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The Willingness and Ability of First Responders to Report for Duty During Disasters: A Case Study of Local Law Enforcement Officers

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The Willingness and Ability of First Responders to Report for Duty during Disasters: A Case Study of Local Law Enforcement Officers

by

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Abstract

Role abandonment of employees is a vulnerability of first responder organizations that can be exposed when disasters occur. Organizational vulnerabilities created by role abandonment of first responders can be reduced by understanding the willingness and ability of employees to report for duty during disasters. To gain a better understanding of law enforcement organizational vulnerability to disasters, this study utilizes an online survey disseminated to police officers (n = 314) working for a police department along the Gulf Coast to determine their willingness and ability to report for duty and examines the barriers and facilitators impacting their decision to report for duty during six disaster scenarios. The results showed that the overwhelming majority of participants were *somewhat willing* to *very willing* and *somewhat able* to *very able* to report for each of the disaster scenarios presented in the survey. The willingness and ability of local law enforcement officers may vary depending on the disaster type. Officers who were willing and able identified fewer barriers than the officers who were unwilling and unable across each disaster scenario presented. In terms of facilitators, officers who were willing and able identified more facilitators which would increase their willingness and ability to report across each disaster scenario presented. Local law enforcement organizations may be able to reduce vulnerabilities by implementing disaster specific policies that address the barriers and facilitators of their officers to report for duty.

Keywords: Willingness, ability, first responders, role abandonment

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Chapter 1: Introduction

Background

During disasters, it is expected that law enforcement organizations will be able to respond to any incident no matter the disaster agent or scope of impact. The disaster response activities of American law enforcement organizations are tremendous and continue to expand in order to address new and emerging problems. As the United States has evolved, Americans have become more reliant upon the functions of government to ensure their wellbeing, security, and safety. The expanding reliance on government has implications for all first responder organizations, especially during disasters and catastrophes. Communities rely on local law enforcement organizations on a daily basis to fulfill a myriad of functions including safety and security. During disasters, the daily functions of law enforcement organizations become expanded to include disaster response activities. Due to the additional disaster related responsibilities, local law enforcement officers are among the first to arrive in an impacted area to assist those who are in need (Rojek & Smith, 2007).

In conjunction with the expanding reliance on government, the escalation of disaster losses has also increased the burden on local law enforcement organizations. The escalating frequency of disaster losses can be partially attributed to the social production of risk (Tierney, 2012). Technological advancements, settlement patterns, land use practices, demographic shifts, disaster politics, and reactive disaster policies have all been identified as contributing to the escalation of socially produced disaster losses, but organizational structure, policies, and processes can reduce the hazard risks of a community (Tierney, 2012). Law enforcement organizations are one component of the whole community approach to hazard

vulnerability reduction, and therefore, law enforcement's organizational structure, policies, and processes must reflect the empirical findings that support vulnerability reduction.

Due to the increased reliance on government response and social production of risk, it has become paramount to address the vulnerabilities of local law enforcement organizations. It is essential for organizations that engage in disaster response and recovery activities to ensure a great level continuity of operations during disasters. A decreased capacity to maintain adequate continuity of operations negatively impacts disaster response and recovery. Role abandonment of employees can be one of the unforeseen organizational vulnerabilities which may emerge during disasters and result in a degradation of continuity of operations. In the area of disaster research, role abandonment was first studied by Lewis Killian (1952) and was described as the abandonment of the occupational role by an employee during a disaster. The impact of Hurricane Katrina on the New Orleans Police Department (NOPD) is an example of how role abandonment by police officers resulted in a decreased capacity to maintain continuity of operations.

Hurricane Katrina's impact on the New Orleans Police Department (NOPD) exposed faults in the organizational planning and polices that exacerbated the amount of role abandonment by officers. During the impact of Hurricane Katrina, not only did flood water inundate police precincts and carry away police cars, but due to rising flood waters, officers were left stranded at their homes and unable to report for duty (Committee on Homeland Security and Governmental Affairs, 2006). The unprecedented amount of role abandonment by NOPD officers impacted the continuity of operations of the NOPD (Harper & Frailing, 2012). Disciplinary action was taken on 320 NOPD officers (nearly 20% of the total force) for abandoning their posts (Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006). The organizational vulnerability of role abandonment by

police officers may have been reduced if there was an understanding of the barriers and facilitators influencing the willingness and ability of NOPD officers prior to the impact of Hurricane Katrina.

The unusually high rate of role abandonment observed within the NOPD was not reported within other responder organizations that were impacted by the same disaster. Hurricane Katrina impacted many first responder organizations in Louisiana and Mississippi, but there have been no reported instances of role abandonment by first responder organizations other that the NOPD (Adams & Anderson, 2019; Quarantelli, 2006). The variance of impact on responder organizations by a single disaster illustrates that each organization possesses their own unique vulnerabilities. The difference in impact may be due to the organizational structure, processes, policy, and disaster response obligations unique to each organization. Because each organization active in disaster response has their own characteristics and operational demands, each organization must engage in unique mitigation, preparedness, and response planning that is specific to its needs in order to reduce vulnerability (Landahl & Cox, 2009). In order to reduce the vulnerability of role abandonment by first responders, empirical research is needed to determine the underlying relationship these unique characteristics have with the unwillingness and inability of personnel to report for duty during disasters.

In order to reduce overall community vulnerability, the organizational subsets of the community must reduce their individual vulnerability by engaging in activities that enhance resistance and resilience capabilities as well as reduce the liabilities associated with risk and susceptibility (McEntire, 2000). Reciprocally, it is also imperative that an organization's leadership prepare its first responders to report for duty during disasters by having the essential resources necessary to carry out the essential functions of their responsibilities to ensure the

safety and welfare of a community, as well as for the purpose of maintaining officer safety. This is especially true for the organizations that are intrinsically responsible for disaster response activities (e.g., EMS fire departments, law enforcement organizations). Communities expect that each of these organizations will be able to maintain continuity of operations during all disasters. One facet of maintaining continuity of operations is ensuring that the personnel employed by the response organization are willing and able to report for duty when needed. In order for first responder organizations to maintain continuity of operations, there must be direct and deliberate planning and preparation aimed at vulnerability reduction so that response personnel are willing and able to report for duty.

The organizational planning and preparation efforts cannot be ad hoc but must be founded on empirical findings relevant to their social and physical environments. Because each responder discipline possesses unique operating demands that must be addressed in order to effectively respond to disasters, there is a need for independent studies of each first responder discipline (Rojek & Smith, 2007). To illustrate, EMS organizations have different disaster response priorities and responsibilities than fire departments or law enforcement organizations, and therefore, disaster preparedness planning needs to address the specific responsibilities of each responder discipline. More specifically, an EMS organization focuses on treatment and transportation of a victim while a law enforcement organization, responding in conjunction with the EMS organization, would be responsible for ensuring the safety and security of the victim and the EMS personnel. Although these organizations frequently respond to incidents under unified command, their disaster responsibilities are different and therefore require discipline specific planning necessities (Rojek & Smith, 2007). Not only do the response organizations differ in terms of disaster response activities, but they also differ by demographics and culture

composition, as well as by organizational structure, policy, and processes. Therefore, organizations must understand the specific needs relevant to their organization (Landahl & Cox, 2009).

Problem Statement and Research Gap

Role abandonment of law enforcement officers is an organizational vulnerability that may be addressed through organizational polices, structures, and processes. First responders within each community must address organizational vulnerability including local law enforcement organizations who provide disaster response functions. Law enforcement organizations have an integral role within each community because they are tasked with specific disaster response activities and provide necessary functions as part of the whole community approach to emergency management practices (Drabek, 1985; Kennedy, 1970; Wegner et al., 1989). In law enforcement organizations, the most important resources are the police officers who carry out the mission essential disaster response activities. One means through which law enforcement organizations may address vulnerability is by identifying barriers and facilitators of willingness and ability specific to their organization.

Vulnerability reduction practices, implemented by law enforcement organizations, need to be guided by an understanding of the barriers and facilitators officers perceive will impact their willingness and ability to report for duty. Hazard and disaster research literature has historically illustrated that role abandonment during disasters has not occurred to a level that requires attention during planning and mitigating efforts (Dynes & Quarantelli, 1986; White, 1962), but as societal changes and technological advancements have created new and emerging threats, uncertainty has developed among the willingness and ability of first responders to report for duty (Kushma, 2007). For example, Hurricane Katrina exposed organizational vulnerabilities

by showing that not all first responders were willing and able to report for duty. Studies of Hurricane Katrina's impact on New Orleans show that many police officers did abandon their posts; some were unwilling and some were unable (Adams & Anderson, 2019; Committee on Homeland Security and Governmental Affairs, 2006; Quarantelli, 2006; Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006).

As new threats have emerged, recent hazard research has re-examined role abandonment by investigating the willingness and ability of employees to report for duty. Hazard research on willingness and ability has been conducted in both the first responder and healthcare disciplines. Each of these disciplines has unique disaster response activities, is culturally, politically, socially, and economically different, as well as possesses its own unique operational demands (Adams & Anderson, 2019; Landahl & Cox, 2009). Because of the unique characteristics of each discipline, future research surrounding the willingness and ability of employees needs to be discipline specific. If law enforcement officers are neither willing nor able to report for duty during the hazards, then the organizations they work for will potentially have unmitigated vulnerabilities.

New and emerging threats as well as unmitigated role abandonment vulnerabilities call for future discipline specific hazard and disaster research to seek understanding of the barriers and facilitators impacting the willingness and ability of first responders to report for duty. Minimizing the potential for role abandonment of first responders will not only reduce organizational vulnerability but will also contribute to the holistic emergency management paradigm which is defined by the Federal Emergency Management Agency (2011) as a "means by which residents, emergency management practitioners, organizational and community leaders, and government officials can

collectively understand and assess the needs of their respective communities and determine the best ways to organize and strengthen their assets, capacities, and interests" (p. 3).

There has been emerging, but still highly limited, research on the ability and willingness of first responders (EMS, fire departments, and law enforcement) to report for duty (Delaney, 2008; Demme, 2007; DiMaggio et al., 2005; Mackler et al., 2007). While a few studies looked at the issue of role abandonment among law enforcement officers (Adams & Anderson, 2019; Adams & Turner, 2014), the discussions were primarily grounded in the idea of multiple group membership, role conflict, and role strain, but excluded other influencing factors (i.e., availability of PPE or organizational polices) that may impact an employee's decision to report for duty. No previous research has specifically examined the perceived willingness and ability of law enforcement officers to report for duty during different hazard scenarios along the Gulf Coast. Only one published study (Demme, 2007) has specifically addressed police officers' willingness and ability to report for duty during disasters, but that study only examined a biological hazard in the National Capital Region. Other studies across different responder disciplines (EMS and fire) have empirically examined willingness and ability to report for duty (Delaney, 2008; DiMaggio et al., 2005; Mackler et al., 2007), but the applicability of the results to the law enforcement discipline are limited because each responder discipline has their own unique operational demands requiring individual attention (Adams & Anderson, 2019; Cox & Landahl, 2009; Rojek & Smith, 2007). The gap in the literature of first responder discipline specific research on the willingness and ability to report for duty along with the need for decreasing the potential of role abandonment of local police officers during disasters led to the formulation of this study.

Consequently, this study focused on the law enforcement first responder discipline and sought to understand the willingness and ability of officers to report for duty during six scenarios of different hazard types (nuclear detonation, anthrax incident, chemical incident, major hurricane, biological disease outbreak, and nerve agent incident). The six scenarios were adapted from National Planning Scenarios recommended by the Department of Homeland Security (DHS) for local, state, and national preparedness initiatives (Department of Homeland Security, 2007). An online survey was distributed to a midsized police department located along the Gulf coast to investigate the willingness and ability of local law enforcement officers to report for duty and further probe how hazard type, perceived barriers, and organization interventions may modulate these attributes. The understanding of the factors that influence willingness and ability will empower local law enforcement organizations with the knowledge needed to engage in organizational vulnerability reduction activities. Engagement in vulnerability reduction activities will lessen the potential for future role abandonment of law enforcement officers during disasters and thus enable more effective response and recovery efforts of law enforcement organizations and further accelerate the recovery process of the communities they serve.

Purpose and Significance of the Study

The overarching goal of this dissertation was to understand the willingness and ability of law enforcement officers along the Gulf coast to report for duty during six hazard types, as well as the barriers and facilitators that impact the willingness and ability of those officers to report. The specific objectives of the research were as follows:

- to examine the association between hazard type and officers' perceived willingness and ability to report for duty (Research Objective 1);

- to examine the association between officers' perceived barriers and their willingness and ability to report for duty (Research Objective 2); and
- to examine the association between facilitators and the officers' willingness and ability to report for duty (Research Objective 3).

Accordingly, I asked three research questions (RQs) and provided research hypotheses (RHs) for each question:

- RQ1: What impact does hazard type have on the willingness and ability of law enforcement officers to report for duty during disasters?
    - RH1: Hazard type is associated with the willingness and ability of law enforcement officers to report for duty.
- RQ2: How do the perceived barriers of reporting for duty impact the willingness and ability of law enforcement officers to report for duty during disasters?
    - RH2: Law enforcement officers' perceived barriers are associated with the willingness and ability of law enforcement officers to report for duty.
- RQ3: How do facilitators impact the willingness and ability of law enforcement officers to report for duty during disasters?
    - RH3: Facilitators are associated with the willingness and ability of law enforcement officers to report for duty.

The three research objectives each corresponded with one research questions and one research hypotheses, and Table 1.1 was constructed to illustrate how each research question resulted in two research questions and two research hypotheses.

Table 1.1

Research Objectives, Questions, and Hypotheses

Research Objectives	Research Questions	Research Hypotheses
RO1: To examine the association between hazard type and officers' perceived willingness and ability to report for duty.	RQ1: What impact does hazard type have on the *willingness and ability* of law enforcement officers to report for duty during disasters?	RH1: Hazard type is associated with the *willingness and ability* of law enforcement officers to report for duty.
RO2: To examine the association between officers' perceived barriers and their willingness and ability to report for duty.	RQ2: How do the perceived barriers of reporting for duty impact the *willingness and ability* of law enforcement officers to report for duty during disasters?	RH2: Law enforcement officers' perceived barriers are associated with the *willingness and ability* of law enforcement officers to report for duty.
RO3: To examine the association between facilitators and officers' willingness and ability to report for duty.	RQ3: How do facilitators impact the *willingness and ability* of law enforcement officers to report for duty during disasters?	RH3: Facilitators are associated with the *willingness and ability* of law enforcement officers to report for duty.

This study will contribute to a very limited body of work surrounding the willingness and ability of first responders to report for duty during disasters by advancing knowledge of the barriers perceived to impact local law enforcement's decision to report for duty. Adding to the academic literature, the findings will also be useful in guiding the policy, structure, and processes of the law enforcement field of practices. According Trainor and Barsky (2011), organizational structures, policies, and process impact an organization's vulnerability. Organizations who reduce their vulnerability by implementing organizational polices, structures, and processes with the goal of increasing the willingness and ability of their officers to report for duty, will decrease the likelihood of role abandonment during disasters. Decreasing the potential

for role abandonment will result in communities that are capable of managing disasters more effectively at a local level and reduce recovery time.

Organization of the Dissertation

The introductory chapter, Chapter 1, has been an overview of the dissertation, explaining the research problem, research gap, methodology, purpose, goals, objectives, and significance of the study. Chapter 2 is a review of the extant literature surrounding organizations that have predefined disaster response activities and their employees' willingness and ability to report for duty during disasters. Chapter 3 discusses, in depth, the specifics of the research design and methodology to include the conceptual framework, instrumentation, sampling, and data analysis procedures. After a successful research proposal defense, research was conducted; Chapter 4 provides the research results and related discussions. Chapter 5, the final chapter, recapitulates the dissertation's major findings, reflects on the implications for policy and practice, discusses the contribution as well as limitations of the study, and explores opportunities for future research.

Chapter 2: Literature Review

Chapter two is a review of existing literature surrounding role abandonment research including the willingness and ability of first responders to report for duty during disasters. Accordingly, the literature review is structured into three primary sections. The first section explores the history of role abandonment research, illustrating that role abandonment, originally not considered to be a major concern (Dynes & Quarantelli, 1986), has emerged as a new vulnerability for first responder organizations that merits further research attention (Adams & Turner, 2014; Cox & Landahl, 2009; Kushma, 2007). The second section engages with previous research on the willingness and ability of first responders to report for work in the event of disasters, illuminating the research gap in discipline specific studies of law enforcement officers' willingness and ability to report for duty. The third and final section discusses the importance of law enforcement discipline specific research on role abandonment that investigate both the willingness and ability to report for duty in the mission of holistic emergency management practices. The chapter closes with a summary of the gap in the literature and a call for more research on the willingness and ability of local law enforcement officers to report for duty during disasters.

Role Abandonment in Disaster Research

Section I is serrated into three segments: 1) role abandonment of no major concern, 2) role abandonment as an emerging vulnerability, and 3) reexamining role abandonment in light of emerging vulnerabilities. The first segment discusses disaster research on role abandonment referencing the first studies on the topic (Dynes, 1986; Killian, 1952; White, 1962). The second segment discusses societal changes that produced new and emerging vulnerabilities which were observed during Hurricane Katrina's impact on NOPD. Lastly, the third segment argues that due

to new and emerging vulnerabilities created by societal changes, role abandonment of first responders is a vulnerability that needs re-addressed (Adams & Turner, 2014; Kushma, 2007; Landahl & Cox, 2009)

Role Abandonment of No Major Concern

The earliest studies of role abandonment suggested that multiple group membership by employees can create conflict between the role of an employee and other primary roles within a community such as the family role (Dynes & Quarantelli, 1986; Killian, 2002; White, 1962). Role conflict in sociological studies refers to the disagreement of priorities people are committed to as a result of multiple group membership (Dynes & Quarantelli, 1986). A widely cited explanation of role conflict in sociological research is that of Getzels and Guba (1954) which stated that role conflict appears when "…the situations are so ordered that an actor is required to fill simultaneously two or more roles that present inconsistent, contradictory, or even mutually exclusive expectations" (p 165).

Early studies of role abandonment focused on the idea that employees have multiple group membership in society, and during disasters, multiple group membership creates competing interest among those groups. Due to the competing interest of multiple group membership, the first studies of role abandonment sought to determine if the competing interest would result in role abandonment of employees in favor of other societal roles (Dynes & Quarantelli, 1986; Killian, 1952; White, 1962). The first study examining role abandonment of employees during disasters was by Lewis Killian (1952), and he concluded that due to multiple group membership, employees may struggle deciding between the priorities of conflicting roles during a disaster. The results of Killian's research indicated that "…conflicting group loyalties and contradictory roles resulting from multiple-group membership were significant factors

affecting individual behavior in critical situations" and that primary group memberships (e.g., family) would override responsibilities of secondary group memberships (e.g., employment) when individuals are made to choose between the conflicting roles (Killian, 1952, p. 310). Subsequent research has concluded that although individuals have multiple group membership, employees will not abandon their employee role in favor of their family role (Dynes & Quarantelli, 1986; White, 1962).

There are different reasons that may contribute to the contradictory findings on role abandonment of employees during disasters. First, these studies differ in terms of the study population, which may explain the conflicting findings. To illustrate, Killian's (1952) study examined refinery workers, ministers, and other organizational employees whereas the research by Dynes and Quarantelli (1986) and White (1962) included employees from organizations who have predefined disaster response functions such as, law enforcement organizations, fire departments, city government, and public utility departments. Because Killian's research did not directly study organizations traditionally tasked with emergency response functions and consequently the participants' roles in disasters were not clearly defined by their employment obligations, it is believed that the results of his study are not applicable to disaster response organizations (Dynes & Quarantelli, 1986). In a strong dissent from the idea that role abandonment is a major issue among responder organizations, Dynes and Quarantelli (1986) wrote, "in sum, while role conflict seems to be a problem for many professionals contemplating emergencies, it is seldom a problem for those solving emergences" (p. 37). A comparison of these studies has highlighted the difference between role abandonment of employees within disaster response organizations versus non-disaster response organizations.

Secondly, disaster type may influence role abandonment of employees and therefore contribute to the explanation of conflicting findings surrounding role abandonment (Adams & Turner, 2014; Dynes & Quarantelli, 1986). For instance, Killian (1952) studied an oil refinery explosion in Texas and found instances of role abandonment by employees in favor of their role of family, while White (1962) studied three communities in Texas impacted by tornados and found no instances of role abandonment by employees in favor of their role of family. There is a concern regarding the generalizability of the studies by Killian (1952) and White (1962) due to the limitation of the disaster type being examined, and one could question whether or not the results from these two studies would have been obtained during a similar study of a different disaster type (Adams & Turner, 2014). While a separate study found no instances of role abandonment by employees across a variety of disaster types (earthquake, tornado, flood, and hurricane) (Dynes & Quarantelli, 1986), suggesting that role abandonment is minimally impacted by hazard type, a more recent study of first responders during Hurricane Katrina found that the "potential for role abandonment is real depending on the context of the crisis" (Adams & Turner, 2014, p. 53), such as the type of disaster (Trainor & Barsky, 2011). Instances of role abandonment by first responders has been alarmingly observed during some disasters and not observed in others, and the contextual differences between disaster types may partially explain the variance among findings.

Two initial studies of employees working for organizations with predefined disaster response functions (Dynes & Quarantelli, 1986; White, 1962) ensured emergency management practitioners that there should be no concern about the role abandonment of first responders during disasters regardless contextual differences surrounding disaster type. Since the findings and recommendations of these foundational disaster research scholars, there has been little

attention given to the topic of first responder role abandoned, that is, until the catastrophic impact of Hurricane Katrina on NOPD's continuity of operations due to role abandonment by police officers (Kushma, 2007).

Role Abandonment as an Emerging Vulnerability

Although it has been established through past empirical research that role abandonment should not be a major concern to emergency response organizations, new threats have emerged and the issue should be readdressed (Kushma, 2007; Landahl & Cox, 2009; Trainor & Barsky, 2011). Threats such as toxic chemical accidents, terrorist attacks, and technological failures including nuclear and electrical power system failures each brought about new and unique risks (Quarantelli, 1985). As societies have progressed, the way in which disasters impact the social and physical environments have also changed. As populations have shifted, there are more inhabitants of coastal communities creating an increased risk to both the physical and social environments. Settlement patterns, land use practices, and reliance on governmental response have also changed since the early studies on role abandonment. Furthermore, technological advancements in energy, transportation, and telecommunication have profoundly changed the fabric of American society, and each of these changes influence the context of hazard and disaster research (National Research Council, 2006). As a result of new technologies, urbanization, and industrialization, the frequency of disasters will continue to rise resulting in increased physical and social damage (National Research Council, 2006; Tierney, 2012; Wegner et al., 1989). With each of these issues in mind, the literature suggested that role abandonment may be emerging as a problem for responder organizations (Delaney, 2008; Demme, 2007; Kushma, 2007; Landahl & Cox, 2009; Mackler et al., 2007).

A natural disaster which highlighted role abandonment as an emerging vulnerability was the impact of Hurricane Katrina on the NOPD. Due to technological advancements, vulnerable infrastructure, and increased vulnerable populations, Hurricane Katrina demonstrated that societal changes have brought about novel threats from known natural hazard, and therefore illustrated that role abandonment of first responders can no longer be viewed as a nonissue, as some police officers abandoned their duties due to unwillingness or inability to report for duty (Committee on Homeland Security and Governmental Affairs, 2006; Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006). The role abandonment by police officers, which was observed during the impact of Hurricane Katrina on the NOPD, demonstrated that the topic of role abandonment needs to be reexamined in the context of new and emerging threats.

Role abandonment vulnerabilities exposed by Hurricane Katrina's impact on NOPD illuminated the barriers hampering the willingness and ability of officers to report for duty during disasters. Organizational policies are one barrier that was found to impact the decision by officers to report for duty (Committee on Homeland Security and Governmental Affairs, 2006; Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006). For example, a NOPD policy required all officers to live within the city limits, so many of them were personally impacted by Hurricane Katrina, and as a result, many were stranded at home and unable to report to work at their assigned times (Committee on Homeland Security and Governmental Affairs, 2006; Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006). Other officers, who were mandated to live within the city limits, made the decision to evacuate with their families instead of becoming victims of the hurricane, and one NOPD officer was quoted as saying, "I left. Maybe it was [the]

wrong decision. Deep down in my heart if I had to do it again for my family, I would do it again" (Adams & Anderson, 2019, p. 75). Because organizational policies influence employee decision making, vulnerability reduction efforts should focus on how an organization can increase the willingness and ability of officers to report for duty by modifying policy with the guidance of empirical answers. However, research to inform such policy is insufficient in the field of law enforcement (Bertram et al., 2011).

Hurricane Katrina also demonstrated that one disaster event can impact disaster response organizations differently; The NOFD had no role abandonment issues while the NOPD encountered significant difficulties as a result of role abandonment (Quarantelli, 2006). Hurricane Katrina not only impacted first responder organizations functioning in the same jurisdiction differently (i.e., NOPD and NOFD), research also found inconsistent impact on different law enforcement organizations operating along the Gulf Coast (Adams & Anderson, 2019; Adams & Turner, 2014). For example, while the NOPD experienced levels of role abandonment never seen before, other small police departments, which were also devastatingly impacted by Hurricane Katrina, reported no instances of role abandonment (Adams and Turner, 2014). The variation in role abandonment reported across different first responder organizations suggest the need for adopting a discipline specific perspective at a local level in future studies of role abandonment during disasters.

Reexamining Role Abandonment in Light of Emerging Vulnerabilities

The changing impacts of disasters in a dynamic society have new implications for first responder organizations and their employees' willingness and ability to report for duty (Kushma, 2007; Landahl & Cox, 2009). The unprecedented level of role abandonment observed after Hurricane Katrina in local responder organizations has highlighted the need for reducing the

vulnerability of first responder organizations by ensuring the work force is personally prepared to be willing and able to report for duty during all hazard types. Out of a police force of roughly 1,750 officers, 18% did not report for duty as a result of their inability or unwillingness (Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006). While findings from early disaster research (Dynes, 1986; White, 1962) ensured practitioners that role abandonment among first responders was not an area of concern for emergency managers, the role abandonment observed during Hurricane Katrina demonstrated that role abandonment by first responders needed to be reexamined in the context of new and emerging threats (Kushma, 2007).

Since the exposure of first responder vulnerabilities to role abandonment, hazard and disaster research have become the two predominate means of studying role abandonment. Hazard and disaster research each have their own unique strengths and weaknesses as well as contributions to the area of study. Hazard research of role abandonment is predominantly perception research with a quantitative orientation that often utilizes a set of hypothetical disaster scenarios in a survey. In contrast, disaster research of role abandonment is predominantly behavioral research grounded on observations during actual disasters or through interviewing first responders with actual experiences of a particular disaster event. Hazard research predominately has found higher levels of predicted role abandonment, especially when a hazard involves the possibility of infection or illness, and in juxtaposition, disaster research has predominately found that role abandonment is rarely observed (Trainor & Barsky, 2011). According to Trainor and Barsky (2011), the problem with behavioral disaster research is that it "…requires an over-extension of finding beyond the original setting where the research was conducted" and the problem with perception studies is that participant's interpretation of the

disaster scenario presented during the survey "…makes it very difficult to judge the degree to which the scenario replicates the reality likely to be experienced during real events" (p. 16).

Despite the possible discrepancy between stated and actual behavior, it is noteworthy that hazard research affords researchers the ability to explore specific hazard scenarios in an effort to predict future behavior while disaster research on role abandonment entails an occurrence of a disaster and the opportunity for researchers to collect data for understanding role abandonment (Trainor & Barsky, 2011). Hence, hazard research is more suited for exploring new and emerging threats in an attempt to predict first responder behavior. It was a goal of this research to reduce first responder organizational vulnerability prior to impact of disaster, and therefore, perception-based hazard studies utilizing a set of hypothetical disaster scenarios was the most appropriate design to approach the research problems. Furthermore, many of the hazard studies of role abandonment have been approached through examining barriers and organizational interventions associated with the willingness and ability of first responders to report for duty, and this study therefore followed the tradition by approaching role abandonment in the same manner.

Willingness and Ability to Report for Duty

This section is serrated into two segments: The first segment discusses the previous research findings on the willingness and ability of first responders to report for duty during disasters to include law enforcement, EMS, and fire departments; the second segment discusses the findings from previous research on healthcare workers' willingness and ability to report for duty during disasters. The willingness and ability of healthcare workers was included for several reasons. The first reason being that there is limited research on the willingness and ability of first responders to report for duty during disasters and even less on the law enforcement responder discipline. Second, healthcare providers and their employees are a vital component of holistic

emergency management practices, and there is more research on the willingness and ability of healthcare workers than that of first responders. Finally, in some disaster types, healthcare workers can be considered first responders as they may be the first to contact victim's during such disasters as biological disease outbreaks or terrorist attacks incorporating infectious diseases or chemical attacks, as illustrated by the impact of the 2020 Novel Corona Virus (COVID-19) pandemic.

Willingness and Ability of First Responders

There are several hazard/perception studies that focused specifically on the first responder discipline. Of the few studies that have been conducted in the area of first responder willingness and ability to report, the majority focused on disasters associated with response to pandemics, biological terrorist attacks, and other unfamiliar disaster agents rather than natural disasters (Delaney, 2008; Demme, 2007; DiMaggio et al., 2005; Mackler et al., 2007). Studies that have examined the willingness and ability of first responders to report during disasters are typically responder discipline specific, focused on one or more incident type, and have examined responders in one specific geographic location (Trainor & Barsky, 2011). Each of these studies were limited due to these methodological parameters. Of the hazard research surrounding willingness and ability of first responders, there was one study specifically examining the responder discipline of law enforcement (Demme, 2007), one study examining the responder discipline of firefighters (Delaney, 2008), and two studies examining the responder discipline of paramedics/EMTs (DiMaggio et al., 2005; Mackler et al., 2007). Not every study on this topic examined both constructs of willingness and ability, and some studies only examined one disaster type, which further limits the generalizability of the findings. Besides, limited research on first responders' willingness and ability using very specific samples from unique populations

tends to have limited generalizability. In spite of these differences, the primary variables found in each study of willingness and/or ability of first responders to report for duty centered around the responder's concern for personal and family health and safety (e.g., Delaney, 2008; Demme, 2007). Other variables such as the existence of organizational incident specific plans, availability of PPE, availability of vaccines, and previous hazard specific training were each associated with willingness and/or ability of employees to report for duty (Delaney, 2008; DiMaggio et al., 2005; Mackler et al., 2007).

Notwithstanding the differences between the studies of first responders' willingness and ability, each study has found that some first responders reported unwillingness and/or inability to report for duty during certain disaster types. This should be alarming for first responder organizations who must maintain continuity of operations in order to provide disaster response functions. DiMaggio et al. (2005) reported that 35.2% of participants conveyed they were not willing to report to a smallpox outbreak, and 37.8% of participants reported they were not able to report during a snowstorm with 36 inches of snow in a 24-hour period. Mackler et al. (2007) found that if no vaccine and no PPE were available for smallpox, then 80% of respondents would abandon their post. The similarities in these studies indicated that disaster type influences the willingness and ability of first responders to report for duty, and future studies of willingness and ability should include multiple disaster types an organization may encounter for the training and planning process to embrace an all-hazards approach.

Barriers to First Responders' Willingness and Ability

Previous studies of first responders' willingness and ability to report for duty during disasters have overarchingly found that the primary concern for willingness and/or ability to report centered around personal and family health and safety, especially during less familiar

disaster types. DiMaggio's et al. (2005) predominately cited reason for unwillingness to report during a nuclear, chemical, or bioterrorism incident was concerns for family, and found that 44% of those who were unwilling, mentioned family concerns as their unwillingness reason. Although, in a study by Mackler et al. (2007), 91% of respondents were willing to report during a pandemic if PPE and a vaccine were available; that percentage fell to 38% being willing to report if their immediate family was not protected. This is an indication that responders were not only concerned about their individual health and safety but also the health and safety of their family. Furthermore, in the only qualitative study specific to law enforcement's willingness and ability to report during biological and pandemic incidents, it was found that personal concerns for family were also the most cited reason for inability and unwillingness to report for duty (Demme, 2007). The primary finding from Demme's (2007) research was that family preparedness and safety were the determinant factors in the ability and willingness of police officers to report for duty during a disaster involving a biological agent. One officer described his willingness in this manner, "I always said that if something horrific happens, I'm not going. I'm going with my family" (p. 34). This quote, in conjunction with DiMaggio's et al. (2005) and Mackler's et al. (2007) findings, solidified the idea that willingness and ability of officers to report for duty has been largely influenced by concerns for personal and family health and safety.

Likewise, the principal factors affecting firefighters' ability to participate in a pandemic were found to focus on family and included concern for the well-being of dependents, the care of pets, and their spouses employment status (Delaney, 2008). During incidents such as pandemics and other incidents involving infectious diseases and biological attacks, first responders have expressed hazard specific concerns that extended past their own personal health and safety and into their families. During disaster types involving contamination, first responders have

expressed concerns about their own health and safety regarding contaminated while on duty, but their concerns also extended to the family when required to return home without adequate protection for their family (Demme, 2007; Mackler et al., 2007). The uncertainty of becoming contaminating and spreading contamination to unprotected family may explain why the predicted willingness to report was lower during disasters involving infectious disease and biological hazards (DiMaggio et al., 2005). This also illustrates that disaster type affects the ability and willingness of first responders to report for duty as there would be no hazard of contaminating family during meteorological disaster events.

Facilitators of First Responders' Willingness and Ability

As shown above, factors that impact a first responder's decision to report for duty extended beyond the concern for the individual first responder and extended to the first responder's familial needs (Delaney, 2008; Demme, 2007; Mackler et al., 2007). Organizational interventions and organizational polices had great potential to alleviate these "barriers" and serve as "facilitators" to enhance the willingness and ability level of first responders (Delaney, 2008; Demme, 2007; DiMaggio et al., 2005; Mackler et al., 2007). For example, in a study of EMTs it was found that 83.1% of participants reported that if family assistance were offered by the employer, it would increase the respondent's willingness to participate (Delaney, 2008). In this same study, 80% of participants reported their willingness would increase if they knew their dependent care needs were planned for and met, and 70.8% of respondents reported their willingness would increase if their organization had pandemic response plans (Delaney, 2008).

The barriers reducing willingness and ability were also amendable through implementation of other organizational interventions such as providing first responders with hazard specific training and development of hazard specific disaster response plans. For

example, EMTs have been found to be twice as likely to report to a biological, radiological, and chemical incident if they had received training on the topic (DiMaggio et al., 2005; Mackler et al., 2007). In another instance, 70% of firefighters reported their willingness would increase if their organization had pandemic response plans (Delaney, 2008). Similarly, it was found that the development of biological-incident plans along with informing the police officers of the plans would positively impact their willingness (Demme, 2007). The research of the willingness and ability of paramedics/EMTs, firefighters, and law enforcement officers to report for duty during certain incident types illustrates that organizations who implement organizational interventions such as hazard specific training and planning will have more employees willing to report.

Beyond the existence of organizational incident specific plans and hazard specific training, studies of first responders' willingness and ability have also illustrated that the availability of PPE supplies or vaccines was positively associated with willingness and/or ability to report for duty (Delaney, 2008; DiMaggio et al., 2005; Mackler et al., 2007). In a discipline specific study of firefighters, one of the primary variables found to be associated with willingness to report for duty during a pandemic was as adequate supply of PPE offered by the employer and the availably of vaccines (Delaney, 2008). During a pandemic, 48.6% of fire fighters were unwilling and 69.6% were unable to report for duty if a member of their immediate family became ill as a cause of the pandemic (Delaney, 2008). In similar findings, Mackler et al. (2007) reported that if no vaccine and no PPE were available for smallpox then 80% of respondents would abandon their post. Although, the percentage fell to 39% unwilling to remain on duty if PPE was available and a vaccine was not available. Finally, if both PPE and vaccines were available, 91% of paramedics were willing to remain on duty (Mackler et al., 2007). Furthermore, in a study of police officers it was also found that the availably of a vaccine, the

availably of PPE, and the fatality rate of a biological agent impacted an officers willingness and ability (Demme, 2007). These studies illustrated the need for first responder originations to consider PPE, not only for the employee but also the employee's family, in order to positively impact the willingness and ability of employees to report for duty.

In sum, this section has focused on studies which concentrated on first responder disciplines (paramedics/EMTs, firefighters, and law enforcement) and their willingness and ability to respond to disasters (Delaney, 2008; Demme, 2007; DiMaggio et al., 2005; Mackler et al., 2007). Although the responder discipline, incident type, and methodologies varied, each study independently found that first responders' primary concern for willingness and/or ability to report for duty centered around personal and family health and safety. Other factors such as the existence of organizational incident specific plans, availability of PPE, availability of vaccines, and previous training on a hazard type are each impactful to a first responder's willingness and/or ability, but each of these barriers were amendable through the implementation of organizational interventions aimed at addressing the negative impact of the barriers.

While research surrounding the willingness and ability of first responders remains limited, there is more research on the ability and willingness of employees for healthcare organizations to report for work. While not typically categorized as first responders, certain healthcare organizations are frontline workers during disasters, for instance, during the 2019 Novel Corona Virus Outbreak, healthcare workers were some of the first to contact individuals who had been exposed to the disease. Therefore, the next section examines the willingness and ability of employees of healthcare organizations specifically, which may provide useful or applicable insights to the understanding of the willingness and ability among first responders.

Willingness and Ability of Healthcare Workers

The willingness and ability of healthcare workers to report for duty has also been studied in the context of disaster response and preparedness. Comparable to the first responder literature, healthcare workers' willingness and ability research was also incident specific, which mostly examined infectious diseases, pandemics, and terrorist attacks utilizing biological or chemical agents. It has been found that healthcare workers tend to be more willing than able to report during natural disasters and more able than willing to report during less familiar events such as pandemics or other disasters involving chemical and biological agents (Balicer et al., 2006; Crane et al., 2010; Qureshi et al., 2005; Shapira et al., 1991). The difference in the willingness and ability of healthcare workers to report for duty during different hazard types was influenced by numerous barriers and facilitators.

Barriers to Healthcare Workers' Willingness and Ability

Literature surrounding healthcare workers willingness and ability to report for duty during disasters has found barriers that negatively impact employees' personal decisions and capabilities to report for work. There was variability among the reported barriers, but the majority can be categorized as concerns for family health and safety (Qureshi et al., 2005; Schechter, 2007; Shapira et al., 1991); hazard type (Balicer et al., 2006; Crane et al., 2010; Qureshi et al., 2005; Shapira et al., 1991); availability of PPE (Balicer et al., 2006; Schechter, 2007); and hazard specific training (e.g., Balicer et al., 2006; Crane et al., 2010; Schechter, 2007).

Variables surrounding the employee's health and the safety of their families were a reoccurring finding throughout several different studies of healthcare workers (Qureshi et al., 2005; Schechter, 2007; Shapira et al., 1991). In a study of hospital workers it was found that the

greatest barriers for ability to report for work were childcare, eldercare, and pet-care responsibilities, and the most common barrier cited for willingness was concern for their family safety (Qureshi et al., 2005). In the unique study conducted in Israel during the Persian Gulf War, it was found that the necessity to care for family was the highest reported reason hospital workers were unwilling to report for work during an unconventional missile attack (Shapira et al., 1991). Shapira et al. (1991) found that 75% of respondents were unwilling to report during such an attack because they were afraid to leave home, and 63% reported to be unwilling because of the necessity to care for their family. Additionally, Schechter (2007) found that 50% of respondents rated family health concerns as a very important barrier to willingness. Although healthcare workers have different emergency response functions than that of traditional first responders, in certain disaster types, healthcare workers are on the frontlines of disaster response and provide critical disaster response functions. The concerns for personal and familial health and safety is an understandably shared barrier to willingness and ability to report for duty between healthcare workers and first responders.

Willingness and ability are also impacted by hazard type. Research of healthcare workers to report for work indicated that there is a large segment of the workforce who were unwilling and unable to report for duty during certain incident types (Balicer et al., 2006; Crane et al., 2010; Qureshi et al., 2005; Shapira et al., 1991). In a study of healthcare facilities in New York City, workers reported being more able to report for a mass casualty incident, an environmental disaster, and a chemical event and least able to report during a snow storm, sudden acute respiratory distress syndrome (SARS), and a smallpox epidemic (Qureshi et al., 2005). This same study also found that healthcare workers were more willing to report during a snow storm and a mass causality incident than they were willing to report during a radiological event,

smallpox epidemic, and chemical event (Qureshi et al., 2005). In a study of healthcare workers in Florida, 68% of physicians, nurses, and pharmacist were not willing to report for duty during a bioterrorism event (Crane et al., 2010). Additionally, Shapira et al. (1991) found that 42% of medical staff at hospitals were unwilling to report to work during an unconventional missile attack, and Balicer et al. (2006) found that only 52% public health workers were "likely to report" for work in the event of a pandemic. A common thread throughout each of these studies is that the willingness and ability of healthcare workers to report for duty were disaster specific.

Additionally, the availability of PPE (Balicer et al., 2006; Schechter, 2007) and hazard specific training (Balicer et al., 2006; Crane et al., 2010; Schechter, 2007) were also barriers to willingness and/or ability to report for duty. For instance, Schechter (2007) found that 46% of respondents reported lack of PPE as a barrier to willingness, and 42% reported lack of training as a barrier to ability. Furthermore, Balicer et al. (2006) found that 83% of respondents perceived hazard specific training as important influencers of their willingness and ability, and Crane et al. (2010) reported previous hazard specific employee training was a significant predictor to healthcare workers' willingness and ability during a bioterrorist incident.

Facilitators of Healthcare Workers' Willingness and Ability

Qureshi et al. (2005) wrote that many of the barriers which have been identified to impact willingness and ability can be influenced in a positive manner by interventions implemented by organizations. The literature suggested that interventions implemented by organizations have potential to increase an employee's willingness and ability include the following: providing PPE for the employee and family (Schechter, 2007; Shapira et al., 1991); providing incident specific training to the employee (e.g., Crane et al., 2010; Shapira et al., 1991); and offering employee and family assistance programs to include, emergency financial relief, critical home supplies,

and assistance with dependent care needs among employees with childcare and eldercare obligations (Qureshi et al., 2005). The implementation of organizational interventions such as plans, policies, structures, and strategies, aimed at addressing the variables was found to positively influence an employees' willingness and ability will reduce organizational vulnerability.

Future Research

Hazard type, concerns about personal and familial health and safety, and other barriers such as hazard specific training, hazard specific PPE, and organizational plans each impacted a first a responder's decision and capability to report for duty (Delaney, 2008; Demme, 2007; DiMaggio et al., 2005; Mackler et al., 2007). Overall, barriers and facilitators impacting willingness and ability were dependent on the specific circumstances surrounding a disaster, but it is clear that willingness and ability were conceptually different and "...although willingness might be influenced by ability (e.g., presence or absence of facilitators or barriers), even if one is fully able, he or she might still not be willing to report to work for a number of reasons" (Qureshi et al., 2005, p. 380). Because willingness and ability were impacted by different variables, it is necessary for future hazard research to examine both constructs respectively. Qureshi et al. (2005) wrote:

> We found that employees' ability and willingness to report for duty varied by event type. We also noted that, in general, the barriers to ability and willingness differed. This supports our hypothesis that ability and willingness are indeed two different constructs. (p. 385)

Due to the differences in variables influencing willingness and ability, first responder organizational leaders should understand what factors are most important to increasing the

willingness and/or ability of their employees to report for duty so that organizational polices, structures, and procedures may be implemented with the purpose of increasing the willingness and/or ability of employees to report for duty.

In a disaster, first responder organizations utilize their preexisting organizational structures to carry out disaster related functions, and it is an expectation of communities that first responder organizations will remain operational during disasters (Webb et al., 1999). Local law enforcement organizations are one of the first organizations to arrive on a disaster scene and provide a symbol of safety and security to the impacted community (Kennedy, 1970). The functions of local law enforcement in disaster response are dependent upon the circumstances of the impact, but typical functions of these organizations include traffic and crowd control, protections of life and property, search and rescue, warnings, and evacuations. Each of these local law enforcement functions is paramount to effective community disaster response (Kennedy, 1970;Wegner et al., 1989). Although fire departments, law enforcement organizations, and EMS are first responder organizations with predefined disaster response functions, they each have their own unique organizational differences steeped in the history, culture, and structure specific to their own discipline. Because of the organizational differences, a disaster can have tremendously different impacts. The impact of Hurricane Katrina in New Orleans is an example of how the NOFD was impacted differently than the NOPD. Quarantelli (2006) wrote the following:

> There was certainly a great deal of work-family role conflict in key emergency organizations. At least anecdotal stories suggest that only about two-thirds of police officers reported for and remained on duty (that there were no such reports about the fire

department may indicate additional organizational problems in the police department). (p. 3-4)

First responder studies have illustrated that willingness and ability may vary by responder discipline type. And the variation is likely to be further compounded by individual characteristics of the employees and hazard type (Trainor & Barsky, 2011), as well as geographical location (Demme, 2007; Adams & Turner, 2014). Therefore, the willingness and ability of first responders to report for duty during disasters needs to be discipline-, hazard-, and site-specific. To address the research gap, this study examined a midsized police department along the Gulf coast as a case study to specifically examine the willingness and ability of local law enforcement officers to report for duty during six disaster scenarios.

Recapitulation

Local law enforcement organizations provide fundamental disaster preparedness, response, and recovery functions, and it is expected that law enforcement organizations will continue to function during all disaster situations. The impact of Hurricane Katrina on the NOPD exposed that role abandonment does exist to a level that can severely impact continuity of operations. However, the ability and willingness of law enforcement to report for duty has been underexplored. The thesis by Demme (2007), the only published research that directly address the willingness and ability of police officers to report for duty during a disaster, found that personal and familial health and safety are primary variables impacting willingness and ability during a biological incident. The research by Demme (2007) was delimited in several ways: 1) only one hazard type (a biological incident) was examined; 2) only law enforcement in the National Capital Region of the United States were included. There has been no research

published examining law enforcement's willingness and ability to report for duty across different hazard types in the Gulf Coast area of the United States.

Two other disaster studies (Adams & Anderson, 2019; Adams & Turner, 2014) researched the impact of Hurricane Katrina on law enforcement organizations along the Gulf Coast focusing on the ideas of multiple group membership, role conflict, and role strain. Undoubtedly, role conflict and role strain will impact role abandonment, but the ideas of role conflict and role strain do not encapsulate other variables that influence an employee's decision to report for duty. Willingness and ability research has managed to not only consider role conflict and role strain as influencing factors but also other effects from first responder's health, personal safety, hazard specific training, and availability of personal protective equipment (PPE) in their decision to report for duty.

In addition, the extant literature has heightened the need for hazard specific and responder discipline specific research on role abandonment (Delaney, 2008; Demme, 2007; Landahl & Cox, 2009; Schechter, 2007). A gap in this research exist at the intersection of the law enforcement disciple and the self-reported willingness and ability to report for duty by hazard type. To date, no study has simultaneously examined the constructs of both willingness and ability of law enforcement to report for duty during different hazard types in the Southeast region of the United States. This study aims to fill the void in the literature by probing the willingness and ability of law enforcement officers along the Gulf coast to report for duty during six disaster scenarios as well as the perceived barriers and facilitators of their willingness and ability to report.

Chapter 3: Methodology

This study highlighted one of the challenges that law enforcement organizations are likely to confront during disasters—role abandonment. Specifically, this study utilized a questionnaire to examine the self-reported willingness and ability of law enforcement officers employed by a midsized police department located along the Gulf coast to report for duty during six different disaster scenarios adapted from the U. S. Department of Homeland Security's National Planning Scenarios (Department of Homeland Security, 2007). The main purpose of this study was to identify and analyze the key factors that may act as facilitators and barriers to the willingness and ability of local law enforcement officers to report for duty.

The methodology chapter is serrated into two primary sections. The first section introduces the ideas encapsulating the comprehensive vulnerability management (CVM) paradigm and discusses how the conceptual framework developed for this study is informed under the tenet of the CVM paradigm. The second section discusses the details of the research design including the study area, survey design, survey implementation procedures, and data analysis.

Comprehensive Vulnerability Management

Throughout the history of disaster research and the practice of emergency management, distinctive paradigms and models have been developed to understand and reduce the negative impacts of disasters. Among these various perspectives, the comprehensive vulnerability management (CVM) paradigm (McEntire et al. 2002) aimed to reduce vulnerability in a multi-dimensional manner and is applicable to the efforts of reducing the potential vulnerability that can be created by role abonnement of law enforcement officers during disasters. McEntire et al. (2002) defined CVM as "…holistic and integrated activities directed toward the reduction of

emergencies and disasters by diminishing risk and susceptibility and building of resistance and resilience" (p. 273). CVM is a holistic paradigm which has built upon the previous paradigms developed in the field of emergency management and disaster research and has applicability across all phases of the disaster cycle: mitigation, preparedness, response, and recovery (McEntire et al., 2002).

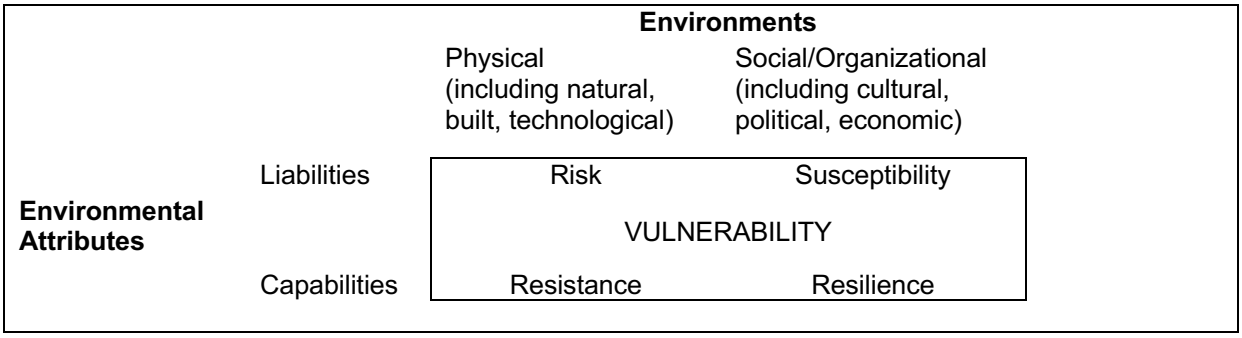
CVM takes a multi-dimensional approach to reducing vulnerability by addressing environments (e.g., physical, social, and organizational) and environmental attributes (e.g., organizational liabilities and capabilities). The physical environment includes structures, natural environments, and technology; the social and organizational environments include cultural, political, and economic systems (McEntire et al., 2002). Each of these environments have liabilities and capabilities, and according to the CVM paradigm, vulnerability reduction can be accomplished by decreasing liabilities and increasing capabilities (McEntire et al., 2002). Liabilities can be reduced when organizations engage in risk and susceptibility reduction practices; capabilities can be increased by organizational engagement in resistance and resilience practices. Risk, susceptibility, resistance, and resilience are not mutually exclusive and together determine the degree of vulnerability (McEntire, 2001). Figure 3.1 (McEntire, 2000; McEntire et al., 2002) visually represents the multi-dimensional nature of the CVM paradigm and offers an avenue to address the social, organizational, and physical environments and calls for rigorous effort to pinpoint and limit liabilities while enhancing capabilities in order to influence the determinants (risk, susceptibility, resistance, and resilience) of vulnerability.

For organizations to engage in liability reduction and capability enhancement practices, it is imperative to identify the barriers and organizational interventions (facilitators) influencing employees' willingness and ability to report for duty. Once there is an understanding of the

variables influencing willingness and ability, local law enforcement organizations will be able to use the information to inform policies, procedures, and structures that enhance capabilities and reduce liabilities thus reducing overall vulnerability. This study sought to pinpoint organizational vulnerabilities within the local law enforcement discipline of first responders. Although CVM was designed to be all-inclusive across hazard type, disaster phases, stakeholders, and environments, this study was specific to: (a) the potential hazards to occur in the geographical area being examined (Gulf Coast), (b) the mitigation and preparedness disaster phases, (c) the local law enforcement discipline, and (d) the social and organizational environments. It was with this understanding of the CVM paradigm that the following conceptual framework was developed to inform the research questions being asked and to provide a path to be used for understanding problems and exploring solutions through research.

Figure 3.1

Comprehensive Vulnerability Management Model



Note. The model was originally developed as the Invulnerable Development model (McEntire, 2000) and later adapted to the CVM model (McEntire et al., 2002).

Conceptual Framework

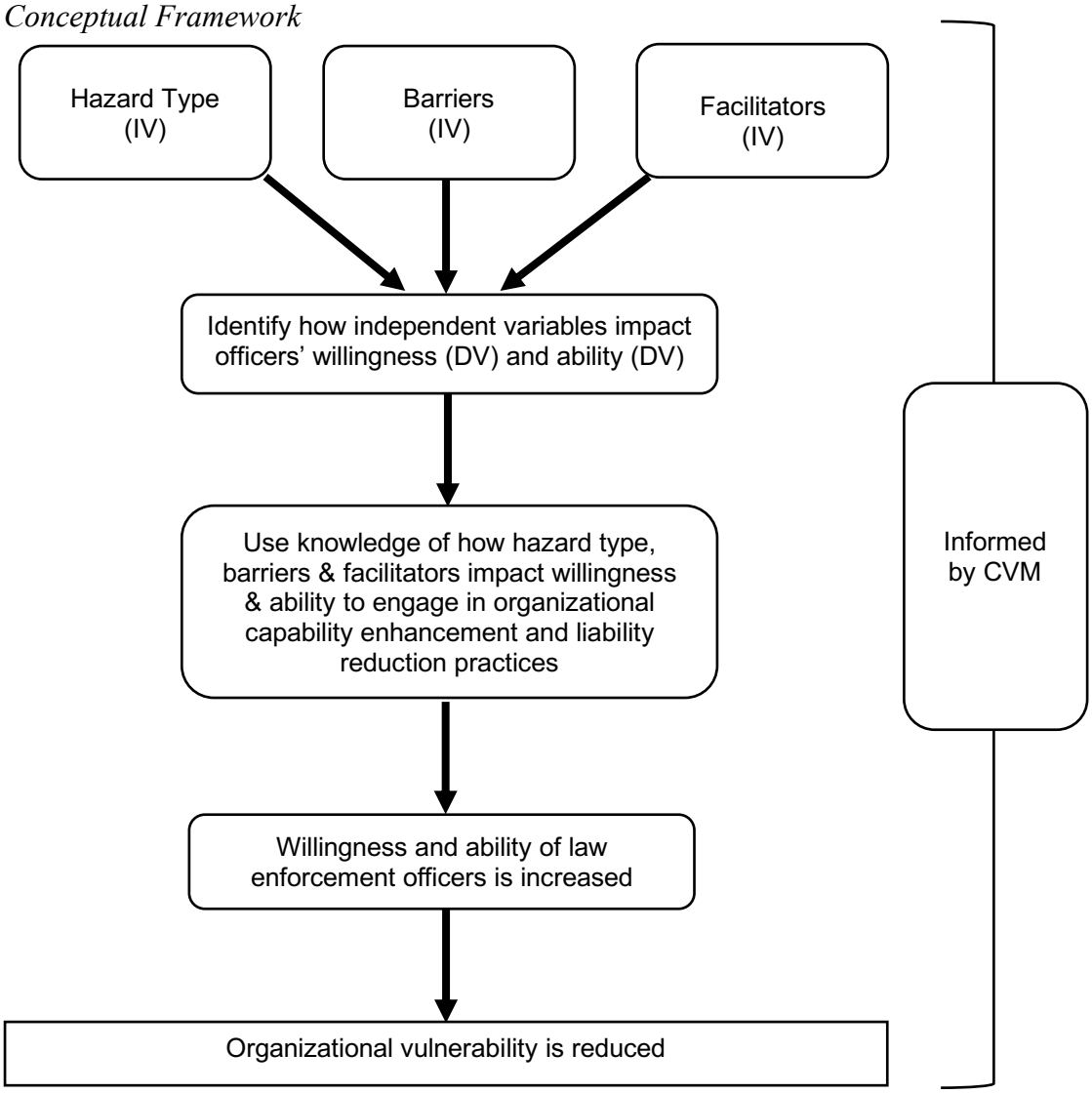
Conceptual frameworks are developed in order to define, describe, and understand abstract ideas (Rudestam & Newton, 2015). A conceptual framework helps the researcher link

constructs to empirical data that is collected, so the conceptual framework for this study has been designed to establish a means through which investigation of the problem statement can be undertaken. The principles of CVM are foundational to the framework, which shows how the vulnerability of law enforcement organizations can be reduced by addressing the organizational environment through liability reduction and capability enhancement activities.

As illustrated in Figure 3.2, the framework visually represents how organizational vulnerability can be reduced by identifying the influences that hazard type, perceived barriers, and organizational interventions have on officers' willingness and ability. The top of the framework depicts the variables (i.e., hazard type, barriers, and facilitators) that may impact the willingness and ability of law enforcement to report for duty. Moving down the framework demonstrates that once there is an understanding of how these specific variables impact willingness and ability, the information can be utilized by organizations to engage in capability enhancement and liability reduction practices so that police officers are more willing and able to report for duty, eventually reducing the organizational vulnerability of role abandonment.

Figure 3.2

Conceptual Framework



Note. Comprehensive Vulnerability Management (McEntire et al., 2002)

Research Design

Study Area and Survey Recruitment

A convenience sample for this study was taken from the study population targeting all law enforcement officers employed by the police department who are certified by their state board. The police department is located along the Gulf coast and serves their municipality and a three-mile police jurisdiction outside of the city limits. The police department employees a

metropolitan police force of nearly 500 police officers including both the uniformed and non-uniformed service divisions and provides full-time police services for a jurisdiction with a population density of approximately 1,400 people per square mile (United States Census Bureau, 2018). All certified law enforcement officers are subject to special-detail requirements during disasters and may be required to report for duty regardless of division assignment.

Survey Structure

The survey for this study was administered using an online tool called Survey Monkey. The survey contained a total of 29 questions and was divided to four parts (see Table 3.1 for a summary of the questions). Part I collected data on willingness and ability in six disaster scenarios; Part II collected data on perceived barriers to and facilitators of willingness; Part III collected data on perceived barriers to and facilitators of ability; Part IV collected demographic information. Appendix C provides a copy of the full survey.

Table 3.1

Summary of Survey Sections and Questions

Survey Section	Content	Number & Type of Questions
Part I	Respondents' willingness and ability to report for duty during disaster scenarios	12 Likert scale questions
Part II	Respondents' perceived barriers to willingness	1 Likert scale question (9 items)
	Respondents' perceived facilitators of willingness	1 Likert scale question (8 items)
Part III	Respondents' perceived barriers to ability	1 Likert scale question (8 items)
	Respondents' perceived facilitators of ability	1 Likert scale question (5 items)
Part IV	Demographics	13 multiple choice questions

Disaster Scenarios (Part I). Part I of the questionnaire presented six scenarios that were adapted from the DHS's National Planning Scenarios (Department of Homeland Security, 2005). The National Planning Scenarios were created by DHS with emphasis on catastrophic threats that have the potential to create the greatest amount of casualties, property damage, and social disruption (Department of Homeland Security, 2007). DHS established a list of 15 scenarios so that organizations can use the scenarios to measure the different response requirements demanded by each incident type. DHS recognizes that it is impossible to maintain a high level of preparedness for all possible threats at all times because of limited resources, therefore a wide range of scenarios were developed in order to identify capabilities that will span across different hazard types (DHS, 2005).

Not all 15 scenarios provided by DHS were utilized in this survey because the hazard types covered in the DHS planning scenarios overlap to some degree. DHS provides four different planning scenarios for a chemical attack, five scenarios for biological attack or disease outbreak, two natural disasters scenarios, and one scenario each for a radiological attack, conventional explosive attack, nuclear detonation, and cyber-attack. DHS provides four different scenarios for a chemical attack incident utilizing different chemical agents (e.g., blister agent, nerve, agent, toxic industrial chemicals, and chlorine tank explosion). These four scenarios have been consolidated into one chemical attack scenario because there are many chemical manufacturing facilities in the area being studied. DHS provides two natural disaster scenarios (major earthquake and major hurricane). The major earthquake scenario is not a likely hazard for the Gulf Coast, but a major hurricane is a hazard that is faced nearly annually by the area being studied. The 15 DHS scenarios were consolidated to lessen the number of questions respondents will have to complete, therefore lessening response burden and responder fatigue. Consequently,

a total of six disaster scenarios were generated: nuclear detonation, anthrax attack, chemical attack, major hurricane, biological disease outbreak, and nerve agent attack.

In order to make the survey questions more engaging and relevant to the participants and potentially increase the response rate, the six scenarios derived from the National Planning Scenarios were further adapted to include landmarks and significant locations in the area of study The contextualized six scenarios were presented to the participants, and a five-point Likert scale was used to measure the level of willingness and ability to report for duty ranging from *very willing* to *very unwilling*, and from *very able* to *very unable*.

Barriers and Facilitators (Parts II & III). Parts II and III of the questionnaire asked participants questions regarding barriers and facilitators influencing their willingness and ability. Factors influencing the willingness and ability of employees to report for duty were examined respectively given that the variables impacting the former have been found to be distinctively different than the variables impacting the latter. Qureshi et al. (2005) wrote, "…although willingness might be influenced by ability (e.g., presence or absence of facilitators or barriers), even if one is fully able, he or she might still not be willing to report to work for any number of reasons" (p. 379). Following this perspective, the survey distinguished between the two concepts by defining willingness as an officer's personal decision to report for duty, and ability as an officer's capability to report for duty (Qureshi et al., 2005; Schechter, 2007). The barrier and facilitator information collected are helpful in numerous ways. First, the participants were presented a series of statements inquiring about their level of concern regarding barriers to willingness and ability such as incident specific training and PPE so that the findings can be compared to previous studies and potentially generate new insights. For instance, DiMaggio et al. (2005) reported that paramedics who received hazard specific training were twice as likely to

be willing, and Mackler et al. (2007) found that 79% of paramedics would definitely not, or probably not, remain on duty during a pandemic if a there were no PPE or vaccine provided. Secondly, the participants were presented a series of statements inquiring about facilitators perceived to increase their willingness and ability to report for duty. DiMaggio et al. (2005) reported that promoting a sense of duty and providing training may increase response rates, and Crane et al. (2010) reported that employees who have previous hazard specific training were more willing to report for work.

Demographics (Part IV). The survey closed with a series of questions about the participants' demographic standing. The demographic information collected will be helpful in several ways. First, the participants' demographics were collected so that the findings could be compared to previous studies. For instance, a study of paramedics found that age, gender, marital status, and having young children are correlated with likelihood of reporting for duty (Mackler et al., 2007). Secondly, Qureshi et al. (2005) reported that the willingness and ability was positively correlated with marriage to a first responder, so the survey inquires if the participants are married to a first responder. Lastly, the survey collected the participants' annual household income, length of employment as a police officer, rank, and job classification to explore their correlations with willingness and ability of officers.

Survey Implementation

Consent from the police department being studied was sought in order to gain access to the police officers through their departmental email system. In order to request consent, a letter was emailed to the police chief explaining the purpose of the study and requesting cooperation with the research. After consent was obtained from the chief of police to email police officers the survey, an introductory letter was emailed to all police officers along with a link to complete the

electronic questionnaire. Two weeks after the introductory letter and survey link were emailed, a subsequent reminder email was sent to each police officer, which also contained a link to the electronic questionnaire. Once participants opened the web link to the survey, they were first presented with the survey cover letter (see Appendix A) and the informed consent page (see Appendix B) which required them to indicate that they had read the consent form and agreed to participate in the survey. After consenting, the participants could begin the survey (see Appendix C). If consent was not obtained, the participants were not allowed to view the view or participate in the survey.

Data Analysis

The results of the survey were imported in into IBM's Statistical Package for the Social Sciences (SPSS®). In order for data entry to be entered into statistical software, the data organization procedure must be preplanned (Newton & Rudestam, 2013). SPSS® requires that certain character rules be followed when naming variables and therefore each variable was given a name in accordance with the requirements of SPSS®. When data is entered into statistical software, it is sometimes difficult to retrieve the coding systems without some type of directory identifying the different coding parameters (Newton & Rudestam, 2013).

To analyze the data, descriptive statistics were used to conduct analysis of each variable that composes the dataset. The descriptive statistical analysis was be conducted first in order to examine the distribution of the data for each variable (Newton & Rudestam, 2013). After the initial analysis, the dataset was examined to determine the associations between variables utilizing contingency tables. Depending on the level of measurement of each variable in the three hypotheses, an appropriate measure of association was utilized, and hypothesis testing utilized McNemar's and *t*-tests.

Limitations and Delimitations

The study was limited in several ways. First, how well self-reported willingness to report for duty in hypothetical disasters predicts actual behavior in a real event remains unknown and warrants validation. Second, perhaps the results cannot be generalized to the entire population of U.S. law enforcement officers in places outside of the study area or to other populations in other first responder organizations such as EMS and fire departments because the literature review has suggested that role abandonment vary by geographical location and organizational characteristics. This study was delimited as it was a case study of only one police department along the Gulf coast. Further delimitations included the assessment of the constructs of willingness and ability of law enforcement officers to report for duty. While other constructs such as role conflicts and role strain that can play an important role in shaping the willingness and ability, they are beyond the scope of this study.

Chapter 4: Results

The goal of this dissertation was to understand the willingness and ability of law enforcement officers along the Gulf coast to report for duty during different disaster types and analyze the relationships barriers and facilitators have with the willingness and ability to report for duty. To achieve this goal, the analyses examined the associations between hazard type and officers' willingness and ability to report for duty, as well as the associations between perceived barriers and facilitators with officers' willingness and ability to report for duty.

The three hypotheses that were tested during the analysis were (1) hazard type is associated with willingness and ability, (2) barriers are associated with willingness and ability, and (3) facilitators are associated with willingness and ability. A Chi squared test was applied to test the first research hypothesis and 2-sample t tests were utilized to test the second and third research hypotheses. To study the influence of demographic variables on willingness and ability, Fishers' tests were used for two-by-two contingency table analyses and Chi squared tests were utilized for lager contingency tables. Results were regarded as statistically significant if the p-value was 0.05 or lower.

The following recounts the results of these statistical tests. The sample characteristics are first described followed by the descriptive statistics regarding the levels of willingness and ability by disaster type. Then the relationships between willingness and ability with barriers and facilitators are reported. The chapter is concluded with a summary of major findings.

Sample Characteristics

A metropolitan police force composed of nearly 500 police officers including both the uniformed and non-uniformed service divisions were emailed a link allowing them access to the

survey. A total of 401 officers accessed the survey. Of the officers who accessed the survey, 314 (78.3%) consented to participate in the survey. Not all participants responded to every question, therefore there are differences in the total number of responses from each question. Valid percentages are reported for each variable. Male respondents totaled 246 (85.4%), 175 (60.6%), were married, and 25 (14.3%) had spouses who were also first responders. Of the married, 15 respondents had a spouse who is also a law enforcement officer. There were three (1%) American Indian or Alaska Native, five Asian (1.8%), 67 (23.9%) Black or African American, two (0.7%) Native Hawaiian or Pacific Islander, 199 (71%) White, and 14 (5%) reported as another race. The largest age group of respondents was 40 – 49 (30%); 166 respondents (58%) had one or more dependent children, and 62 respondents (22%) had one or more elderly dependents. Of the respondents, 202 (70.1%) had lived in the same jurisdiction they policed for 16 or more years.

Respondents were assigned to a variety of duty assignments including 138 (47.4%) assigned to field operations (e.g., uniformed patrol), 68 (23.4%) to investigation divisions, 37 (12.8%) to special operations, 20 (6.9%) to intelligence and technology divisions, and 22 (7.6%) to administrative and support services. More than half (61%) of the respondents had been law enforcement officers for more than 10 years, and 167 (57%) had been employed with the department that was surveyed for more than 10 years. Table 4.1 depicts the participants' demographics.

Table 4.1

Respondent Demographics

	n	Valid %
Gender		
Female	42	14.6
Male	246	85.4
Race		
American Indian or Alaska Native	3	1.0
Asian	5	1.7
Black or African American	67	23.3
Native Hawaiian or Pacific Islander	2	0.7
Mixed	4	1.4
White	199	71.1
Other	14	5.0
Age group		
20 - 29	47	16.3
30 - 39	74	25.6
40 - 49	87	30.1
50 - 59	65	22.5
60 +	16	5.5
Officer's duty assignment		
Administrative Services	13	4.5
Field Operations	138	47.4
Investigative Operations	68	23.4
Support Services	9	3.1
Special Operations	37	12.7
Intelligence Section	12	4.1
Technology & Intelligence	8	2.8
Other	6	2.1
Years at department		
5 or less	68	23.5
6 - 10	54	18.7
11 - 15	37	12.8
16 - 20	53	18.3
21 +	77	26.6
Total years in Law Enforcement		
5 or less	64	22.1
6 - 10	48	16.6
11 - 15	38	13.1
16 - 20	52	17.9
21 +	88	30.3
Marital Status		
Single	71	24.6
Married	175	60.6
Divorced / Separated	41	14.2
Widowed	2	.7

	n	Valid %
Is spouse a 1st responder?	150	85.7
No		
Yes	25	14.3
Spouses' responder discipline		
Law enforcement	15	60.0
Firefighter	1	4.0
Other	9	36.0
# of dependent children		
None	124	42.8
1 -2	124	42.8
3 - 4	36	12.4
5 or more	6	2.1
# of elderly dependents		
None	228	78.6
1 - 2	57	19.7
3 - 4	5	1.7
5 or more	0	0
Education level		
High school graduate or GED	44	15.2
Some college or associate degree	116	40.0
Bachelor's degree	99	34.1
Advanced degree	31	10.7
Years in current city		
5 years or less	32	11.0
6 - 10 years	18	6.2
11 - 15 years	14	4.8
16 or more years	202	69.7
I do not live in here	24	8.3

Note. For some categories, numbers do not total to 314 due to missing responses. Percentages do not total to 100% due to rounding. Valid percent reported.

Officers' Willingness to Report by Disaster Type

As indicated in Table 4.2, respondents reported greater willingness for all six disaster scenarios (measured on a scale from *very willing* = 1 to *very unwilling* = 5) with a mean of 1.29 for a hurricane, 1.54 for the biological disease, 1.72 for the chemical attack, 1.77 for the anthrax attack, 1.85 for the nuclear attack, and 1.86 for the nerve agent attack. The median and mode for each disaster type equaled 1, suggesting the majority of the respondents were very willing to report during any of the scenarios presented in the survey. The distribution of willingness level

for each disaster had a high positive skewness (i.e. greater than 1). Willingness to report for a hurricane had the highest level of skewness (2.94) and kurtosis (9.69), exhibiting the greatest level of asymmetry of the distribution and more extreme outliers, followed by a biological disease outbreak (skewness = 1.83, kurtosis = 3.18).

Table 4.2

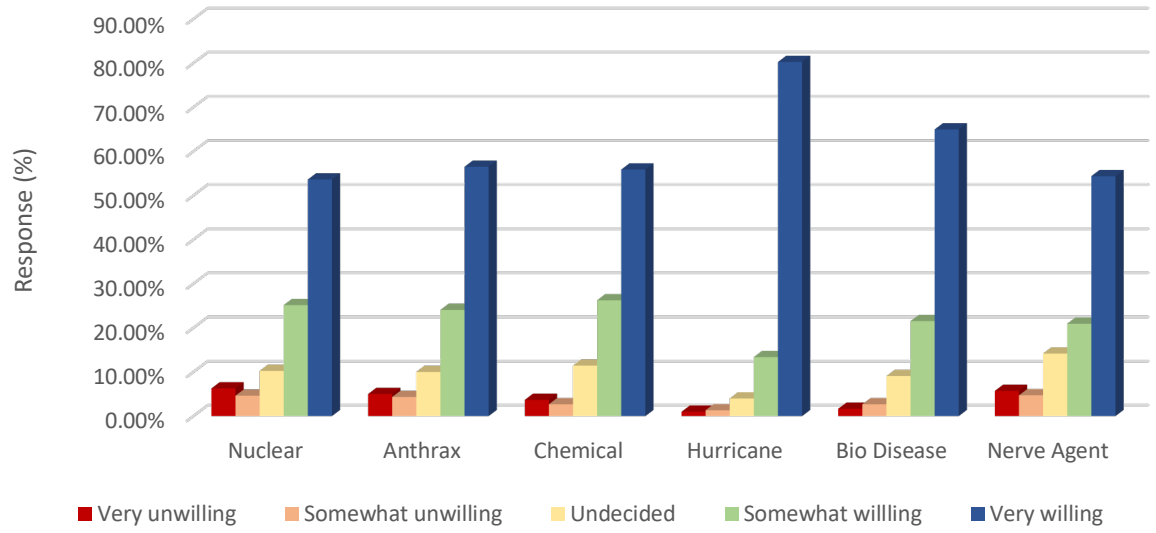
Descriptive Statistics of Willingness Levels

	Nuclear	Anthrax	Chemical	Hurricane	Biological Disease	Nerve Agent
N	302	299	297	299	297	296
Mean	1.84	1.77	1.72	1.29	1.54	1.86
Median	1.00	1.00	1.00	1.00	1.00	1.00
Mode	1.00	1.00	1.00	1.00	1.00	1.00
SD	1.171	1.115	1.019	.700	.892	1.174
Skewness	1.423	1.526	1.583	2.946	1.830	1.303
SE of Skewness	.140	.141	.141	.141	.141	.142
Kurtosis	1.137	1.567	2.149	9.696	3.188	.781
SE of Kurtosis	.280	.281	.282	.281	.282	.282
Minimum	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00

As indicated by Figure 4.1, the percent of respondents who were willing (*very willing* to *somewhat willing*) to report for duty far outweighed the percent of respondents who were unwilling (*very unwilling* to *somewhat unwilling*) to report for duty across all disaster types measured. More specifically, 93.7% of respondents indicated they were *very willing* or *somewhat willing* to report for duty during the hurricane, 86.5% for the biological disease outbreak, 82.2% for the chemical attack, 80.6% for the anthrax attack, 78.71 for the nuclear explosion, and 75.34% for the nerve agent attack.

Figure 4.1

Differences in Officers' Willingness to Report by Disaster Type



Officers' Ability to Report by Disaster Type

As indicated in Table 4.3, respondents reported greater ability for all six disaster scenarios (measured on a scale from *very able* = 1 to *very unable* = 5) with a mean of 1.39 for a hurricane, 1.53 for a biological disease outbreak, 1.62 for an anthrax attack, 1.63 for a chemical attack, 1.71 for a nuclear attack, and 1.72 for a nerve agent attack. The median and mode for each disaster type equaled 1.0, suggesting that the majority of the respondents were very able to report during any of these scenarios. The distribution for each disaster had a high positive skewness (i.e., greater than 1). Ability to report for a hurricane had the highest level of skewness (2.81) and kurtosis (5.424) followed by an anthrax attack (skewness = 1.89, kurtosis = 3.13).

Table 4.3

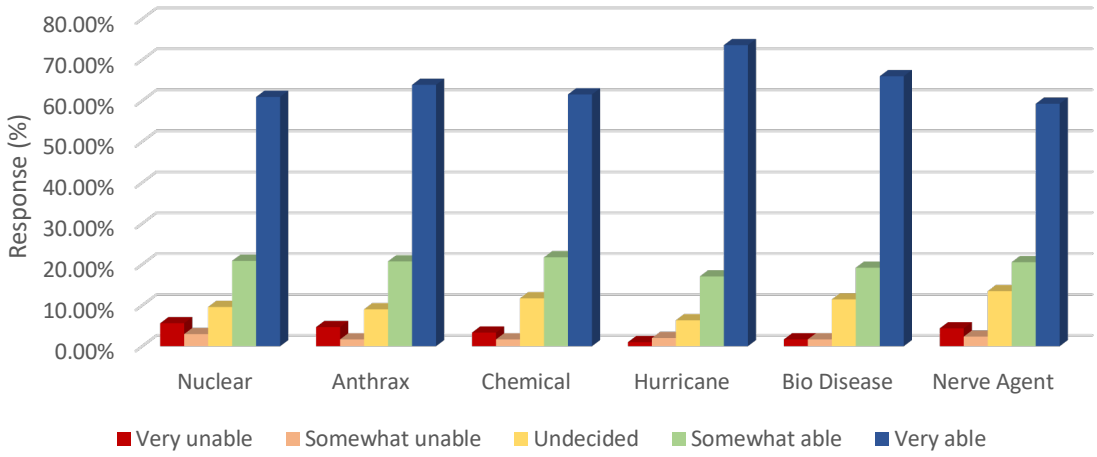
Descriptive Statistics of Ability Levels

	Nuclear	Anthrax	Chemical	Hurricane	Biological Disease	Nerve Agent
N	302	299	299	299	297	297
Mean	1.71	1.62	1.63	1.39	1.53	1.72
Median	1.00	1.00	1.00	1.00	1.00	1.00
Mode	1.00	1.00	1.00	1.00	1.00	1.00
SD	1.119	1.039	.985	.780	.884	1.068
Skewness	1.680	1.899	1.737	2.281	1.781	1.564
SE of Skewness	.140	.141	.141	.141	.141	.141
Kurtosis	2.037	3.130	2.748	5.424	3.014	1.860
SE of Kurtosis	.280	.281	.281	.281	.282	.282
Minimum	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00

As indicated by Figure 4.2, the percent of respondents who are able (*very able* to *somewhat able)* to report for duty, like willingness, far outweighed the percent of respondents who were unable (*very unable* to *somewhat unable)* across all disaster types measured. Specifically, 90.6% of respondents indicated they were *very able* or *somewhat able* to report for duty during the hurricane, 85.2% for the biological disease outbreak, 84.6% for the anthrax attack, 83.3% for the chemical attack, 81.8% for the nuclear explosion, and 79.8% for the nerve agent attack.

Figure 4.2

Differences in Officers' Ability to Report by Disaster Type



Officers' Perceived Barriers to Willingness

Participants were asked to specify their levels of agreement with nine statements about barriers which could hinder their willingness (personal decision) to report for duty on a scale from *strongly agree* = 1 to *strongly disagree* = 5. As indicated by Table 4.4, the distribution of each of the nine barriers to willingness are fairly symmetrical (between -.5 and .5) to moderately skewed (between -1 and -.5 or .5 and 1) which indicated that the responses varied across the scale depending on the barrier being measured. The mean for each barrier to willingness was between 2.48 (family safety) and 3.69 (elderly care); each median varied between 2 (family safety and PPE) and 4 (personal safety, elderly care, and health problems), and each mode varied between 1 (PPE) and 5 (personal safety, childcare, elderly care, and health problems), suggesting that respondents' level of agreement varied depending on the barrier presented during the survey.

Table 4.4

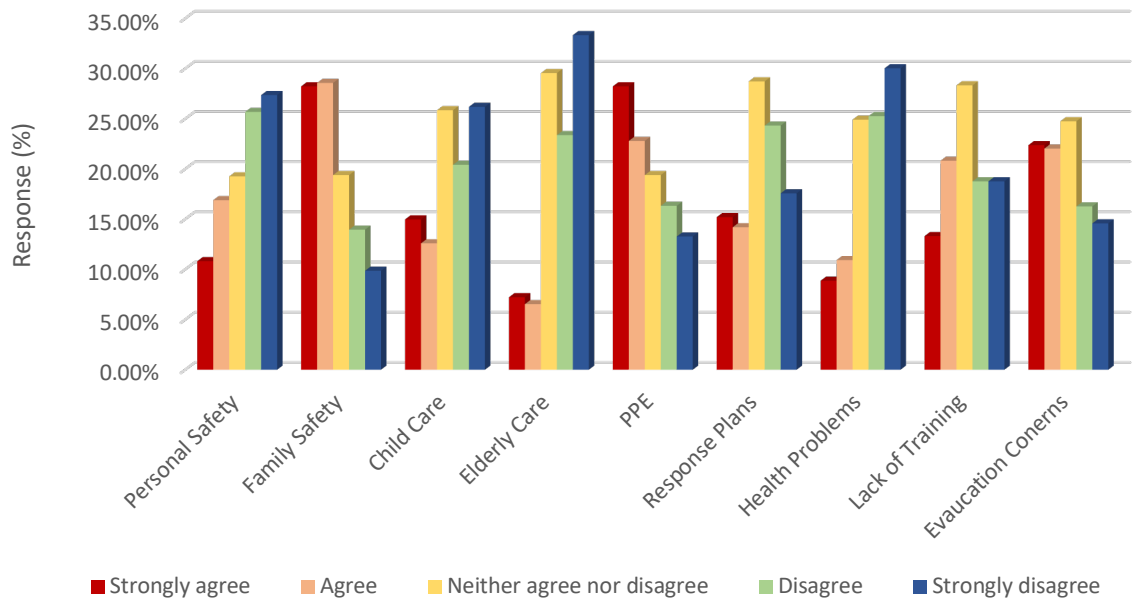
Descriptive Statistics of Perceived Barriers to Willingness

	Personal Safety	Family Safety	Child Care	Elderly Care	PPE	Response Plans	Health Problems	Lack of Training	Family Evacuation
N	296	294	294	291	294	296	293	293	295
Mean	3.41	2.48	3.30	3.69	2.63	3.14	3.56	3.08	2.78
Median	4.00	2.00	3.00	4.00	2.00	3.00	4.00	3.00	3.00
Mode	5.00	2.00	5.00	5.00	1.00	3.00	5.00	3.00	3.00
SD	1.33	1.30	1.37	1.20	1.38	1.29	1.26	1.29	1.34
Skewness	-.380	.513	-.296	-.616	.333	-.213	-.528	-.014	.202
SE of Skewness	.142	.142	.142	.143	.142	.142	.142	.142	.142
Kurtosis	-1.05	-.85	-1.08	-.413	-1.16	-.96	-.71	-1.04	-1.11
SE of Kurtosis	.282	.283	.283	.285	.283	.282	.284	.284	.283
Range	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

Figure 4.3 illustrates that the highest percent of concern was for the safety of respondents' family — 51.8% (*M* =2.48) of respondents *agreed* or *strongly agreed* that concerns about the safety of their family was a barrier to their willingness to report for duty. Fewer respondents *agreed* or *strongly agreed* that the availability of PPE (51.02%, *M* = 2.63), the evacuation of their family (44.40%, *M* = 2.78), lack of incident specific training (34.13%, *M* = 3.08), would prevent them from being willing to report for duty, and even smaller percent of respondents were concerned about (*agreed* or *strongly agreed*) organizational incident specific response plans (29.39%, *M* = 3.14), childcare (27.56%, *M* = 3.30), personal safety (27.7%, *M* = 3.41), personal health problems (27.76%, *M* = 3.56), and elderly care (13.75%, *M* = 3.69) as barriers to their willingness to report for duty.

Figure 4.3

Perceived Barriers to Willingness



Participants were also provided the opportunity to specify other barriers that impact their willingness to report for duty. There was a total of 27 typed responses, and some of the responses were redundant to the barrier statements provided. For example, seven participates expressed concern over a lack of incident specific PPE and their department's ability to provide adequate training. One participant wrote, "the major contributor to unwillingness to respond is definitely the departments' lack of PPE". Seven participants expressed concern about ensuring their family was safe and secure prior to becoming willing to report for duty, and one participant wrote, "eminent threat to my family comes before anything. When they are as safe as reasonable, I will fulfill my obligations or die trying". Three participants indicated that a low sense of duty due to a lack of support by command staff is a barrier to their willingness. One participant wrote,

"significant support from the staff members…would go a long way toward encouraging loyalty…when asking them [officers] to go above and beyond".

Officers' Perceived Barriers to Ability

Participants were asked to specify their levels of agreement with eight statements about barriers which could hinder their ability (capability) to report for duty on a scale from *strongly agree* = 1 to *strongly disagree* = 5. As indicated by Table 4.5, the distribution of each of the eight barriers to ability were fairly symmetrical (between -.5 and .5) to moderately skewed (between -1 and -.5 or 5 and 1). The mean for each barrier was between 2.73 (PPE) and 3.57 (pet care); the medians slightly varied between 3.0 (family evacuation, PPE, lack of training, spousal care, childcare, and elderly care and 4.0 (personal health problems and pet care), and each mode was equal to 3.0 except for pet-care which has a mode of 5.0. The majority of responses were on the middle to higher end of the scale which indicated the majority of the respondents were either undecided or disagree that the given barriers to hinder their ability to report for duty.

Table 4.5

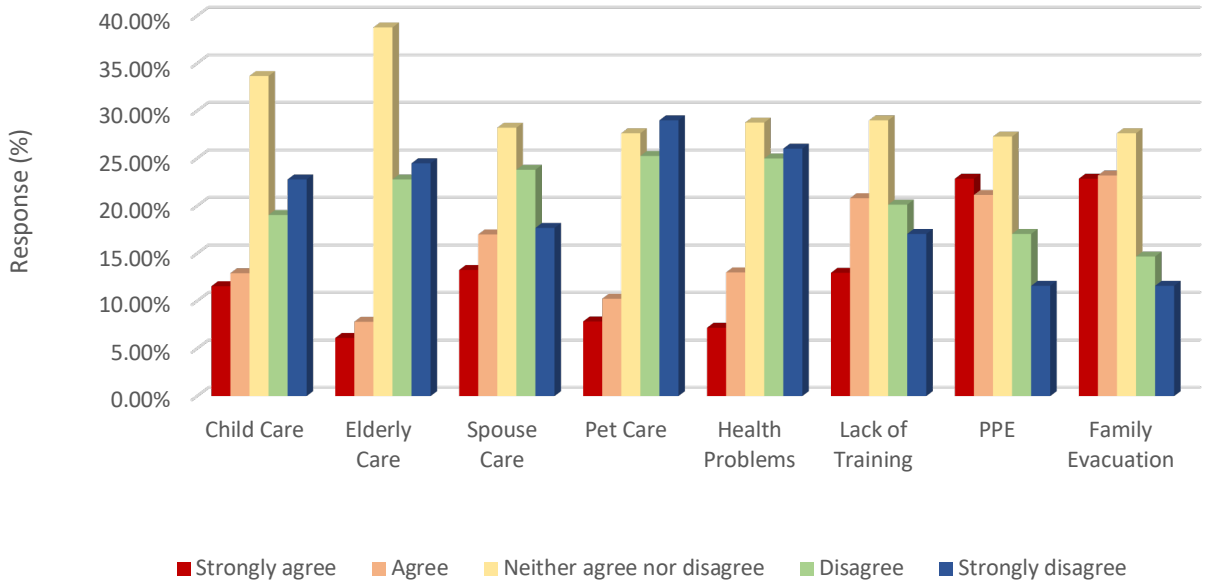
Distribution of Barriers to Ability

	Child Care	Elderly Care	Spouse Care	Pet Care	Health Problems	Lack of Training	PPE	Family Evacuation
N	294	294	294	293	292	293	293	293
Mean	3.26	3.52	3.17	3.57	3.50	3.08	2.73	2.69
Median	3.00	3.00	3.00	4.00	4.00	3.00	3.00	3.00
Mode	3.00	3.00	3.00	5.00	3.00	3.00	3.00	3.00
Std. Deviation	1.27	1.12	1.27	1.22	1.21	1.26	1.30	1.29
Skewness	-.219	-.339	-.167	-.507	-.383	-.020	.195	.278
SE of Skewness	.142	.142	.142	.142	.143	.142	.142	.142
Kurtosis	-.867	-.420	-.967	-.632	-.743	-.989	-1.027	-.945
SE of Kurtosis	.283	.283	.283	.284	.284	.284	.284	.284
Range	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

As indicated by Figure 4.4, the highest percent of concern for a barrier to ability was the evacuation of the participant's family—46.08% (*M* = 2.69) *agreed* or *strongly agreed* that concerns about the evacuation of family would hinder their ability to report for duty. Fewer *respondents agreed* or *strongly agreed* that the availability of PPE (44.03%, *M* = 2.73), lack of incident specific training (33.79%, *M* = 3.08), spousal care (30.28%, *M* = 3.17), childcare (24.49%, *M* = 3.26), personal health problems (20.2%, *M* = 3.50), elderly care (18.09%, *M* = 3.52), and pet care (18.09%, *M* = 3.57), were concerns that would hinder their ability to report for duty.

Figure 4.4

Barriers to Ability



Participants were also provided the opportunity to specify any other barriers impacting their ability to report for duty. There was a total of 13 typed responses, some of which were redundant to the statements previously rated, and some of the responses contained more than one barrier to ability. Overarchingly, participants expressed concern about the safety of their spouse

and/or children, while fewer participants expressed concern about the availability of PPE, training, and equipment as having an impact on their ability to report. One participant wrote, “the major concern here is again PPE and lack thereof…[I] was repeatedly told that the PPE (gas mask filters) in stock are all expired or expiring soon”, and another participant wrote, “my wife and daughters come before anything in my life. Upon assuring they are as reasonably safe as possible, I will give my life to protect humanity”.

Officers’ Perceived Facilitators to Willingness

Participants were asked to rate eight statements about facilitators which could promote their willingness (personal decision) to report for duty on a scale from *strongly agree* = 1 to *strongly disagree* = 5. As indicated by Table 4.6, the distribution of each of the eight facilitators to willingness had a positive moderate (between .5 and 1) to heavy (greater than 1) skewness, which indicated that the responses were concentrated on the lower side of the scale and the vast majority of the respondents *strongly agreed* or *agreed* that the given facilitators to willingness tend to increase their willingness. The mean for each facilitator was between 1.94 (PPE) and 2.18 (vaccine availability); and each median equaled 2 and had a mode of 1, suggesting that respondents mostly agreed that each of the eight facilitators presented in the survey would promote their willingness to report for duty.

Table 4.6

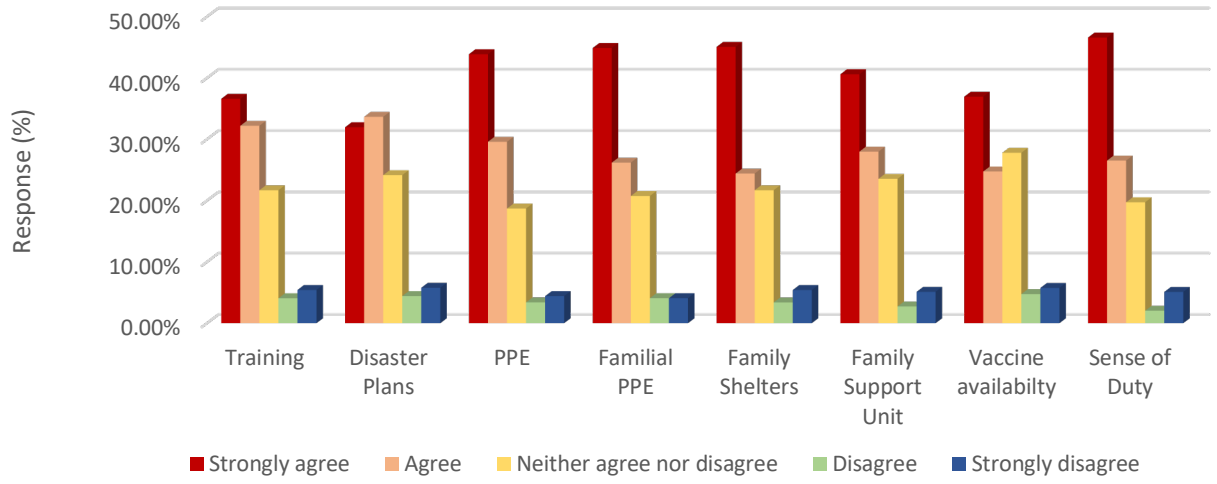
Descriptive Statistics of Perceived Facilitators to Willingness

	Training	Response Plans	PPE	PPE for Family	Family Shelters	Family Support Unit	Vaccine Availability	Duty
N	295	294	294	294	295	293	295	294
Mean	2.09	2.18	1.94	1.96	1.99	2.03	2.17	1.92
Median	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Mode	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Std. Deviation	1.10	1.10	1.07	1.09	1.13	1.10	1.15	1.09
Skewness	.957	.857	1.124	1.028	1.037	.977	.750	1.181
SE of Skewness	.142	.142	.142	.142	.142	.142	.142	.142
Kurtosis	.407	.261	.780	.445	.399	.456	-.119	.895
SE of Kurtosis	.283	.283	.283	.283	.283	.284	.283	.283
Range	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

As indicated by Figure 4.5, the facilitator to ability with the highest percent was employer provided hazard specific PPE—73.47% (M = 1.94) *agreed* or *strongly agreed* that hazard specific PPE provided by their employer would increase their willingness to report for duty. Fewer respondents *agreed* or *strongly agreed* that having a sense of duty (73.13%, *M =1.92*), availably of PPE for dependent family (71.09%, M = 1.96), dependent family shelters (69.49%, M = 1.99), hazard specific training (68.81%, M = 2.09), development of a family support unit (68.6%, M = 2.03), hazard specific response plans (65.64%, M = 2.18), and availably of vaccines (61.7%, M = 2.17) were facilitators that would promote their willingness to report for duty.

Figure 4.5

Perceived Facilitators to Willingness



Participants were provided the opportunity to specify other facilitators impacting their willingness to report for duty. There were a total of 19 typed responses, some of which were redundant to the statements previously rated, and some of the responses contained more than one facilitator to willingness. The majority of the statements provided expressed that once the officer's family is safe, their willingness to respond would increase. Others expressed that adequate PPE and training would increase their willingness, as one participant wrote, "the acquisition and distribution for PPE to members of the department would greatly increase the willingness to respond". A stronger sense of duty instilled by the police department along with hazard pay and incentives for working on pre-scheduled off days were some other facilitators identified that would increase their willingness to respond.

Officers' Perceived Facilitators to Ability

Participants were asked to rate five statements about facilitators which could promote their ability (capability) to report for duty on a scale from *strongly agree* = 1 to *strongly disagree*

= 5. As indicated by Table 4.7, the distribution of each of the five facilitators to ability had a positive moderate skewness (between .5 and 1), suggesting responses were concentrated on the lower side of the scale and the vast majority of the respondents *strongly agreed* or *agreed* that the given facilitators to ability tended to increase their willingness. The mean for each facilitator was between 2.19 (paid time off) and 2.28 (shelters for family), and each median equaled 2 with a mode of 1, suggesting that respondents mostly agreed that each of the eight facilitators presented in the survey would increase their ability to report for duty.

Table 4.7

Descriptive Statistics of Perceived Facilitators to Ability

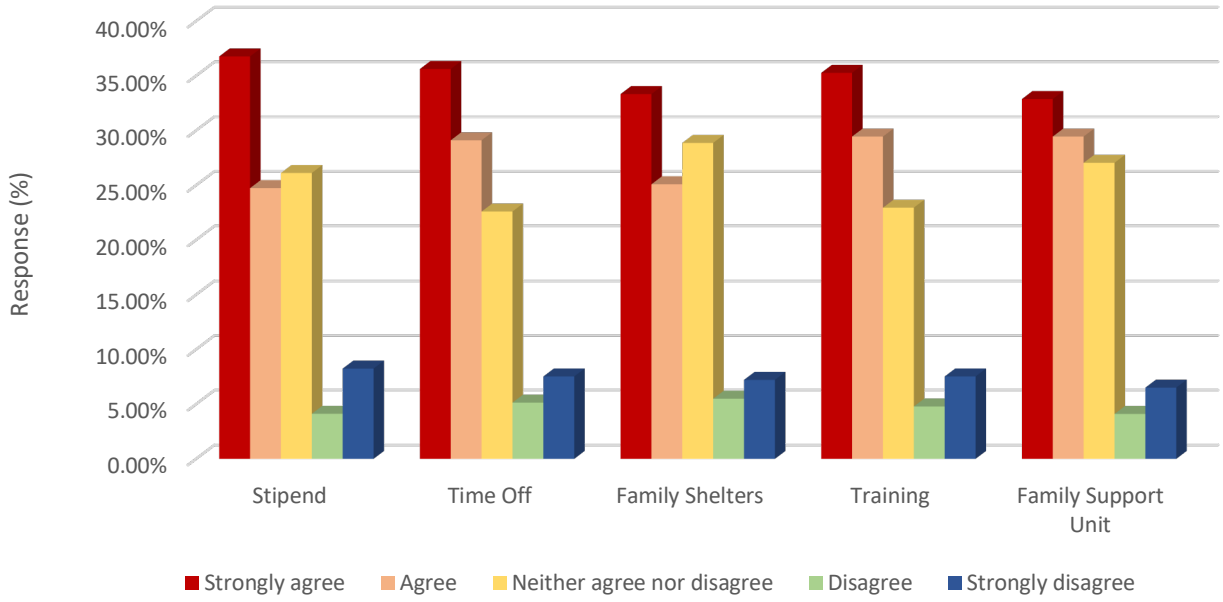
	Stipend	Paid Time Off	Shelters for Family	Training	Family Support Unit
N	291	292	291	292	292
Mean	2.22	2.19	2.28	2.19	2.21
Median	2.00	2.00	2.00	2.0000	2.00
Mode	1.00	1.00	1.00	1.00	1.00
Std. Deviation	1.221	1.196	1.190	1.190	1.142
Skewness	.801	.860	.676	.865	.786
SE of Skewness	.143	.143	.143	.143	.143
Kurtosis	-.161	-.026	-.277	.012	.052
SE of Kurtosis	.285	.284	.285	.284	.284
Range	4.00	4.00	4.00	4.00	4.00
Minimum	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00

As indicated by Figure 4.6, the facilitator to ability with the highest percent was paid time off to prepare and evacuate family—64.74% (M = 2.19) *agreed* or *strongly agreed* that if their employer provided paid time off in order for them to prepare and evacuate their family (if there was a warning period prior to onset of the hazard) their ability to report for duty would increase. Fewer respondents *agreed* or *strongly agreed* that hazard specific training (64.27%, M = 2.19), development of a family support unit (62.33%, M = 2.21), employer provided stipend (61.51%,

M = 2.22), and shelters for dependent family (58.42%, *M* = 2.28) were facilitators that would increase their ability to report for duty

Figure 4.6

Perceived Facilitators of Ability



Participants were provided the opportunity to specify other facilitators impacting their ability to report for duty. There was a total of 10 typed responses, some of which were redundant to the statements previously rated, and some of the responses contained more than one facilitator to ability. Overarchingly, participants expressed that ensuring that their family was safe prior to impact would greatly increase their ability to report for duty. One participant wrote, “the ability to make sure my family was safe before reporting to a hazardous event would most certainly make reporting to duty easier”. Others expressed that hazard pay and leave from duty prior to impact so preparations could be made would increase their ability to report.

Relationships between Willingness/Ability to Report and Demographics

To examine the relationship between demographics and the respondents' willingness/ability to report for duty, responses to willingness were first recoded with numerical values (0 = *unwilling, somewhat unwilling*, or *undecided*, and 1 = *somewhat willing* or *willing*). Responses to ability were recoded with numerical values (0 = *unable, somewhat unable*, or *undecided*, and 1 = *somewhat able* or *able*). Similar to the analysis performed by Qureshi et al. (2005), the responses to the six willingness disaster scenario questions were added to form an overall willingness score, and those for the six ability disaster scenario questions were added to form an overall ability score for each respondent. As shown in Table 4.8, the created overall willingness or ability score had a possible range of 0 to 6. Both scores had a median of 6.0 with at least 50% of respondents scoring 6.0 (*SD* = 1.78), indicating the majority of respondents were both willing and able to report for duty during all six disaster scenarios. For further statistical analysis, the overall willingness and ability scores were dichotomized using the median as a cut off: Those with an overall willingness/ability score of 6.0 were classified as willing/able and all others were classified as not willing/not able.

Table 4.8

Willingness and Ability Score

	N	Mean	Std Dev	Min	Max	Median	Interquartile Range
Willingness Score	293	4.97	1.78	0	6	6	1
Ability score	296	5.06	1.78	0	6	6	1

To assess the relationships between willingness/ability and demographic variables, ten Chi squared tests were conducted between willingness/ability and duty assignment, years of service with current employer, total years of service in law enforcement, age, marital status, spouses' first responder discipline, dependent children, dependent elderly, education, and years

living in the within the municipality in which the respondent polices. Race, education level, and spousal responder discipline were then recoded to have binary data, so a Fisher's Exact test was also conducted between each of these variables and willingness/ability.

As shown in Table 4.9, race turned out to be the only variable of significant association with both willingness (n = 263, p = .03, Fisher's exact test) and ability (n = 265, p = .04, Fisher's exact test). Years of service (X^2 (2, n = 288) = 7.22, p = .02), marital status (X^2 (2, n = 288) = 8.049, p = .01), and education level (n = 289, p = 0.02, Fisher's exact test) of the respondents are found to be significantly related to ability only (see Tables 4.10 to 4.12). Chi squared tests and Fisher's exact tests showed minorities were less willing and able to report for duty than their white counterparts; respondents who had 11-20 years of service were more able to report for duty than those with less than 10 years and those with 21 or more years; respondents who were single were less able to report for duty than those participants of other marital status; those with at least some college education were more able to report for duty. No significant relationship was observed between willingness/ability and any other demographic characteristics measured.

Table 4.9

Differences in Willingness and Ability by Race

	Black or African American		White		Fisher's exact test (p)
	n	Column %	n	Column %	
Willing?					0.0333
Not willing	29	43.94%	57	28.93%	
Willing	37	56.06%	140	71.07%	
Able?					0.0442
Able	40	60.61%	147	73.87%	
Not able	26	39.39%	52	26.13%	

Table 4.10

Differences in Willingness and Ability by Years of Service in Current Police Department

	10 or less		11-20		21 +		*p*	Chi-square	df
	n	Column %	n	Column %	n	Column %			
Willing?							0.1446	3.868	2
Not willing	46	38.33%	23	25.56%	24	31.58%			
Willing	74	61.67%	67	74.44%	52	68.42%			
Able?							0.0269	7.228	2
Able	79	64.75%	73	81.11%	51	67.11%			
Not able	43	35.25%	17	18.89%	25	32.89%			

Table 4.11

Differences in Willingness and Ability by Marital Status

	Divorced, Separated, Widowed		Married		Single		*p*	Chi-square	df
	N	Column %	N	Column %	N	Column %			
Willing?							0.1041	4.524	2
Not willing	12	28.57%	51	29.31%	30	42.86%			
Willing	30	71.43%	123	70.69%	40	57.14%			
Able?							0.0179	8.049	2
Able	31	72.09%	132	75.86%	41	57.75%			
Not able	12	27.91%	42	24.14%	30	42.25%			

Table 4.12

Differences in Willingness and Ability by Education

	High school graduate or GED		Some college or college degree		Fisher's test
	n	Column %	n	Column %	
Willing?					0.7214
Not willing	12	28.57%	81	33.06%	
Willing	30	71.43%	164	66.94%	
Able?					0.0288
Able	24	55.81%	180	73.17%	
Not able	19	44.19%	66	26.83%	

Relationship between Willingness/Ability and Disaster Type

To test the first research hypothesis: Hazard type is associated with the willingness and ability of law enforcement officers to report for duty, McNemar's tests were used to examine the relation between disaster type and the dichotomized willingness/ability data (as noted previously in the Relationships between Willingness/Ability to Report and Demographics section). All possible pairs of disasters were compared in McNemar's tests resulting in a total of 15 comparisons.

As shown in Table 4.13, the McNemar's tests determined significant differences between the following pairs of disasters in the proportion of respondents who were willing as opposed to unwilling to report for duty: nuclear and hurricane ($p < 0.0001$), nuclear and biological disease ($p = 0.0005$), anthrax and hurricane ($p < 0.0001$), anthrax and biological disease ($p = 0.0031$), anthrax and nerve agent ($p = 0.0303$), chemical and hurricane ($p = 0.0265$), chemical and biological disease ($p = 0.0367$), chemical and nerve agent ($p = 0.00154$), hurricane and biological disease ($p < 0.0001$), hurricane and nerve agent ($p < 0.0001$), and lastly biological disease and nerve agent ($p < 0.0001$). More specifically, the McNemar's test results showed that the proportion of respondents who were willing to report for duty significantly increased as the disaster scenario they were faced with switched from nuclear to hurricane, nuclear to biological disease, anthrax to hurricane, anthrax to biological disease, chemical to hurricane, and chemical to biological disease. Conversely, the proportion of respondents who were willing to report for duty significantly decreased as the disaster scenario they were faced with switched from anthrax to nerve agent, chemical to nerve agent, hurricane to biological disease, hurricane to nerve agent, and biological disease to nerve agent.

Table 4.13

Differences in Willingness to Report for Duty among Different Disaster Types

	Nuclear	Anthrax	Chemical	Hurricane	Bio Disease
Anthrax	0.4725	--	--	--	--
Chemical	0.1004	0.3074	--	--	--
Hurricane	<0.0001	<0.0001	0.0265	--	--
Bio Disease	0.0005	0.0031	0.0367	<0.0001	--
Nerve Agent	0.2330	0.0303	0.00154	<0.0001	<0.0001

As shown in Table 4.14, the McNemar's test determined significant differences between the following pairs of disasters in the proportion of respondents who were able as opposed to unable to report for duty: nuclear and hurricane ($p = 0.0001$), anthrax and hurricane ($p = 0.0031$), anthrax and nerve agent ($p = 0.0311$), chemical and hurricane ($p = 0.0005$), hurricane and biological disease ($p = 0.008$), hurricane and nerve agent ($p < 0.0001$), and lastly biological disease and nerve agent ($p = 0.0022$). More specifically, the McNemar's test results showed that the proportion of respondents who were able to report for duty significantly increased as the disaster scenario they were faced with switched from nuclear to hurricane, anthrax to hurricane, and chemical to hurricane. Conversely, the proportion of respondents who were able to report for duty significantly decreased as the disaster scenario they were faced with switched from anthrax to nerve agent, hurricane to biological disease, hurricane to nerve agent, and biological disease to nerve agent.

Table 4.14

Differences in Ability to Report for Duty among Different Disaster Types

	Nuclear	Anthrax	Chemical	Hurricane	Bio Disease
Anthrax	0.0953	--	--	--	--
Chemical	0.4725	0.6464	--	--	--
Hurricane	0.0001	0.0031	0.0005	--	--
Bio Disease	0.091	0.8235	0.3613	0.008	--
Nerve Agent	0.5322	0.0311	0.0776	<0.0001	0.0022

Relationship between Willingness/Ability to Report and Barriers

To test the second research hypothesis: Law enforcement officers' perceived barriers are associated with the willingness and ability of law enforcement officers to report for duty, barriers were recoded (1 = *strongly agree or agree* and 0 = *strongly disagree* or *disagree* or *neither agree nor disagree*). Then, the responses to the nine barriers to willingness questions were added to form a score (range = 0 to 9), and those for the eight barriers to ability questions were added to form a score (range = 0 to 8) for each participant. The higher the score, the higher the concern about barriers hindering the participants' willingness or ability to report for duty.

A two-sample *t*-test was performed to examine whether there is a statistically significant difference in the mean scores for barriers between those who are willing and unwilling to report for duty for each disaster presented to the respondents (i.e., 0 = *unwilling* and 1 = *willing*). As Table 4.15 indicates, the respondents who are willing identified significantly fewer barriers than the respondents who are unwilling across all disaster scenarios but the hurricane context ($t(281) = -1.69$, $p = .09$). For instance, there is a statistically significant difference between mean barriers score of respondents who are willing and the mean barriers score of respondents who are unwilling to report for a nuclear detonation ($t(281) = -7.01$, $p < .0001$). Respondents who are willing to report for duty after a nuclear detonation, on average, indicated 2.5 barriers ($n = 220$, $M = 2.47$, $SD = 2.56$) out of the nine listed; whereas in comparison, respondents who are unwilling to report for duty after a nuclear detonation on average, indicated over 5 barriers ($n = 63$, $M = 5.13$, $SD = 2.69$), out of the nine listed. Results of t-tests with other four disaster scenarios supported this pattern that the unwilling reported significantly more barriers compared to the willing: 1) anthrax: $t(280) = -5.90$, $p < .0001$; 2) chemical: $t(279) = -4.93$, $p < .0001$; 3)

biological disease outbreak: $t(281) = -3.31$, $p = .0010$; and 4) nerve agent: $t(281) = -4.74$, $p < .0001$.

Table 4.15

Differences in the Perceived Barriers among the Willing and Unwilling

		n	Mean	Std Dev	Min	Max	p	t	df
	Nuclear								
Mean Barriers Score	Unwilling	63	5.13	2.96	0	9	<0.0001	-7.0136	281
	Willing	220	2.47	2.56	0	9			
	Anthrax								
Mean Barriers Score	Unwilling	57	4.96	2.83	0	9	<0.0001	-5.9044	280
	Willing	225	2.59	2.68	0	9			
	Chemical								
Mean Barriers Score	Unwilling	51	4.76	3.07	0	9	<0.0001	-4.9387	279
	Willing	230	2.67	2.66	0	9			
	Hurricane								
Mean Barriers Score	Unwilling	18	4.17	3.71	0	9	0.0911	-1.6957	281
	Willing	265	2.98	2.80	0	9			
	Bio Disease								
Mean Barriers Score	Unwilling	38	4.47	3.32	0	9	0.0010	-3.3199	281
	Willing	245	2.84	2.74	0	9			
	Nerve agent								
Mean Barriers Score	Unwilling	70	4.83	2.88	0	9	<0.0001	-4.7445	281
	Willing	212	2.48	2.63	0	9			

A two-sample t-test was performed to examine whether there is a statistically significant difference in the mean scores for barriers between those who were able and unable to report for duty for each disaster presented to the respondents (i.e., 0 = unable and 1 = able). Table 4.16 consistently illustrated that the respondents who were able identified significantly fewer barriers than the respondents who were unable. For instance, there was a statistically significant difference between the mean barriers scores for respondents who were able versus unable to report for a nuclear detonation ($t(290) = -3.36$, $p = .0009$). Respondents who were able to report for duty after a nuclear detonation, on average, indicated over two barriers ($n = 238$, $M = 2.08$, $SD = 2.43$) out of the eight listed; whereas in comparison, respondents who are unable to report

for duty after a nuclear detonation on average, indicated over three barriers (n = 54, M = 3.33, SD = 2.61), out of the eight listed. Results of t-tests with all other disaster scenarios exhibited the same pattern with the unable reporting more barriers compared to the able:1) anthrax: $t(289) = -2.38$, p =.017; 2) chemical: $t(290) = -3.03$, p = .002; 3) hurricane: $t(290) = -2.06$, p = .039; 4) biological disease outbreak: $t(290) = -2.97$, p = .003; 5) nerve agent: $t(290) = -3..71$, p = .0002.

Table 4.16

Differences in the Perceived Barriers among the Able and Unable

		n	Mean	Std Dev	Min	Max	p	t	df
	Nuclear								
Mean Barriers Score	Unable	54	3.33	2.61	0	8	0.0009	-3.3698	290
	Able	238	2.08	2.43	0	8			
	Anthrax								
Mean Barriers Score	Unable	45	3.13	2.75	0	8	0.0179	-2.3804	289
	Able	246	2.17	2.43	0	8			
	Chemical								
Mean Barriers Score	Unable	50	3.28	2.78	0	8	0.0026	-3.036	290
	Able	242	2.12	2.40	0	8			
	Hurricane								
Mean Barriers Score	Unable	27	3.26	2.86	0	8	0.0394	-2.0692	290
	Able	265	2.22	2.45	0	8			
	Bio Disease								
Mean Barriers Score	Unable	43	3.35	2.78	0	8	0.0032	-2.9721	290
	Able	249	2.14	2.41	0	8			
	Nerve Agent								
Mean Barriers Score	Unable	59	3.37	2.73	0	8	0.0002	-3.7131	290
	Able	233	2.05	2.37	0	8			

Relationship between Willingness/Ability to Report and Facilitators

To test the third research hypothesis (officers' facilitators are associated with the willingness and ability of law enforcement officers to report for duty), participates were asked to rate from *strongly agree* to *strongly disagree* a seven-item inventory question for facilitators to willingness and a five-item inventory question for facilitators to ability. Facilitators were then

recoded (1 = *strongly agree or agree* and 0 = *strongly disagree* or *disagree* or *neither agree nor disagree*). Then, the responses to the seven facilitators to willingness statements were added to form a score (range = 0 to 7), and those for the 5 facilitators to ability questions were added to form a score for each participant (range = 0 to 5). The higher the score, the higher the likelihood that the participants' willingness or ability to report for duty would increase if facilitators were implemented.

A two-sample t-test was performed to examine whether there is a statistically significant difference in the mean scores for facilitators between those who were willing and unwilling to report for duty for each disaster presented to the respondents (i.e., 0 = unwilling and 1 = willing). According to Table 4.17, the results of t-tests were mixed in terms of statistical significance, but the overall trend held across all disaster scenarios: the respondents who were willing identified more facilitators if implemented by their employer that will promote their willingness as opposed to those who were unwilling. For instance, respondents who were willing to report for duty during a hurricane, on average, indicated about 5 facilitators (n = 232, M = 5.09, SD = 2.57) out of the seven listed; whereas in comparison, respondents who were unwilling to report for duty during a hurricane, on average, indicated about 2 facilitators (n = 18, M = 2.33, SD = 2.66) out of the seven listed. Significant differences between mean facilitators scores of respondents who were willing versus unwilling to report were found for the anthrax attack (t(286) = 2.40, p = .0168), chemical (t(286) = 2.82, p = .0050), hurricane (t(287) = 4.39, p = .0001), and biological disease outbreak (t(287) = 2.67, p = .008) scenarios whereas the difference was not significant for the nuclear (t(287) =1.95, p = .051) or nerve agent scenario (t(286) = 1.27, p = .20).

Table 4.17

Differences in the Perceived Facilitators among the Willing and Unwilling

		n	Mean	Std Dev	Min	Max	p	t	df
	Nuclear								
Mean Facilitators Score	Unwilling	61	4.31	2.57	0	7	0.0518	1.9531	287
	Willing	228	5.05	2.63	0	7			
	Anthrax								
Mean Facilitators Score	Unwilling	56	4.16	2.70	0	7	0.0168	2.4049	286
	Willing	232	5.09	2.57	0	7			
	Chemical								
Mean Facilitators Score	Unwilling	51	3.98	2.78	0	7	0.0050	2.8280	286
	Willing	237	5.11	2.54	0	7			
	Hurricane								
Mean Facilitators Score	Unwilling	18	2.33	2.66	0	7	0.0001	4.3978	287
	Willing	271	5.06	2.54	0	7			
	Bio Disease								
Mean Facilitators Score	Unwilling	38	3.84	2.89	0	7	0.0080	2.6706	287
	Willing	251	5.05	2.56	0	7			
	Nerve Agent								
Mean Facilitators Score	Unwilling	71	4.55	2.65	0	7	0.2021	1.2786	286
	Willing	217	5.01	2.62	0	7			

A two-sample *t*-test was then performed to examine whether there is a statistically significant difference in the mean facilitators scores between those who are able and unable to report for duty for each disaster presented to the respondents (i.e., 0 = unable *and* 1 = able). According to Table 4.18, the results of t-tests were mixed in terms of statistical significance, but the overall trend held across all disaster scenarios: the respondents who were able identified more facilitators if implemented by their employer that would promote their ability as opposed to those who were unable. For instance, respondents who were able to report for duty during a hurricane, on average, indicated about 3 facilitators ($n = 261$, $M = 3.22$, $SD = 1.99$) out of the five listed; whereas in comparison, respondents who were unable to report for duty during a hurricane, on average, indicated about 2 facilitators ($n = 27$, $M = 2.22$, $SD = 2.24$) out of the five listed. Significant differences between mean facilitators scores of respondents who were able

versus unable to report were only found for the anthrax attack ($t(286) = 2.40$, $p = .0168$) and hurricane ($t(286) = 2.45$ $p = .01$) scenarios whereas the differences were not significant for the nuclear ($t(286) = 1.40$, $p = .16$), chemical ($t(286) = 1.64$, $p = .10$), biological disease outbreak ($t(286) = 1.76$, $p = .07$) and nerve agent ($t(286) = 1.88$, $p = .23$.) scenarios.

Table 4.18

Differences in the Perceived Facilitators among the Able and Unable

		n	Mean	Std Dev	Min	Max	p	t	df
	Nuclear								
Mean Facilitators Score	Unable	54	2.78	1.97	0	5	0.1604	1.4075	286
	Able	234	3.21	2.05	0	5			
	Anthrax								
Mean Facilitators Score	Unable	45	2.49	2.07	0	5	0.0190	2.3597	285
	Able	242	3.26	2.00	0	5			
	Chemical								
Mean Facilitators Score	Unable	49	2.69	2.02	0	5	0.1008	1.6461	286
	Able	239	3.22	2.03	0	5			
	Hurricane								
Mean Facilitators Score	Unable	27	2.22	2.24	0	5	0.0148	2.4522	286
	Able	261	3.22	1.99	0	5			
	Bio Disease								
Mean Facilitators Score	Unable	42	2.62	2.06	0	5	0.0791	1.7620	286
	Able	246	3.22	2.02	0	5			
	Nerve Agent								
Mean Facilitators Score	Unwilling	58	2.84	1.99	0	5	0.2355	1.8883	286
	Willing	230	3.20	2.04	0	5			

Summary

This study has examined the willingness and ability of law enforcement officers to report for duty during six different disaster scenarios presented to the participants in a survey research format. The study also examined the relationship that officers' barriers and facilitators had with willingness and ability to report for duty. A total of 314 valid survey responses were utilized for analysis to test the three research hypotheses. Participants were overwhelmingly both willing and

able to report to each of the six disaster scenarios presented. Significant association was found between officers' ability to report for duty and several of the demographic variables measured (e.g., race, education, and years of service). As for willingness, significant association was only found with race. There were no other significant associations found with willingness/ability and any of the other demographic variables measured.

In the pairwise comparison of willingness or ability by disaster type, it was found that eleven out of fifteen pairs of disaster scenarios have significant differences between the respondents who were willing and unwilling to report for duty whereas seven out of fifteen pairs of disaster scenarios have statistically significant difference between the respondents who were able and unable to report for duty, lending partial support to the first research hypothesis that willingness or ability and disaster type are associated.

Barriers and facilitators of willingness and ability were also examined, and the results indicated that overall, the respondents who were willing and able to report for duty identified significantly fewer barriers than the respondents who were unwilling and unable across each disaster scenario presented. Furthermore, respondents who were willing and able to report for duty identified significantly more facilitators that would increase their willingness and ability to report for duty across each disaster scenario presented. Lending partial support to the second and third research hypothesis that barriers and facilitators are associated with willingness and ability, significant association was found between willingness and barriers in five scenarios, significant association was found between ability and barriers in all six scenarios, significant association was found between willingness and facilitators in four scenarios, and significant association was found between ability and facilitators and only two scenarios.

While the hypotheses of this study were partially confirmed, some surprises were discovered in conducting the research for the study. Some of the findings were consistent with previous survey research surrounding the willingness and ability of first responders to report for duty during disasters, but other findings were contrary. These will be identified along with recommendations for future research initiatives

Chapter 5: Discussion

Law enforcement organizations have essential responsibilities in every community, in part, because they are tasked with specific disaster response activities and provide necessary functions as part of the whole community approach to emergency management practices. One vulnerability of law enforcement organizations can be the unwillingness or inability of officers to report for duty during disasters resulting in the need for research. While several studies have examined first responder's willingness or ability to report for duty for a specific disaster, this study appears to be the first to examine police officers' willingness and ability to report during six different disaster types along the Gulf Coast. Due to the research gap, this study sought to further understand the willingness and ability of officers to report for duty to guide vulnerability reduction practices. The purpose of this study has been to examine the willingness and ability of local law enforcement officers to report for duty during different disaster scenarios so that law enforcement organizations can utilize this information to reduce their risk and susceptibility to disaster and increase their resistance and resilience. Reducing risk and susceptibility and increasing resistance and resilience (as proposed in the comprehensive vulnerability model) will support continuity of police operations during disasters. From the conclusions of the study numerous points can be made.

First, one research question directed the study to examine the relationship between hazard type with the willingness and ability of law enforcement officers to report for duty during disasters. The results indicated that willingness and ability vary by disaster type, but the overwhelming majority of officers were both willing and able to report for duty during each disaster scenario presented in the questionnaire. The results showed that of the six disaster scenarios presented to the participants, the percent of officers very willing and very able to report

for duty far outweighed the participants who were very unwilling and very unable across each disaster type (Figure 4.1 and Figure 4.2). The respondents were most willing to report during a natural disaster and a biological disease outbreak. Conversely, respondents were least willing and able to report during a nerve agent attack and a nuclear explosion. These findings are partially consistent with that of Qureshi et al. (2005). Comparatively, Qureshi (2005) also found that willingness and ability vary by disaster type, and their study found that employees were most willing to report during a natural disaster (36" snowstorm) but least able to report to the same natural disaster. Contrary to Qureshi et al. (2005), participants of this study were more able and willing to report for a biological disease outbreak when Qureshi et al. (2005) found that participants were least willing and able to report for biological disease outbreak. Although, Qureshi et al. (2005) presented a disaster scenario which utilized a sudden acute respiratory distress syndrome (SARS) outbreak, and this study presented the disaster scenario of a Flu outbreak, which may explain the differences in results. Additionally, this study contrasted the findings from Demme (2007), which reported that EMTs are more willing than able to respond to a natural disaster but more able and less willing to respond terrorist attacks.

Although the majority of officers were both willing and able across each of the disaster scenarios presented, the analysis supported the hypotheses that there are differences in the willingness and ability of officers to report for duty (Table 4.13 and Table 4.14). One explanation for the differences in willingness and ability across disaster types is familiarity with the disaster or past experiences with a similar disaster. Participants may have indicated a higher willingness and ability rate during a hurricane and a biological disease outbreak because they were more familiar with these two types of disasters and likely have experienced both as police officers. The respondents of this study lived in the Gulf coast region and therefore annually

encountered the hazards associated with hurricanes. Additionally, participants of this study were policing during the COVID-19 pandemic and therefore had more familiarity with this disaster type. Respondents were less likely to have familiarity, experience, or training with nerve agent attacks and nuclear explosions. Due to this absence of familiarity, the participants may have had a higher risk perception of these disasters, which resulted in a lower rate of those who were willing and able. Furthermore, respondents reported being least willing and able to report for disaster types that they most likely perceived to have the highest perception of risk to themselves and their families (i.e., nerve agent attack, nuclear detonation, and anthrax attack).

Second, a subsequent research question directed the study to examine the relationship between barriers to reporting for duty with the willingness and ability of officers. The results demonstrated that respondents who identified more barriers to willingness and ability were less willing and able to report for duty (Table 4.15 and Table 4.16). The highest percent of concern is for the safety of the respondent's family. Participants predominantly were concerned about the safety of their families as a barrier to both their willingness and ability to report for duty. However, other barriers respondents were principally concerned about included the availability of PPE, the evacuation of their families, and lack of incident specific training. Respondents were less concerned about organizational incident specific response plans, organizational disaster response plans, and showed even less concern for personal safety, personal health problems, childcare, and elderly care. Respondents were most concerned about the evacuation of their families as a barrier to ability and about family safety as a barrier to willingness.

These findings build on existing evidence from several different studies of first responders willingness and ability, which have also found that the predominately cited barrier for unwillingness to report are concerns surrounding the health and safety of family (Delaney, 2008;

Demme, 2007; DiMaggio et al., 2005; Mackler et al., 2007). Organizational policy, which addresses the barriers identified in this study has the potential to increase officers' willingness and ability to report for duty therefore reducing organizational vulnerability to disasters. Barriers surrounding the officers' family concerns have the most influence on their willingness and ability. These findings suggest that law enforcement organizations can positively influence their officers' willingness and ability by addressing their officers' barriers through policies such as providing PPE for the officers' family, assistance with family evacuation, or family shelters. By addressing the officers' barriers through policy, organizations will reduce their liabilities (risk and susceptibility) and increase the capabilities (resistance and resilience). Organizations have risk and susceptibility in that officers may be unwilling or unable to report for duty during certain disaster types, and organizations have resistance and resilience if their officers are willing and able to report for all disasters.

Finally, the last research question directed the study to examine the relationship between facilitators to reporting for duty with willingness and ability of officers. The results demonstrated that those respondents who identified more facilitators were more willing and able to report for duty (Table 4.17 and Table 4.18). The results indicated that many of the facilitators that will increase the respondents' willingness and/or ability to report for duty surround the respondents' family. Employer provided PPE for family was the highest rated facilitator to increase willingness followed by employer provided family shelters and development of a family support unit. In terms of facilitators related specifically to the officer and not their family, over half of the respondents agreed that if their employer provided hazard specific training, disaster specific response plans, hazard specific PPE, and instilled a sense of duty their willingness to report for duty would increase. Employer provided hazard specific PPE was the facilitator with the greatest

potential to increase willingness and paid time-off to personally prepare for a disaster was the facilitator with the greatest potential to increase ability. Specifically this studies' findings build on the existing evidence of other similar studies (e.g., Delaney, 2008; Demme, 2007; DiMaggio et al., 2005; Mackler et al., 2007) of first responders and their facilitators to willingness/ability that attention to the employee's family needs, providing disaster specific training, and proper PPE for the employee and their family have the capability to increase willingness and ability. This study is supportive of the finding by (Qureshi et al., 2005) that barriers to willingness and ability are amendable by organizational intervention and further solidifies that law enforcement organizations have the potential to increase their officers' willingness and ability therefore reducing vulnerability. The results of this study and other similar studies should be taken into account when law enforcement organizations are considering implementation of organizational interventions (i.e., facilitators), which have potential to increase the willingness and ability of first responders.

Limitations

Limited research has been conducted in the area of local law enforcement officers' willingness and ability to report for duty during different disasters, and no study has previously examined the willingness and ability of officers to report for duty across a different disaster types. This study has matured this area of research by examining law enforcement organizations specifically and first responders in general who can use the information to develop organizational polices addressing the barriers and facilitators of employees to report for duty with the hopes of reducing organizational vulnerability. However, this study is subject to several limitations.

As with many self-reporting participant surveys, responder bias may be an issue. Even though the approximate response rate of 62% is relatively high, this study still lacks responses from approximately 38% of the police officers. Responder bias may be a limiting factor because those officers who chose to participate in the study may be more interested in providing their responses than their non-respondent coworkers. This is perhaps due to the survey setting in which the questionnaire was disseminated. Police officers were presented the opportunity to participate through their official employee email address, which may have had an impact on their participation. Additionally, social desirability bias may have been introduced as participants may have felt obligated to report higher willingness and ability simply because they are police officers and swore an oath to duty. Furthermore, the participants' responses to the scenarios measuring willingness and ability to report to each disaster may also be exaggerated. According to Trainor and Barsky (2011) perception studies overestimate the amount of role abandonment that will occur during disasters and behavioral studies of actual disasters tend to indicate less role abandonment than perception studies. Therefore, this must be taken into account when comparing this perception study with the findings of behavioral studies because the actual response rate of law enforcement officers to a certain disaster can only be measured when a disaster actually strikes.

Additionally, the questionnaire utilized in this study only presented six different disaster scenarios to participants. This limits the generalizable of the findings of this study to other police departments that do not face the same hazards such as hurricanes. Police departments across America are as unique and culturally diverse and the communities in which they exist. Because of cultural differences, the generalizable of the findings from this study further limited and may not be applicable to police departments with a different cultural background. Additionally, this

study only examined one municipal police department in the southeast region, and therefore, these findings may not be generalizable to other police departments in other regions of the United States.

Furthermore, the interpretation and risk perception of the scenarios presented was likely different for each participant. Participants of the study may have interpreted the risk information in the scenario differently, and therefore may have produced varying risk perceptions of the scenarios utilized. If the certain risk information was removed or additional risk information provided in the scenarios may

Recommendations/ Future Research

Replication of the present study is needed to expand the scope of understanding surrounding the willingness and ability of first responders in general, and law enforcement specifically, to report for duty during disasters. Future replications should incorporate law enforcement organizations of varying size and geographical location. There is a need to conduct more research of law enforcement officers along the gulf coast to determine if the results of this study are similar to other organizations of similar size, but also to be able to compare results from other law enforcement organizations from different communities that likely have different cultural and social distinctions. Furthermore, law enforcement organizations along the Gulf Coast are vastly different in personnel size, scope of responsibly, and the communities they serve are also vastly different by demographics, police officer per citizen ration, and many other varying factors; therefore, similar future studies are needed to determine if the results remain constant.

Future studies of the willingness and ability of law enforcement officers should incorporate disasters scenarios that are applicable to their hazards, as well as incorporate more

qualitative research, which can examine the logic and reasoning influencing a police officer's willingness and ability to report for duty. While this study was able to examine which barriers and facilitators are impactful to an officer's decision and capability to report for duty, qualitative research of this topic is more suited for examining why officers make the decision to report or not report for duty. Furthermore, similar studies of non-first responder organizations along the Gulf Coast should also be considered in order to compare the results with first responder organizations.

Finally, future research should also include both qualitative and quantitative studies of actual disaster events along the Gulf Coast. The disaster research of the willingness and ability of police officers to report for duty after a catastrophic incident may provide very different results than survey research utilizing scenarios. There is a deficiency in the area of disaster research surrounding actual disasters and catastrophes and studies of that nature are needed to help solidity the literature surrounding the topic.

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Appendix A: Cover Letter

MPD Officer,

I am a doctoral student in the Department of Emergency Management at Jacksonville State University. I have also served as a law enforcement officer with 15 years of local law enforcement experience. I am currently conducting my dissertation research with a focus on the willingness and ability of law enforcement officers to report for duty during disasters. I intend to learn more about the barriers and facilitators impacting police officers' willingness and ability to report for duty during a variety of disaster scenarios.

It is greatly anticipated that the research will help reduce role abandonment during disasters and ensure that law enforcement organizations can continue to engage in mission essential functions during disasters through improved understanding of the facilitators and barriers influencing the willingness and ability of law enforcement officers to report for duty. Your participation in this survey will provide valuable input to the topic.

Participation in this study is completely anonymous and voluntary, and you will be asked to fill out a survey that will a take approximately 15 to 20 minutes to complete. Information collected on the survey is anonymous and will be kept strictly confidential, only accessible by the principal investigator, and used only for research purposes. Any potentially identifying information of participants will be kept confidential and coded as early as feasible to be de-identified. You can withdraw from this study at any time. Refusal to participate in or withdrawal from this study will involve no penalty.

If you have any questions or concerns, please feel free to contact me directly by phone at (251) 487-0033 or by email at wpeak@stu.jsu.edu. The study is being overseen by faculty of the Emergency Management Department at Jacksonville State University, and you may call the Office of the Vice Provost, Jacksonville State University at (256) 782-5284 to learn more about your rights as a research participant.

Thank you for your participation in this important project.

Sincerely,
Andrew Peak
Jacksonville State University
Department of Emergency Management

Appendix B: Informed Consent Form for Research Involving Adults

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Consent to take part in research by Andrew Peak for partial fulfillment of his requirements to the Doctoral degree in Emergency Management at Jacksonville State University.

Study Title: The Willingness and Ability of First Responders to Report for Duty During Disasters: A Case Study of Local Law Enforcement Officers

Principal Investigator (PI): Andrew Peak, D.Sc. candidate
Academic Advisor: Chongming Wang, Ph.D.

This study seeks to advance understanding of the willingness and ability of law enforcement officers to report for duty during disasters. You have been selected to participate in this study because you are a certified law enforcement officer with MPD, and part of the duties of law enforcement officers is to respond to emergencies and disasters.

This is an anonymous online survey that should take approximately 15 to 20 minutes to complete. Your name will not be connected to these materials, and only group-level data will be shared in potential publications or presentations resulting from this research.

Study Purpose: The purpose of this research is to learn about the willingness and ability of law enforcement officers to report for duty during different disaster scenarios as well as the facilitators and barriers impacting their decision to report for duty. The results of this research will help to inform local law enforcement policy decisions and increase the potential that law enforcement organizations will be able to continue engagement in mission essential disaster response functions during disasters.

Study Procedure: If you agree to participate in this study, you will be asked to complete the survey that has been provided to you. Only the principal investigator (Andrew Peak) will have access to the actual survey responses. The survey is divided into four sections, and you will be asked to complete 29 questions. There aren't any right or wrong answers to the questions, so please respond with the answer that best applies to you personally. There are no repercussions for not answering a particular question or for choosing not to participate in this survey.

Confidentiality: Neither your name nor your email address will be collected and any potentially identifying information collected in the survey is confidential and will be coded as early as feasible to make data non-identifiable. All information collected will be stored on a password protected computer. All data collected from this project will also be confidential and used only for research purposes.

Risks of Participating: There are no foreseeable risk in participating in this research. However, some of the survey questions are personal (e.g., concerns of personal safety during a disaster and level of income), and you may skip the questions you do not wish to answer.

Benefits: You will not be compensated for participation in this survey. There is no promise of any individual benefits to the participants; however, the culmination of the research may help to inform the practices associated with the profession of the participants and provide knowledge to those in the profession.

Withdrawal: Your participation is entirely voluntary, and you should feel free not to complete this survey. If you do choose to voluntarily participate, you may withdraw from the research at any time while completing the survey by closing your internet browser. If you choose not to participate in this study, there will be no impact of any kind on your employment

Concerns: If you have any questions concerning this research, you may contact Andrew Peak at (251) 487-0033 or wpeak@stu.jsu.edu. The study is being overseen by faculty of the Emergency Management Department at Jacksonville State University, and you may call the Office of the Vice Provost, Jacksonville State University at (256)782-5284 to learn more about your rights as a research participant.

1. **Consent:** Please read the above form carefully. By choosing *I consent to participate in the survey*, you acknowledge that you are employed by the police department as a police officer, have read and understand the information contained on this form, and are willing to participate in the survey. By choosing *I DO NOT consent to participate in the survey*, you indicate that you do not want to participate in the survey.

   ☐ I consent to participate in the survey

   ☐ I DO NOT consent to participate in the survey

Appendix C: **Survey of Police Department Officers' Willingness and Ability to Report for Duty during Disasters**

Thank you for taking a moment to complete this survey. All responses will be kept confidential.

Part I: Willingness and Ability to Report for Duty
Consider the following six scenarios and indicate your willingness and ability to report for duty.

Willingness refers to your *personal decision* to report for duty when you are ordered to do so before, during, or after a disaster.

Ability refers to your *capability* to report for duty when you are ordered to do so before, during, or after a disaster.

Scenario 1:
Nuclear Detonation: In this scenario, a terrorist organization has smuggled nuclear material into the Alabama State Docks. The nuclear material was used to make a 10-kiloton improvised nuclear device. The device was assembled in a delivery van and detonated in the city. There are tens of thousands of casualties within a 3-mile radius. People in the region are instructed to shelter in place as the nuclear plum moves across the region. Tens of thousands are seeking shelter but must be decontaminated prior to entering shelters.

2. If this disaster occurred, would you be **WILLING** to report for duty?

☐ Very Willing ☐ Somewhat Willing ☐ Undecided ☐ Somewhat Unwilling ☐ Very Unwilling

3. If this disaster occurred, would you be **ABLE** to report for duty?

☐ Very Able ☐ Somewhat Able ☐ Undecided ☐ Somewhat Unable ☐ Very Unable

Scenario 2:
Anthrax Terrorist Attack: In this scenario, anthrax is distributed into the entertainment district of downtown during a densely populated period of time. A concealed spraying device in a truck is used to distribute anthrax into the air throughout the area. It is unknown if the attack is ongoing or if there will be other time-phased attacks. There are approximately 13,000 fatalities and injuries. Another 25,000 citizens are seeking shelter but first require decontamination.

4. If this disaster occurred, would you be **WILLING** to report for duty?

☐ Very Willing ☐ Somewhat Willing ☐ Undecided ☐ Somewhat Unwilling ☐ Very Unwilling

5. If this disaster occurred, would you be **ABLE** to report for duty?

☐ Very Able ☐ Somewhat Able ☐ Undecided ☐ Somewhat Able Unable ☐ Very Unable

Scenario 3:
Chemical Terrorist Attack: In this scenario, a chemical manufacturing facility was attacked with an improvised explosive device. Major fires occur as a result of the explosion, and a heavy plume of smoke is visible and drifting toward the city. The plume of smoke contains numerous hazardous chemicals and is resulting in inhalation fatalities. Soon after the chemical facility is attacked, several ships docked in river are attacked. As a result of the attack on the ships, more toxic plumes of smoke are released, and smoke plumes immediately drift over the city during a weekday lunch hour. There are 350 fatalities reported so far and over 1,000 hospitalizations.

6. If this disaster occurred, would you be **WILLING** to report for duty?

☐ Very Willing ☐ Somewhat Willing ☐ Undecided ☐ Somewhat Unwilling ☐ Very Unwilling

7. If this disaster occurred, would you be **ABLE** to report for duty?

☐ Very Able ☐ Somewhat Able ☐ Undecided ☐ Somewhat Unable ☐ Very Unable

Scenario 4:
Major Hurricane: In this scenario, there is a category 5 hurricane with sustained wind speeds of 160 MPH, is 400 miles in diameter, and has a forward speed of 15 MPH. The storm surge is greater than 20 feet above normal. The eye of the hurricane is approaching the bay. Massive evacuations are required, and all low-lying escape routes are inundated by water 5 hours prior to the storm making landfall. During the impact of the storm, downtown and other low-lying areas are completely flooded by the storm surge, and most streets are impassable. The majority of residential homes along the bay and nearby waterways are completely destroyed by hurricane winds and/or flooding. Fallen trees and power poles isolate residential areas. Power outages will last for weeks to possibly months, and most of the area will be uninhabitable for weeks or months.

8. If this disaster occurred, would you be **WILLING** to report for duty?

☐ Very Willing ☐ Somewhat Willing ☐ Undecided ☐ Somewhat Unwilling ☐ Very Unwilling

9. If this disaster occurred, would you be **ABLE** to report for duty?

☐ Very Able ☐ Somewhat Able ☐ Undecided ☐ Somewhat Unable ☐ Very Unable

Scenario 5:

Biological Disease Outbreak: In this scenario, an influenza pandemic has occurred as the result of a genetic shift in the circulating strain of influenza. As a result of this influenza outbreak, 15% of the U.S. population contract the disease resulting in 87,000 fatalities and 300,000 hospitalizations in a month period of time.

10. If this disaster occurred, would you be **WILLING** to report for duty?

☐ Very Willing ☐ Somewhat Willing ☐ Undecided ☐ Somewhat Unwilling ☐ Very Unwilling

11. If this disaster occurred, would you be **ABLE** to report for duty?

☐ Very Able ☐ Somewhat Able ☐ Undecided ☐ Somewhat Unable ☐ Very Unable

Scenario 6:
Nerve Agent Terrorist Attack: In this scenario, terrorist have released Sarin (a human-made chemical warfare agent classified as a nerve agent) vapors into the ventilation system of the RSA Tower, Government Plaza, and USA Children's and Women's Hospital. Sarin is a clear, colorless, odorless, and tasteless liquid and as a result of the release, the agent kills 95% of the people in the buildings and kills or sickens many of the first responders.

12. If this disaster occurred, would you be **WILLING** to report for duty?

☐ Very Willing ☐ Somewhat Willing ☐ Undecided ☐ Somewhat Unwilling ☐ Very Unwilling

13. If this disaster occurred, would you be **ABLE** to report for duty?

☐ Very Able ☐ Somewhat Able ☐ Undecided ☐ Somewhat Unable ☐ Very Unable

Part II: Barriers and Facilitators Influencing Your Willingness to Report for Duty during Disasters

14. A **barrier** to willingness refers to a factor that hinders your *personal decision* to report for duty when you are ordered to do so before, during, or after a disaster. Please indicate how you feel about the following statements.

A. Concerns about my personal safety would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
B. Concerns about the safety of my family	☐	☐	☐	☐	☐

would prevent me from being willing to report for duty.	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
C. Concerns about dependent childcare issues would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
D. Concerns about dependent elderly care issues would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
E. Concerns about the availability of personal protective equipment (PPE) would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
F. Concerns about my organization's disaster specific response plans would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
G. Concerns about my personal health problems would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
H. Concerns about the lack of incident specific training would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
I. Concerns about my family's evacuation would prevent me from being willing to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
J. Other barriers hindering my willingness to report for duty.	Please specify_____				

15. A **facilitator** to willingness refers to a factor that promotes your *personal decision* to report for duty when you are ordered to do so before, during, or after a disaster. Please indicate how you feel about the following statements.

A. My willingness to report for duty would increase if my employer provided hazard specific training regarding nuclear, biological, chemical, and nerve agent incidents.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
B. My willingness to report for duty would increase if my employer developed hazard specific response plans, and I had access to the plans.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
C. My willingness to report for duty would increase if I was supplied with adequate hazard specific personal protective equipment (PPE).	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
D. My willingness to report for duty would increase if my dependent family was supplied with adequate hazard specific PPE.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
E. My willingness to report for duty would increase if my employer provided shelters for my dependent family during disasters.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
F. My willingness to report for duty would increase if my employer developed a family support unit that could provide my family with disaster information and resources.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree

G. My willingness to report for duty would increase if vaccines were available to me and my family.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
H. I have a duty to protect the citizens, so I am willing to report during any disaster.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
I. Other factors promoting my willingness to report for duty.	Please specify_____				

Part III: Barriers and Facilitators Influencing Your Ability to Report for Duty during Disasters

16. A **barrier** to ability refers to a factor that hinders your *capability* to report for duty when you are ordered to do so before, during, or after a disaster. Please indicate how you feel about the following statements.

A. Concerns about my dependent childcare obligations would prevent me from being able to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
B. Concerns about my dependent elderly care obligations would prevent me from being able to report for duty	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
C. Concerns about my my spousal care obligations would prevent me from being able to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
D. Concerns about my pet care obligations would prevent me from being able to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
E. Concerns about my personal health issues would prevent me from	☐ Strongly Agree	☐ Agree	☐	☐ Disagree	☐ Strongly Disagree

being able to report for duty.			Neither Agree nor Disagree		
F. Concerns about my lack of incident specific training would prevent me from being able to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
G. Concerns about a lack of available personal protective equipment (PPE) would prevent me from being able to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
H. Concerns about the evacuation of my family would prevent me from being able to report for duty.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
I. Other barriers hindering my ability to report for duty.	Please specify_____				

17. A **facilitator** to ability refers to a factor that promotes your *capability* to report for duty when you are ordered to do so before, during, or after a disaster. Please indicate how you feel about the following statements.

A. My ability to report for duty would increase if my employer provided a stipend to assist with the cost associated with personal disaster preparedness purchases and/or costs associated with evacuation of dependent family.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
B. My ability to report for duty would increase if there was a warning period prior to a disaster impact (i.e., hurricane), and I was provided with paid time off to prepare and evacuate my family,	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree

if necessary, before the impact.					
C. My ability to report for duty would increase if my employer provided local shelters for my dependent family.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
D. My ability to report for duty would increase if my employer provided hazard specific training regarding nuclear, biological, chemical, and nerve agent incidents.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
E. My ability to report for duty would increase if my employer developed a family support unit that could provide my family with disaster information and resources my ability to report for duty would increase.	☐ Strongly Agree	☐ Agree	☐ Neither Agree nor Disagree	☐ Disagree	☐ Strongly Disagree
F. Other factors promoting my ability to report for duty.	Please specify_____				

Part IV: Demographics

18. Which of the following best describes your current duty assignment?

☐ Administrative Services
☐ Field Operation Division
☐ Investigative Operations Division
☐ Support Services Division
☐ Special Operation Division
☐ Intelligence Section
☐ Technology & Cyber Intelligence Section
☐ Other

19. How many years have you have been employed by MPD as a law enforcement officer?

☐ 5 years or less ☐ 6 to 10 years ☐ 11 to 15 years ☐ 16 to 20 years ☐ 21 or more years

20. How many total years you have been certified by a state board as a law enforcement officer?

☐ 5 or less years ☐ 6 to 10 years ☐ 11 to 15 years ☐ 16 to 20 years ☐ 21 or more years

21. In which age group are you?

☐ Under age 20 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60 or over

22. What is your sex?

☐ Female
☐ Male

23. What is your marital status?

☐ Single
☐ Married
☐ Divorced / Separated
☐ Widowed

24. If married, is your spouse or partner a first responder?

☐ No
☐ Yes
☐ Not applicable

25. If your spouse or partner is a first responder, then specify which first responder discipline.

☐ Local law enforcement ☐ Firefighter ☐ EMS/Paramedic ☐ Other ☐ N/A

26. How many dependent children are you responsible for?

☐ None ☐ 1-2 ☐ 3-4 ☐ 5 or more

27. How many elderly dependents are you responsible for?

☐ None ☐ 1-2 ☐ 3-4 ☐ 5 or more

28. What is your race?

☐ American Indian or Alaskan Native
☐ Asian
☐ Black or African American
☐ Native Hawaiian or Pacific Islander
☐ White
☐ Other race (Please specify_____)

29. What is the highest degree or level of school you have completed?

- ☐ Less than high school completion
- ☐ High school graduate or GED
- ☐ Some college or associate degree
- ☐ Bachelor's degree
- ☐ Advanced degree (master's degree, professional degree, or doctorate)

30. How long have you lived in this city?

- ☐ 5 years or less
- ☐ 6 to 10 years
- ☐ 11 to 15 years
- ☐ 16 or more years
- ☐ I do not live in this city