

Eastern Kentucky University Encompass

Online Theses and Dissertations

Student Scholarship

January 2014

Safety During a Disaster: A Comparison of Disaster Events

Lauren Webb

Eastern Kentucky University

Follow this and additional works at: <https://encompass.eku.edu/etd>

 Part of the [Emergency and Disaster Management Commons](#)

Recommended Citation

Webb, Lauren, "Safety During a Disaster: A Comparison of Disaster Events" (2014). *Online Theses and Dissertations*. 328.
<https://encompass.eku.edu/etd/328>


This Open Access Thesis is brought to you for free and open access by the Student Scholarship at Encompass. It has been accepted for inclusion in Online Theses and Dissertations by an authorized administrator of Encompass. For more information, please contact Linda.Sizemore@eku.edu.

Safety During a Disaster: A Comparison of Disaster Events

By

Lauren Michelle Webb

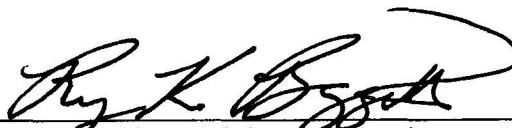
Thesis Approved:



Chair, Advisory Committee



Member, Advisory Committee



Member, Advisory Committee



Dean, Graduate School

STATEMENT OF PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a Master's degree at Eastern Kentucky University, I agree that the Library shall make it available to borrowers under rules of the Library. Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of the source is made. Permission for extensive quotation from or reproduction of this thesis may be granted by my major professor, or in [his/her] absence, by the Head of Interlibrary Services when, in the opinion of either, the proposed use of the material is for scholarly purposes. Any copying or use of the material in this thesis for financial gain shall not be allowed without my written permission.

Signature

A handwritten signature in blue ink, appearing to read "L. A. Webb", is written over a horizontal line.

Date

A handwritten date "11/25/2014" in blue ink is written over a horizontal line.

Safety During a Disaster: A Comparison of Disaster Events

By

Lauren Michelle Webb

Master's of Science
Eastern Kentucky University
Richmond, Kentucky
2014

Submitted to the Faculty of the Graduate School of
Eastern Kentucky University
in partial fulfillment of the requirements
for the degree of
MASTER OF SCIENCE
December, 2014

Copyright © Lauren Michelle Webb, 2014
All rights reserved

DEDICATION

This thesis is dedicated to Kathleen and Ray Serowick, I would not be on this path without either of them.

ACKNOWLEDGMENTS

I want to thank my professors at ECU for their unending patience and driving me to challenge myself; particularly my thesis committee members for their time, attention, and honesty during this whole process. I want to also thank my family, for being my sounding board no matter how many times I ran through the entire thesis.

ABSTRACT

Disasters such as hurricanes disrupt the lives of everyone in their path. The preparation for and response during and after such an event can make all the difference for those involved. Past hurricanes need to be learned from, hurricanes such as Katrina and Hugo; lessons learned from events like these can be applied in future ones such as they were in Sandy and Gustav. This thesis reviews past research done concerning problems and themes of unsafe situations during hurricanes in urban centers, finding these themes and making suggestions to be used in the future to attempt to prevent future re-occurrences. By reviewing historical hurricanes in urban centers, responses to these events that have been seen as unsuccessful or misguided can be studied for lessons to learn can further be utilized.

TABLE OF CONTENTS

CHAPTER	PAGE
I. Introduction	1
Background	1
Statement of the problem	7
Purpose of the study	7
Definition of terms	8
Potential significance	9
Limitations.....	9
Organization of the study	9
II. Literature Review	10
III. Methods	17
Context of study	17
Research questions	17
Data collection and analysis	18
IV. Bias	18
V. Discussion and implications	19
Waiting for landfall	19
Military support to augment civilian law	20
Early declaration lends to early resources	24
VI. Suggestions for future response use	28
List of References.....	29

CHAPTER 1

Introduction

Background

Natural disasters are a phenomenon that is a fact of life, there is no escaping their effects beyond getting out of their path. That is not always an option, as cities cannot evacuate from the destruction path as living beings can, but oftentimes do not. Ninety-one percent of Americans live in moderate to high risk locations for disaster; 217 million people were affected directly by disasters globally in 2010 and nearly 80% of those were storms and floods (Amanda Ripley, 2012, p.vi-1)

Due to these facts, it is the responsibility of those in power to react to, respond to, and recover from disasters in an appropriate and effective manner. Appropriate response measures include serious concerns toward citizen and emergency worker safety in the all emergency phases. A governing body is responsible for anything that happens during disaster events and the lessons to be taken from them.

Past disaster events can teach many things as reoccurring themes emerge. Each one teaches something new as it affects each community in new ways not previously anticipated or for which no preparation occurred. These lessons build on previous ones, and if applied correctly can greatly improve the response and recovery period for all affected.

Preparation before a disaster, response to a disaster, and recovery from a disaster; these phases originate from governmental bodies and trickle all the way through the community to those emergency workers and citizens on the street level, the “boots on the ground” as it were. These decisions on preparation activities as well as response choices

affect not only recovery as mentioned previously, but also the safety of those on the ground level. Additional preparation and response decisions must be made to protect civilians and emergency workers during the chaos of a disaster event where law and order is not always prepared in relation to supplies or physical presence on the scene.

Hurricane Hugo made landfall on September 17th, 1989 at St. Croix on the U.S. Virgin Island. It was a Category 4 hurricane that did enough damage to cut the island off from the outside world. St. Croix keeps in contact with the mainland via telephone lines and transmitted means, but the hurricane destroyed phone lines and relay towers for transmissions to the mainland.

St. Croix was not unprepared, but was struck harder than anticipated, "...stored food and water was damaged, as were [the] telephone lines" (Harper, 2010, p. 9). In the wake of no power and little working law enforcement, law and order broke down in St. Croix. In an interview, Captain Paul Blayney, commander of the Coast Guard district in San Juan, Puerto Rico, stated that shore parties were sent ashore after Hurricane Hugo due to reports of "civil disorder" (FEMA, 1991). They were given the instructions to observe and report only, "...not to engage in any law enforcement activity...not to quell any of the looting" (FEMA, 1991).

People swam from the beach to the boats to report that there was a group of tourists hiding in a hotel afraid for their lives. Looting was occurring in the area, armed with guns that would be shot randomly; it hadn't progressed to shots fired at people yet. "...basically anarchy was in effect here on St. Croix" (Bruce Hunter, FEMA 1991). Virgin Islands state senator, Holland Redfield stated that "...we needed to restore order immediately" (FEMA 1991). This request for help was supported by territorial governor

Alexander Farrelly, "...unless help was requested and received it was a good chance that the looting would escalate and civil order would prevail....made the decision and I made the call to the White House...[asking them] to send two military police units" (FEMA, 1991). On September 20th, President Bush activated the National Guard, sending 1,000 soldiers to restore order.

Farrelly set a curfew a few days after Hugo hit, from 6:00 pm to 6:00 am. The curfew hindered efforts due to work needing to continue past 6pm. The curfew was stepped down to ten hours, then eight, before being lifted. Armed troops patrolled St. Croix at all hours until well into December (FEMA, 1991). The curfew was not just for threat of violence and law and order purposes, but also because it was winter and there was no power; this meant working in the dark in an area with significant damage; this posed another serious risk to the safety of emergency workers and civilians. Emergency workers have a higher risk to their physical safety due to the nature of their work, purposefully entering highly damaged and unstable areas to do their jobs.

Hurricane Katrina, specifically where it landed in New Orleans, was a Category 3 storm that made landfall August 29th, 2005. Two-thousand people died and those that failed to evacuate before the storm hit did not get the chance to do so until September 3rd, 5 days later (Harper, 2010, p.97). They were forced to stay in the city, possibly in the Superdome where the living conditions caused many evacuees to become apprehensive and fearful for their health and safety (Harper, 2010, p.248). Around 3,000 prisoners were released back into New Orleans due to the effects of the storm.

A significant rise in crime was reported following Katrina, a 68% jump in reported rape, increasing rates of interpersonal violence, and rising rates of mental illness

(Jenkins & Phillips, 2008). One paper stated that lawlessness also delayed restoration of essential private sector services such as power, water, and telecommunications. Federal officials attempted to have law enforcement officers protect emergency responders against security threats due to a lack of planning, arranging this support took several days, during which the situation grew worse (Wyatt-Nichol & Abel, 2007, p. 574).

There were conflicting reports from the Superdome, “stories coming out of the Superdome portrayed individuals...as violent predators, as reports on assaults, murder, and rape were perpetuated...the reports of rape and murder were never substantiated” (Wyatt-Nichol & Abel, 2007, p.572). This is in direct conflict with other reports cited, where extensive violence was referenced (Harper, 2010, p.248).

The Superdome was another safety issue that affects not only emergency workers but civilians too. The risk of sexual assault in temporary housing is higher than in normal situations due to the remote locations without adequate lighting, access control, and physical security (Harper, 2010, p.46). "Virtually every aspect of the criminal justice system was damaged or destroyed by the effects of the hurricane, including the courts, jails, and police"(Jenkins & Phillips, 2008, p.58).

Emergency workers live in the same temporary housing sites that FEMA sets up for a community that is damaged by disaster as a place for citizens to live while their recovery process is in progress. It was said in an interview with Interim Superintendent Warren J. Riley, Chief of Operations during the storm, that “the criminal justice system was essentially shut down...500 police officers were lost to the impact of the storm; they were either evacuated or quit, many of whom never returned” (Harper, 2010, p.249). Other crimes had also been noted in these FEMA parks, including murder(Harper, 2010,

p.249). Physical security being a problem in the previously mentioned temporary housing parks could be attributed to a simple lack of manpower.

Specifically looking at cases of violence against emergency workers, it was found that “a number of cases of sexual assaults against volunteers who have been working in blackout zones, which [had no] electricity and relatively poor law enforcement protection” (Harper, 2010, p.46). Volunteer jobs consisted of things like tearing down houses and hauling away debris in all areas of the city. Crimes such as armed robbery, burglary, rape, and minor thefts were witnessed during the extended recovery process, “criminal victimization of disaster volunteers who work in various recovery projects” was not uncommon during Hurricane Katrina (Harper, 2010, p.45).

Several factors led to Hurricane Katrina and New Orleans being such a topic of public attention, some of it resulting from government officials visibly supporting recovery efforts while the logistics were not so swift. As Barnsaw et.al. states, “...while large cities always have crime...it was not until Hurricane Katrina disrupted the entire urban system that these structural problems created conditions that drew widespread national media attention” (Barnsaw, Nigg & Torres, p.124).

New Orleans has a unique organization in the urban centers where power is centralized on parish presidents. This coupled with “the historically volatile nature of Louisiana state politics” (Barnsaw, Nigg & Torres, p.124) created an unstable environment. The parish divisions made resource allocation difficult during and after the hurricane made landfall.

Hurricane Gustav was a hurricane that made landfall September 1st, 2008. It was a Category 2 when it made it to Louisiana, and it was the second most destructive of the

hurricane season in 2008. Hurricane Gustav hit the same area with similar force as the hurricane that preceded it by three years, Hurricane Katrina. “Property was protected more effectively during Gustav” (Harper, 2010, p.255). This was due to the fact that the National Guard was deployed before Gustav even made landfall, whereas during Katrina it was not until 5 days had passed. Louisiana National Guard had troops and vehicles stationed at high looting risk targets such as pharmacies; “The highly visible police and National Guard presence served as an effective deterrent” (Harper, 2010, p.255).

One of the reasons it is worth consideration is that it landed in New Orleans three years after and in the same month as Katrina. Lessons learned from Hurricane Hugo and Hurricane Katrina were applied in Gustav. Lessons from all three previous hurricanes were then applied during Hurricane Sandy for a much smoother response.

In contrast to these other hurricanes, Sandy is one to examine for themes and lessons learned from previous ones. Hurricane Sandy was a Category 1 hurricane when it made landfall in New Jersey and New York, having lost energy from its peak strength of a Category 3 when it hit Cuba. The hurricane was a hybrid storm born from a tropical cyclone that went north but collected energy and pressure from the Northern Atlantic (Walsh, 2012, p. 37).

Closest estimates as of February 2013 place the cost of Sandy around \$50 billion, with estimates reevaluated as time goes on. These costs make Sandy the second costliest hurricane to hit the United States, having struck a similar socioeconomic environment (Porter, 2013). The storm hit during a full moon, which exacerbated the high tides (Walsh, 2012, p. 40). The reach of the storm hitting so many states and high

population centers that the storm “rendered mutual-aid agreements...virtually impossible” (Walsh, 2012, p.37).

Statement of the problem

The safety environment must be considered and specific choices made to evaluate and ensure a safe environment. Disaster events result in temporary housing, putting many people in close quarters to each other during a very stressful period of their lives. Law and order can be non-effective as people will tend to their own lives before their jobs; this leads to a major under staffing problem as police officers and fire fighters live in the area that gets affected. Outside help has historically been the solution, but sometimes this help comes later than needed as it happened in New Orleans during Hurricane Katrina, where assistance did not arrive for five days after landfall (Drye, 2005, p.2).

As will be shown throughout this thesis, events have been handled in different ways with differing results on safety. By examining the outcome of these decisions in the environments they were made, conclusions on best practices can be made. Both Hurricane Katrina and Hurricane Sandy are examples of disasters to learn from, as well as other hurricanes such as Hugo in 1989 and Gustav in 2008.

Purpose of the study

The purpose of this study is to look for reoccurring themes and issues from past hurricanes, focusing on themes related to emergency efforts and the safety of those involved. This study is attempting to find what did and did not work during preparation and response phases well into recovery of previous hurricanes such as Katrina to be applied in future hurricanes such as Sandy. These lessons need to then be applied in future disaster events, bringing as much of what was learned into the preparation phase to

be ready and available before the hurricane makes landfall. By being better prepared, response and recovery have an accelerated timeline with flexible operations that respond to sudden problems more effectively.

Definition of terms

For the purposes of this study, “disaster event” refers to any situation that violently brings a geographical location, such as a city, out of status quo; so far outside that normal life is brought to a halt until the situation has been recovered. “Response” is the time from when the hurricane disaster event is either anticipated or has made its influence on the area felt. “Recovery” for the purposes of this study refers to what comes after response, what actions are taken as well as the length of time it takes to return normal living in the area to return to the status quo. Whether this is a new status quo affected by the disaster event or returning to the previous one is dependent on the outcome of the event itself.

There are also several definitions concerning shelters and housing during disaster aftermath. “Emergency shelter” refers to “structurally sound havens for very short periods of less than twenty-four hours during and following a disaster” (Barnshaw et al., 2006, p. 119). “Temporary shelters” provide facilities for those whose homes are without basic utilities or are uninhabitable due to the effects of the disaster event. “Temporary housing” is set up at an intermediate staging housing scenario, where victims need to get back to normal tasks but their homes are still uninhabitable. These housing options are usually apartments or rental homes. “Permanent/replacement housing” is for those who are unable to ever return to their homes.

Potential significance

The potential for these applied lessons has many possibilities, the main one being a safer environment for emergency workers to do their jobs as well as civilians to survive and even help themselves during these tumultuous times. Lessons learned and then applied can ensure that there is no stereotypical breakdown of law and order, no need for an after-dark curfew that impedes continued recovery efforts.

Limitations

This study has been limited to hurricanes that have landed in large urban areas in the United States. It has also been limited to hurricanes that are comparable in severity. Further studies could include flooding that was not hurricane related as well as tornado disaster events; both being more plan preparation applications of lessons and heavy in response.

Organization of the study

This study is a case series focused on historical hurricanes of repute, looking at research and findings of academics as well as witness statements from those who experienced the disaster events firsthand. Themes and lessons learned are identified and shown how they were applied, and changes are proposed for potential future disaster events. Information on the storms themselves will be presented in the introduction, with more information found about the subject presented in the discussion section as well as findings portion. Previous research on the hurricanes to be considered will be presented in the literature review, as well as findings and issues to be discussed in the findings and discussion section. In this introduction, details on the hurricanes themselves are presented.

CHAPTER 2

Literature Review

Safety of emergency personnel and citizens needs to be a top priority with emergency response planning. Previous literature has shown reoccurring themes on this subject in relation to safety during disasters. By looking at past disasters and the literature published on them, these themes are discovered. Looking at Hurricane Hugo and Hurricane Katrina, lessons on safety can be learned and applied in future disasters as they were in Hurricane Sandy.

Howard Kunreuther and Mark Pauly looked at what was learned from Hurricane Katrina and looked at options for programs to be put in place before disaster strikes, the purpose to avoid extreme expense and large losses if insurance protection and swifter mitigation can be achieved. The research done was of the case series variety as well as looking into homeowners' insurance plans primarily, the authors stating that individuals did not anticipate the government coming to the rescue in the wake of a flood, hurricane, or earthquake but demand relief after suffering losses from a natural disaster. They also state that individuals move into disaster prone areas without considering these hazards and what they should do to protect themselves. Their research found that only 40% of residents in Orleans parish had flood insurance, 57.7% in St. Bernard's, and a mere 7.3% in Tangipahoa (Kunreuther & Pauly, 2006, p. 5). Kunreuther and Pauly propose mandated comprehensive disaster insurance for all homeowners; this would avoid such costly recovery for the government. If homeowners are insured against such disasters as well, their recovery from such events can also be much swifter than if they rely on governmental measures.

Amy Donahue and Robert Tuohy conducted a study on the lessons that disasters have taught us historically and that it seems that these mistakes they have noted have often been repeated thematically. The study was a qualitative analysis of response organizations' perspectives on lessons and learning, using interviews, document reviews produced following incidents, and a focus group retreat; all those interviewed were experienced emergency responders. The authors mention that not only can emergency responders predict problems and breakdowns before they happen, but casual observers can as well. Looking at several events, it has been noted that in large disasters that involved many agencies, a unified command is needed to coordinate efforts. This and many other themes were found, across many disasters, the authors recommended a "need for incentives to institutionalize lessons-learning processes at all levels of government" (Donahue & Tuohy, 2006, p.17). Certain types of grants can be set up for counties in such a way that only those that complete Incident Command training and keep it up to date are eligible for federal funding, such a type of incentive might be a way to avoid previously repeated mistakes.

The study also found that large scale disaster events require more resources, such as personnel, equipment, and supplies. The resources needed are often more resources than any agency could have on hand for a situation that arises, this makes resource acquisition and management a major function of incident management (Donahue & Tuohy, 2006, p.8). Preparation and early deployment of personnel and supplies before a hurricane makes landfall allows for closer supply sources as well as a forewarned supply chain to begin the mass acquisition effort. Overall, the study recommends learning past lessons and act on them as has previously not been the case.

Thomas Birkland and Carrie Schneider wrote a paper that looked at how prepared the courts were in Louisiana and New York. Birkland and Schneider did an overview of these trends with a focus on 9-11 and Hurricane Katrina and described the common features of disasters and of the management guidance available to courts (Birkland and Schneider, 2007). Among significant managerial trends in disaster management and the courts, using Katrina and 9-11 as what is known as ‘focusing events’. The research presented is based on secondary sources, through legal press and discussion about the courts in New Orleans and New York City from interviews with court officials. No primary research was conducted.

Birkland and Schneider found that, while courts did have planning and had different levels of preparedness (having found evidence of this, and further research would have been beneficial); that the day-to-day events that the courts had to attend to seemed to overtake the concerns of preparedness until a focusing event like the two presented. 9-11 and Katrina were characterized as a catalytic event that caused “training and planning efforts [to] have proliferated, and it is plausible to argue that court staff and leaders are not more familiar with emergency procedures than ever before” (Birkland and Schneider, 2007). This does show a reactionary view, but it is also a realistic one of people having lived through an event and not intimately knowing the details of how something works. It was noted that planning on the scale of Katrina was not prepared for by Louisiana courts but neither did any other government agency.

Pam Jenkins and Brenda Phillips studied how victims of domestic violence are affected during disasters. During these kinds of scenarios, support systems disappear and those who need that protection no longer have it. The authors gathered data from focus

groups of survivors and interviewed advocates; they also got incident data on domestic violence and observations from community meetings (Jenkins & Phillips, 2008, p.55). They found a sixty-eight percent jump in reported rape, and increasing rates of interpersonal violence (Jenkins & Phillips, 2008, p.50). There was a much higher amount of law enforcement in the urban center due to the disaster, but their first priority wasn't specific to domestic violence issues; being more focused on the hurricane aftermath. "Virtually every aspect of the criminal justice system was damaged or destroyed by the effects of the hurricane, including courts, jails, and police" (Jenkins & Phillips, 2008, p. 58). The change they suggested in their study was a sound idea, to train emergency shelters to be able to identify possible victims of domestic violence and get them away to a safer location if possible.

A study by John Barnshaw, Joanne Nigg, & Manuel Torres dovetails with what Jenkins & Phillips studied; they assessed the effectiveness of governmental efforts to provide shelter and housing for thousands of evacuees displaced by Hurricane Katrina (Barnshaw et al., 2006, p.113). Their data focused on the actions taken during the warning period of the hurricane as well as the early response period, versus the after effect; looking closely at the federal planning processes of the DHS and FEMA as well as the state of Louisiana and Texas in relation to evacuation, sheltering, and temporary housing (Barnshaw et al., 2006, p.114). The information they gathered came from three teams sent in by the Disaster Research Center to affected states September 15th-30th, 2005. They collected data concerning housing and sheltering issues. They did interviews with evacuees in hotels and official shelters as well as with emergency management

agencies. They found that Louisiana's Superdome was not a purposeful emergency shelter, but rather what is called a "last-resort refuge". A last-resort refuge is defined as:

"...a place for persons to be protected from high winds...unlike a shelter, there may be little to no water or food and possibly no utilities. Thus, a last resort refuge is intended only to provide best available survival protection for the duration of the hurricane only" (Barnshaw et al., 2006, p. 115).

The Superdome was only intended as a refuge of last resort for those who did or could not evacuate before the hurricane prevented it, not as a mass shelter. Despite this, the National Guard delivered enough supplies to the Superdome to supply it for three days. Likewise the Convention Center hasn't been designated a shelter or even a last-resort refuge, but it was also being used as a shelter for mass amounts of people in dangerous conditions (Barnshaw et al., 2006, p. 116). In respect to dangerous housing, the authors found via interviews from evacuees that they had been transitioned from different housing levels non-sequentially, in both directions from emergency shelters up and from temporary housing back to emergency sheltering (Barnshaw et al., 2006, p. 121). They were moved from location to location as well. This led not only instability to the area during an already tumultuous time, but also made it hard to ensure safety in housing situations.

As an addition to problems with providing safe housing options, there is also the problem of where to put manufactured housing in areas already inhabited such as neighborhoods in New Orleans that were not rendered inhospitable. Alka Sapat looked into policy learning and changes in post-disaster housing, specifically Hurricane Katrina and Ike. Sapat looked at legislation as well as housing policies pre- and post- Katrina. By

analyzing changes, they found that it was not only the housing areas that were already in place that were a danger, but also where they were trying to put them.

Sapat found that "...32 of the 64 parishes in Louisiana banned new group trailer sites after Katrina, which was heavily stigmatized and considered by many to represent 'blight'" (Sapat, 2011, p. 42). Having a hostile community around temporary housing makes for an unsafe environment. Sapat also found that FEMA tried to learn from this, attempting in post-Katrina housing situations to integrate housing into areas not contained inside community limits or into areas such as mobile home parks where the housing is appropriate for its surroundings (Sapat, 2011, p. 42).

Russell Dynes wrote a discussion on social capital in dealing with communities during emergencies. Dynes considers a community as a social system, focusing on what happens in this system during the response phase of a disaster (the time directly after the event ends). Dynes' research was focused on further analysis of previous work as well as further analysis of "response" research done, as he indicates, months or years after an event. Among his many findings, of interest and note are how a disaster can make volunteers flood to a community. The problem can be not a lack of volunteers, but how to utilize them. Dynes had several findings, a few of which contain suggestions for how to use social capital and use the standing social system that is already in place in a community rather than working against it. He also suggests involving local civic organizations in planning activities and utilizing existing social units instead of creating ad hoc ones. One interesting point he made, was that the aim of emergency planning is to move back to the "normal" as soon as possible, following a disaster event and not an opportunity to massively overhaul an area. This does not mean that there is not room for

improvement such as putting new measures of protection in place or rebuilding in a city better; but recovery means getting people back on their feet and respecting their traditions and social structure.

In light of the previous research done on Hurricane Katrina and the issues the emergency management conducted during that disaster event, this thesis will build on the themes that were identified. Hurricanes Katrina and Hugo give several lessons on what kind of problems arise and how they responded to them, or how we can learn from them. These lessons are taken and utilized in similar hurricane events, such as Hurricanes Gustav and Sandy. After examining these issues, suggestions for future use in hurricane situations in urban centers can be made.

CHAPTER 3

Methods

Context of study

For the purposes of this thesis, a narrowed scope will be used for the situations considered. The safety of emergency workers and civilians is the overall focus, with a specific examination of hurricane disaster events in urban centers. This will be done in a historical case series, examining past hurricanes (notable ones being Katrina and Sandy) in urban centers and reoccurring themes relating to health and safety of those involved.

Research questions

1. What themes in emergency worker and citizen safety can be taken from Hurricane Katrina and similarly Hurricane Gustav?
2. From the lessons learned following Hurricane Katrina as well as other hurricanes; how were they applied during Hurricane Sandy?
3. For future disasters, what themes overall can be taken from all studied events and repeated or avoided?

Two historical disasters were examined for reoccurring themes and lessons learned, to make proposals for changes in future disaster preparation, response, and recovery. The disasters were Hurricane Katrina in 2005 and Hurricane Sandy in 2012. Katrina and Sandy are compared due to their similar affected environment, large urban centers with a bloated population; New Orleans and New York City/New Jersey specifically. Lessons learned from Katrina can be applied in Sandy due to the similarity of environment and storm circumstance.

Examining Katrina, we can take lessons and themes that were applied in the preparation and response to Sandy, as well as being applicable in future policies. Other Hurricanes are mentioned for relevant application of lessons from Hurricane Katrina as well, supporting the findings from Katrina and their successful application. The goal will be to determine if lessons learned during Hurricane Katrina were effectively applied during Hurricane Sandy.

Data collection and analysis

For data collection, several information sources were used; peer-reviewed articles, as well as education materials such as videos and books. The sources of information examined included interviews from disaster event survivors and responders, as well as planning details and outcomes of event response. Data was collected and analyzed for reoccurring themes found from two main hurricane events as well as anecdotes from other storms; Hurricanes Katrina, Sandy, Hugo, and Gustav are all considered. By looking at historical data, lessons are learned from the mistakes and victories that resulted from the disaster itself and the actions of those involved.

Bias

There are a few bases of possible bias in the sources used, the main concern being the bias of those who were actively experiencing the disaster event as opposed to those who came after and interviewed them. Personal investment in the area as well as perception of events can be a bias, as well as the bias of the person recording the data acquired from them.

CHAPTER 4

Discussion and implications

The three main themes discussed have implications for how lessons learned from previous hurricane events, where they are utilized in more recent hurricanes. These themes are discussed below.

Waiting for landfall

Waiting for a hurricane to make landfall before deploying assistance measures is a failure in process. During Katrina, disaster declaration was not done until after the hurricane had moved through New Orleans and left damage behind. Governor Blanco made requests for resources from FEMA before Katrina even made landfall. She reported that “she could not get the federal government to respond to her requests” (Barnsaw, Nigg & Torres, p.125). A conflicting report states that “Blanco was criticized for being reluctant to transfer power to the federal government...she requested federal assistance on the day Katrina made landfall...[she] declined a White House proposal to place control of National Guard under the federal government” (Wyatt-Nichol & Abel, 2007, p. 567).

In Sandy and Gustav, disaster declarations should be made as soon as it is known where the incoming hurricane will make landfall. By doing so, mutual aid assistance can be requested quickly for supplies and additional physical presence, to be ready for when it is needed since as previously stated most agencies do not have what supplies are going to be required for response and recovery on hand. The early declaration also allows for earlier military support to prevent a breakdown in law and order as seen in historical events. In Sandy, the declaration was made as soon as the

hurricane was detected as a threat to New York and New Jersey; allowing for resources and support to be mobilized prior to need.

Military support to augment civilian law

Military support of civilian law enforcement is effective and efficient for restoring order to the community and protecting assets. The military support already in place is also a step toward the safety of emergency workers. Emergency workers working in teams should be protected by military units, so they do not have to worry about themselves and can carry on in their work. By protecting emergency workers, their equipment and supplies, the recovery process will also be swifter and less tumultuous for the community.

While recovery and law enforcement experiences were less than positive during Katrina and Hugo, Sandy and Gustav went much smoother by applying these lessons and attempting to improve the experience leading up to and following disaster events.

Anecdotes from Sandy consisted more of stories of people helping each other rather than violence and outlaw activity. This cannot be simply a cultural difference due to all large cities having crime and both New Orleans and New York City being large urban centers.

During a disaster, the National Guard of each state can be activated by their Governor or nationalized by the President. The state National Guard “provides security, shelter, traffic control, and resources” to support the response and recovery phase of an emergency (Goss, 2007, p.258). They can provide helicopters, generators, portable lights, and communications; all of these activities and resource provision must be approved and then made available for use by the governor. This does add an element of delay for needed resources at the disaster site. The National Guard has emergency management

responsibilities in 26 states (Goss, 2007, p.52). The National Guard consisted of 70% of the military force for Hurricane Katrina, able to provide assistance to law enforcement as federal military branches cannot under federal law; this means swifter control of law enforcement that doesn't need to wait for declarations or additional orders (Davis, T. , 2006, p. 207).

During Hurricane Katrina, there were initially 15,000 National Guardsmen on active state duty in the surrounding states, including Louisiana, Mississippi, Alabama, and Florida (Goss, 2007, p.281). In just a few days that number increased to 30,000 personnel and resources deployed through their own state emergency management agencies mutual aid agreements.

Florida put into effect legislation in 1993 an interstate compact on emergency relief; it was a statement that formally recognized what had previously been informal agreements between the Florida National Guard and the National Guard of surrounding states to provide emergency assistance and supplies in the event of a disaster scenario (Goss, 2007, p.272). These units can prearrange for personnel and equipment, shortening the delay that in state gubernatorial approval can cause. This reflects the current trends that focus on automatic aid concepts; rapid assistance through pre-set plans to receive the closest appropriate resource with no concern to jurisdiction.

More importantly, National Guard units were used to “augment civilian law enforcement in support of their missions” (Goss, 2007, p.281). This was important due to the breakdown of law and order in New Orleans during Hurricane Katrina in 2005. This was also a reoccurring theme during Hurricane Hugo in 1989, military units augmenting civilian law enforcement during a disaster's resulting disorder.

Before the National Guard support civilian law enforcement, there were several instances of media bias that complicated response matters due to public perception. News stories portrayed one racial group as looting and being violent while members of another racial group “were portrayed as getting supplies” (Wyatt-Nichol & Abel, 2007, p.572).

The National Guard personnel have emergency management responsibilities to maintain security for firefighters, as well as their equipment during the response phase of Hurricane Katrina (Goss, 2007, p.53). This is an example of an effective safety measure for emergency worker safety; fire fighters did not have to worry about their necessary work tools going missing while they did their jobs.

During the military support of New Orleans law enforcement, it was stated that, “When the federal presence arrived, along with police officers and other emergency personnel from all over the United States, we then had a substantial population of law enforcement in the city... [afterwards there was] virtually no violent crime” (Harper, 2010, p. 249-251).

It was stated by Donahue and Tuohy that regular duty law enforcement could not be expected to abruptly be pulled out of their job roles and learn incident management quickly while engaged in the process. “You can’t grab ‘regular’ police officers and firefighters and take them away from handling the stuff their handling to do incident management stuff” (Donahue & Tuohy, 2006, p.7).

During Hurricane Hugo, a dramatic break down of law and order was witnessed, with the initial support units being told not to participate in any activities to end criminal behavior. They were told to ignore looting behaviors and to only observe

and report activities. As previously stated, when civilians took notice of the military presence they swam to the boat to ask for help as they feared for their safety.

Literature and witnesses state that as soon as a visible military presence had arrived, law and order was restored. The curfew put in place was originally 12 hours, which was justified with the issue of no power. The worry was that with no power to light the city, people out and walking in the street might be run over as well as attacked by those they could not see. Portable lighting with generators would need to be utilized and in such large quantities as to be unreasonable.

The curfew was a hindrance to recovery, since the curfew also applied to emergency workers who often needed to work past 6:00 pm. This curfew was reduced in hourly increments over time.

Hurricane Gustav is a supporting example of lessons learned from Katrina, as it hit in the same area and similar force as the hurricane that preceded it by three years. “Property was protected more effectively during Gustav” (Harper, 2010, p.255). This was due to the fact that the National Guard was deployed before Gustav even made landfall, whereas during Katrina it was not until 5 days had passed. Louisiana National Guard had troops and vehicles stationed at high looting risk targets, for an example would be pharmacies; “The highly visible police and National Guard presence served as an effective deterrent” (Harper, 2010, p.255).

The National Guard being deployed helps with the personnel issue as well as emergency workers that will drive to help from all over the United States. They can bring supplies with them. It can be argued that the National Guard is largely underutilized, though they have emergency management experience, training, and duties. Safety of

emergency workers is not considered to the level it should and plans for such need to be in place long before a disaster event. Emergency workers tend to deploy before they are called to respond if they see a need.

Preparation needs to be heavily invested in, as it is an action that mitigates how bad a recovery process is for affected areas. Taking the lessons from Hurricanes Hugo and Katrina, Hurricanes Sandy and Gustav had smoother recovery efforts. Hurricane Gustav hit New Orleans three years after Katrina did, and the lesson learned relating to law enforcement was quickly implemented. The National Guard was deployed before the storm hit, a lesson also reflected in the preparation for Hurricane Sandy in 2012.

Early declaration lends to early resources

In relation to disaster possibilities, Governor Cuomo of New York stated, “We have a 100-year flood every two years now, we [need to be] more prepared and protected than we have been before” (Walsh, 2012 p. 36). Preparation plans and redundant measures were one of the reasons New York was prepared for Hurricane Sandy, with sufficient notice of its landfall. NASA has orbiting satellites that forecasts the storm in advanced. A month before Sandy, the satellite used went dark. Before panic could occur, NASA activated the spare satellite they had in orbit.

The satellite forecasted Sandy and warnings pushed Cuomo and FEMA to declare it a disaster in eight states and Washington D.C. before it even made landfall. This allowed requests for assistance to be made before the storm even hit. Law enforcement had National Guard support, and no large reporting of violence such as seen in Katrina and Hugo was in evidence.

Governor Cuomo also stated that preparation needed to be a priority, even if it cost more money up front; “For every \$1 spent on...infrastructure, \$5 in disaster-damage costs [are] saved” (Walsh, 2012 p. 36). In the preparation process, all the different levels of government from local to state to federal must have plans and programs in place to facilitate cooperation. “...[it could be argued] that FEMA's regional offices should have a stronger role in working with states to adapt the NRP, NIMS, and other FEMA programs to fit local and state political systems. Perhaps if this had been done, it might not have been necessary to militarize the response in New Orleans. This recommendation, of course, could not be taken without a public discourse about the proper role of FEMA. Since the establishment of DHS, FEMA has been diminished in size, budget and authority; yet it is still the primary civilian agency tasked with all aspects of disaster management” (Barnsaw, Nigg & Torres, 2006, p.127).

Measures taken for early declaration of a disaster has resulted in positive results. Keeping these lessons in mind, policy changes can be made to avoid negative issues from the past and reinforce the positive results as a standard.

Lessons learned are a powerful tool, but they need to be applied at multiple levels at the same time. “...analysis shows that disaster related learning and policy change occur at the state as well as the national level. The local dimension is...important when dealing with disasters...state and local governments have the greatest influence over policy tools in the realm of natural disasters” (Donahue & Tuohy, 2006, p.104). This is reflected in Federal disaster policies, which are by and large designed to “induce state and local governments to take action” (Donahue & Tuohy, 2006 p.104).

Referring back to the research questions previously proposed, there are several themes to be taken from Hurricane Katrina in respect to emergency worker and citizen safety. These are tied due to the fact that emergency workers inhabit the same physical space as citizens during disaster periods, even staying in the same housing. Themes to be taken include unsafe housing situations, lack of resources for basic job use, little to no adequate protection or law and order, as well as late disaster declaration and the resulting delay in assistance.

This theme ties back into the previous two, from the lessons learned during Katrina, they were applied to Sandy in several ways. With the lessons FEMA learned during Katrina, they applied to Sandy. FEMA was prepared before the storm and responded immediately after with no delay. There wasn't a wait for the storm to hit before readying and positioning personnel and resources (Naylor, B. , 2012).

In relation to the little to no law enforcement support, the hurricane was declared a disaster before it made landfall as stated and the National Guard assisted in law enforcement efforts from the beginning. Law enforcement having National Guard support, lead to no large reporting of violence such as seen in Katrina and Hugo was in evidence. Early declaration meant supplies and resources were released earlier and further needed amounts could be requested. Hurricane Gustav showed that lessons were learned from Katrina three years prior, by having National Guard units in place before the hurricane hit protecting high value targets. This reduced violent and looting behavior such as was seen during Katrina and Hugo.

Historical disaster events such as Hurricanes Katrina, Hugo, Gustav, and Sandy all serve as lessons learned and warnings for the future events that will impact lives. By

heeding the themes and knowledge, much tragedy and loss can be avoided or at least lessened. It is the duty of Emergency Managers and all levels of government to commit to learning and implementing measures taken from them.

Suggestions for future response use

As soon as a hurricane or any storm system threatens a community, a disaster declaration should immediately be made. Even if the storm never actually hits the community, the resources can be returned to where they were deployed from for future use. The resources in place are ready for use one way or the other, and if not no harm done besides time.

Military support of civilian law enforcement is effective and efficient for restoring order to the community and protecting assets; as soon as a disaster such as a hurricane is imminent, support and assets should be deployed to augment and stabilize and dangerous situation. To achieve this support swifter to civilian law enforcement, the National Guard should be utilized as they are not restricted from law enforcement while the federal military services are.

Disaster status should be declared early and acted on as soon as possible, this makes sure that immediate assets are made available and more can be sent on the way for sooner access upon need. This links to the military support option, declaration status means the National Guard can be federalized for response before desperate need arises.

List of References

- Barnsaw, J., Nigg, J., & Torres, M. (2006). Hurricane katrina and the flooding of new orleans: emergent issues in sheltering and temporary housing. *American Academy of Political and Social Science*, 604, 113-128.
- Birkland, T. A., & Schneider, C. A. Emergency management in the courts: trends after september 11 and hurricane katrina. (2007). *justice system journal* 28, III (20), 1-12.
- Davis, T. (2006). A Failure Of Initiative. *Report to 109th Congress*, 201-207.
- Donahue, A., & Tuohy, R. (2006). Lessons we don't learn: a study of the lessons of disasters, why we repeat them, and how we can learn from them. *Homeland Security Affairs*, 2(2),
- Dynes, R. R. Social capital: Dealing with community emergencies. (2006). *Homeland Security Affairs*, II (2), 1-22. Retrieved from <http://www.hsaj.org>
- Federal Emergency Management Agency, Washington D.C., 1991, time 46 minutes and 27 seconds. (Producer) (n.d.). *Hurricane hugo in the virgin islands: The federal response* [Web]. Retrieved from http://www.courses.justice.eku.edu/SSE826/Video/video.asp?fileType=MP4&lesson=Supplementary_videos&fileName=FEMA_Hugo
- Goss, K. C. (2007). *Emergency management handbook*. (1 ed.). Oklahoma State University: fire Protection Publications.
- Harper, D. W. (2010). *Crime and criminal justice in disaster*. Durham, North Carolina: Carolina Academic Press.
- Jenkins, P., & Phillips, B. (2008). Battered women, catastrophe, and the context of safety after hurricane katrina. *NWSA Journal*, 20(3), 49-68. Retrieved from <http://www.jstor.org/stable/40071296>
- Naylor, B. (2012, November 3). Lessons From Katrina Boost FEMA's Sandy Response. Retrieved November 4, 2014, from <http://www.npr.org/2012/11/03/164224394/lessons-from-katrina-boost-femas-sandy-response>
- Pauly, M., & Kunreuther, H. Rules rather than discretion: lessons from hurricane katrina. (2006). *J Risk Uncertainty*, 33, 101-116.

- Porter, D. (2013, February 12). Hurricane sandy was second-costliest in us history, report shows. *Huffington Post*. Retrieved from http://www.huffingtonpost.com/2013/02/12/hurricane-sandy-second-costliest_n_2669686.html
- Ripley, A. (2012, November 12). Lessons from the storm: Outsmarting the surge. *Time Magazine*, 180(20), p.vi-1.
- Walsh, B. (2012, November 12). Lessons from the storm: Outsmarting the surge. *Time Magazine*, 180(20), 34-41.
- Wyatt-Nichol, H., & Abel, C. (2007). A critical analysis of emergency management. *Administrative Theory & Praxis*, 29(4), 567-585. Retrieved from <http://www.jstor.org/stable/25610897>