochures for older Americans, learners were advised to talk to their home service providers about their emergency plans. On the New Jersey Department of Health's medical needs shelter suggested packing list, visiting nurses and home health aides are encouraged to accompany those within their care to the medical needs shelters.

Preparing vulnerable community members as a prevention intervention is not discussed as a role of the nurse in disaster preparedness. In the literature, nurses are advised to prepare for the surge of patients that place a toll on compromised healthcare facilities in the disaster setting. Perhaps some of this surge can be avoided by adequately preparing the elderly and medically frail community members prior to the disaster. This study should motivate nurses to actively prepare themselves and their vulnerable community members prior to disaster as a prevention measure.

Consequences of Household Emergency Preparedness

The discursive constructions for household emergency preparedness found in the scholarly literature would lead readers to believe that adequate household emergency preparedness prevents the need for rescue, prevents exacerbation of chronic conditions, and prevents loss of life. Fortunately, disasters are not an "every day lived experience," a topic favored by most qualitative researchers. Because of this, the consequences of adequate household emergency preparedness could not objectively be evaluated by this study. None of the participants had a disaster supply kit before or for Hurricane Sandy. Based on their Hurricane Sandy experience (and probably their participation in this study), most of the participants intended to prepare for future disasters with a supply kit.

The participants have not been tested with a severe weather event like Hurricane Sandy since they engaged in preparedness activities. It is unclear if having a supply kit leads to the outcomes promised in the scholarly literature. However, the participants who did have a kit at the time of their interviews told the PI that the supplies made them feel safer and ready to endure future storms. The participants felt that a supply kit would mitigate some of their risks in disaster. At least one consequence of household emergency preparedness seems to be subjective preparedness.

Contribution of Findings

Study findings were compared to the extant literature and the following household emergency preparedness variables were confirmed: (a) lack of education on how best to prepare was a situational impediment; (b) lack of financial means to purchase and maintain disaster supplies was a situational impediment; (c) individual's beliefs that they were not at risk for death, injury, or property damage was a situational impediment; (d) accepting death as a result of disaster was a situational impediment; (e) emotional attachment to the home was a situational impediment; (f) not wanting to leave pets behind was a situational impediment for evacuation; (g) previous experience with disaster was a situational facilitator; (h) low cost of self protection was a situational facilitator; (i) caregiving responsibilities were a situational facilitator for supplies, but a situational impediment for evacuation; (j) trusted information sources were a situational facilitator (k) household emergency preparedness information dissemination via venues not typically used by elderly and medically frail community members was a situational impediment; (l) medical frailty was a situational impediment; (m) effective communication infrastructure was a situational facilitator; (n) accurate risk perception

was a situational facilitator; (o) belief that one can mitigate risk was a situational facilitator, and; (p) vicarious experience with disaster was a situational facilitator.

The following emergency preparedness variables seemed to contradict the extant literature: (a) fatalism, or individual's beliefs that they were unable to mitigate risks was a situational impediment; (b) lack of space to store supplies was a situational impediment; (c) people already living in survival mode did not want to prepare for an event that may never happen; (d) lack of trust in scientific and governmental authorities was a situational impediment, and; (e) individual's beliefs that evacuation assistance would put others at risk was a situational impediment to evacuation. The participants of this study did not experience these variables as situational impediments.

The following household emergency preparedness variables were found to be inconclusive: (a) surviving a previous disaster with minimal negative consequences was a situation impediment; (b) the inconvenience of maintaining supplies was a situational impediment; (c) loss of personal valuables in a previous disaster was a situational impediment; (d) lack of accessible transportation was a situational impediment for evacuation, and; (e) lack of means to evacuate was a situational impediment for evacuation. Some of the participants experienced these variables as predicted, some experienced the opposite, and some of these variables were not mentioned at all.

According to PADM theoretical conclusions, past experience with disaster is a consistent predictor of engagement in household emergency preparedness activities (Lindell, 2013). The findings of this study add evidence to this theoretical conclusion. The PADM relational propositions supported by the findings of this study were (Lindell & Perry, 2012, pp. 617-629): (a) information from environmental cues and social

warnings, together with prior beliefs about the hazard, produces a perception of personal risk; (b) risk perceptions provide the basis for protective action decision-making; (c) protective action decision-making combines with situational facilitators and impediments to produce a behavioral response; (d) information seeking occurs when there is uncertainty; (e) hazard proximity is predicted to cause hazard experience; (f) hazard experience is predicted to cause risk perception; (g) risk perception is predicted to cause hazard adjustment adoption, and; (h) perceptions of the information sources' expertise, trustworthiness, and protection responsibility affects risk area residents' risk perceptions, which, in turn, affects their adoption of hazard adjustments.

This theory-generating study may inform future modifications of the PADM. This study added to PADM theory development by including a sample of community members who were elderly and medically frail, and thus more vulnerable in a disaster situation. Providing this population the knowledge and skills needed to become prepared encouraged household emergency preparedness self-efficacy. Medical frailty empirical referents can now be added to the model, especially under the receiver characteristics and the situational impediments and facilitators propositions.

The following new knowledge was generated from this study: (a) once educated, elderly and medically frail community members accept self-responsibility for and are motivated to prepare for disaster; (b) the preferred information sources of elderly and medically frail community members were gleaned; (c) plausible causal conditions of household emergency preparedness of elderly and medically frail community members were discovered; (d) relevant community interventions to overcome situational impediments to adequate household emergency preparedness were recommended by

elderly and medically frail community members, and; (e) the role of the nurse in household emergency preparedness of elderly and medically frail community members was explored. The findings from this study filled some gaps in the literature on where preparedness disparities are rooted, how a disaster event affects preparedness, and the social, economic, and environmental influences on household emergency preparedness of elderly and medically frail community members. To the PI's knowledge, this was the only qualitative study with this research question conducted with elderly and medically frail community members in a coastal urban setting of the U.S. Additional contributions of the study findings will be discussed in the implications for practice in chapter seven.

Chapter Seven: Conclusion

Summary

The PI conducted a qualitative Situational Analysis Grounded Theory study to understand how older and/or medically frail adults have experienced disaster and how this experience impacts what they do now to prepare for disaster. A second purpose of the study was the generation of theory regarding the process through which community members prepare for disasters. The PI also hoped to inspire nurses to meaningfully contribute to disaster-related community resilience by engaging in the preparedness efforts of their communities.

An interview guide inspired by current theory was developed to collect data from 33 elderly and/or medically frail participants living independently in a coastal urban setting of the U.S. Additional data sources included field notes, memos, peer-reviewed research and journal articles, emergency management text books, newspaper articles, television broadcasts, documentaries, household emergency preparedness educational materials, reports from senior advocacy groups, attendance at emergency preparedness conferences, coffee table books, non-fiction books, one memoir, one cookbook, emergency management plans, public policies, the PADM, and flood maps.

Data collection and analysis occurred simultaneously. The interview transcripts and other data were thematically analyzed through an iterative process. The codes emerged from the data and were grouped using categories, concepts, and lower-level concepts. The PADM was used to inspire the initial coding of the data. As the study progressed, codes were determined according to the emerging theory. The extracted codes were placed on situational, social worlds, and positional maps that represented both

the human and non-human factors that mattered to the situation (Clarke, 2005). Once the maps were drafted, the PI specified the relationships of the elements to develop the new theory (Clarke, 2005). The research question of how older and or medically frail adults experienced disaster and how this experience impacts what they do now to prepare for disaster was answered. None of the participants were prepared for disaster according to FEMA recommendations at the time of their interviews.

Conclusion

Based on the findings, the PI's theory is that coastal urban elderly and medically frail community members are generally considered unprepared for disaster according to FEMA recommendations. Their lack of preparedness is due in large part to lack of education on how best to prepare. Once educated, motivation for self-responsibility of household emergency preparedness can be expected. However, community interventions like distributing disaster supply kits and offering evacuation assistance help overcome their situational impediments to preparedness and provide the best chance for these vulnerable community members to survive disasters without becoming ill or injured or experiencing a decline in their baseline functional status. If elderly and medically frail community members are incidentally prepared, it is largely due to their past experience with disaster or their professional experience.

The causal conditions of household emergency preparedness were past experience with disaster, vicarious experience, geography and climate change, and the preparedness, response, relief, and recovery efforts of disaster responders. The strategies employed by the participants in response to the causal conditions were stocking up on supplies, staying informed, and checking on neighbors. The situational facilitators and impediments were

household emergency preparedness education, social support, pets, trusted information sources, risk perception, community interventions, and responsibility perceptions. The objective consequences of preparedness could not be determined, but the subjective consequences were feelings of safety and readiness, and anticipated disaster resilience. Study findings were compared to the extant literature and the household emergency preparedness variables that were confirmed, contradicted, or inconclusive were discussed.

Strengths and Limitations

The strength of this study that the PI is most proud of is that the study gave voices to those who were previously silent in household emergency preparedness research. Participation in this study provided a venue for participants to tell their stories, voice their concerns, and make suggestions that should persuade disaster responders and other community members to take action. These actions could save lives and contribute to disaster resilience of the community.

This study's research question had not been investigated qualitatively in the U.S. or on a coastal urban elderly and medically frail sample. Other strengths of this study included the transferable protocol, analysis, and findings. The sample of elderly and medically frail community members was diverse and provided readers with lessons from individuals with different medical conditions and levels of preparedness, social support, baseline functional status, income, and education. Causal relationships between the situational impediments, facilitators, and household emergency preparedness were established. The rigorous, transparent audit trail and member checking lend support to the validity of the findings.

One limitation of this study was that the participants resided in one coastal urban community in New Jersey that implemented several effective community interventions prior to a disaster. Their disaster experience may not reflect the experience of elderly and medically frail community members in other coastal urban communities. However, it is now understood that study results are situated knowledge, produced and consumed by particular groups, and to assume generalizability is naïve (Clarke, 2005). Other limitations include self-report of preparedness activities, social desirability bias, and use of English-speaking participants only.

Implications and Recommendations

At a time when disasters and public health emergencies are occurring with increasing frequency, it is essential that the breadth and untapped potential of the nursing profession be fully understood and deployed.

- Goodwin Veenema et al. (2016, p. 197)

Nursing's role in household emergency preparedness is to serve as a role model, advocate, and trusted risk communicator (Zidek et al., 2014). Nurses could provide information to their patients and neighbors about community resources that could assist these community members with their preparedness efforts. Nurses work the front line of disasters and their actions are situated within local responses (Keeling & Mann-Wall, 2015). Nurses from all specialties can make an enormous contribution before disasters occur by participating in the development and implementation of legislation, policies, and procedures that promote disaster-related community resilience (Minami, 2007). Nurses are encouraged to: (a) participate in strategic planning and implementation of disaster plans, drills, and exercises; (b) be present on disaster-related planning committees, and; (c) promote preparedness amongst individuals in their care, families, and communities (Goodwin Veenema et al., 2016; Minami, 2007).

If readers are not ready to actively participate on emergency planning and policy development committees, there are several simpler actions that can be done to promote preparedness in the community: (a) as trusted messengers, nurses from all specialties are encouraged to share risk communication messages via social media, the telephone, or in person to make sure that community members understand that a risk exists and that they are able to mitigate that risk with preparedness actions; (b) share paper copies of the FEMA checklist to those who do not frequent the computer; (c) check on elderly and medically frail neighbors before disaster, assess their means and capabilities to implement recommended preparedness actions, and ask if they need a ride to a shelter or the store; (d) give disaster supply kits as gifts (they are perfect for any occasion); (e) donate supply kits to fundraising events; (f) for nursing honor society projects, collect disaster supplies, assemble kits, and distribute them to vulnerable community members, and; (g) add a disaster supply checklist, emergency preparedness education, and the Special Needs Registry information to the discharge instructions of all patients. These simple actions will make a positive difference in the disaster resilience of the community. They may even save a life.

This study added to the evidence that elderly and medically frail community members are generally not prepared for disaster. However, studies conducted on nurses and student nurses have also found that the majority of those samples were not considered prepared for disaster (Schmidt et al., 2011; Whetzel, Walker-Cilo, Chan, & Trivett, 2013). Nurses from all specialties should prepare their households for disaster. Readers are encouraged to peruse Table 8, Table 10, and Appendix D again to learn what actions and supplies are recommended for household emergency preparedness. Nurses

who do not have their households adequately prepared do not role model good preparedness behaviors for fellow community members. Nurses need to prepare their households so that they may concentrate on their work duties in disasters.

Other recommendations gleaned from this study are that senior and disability housing should always have backup generators for the elevators, disaster supply buckets should be distributed to elderly and medically frail community members free of cost, early prescription medication refills should be permitted prior to predicted disasters, and disaster supply checklists should be hand delivered by trusted community messengers. Greater efforts need to be made to disseminate household emergency preparedness education and storm information to homebound individuals and individuals who do not use computers. Emergency preparedness classes should be offered at the senior buildings and centers. The education should be relevant for the non able-bodied members of the community as well. Community and faith-based organizations may serve as additional information sources and disseminators of household emergency preparedness education. Healthcare providers in all care settings need to educate patients and their families on household emergency preparedness and the consequences of lack of preparedness. When responders provide in-person evacuation notices, they should also provide a copy of a packing list, recommended home preparations, and shelter locations, and offer transportation assistance.

The journalism data sources provided plenty of preparedness actions, response efforts, and vicarious experience for consumers to learn from via the pictures of and articles about preparedness, response efforts, rescues during the disaster, and horrific home and community damage from past storms. However, few of the journalism data

sources provided a household emergency preparedness checklist. With pictures and stories such as these, the journalism data sources had a captive audience for household emergency preparedness education. Newspapers should include a disaster supply checklist as an insert or publish one with the purpose of clipping it out and bringing it to a store in the days prior to a predicted disaster. The household emergency preparedness recommendations should also be consistent and, to foster social support, always include a recommendation to check on neighbors. If community members are interviewed or photographed demonstrating faulty preparedness behaviors, perhaps a disclaimer could be included saying as much. The reporter could then provide the recommended preparedness action. All preparedness articles should include a message that implementing preparedness actions even if “nothing happens at all” could do no harm. It is always good to be prepared because not all disasters are predicted.

Implications for practice.

The remainder of this section is focused on the public health nurse’s role in disaster preparedness and is from the scholarly literature review, not the interview or journalism data sources. However, most of the recommendations from the literature were supported by the data from this study. Nurses from all specialties, public health professionals, and emergency managers may also find these recommendations relevant to their practice. Recommended public health nursing and emergency management practices are divided into different phases of a disaster.

Central to both pre- and postdisaster periods is the need to maintain effective communication with community members and other agencies. One of the core competencies for public health and emergency management professionals is the ability to

apply principles of crisis and risk communication. Public health nurses must take into account potential visual, auditory, and cognitive impairments, and offer unambiguous, concise, and redundant messages via print, television, radio, the Internet, and social and religious networks (Bea, 2007; Colten et al., 2008; Crook & Vu, 2011; Fernandez et al., 2002; HelpAge International, 2012; Mayhorn, 2005). Age and disability-appropriate messages should be printed in large font on non-glare paper (Jan & Lurie, 2012; Lamb et al., 2008; Tuohy, Stephens, et al., 2014). Auditory alert sounds should be broadcasted at frequencies that older adults with hearing loss can perceive (Mayhorn, 2005). Trust between the community members and the authorities issuing the directives is vital to the effectiveness of the risk communication (Twigg, 2013).

Predisaster interventions. Predisaster interventions include locating vulnerable community members, assessing their resources and capabilities for household emergency preparedness, educating them about household emergency preparedness, including them in emergency planning, and assuring that evacuation assistance, medications, healthcare, and appropriate shelters will be accessible to them in disaster.

Locating vulnerable community members can be achieved by seeking the assistance of providers and organizations involved in the routine care of these individuals, such as dialysis centers, senior centers, home delivery of meals organizations, home healthcare programs, ambulance companies, church-based service groups, retirement community managers, insurance companies, and utility companies who have lists of life support equipment customers (Cherniack et al., 2008; Christopher & Goldstein, 2014; Clay et al., 2014; DeSalvo et al., 2014; Fernandez et al., 2002; Foster et al., 2011; Henderson et al., 2010; True et al., 2013; Zidek et al., 2014). If sharing

client information is against policy, public health nurses can emphasize the responsibility of social service agencies to prepare their clients before disaster and continue their services immediately after the disaster (Colten et al., 2008; Lamb et al., 2008).

Population surveys conducted with Geographical Information Systems can map the locations of the elderly and the medically frail in the community (Benson, 2007; Fernandez et al., 2002; Lamb et al., 2008), as well as optimal shelters locations.

Appropriate selection of shelter sites is important as individuals may be housed longer than a few days. It is particularly important that special needs of the elderly and the medically frail are considered. Buildings should be clutter free, equipped with ramps, adequate lighting, grab bars, handrails, and handicapped accessible (Christopher & Goldstein, 2014; Dostal, 2015; HelpAge International, 2012; Jones, 2010; Lamb et al., 2008).

Currently, many shelters are not pet friendly. People may risk their lives and refuse evacuation in order to be with their service animals and pets. Public health and emergency management professionals should consider designating pet friendly shelters (Jones, 2010).

Medical needs shelters should be made mandatory and opened before the storm arrives. The scope of care in a medical needs shelter will likely be very limited and sub-acute in nature, including urinary catheter maintenance, medication management, blood pressure monitoring, ostomy care, oxygen, nebulizer treatments, provision of medical supplies, minor wound care, glucose monitoring, obtaining orders for prescription refills, and assistance with activities of daily living (Medical Reserve Corps, 2014; New Jersey Department of Health, 2013).

People eligible for medical needs shelters should include: (a) people in hospice and home health; (b) people with draining wounds, tracheostomies, feeding tubes, or intravenous catheters; (c) people who need oxygen and electrical medical devices; (d) people with diabetes; (e) frail and elderly people; (f) people who require assistance with activities of daily living; (g) people who have undergone recent major surgery, and; (h) those whose mental status requires continuous monitoring and/or a secure environment (New Jersey Department of Health, 2013). Medications used to treat chronic illnesses must be stocked, as most medication needs postdisaster are for chronic conditions (HelpAge International, 1999, 2012; Mokdad et al., 2005; Seplaki et al., 2006). Before a disaster occurs, public health professionals should form partnerships with medication manufacturers, distributors, and retail pharmacies to ensure the supply of needed medications during a disaster (Ko et al., 2014).

Disaster preparedness should be integrated in school so that children can educate their families (Clay et al., 2014). Thompson et al. (2014) suggested using animal networks, like service pet associations, veterinarian offices, or rabies clinics to distribute disaster preparedness information for both the pet and the family. Healthcare providers are trusted messengers who can routinely speak to medically frail patients and mentally ill patients about disaster preparedness (Al-Rousan et al., 2014; Ardalan et al., 2010; Bethel et al., 2011; Christensen & Castaneda, 2014; Clay et al., 2014; Colten et al., 2008; Eisenman et al., 2014; Fernandez et al., 2002; Foster et al., 2011; Ko et al., 2014; McClure et al., 2011; Tuohy, Johnston, et al., 2014). Patients dependent on electronic medical devices or peritoneal dialysis should be advised to register with the water and power companies for priority service (A. Miller & Arquilla, 2008; Trento & Allen, 2014).

Patients living with end stage renal disease should be advised to arrange for their dialysis treatments before predicted disasters (Foster et al., 2011; Render-Cohen & Render-Dinerstein, 2005). Elderly and medically frail patients should keep their medical history and medication list on their person at all times (Lamb et al., 2008; A. Miller & Arquilla, 2008; Trento & Allen, 2014). Reminders to check on elderly neighbors should be included in all public service announcements concerning disaster (Colten et al., 2008). Elderly and medically frail community members should be educated about medication preparedness and encouraged to refill their medications early when disasters are predicted (Office of the Assistant Secretary for Preparedness and Response, 2015).

Protection of the elderly and the medically frail is an interdisciplinary responsibility, with collaboration needed among public health, emergency management, healthcare, and community- and faith-based organizations (Benson, 2007; Christopher & Goldstein, 2014; DeVos, 2011; J. Smith & Anderscavage, 2011; Trento & Allen, 2014; Tuohy, Stephens, et al., 2014). Elderly and medically frail individuals also need to be on the team because they will contribute valuable information about meeting their needs for emergency planning and response decisions (Benson, 2007; DeSalvo et al., 2014; FEMA Emergency Management Institute, 2014; Gershon et al., 2013; HelpAge International, 1999, 2012; Henderson et al., 2010; Jones, 2010; Powell et al., 2009; Rooney & White, 2007; Smith & Notaro, 2009; Tuohy, Stephens, et al., 2014). Public health nurses can also lobby policymakers to establish emergency evacuation building standards for people with mobility deficits and support efforts to develop affordable alternative energy sources to be used in power outages (Rooney & White, 2007).

Disaster interventions. Elderly and medically frail individuals in danger zones

should be evacuated in advance of disasters with their necessary assistive devices (Benson, 2007; Cranmer & McKay, 2011; HelpAge International, 2012; Lamb et al., 2008; A. Miller & Arquilla, 2008). Evacuation assistance is best accomplished by providing elderly and medically frail individuals with transportation and a host site (Abramson et al., 2015b; Christensen & Castaneda, 2014; HelpAge International, 2012; Jones, 2010; McClure et al., 2011; Tuohy & Stephens, 2015). Thompson et al. (2014) caution public health and emergency management professionals that separating an owner from his or her pet can produce the same grief reaction as the death of a family member. If pets are not evacuated, owners may risk their lives by refusing evacuation or returning too soon after the disaster to find their pets.

Postdisaster interventions. Postdisaster interventions include ensuring equitable distribution of supplies, providing psychological care, and assisting individuals in obtaining governmental assistance.

Meals distributed particularly to elderly, frail, and chronically ill individuals should be heart-healthy and low-sodium (A. Miller & Arquilla, 2008). Meals-Ready-to-Eat packages offered in disaster situations are too high in glucose and sodium for people with chronic diseases (Benson, 2007). During distribution of meals, or any disaster relief supplies, the elderly and the medically frail need a fast track queue as they are unable to tolerate standing in long lines (DeSalvo et al., 2014).

The stress associated with the disaster can exacerbate chronic illnesses by causing confusion, elevating blood pressure, and altering blood glucose control. Psychosocial interventions, such as grief counseling, should be provided (HelpAge International, 1999; Lamb et al., 2008; Smith & Notaro, 2015). Assistance with filling out forms to obtain

governmental assistance should be provided to the elderly and the medically frail, especially if they are online documents.

Implications for knowledge generation.

Through development of their own body of disaster knowledge, nurses can further increase public understanding of what it is they contribute to the field.

- Keeling and Mann-Wall (2015, p. 269)

Nurses are encouraged to conduct interventional disaster research studies, with both quantitative and qualitative designs, to identify nursing practices that are effective in improving population outcomes across the disaster life cycle (Goodwin Veenema et al., 2016; Minami, 2007). Implications for knowledge generation gleaned from this study include a call for an exploration of the usefulness of a disaster preparedness aisle in stores as a community intervention, on whether or not elderly and medically frail community members would willingly assist the OEM with disaster plans, and the Internet use of elderly and medically frail community members for disaster information. Cost benefit analyses of specific community interventions would also be useful to lend support for funding requests. The PI did not ask participants about specific medical conditions, but none of the participants disclosed that they had a hereditary blood disorder or end-stage renal disease, conditions frequently identified in the literature that increase an individual's vulnerability in disasters. A qualitative exploration of the household emergency preparedness process of individuals with these conditions could inform policy development and disaster plans to better meet their needs and keep them healthy in disaster. Finally, the consequences of adequate household emergency preparedness should be explored to determine if prepared elderly and medically frail community members experience better outcomes in rates of illnesses or injuries, mortality, and

baseline functional status related to disaster compared to their unprepared counterparts.

Elderly and Medically Frail Community Members as Assets

This study cannot be concluded without mention of how the elderly and the medically frail can also be assets in disaster. Readers will recall that several participants in this study volunteered with the relief and recovery efforts of their community. Elderly and medically frail individuals should not just be viewed as helpless and vulnerable. These community members can be used as trusted messengers for risk communication to their families and communities (HelpAge International, 1999; Powell et al., 2009). They share their advice and experience from past disasters and instill hope for the future in their loved ones (Ardalan et al., 2010; Benson, 2007; HelpAge International, 1999; Henderson et al., 2010; Tuohy et al., 2015; Tuohy, Stephens, et al., 2014). These individuals have also been known to look after supplies, the sick and injured, children, and other dependents while the able-bodied community members engage in recovery activities (Ardalan et al., 2010; HelpAge International, 1999; Mayhorn, 2005; Powell et al., 2009; Roberto, Henderson, Kamo, & McCann, 2010; Tuohy et al., 2015). They also teach younger generations about traditional survival skills, alternative medicines, and provide local environmental knowledge that can guide resource distribution (Ardalan et al., 2010; HelpAge International, 1999; Roberto et al., 2010). Utilizing and protecting the elderly and the medically frail before, during, and after disaster will enhance community resilience overall.

References

- Ablah, E., Konda, K., & Kelley, C. L. (2009). Factors predicting individual emergency preparedness: A multi-state analysis of 2006 BRFSS data. *Biosecurity and Bioterrorism*, 7(3), 317-330. doi:10.1089/bsp.2009.0022
- Abramson, D., Van Alst, D., Merdjanoff, A., Piltch-Loeb, R., Beedasy, J., Findley, P., . . . Tobin-Gurley, J. (2015a). *The Hurricane Sandy person report: Disaster exposure, health impacts, economic burden, and social well-being* Retrieved from <http://njadapt.rutgers.edu/docman-lister/conference-materials/137-scafh-person-report-final/file>
- Abramson, D., Van Alst, D., Merdjanoff, A., Piltch-Loeb, R., Beedasy, J., Findley, P., . . . Tobin-Gurley, J. (2015b). *The Hurricane Sandy place report: Evacuation decisions, housing issues and sense of community*. Retrieved from <http://academiccommons.columbia.edu/catalog/ac:187430>
- Agar, M. (1996). *The professional stranger* (2nd ed.). San Diego, CA: Academic Press.
- Al-Rousan, T. M., Rubenstein, L. M., & Wallace, R. B. (2014). Preparedness for Natural Disasters Among Older US Adults: A Nationwide Survey. *American journal of public health*, 104(3), 506-511. doi:10.2105/AJPH.2013.301559
- American Nurses Association. (2010a). *Nursing: Scope and standards of practice*. Silver Spring, MD: American Nurses Association.
- American Nurses Association. (2010b). *Nursing's social policy statement: The essence of the profession*. Silver Spring, MD: American Nurses Association.
- American Nurses Association. (2017). Disaster preparedness and response Retrieved from <http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/DPR>
- American Red Cross. (2012). *The future of American Red Cross nursing: A blueprint for action*. Retrieved from http://www.redcross.org/images/MEDIA_CustomProductCatalog/m12940094_Blueprint_for_Nursing_9_2012.pdf
- Apatu, E. J., Gregg, C. E., Richards, K., Sorensen, B. V., & Wang, L. (2013). Factors affecting household adoption of an evacuation plan in American Samoa after the 2009 earthquake and tsunami. *Hawai'i journal of medicine & public health : a journal of Asia Pacific Medicine & Public Health*, 72(8), 267-272.

- Apte, A., Heath, S. K., Pico, A., & Tan, Y. H. R. (2015). Evacuating people with mobility-challenges in a short-notice disaster. *Decision Sciences*, 46(4), 731-754. doi:10.1111/dec.12153
- Ardalan, A., Naieni, K. H., Rezaie, M., Mazaheri, M., Teimoori, F., & Pourmalek, F. (2010). Older people's needs following major disasters: A qualitative study of Iranian elders' experiences of the Bam earthquake. *Ageing and Society*, 30(1), 11-23. doi:10.1017/S0144686X09990122
- Baker, L. R., & Cormier, L. A. (2013). Disaster preparedness and families of children with special needs: A geographic comparison. *Journal of Community Health*, 38(1), 106-112. doi:10.1007/s10900-012-9587-3
- Bea, K. (2007). *Federal Emergency Management policy changes after Hurricane Katrina: A summary of statutory provisions*. Retrieved from <https://www.fas.org/sgp/crs/homsec/RL33729.pdf>
- Becker, J. S., Johnston, D. M., Paton, D., & Ronan, K. R. (2013). Salient Beliefs About Earthquake Hazards and Household Preparedness. *Risk Analysis*. doi:10.1111/risa.12014
- Benson, W. F. (2007). *CDC's disaster planning goal: Protect vulnerable older adults*. Retrieved from http://www.cdc.gov/aging/pdf/disaster_planning_goal.pdf
- Bergstrand, K., Mayer, B., Brumback, B., & Zhang, Y. (2015). Assessing the Relationship Between Social Vulnerability and Community Resilience to Hazards. *Social Indicators Research*, 122(2), 391-409. doi:10.1007/s11205-014-0698-3
- Bethel, J. W., Foreman, A. N., & Burke, S. C. (2011). Disaster preparedness among medically vulnerable populations. *American Journal of Preventive Medicine*, 40(2), 139-143. doi:10.1016/j.amepre.2010.10.020
- Birks, M., Chapman, Y., & Francis, K. (2008). Memoing in qualitative research: Probing data and process. *Journal of Research in Nursing*, 13(1), 68-75. doi:10.1177/1744987107081254
- Brown, K. C., Horner, N., Fankhauser, M., Roth Jr, J., & Victoroff, T. (2012). Assessment of household preparedness through training exercises - two metropolitan counties, Tennessee, 2011. *Morbidity and Mortality Weekly Report*, 61(36), 720-722.
- Chan, J. L., & Theodosis, C. (2011). Public-private partnerships during emergencies. In G. B. Kapur & J. P. Smith (Eds.), *Emergency public health: Preparedness and response* (pp. 83-101). Sudbury, MA: Jones and Bartlett Learning.

- Chandra, A., Williams, M., Plough, A., Stayton, A., Wells, K. B., Tang, J., & Horta, M. (2013). Getting actionable about community resilience: The Los Angeles county community disaster resilience project. *American journal of public health, 103*(7), 1181-1189. doi:10.2105/AJPH.2013.301270
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Thousand Oaks, CA: Sage Publications.
- Charmaz, K. (2014). *Constructing grounded theory* (2nd ed. ed.). Los Angeles, CA: Sage.
- Chen, V., Banerjee, D., & Liu, L. (2012). Do people become better prepared in the aftermath of a natural disaster? The hurricane Ike experience in Houston, Texas. *Journal of Public Health Management & Practice, 18*(3), 241-249 249p.
- Cherniack, E. P., Sandals, L., Brooks, L., & Mintzer, M. J. (2008). Trial of a survey instrument to establish the hurricane preparedness of and medical impact on a vulnerable, older population. *Prehospital and disaster medicine : the official journal of the National Association of EMS Physicians and the World Association for Emergency and Disaster Medicine in association with the Acute Care Foundation, 23*(3), 242-249.
- Chesser, A., Ablah, E., Hawley, S. R., Wolfe, D., St. Romain, T., Grube, C. D., & Molgaard, C. (2006). Preparedness needs assessment in a rural state: Themes derived from public focus groups. *Biosecurity and Bioterrorism, 4*(4), 376-383. doi:10.1089/bsp.2006.4.376
- Christensen, J. J., & Castaneda, H. (2014). Danger and dementia: Caregiver experiences and shifting social roles during a highly active hurricane season. *Journal of Gerontological Social Work, 57*(8), 825-844. doi:10.1080/01634372.2014.898009
- Christopher, M. A., & Goldstein, J. (2014). The visiting nurse service of New York's response to Hurricane Sandy. *American Journal of Nursing, 114*(10), 55-62.
- Clarke, A. E. (2005). *Situational analysis: Grounded theory after the postmodern turn*. Thousand Oaks, CA: Sage Publications, Inc. .
- Clay, L. A., Goetschius, J. B., Papas, M. A., & Kendra, J. (2014). Influence of mental health on disaster preparedness: Findings from the Behavioral Risk Factor Surveillance System, 2007-2009. *Homeland Security & Emergency Management, 11*(3), 375-392. doi:10.1515/jhsem-2014-0013
- Colten, C. E., Kates, R. W., & Laska, S. B. (2008). Three years after Katrina: Lessons for community resilience. *Environment, 50*(5), 36-47. doi:10.3200/ENVT.50.5.36-47

- Columbia University. (2011). The American Preparedness Project: Executive summary: Where the US public stands in 2011 on terrorism, security, and disaster preparedness. *Columbia University Academic Commons*, 1-6.
- Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed. ed.). Los Angeles, CA: Sage.
- Cranmer, H. H., & McKay, M. P. (2011). Rapid needs assessments. In G. B. Kapur & J. P. Smith (Eds.), *Emergency public health: Preparedness and response* (pp. 185-198). Sudbury, MA: Jones and Bartlett Learning.
- Creswell, J. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Los Angeles: Sage.
- Crook, J., & Vu, A. (2011). Extreme temperature emergencies: Heat waves and cold storms. In G. B. Kapur & J. P. Smith (Eds.), *Emergency public health: Preparedness and response* (pp. 425-443). Sudbury, MA: Jones and Bartlett Learning.
- de Boer, J., Wouter Botzen, W. J., & Terpstra, T. (2015). More than fear induction: Toward an understanding of people's motivation to be well-prepared for emergencies in flood-prone areas. *Risk Analysis*, 35(3), 518-535. doi:10.1111/risa.12289
- DeBastiani, S. D., & Strine, T. (2012). Household preparedness for public health emergencies: 14 states, 2006-2010. *Center for Disease Control and Prevention Morbidity and Mortality Weekly Report*, 61(36), 713-719.
- Delery, B. (2015). Medical needs sheltering. Retrieved from <http://www.co.hunterdon.nj.us/health/php/MedicalNeedsSheltering.html>
- Denzin, N. K., & Lincoln, Y. S. (2011). *The SAGE handbook of qualitative research* (4th ed.). Los Angeles, CA: SAGE Publications, Inc. .
- Der-Martirosian, C., Atia, M., Chu, K., Mitchell, M. N., Dobalian, A., & Strine, T. (2014). General household emergency preparedness: A comparison between veterans and nonveterans. *Prehospital and Disaster Medicine*, 29(2), 134-140. doi:10.1017/S1049023X1400020X
- DeSalvo, K., Lurie, N., Finne, K., Worrall, C., Bogdanov, A., Dinkler, A., . . . Kelman, J. (2014). Using Medicare data to identify individuals who are electricity dependent to improve disaster preparedness and response. *American journal of public health*, 104(7), 1160-1164.

- DeVos, E. (2011). Hurricanes, tsunamis, and cyclones. In G. B. Kapur & J. P. Smith (Eds.), *Emergency public health: Preparedness and response* (pp. 403-424). Sudbury, MA: Jones and Bartlett Learning.
- Diekman, S. T., O'Neil, M. E., MacK, K. A., & Kearney, S. P. (2007). Qualitative study of homeowners' emergency preparedness: Experiences, perceptions, and practices. *Prehospital and Disaster Medicine*, 22(6), 494-501. doi:10.1017/S1049023X00005318
- Doran, K. M., McCormack, R. P., Johns, E. L., Carr, B. G., Smith, S. W., Goldfrank, L. R., & Lee, D. C. (2016). Emergency department visits for homelessness or inadequate housing in New York City before and after Hurricane Sandy. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 93(2), 331-344. doi:10.1007/s11524-016-0035-z
- Dostal, P. J. (2015). Vulnerability of urban homebound older adults in disasters: A survey of evacuation preparedness. *Disaster Medicine And Public Health Preparedness*, 9(3), 301-306. doi:10.1017/dmp.2015.50
- Doyle, S. (2013). Reflexivity and the capacity to think. *Qualitative Health Research*, 23(2), 248-255. doi:doi:10.1177/1049732312467854
- Durant, T. J. (2011). The utility of vulnerability and social capital theories in studying the impact of Hurricane Katrina on the elderly. *Journal of Family Issues*, 32(10), 1285-1302 1218p. doi:10.1177/0192513X11412491
- Eisenman, D. P., Bazzano, A., Koniak-Griffin, D., Tseng, C. H., Lewis, M. A., Lamb, K., & Lehrer, D. (2014). Peer-Mentored Preparedness (PM-Prep): A new disaster preparedness program for adults living independently in the community. *Intellectual and Developmental Disabilities*, 52(1), 49-59.
- Eisenman, D. P., Cordasco, K. M., Asch, S., Golden, J. F., & Glik, D. (2007). Disaster planning and risk communication with vulnerable communities: lessons from Hurricane Katrina. *American journal of public health*, 97 Suppl 1, S109-115. doi:10.2105/AJPH.2005.084335
- Eisenman, D. P., Glik, D., Maranon, R., Gonzales, L., & Asch, S. (2009). Developing a Disaster Preparedness Campaign Targeting Low-Income Latino Immigrants: Focus Group Results for Project PREP. *Journal of Health Care for the Poor and Underserved*, 20(2), 330-345.
- Eisenman, D. P., Glik, D., Ong, M., Zhou, Q., Tseng, C. H., Asch, S., . . . Fielding, J. (2009). Terrorism-related fear and avoidance behavior in a multiethnic urban population. *American journal of public health*, 99(1), 168-174. doi:10.2105/AJPH.2007.124206

- Eisenman, D. P., Maranon, R., Zhou, Q., Tseng, C. H., Asch, S. M., Glik, D., & Gonzalez, L. (2009). Improving Latino disaster preparedness using social networks. *American Journal of Preventive Medicine*, 37(6), 512-517. doi:10.1016/j.amepre.2009.07.022
- Elo, S., & Kyngas, H. (2007). The qualitative content analysis process. *The Authors Journal Compilation*, 107-115.
- Federal Emergency Management Agency. (2013). *Hurricane Sandy FEMA after-action report*. Retrieved from http://www.fema.gov/media-library-data/20130726-1923-25045-7442/sandy_fema_aar.pdf
- Federal Emergency Management Agency. (2014). Ready. Prepare. Plan. Stay informed. . Retrieved from <http://www.ready.gov>
- Federal Emergency Management Agency. (2017a). The disaster declaration process. Retrieved from <https://www.fema.gov/disaster-declaration-process>
- Federal Emergency Management Agency. (2017b, July 21). The national flood insurance program. Retrieved from <https://www.fema.gov/national-flood-insurance-program>
- Federal Emergency Management Agency. (n.d.). Post-Katrina Emergency Management Reform Act. Retrieved from <https://emilms.fema.gov/IS230c/FEM0101200.htm>
- FEMA Emergency Management Institute. (2014). IS-368: Including people with disabilities and others with access and functional needs in disaster operations. Retrieved from <https://training.fema.gov/is/courseoverview.aspx?code=is-368>
- Fernandez, L. S., Byard, D., Lin, C. C., Benson, S., & Barbera, J. A. (2002). Frail elderly as disaster victims: Emergency management strategies. *Prehospital and Disaster Medicine*, 17(2), 67-74. doi:10.1017/S1049023X00000200
- Finch, C., Emrich, C. T., & Cutter, S. L. (2010). Disaster disparities and differential recovery in New Orleans, 179.
- Fonseca, V. A., Smith, H., Kuhadiya, N., Leger, S. M., Yau, C. L., Reynolds, K., . . . John-Kalarickal, J. (2009). Impact of a natural disaster on diabetes: exacerbation of disparities and long-term consequences. *Diabetes Care*, 32(9), 1632-1638 1637p. doi:10.2337/dc09-0670
- Foster, M., Brice, J. H., Shofer, F., Principe, S., DeWalt, D., Falk, R., & Ferris, M. (2011). Personal disaster preparedness of dialysis patients in North Carolina. *Clinical Journal of the American Society of Nephrology*, 6(11), 2478-2484. doi:10.2215/cjn.03590411

- Fowler, M. (2008). *Guide to the code of ethics for nurses: Interpretation and application* (M. Fowler Ed. 2010 reissue ed.). Silver Spring, MD: American Nurses Association
- Gable, A. (2017, September 13). Now is the time, personal preparedness can't wait. Retrieved from <https://disasternursing.org/2017/09/13/now-is-the-time-personal-preparedness-cant-wait/>
- Ge, Y., Peacock, W. G., & Lindell, M. K. (2011). Florida Households' Expected Responses to Hurricane Hazard Mitigation Incentives. *Risk Analysis*, 31(10), 1676-1691. doi:10.1111/j.1539-6924.2011.01606.x.
- Gershon, R. R. M., Sherman, M., & Raveis, V. (2013). Emergency preparedness in a sample of persons with disabilities *American Journal of Disaster Medicine*, 8(1), 35-47. doi:10.5055/ajdm.2013.0109
- Gibbs, L. I., & Holloway, C. F. (2013). *Hurricane Sandy after action report and recommendations to Mayor Michael R. Bloomberg*. Retrieved from http://www.nyc.gov/html/recovery/downloads/pdf/sandy_aar_5.2.13.pdf
- Glik, D. C., Eisenman, D. P., Zhou, Q., Tseng, C.-H., & Asch, S. M. (2014). Using the Precaution Adoption Process model to describe a disaster preparedness intervention among low-income Latinos. *Health Education Research*, 29(2), 272-283 212p.
- Goodwin Veenema, T., Griffin, A., Gable, A., MacIntyre, L., Simons, N., Couig, M., . . . Larson, E. (2016). Nurses as leaders in disaster preparedness and response: A call to action. *Journal of Nursing Scholarship*, 48(2), 187-200. doi:10.1111/jnu.12198
- Heagele, T. N. (2016a). Disaster-related community resilience: A concept analysis and a call to action for nurses. *Public Health Nursing*. doi:10.1111/phn.12292
- Heagele, T. N. (2016b). Lack of Evidence Supporting the Effectiveness of Disaster Supply Kits. *American journal of public health*, 106(6), 979-982. doi:10.2105/AJPH.2016.303148
- HelpAge International. (1999). Older people in disasters and humanitarian crises: guidelines for best practice [Press release]. Retrieved from <https://login.proxy.libraries.rutgers.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=flh&AN=MRB-FSD0355728&site=eds-live>
- HelpAge International. (2012). *Older people in emergencies: Identifying and reducing risks*. Retrieved from <http://www.helpage.org/silo/files/older-people-in-emergencies--identifying-and-reducing-risks.pdf>

- Henderson, T. L., Roberto, K. A., & Kamo, Y. (2010). Older adults' responses to Hurricane Katrina: daily hassles and coping strategies. *Journal of Applied Gerontology*, 29(1), 48-69 22p.
- Heslin, K. C., Gin, J. L., Afable, M. K., Ricci, K., & Dobalian, A. (2013). Personal medication preparedness among veteran and nonveteran men and women in the California population. *Prehospital and Disaster Medicine*, 28(4), 359-366. doi:10.1017/S1049023X13003506
- Hilfingier-Messias, D. K., & Lacy, E. C. (2007). Katrina-Related Health Concerns of Latino Survivors and Evacuees. *Journal of Health Care for the Poor and Underserved*(2), 443.
- Hoffmann, E. A. (2007). Open-ended interviews, power, and emotional labor. . *Journal of Contemporary Ethnography*, 36(3), 318-346. doi:10.1177/0891241606293134
- Holloway, I., & Wheeler, S. (2010). *Qualitative research in nursing and healthcare* (3rd ed.). Oxford, UK: Wiley-Blackwell.
- Hoopes-Haplin, S. (2013). *The impact of superstorm sandy on New Jersey towns and households*. Retrieved from Newark, NJ:
<http://njdatbank.newark.rutgers.edu/sites/default/files/files/RutgersSandyImpact-FINAL-25Oct13.pdf>
- Horney, J. A., MacDonald, P. D. M., Van Willigen, M., Berke, P. R., & Kaufman, J. S. (2010). Individual Actual or Perceived Property Flood Risk: Did it Predict Evacuation from Hurricane Isabel in North Carolina, 2003? *Risk Analysis*, 30(3), 501-511. doi:10.1111/j.1539-6924.2009.01341.x.
- Houston, J. B., Spialek, M. L., Cox, J., Greenwood, M. M., & First, J. (2015). The Centrality of Communication and Media in Fostering Community Resilience: A Framework for Assessment and Intervention. *American Behavioral Scientist*, 59(2), 270-283. doi:10.1177/0002764214548563
- Huang, S. K., Lindell, M. K., Prater, C. S., Wu, H. C., & Siebeneck, L. K. (2012). Household Evacuation Decision Making in Response to Hurricane Ike. *Natural Hazards Review*, 13(4), 283-296. doi:10.1061/(ASCE)NH.1527-6996.0000074
- Inui, A., Kitaoka, H., Majima, M., Takamiya, S., Uemoto, M., Yonenaga, C., . . . Taniguchi, H. (1998). Effect of the Kobe earthquake on stress and glycemic control in patients with diabetes mellitus. *Archives of Internal Medicine*, 158(3), 274-278 275p.
- Jan, S., & Lurie, N. (2012). Disaster resilience and people with functional needs. *The New England Journal Of Medicine*, 367(24), 2272-2273. doi:10.1056/NEJMp1213492

- Jhung, M. A., Shehab, N., Pollock, D. A., Jernigan, D. B., Rohr-Allegrini, C., Sanchez, R., & Guerra, F. (2007). Chronic disease and disasters: Medication demands of Hurricane Katrina evacuees. *American Journal of Preventive Medicine*, 33(3), 207-210. doi:10.1016/j.amepre.2007.04.030
- Jones, N. L. (2010). *The Americans with Disabilities Act and emergency preparedness and response*. Retrieved from <https://fas.org/sgp/crs/homesecc/RS22254.pdf>
- Kapur, G. B., & Smith, J. P. (2011). Public health security: Protecting populations from emergencies. In G. B. Kapur & J. P. Smith (Eds.), *Emergency public health: Preparedness and response* (pp. 3-10). Sudbury, MA: Jones and Bartlett Learning.
- Keefe, J., & Hill, A. (2017). Potential storm-surge flooding by hurricane size. Retrieved from <https://project.wnyc.org/storm-surge/>
- Keeling, A. W., & Mann-Wall, B. (2015). *Nurses and disasters: Global, historical case studies*. New York, NY: Springer Publishing Company.
- Keller, J. (2012, November 17, 2012). Mapping Hurricane Sandy's Deadly Toll. *The New York Times*. Retrieved from http://www.nytimes.com/interactive/2012/11/17/nyregion/hurricane-sandy-map.html?hp&_r=0
- Kim, Y. C., & Kang, J. (2010). Communication, neighbourhood belonging and household hurricane preparedness. *Disasters*, 34(2), 470-488. doi:10.1111/j.1467-7717.2009.01138.x.
- Ko, J. Y., Allweiss, P., & Strine, T. W. (2014). Chronic conditions and household preparedness for public health emergencies: Behavioral risk factor surveillance system, 2006-2010. *Prehospital and Disaster Medicine*, 29(1), 13-20. doi:10.1017/S1049023X13009126
- Kulig, J. C., Edge, D. S., Townshend, I., Lightfoot, N., & Reimer, W. (2013). Community Resiliency: Emerging Theoretical Insights. *Journal of Community Psychology*, 41(6), 758-775. doi:10.1002/jcop.21569
- Lamb, K. V., O'Brien, C., & Fenza, P. J. (2008). Elders at risk during disasters. *Home Healthcare Nurse*, 26(1), 30-40 11p.
- Levac, J., Toal-Sullivan, D., & O'Sullivan, T. (2012). Household emergency preparedness: A literature review. *Journal of Community Health*, 37(3), 725-733 729p. doi:10.1007/s10900-011-9488-x

- Lindell, M. (2013). North American cities at risk: Household responses to environmental hazards. In H. Joffe, T. Rossetto, & J. Adams (Eds.), *Cities at risk: Living with perils in the 21st century* (pp. 109-130). New York NY: Springer.
- Lindell, M. K., & Hwang, S. N. (2008). Households' perceived personal risk and responses in a multihazard environment. *Risk Analysis*, 28(2), 539-556. doi:10.1111/j.1539-6924.2008.01032.x.
- Lindell, M. K., & Perry, R. W. (1992). *Behavioral foundations of community emergency planning*. Philadelphia, PA: Hemisphere Publishing Corporation.
- Lindell, M. K., & Perry, R. W. (2012). The Protective Action Decision Model: Theoretical Modifications and Additional Evidence. *Risk Analysis*, 32(4), 616-632. doi:10.1111/j.1539-6924.2011.01647.x
- Lindell, M. K., Prater, C. S., & Perry, R. W. (2006). Fundamentals of Emergency Management. Retrieved from <http://training.fema.gov/hiedu/aemrc/booksdownload/fem/F>
- Manuel, J. (2013). The long road to recovery: Environmental health impacts of Hurricane Sandy. *Environmental Health Perspectives*, 121(5), 152-159.
- Maxwell, J. A. (2012). The importance of qualitative research for causal explanation in education. *Qualitative Inquiry*, 18(8), 655-661. doi:10.1177/1077800412452856
- Mayhorn, C. B. (2005). Cognitive aging and the processing of hazard information and disaster warnings. *Natural Hazards Review*, 6(4), 165-170. doi:10.1061/(ASCE)1527-6988(2005)6:4(165)
- McClure, L. A., Boninger, M. L., Oyster, M. L., Roach, M. J., Nagy, J., & Nemunaitis, G. (2011). Emergency evacuation readiness of full-time wheelchair users with spinal cord injury. *Archives of Physical Medicine and Rehabilitation*, 92(3), 491-498. doi:10.1016/j.apmr.2010.08.030
- McCormick, L. C., Pevear, J., Rucks, A. C., & Ginter, P. M. (2014). The Effects of the April 2011 Tornado Outbreak on Personal Preparedness in Jefferson County, Alabama. *Journal of Public Health Management & Practice*, 20(4), 424-431.
- Medical Reserve Corps. (2014). Guide to medical special needs shelters: A guide for local MRC units. Retrieved from https://www.medicalreservecorps.gov/File/Promising_Practices_Toolkit/Guidance_Documents/Emergency_Preparedness_Response/MRC-SpecialNeedsShelterGuide.pdf
- Merriam-Webster. (2016). Disaster. Retrieved from <http://www.merriam-webster.com/dictionary/disaster>

- Miller, A., & Arquilla, B. (2008). Chronic diseases and natural hazards: Impact of disasters on diabetic, renal, and cardiac patients. *Prehospital & Disaster Medicine*, 23(2), 185-194 110p.
- Miller, K. G., Kopp, R. E., Browning, J. V., & Horton, B. P. (2013). Sea-level rise in New Jersey fact sheet. Retrieved from http://geology.rutgers.edu/images/stories/faculty/miller_kenneth_g/Sealevelfactsheet7112014update.pdf
- Minami, H. (2007). Helping our countries prepare for disasters. *International Nursing Review*, 54(1), 1-2.
- Mokdad, A. H., Mensah, G. A., Posner, S. F., Reed, E., Simoes, E. J., & Engelgau, M. M. (2005). When Chronic Conditions Become Acute: Prevention and Control of Chronic Diseases and Adverse Health Outcomes During Natural Disasters. *Preventing Chronic Disease*(5).
- Muller, V. M., Burke, R. V., Berg, B. M., Lin, A. C., & Upperman, J. S. (2014). A mixed-methods pilot study of disaster preparedness and resiliency among faith-based organizations. *Prehospital and Disaster Medicine*, 29(2), 127-133. doi:10.1017/S1049023X14000120
- Murphy, S. T., Cody, M., Frank, L. B., Glik, D., & Ang, A. (2009). Predictors of emergency preparedness and compliance. *Disaster Medicine And Public Health Preparedness*.
- New Jersey Department of Health. (2013). Alternate care site: Expanded treatment area planning template. Retrieved from http://www.nj.gov/health/er/acs_planning.shtml
- Nicogossian, A., Kloiber, O., Zimmerman, T., Stabile, B., Thomas, K., Terbush, J. W., & Doarn, C. R. (2012). *Poverty, disparities, disasters and global burden of disease*. Retrieved from
- Norris, F. H., & Stevens, S. P. (2007). Community resilience and the principles of mass trauma intervention. *Psychiatry: Interpersonal and Biological Processes*, 70(4), 320-328. doi:10.1521/psyc.2007.70.4.320
- O'Dowd, M. (2012). Identifying disaster medical and public health research priorities: Data needs arising in response to Hurricane Sandy. Retrieved from <http://www.nyam.org/news/nyam-news/2013-03-06-1.html>
- Office of the Assistant Secretary for Preparedness and Response. (2015). *Prescription medication preparedness initiative* Retrieved from <https://www.phe.gov/about/OPP/dhsp/Documents/pmpi-mtg.pdf>.

- Oxford University Press. (2016). Disaster. Retrieved from http://www.oxforddictionaries.com/us/definition/american_english/disaster
- Parents and Friends of Pascack Valley Learning Center. (2013). *Surviving Sandy: The superstorm that reshaped our lives*. Airmont, NY: Ambient Funding Corporation.
- Peacock, W. G. (2003). Hurricane Mitigation Status and Factors Influencing Mitigation Status among Florida's Single-Family Homeowners. *Natural Hazards Review*, 4(3), 149-158.
- Pekovic, V., Seff, L., & Rothman, M. B. (2007). Planning for and responding to special needs of elders in natural disasters. *Generations*, 31(4), 37-41 35p.
- Perman, J., Shoaf, K., Kourouyan, A., & Kelley, M. (2011). Disaster Kit Contents: A Comparison of Published Guidelines for Household Preparedness Supplies. *International Journal of Mass Emergencies & Disasters*, 29(1), 1.
- Perry, R. W., & Lindell, M. K. (2008). Volcanic risk perception and adjustment in a multi-hazard environment. *Journal of Volcanology and Geothermal Research*, 172(2008), 170-178. doi:10.1016/j.jvolgeores.2007.12.006
- Pfefferbaum, R. L., Pfefferbaum, B., Nitiéma, P., Van Horn, R. L., & Houston, J. B. (2015). Assessing Community Resilience: An Application of the Expanded CART Survey Instrument With Affiliated Volunteer Responders. *American Behavioral Scientist*, 59(2), 181-199. doi:10.1177/0002764214550295
- Plan NYC. (2013). A stronger more resilient New York. Retrieved from <http://www.nyc.gov/html/sirr/html/report/report.shtml>
- Plough, A., Fielding, J. E., Chandra, A., Williams, M., Eisenman, D., Wells, K. B., . . . Magana, A. (2013). Building Community Disaster Resilience: Perspectives From a Large Urban County Department of Public Health. *American journal of public health*, 103(7), 1190-1197. doi:10.2105/AJPH.2013.301268
- Powell, S., Plouffe, L., & Gorr, P. (2009). When ageing and disasters collide: Lessons from 16 international case studies. *Radiation Protection Dosimetry*, 134(3-4), 202-206. doi:10.1093/rpd/ncp082
- Prasad, S. (2012). An Assessment of Human Vulnerability to Hazards in the US Coastal Northeast and mid-Atlantic. *Southeastern Geographer*(3), 282.
- Reininger, B. M., Rahbar, M. H., Lee, M., Chen, Z., Alam, S. R., Pope, J., & Adams, B. (2013). Social capital and disaster preparedness among low income Mexican Americans in a disaster prone area. *Social Science & Medicine*, 83, 50-60. doi:10.1016/j.socscimed.2013.01.037

- Render-Cohen, J., & Render-Dinerstein, G. (2005). Emergencies happen! *InsideMS*, 18-25.
- Roberto, K. A., Henderson, T. L., Kamo, Y., & McCann, B. R. (2010). Challenges to older women's sense of self in the aftermath of Hurricane Katrina. *Health Care Women for Women International*, 31(11), 981-986. doi:10.1080/07399332.2010.500754
- Rooney, C., & White, G. W. (2007). Consumer perspective: Narrative analysis of a disaster preparedness and emergency response survey from persons with mobility impairments. *Journal of Disability Policy Studies*, 17(4), 206-215. doi:10.1177/10442073070170040301
- Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The art of hearing data* (3rd ed. ed.). Los Angeles, CA: Sage.
- Ryan, E. (2012). Identifying disaster medical and public health research priorities: Data needs arising in response to Hurricane Sandy. Retrieved from <http://www.nyam.org/news/nyam-news/2013-03-06-1.html>
- Saccenti, J. (2012). Middlesex shelter opens for residents with medical needs at MCC. Retrieved from <http://patch.com/new-jersey/eastbrunswick/county-shelter-opens-for-residents-with-medical-needs-at-mcc>
- Schmidt, C. K., Davis, J. M., Sanders, J. L., Chapman, L. A., Cisco, M. C., & Hady, A. R. (2011). EXPLORING Nursing Students' Level of Preparedness for Disaster Response. *Nursing Education Perspectives*, 32(6), 380-383 384p. doi:10.5480/1536-5026-32.6.380
- Seplaki, C. L., Goldman, N., Weinstein, M., & Lin, Y. (2006). Before and after the 1999 Chi-Chi earthquake: Traumatic events and depressive symptoms in an older population. *Social Science & Medicine*, 62, 3121-3132. doi:10.1016/j.socscimed.2005.11.059
- Shah, S. A. (2011). Mental health emergencies and Post-traumatic Stress Disorder. In G. B. Kapur & J. P. Smith (Eds.), *Emergency public health: Preparedness and response* (pp. 493-516). Sudbury, MA: Jones and Bartlett Learning.
- Smith, & Notaro. (2009). Personal emergency preparedness for people with disabilities from the 2006-2007 Behavioral Risk Factor Surveillance System. *Disability and Health Journal*, 2, 86-94. doi:10.1016/j.dhjo.2009.01.001
- Smith, D. L., & Notaro, S. J. (2015). Is emergency preparedness a 'disaster' for people with disabilities in the US? Results from the 2006-2012 Behavioral Risk Factor

- Surveillance System (BRFSS). *Disability & Society*, 30(3), 401-418.
doi:10.1080/09687599.2015.1021413
- Smith, J. P., & Anderscavage, S. M. (2011). Nongovernmental organizations' response to crises In G. B. Kapur & J. P. Smith (Eds.), *Emergency public health: Preparedness and response* (pp. 103-130). Sudbury, MA: Jones and Bartlett Learning.
- Society for the Advancement of Disaster Nursing. (2017). Resources and links.
Retrieved from <https://disasternursing.org/resources-and-links/>
- Sparkes, A. C. (2001). Myth 94: Qualitative health researchers will agree about validity. *Qualitative Health Research*, 11(4), 538-552. doi:10.1177/104973230101100409
- State of New Jersey Department of Human Services. (2014). Managed long term services and supports: Eligibility for members enrolled in NJ FamilyCare Plan ABP.
Retrieved from http://www.state.nj.us/humanservices/dmahs/home/MLTSS_ABP_Training_for_Providers.pdf
- State of New Jersey Office of Emergency Management. (2016). *Basic workshop in emergency management* West Trenton, NJ: State of New Jersey Office of Emergency Management.
- Symons, M., & Oglesby, A. (2012, October 29). Stay home, gov urges, as state gets ready for hit. *Asbury Park Press*, pp. A1-A2.
- Terpstra, T., & Lindell, M. K. (2013). Citizens' Perceptions of Flood Hazard Adjustments: An Application of the Protective Action Decision Model. *Environment and Behavior*, 45(8), 993-1018. doi:10.1177/0013916512452427
- Texas A&M Engineering Extention Service. (2015). *Advanced critical infrastructure protection: MGT-414 participant guide*. College Station, TX: Texas A&M Engineering Extention Service.
- The Star Ledger. (2013). *When Sandy hit: The storm that forever changed New Jersey*. Battle Ground, WA: Pediment Publishing.
- Thompson, K., Every, D., Rainbird, S., Smith, B., Trigg, J., & Cornell, V. (2014). No pet or their person left behind: Increasing the disaster resilience of vulnerable groups through animal attachment, activities and networks. *Animals*, 4(2), 214-240.
doi:10.3390/ani4020214
- Trento, L., & Allen, S. (2014). Hurricane Sandy: Nutrition support during disasters. *Nutrition in Clinical Practice*, 29(5), 576-584. doi:10.1177/0884533614536927

- True, N. A., Adedoyin, J. D., Shofer, F. S., Hasty, E. K., & Brice, J. H. (2013). Level of disaster preparedness in patients visiting the emergency department: Results of the civilian assessment of readiness for disaster (CARD) survey. *Prehospital and Disaster Medicine*, 28(2), 127-131. doi:10.1017/S1049023X12001811
- Tuohy, R., Johnston, D., & Stephens, C. (2014). Qualitative research can improve understandings about disaster preparedness for independent older adults in the community. *Disaster Prevention and Management*, 23(3), 296-308. doi:10.1108/DPM-01-2013-0006
- Tuohy, R., Johnston, D., & Stephens, C. (2015). Disaster preparedness: Older adults' perspectives. *International Journal of Emergency Management*, 11(1), 46-61. doi:10.1504/IJEM.2015.069516
- Tuohy, R., & Stephens, C. (2015). Older adults' meanings of preparedness: a New Zealand perspective. *Ageing and Society*, 18p. doi:10.1017/S0144686X14001408
- Tuohy, R., Stephens, C., & Johnston, D. (2014). Older adults' disaster preparedness in the context of the September 2010–December 2012 Canterbury earthquake sequence. *International Journal of Disaster Risk Reduction*, 9, 194-203. doi:10.1016/j.ijdr.2014.05.010
- Twigg, J. (2013). Risk perception, public education and disaster risk management. In H. Joffe, T. Rossetto, & J. Adams (Eds.), *Cities at risk: Living with perils in the 21st century* (pp. 171-182). New York, NY: Springer.
- United States Census Bureau. (2015). QuickFacts Long Branch City, New Jersey. Retrieved from <http://www.census.gov/quickfacts/table/PST045215/3441310>
- Uscher-Pines, L., Chandra, A., Acosta, J., & Kellerman, A. (2012). Citizen preparedness for disasters: Are current assumptions valid? *Disaster Medicine And Public Health Preparedness*, 6(2), 170-173.
- Uscher-Pines, L., Hausman, A. J., Powell, S., DeMara, P., Heake, G., & Hagen, M. G. (2009). Disaster preparedness of households with special needs in southeastern Pennsylvania. *American Journal of Preventive Medicine*, 37(3), 227-230. doi:10.1016/j.amepre.2009.04.028
- Visiting Nurses Associations of America. (2014, February 25). VNAA develops recommendations to CMS on emergency preparedness. Retrieved from http://www.vnaa.org/article_content.asp?article=496
- Walker, L. O., & Avant, K. C. (2011). *Strategies for theory construction in nursing* (5th ed. ed.). Upper Saddle River, NJ: Prentice Hall.

- Wells, K. B., Tang, J., Lizaola, E., Jones, F., Brown, A., Stayton, A., . . . Plough, A. (2013). Applying Community Engagement to Disaster Planning: Developing the Vision and Design for the Los Angeles County Community Disaster Resilience Initiative. *American journal of public health, 103*(7), 1172-1180. doi:<http://dx.doi.org.proxy.libraries.rutgers.edu/10.2105/AJPH.2013.301407>
- Whetzel, E., Walker-Cilo, G., Chan, G. K., & Trivett, J. (2013). Emergency nurse perceptions of individual and facility emergency preparedness. *Journal of Emergency Nursing, 39*(1), 46-52. doi:10.1016/j.jen.2011.08.005
- Xie, R., McCormick, L. C., & Pevear, J. (2013). Measuring levels of citizen public health emergency preparedness, Jefferson County, Alabama. *Journal of Public Health Management and Practice, 19*(3), 266-273. doi:10.1097/PHH.0b013e318264ed8c
- Zakour, M. J. (2015). Effects of support on evacuation preparedness of persons with disabilities. *Journal of Social Work in Disability and Rehabilitation, 14*(1), 1-22. doi:10.1080/1536710X.2015.989561
- Zidek, C., West, E., Holmes, J., & Crytzer, M. (2014). A survey comparison of rural versus urban residents and household preparedness. *Home Healthcare Nurse, 32*(7), 420-429. doi:10.1097/NHH.0000000000000109

Appendix A

**SUBJECT CONSENT TO TAKE PART IN A RESEARCH STUDY****TITLE OF STUDY:**

Citizen Emergency Preparedness: The Experience of the Older Adult with Preparing for Disaster

Principal Investigator:

Tara Heagele, MSN Ed., RN, PCCN, EMT

This consent form is part of an informed consent process for a research study and it will provide information that will help you to decide whether you wish to volunteer for this research study. It will help you to understand what the study is about and what will happen in the course of the study.

If you have questions at any time during the research study, you should feel free to ask them and should expect to be given answers that you completely understand.

After all of your questions have been answered, if you still wish to take part in the study, you will be asked to sign this informed consent form.

You are not giving up any of your legal rights by volunteering for this research study or by signing this consent form.

Who is conducting this research study?

Tara Heagele, a PhD in Nursing student at Rutgers University, is the Principal Investigator of this research study. A Principal Investigator has the overall responsibility for the conduct of the study. However, there are often other individuals who are part of the research team.

Tara Heagele may be reached at 609-635-0590 or tara.heagele@rutgers.edu.

Tara Heagele will also be asked to sign this informed consent. You will be given a copy of the signed consent form to keep.

Karen D'Alonzo, PhD, RN, APN-c and Teri Lindgren, RN, MPH, PhD are Tara Heagele's Faculty Advisors and will be a Co-Investigators on this research study.

Why is this study being done?

The purpose of this study is to understand how older and/or medically frail adults have experienced disaster and how this experience impacts what they do now to prepare for disaster. The results will be used to inform planning and response decisions of emergency managers to better meet the needs of older and/or medically frail adults during disaster.

Why have you been asked to take part in this study?

You are being invited to take part in this study because you live in a coastal urban community prone to natural disasters and you have no experience working or volunteering as a disaster responder.

Who may take part in this study? And who may not?

You may take part in this study if you are 65 years of age or older (with or without a disability) or you are 64 years of age or younger with a serious and complex medical condition, a disability, or dependent on at least one prescription medication, English-speaking, non-institutionalized (e.g., you do not live in a nursing home, prison or mental institution), and you have no experience working or volunteering as a disaster responder.

You may not take part in this study if you are younger than 65 years of age without a serious and complex medical condition, disability, or dependence on at least one prescription medication or if you have ever worked or volunteered as a disaster responder. Disaster responders are defined as police officers, firefighters, emergency medical workers, government agency officials, non-government agency volunteers (e.g. from the American Red Cross or the Citizen Corps), public health department employees or healthcare workers working in hospitals, nursing homes or rehabilitation facilities. Disaster responders may not participate because they have likely received formal training in emergency preparedness and response to disasters.

How long will the study take and how many subjects will participate?

If you agree to participate in this study, you will be asked for a one-time in person interview with Tara Heagele that will last up to 60 minutes. You will be one of about 40 individuals who will take part in this research.

What will you be asked to do if you take part in this research study?

Your participation in the study will include the following:

1. A one-time in person interview at a time that is convenient for you. The interview will be audio-recorded (sound only).
2. You will be asked to fill out a brief demographic data form about yourself.
3. During the interview, Tara Heagele will ask you questions about your experience with disaster and how this experience impacts the decisions you make to prepare or

not to prepare for disasters. You can skip or refuse to answer any question and you can stop the interview at any time.

4. Your responses during the interview will be audio-recorded (sound only). Tara Heagele will transcribe the audio-recordings. The audio-recordings will be destroyed as soon as correct transcription is confirmed.

What are the risks and/or discomforts you might experience if you take part in this study?

There is no more than minimal risk to you when participating in the study. You may become tired or may have some unpleasant memories when answering the questions during the interview, and if this occurs you can skip or refuse to answer any questions, or stop the interview at any time.

Are there any benefits for you if you choose to take part in this research study?

There are no direct benefits to you. However, this study will assist in a better understanding on how and why older adults prepare for disaster to inform planning and response decisions of emergency managers to better meet the needs of older and/or medically frail adults during disaster.

What are your alternatives if you don't want to take part in this study?

Your participation in this study is completely voluntary. Instead of being in this study, your alternative is to choose not to participate.

How will you know if new information is learned that may affect whether you are willing to stay in this research study?

During the course of the study, you will be updated about any new information that may affect whether you are willing to continue taking part in the study. If new information is learned that may affect you after the study or your follow-up is completed, you will be contacted.

Will there be any cost to you to take part in this study?

There will not be any cost to you to take part in this study.

Will you be paid to take part in this study?

You will not be paid for your participation in this research study.

How will information about you be kept private or confidential?

All efforts will be made to keep your personal information in your research record confidential, but total confidentiality cannot be guaranteed. Your name will be only on the consent form, which will be kept separate from your interview and demographic data form. The interview, transcripts and demographic data form will not be linked with your name or this consent form, nor will they contain any information connecting to your name, telephone number or any other contact information you have provided.

What will happen if you do not wish to take part in the study or if you later decide not to stay in the study?

Participation in this study is voluntary. You may choose not to participate or you may change your mind at any time.

If you do not want to enter the study or decide to stop participating, your relationship with the Long Branch Senior Center, the Long Branch Housing Authority, and the study staff will not change, and you may do so without penalty and without loss of benefits to which you are otherwise entitled.

You may also withdraw your consent for the use of data already collected about you, but you must do this in writing to Tara Heagele at tara.heagele@rutgers.edu.

Who can you call if you have any questions?

If you have any questions about taking part in this study or if you feel you may have suffered a research related injury, you can call the Principal Investigator:

Tara Heagele
Rutgers University, The State University of New Jersey, Newark
School of Nursing
609-635-0590

If you have any questions about your rights as a research subject, you can call:

IRB Director
973-972-3608

and

Human Subject Protection Program
973-972-1149

What are your rights if you decide to take part in this research study?

You have the right to ask questions about any part of the study at any time. You should not sign this form unless you have had a chance to ask questions and have been given answers to all of your questions.

RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY IRB
AUDIO/VIDEOTAPE ADDENDUM TO CONSENT FORM

You have already agreed to participate in a research study entitled **Citizen Emergency Preparedness: The Experience of the Older Adult with Preparing for Disaster** conducted by Tara Heagele. We are asking for your permission to allow us to audiotape (sound only) as part of that research study. You do not have to agree to be recorded in order to participate in the main part of the study.

The audio-recording will be used to record your responses during the interview, which Tara Heagele will then transcribe and analyze.

The audio-recording and your transcribed interview responses will not contain any information connecting you to your name, telephone number, or any other contact information you provided.

The audio-recording will be stored in a computer that is password-protected. Once the interview is transcribed, the audio-recording will be erased. The transcribed interview will be stored on a password-protected computer and will be erased three years after completion of the research study.

Your signature on this form grants the investigator named above permission to record you as described above during participation in the above-referenced study. The investigator will not use the recording for any other reason than that/those stated in the consent form without your written permission.

AGREEMENT TO PARTICIPATE

1. Subject consent:

I have read this entire form, or it has been read to me, and I believe that I understand what has been discussed. All of my questions about this form or this study have been answered.

Subject Name: _____

Subject Signature: _____ Date: _____

2. Signature of Investigator/Individual Obtaining Consent:

To the best of my ability, I have explained and discussed the full contents of the study including all of the information contained in this consent form. All questions of the research subject and those of his/her parent or legally authorized representative have been accurately answered.

Investigator/Person Obtaining Consent (printed name): _____

Signature: _____ Date: _____

Appendix B

Demographic Data

1. Are you male or female?
☐ Male
☐ Female
☐ Other (specify) _____
2. What is your age? _____
3. What is your race / ethnicity?
☐ Asian
☐ Black or African-American
☐ Hispanic or Latino
☐ White or Caucasian
☐ Other (specify) _____
4. Which of the following best describes your current relationship status?
☐ Married
☐ Widowed
☐ Divorced
☐ Separated
☐ In a domestic partnership or civil union
☐ Single, but living with a significant other
☐ Single, never married
5. Which of the following categories best describes your employment status?
☐ Employed, working full-time
☐ Employed, working part-time
☐ Not employed
☐ Retired
☐ Disabled, not able to work
6. What is the highest level of school you have completed or the highest degree you have received?
☐ Less than high school degree
☐ High school degree or equivalent (e.g., GED)
☐ Some college, but no degree
☐ Associates degree
☐ Bachelors degree
☐ Graduate degree

7. What was your household income over the last year?
- ☐ Less than \$20,000
 - ☐ \$20,000 to \$34,999
 - ☐ \$35,000 to \$49,999
 - ☐ \$50,000 to \$74,999
 - ☐ \$75,000 to \$99,999
 - ☐ \$100,000 to \$149,999
 - ☐ \$150,000 or More
8. Do you take medications every day?
- ☐ Yes
 - ☐ No
9. Do you have a medical condition for which you have to use special equipment?
- ☐ Yes
 - ☐ No
10. Do you or anyone in your household have a disability that requires assistance from others?
- ☐ Yes
 - ☐ No
11. Were you in the military?
- ☐ Yes
 - ☐ No
12. Is English your first language?
- ☐ Yes
 - ☐ No
13. In what ZIP code is your home located? _____
14. Do you own or rent the home where you live now?
- ☐ Own
 - ☐ Rent
 - ☐ Other (specify) _____
15. How many years have you lived in the home where you live now? _____ Years
16. How long have you lived in the community where you now reside? _____ Years
17. Which of the following best describes the type of structure that you live in?
- ☐ Detached single family home
 - ☐ Multi-family, one or two stories
 - ☐ Multi-family, three or more stories
 - ☐ Mobile or manufactured home

____ Other (specify) _____

18. How many people in your household are:

_____ Less than 18 years

_____ 18-60 years

_____ over 60 years

Appendix C

Interview Guide

1. Tell me a little bit about yourself.
2. Tell me about your most memorable experience with a major weather disaster.
...something like a hurricane, flood or snow storm (do not say this unless they ask).
 - What happened?
 - Where were you?
 - What did you do?
 - What worried you?
 - Did you feel that you, your loved ones, or your home was in danger? How?
 - Did you lose electric power or other basic utilities (fuel, water, sewer, communications)? Tell me about that.
 - Were you able to get out of your home?
 - Did you have trouble with food, water or medications?
 - How did you get information?
 - How does it compare to your other experiences with disaster?
 - How does this disaster stand out from all of the others you've experienced?
3. What did you do to prepare (for that disaster)?
 - If nothing, tell me about that.
 - If you or other members of your household did prepare, what was the reason for those decisions? Were those decisions made jointly or did one person make them? If the latter, who made the decisions?
 - If you did prepare, what was the result of your preparations?
 - Do you have pets? What happens to them during disaster?
 - Had you or other members of your household ever attended any emergency preparedness meetings or classes? What was the most important lesson from those classes?
 - Have you attended any emergency preparedness meetings or classes since this disaster?
 - Have you seen a disaster kit checklist? Where did you get this checklist?
 - If they received the bucket, what is in the bucket? What do they do with it?
4. If you heard that a hurricane or major storm was likely to hit your community, what would you do?
 - If you heard that a Category 1 hurricane was likely to hit your community, what would you do? What if it was a Category 3 hurricane? How about a Category 5 hurricane?
 - If local authorities recommend evacuation, would you evacuate or stay at home? What would you need to think about in order to make that decision?
 - Does anyone in your household have physical or medical limitations that would make it difficult for them to evacuate?

5. We have talked about your past experiences with disaster and what you will do in the future, is there anything else that you would like to tell me about disaster preparedness?

Appendix D



Recommended Items to Include in a Basic Emergency Supply Kit:

- ☐ Water, one gallon of water per person per day for at least three days, for drinking and sanitation
- ☐ Food, at least a three-day supply of non-perishable food
- ☐ Battery-powered or hand crank radio and a NOAA Weather Radio with tone alert and extra batteries for both
- ☐ Flashlight and extra batteries
- ☐ First aid kit
- ☐ Whistle to signal for help
- ☐ Dust mask, to help filter contaminated air and plastic sheeting and duct tape to shelter-in-place
- ☐ Moist towelettes, garbage bags and plastic ties for personal sanitation
- ☐ Wrench or pliers to turn off utilities
- ☐ Can opener for food (if kit contains canned food)
- ☐ Local maps

Through its *Ready* Campaign, the Federal Emergency Management Agency educates and empowers Americans to take some simple steps to prepare for and respond to potential emergencies, including natural disasters and terrorist attacks. *Ready* asks individuals to do three key things: get an emergency supply kit, make a family emergency plan, and be informed about the different types of emergencies that could occur and their appropriate responses.

All Americans should have some basic supplies on hand in order to survive for at least three days if an emergency occurs. Following is a listing of some basic items that every emergency supply kit should include. However, it is important that individuals review this list and consider where they live and the unique needs of their family in order to create an emergency supply kit that will meet these needs. Individuals should also consider having at least two emergency supply kits, one full kit at home and smaller portable kits in their workplace, vehicle or other places they spend time.



Additional Items to Consider Adding to an Emergency Supply Kit:

- ☐ Prescription medications and glasses
- ☐ Infant formula and diapers
- ☐ Pet food and extra water for your pet
- ☐ Important family documents such as copies of insurance policies, identification and bank account records in a waterproof, portable container
- ☐ Cash or traveler's checks and change
- ☐ Emergency reference material such as a first aid book or information from www.ready.gov
- ☐ Sleeping bag or warm blanket for each person. Consider additional bedding if you live in a cold-weather climate.
- ☐ Complete change of clothing including a long sleeved shirt, long pants and sturdy shoes. Consider additional clothing if you live in a cold-weather climate.
- ☐ Household chlorine bleach and medicine dropper – When diluted nine parts water to one part bleach, bleach can be used as a disinfectant. Or in an emergency, you can use it to treat water by using 16 drops of regular household liquid bleach per gallon of water. Do not use scented, color safe or bleaches with added cleaners.
- ☐ Fire Extinguisher
- ☐ Matches in a waterproof container
- ☐ Feminine supplies and personal hygiene items
- ☐ Mess kits, paper cups, plates and plastic utensils, paper towels
- ☐ Paper and pencil
- ☐ Books, games, puzzles or other activities for children



Appendix E

Table 4
Household Emergency Preparedness Supplies of Participants

Participant Pseudo Name	Water	Food	Radio	Flashlight	Batteries	First Aid Kit	Whistle	Dust Mask	Plastic Sheeting	Duct Tape	Moist Towelettes	Garbage Bags	Wrench or Pliers	Can Opener	Local Maps	Percent Prepared
Julia	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	N	Y	U	80
Lisa	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	87
Fiona	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	Y	N	53
Alex	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	87
Otto	Y	Y	Y	Y	U	Y	Y	Y	Y	U	Y	Y	U	Y	U	73
Walter	Y	Y	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	N	60
Tobias	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	87
Karl	N	Y	Y	Y	Y	Y	N	Y	N	N	U	U	Y	Y	Y	60

Virginie	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	N	67
Colin	N	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y	Y	Y	53
Nicole	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	40
Paula	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	N	53
Matthew	N	Y	N	Y	Y	Y	N	Y	Y	Y	U	Y	Y	Y	Y	73
Gaston	N	Y	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	73
Danielle	N	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	N	60
Whitney	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	93
Hermine	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	Y	73
Katia	Y	Y	N	Y	Y	N	Y	N	N	N	U	Y	Y	Y	N	53
Sean	N	Y	Y	Y	U	Y	N	N	N	N	N	Y	Y	Y	Y	53

Tammy	N	N	N	Y	Y	Y	N	Y	U	Y	Y	Y	Y	Y	N	60
Earl	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	73
Cindy	Y	Y	N	Y	Y	N	N	N	N	Y	Y	Y	N	Y	N	53
Vince	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	87
Maria	N	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	Y	N	60
Harvey	N	Y	N	Y	U	Y	N	N	N	N	Y	Y	Y	Y	Y	53
Don	Y	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	Y	Y	67
Ophelia	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	87
Gert	N	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	73
Shary	Y	N	Y	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	Y	67
Philippe	Y	Y	N	N	U	N	N	N	N	N	Y	Y	N	Y	N	33

Ian	Y	N	N	Y	N	N	N	N	N	N	N	Y	Y	Y	N	33
Emily	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	87
Jose	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	N	Y	N	80