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Understanding Cross-Sector Collaboration in Emergency Management: The Dynamics of Vertical and Horizontal Networks

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UNDERSTANDING CROSS-SECTOR COLLABORATION IN EMERGENCY MANAGEMENT: THE DYNAMICS OF VERTICAL AND HORIZONTAL NETWORKS

By

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For My Parents and Grandparents
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ABSTRACT

Studies of local emergency management and homeland security collaboration have rapidly grown in the public administration research. Local governments are viewed as key actors in the U.S. to coordinate national counterterrorism efforts and provide functional activities relevant to emergency management. However, the discussions about why local governments collaborate based on the analysis of different types of collaboration in this area are still limited.

Through using the mixed-methods approach, this dissertation develops a framework under the perspectives of organizational internal factors, organizational external factors, and emergency management/homeland security capacity to empirically study the determinants of collaboration in the context of emergency management and homeland security at the local level according to three types of collaboration: vertical, horizontal-interlocal, and horizontal-intersectoral collaborations. The ICMA 2005 Homeland Security Survey data is used to conduct the empirical analysis. This research also interviews city and county local emergency management managers in Florida to understand their 1) motivations behind each type of collaboration, 2) definitions of collaboration, 3) perceived obstacles of collaboration, 4) practical collaborative activities in both vertical and horizontal contexts, and 5) opinions on the influences of organizational internal and external factors on collaboration.

The findings of this research show that factors related to resource shortage in money and information, mutual understanding, financial resource dependence on higher levels of government, and the adoption of national standard have different impacts on different types of collaboration. Organizational attention is a critical factor to all three types of collaboration. Local emergency management/homeland security capacity can be a significant determinant and mediator. From the practical point of view, horizontal collaboration is more common than vertical collaboration. For local governments, seeking resources and training opportunities can explain most parts of vertical collaboration. However, in the horizontal context, a local government not only plays a part as a resource-seeker but also as an assistance-provider to their governmental and non-governmental partners. In sum, this study helps us to gain a theoretical and practical understanding of local emergency management and homeland security collaboration in the United States.
CHAPTER ONE

INTRODUCTION

1.1 The Purpose of This Research

The research of collaboration in emergency management and homeland security has attracted many public management scholars in recent years. These studies try to construct a concept of collaborative emergency management (Kapucu, Arslan, and Demiroz 2010); recognize the importance of communication, coordination, and collaboration vertically and horizontally in responding to extreme events (Choi 2008; Comfort 2002; Kettl 2006a; Waugh and Streib 2006), understand what factors influence collaboration in emergency management and homeland security (Hicklin, O'Toole, Meier, and Robinson 2009; Kapucu, Bryer, Garayev, and Arslan 2010; McGuire and Silvia 2010; Reddick 2008; Simo and Bies 2006); and study the possible challenges when conducting collaboration (Caruson and MacManus 2011; Scavo, Kearney, and Kilroy 2007). It has become apparent that local governments are key actors in the U.S. coordinated national counterterrorism effort and provide functional activities relevant to emergency management. Therefore, more and more recent papers also focus on studying this policy area from the local perspective (Brudney and Gazley 2009; Caruson and MacManus 2007, 2008; Gerber, Cohen, Cannon, Patterson, and Stewart 2005; Gerber and Robinson 2009; Henstra 2010; Krueger, Jennings, and Kendra 2009; MacManus and Caruson 2008, 2011; Reddick 2008; Somers and Svara 2006).

In general, the literature suggests the importance of managerial and organizational capacity, leadership, resource scarcity, interdependency, shared beliefs, trust, common purpose, uncertainty, and past experience of conflicts in the process of forming collaborative relationships (Agranoff and McGuire 2001, 2003; Alter and Hage 1993; Ansell and Gash 2008; Bryson, Crosby, and Stone 2006; Connelly, Zhang, and Faerman 2008; Emerson, Nabatchi, and Balogh 2011; Fleishman 2009; Gazley 2008; McGuire and Silvia 2010; Pfeffer and Salancik 2003; Somers and Svara 2006; Thomson and Perry 2006). These factors can be generally categorized as organizational external factors and organizational internal factors. However, current research on collaboration lacks the
creation and testing of empirical models based on different types of collaboration to test the influences of the above-listed factors. Agranoff and McGuire (2003) explained that collaboration can occur on both the vertical and horizontal levels. Vertical collaboration emphasizes work across levels of governments within the U.S. federal system, while horizontal collaboration focuses on local players which represent multiple interests within the community. Collaboration can also happen across different departments, agencies, organizations and be conducted across public, private, and non-profit sectors, which form different types of collaboration. We are not sure whether it is proper to use the same factors to explain both vertical and horizontal collaboration in this field. O‘Toole (1997) reminded us that it is important for public administration scholars to study types of networks and their variations. If choosing types of collaboration is thought of as a strategic action for a local government to maximize diverse advantages, it is reasonable to assume that there might be different motivations behind each type of collaboration.

On the other hand, studying the predictors of collaboration or the hurdles of collaboration in the context of emergency management and homeland security is becoming more common (Caruson and MacManus 2011; Hicklin et al. 2009; Kapucu et al. 2010; MacManus and Caruson 2011; McGuire 2009; McGuire and Silvia 2010; Reddick 2008). Recent study findings have often specifically demonstrated that managerial and structural factors have impacts on collaboration. But these studies do not test the potential mediating effects of management capacity, which the previous literature has emphasized. For example, O‘Toole and Meier (1999) argued that management is “the set of conscious efforts to connect actors and resources to carry out established collective purposes” (p. 510). Put differently, management can be treated as a black box which translates public resources into policy results. Following this logic, in the “management matters” research, management capacity is understood as a critical mechanism which operates government functions and influences government performance (Ingraham, Joyce, and Donahue 2003). Similarly, Kim and Lee (2009) in their innovative research proposed a theoretical model in which management capacity for innovation along with environmental exigencies and organizational characteristics are influential factors for idea generation, adoption, implementation, and the sustainability of innovation. These studies imply that there is a potential mediating effect of management capacity in the
relationship between resources and outcomes. However, in the current emergency management and homeland security collaboration research, discussions about the mediating effect of management capacity are rare.

To fill these gaps, this research studies and categorizes local emergency management and homeland security collaboration into three types: 1) vertical collaboration, 2) horizontal-interlocal collaboration, and 3) horizontal-intersectoral collaboration. A general framework is developed in the second chapter for studying local collaboration in emergency management and homeland security. Local collaboration is mainly affected by three dimensions, including organizational internal factors, organizational external factors, and emergency management/homeland security (EM/HS) capacity according to the framework. The organizational internal factors contain the perspectives of resource shortage, organizational attention, mutual understanding, institution, EM/HS position power, and past experience with partners. The organizational external factors include the perspectives of resource dependence on federal and state governments, disaster magnitudes, and community attributes. The EM/HS capacity is generated by both organizational internal and external factors in the general framework, which presents that the EM/HS capacity could mediate the relationship between internal factors and collaboration, and the relationship between external factors and collaboration. Moreover, local EM/HS managers are also interviewed in this research in order to substantively understand when, why, and how local governments conduct different types of collaboration in practice, and how collaboration could be defined in their work. The perceived obstacles of collaboration are also discussed. Their opinions and comments on the impacts of organizational internal and external factors on collaboration provide us a different angle to make comparisons with the empirical findings. In sum, my research covers four primary questions:

1. How is collaboration defined and observed theoretically and practically in the context of emergency management and homeland security from the local perspective? How are vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration conducted in the context of emergency management and homeland security from the local perspective?
2. For local governments, are there different incentives behind the above three types of collaboration? How do organizational internal factors (i.e. resource shortage, organizational attention, institution, manager capacity, and past experience with partners), organizational external factors (i.e. disaster magnitude, resource dependency, community attributes), and EM/HS capacity explain the above three types of collaboration in the context of emergency management and homeland security? How are they alike and different?

3. How does the mediating effect of EM/HS capacity influence the relationship between organizational internal and external factors and the three different types of collaboration?

1.2 Introduction to Local Emergency Management and Homeland Security Collaboration

Management for emergencies and various disasters is an area with a long history in the United States. In the 1950s, civil defense against nuclear attack triggered the development of modern emergency management and national security. In the mid-1990s, the Federal Emergency Management Agency (FEMA) developed an integrated all-hazards approach, which delineated a four phase process—mitigation, preparedness, response, and recovery—into a comprehensive federal emergency management system (Sylves 2008). Simultaneously, following the logic of federalism, local governments were viewed as the first line to deal with emergencies while the federal government acted as the key grantor to support state and local emergency management activities. States served the roles of inter-mediators which helped to implement federal policies, training communities, and funneling federal grant monies (McEntire and Dawson 2007).

After September 11th, 2001, the anti-terrorism movement captured national attention and priority on the homeland security issue. When FEMA was merged into the Department of Homeland Security (DHS), the core priority of U.S. emergency management shifted from dealing with natural disasters to terrorism and other man-made disasters. However, in 2005, the tragedy of Hurricane Katrina and the inept response system reminded the U.S. government again of the importance of an all-hazard approach in emergency management. Both homeland security and emergency management should
be recognized as equally critical. Today, local governments are the first responders in all kinds of emergencies and also stand on the front line to defend U.S. homeland security (Scavo, Kearney, and Kilroy 2006; Sylves 2008). Although municipal governments have recognized their essential role in dealing with disasters, they are often confronted with the challenges of limited financial and human resources (Krueger, Jennings, and Kendra 2009). Moreover, Sylves (2008, p.10) points out that “Disasters are by their very nature high-risk, low-probability events. Their infrequency makes it difficult to justify pre-disaster expenditures of public money in view of seemingly more pressing, ongoing public needs and issues.” This may lead local governments to more actively search for local and intergovernmental partners in homeland security, so that services are provided, but not at their own exclusive cost.

Collaboration across the public, private, and non-profit sectors is seen as one reasonable solution to efficiently use cross-sector resources for localities to respond and manage emergencies and disasters (Waugh and Streib 2006). And yet, as Kettl (2006b) points out, managing across boundaries can be difficult in the current American administrative system. Complicated social and economic problems such as the persistent problems of poverty or inner city unemployment, or broad scale events such as terror attacks or natural disasters, cross administrative boundaries and need intergovernmental cooperation. At the same time, local governments also rely on funding from federal and state governments to operate activities in emergency management and homeland security. The logic of fiscal federalism and legal requirements (e.g. the Stafford Act and the Patriot Act) expects federal and state governments to be funding grantors to support local governments’ activities as they respond to disasters and terrorist acts. Collaboration across different levels of government becomes both more necessary and under these conditions very common. In sum, collaboration can be viewed as a useful way to reduce the vertical and horizontal fragmentation in managing disasters (Sylves 2008).

1.3 Significances of This Research

By choosing local government as the unit of analysis, my dissertation project is expected to make four contributions. First, this research establishes a theoretical framework through three perspectives, including organizational internal factors,
organizational external factors, and EM/HS capacity, to connect theories related to disaster magnitude, resource scarcity and dependency, organizational attention, management and manager capacity, institution, and transaction costs to study their impacts on collaboration in the context of local homeland security and emergency management. Moreover, the potential mediating effect of EM/HS capacity is also considered in the analysis, which strengthens the explanatory power of my research to understand local collaborative actions.

Secondly, this research studies three types of collaboration to compare and contrast how they differ. Therefore, I study not only horizontal collaboration across local governments, private companies, or non-profit organizations, but also vertical collaboration across different levels of government, which can provide a more complete view to understand local governments’ collaborative actions in the area of emergency management and homeland security. Moreover, the current research in public administration and public management addressing and testing the impacts of state/federal funding dependency on different types of collaboration is still limited. This work aims to fill this gap.

Third, this study provides empirical evidence about how local government managers view their roles and responsibilities in emergency management and homeland security, and how collaboration and resource issues are decided; thus the work contributes to the broadening study of emergency management and homeland security in the U.S.

Finally, this study will use a mixed-method approach to address the research questions. I will utilize quantitative analysis through multivariate regression analysis on the survey data from a sample of U.S. cities and counties, collected by the International County/City Management Association (ICMA). Meanwhile, I will also interview local emergency management managers in Florida cities and counties to study their 1) motivations behind each type of collaboration, 2) definitions of collaboration, 3) perceived obstacles of collaboration, 4) practical collaborative activities in both vertical and horizontal contexts, and 5) opinions on the influences of organizational internal and external factors on collaboration to supplement my empirical results. The use of both quantitative and qualitative analysis is expected to provide a relatively more complete
approach to understand local emergency management and homeland security collaboration.

In sum, this study helps us to gain a better understanding of how collaboration is observed, why local governments implement different types of collaborative activities from both theoretical and practical perspectives, and how local governments collaborate with different levels of government, the private sector, and non-government organizations to improve their performance in local emergency management and homeland security initiatives.

1.4 Summary of Subsequent Chapters

This chapter has introduced the rationale and existence of collaboration in local emergency management and homeland security, including a brief U.S. historical background, while describing the purpose and significance of this research. In subsequent chapters I will provide a more comprehensive discussion of collaboration literature in the context of local emergency management and homeland security, explain the research methodology, demonstrate the findings, and conclude with a summary of theoretical implications. A summary of each chapter is listed below.

Chapter two presents a literature review of the existing studies on local emergency management and homeland security collaboration. Also, the mediating effect of management capacity will be considered. Hypotheses based on related theories will be also proposed in this chapter.

Chapter three describes the overall research methodology of my dissertation. I will use a mixed-method approach to conduct this study. For the quantitative analysis, the models, methods, and dataset that I use for testing hypotheses will be explained. For the qualitative analysis, I will interview the local emergency management managers in Florida to supplement the limited empirical analysis. The interviewee selection criteria, the interview structure guidelines, and the interview process will be explained in this chapter.

I use two chapters to report and discuss my findings from the empirical analysis and interviews. Chapter four presents the empirical results of the multivariate regression
analysis. Chapter five demonstrates the analysis of interview responses from Florida local emergency management managers, which will be linked back to the hypotheses.

Chapter six provides an overall discussion of the key findings and proposes theoretical and practical implications of this research. Research limitations and possible future research will also be addressed.
CHAPTER TWO
LITERATURE REVIEW AND HYPOTHESES

2.1 The History of Emergency Management and Homeland Security in the United States

According to the online Dictionary of Disaster Terms, an emergency is defined as “an unexpected event, which places life and/or property in danger and requires an immediate response through the use of routine community (or organizational) resources and procedures.” Emergency management is further defined by the Dictionary of Disaster Terms as “the management of the governmental and non-governmental preparedness and response at federal, state, and local levels to unplanned events that affect public health and safety and destroy property.”

The United States has dealt with disasters throughout its 235 year history. Ward and Wamsley (2007) chronicled the history of U.S. emergency management development and pointed out that the U.S. federal government’s actions to assist communities affected by natural disasters can be traced back to the 1800s, but the federal government had limited involvement at that time. Neighbors, religious groups, and civic communities were expected to have more responsibility than the government.

At the beginning of the twentieth century, federal and state governments gradually engaged more in disaster and emergency management with the growth of disaster science, the emergence of the American Red Cross, and repeated occurrences of major catastrophes. Yet, governments at all levels still lacked a formal system to deal with pre-disaster mitigation and post-disaster recovery. Prior to WWII, the federal government viewed disasters as uncontrollable natural phenomena. After WWII, the definition of disaster expanded to include “intentional actions inflicted on communities” which led to the development of the civic defense system designed to “prevent and deal with the consequence of man-made disasters” (Ward and Wamsley 2007, pp. 207-208).

With the passage of the Federal Disaster Assistance Act (Public Law 81-875) and the Civil Defense Act in 1950, the federal natural disaster response system started to be

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formalized, and was given motivation by the specter of nuclear war between the Soviet Union and its allies such as Cuba, and the U.S. The creation of FEMA in 1979 was also expected to handle both natural and man-made disasters. However, the tension and nuclear arms race between the United States and the Soviet Union forced FEMA and civil defense to mainly prepare for nuclear attacks. In the mid-1990s, FEMA integrated an all-hazards approach into modern emergency management to enhance national capability towards natural disaster responses (Sylves 2008; Ward and Wamsley 2007). Later, the terror-attacks on the World Trade Center and Pentagon on September 11, 2001 focused national attention on anti-terrorism and homeland security issues. FEMA was also merged into DHS in 2003 under the impact brought from the 9/11 incident. Under these circumstances, the federal government shifted its attention from responding to natural disasters to terrorism and intentional man-made disasters. However, huge damages and losses caused by Hurricane Katrina in 2005 forced the U.S. government to reconsider the necessity of an all-hazard approach to deal with natural disasters.

Today, governments at all levels take responsibility for dealing with unplanned natural disasters, and both intended and unintended man-made disasters. I adopt a broader view to understand the U.S. emergency management system which is an area that applies a variety of technological, scientific, and management skills to decrease the loss of life and property caused by various emergencies. Homeland security is in this research defined as one specific type of emergency management that focuses on preventing and responding to terrorism within America.

2.2 The Necessity of Collaboration in Local Emergency Management and Homeland Security

More recent studies recognize and advocate for the necessity to establish a network or collaborative approach in the area of emergency management and homeland security that emphasizes communication, coordination, resource-sharing, and leadership among different levels of government and cross-sector organizations (Comfort 2002, 2007; Kapucu, Arslan, and Demiroz 2010; Schneider 2011). In the U.S. context, Drabek (1985) addressed four characteristics of the U.S. emergency management system: localism, lack of standardization, unit diversity, and fragmentation. Localism means the
federal government relies heavily on municipalities as the main responders in disasters. Lack of standardization refers to the variation in how emergency management is organized and undertaken place by place. Unit diversity means the differences in sizes and types of entities for responding to disasters. Fragmentation describes two situations: on the one hand, federal, state, and local governments’ approaches to emergency management could diverge, causing the overall emergency management effort to face vertical strains; on the other hand, separate entities view emergency management only from their own perspectives, which leads to horizontal conflicts across departments and between neighboring jurisdictions.

In homeland security, Kettl (2003) pointed out five challenges that governments face: 1) matching place-based problems with functionally organized services; 2) defining and achieving a minimum level of protection that all citizens ought to receive; 3) building a reliable learning system for problems that, with luck, occur only rarely; 4) balancing the new homeland security mission with existing missions that remain important; and 5) meeting citizens’ expectations in a fragmented governance system (p.253). Kettl further proposed the idea of contingent coordination for governments to deal with homeland security issues. He argued homeland security is a new and hard to predict problem. It is the core of modern governance, which connects governments and non-governments, in the area of defense.

The characteristics of the U.S. emergency management system listed above provide a strong rationale for why collaboration in emergency management and homeland security is extremely important. Three reasons stand out: 1) local governments are the frontline to deal with emergencies but only have limited resources, 2) federalism respects the independence and diversity of local governments, and 3) contingency is related to emergency management. Disaster management in the U.S. traditionally follows a “bottom-up” system, which means “local emergency management organizations and governments address disasters and emergencies first, seeking help from their state government or from adjacent local governments. The federal government help is perceived as ‘last resort’ assistance, when a state cannot respond to and recover from a disaster or emergency using its own resources” (Sylves 2008, p. 171). Federal agencies own and provide substantial resources for emergency management and national security.
States often help to implement federal policies, train communities in best practices, and funnel federal grant monies to localities (McEntire and Dawson 2007). Thus, as the frontlines to deal with emergencies, local governments heavily rely on collaboration across different organizations to effectively manage limited resources to deal with various emergencies, no matter if those emergencies are natural disasters or terrorist attacks.

From the perspective of federalism, the U.S. federal government respects localities’ preference, authority, and diversity, which allows local governments to have higher flexibility to deal with emergencies. Central authority plays a role to provide monetary supports and policy guidelines while local jurisdictions offer “compelling advantages in terms of tailoring the provision of certain public services to local tastes” (Oates 2004, p. 44). McEntire and Dawson (2007) further argue that although a multi-level political structure brings redundancy in implementing policy, it allows disaster-stricken communities to seek assistance from nearby jurisdictions or from state and federal agencies. These characteristics of federalism give local governments an opportunity to vertically connect with different levels of government to seek monetary support and other resources when faced with disasters.

However, we should not ignore another factor that can explain the necessity of collaboration in local emergency management and homeland security: natural disasters and terror attacks can be and are often cross-jurisdictional. Emergencies are not limited by the jurisdictional boundary (McGuire and Silvia 2010). Floods, earthquakes, tornadoes, hurricanes, and other natural disasters usually cause damages across different administrative boarders. Terror attacks on public transportation or buildings can also affect multiple metropolitan areas. Local governments with similar geography, climate, or socioeconomic status particularly need to share a cross-border view to organize their plans for emergency management and homeland security. Therefore, cross-jurisdictional collaboration is necessary to deal with natural or man-made disasters.
2.3 Definition of Collaboration

Collaboration is discussed widely in the recent public administration and management literature and simultaneously plays a key role in developing various theories, such as decentralized governance, new governance, networks, privatization, devolution, and collaborative public management (Bingham, O'Leary, and Carlson 2008). Although research on collaboration has grown, there is still no agreement on how to define collaboration. Scholars applied a variety of perspectives, including those from inter-organizational relations, networks, and the logic of collective action (Thomson and Perry 2006). In general, collaboration can be viewed as a process of facilitating and operating in multiple organizational arrangements to solve problems which single organizations cannot solve or find hard to solve easily. A purposive relationship exists among organizations (Agranoff and McGuire 2003). Gazley (2008) proposed that sharing mutual goals between stakeholders, which can be organizations or individuals, is the key in the evolving and contingent collaborative relationship. Thomson and Perry (2006) emphasized the importance of autonomy and mutual benefit in the collaborative process. Gray (1989) took the perspective of business management to distinguish collaboration from other forms of cooperation according to four elements: interdependence of the stakeholders, the ability to address differences constructively, joint ownership of decisions, and collective responsibility for the future of the partnership.

In their definitions, both actors and activities are essential to construct the contacts and interaction in the collaboration, which form the basic concepts to measure collaboration in the empirical studies (McGuire 2009; McGuire and Silvia 2010). Even though there is still no consensus on defining the term collaboration, most scholars agree that cooperation and collaboration differ in the degree of interaction, integration, commitment, and complexity (Thomson and Perry 2006). Cooperation only refers to working jointly whereas collaboration means not only working jointly but also seeking a higher-order level of collective actions, which includes mutual goals, trust, and reciprocity among organizations and individuals (Agranoff and McGuire 2003; Thomson and Perry 2006). Collaboration and coordination also have different meanings. Kapucu, Augustin, and Garayev (2009) pointed out that coordination happens when actors with different positions perform subtasks of the decision in a sequential order, but
collaboration requires actors to cooperate throughout all stages of the task. Actors in a coordinative relationship only focus on finishing their own job whereas actors in a collaborative relationship care more about how to achieve the overall goal. Bryson and Crosby (2008) employed the level of cross-sector sharing to differentiate cooperation, coordination, and collaboration. Collaboration stands at a higher level of sharing than cooperation and coordination. In the cooperation level, only information, good will and good intentions are shared. Upgrading to the coordination level, activities and resources are also shared across sectors. In the collaboration level, organizations in different sectors share not only information, good will and good intentions, activities, and resources, but also power and capabilities.

Kapucu, Augustin, and Garayev (2009) identified partnerships, networks, and collaborations in the context of emergency management. They argued that these three concepts can be distinguished by participants’ investment and by formality in the relationship. Networks can be understood by the level of inter-organizational dependency, variety of actors and goals, and length of relationships. It is better viewed along with a continuum where at one end participants are still separate and autonomous and at the other end where actors have worked together and have formed a long-term relationship. From this perspective, partnerships can be viewed as relatively loose networks that public or private organizations agree to work together with a mutual goal in a limited scope. But they are still independent from each other (Drabek 2003; Klitgaard and Treverton 2004). In contrast, collaborations refer to relatively tight networks in which participants are highly interdependent and unite as a new entity.

In this research, I adopt Agranoff and McGuire’s broader definition of collaboration that is a process in which more than one organization or individual work together to solve complicated problems. In this process, organizations and individuals share mutual goals, trust, and benefits and establish a long-term interdependent relationship. Their broader definition provides us a more extensive foundation to cover theories of intergovernmental relationships and management, collaborative public management, policy tools, and governance for studying why and how local governments collaborate with different levels of government, the private sector, and non-governmental organizations.
In the context of local emergency management and homeland security, collaboration is used to explain the situation in which local governments create a long-term relationship with other public agencies, private companies, or non-profit organizations to efficiently and effectively respond to all kinds of emergencies through sharing resources and risks. One of my contributions will be developing a definition of collaboration in emergency management and homeland security collaboration based on the interviews of local emergency management/homeland security managers.

2.4 Types of Collaboration in the Context of Local Emergency Management and Homeland Security

Agranoff and McGuire (2003) explained that collaboration can occur on both vertical and horizontal dimensions. Vertical collaboration emphasizes work across levels of governments within the U.S. federal system, while horizontal collaboration refers to joint works by jurisdictions on the same level of government. In the case of local emergency management and homeland security, flexible collaboration in both vertical and horizontal contexts are necessary, especially when responding to large scale disasters (Drabek 1990). This paper specifically focuses on three types of collaboration: vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.

2.4.1 Vertical Collaboration

In the U.S., federalism, intergovernmental relations, and intergovernmental management form the theoretical foundations that explain vertical collaboration (Agranoff and McGuire 2003; McGuire 2006; Mullin and Daley 2010). The federal-state-local structure organizes the basic framework in which American politics, law enforcement, tax and finance, and policy implementation operate. The concept of cooperative federalism, which Grodzins (1966) applied the metaphor of “marble cake” federalism to describe, is especially useful to explain the phenomenon of cooperation across levels of governments. Local jurisdictions have the ability and authority to implement some independent laws, politics, and financial decisions. Their interaction across levels of governments is about sharing, bargaining, negotiating cooperation, and
drawing down more resources from higher levels of government while trying to maintain policy independence rather than merely having to implement higher level policy mandates. The concept of federalism is not centralization but sharing power among political centers (Elazar 1962). From this perspective, the intergovernmental relationship in the United States can be represented as an overlapping-authority model, which means: 1) governmental operations simultaneously involve different levels of government; 2) the interactions between different levels of government are full of bargains and negotiations; and 3) the autonomy of each level of government is limited (Wright 2007). Agranoff and McGuire (2003) assert there are two main collaborative activities that local governments seek in the vertical context: information seeking and adjustment seeking. Local governments, on the one hand, may seek information from state or federal governments about programs or funding, interpretation of standards and rules, general program guidance, or other technical assistance. On the other hand, local governments can also seek adjustment or changes in policies, or regulatory relief to have more flexibility in policy implementation and executive discretion.

From the resource-seeking aspect, the grant-in-aid system in America also reflects the characteristics of vertical collaboration (McGuire 2006). This aid system has long been characterized by the presence of bargaining, cooperation, and mutual dependence (Pressman 1975). With the growth and expansion of federal grants and new regulatory programs, federal-state and federal-local programming, federal initiatives to nongovernmental organizations, and expanded roles for state government, vertical collaborative actions and transactions across levels of governments also increased (Agranoff and McGuire 2003). O’Toole and Meier (2004) state that intergovernmental grant programs imply a donor-recipient relationship which involves one or more donor governments and governmental agencies in regular interaction with one or more recipient governments and agencies (Pressman 1975). Donor governments (e.g. federal or state governments) provide incentives for recipient governments to implement certain initiatives or policies with certain emphases and they typically set some regulatory conditions in the grants. Recipient governments (e.g. local governments) need to find the balance between the donors’ preferences and local tastes to secure their grants but satisfy local needs.
In the context of emergency management and homeland security, vertical collaboration also involves intergovernmental grants. Although local governments serve as the first respondents to emergencies, their expenditures on mitigation, preparedness, response, and recovery heavily rely on federal grant programs. These grants are offered in the form of categorical grants which are accompanied by various political guidelines and bureaucratic rules (Sylves 2007). In order to be funded successfully, local governments must “prepare and submit an application; prove that they deserve the funds; meet ever-changing conditions (even after the grants are awarded); demonstrate how the money is being spent; document (often in painstakingly detail) how the funding has enhanced emergency management or homeland security and obey time limits that stipulate when the federal funds will be made available, when they may be obligated, and when they may be spent” (Sylves 2007, p. 301). Moreover, local governments are also required to participate in a standardized national system, such as the National Response Plan and National Incident Management System, in order to efficiently coordinate with the federal government to deal with natural disasters and terror attacks. These national plans and systems can be seen as another form of vertical collaboration (McEntire and Dawson 2007).

2.4.2 Horizontal-Interlocal Collaboration

Horizontal-interlocal collaboration here refers to local government collaboration. In order to efficiently deliver community services, local governments often decide to collaborate together through signing interlocal agreements for building partnerships. Such kinds of voluntary coordination mechanisms are particularly popular in metropolitan areas where the problems of fragmentation are frequently most serious and the institutional complexity makes implementation of standardized solutions hard (Feiock 2008). Local governments expect to reduce the costs and increase the benefits through their functional or geographical collaboration to deliver public services.

It is also common for local governments to share information and jointly respond to emergencies. For example, a local government may cooperate with other nearby jurisdictions within a region to suppress a fire that has spread across administrative boundaries, or design workable standard operating procedures throughout a metropolitan
area (McEntire and Dawson 2007). Local governments can also decide to sign mutual aid agreements and memorandums of understanding to offer or receive structured assistance in the event of a disaster (Cohn 2005; Henstra 2010; Patton 2007).

2.4.3 Horizontal-Intersectoral Collaboration

With the expansion of the literature in governance, policy tools, and network, the discussion of horizontal collaboration has also increased. Collaborating with non-governmental organizations can be viewed as an innovative way to solve complicated problems and provide public services through cooperation across sectoral and organizational boundaries (Frederickson 1999; Milward and Provan 2000; Salamon 2002). Horizontal-intersectoral collaboration describes an interaction across public and private sectors or public and non-profit sectors within policy networks through the form of contracts and formal agreements (Gazley 2008; O’Leary, Gazley, McGuire, and Bingham 2009) or sharing resources on a case by case basis. Such an interaction may often become a long-term partner relationship where all participant organizations make symbolic or substantial contributions and share responsibility for the outcomes to achieve better results or solutions (O’Leary et al. 2009). Bryson and Crosby (2008) further defined cross-sector collaboration as “the linking or sharing of information, goodwill, and good intentions; resources; activities, and power or capabilities by organizations in two or more sectors to achieve jointly an outcome that could not be achieved by organizations in one sector separately” (p.56). Their definition implies that successful cross-sector collaboration might arise from failure to achieve results if only one party works alone. Moreover, the success of cross-sector collaboration relies on the capability of each sector, and how to appropriately utilize the strengths of each sector while minimizing each sector’s weaknesses.

In the context of local emergency management and homeland security, intersectoral collaboration has its historical roots among local communities. For example, Project Impact, a community-based program which was initiated in the 1990s and had a four-year life span, was designed to harness local support from public and private agencies. This program successfully created about 250 communities engaging in public-private collaboration to resist disasters and develop local emergency management (Patton
Brudney and Gazley (2009) also found a positive relationship between the level of joint planning with voluntary organizations and public managers’ perception of emergency preparedness at the county level, which reminds us of the important role of private and nonprofit voluntary organizations to improve local emergency preparedness. Patton (2007) also listed several possible groups belonging to public, profit and non-profit sectors that could collaborate with local governments for the purpose of emergency management and homeland security, such as local elected and appointed officials, subject-matter experts, community-based organizations, social service agencies, faith-based organizations, civic groups, citizens whether affiliated with a group or independent, chambers of commerce and private businesses, and media organizations. These groups are helpful to complete and strengthen local capacities to deal with emergencies.

2.5 The Framework of Local Emergency Management and Homeland Security Collaboration

This research proposes a general framework (see Figure 2-1) to study collaboration in vertical and horizontal contexts in the area of local emergency management and homeland security. O’Toole (1997) reminded us of the importance for public administration scholars to study types of networks and their variations. It is reasonable to assume that there might be different intentions behind each type of collaboration if selecting types of collaboration is considered a strategic action for local governments to maximize their advantages.

In my general framework, local collaboration is influenced by three dimensions, including organizational internal factors, organizational external factors, and emergency management/homeland security (EM/HS) capacity. The organizational internal factors cover the perspectives of resource shortage, organizational attention, mutual understanding, institution and national standards, EM/HS position power, and past experience with partners. The organizational external factors include perspectives of resource dependence on federal and state governments, disaster magnitudes, and community attributes. The EM/HS capacity is related to the ability of a local government to conduct EM/HS planning and preparedness activities for dealing with all kinds of
hazards. It is generated by both organizational internal and external factors in a general framework, which demonstrates that the relationship between internal factors and collaboration, and the relationship between external factors and collaboration can be mediated by EM/HS capacity. In the following sections, I explain my framework and establish hypotheses through a review of the literature.

2.5.1 EM/HS Capacity of the Local Government

In public management research, organizational capacity is always a critical issue, which can be defined as an institution’s ability to secure, develop, direct, and control its financial, human, physical, technological, informational and other necessary resources to
achieve a specific goal (Gazley 2008; Ingraham, Joyce, and Donahue 2003). The previous literature has discussed how a government’s capacity influences government performance (Ingraham, Joyce, and Donahue 2003), government innovation adoption (Kim and Lee 2009), and the implementation of indirect governance and privatization (Kettl 1988; Rainey 2003). Organizational capacity can also be viewed as one determinant of collaboration (Agranoff and McGuire 2003; Bardach 1998; Gazley 2008; O’Leary et al. 2009). When an organization has a higher capacity reflecting sufficient human, financial, technological resources and knowledge, a clear strategic plan, and effective implementation power, collaboration is expected to be easier and more likely to occur, since an organization with higher capacity is expected to have a better ability to deal with complex issues and difficulties while implementing collaborative actions. From the organizational legitimacy view, an organization with a strong capacity may also be viewed as a model and attract other organizations that want to improve their reputation, intelligence, and legitimacy to collaborate (DiMaggio and Powell 1983).

In local emergency management and homeland security, McGuire and Silvia (2010) indicated that the program-oriented capacity of a public manager and his or her home organization is positively associated with a greater level of external collaboration within that program area. Put differently, in the vertical context, local governments with stronger EM/HS capacity can have a better ability to implement EM/HS policies from state and federal governments and give substantive feedback to them. Local government with better EM/HS capacity could also have a stronger ability to conduct EM/HS planning and preparedness for dealing with potential emergencies and demonstrate good performance when they apply for grants from state and federal government. In the horizontal context, local governments may include private companies and non-profit organizations in the local EM/HS planning process, or sign mutual aid agreements with other nearby local governments in order to effectively respond to emergencies. Better EM/HS capacity also gives local governments a stronger ability to operate these complicated collaborative initiatives in the EM/HS program. At the same time, other private companies and non-profit organizations may also be attracted to collaborate with a local government with a strong EM/HS capacity for requesting EM/HS-related resources and intelligence, or earning a better reputation regarding the improvement of
emergency management and homeland security (Graddy and Chen 2009). Therefore, my first hypothesis is:

**Hypothesis 1:** A local government with higher emergency management and homeland security capacity is more likely to have a greater level of vertical, horizontal-interlocal, and horizontal intersectoral collaboration.

### 2.5.2 Organizational Internal Factors

#### 2.5.2.1 Shortages of financial, human, and information resources

The influence of resources on collaboration has been widely studied throughout the literature, including management and organizational theory (Alter and Hage 1993; Fleishman 2009; Gazley 2008; Levine and White 1961; Thomson and Perry 2006; Van de Ven, Emmett, and Koenig 1975). Their arguments assert that an organization which lacks inside resources will seek outside support by conducting collaborative actions with other organizations.

In the case of U.S. emergency management and homeland security, local governments stay at the frontline to deal with various emergencies. However, they also face shortages of human and financial resources, especially in times with serious fiscal difficulties. Local governments could therefore be more likely to rely on vertical and horizontal collaborative actions for securing local emergency management and homeland security. For example, a local government may seek grants from federal and state governments to solve the budget shortfall problems they face. They may also ask for volunteers from local non-profit organizations to expand administrative capacity and help local emergency management and homeland security systems (Patton 2007), or to sign mutual aid agreements with other nearby local governments in order to share human resources when dealing with personnel shortage problems.

Moreover, local governments can possibly face a shortage of information, intelligence, or skills to conduct emergency planning, preparedness, or response, especially for local governments with small populations. Thus, they may need extra training or related technical assistance from different partners, which increases the opportunities for collaboration. Neighboring local governments can be good examples for local governments to learn from and request information-sharing since they share similar
risks. Agranoff and McGuire (2003) also point out that vertical collaboration can happen when local governments seek grant or program-oriented information or assistance from state and federal government. Local government may also collaborate with non-profit organizations which work in emergency management, such as the American Red Cross and the United Way, or work with private utility and phone companies to keep the communication system stable and workable during disasters. Therefore, the following hypotheses can be established:

**Hypothesis 2:** A local government facing a shortage of financial resources in the field of emergency management and homeland security is more likely to have a greater level of vertical collaboration.

**Hypothesis 3:** A local government facing a shortage of human resources in the field of emergency management and homeland security is more likely to have a greater level of horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.

**Hypothesis 4:** A local government facing a shortage of information or skills in emergency management and homeland security is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.

### 2.5.2.2 Organizational attention

Natural damages, man-made disasters, or terror attacks, which emergency management and homeland security deal with, can be viewed as one type of focusing event (Birkland 2009). These focusing events easily gain attention from the media, the public, and the local policy makers, which give local policy entrepreneurs who work on related policy areas more opportunities to change agenda in the policy process and attain resources (Birkland 1997, 2006). Similarly, these focusing events can also attract attention from the local government and stimulate the local government to invest more local funding or manpower in emergency management and homeland security and further consider strategies for effectively responding to future possible hazards. In other words, a situation where a local government uses more of its own resources to support emergency management and homeland security could imply that this local government pays more attention to this policy area. When a local government displays higher
organizational attention towards emergency management and homeland security, it could actively learn a wide variety of approaches for dealing with disasters, and recognize the importance and necessity of collaboration in this policy area, which eventually may increase the local government’s willingness to collaborative vertically and horizontally. Thus, the following hypothesis can be constructed as:

*Hypothesis 5: A local government with more organizational attention and support in emergency management and homeland security is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.*

### 2.5.2.3 Mutual understanding

Alter and Hage (1993) argued that one of the important contributors to collaboration is the willingness to cooperate. But they further addressed that “willingness to cooperate starts from the awareness and understanding of other organizations’ needs and the perception that they are in some way compatible with one’s own” (p.39). In other words, understanding possible partners through collecting useful information about them is a necessary process to effectively reduce potential communication conflicts and increase the probability of the willingness to collaborate. Ansell and Gash (2008) also indicate mutual understanding through face-to-face dialogue is a necessary condition for collaboration. According to transaction costs, understanding the needs and resources of the potential partners before deciding to collaborate is also a way to reduce the risks and costs which can be generated by information asymmetry (North 1990). In the area of emergency management and homeland security, local governments could understand the thoughts of vertical and horizontal partners through reading information from state and federal governments or regularly meeting with their mutual aid partners in the process of designing the local EM plans and preparedness activities. Therefore, the next two hypotheses are established as:

*Hypothesis 6: A local government with a higher level of understanding about state and federal governments is more likely to have a greater level of vertical collaboration.*
Hypothesis 7: *A local government that includes its mutual aid partners in emergency planning and preparedness activities is more likely to have a greater level of horizontal-interlocal collaboration and horizontal-intersectoral collaboration.*

### 2.5.2.4 Institution and national standards

An institution can be defined broadly as the prescription which is used to organize all repetitive and structured human interactions (Ostrom 2005). In the case of emergency management and homeland security, national standards and mutual-aid agreements could be viewed as two examples to facilitate collaboration under the institutional perspective (Sylves 2008; Waugh 2011). The purpose of adopting a national standard for local governments is to ensure everyone is on the same page and using the same language, which therefore decreases response time and increases the capacity to deal with disasters. Taking the National Incident Management System (NIMS) as an example, it was a national standard which operated at all levels of government for standardizing disasters and was developed by Department of Homeland Security after the 2001 terrorist attacks. It requires all levels of government to adopt the Incident Comment System (ICS) for integrating the activities of different governmental entities in order to achieve an efficient response to each disaster. This national standard seeks to improve post-disaster operations through pre-disaster planning and capacity establishment. The procedure of NIMS also emphasizes the improvement of the interoperability among all types of responders, including those in the private and nonprofit sectors (McEntire and Dawson 2007). According to the above arguments, the next hypothesis is established as:

*Hypothesis 8: A local government adopting an institutionalized emergency management and homeland security system is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration than non-adopters.*

### 2.5.2.5 Emergency management/homeland security (EM/HS) manager capability

Recently, more local governments organize offices and hire managers to direct related initiatives in emergency management and homeland security. These managers are
usually expected to have professional knowledge and background in the field, on the one hand, so they are capable of implementing policies and guidelines from state and federal governments and reflecting the local preferences and needs to state and federal governments (McGuire 2009). On the other hand, these professional managers are responsible to communicate and cooperate with other local governments, private companies, and non-profit organizations to establish complete plans and initiatives for dealing with emergencies.

As a EM/HS manager, he/she is responsible for ensuring that all resources are in place during all mitigation, preparedness, response, and recovery stages, and for determining what level of resources may be needed by working with other local government departments to develop comprehensive risk analysis and emergency planning (Edwards and Goodrich 2007). The EM/HS manager also needs to be familiar with the complex process of grant management and always well prepared to provide succinct explanations of how the funds will be spent. Moreover, they must be equipped with political skills to communicate with lawmakers and always comply with local, state, and federal regulations (McEntire and Dawson 2007). Put differently, capable and professional EM/HS managers can effectively and successfully achieve their goals, which increase the overall EM/HS capacity of the local governments.

Recent emergency management and homeland security research also studies how a manager may influence collaborative activities through his/her capability and leadership (McGuire and Silvia 2010). Gazley (2008) has argued that collaboration often relies on the way public managers make decisions. Bardach (1998) stated that leaders are the keys in creating interagency collaborative capacity which is essential for dealing with possible difficulties when individuals or organizations exchange their resources and try to work together for the common purpose. Agranoff and McGuire (2001) especially emphasized that the soft guidance power of leaders can stimulate self-governance in a network, which is different from traditional command and control in a hierarchical structure.

However, Ingraham et al. (2003) reminded us that leadership needs to work under a good management system or with strong organizational capacity to improve organizational performance. Following this logic, management or organizational capacity can be view as a mechanism to mediate the relationship between manager capacity and
the outputs of the organization. Similarly, in emergency management and homeland security, an excellent EM/HS manager still cannot successfully lead and manage various resources to conduct collaborative activities without a strong EM/HS capacity at the local government level, no matter whether in a vertical or horizontal context. Therefore, the eighth hypothesis is:

**Hypothesis 9:** The extent of local EM/HS manager capability is positively related to the extent of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration, with the mediating effect of EM/HS capacity.

### 2.5.2.6 Past experiences with partners

A past experience of antagonism or cooperation between stakeholders is another factor that will hinder or facilitate collaboration (Ansell and Gash 2008). Connelly, Zhang, and Faerman (2008) pointed out that one’s initial disposition toward cooperation/collaboration helps determine the success of the collaborative process. Past experience could be one critical factor that influences the disposition. Experience brings familiarity and decreases uncertainty. Connelly, Zhang, and Faerman (2008) argued that if people have had a bad personal experience in cooperation and are therefore more likely to mistrust others, successful collaboration will be harder to reach. Put differently, a positive past collaboration experience is good for building trust with potential partners, which can establish stronger commitment and reduce costs in monitoring compliance (Agranoff and McGuire 2001), and also result in future collaboration.

At the organizational level, past experience also plays a key role to determine the rationale of collaborative actions according to path dependency theory, which applies a historic view to analyze the determinants of outcomes of policies or political actions, Pierson (2000) used the concept of increasing returns, which refers to concentration on steps in a specific direction that cause further movement in the same direction, to explain the appearance of path dependency. Organizations having past experience in collaboration, on the one hand, may have invested sunk costs in arranging the partnership; on the other hand, these experienced organizations have more information in building partnerships than other organizations which should decrease their uncertainty when taking collaborative actions. Thus, the next hypothesis is:
Hypothesis 10: When a local government has had positive past experience in working with federal and state governments, other local governments, the private sector, and non-governmental organizations, it is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.

2.5.3 Organizational External Factors

2.5.3.1 Disaster magnitude

Collaboration is extremely important to emergency management and homeland security because emergencies and disasters could be too severe to be handled by a single public agency and are not limited by jurisdictional boundaries (McGuire and Silvia 2010; Rubin 2007). In general, the hierarchy of disasters can be thought as a pyramid with three levels. At the base are emergencies that the local government can solve by itself or with other local partners. At the second level are emergencies that are primarily dealt with by the local government, but state government officials and resources are also involved in the process of assistance. At the apex of the pyramid are the disasters that require local, state, and federal resources (Rubin 2007). Moreover, floods, earthquakes, tornadoes, hurricanes, and other natural disasters usually cause damages across different administrative boarders. Terror attacks on public transportation or buildings can also affect multiple metropolitan areas. Therefore, local governments understand that working alone to deal with disasters is unrealistic and could produce failure (Bryson and Crosby 2008; Bryson, Crosby, and Stone 2006). Sharing a cross-border view and collaborating with each other is the key for successfully dealing with all kinds of hazards. In other words, the level of disaster severity is related to the interdependency of each local government. Thus, the following hypothesis is:

Hypothesis 11: A local government that has faced a more severe disaster is more likely to have a greater level of vertical collaboration, horizontal-intersectoral collaboration, and horizontal-interlocal collaboration.

2.5.3.2 Resource dependency
The basic assumption of resource dependency theory is that organizations are embedded in networks of interdependencies and social relationships. Their needs for financial, physical, or informational resources to achieve organizational goals are provided by the environment, which forces organizations to be dependent on external sources for these resources (Pfeffer and Salancik 2003). Because each organization is in the same position of dependency, exchange relationships develop (Fleishman 2009). Through the development of exchange relationships, individual organizations thus build stable inter-organizational connections for securing their sources of resources and making certain their organization survives.

In the case of the U.S. emergency management and homeland security, the federal government provides two types of principal funding: pre-disaster funding and post-disaster funding (Sylves 2007). At least six principal grant programs are created for processing the pre-disaster funding, including the State Homeland Security Grant Program, the Urban Area Security Initiative, the Law Enforcement Terrorism Prevention Program, the Emergency Management Performance Grant program, the Assistance to Firefighters Grant program, and the Metropolitan Medical Response System. These pre-disaster funds are used to grant activities of planning, training, exercising, infrastructure maintenance, or equipment-purchasing. Post-disaster funds, such as the Public Assistance Grant Program, and the Individual and Family Grant Program, are used to repair or replace local infrastructures, reimburse non-profit organizations’ spending to relieve the disaster, or provide direct aid to individuals and families after the issuance of the Presidential Disaster Declaration (Sylves 2007). State governments are responsible for funneling these grants to local governments.

Collaboration across levels of governments and among local governments can be directly enhanced through the grant system. On the one hand, as Sylves (2007) argued, the greater the share of federal and state funding, the more likely it is that the local governments follow the policy guidelines in emergency management and homeland security from state and federal governments in order to successfully be funded in the future. On the other hand, many federal grants work under multi-jurisdictional projects, which follow a regional approach to emergency management (McEntire and Dawson 2007). The assumption behind this approach is that jurisdictions would share their
resources in times of need. A regional approach encourages local governments to share resources and information with each other under the context of emergency management and homeland security for achieving collective benefits (Caruson and MacManus 2007; McEntire and Dawson 2007). When local governments receive higher funding from federal and state governments, they are more likely to be regulated by grant criteria which require local governments to behave as regional partners and implement intergovernmental collaboration.

Federal and state funds can also indirectly enhance horizontal-intersectoral collaboration through increasing EM/HS capacity. For example, when local governments receive federal or state funds, they can use these grants to purchase equipment, conduct exercises and trainings, and improve public education on emergency management and homeland security which increases their EM/HS capacity. Once local governments have higher EM/HS capacity, on the one hand, they own a better ability to conduct collaborative initiatives with the private sector and non-governmental organizations in the emergency management and homeland security program. On the other hand, private companies and non-profit organizations can also be attracted to work with them to exchange EM/HS-related resources and intelligence, or enhance their reputation (Graddy and Chen 2009). Thus, the last two hypotheses are:

Hypothesis 12: A local government relying on a greater extent of federal and state funding in emergency management and homeland security is more likely to have a greater level of vertical collaboration, and horizontal-interlocal collaboration.

H13: The extent of federal and state funding in emergency management and homeland security is positively related to the extent of horizontal-intersectoral collaboration, with the mediating effect of EM/HS capacity.

2.5.3.3 Attributes of community

When we discuss the collaborative activities of local governments, it is necessary to consider the community attributes. Ostrom (2005) in her Framework for Institutional Analysis argued that community attributes have critical effects on the action arena. Therefore, it is necessary to consider the attributes of the community when discussing the pattern of interaction in localities. Feiock (2008) also emphasized the importance of
community characteristics in analyzing collective actions among local governments. “Demographic homogeneity among communities reduces the likelihood of political and economic power asymmetries that advantage one of the parties and create problems for negotiating fair divisions of benefits. Neighboring jurisdictions that are similarly situated begin from a position of mutual dependence” (Feiock 2008, p.201). In the case of local emergency management and homeland security, it is particularly necessary for local communities to consider their similar risks and demographic homogeneity when conducting collaboration. Therefore, this research will control the effects of community attributes in the analysis.

Table 2-1 lists all hypotheses in this research. The hypothesized differences among the impacts of determinants on the three types of collaboration are not very obvious here. It is because the current literature discussing the differences among three types of collaboration is very limited. This dissertation is a preliminary attempt to study this topic and proposes a differentiation among the impacts of specific determinants (i.e. the resource shortage perspective, the mutual understanding perspective, and the resource dependency perspective) on three types of collaboration. Further research in the future will be necessary related to discussion of the differences among different types of collaboration.
<table>
<thead>
<tr>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EM/HS capacity</strong></td>
</tr>
<tr>
<td>H1: A local government with higher emergency management and homeland security capacity is more likely to have a greater level of vertical, horizontal-interlocal, and horizontal-intersectoral collaboration.</td>
</tr>
<tr>
<td><strong>Resource shortage</strong></td>
</tr>
<tr>
<td>H2: A local government facing a shortage of financial resources in the field of emergency management and homeland security is more likely to have a greater level of vertical collaboration.</td>
</tr>
<tr>
<td>H3: A local government facing a shortage of human resources in the field of emergency management and homeland security is more likely to have a greater level of horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
</tr>
<tr>
<td>H4: A local government facing a shortage of skills or knowledge in the field of emergency management and homeland security is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
</tr>
<tr>
<td><strong>Organizational attention and support</strong></td>
</tr>
<tr>
<td>H5: A local government with more organizational attention and supports in emergency management and homeland security from is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
</tr>
<tr>
<td><strong>Mutual understanding</strong></td>
</tr>
<tr>
<td>H6: A local government with a higher level of understanding about state and federal governments is more likely to have a greater level of vertical collaboration.</td>
</tr>
<tr>
<td>H7: A local government that includes its mutual aid partners in emergency planning and preparedness activities is more likely to have a greater level of horizontal-interlocal collaboration and horizontal-intersectoral collaboration.</td>
</tr>
<tr>
<td><strong>Institution/national standard</strong></td>
</tr>
<tr>
<td>H8: A local government adopting an institutionalized emergency management and homeland security system is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration than non-adopters.</td>
</tr>
<tr>
<td><strong>EM/HS manager capability-position power</strong></td>
</tr>
<tr>
<td>H9: The extent of local EM/HS manager capability is positively related to the extent of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration, with the mediating effect of EM/HS capacity.</td>
</tr>
<tr>
<td><strong>Past experience</strong></td>
</tr>
<tr>
<td>H10: When a local government has positive past experience in working with federal and state governments, other local governments, the private sector, and non-governmental organizations, it is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
</tr>
<tr>
<td><strong>Disaster magnitude</strong></td>
</tr>
<tr>
<td>H11: A local government that has faced a more severe disaster is more likely to have a greater level of vertical collaboration, horizontal-intersectoral collaboration, and horizontal-interlocal collaboration.</td>
</tr>
<tr>
<td><strong>Resource dependency</strong></td>
</tr>
<tr>
<td>H12: A local government relying on a greater extent of federal and state funding in emergency management and homeland security is more likely to have a greater level of vertical collaboration, and horizontal-interlocal collaboration.</td>
</tr>
<tr>
<td>H13: The extent of federal and state funding in emergency management and homeland security is positively related to the extent of horizontal-intersectoral collaboration, with the mediating effect of EM/HS capacity.</td>
</tr>
</tbody>
</table>
CHAPTER THREE

METHODS AND DATA

This chapter covers the primary decisions of research methodology and variable definition for this study, including laying out the three research models, and explaining the data sources, measurement of variables, and statistical methods. This chapter also provides the rationale and method for interviewing Florida local emergency management managers, and explains how these interviews will provide rich qualitative data for us to comprehend the topics of local emergency management and homeland security collaboration and supplement the empirical analysis with the multivariate models.

3.1 Research Methods and Data Explanation

This research uses both quantitative and qualitative methods, a mixed-methods approach, to study the research questions. I not only ran an empirical analysis to study the determinants of local emergency management and homeland security collaboration, but also conducted interviews in order to gain contextual understanding about why, when, and how local governments practically implement different types of collaboration and how they define collaboration. Greene (2007) suggested the main purposes of using mixed methods include triangulation, complementarity, development, and expansion. Complementarity, which means searching for a deeper and more comprehensive understanding of the same inquiry by employing different methods in order to catch diverse dimensions, provides a strong reason to explain why using the mixed-method approach is appropriate and necessary for research on collaboration and important to improve the overall quality of this dissertation. Collaboration in emergency management and homeland security is a subtle and complicated research topic. The quantitative analysis provides us a chance to measure and test the impact of diverse factors on different types of collaboration while the qualitative analysis advances our substantive knowledge in the U.S. context of emergency management and homeland security from the local perspective.

A multivariate regression analysis is conducted to empirically test models with and without the potential mediating effects of management capacity. The data are from
the *Homeland Security Survey* from the International City/County Management Association (ICMA). This national survey data was conducted in spring and summer 2005 (before Hurricane Katrina and Rita). It was mailed to the Chief Administrative Officers of municipalities with populations of 2,500 and over, and to the Chief Administrative Officers of counties with the council-administrator or council-elected executive form of government. The overall response rate was about 35% (2,786 respondents). Respondents who had not responded to the original survey received a second wave of surveys. This national survey data is the only ICMA available dataset which is related to the topic of local emergency management and homeland security. It covers questions about management, budget, and security education/awareness and training in the field of emergency management and homeland security which is useful to help us study local aspects nationwide in this area.

I conducted interviews with FL local emergency managers to build a rich description of how managers at the local level see their incentives and rationale for collaboration. Do the emergency managers believe the explanations for why they conduct the three different types of collaboration is the same for each, or are there distinctive reasons for each type of collaboration? Do the managers believe collaboration is the same thing as cooperation? The qualitative analysis will provide a comprehensive perspective from the ground-level so we can compare it to the national sample that tests our hypotheses with a large-N sample. I choose my interviewees from county and city emergency management directors in Florida, with the full explanation of my sample selection criteria on page 59 of this chapter. Florida is a “disaster-prone state with a crowded intergovernmental landscape” (Caruson and MacManus 2011, p.9), which indicates that Florida is an appropriate state to be selected and studied for the topic of emergency management and homeland security collaboration in the United States. Emergency management managers in Florida local governments are expected to efficiently and effectively coordinate and collaborate with different levels of governmental agencies and cross-sector stakeholders to deal with frequent natural and man-made disasters. Therefore, it is reasonable to view them as well-qualified subjects who can provide their thoughtful and practical opinions about local emergency management and homeland security collaborative activities.
The ICMA Homeland Security Survey dataset has a primary limitation. The identifier of each respondent local government is eliminated due to security reasons. Therefore, this dataset cannot be merged with other datasets nor can be added to other variables, which limits its explanatory power. Hypothesis 10 and Hypothesis 11, which are developed for testing perspectives of past experience with partners and disaster magnitude, therefore cannot be empirically tested. I will discuss the impacts of these two factors by using the findings from the interviews.

In the following sections, I first explain the measurement of each variable and introduce the vertical collaboration model, the horizontal-interlocal collaboration model, and the horizontal intersectoral collaboration model. Then, I will illustrate the selection criteria of the interviewees, the process of conducting the interview, the interview question guidelines, and the background of the final interviewees.

3.2 Quantitative Research Method: Regression Analysis

3.2.1 Dependent Variables—Three Types of Collaboration

Collaboration is the dependent variable in this research. According to the research models, collaboration is differentiated into three types: vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration. These three types of collaboration are viewed as the three dependent variables, and each dependent variable is tested in a different model. The literature suggested that it is necessary to consider both actors and activities when measuring collaboration (Agranoff and McGuire, 2003; McGuire, 2009; 2010). However, due to the data limitations, there are no specific collaborative activities included in the Homeland Security Survey 2005. Therefore, the three types of collaboration are only measured by the actors. Moreover, this survey data does not include any questions related to the collaboration between local governments and the private sector. Therefore, the horizontal-intersectoral collaboration is only measured by the collaboration between local governments and non-governmental organizations in the empirical analysis. Substantive collaborative activities among local governments, federal and state governments, the private sector, and non-governmental organizations will be developed by interviewing local emergency management managers to supplement the limitation of this dataset.
Regarding vertical collaboration, there are six vertical actors (affiliated state government, other state government, Federal Bureau of Investigation/Department of Justice, Department of Homeland Security/Federal Emergency Management Agency, Department of Health and Human Service, Department of Defense). The vertical collaboration count score ranges from 0 to 6. Local governments collaborating with more vertical actors refer to their higher level of vertical collaboration. There are 16.67% of respondent local governments which have zero vertical actors; 21.17% of respondent local governments have one vertical actor; 20.13% of respondent local governments have two vertical actors; 19.12% of respondent local governments have three vertical actors; 11.76% of respondent local governments have four vertical actors; 7.92% of respondent local governments have five vertical actors; and 3.24% of respondent local governments have all six vertical actors.

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which of the following agencies/organizations does your local government collaborate with on homeland security issues?</td>
<td>Other local governments</td>
<td>2,449</td>
<td>239</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>A regional organization, such as a regional planning agency</td>
<td>1,624</td>
<td>1,064</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Local military installations</td>
<td>579</td>
<td>2,109</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Your state government</td>
<td>2,010</td>
<td>678</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Other state government</td>
<td>316</td>
<td>2,372</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>FBI/DOJ</td>
<td>1,123</td>
<td>1,565</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>DHS/FEMA</td>
<td>1,440</td>
<td>1,248</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>HHS(Health and Human Services)</td>
<td>807</td>
<td>1,881</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>DoD (Department of Defense)</td>
<td>348</td>
<td>2,340</td>
<td>98</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Non-government organizations</td>
<td>973</td>
<td>1,715</td>
<td>98</td>
<td>2,786</td>
</tr>
</tbody>
</table>
For horizontal-interlocal collaboration, three actors (other local governments, regional organizations, and local military installations) fall into this category and the count score ranges from 0 to 3. More horizontal-interlocal actors refer to a higher level of horizontal –interlocal collaboration. There are 4.06% of respondent local governments which have zero horizontal-interlocal actors, 34.41% of respondents have one horizontal-interlocal actor, 45.94% of respondents have two horizontal-interlocal actors, 11.59% of respondents have all three horizontal-interlocal actors. Horizontal-intersectoral collaboration is measured by whether the local government collaborates with nongovernmental organizations. So, horizontal-intersectoral collaboration is created as a dichotomous variable and about 36% of the respondents collaborated with non-governmental organizations. Table 3-1 presents the original survey question related to collaboration and the response frequency for each alternative. Table 3-2 shows the frequency of numbers of collaborative actors in each type of collaboration. Table 3-3 displays the descriptive analysis of these three dependent variables.

<p>| Table 3-2: Frequencies of numbers of collaborative actors in three types of collaboration |
|-----------------------------------------------|---------------|---------------|---------------|
| Vertical collaboration (VCB) | Horizontal- interlocal collaboration (HLCB) | Horizontal intersectoral collaboration (HSCB) |</p>
<table>
<thead>
<tr>
<th>Numbers of Actor</th>
<th>Frequency</th>
<th>%</th>
<th>Frequency</th>
<th>%</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>488</td>
<td>16.67</td>
<td>109</td>
<td>4.06</td>
<td>1,715</td>
<td>63.8</td>
</tr>
<tr>
<td>1</td>
<td>569</td>
<td>21.17</td>
<td>925</td>
<td>34.41</td>
<td>973</td>
<td>36.2</td>
</tr>
<tr>
<td>2</td>
<td>541</td>
<td>20.13</td>
<td>1,235</td>
<td>45.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>514</td>
<td>19.12</td>
<td>419</td>
<td>15.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>316</td>
<td>11.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>213</td>
<td>7.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>87</td>
<td>3.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Table 3-3: Descriptive analysis of three types of collaboration |
|------------------|-------|-------|-------|-------|-------|
| Variables        | n     | Mean  | STD   | Min  | Max  |
| Vertical collaboration (VCB) | 2,688 | 2.25  | 1.65  | 0    | 6    |
| Horizontal- interlocal collaboration (HLCB) | 2,688 | 1.73  | .77   | 0    | 3    |
| Horizontal intersectoral collaboration (HSCB) | 2,688 | 0.36  | .48   | 0    | 1    |
3.2.2 Independent Variables

This research examines the impacts on different types of collaboration from the EM/HS capacity of the local government, organizational internal factors, and organizational external factors. Organizational internal factors include perspectives of resource shortages, organizational attention and support, mutual understanding, EM/HS manager capacity, and past experience with partners. Organizational external factors include the perspectives of disaster magnitude, resource dependency, and community attributes. Detailed measurements of the independent variables in each perspective and the control variables are defined in the next sections.

3.2.2.1 EM/HS capacity of the local government

EM/HS capacity is presented as an index and measured by whether the local government has undertaken the following six initiatives, conducting homeland security-related risk assessments, conducting homeland security-related drills or exercises, conducting disaster or emergency training for non-first responders, developing comprehensive homeland security–related plans, developing local response plans based on changes to the Homeland Security Advisory System, and participating in the Department of Homeland Security National Exercise Program (see Table 3-4). The index score of EM/HS capacity ranges from 0 to 6. The average score is 3.22. The higher the score on the index indicates a higher EM/HS capacity of a local government. Table 3-3 shows the original survey question related to EM/HS capacity and the response frequency for each alternative. Table 3-5 displays a descriptive analysis of the EM/HS capacity.
<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducted a homeland security-related risk assessment</td>
<td>2,135</td>
<td>488</td>
<td>163</td>
<td>2,786</td>
</tr>
<tr>
<td>Conducted a homeland security-related drill or exercise</td>
<td>1,461</td>
<td>1,155</td>
<td>170</td>
<td>2,786</td>
</tr>
<tr>
<td>Conducted disaster or emergency training for non-first responders, such as</td>
<td>1,508</td>
<td>1,135</td>
<td>143</td>
<td>2,786</td>
</tr>
<tr>
<td>administrative staff</td>
<td>(52%)</td>
<td>(41%)</td>
<td>(6%)</td>
<td></td>
</tr>
<tr>
<td>Developed a comprehensive homeland security-related plan or amended your existing</td>
<td>1,642</td>
<td>931</td>
<td>213</td>
<td>2,786</td>
</tr>
<tr>
<td>emergency management plan</td>
<td>(59%)</td>
<td>(33%)</td>
<td>(8%)</td>
<td></td>
</tr>
<tr>
<td>Developed local response plans based on changes to the Homeland Security Advisory</td>
<td>981</td>
<td>1,595</td>
<td>210</td>
<td>2,786</td>
</tr>
<tr>
<td>System</td>
<td>(35%)</td>
<td>(57%)</td>
<td>(8%)</td>
<td></td>
</tr>
<tr>
<td>Participated in the Department of Homeland Security National Exercise Program</td>
<td>652</td>
<td>1,819</td>
<td>315</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(23%)</td>
<td>(65%)</td>
<td>(11%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM/HS capacity (MNGCP)</td>
<td>2,011</td>
<td>3.22</td>
<td>1.83</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

3.2.2.2 Organizational internal factors

3.2.2.2.1 Resource shortage in finances, human resources, and information

The shortage of resources covers three dimensions in this research: finances, human resources, and information. Budget cuts measure the financial dimension through asking whether the local government experienced budget shortfalls as a result of homeland security activities during the past two fiscal years. It is created as a dichotomous variable and 23% of respondents report that they have experienced budget cut problems.
Table 3-6: Original survey questions and alternatives related to resource shortage

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has your municipality experienced budget shortfalls as a result of Homeland Security activities during the past two fiscal years (FY2002-FY2004)?</td>
<td>-</td>
<td>494</td>
<td>1,658</td>
<td>634</td>
<td>2,786</td>
</tr>
<tr>
<td>Has your municipality experienced personnel reductions or layoffs in the following critical areas during the past two fiscal years (FY2002-FY2004)?</td>
<td>Police</td>
<td>547</td>
<td>2,137</td>
<td>102</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Fire</td>
<td>270</td>
<td>2,282</td>
<td>234</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>EM (response)</td>
<td>136</td>
<td>2,334</td>
<td>316</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Emergency medical service</td>
<td>131</td>
<td>2,299</td>
<td>356</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Public health</td>
<td>101</td>
<td>2,231</td>
<td>454</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Public works</td>
<td>420</td>
<td>2,145</td>
<td>221</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Public utilities</td>
<td>167</td>
<td>2,251</td>
<td>368</td>
<td>2,786</td>
</tr>
<tr>
<td>Does your local government need training or technical assistance in the following area?</td>
<td>Emergency planning, preparedness, response.</td>
<td>1,867</td>
<td>756</td>
<td>163</td>
<td>2,786</td>
</tr>
</tbody>
</table>

Personnel layoff measures human resource dimensions by an index, which is developed by the addition of whether the local government experienced personnel reductions or layoffs in the areas of police, fire, emergency management (response), emergency medical service, public health, public works, and public utilities during the past two fiscal years. The index score ranges from 0 to 7. The average score is .55. The higher the score implies that the local government faces more serious personnel reduction. The information dimension is represented by whether the local government has needs for training and technical assistance in emergency planning, preparedness, and response. It is also developed as a dichotomous variable and 71% of local governments needed that training and assistance. The original survey questions are listed in Table 3-6. Table 3-7 presents the descriptive analysis of the resource shortage.
Table 3-7: Descriptive analysis of resource shortage

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget cut (BGC)</td>
<td>2,152</td>
<td>.23</td>
<td>.42</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Layoff (SHR)</td>
<td>2,217</td>
<td>.55</td>
<td>1.23</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Need of training/technical assistance in EM (EMPR)</td>
<td>2,623</td>
<td>.71</td>
<td>.45</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

3.2.2.2.2 Organizational attention

An index is created to measure the organizational attention perspective through calculating whether the council of local government used its own funds to pay for homeland security activities in the following areas: information security, disaster response, disaster mitigation/preparedness, physical surveillance/security systems, medical/public health surveillance systems, drills and training exercises, staffing, equipment, public education, and cyber security. The score ranges from 0 to 10. The average score is 4.27 (see Table 3-9). The higher the score, the greater the likelihood that the local government has used its own funds in supporting emergency management and homeland security. The original survey question is listed in Table 3-8.

Table 3-8: Original survey question and alternatives related to organizational attention

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has your local government used its own funds (not from state or federal government) to pay for homeland security activities in any of the following areas?</td>
<td>Information security</td>
<td>972</td>
<td>1,307</td>
<td>507</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(35%)</td>
<td>(47%)</td>
<td>(18%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disaster response</td>
<td>1,440</td>
<td>965</td>
<td>381</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(52%)</td>
<td>(35%)</td>
<td>(14%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disaster mitigation/preparedness</td>
<td>1,547</td>
<td>871</td>
<td>368</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(56%)</td>
<td>(31%)</td>
<td>(13%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical surveillance/security systems</td>
<td>990</td>
<td>1,315</td>
<td>481</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(36%)</td>
<td>(47%)</td>
<td>(17%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical/public health surveillance systems</td>
<td>314</td>
<td>1,862</td>
<td>610</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(11%)</td>
<td>(67%)</td>
<td>(22%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drills and training exercises</td>
<td>1,538</td>
<td>910</td>
<td>338</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(55%)</td>
<td>(33%)</td>
<td>(12%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staffing</td>
<td>1,075</td>
<td>1,262</td>
<td>449</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(39%)</td>
<td>(45%)</td>
<td>(16%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipment</td>
<td>1,652</td>
<td>847</td>
<td>287</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(59%)</td>
<td>(30%)</td>
<td>(10%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3-8 (Continued)

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has your local government used its own funds (not from state or federal government) to pay for homeland security activities in any of the following areas?</td>
<td>Public education</td>
<td>1,032 (37%)</td>
<td>1,284 (46%)</td>
<td>470 (17%)</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Cyber security</td>
<td>568 (20%)</td>
<td>1,616 (58%)</td>
<td>602 (22%)</td>
<td>2,786</td>
</tr>
</tbody>
</table>

Table 3-9: Descriptive analysis of organizational attention

<table>
<thead>
<tr>
<th>Variables (LFUND)</th>
<th>n</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational attention</td>
<td>2,049</td>
<td>4.27</td>
<td>3.29</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

3.2.2.2.3 Mutual understanding

There are two variables related to the mutual understanding perspective in this research (see Table 3-9). The first variable is the extent of understanding of federal and state government. A local government with a higher score in this variable indicates that this local government has a higher level of understanding of federal and state governments. This variable is measured as an index, which ranges from 1 to 5, and the average index score is 3.53. This index is calculated by the mean of two scores: 1) the perception score of how easily a local public manager understands information from the federal government and 2) the perception score of how easily a local public manager understands information from the state government. Regarding the first type of perception score for the federal government, a local government is considered to highly understand the federal government when its public manager strongly agrees (recoded as 5) that information from the federal government is easily understood. In contrast, a local government is seen to poorly understand the federal government when its public manager strongly disagrees (recoded as 1) that information from the federal government is easily understood. The way to measure the perception score of how easily a local public manager understands information from state government follows the same logic. The second type of perception score for state government also ranges from 1 (strongly disagree) to 5 (strongly agree).
The second variable related to the mutual understanding perspective is about the extent of sharing information with partners in the horizontal context. This variable is measured by whether a local government includes its mutual aid partners in emergency planning and preparedness activities. Including mutual aid partners in emergency planning and preparedness activities represents a sharing information process in the horizontal context. About 85% of local governments reported that their mutual aid partners are included in emergency planning and preparedness activities.

The original survey questions related to the mutual understanding perspective are listed in Table 3-10 and Table 3-11. Table 3-12 shows a descriptive analysis of the above two variables under the mutual understanding perspective.

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Strongly agree</th>
<th>Somewhat agree</th>
<th>Neutral</th>
<th>Somewhat disagree</th>
<th>Strongly disagree</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>The information I receive from the federal government is easily understood.</td>
<td>302 (11%)</td>
<td>1,082 (39%)</td>
<td>773 (28%)</td>
<td>385 (14%)</td>
<td>130 (5%)</td>
<td>114 (4%)</td>
</tr>
<tr>
<td>The information I receive from the state government is easily understood.</td>
<td>481 (17%)</td>
<td>1,267 (45%)</td>
<td>611 (22%)</td>
<td>227 (8%)</td>
<td>95 (3%)</td>
<td>105 (4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since Sept. 11th 2001, has your local government undertaken any of the following homeland security-related initiatives?</td>
<td>Included mutual aid partners in emergency planning and preparedness activities</td>
<td>2,273 (82%)</td>
<td>393 (14%)</td>
<td>120 (4%)</td>
<td>2,786</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding of state and federal information (FSINFO)</td>
<td>2,663</td>
<td>3.53</td>
<td>.92</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Include mutual aid partners in planning (MAIDP)</td>
<td>2,666</td>
<td>.85</td>
<td>.35</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
3.2.2.2.4 Institution/national standard

In the institution perspective, I would like to analyze the impact of institutionalized national standard adoption on vertical, horizontal-interlocal, and horizontal intersectoral collaborations. Therefore, I use whether a local government adopts the National Incident Management System (NIMS) to measure the influence of the institutionalized national standard adoption on collaboration. About 67% of respondents reported that they had adopted NIMS in their emergency management/homeland security program (see Table 3-14). Table 3-13 presents the original survey question related to the institution perspective.

Table 3-13: Original survey question and alternatives related to the institution/national standard

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since Sept. 11th 2001, has your local government undertaken any of the following homeland security-related initiatives?</td>
<td>Adopted the National Incident Management System</td>
<td>1,622</td>
<td>812</td>
<td>352</td>
<td>2,786</td>
</tr>
</tbody>
</table>

Table 3-14: Descriptive analysis of the mutual understanding

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIMS adoption (NIMS)</td>
<td>2,434</td>
<td>.67</td>
<td>.47</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

3.2.2.2.5 EM/HS manager capability-position power

Due to data limitations, the concept of manager capability in my regression analysis is only measured by the concept of position power, which indicates whether the local government hires a homeland security/emergency management manager to coordinate federal/state/local homeland security functions for the local government. According to Table 3-16, about 33% of respondents had hired an EM/HS manager in their local governments. Table 3-15 presents the original survey question.
Table 3-15: Original survey question and alternatives related to EM/HS manager capacity

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since Sept. 11th, has your local government undertaken any of the following homeland security-related initiatives?</td>
<td>Hired/appointed a homeland security/emergency management manager to help coordinate federal/state/local security functions for your local government.</td>
<td>878</td>
<td>1,801</td>
<td>107</td>
<td>2,786</td>
</tr>
</tbody>
</table>

Table 3-16: Descriptive analysis of EM/HS manager capacity

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM/HS manager capacity (MGCP)</td>
<td>2,679</td>
<td>.33</td>
<td>.47</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

3.2.2.2.6 Past experience with partners

Due to the limitations of the ICMA Homeland Security Survey data, this research cannot empirically test the impact of this perspective on the three types of collaboration. However, I will discuss its influence on collaboration through conducting interviews with local EM/HS managers in Chapter Five.

3.2.2.3 Organizational external factors

3.2.2.3.1 Resource dependency

The federal and state funding index is used to measure the resource dependency perspective in this research. The range of federal and state funding index is from 0 to 10 and its average score is 1.61 (see Table 3-19). The higher the index scores, the greater the extent of funding from state and federal governments awarded to local governments.
Table 3-17: Original survey question and alternatives related to the extent of federal funding

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has your council (or other legislative body) received federal funding for any of the following homeland security-related programs and needs?</td>
<td>Information security</td>
<td>168</td>
<td>1,307</td>
<td>1,311</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(6%)</td>
<td>(47%)</td>
<td>(47%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disaster response</td>
<td>680</td>
<td>994</td>
<td>1,112</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(24%)</td>
<td>(36%)</td>
<td>(40%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disaster mitigation/preparedness</td>
<td>589</td>
<td>1,059</td>
<td>1,138</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(21%)</td>
<td>(38%)</td>
<td>(41%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical surveillance/security systems</td>
<td>365</td>
<td>1,259</td>
<td>1,162</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(13%)</td>
<td>(45%)</td>
<td>(42%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical/public health surveillance systems</td>
<td>170</td>
<td>1,311</td>
<td>1,305</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(6%)</td>
<td>(47%)</td>
<td>(47%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drills and training exercises</td>
<td>551</td>
<td>1,096</td>
<td>1,139</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(20%)</td>
<td>(39%)</td>
<td>(41%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staffing</td>
<td>162</td>
<td>1,354</td>
<td>1,270</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(6%)</td>
<td>(49%)</td>
<td>(46%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipment</td>
<td>1,156</td>
<td>816</td>
<td>814</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(41%)</td>
<td>(29%)</td>
<td>(29%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public education</td>
<td>305</td>
<td>1,256</td>
<td>1,225</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(11%)</td>
<td>(45%)</td>
<td>(44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cyber security</td>
<td>74</td>
<td>1,402</td>
<td>1,310</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>(3%)</td>
<td>(50%)</td>
<td>(47%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The federal and state funding index is measured by the mean of the extent of the federal funding score and the extent of the state funding score. The extent of the federal funding score is measured by whether the council of local government received federal funding in the following areas: information security, disaster response, disaster mitigation/preparedness, physical surveillance/security systems, medical/public health surveillance systems, drills and training exercises, staffing, equipment, public education, and cyber security. If a local government received federal funding in all areas, it is coded as 10. In contrast, a local government is coded as 0 if it received no funding from the federal government in the above 10 areas. The way to calculate the extent of the state funding score follows the same logic. It also ranges from 0 to 10. Table 3-17 and Table 3-18 present the original survey questions related to the extent of federal and state funding to local governments.
Table 3-18: Original survey question and alternatives related to the extent of state funding

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Alternatives</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has your council (or other legislative body) received state funding for any of the following homeland security-related programs and needs?</td>
<td>Information security</td>
<td>125</td>
<td>1,342</td>
<td>1,319</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Disaster response</td>
<td>671</td>
<td>1,028</td>
<td>1,087</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Disaster mitigation/preparedness</td>
<td>663</td>
<td>1,071</td>
<td>1,052</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Physical surveillance/security systems</td>
<td>318</td>
<td>1,315</td>
<td>1,153</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Medical/public health surveillance systems</td>
<td>154</td>
<td>1,356</td>
<td>1,276</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Drills and training exercises</td>
<td>644</td>
<td>1,066</td>
<td>1,076</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Staffing</td>
<td>139</td>
<td>1,394</td>
<td>1,253</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Equipment</td>
<td>1,101</td>
<td>883</td>
<td>802</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Public education</td>
<td>290</td>
<td>1,294</td>
<td>1,202</td>
<td>2,786</td>
</tr>
<tr>
<td></td>
<td>Cyber security</td>
<td>49</td>
<td>1,449</td>
<td>1,288</td>
<td>2,786</td>
</tr>
</tbody>
</table>

Table 3-19: Descriptive analysis of resource dependency

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>State and federal funding (FSFUND)</td>
<td>1,077</td>
<td>1.61</td>
<td>1.94</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

3.2.2.3.2 Disaster magnitude

Due to the limitations of the ICMA Homeland Security Survey data, this research cannot empirically test the impact of this perspective on the three types of collaboration. However, the impact of this perspective on collaboration will be also discussed through conducting interviews with local EM/HS managers in Chapter Five.
3.2.3 Control Variables: Community Attributes

Attributes of local community are viewed as control variables in this research, including population, government type, and metro status. According to Table 3-20, 12% of respondent local governments are counties and 14% of respondent local governments are located in a metropolitan statistical area (MSA). The average population is about 44,520. The detailed variable information of community attributes is shown in Table 3-20. \(^2\)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
<th>STD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>County (CNTY)</td>
<td>Whether the local government is county government or not.</td>
<td>2,786</td>
<td>.12</td>
<td>.33</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Central area (CNTRL)</td>
<td>Indicates whether the municipality is located within an MSA (Metropolitan Statistical Area) as defined/designated by the U.S. Office of Management &amp; Budget.</td>
<td>2,786</td>
<td>.14</td>
<td>.34</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Population (unit: thousand people) (POP)</td>
<td>Population size of the municipality in 2000.</td>
<td>2,786</td>
<td>44.52</td>
<td>112.82</td>
<td>.78</td>
<td>1709.43</td>
</tr>
</tbody>
</table>

3.2.4 Models

In this research, I create three main models based on vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration (see Figure 3-1, 3-2, and 3-3). In each basic model, I construct sub-models for testing the mediating effect of EM/HS capacity on three types of collaboration (see Table 3-21).

\(^2\) The geographical region variables (south, west, northeast, and northcentral) are suggested to be included in the analysis. After testing their effects, there is no statistically significant impact on three types of collaboration. Therefore, the current overall analysis still uses government type, metro status, and population as three main variables to control the effects of community attributes.
Figure 3-1: Vertical collaboration model

**Internal factors**

- Resource shortage
  - Budget shortfall (+)
  - Information shortage: Needs of assistance or training in emergency planning, preparedness, and response (+)

- Organization attention
  - The extent of funding from the local government to support emergency management/homeland security activities (+)

- Mutual understanding
  - The extent of understanding federal and state government information (+)

- Institution/national standard
  - NIMS adoption (+)

- EM/HS manager capacity
  - Position power (+)

- Past experience with vertical partners (+)

- EM/HS capacity: Capability of dealing with emergencies and disasters (+)

**External factors**

- Resource dependence on state and federal support
  - The extent of funding from the state and federal governments to support emergency management/homeland security activities (+)

- Disaster magnitude (+)

- Community attributes: Population, type of local government, metropolitan status
Figure 3-2: Horizontal-interlocal collaboration model

<table>
<thead>
<tr>
<th>Internal factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource shortage</td>
</tr>
<tr>
<td>- Layoff problem (+)</td>
</tr>
<tr>
<td>- Information shortage: Needs of assistance or training in emergency planning, preparedness, and response (+)</td>
</tr>
<tr>
<td>Organization attention</td>
</tr>
<tr>
<td>- The extent of funding from the local government to support emergency management/homeland security activities (+)</td>
</tr>
<tr>
<td>Mutual understanding</td>
</tr>
<tr>
<td>- Involving mutual aid partners in emergency planning and preparedness (+)</td>
</tr>
<tr>
<td>Institution/ national standard</td>
</tr>
<tr>
<td>- NIMS adoption (+)</td>
</tr>
<tr>
<td>EM/HS manager capacity</td>
</tr>
<tr>
<td>- Position power (+)</td>
</tr>
<tr>
<td>Past experience with horizontal-interlocal partners (+)</td>
</tr>
<tr>
<td>EM/HS capacity: Capability of dealing with emergencies and disasters (+)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource dependence on state and federal support</td>
</tr>
<tr>
<td>- The extent of funding from the state and federal governments to support emergency management/homeland security activities (+)</td>
</tr>
<tr>
<td>Disaster magnitude (+)</td>
</tr>
<tr>
<td>Community attributes: Population, type of local government, metropolitan status</td>
</tr>
</tbody>
</table>
Figure 3-3: Horizontal-intersectoral collaboration model

Internal factors

- Resource shortage
  - Layoff problem (+)
  - Information shortage: Needs of assistance or training in emergency planning, preparedness, and response (+)

- Organization attention
  - The extent of funding from the local government to support emergency management/homeland security activities (+)

- Mutual understanding
  - Involving mutual aid partners in emergency planning and preparedness (+)

- Institution/national standard
  - NIMS adoption (+)

- EM/HS manager capacity
  - Position power (+)

- Past experience with horizontal-intersectoral partners (+)

- EM/HS capacity: Capability of dealing with emergencies and disasters (+)

External factors

- Resource dependence on state and federal support
  - The extent of funding from the state and federal governments to support emergency management/homeland security activities (+)

- Disaster magnitude (+)

- Community attributes: Population, type of local government, metropolitan status
When the mediating effect is not considered, the Poisson regressions are used to test the VCB-0 model and the HLCB-0 model since the dependent variables (VCB and HLCB) are count variables (see Table 3-20). Logistic regression is applied to test the HSCB-0 model because the dependent variable (HSCB) is binary. When EM/HS capacity is treated as the mediator, I apply the Mediation Formulas, which were developed by Judea Pearl (2011), to establish the sub-models in all three types of collaboration. Pearl’s Mediation Formulas are applicable to all distributions and to all types of variables. They can estimate direct and indirect effects in both parametric and nonparametric regression. The formulas are shown below:

\[
DE = \sum_m [E(Y|x+1,m) - E(Y|x,m)]P(m|x)
\]

\[
IE = \sum_m E(Y|x,m)[P(m|x+1) - P(m|x)]
\]

The value range of \( m \) is based on the value that the mediator variable can take.

The direct effect (DE) measures the expected change in the dependent variable \( Y \) when the independent variable \( x \) is increased by one unit \((x+1)\), while the mediator variable \( m \) is fixed at the level it would have attained before the change. The indirect effect (IE) measures the expected change in the dependent variable when the independent variable is set as constant, and the mediator variable changes to the level it would have attained had the independent variable increased from \( x \) to \( x+1 \). The causal effect of the independent variable on the mediator variable is denoted as \( P(m|x) \). The causal effect of the change in the independent variable on the mediator variable is denoted as \( P(m|x+1) \). The error is assumed to be independent in the Mediation Formulas. Table 3-21 presents the formulas of all sub-models in three types of collaboration.
### Table 3-21: Formulas of all models and submodels

**Vertical collaboration models:** $(Y = VCB)$

- Without considering the mediating effect of EM/HS capacity

  **VCB-0**: \( \log_e(Y) = \beta_0 + \beta_1(MNGCP) + \beta_2(MGCP) + \beta_3(BGC) + \beta_4(SHR) + \beta_5(EMPR) + \beta_6(FSFUND) + \beta_7(LFUND) + \beta_8(FSINFO) + \beta_9(MAIDP) + \beta_{10}(NIMS) + \beta_{11}(POP) + \beta_{12}(CNTY) + \beta_{13}(CNTRL) \)

  \( Y = 0, 1, 2, \ldots \)

- With considering the mediating effect of management capacity

  \[
  \begin{align*}
  DE &= \sum_{m} [E(Y|x+1,m) - E(Y|x,m)]P(m|x) \\
  IE &= \sum_{m} E(Y|x,m)[P(m|x+1) - P(m|x)]
  \end{align*}
  \]

  Sub-model:

  **VCB-1**: \( x = MGCP, m = MNGCP, \) controls: BGC, SHR, EMPR, FSFUND, LFUND, FSINFO, MAIDP, NIMS, POP, CNTY, CNTRL

**Horizontal-interlocal collaboration models:** $(Y = HLCB)$

- Without considering the mediating effect of EM/HS capacity

  **HLCB-0**: \( \log_e(Y) = \beta_0 + \beta_1(MNGCP) + \beta_2(MGCP) + \beta_3(BGC) + \beta_4(SHR) + \beta_5(EMPR) + \beta_6(FSFUND) + \beta_7(LFUND) + \beta_8(FSINFO) + \beta_9(MAIDP) + \beta_{10}(NIMS) + \beta_{11}(POP) + \beta_{12}(CNTY) + \beta_{13}(CNTRL) \)

  \( Y = 0, 1, 2, \ldots \)

- With considering the mediating effect of EM/HS capacity

  \[
  \begin{align*}
  DE &= \sum_{m} [E(Y|x+1,m) - E(Y|x,m)]P(m|x) \\
  IE &= \sum_{m} E(Y|x,m)[P(m|x+1) - P(m|x)]
  \end{align*}
  \]

  Sub-model

  **HLCB-1**: \( x = MGCP, m = MNGCP, \) controls: BGC, SHR, EMPR, FSFUND, LFUND, FSINFO, MAIDP, NIMS, POP, CNTY, CNTRL
Table 3-21 (Continued)

<table>
<thead>
<tr>
<th>Horizontal-intersectoral collaboration models: (Y = HSCB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Without considering the mediating effect of EM/HS capacity</td>
</tr>
<tr>
<td>HSCB-0: Y = ( \alpha + \beta_1(MGCP) + \beta_2(MGCP) + \beta_3(BGC) + \beta_4(SHR) + \beta_5(EMPR) + \beta_6(FSFUND) + \beta_7(LFUND) + \beta_8(FSINFO) + \beta_9(MAIDP) + \beta_{10}(NIMS) + \beta_{11}(POP) + \beta_{12}(CNTY) + \beta_{13}(CNTRL) + \text{error} )</td>
</tr>
<tr>
<td>Y = ( \begin{cases} 1, &amp; \text{if } Y &gt; 0 \ 0, &amp; \text{if } Y \leq 0 \end{cases} )</td>
</tr>
<tr>
<td>• Considering the mediating effect of EM/HS capacity</td>
</tr>
<tr>
<td>[ DE = \sum_{m} [E(Y</td>
</tr>
<tr>
<td>[ 1E = \sum_{m} E(Y</td>
</tr>
<tr>
<td>Sub-models</td>
</tr>
<tr>
<td>HSCB-1: x = MGCP, m = MNGCP, controls: BGC, SHR, EMPR, FSFUND, LFUND, FSINFO, MAIDP, NIMS, POP, CNTY, CNTRL</td>
</tr>
<tr>
<td>HSCB-2: x = FSFUND, m = MNGCP, controls: MGCP, BGC, SHR, EMPR, LFUND, FSINFO, MAIDP, NIMS, POP, CNTY, CNTRL</td>
</tr>
</tbody>
</table>

3.3 Qualitative Research Method

3.3.1 Structured Interviews in Florida Counties and Cities Interviewee Selection

Criteria

The purpose of this research is to understand local collaborative activities in emergency management and homeland security. Thus, local emergency management managers were chosen as interview subjects in this research, including both county and city emergency management directors in Florida. The selection process is described as follows. In Florida, each county government should legally constitute an emergency management agency and appoint a director according to Florida State Statute 252.38. Thus, the County EM directors take the main responsibility to coordinate with state government and other local governments in dealing with local emergency management and homeland security. Municipalities are also encouraged to create an EM agency and under law shall coordinate its activities with those of the county EM agency. Therefore, I

---

3 According to the ICMA 2005 Homeland Security Survey, about 58.3% (196 out of 336) of respondent county governments have created the county EM/HS manager position. The state of Florida is a case that legally requires all county governments to establish such a position to deal with local emergency management business.
decided to select the county EM director, who is most familiar with local emergency management and homeland security initiatives, as my interviewee.

Table 3-22: The list of selected counties for conducting interviews

<table>
<thead>
<tr>
<th>Region 1</th>
<th>Small population county</th>
<th>Medium population county</th>
<th>Large population county</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region 1</td>
<td>Calhoun (14,310)</td>
<td>Jackson (52,639)</td>
<td>Escambia (313,480)</td>
</tr>
<tr>
<td>Region 2</td>
<td>Liberty (8,158)</td>
<td>Dixie (15,963)</td>
<td>Leon (274,892)</td>
</tr>
<tr>
<td>Region 3</td>
<td>Union (15,974)</td>
<td>Nassau (71,915)</td>
<td>Duval (904,971)</td>
</tr>
<tr>
<td>Region 4</td>
<td>Hardee (27,909)</td>
<td>Hernando (164,907)</td>
<td>Hillsborough (1200,541)</td>
</tr>
<tr>
<td>Region 5</td>
<td>Indian River (141,667)</td>
<td>Lake (288,379)</td>
<td>Orange (1114,979)</td>
</tr>
<tr>
<td>Region 6</td>
<td>Glades (11,323)</td>
<td>Highlands (100,207)</td>
<td>Lee (623,725)</td>
</tr>
<tr>
<td>Region 7</td>
<td>Monroe (76,081)</td>
<td>Palm Beach (1294,654)</td>
<td>Miami-Dade (2477,289)</td>
</tr>
</tbody>
</table>

Note: The source of Florida county population is from Florida Statistics Book 2010

However, due to time limitations, I could not interview all 67 county EM directors in Florida, so I decided to use the county location and the county population as the criteria to sample my interviewees since geographic and demographic factors play critical roles to influence how local governments face disasters, manage their resources, and conduct their emergency management and homeland security. Because Florida counties are grouped as seven regions under the Florida emergency management system, I select three counties from each region, the largest, a medium-size, and the smallest counties as my sample. Such a selection criterion is helpful to examine the effect of population size on local emergency management and homeland security collaboration in different geographic areas in Florida. County emergency management managers in the sample counties are treated as interview subjects. There are 21 counties selected and are shown in Table 3-22.

I also wanted to interview local EM practitioners at the city level, but not every city in Florida has established an EM/HS program and manager to specifically handle EM/HS-related initiatives. Therefore, I follow the selection rules from the Urban Area
Security Initiative (UASI) grant program and choose the cities of Miami, Tampa, Fort Lauderdale, Jacksonville, and Orlando as sample cities since these large cities pay attention to local EM/HS initiatives and are capable of applying and handling federal funding to support them. These five areas had allocated UASI grant money in FY2010. City emergency management managers in the above five cities were contacted as interview subjects.

### 3.3.2 The Structured Interview Guidelines

The interview questionnaire has several functions: 1) to ensure that the investigator covers all the terrain in the same order for each respondent; 2) to properly schedule the prompts which are necessary to manufacture distance; 3) to establish channels for the direction and scope of discourse; and 4) to allow the investigator to validate the respondent’s testimony. (McCracken 1988, pp.25-26). In this structured interview, I categorize the questionnaires in the following dimensions: the general definition of collaboration, the motivations behind conducting the three types of collaboration, the extent of collaborative activities in the three types of collaboration, the strengths and weaknesses in conducting the three types of collaboration, the connection between emergency management and homeland security, and the background information of local emergency management managers. The detailed interview guideline is listed in Appendix E.

### 3.3.3 Interview Process

The interview process in this dissertation has been approved by the Institutional Review Board at Florida State University (see Appendix A). Every selected subject first received an interview invitation email (see Appendix B) that addresses the research purpose. If the chosen interviewee replied and agreed to be interviewed, I scheduled the interview time and date with the interviewee by email and sent the formal cover letter (see Appendix C), interview consent form (see Appendix D), and interview question guideline to the interviewee by email (see Appendix E). After receiving the signed

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4 All personal contact information in the interview invitation letters and interview consent form and has been removed.
consent form from the subject by fax or email, the interview was conducted. If the selected interviewees did not reply to the invitation e-mail after two weeks, the e-mail invitations were sent out again. I also contacted the selected interviewees by phone.

Each interview was completed within 20-30 minutes. I primarily conducted the interview and my major professor also participated in almost half of the interviews. Interviews were audio recorded with the permission of interviewees and transcribed for the purpose of analysis. All audio files and transcriptions were saved on a separate hard disk with password protection which only the researcher and major professor had access to open. Each interview transcription was done by content analysis based on the interview questions to compare interviewee answers across large and small counties and across counties and cities. Analyses and findings from interviews will be presented in Chapter Five.

3.3.4 Introduction of Final Interviewees

McCracken (1988) suggested that eight interview respondents would be sufficient for many research projects. After sending out invitations twice within a month, a total of 15 counties and cities eventually agreed to be interviewed, including 6 large counties, 3 medium counties, 4 small counties and 2 big cities. Most of the interview subjects were interviewed by phone. Only one county EM director and EM coordinator were interviewed in person. I eventually interviewed 13 county EM directors, 1 county EM coordinator, 1 city fire chief, 1 city fire rescue assistant chief, and 1 city EM coordinator. These local EM directors/managers usually have had backgrounds in public safety service (i.e. law enforcement and fire service) or military service for many years. Some interviewees also have experience in medicine or emergency medical assistance. They may have bachelor’s or master’s degrees in the areas of criminology, urban planning, social behavior, public administration, computer science, meteorology, or other majors. Most of the interviewees have abundant experience in emergency management and have worked in this area for more than ten years.
CHAPTER FOUR
FINDINGS OF EMPIRICAL ANALYSIS

In this chapter, I present my empirical analyses of the 2005 ICMA homeland security survey data through reporting the correlation matrix, the multivariate regression models, and the mediating effects. The discussions of the empirical results are also included.

4.1 Correlation Matrix and Multicollinearity Diagnosis

According to the correlation matrix (Table 4-1), with the significance level at .05, vertical collaboration is positively and moderately correlated with horizontal-interlocal collaboration (.45) and horizontal intersectoral collaboration (.48). Horizontal-interlocal collaboration is positively and weakly correlated with horizontal-intersectoral collaboration (.33). Their correlation indicates these three dependent variables present three different concepts of collaboration. In order to avoid the potential multicollinearity problem among all independent variables, the VIF (Variance Inflation Factor) is reported in Table 4-2. VIF is used to analyze how much of the inflation of the standard error could be caused by collinearity. All VIF values are less than ten, which indicates there is no obvious multicollinearity problem among independent variables.

---

5 Specifically, vertical collaboration is positively correlated with EM/HS capacity (.52), and followed by federal and state funding in EM/HS (.48), local funding in EM/HS (.39), NIMS adoption (.27), local EM/HS manager position power (.26), including mutual-aid partners in planning and preparedness activities (.26), EM/HS budget shortage (.18), understanding of federal and state information (.14), and layoff in EM/HS-related personnel (.05). For horizontal-interlocal collaboration, it is positively correlated with EM/HS capacity (.43), followed by federal and state funding in EM/HS (.37), local funding in EM/HS (.32), including mutual-aid partners in planning and preparedness activities (.23), NIMS adoption (.21), local EM/HS manager position power (.16), EM/HS budget shortage (.12), and understanding of federal and state information (.06). About horizontal-intersectoral collaboration, it is positively correlated with EM/HS capacity (.40), federal and state funding in EM/HS (.38), local funding in EM/HS (.33), local EM/HS manager position power (.22), including mutual-aid partners in planning and preparedness activities (.21), NIMS adoption (.17), EM/HS budget shortage (.09), and the layoff in EM/HS-related personnel (.05). Three community attribute variables are all positively and weakly correlated with the three dependent variables. There are no strong correlations among the independent variables.
Table 4-1: Correlation Matrix

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<th>HL</th>
<th>HS</th>
<th>MNG</th>
<th>MG</th>
<th>BGC</th>
<th>SHR</th>
<th>EM</th>
<th>PR</th>
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<tr>
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* <.05(two-tailed)

Table 4-1 (Continued)

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<td>.53*</td>
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</tr>
</tbody>
</table>

* <.05(two-tailed)
4.2 Multivariate Regression Models

4.2.1 Vertical Collaboration Model and the Mediating Effect of EM/HS Capacity

Poisson regression is utilized for analyzing the vertical collaboration model (VCB-0) without considering the mediating effect of EM/HS capacity. The use of Poisson regression to analyze the VCB-0 model is appropriate because the variance of the dependent variable (2.72) is close to the mean of the dependent variable (2.25) according to Table 3.3. The robust standard errors for the parameter are estimated to control the potential mild violation of the distribution assumption that the variance equals the mean. According to Table 4-3, 470 observations are used in this Poisson regression analysis. The pseudo R-squared value in the VCB-0 model is .15. The Wald Chi-square (402.5) and its associated $p$-value (0.00) represent that this model is statistically significant. The Poisson model form fits the data reasonably well because both two goodness-of-fit chi-squared tests are not statistically significant.
Incident rate ratio (IRR) is applied to explain the relationship between the parameters and the outcome. Vertical collaboration is strongly and positively associated with mutual-aid partners inclusion in EM/HS planning and preparedness activities (IRR = 1.49), NIMS adoption, (IRR = 1.25), EM/HS budget shortage (IRR = 1.14), EM/HS capacity (IRR = 1.12), the need of training or technical assistance in emergency planning, preparedness, and response (IRR = 1.11), understanding of federal and state information (IRR =1.09), Federal and state funding in EM/HS (IRR = 1.04), local government funding in EM/HS (IRR = 1.03), and central area (IRR = 1.17). In other words, a local government is more likely to have a larger expected number of vertical collaborative actors when it has a stronger EM/HS capacity, uses more local funding in emergency management and homeland security, has faced a EM/HS budget shortage problem, has a need for training and technical assistance, has a higher ability to understand federal and state information, includes mutual aid partners in EM/HS planning and preparedness activities, adopts NIMS, has received more emergency management and homeland security programs from federal and state funds, and is located within a central MSA area. The layoff problem and EM/HS manager position establishment are insignificant factors in this vertical collaboration model.

| Table 4-3: Poisson regression analysis for vertical collaboration (without mediating effects) |
|---------------------------------------------|-----------------|--------|
| EM/HS Capacity (MNGCP)                  | 1.12**          | .02    |
| Manager capacity                        |                 |       |
| Position power (MGCP)                    | 1.03            | .05    |
| Resource shortage                       |                 |       |
| Budget cut (BGC)                         | 1.14*           | .06    |
| Layoff (SHR)                             | 1.00            | .02    |
| Need of training/technical assistance in EM (EMPR) | 1.11* | .06 |
| Organization attention and support       |                 |       |
| Local funding in EM/HS (LFUND)           | 1.03*           | .01    |
| Mutual understanding                     |                 |       |
| Understanding of federal and state information (FSINFO) | 1.09** | .03 |
| Include mutual aid partners (MAIDP)      | 1.49**          | .20    |
Table 4-3 (Continued)

<table>
<thead>
<tr>
<th>Institution/Standard</th>
<th>IRR</th>
<th>Robust S.E.</th>
</tr>
</thead>
<tbody>
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<td>.09</td>
</tr>
<tr>
<td>Federal and state funding in EM/HS (FSFUND)</td>
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<td>.01</td>
</tr>
<tr>
<td>County (CNTY)</td>
<td>1.09</td>
<td>.06</td>
</tr>
<tr>
<td>Central area (CNTRL)</td>
<td>1.17*</td>
<td>.08</td>
</tr>
<tr>
<td>Population (unit: thousand people) (POP)</td>
<td>1.00</td>
<td>.00</td>
</tr>
</tbody>
</table>

Model summary
- Wald chi2 = 402.5
- Prob > Chi-square = 0.00
- Pseudo R² = .15
- n = 470

Goodness-of-fit test
- Deviance goodness-of-fit = 394.03
- Prob > Chi-square = .98
- Pearson goodness-of-fit = 341.92
- Prob > Chi-square = 1.00

Table 4-3 shows that whether or not the local government has established a manager position to deal with EM/HS-related issues is not significantly associated with the expected number of vertical collaborative actors. I hypothesize that the EM/HS capacity of a local government mediates the relationship between these two variables when other variables are viewed as controls (see Figure 4-1). Traditionally, mediation can occur when 1) the independent variable significantly affects the dependent variable in the absence of the mediator, 2) the independent variable significantly affects the mediator, 3) the mediator significantly affects the dependent variable, and 4) the effect of the independent variable on the dependent variable decreases upon the addition of the mediator to the model (Baron and Kenny 1986). However, contemporary discussion of mediation believes that only conditions 2 and 3 are necessary. In this research, I use this argument as the basis to create a VCB-1 model to examine whether the EM/HS capacity significantly mediates the influence of manager position power on the number of vertical collaborative actors. The indirect effect is calculated by using the product of coefficients approach. The Sobel test (Sobel 1982) with the bias-corrected bootstrapping procedure is

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utilized to estimate the standard error of the indirect effect and test the significance of the indirect effect.

According to David Kenny’s explanation, bootstrapping is a non-parametric method that uses random sampling with replacement many times to calculate the indirect effect and generate the sampling distribution. The bootstrapped confidence interval can be computed from the sampling distribution. The mean of the bootstrapped distribution will not be exactly the same each time. Thus, a bias-corrected bootstrapped confidence interval is often made. A bias-corrected bootstrapped confidence interval is usually calculated to check whether zero is in the interval. If zero is not in the interval, we are confident that the indirect effect is different from zero.\(^7\)

The result is shown in Table 4-4. The bias-corrected bootstrapped confidence intervals of the indirect effect and the total effect do not include zero, which represents the indirect effect and the total effect as significant in the VCB-1 model. In other words, there is a positively significant indirect effect of the local EM/HS manager position power on the increase of expected numbers of vertical collaborative actors through EM/HS capacity. It appears that establishing a local EM/HS manager position increases a local government’s EM/HS capacity, which in turn enhances its vertical collaboration.

Table 4-4: Tested mediating effect of EM/HS capacity between local EM/HS manager position power and vertical collaboration (VCB-1)

<table>
<thead>
<tr>
<th>Effect Type</th>
<th>Coefficient</th>
<th>Bootstrapped S.E.</th>
<th>bias-corrected confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effect ((a \times b))</td>
<td>.16</td>
<td>.04</td>
<td>.0865517 to .2663755</td>
</tr>
<tr>
<td>Direct effect</td>
<td>.10</td>
<td>.14</td>
<td>-.1575591 to .3859905</td>
</tr>
<tr>
<td>Total effect</td>
<td>.26</td>
<td>.14</td>
<td>-.0116635 to .5379613</td>
</tr>
</tbody>
</table>

\(^7\) Ibid.
4.2.2 Horizontal-Interlocal Collaboration Model and the Mediating Effect of EM/HS Capacity

Poisson regression is also utilized for analyzing the horizontal-interlocal collaboration model (HLCB-0) without considering the mediating effect of EM/HS capacity. The use of Poisson regression to analyze the VCB-0 model is considered to be appropriate because the variance of the dependent variable (.59) is smaller but not far from the mean of the dependent variable (1.73) according to Table 3.3, which is not an over-dispersion problem. The robust standard errors for the parameter are also estimated to control the potential mild violation of the distribution assumption that the variance equals the mean. According to Table 4-5, 470 observations are used in this analysis. The pseudo R-squared value in the HLCB-0 model is .03. The Wald Chi-square (171.01) and its associated p-value (0.00) represent that this model is statistically significant. The Poisson model form fits the data reasonably well because both of the two goodness-of-fit chi-squared tests are not statistically significant.

Table 4-5 shows that horizontal-interlocal collaboration is strongly and positively associated with mutual-aid partners inclusion in EM/HS planning and preparedness activities (IRR =1.22), NIMS adoption (IRR = 1.09), EM/HS capacity (IRR = 1.05), federal and state funding in EM/HS (IRR = 1.03), and local funding in EM/HS (IRR = 1.02). The budget cuts, having had layoffs, and needs of training or technical assistance have no significant impacts on the horizontal interlocal collaboration. In other words, on average, a local government is more likely to have a larger expected number of horizontal-interlocal collaborative actors when it has better EM/HS capacity, has adopted NIMS, is granted more emergency management and homeland security programs by federal, state, and local funds, and includes mutual-aid partners in the EM/HS planning and preparedness activities.
Table 4-5: Multivariate regression analysis for horizontal-interlocal collaboration (without mediating effects)

<table>
<thead>
<tr>
<th></th>
<th>IRR</th>
<th>Robust S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EM/HS Capacity (MNGCP)</strong></td>
<td>1.05**</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Manager capacity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position power (MGCP)</td>
<td>1.00</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Resource shortage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budget cut (BGC)</td>
<td>.96</td>
<td>.04</td>
</tr>
<tr>
<td>Layoff (SHR)</td>
<td>1.00</td>
<td>.01</td>
</tr>
<tr>
<td>Need of training/technical assistance in EM (EMPR)</td>
<td>1.06</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Organization attention and support</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local funding in EM/HS (LFUND)</td>
<td>1.02*</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Mutual understanding</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding of federal and state information (FSINFO)</td>
<td>.98</td>
<td>.02</td>
</tr>
<tr>
<td>Include mutual aid partners (MAIDP)</td>
<td>1.22**</td>
<td>.08</td>
</tr>
<tr>
<td><strong>Institution/Standard</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIMS adoption (NIMS)</td>
<td>1.09*</td>
<td>.05</td>
</tr>
<tr>
<td><strong>Outside resource dependency</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal and state funding in EM/HS (FSFUND)</td>
<td>1.03**</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Community attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>County (CNTY)</td>
<td>.96</td>
<td>.04</td>
</tr>
<tr>
<td>Central area (CNTRL)</td>
<td>1.03</td>
<td>.05</td>
</tr>
<tr>
<td>Population (unit: thousand people) (POP)</td>
<td>1.00</td>
<td>.00</td>
</tr>
</tbody>
</table>

Model summary

Wald chi2 = 171.01
Prob > Chi-square = 0.00
Pseudo R² = .03
n = 470

Goodness-of-fit test

Deviance goodness-of-fit = 130.13
Prob > Chi-square = 1.00
Pearson goodness-of-fit = 111.53
Prob > Chi-square = 1.00

According to Table 4-5, the establishment of a manager position to deal with EM/HS-related issues in the local government is not significantly associated with the expected increase in horizontal-interlocal collaboration. Similarly, I create an HLCB-1 model and hypothesize that the EM/HS capacity of a local government mediates the relationship between local EM/HS manager position power and horizontal-interlocal collaboration when other variables are viewed as controls (see Figure 4-2). The product of coefficients approach is used to generate the indirect effect. The Sobel test with the
bias-corrected bootstrapping procedure is also used here to estimate the standard error of the indirect effect and examine the significance of the indirect effect. The indirect effect is significant because the bias-corrected confidence interval does not contain zero. The total effect is not significant here, which is not uncommon in the analysis of mediating effects (Hayes 2009). Hayes also further argued that “A failure to test for indirect effects in the absence of a total effect can lead to you miss some potentially interesting, important, or useful mechanisms by which X exerts some kind of effect on Y” (p.11). In other words, we should not ignore the meanings of the significant indirect effect when the total effect is analyzed as equal to zero. Therefore, EM/HS capacity is viewed as a significant mediator between the local EM/HS manager position power and the horizontal-interlocal collaboration in the HLCB-1 model. The analysis displays that there is a positively significant indirect effect of the local EM/HS manager position power on the increase of numbers of horizontal-interlocal collaborative actor through EM/HS capacity (see Table 4-6). EM/HS capacity can be viewed as a significant mediator.

![Figure 4-2: Hypothesized mediating effect of EM/HS capacity between local EM/HS manager position power and horizontal-interlocal collaboration](image)

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Bootstrapped S.E.</th>
<th>bias-corrected confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effect ( (a \times b) )</td>
<td>.06</td>
<td>.02</td>
</tr>
<tr>
<td>Direct effect</td>
<td>.01</td>
<td>.07</td>
</tr>
<tr>
<td>Total effect</td>
<td>.07</td>
<td>.07</td>
</tr>
</tbody>
</table>

Table 4-6: Tested mediating effect of EM/HS capacity between local EM/HS manager position power and vertical collaboration (HLCB-1)
4.2.3 Horizontal-Intersectoral Collaboration Model and the Mediating Effect of EM/HS Capacity

Logistic regression analysis is employed to test the horizontal-intersectoral model because the dependent variable is a dichotomous variable. According to Table 4-6, the model’s LR chi-square value (175.98) and its associated $p$-value (0.00) represent that this model significantly explains the variance of the dependent variable. The value of Efron's R-square in this logistic regression model is .33 which presents an acceptable model fit.

Based on Table 4-7, EM/HS capacity (OR = 1.27), local funding in EM/HS (OR = 1.22), and the need of training and technical assistance (OR= 1.95) are three positive and significant drivers which increase the odds of the local government’s horizontal-intersectoral collaboration. County governments are more likely to collaborate with non-government organizations than municipal governments. Budget cuts, having had layoffs in EM/HS-related areas, and the inclusion of mutual-aid partners in EM/HS planning and preparedness activities are insignificant factors in this model. NIMS adoption, and federal and state funding in EM/HS are two weak but positive factors which are associated with the increase of the odds for local governments to conduct horizontal-intersectoral collaboration.

Table 4-7: Multivariate regression analysis for horizontal-intersectoral collaboration (without mediating effects)

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>S.E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EM/HS Capacity (MNGCP)</strong></td>
<td>1.27**</td>
<td>.12</td>
</tr>
<tr>
<td>Manager capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position power (MGCP)</td>
<td>1.39</td>
<td>.36</td>
</tr>
<tr>
<td><strong>Resource shortage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budget cut (BGC)</td>
<td>.76</td>
<td>.22</td>
</tr>
<tr>
<td>Layoff (SHR)</td>
<td>1.07</td>
<td>.10</td>
</tr>
<tr>
<td>Need of training/technical assistance in EM (EMPR)</td>
<td>1.95*</td>
<td>.52</td>
</tr>
<tr>
<td><strong>Organization attention and support</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local funding in EM/HS (LFUND)</td>
<td>1.22**</td>
<td>.05</td>
</tr>
<tr>
<td><strong>Mutual understanding</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding of federal and state information (FSINFO)</td>
<td>1.12</td>
<td>.14</td>
</tr>
<tr>
<td>Include mutual aid partners (MAIDP)</td>
<td>1.84</td>
<td>.81</td>
</tr>
</tbody>
</table>

** < .01, * < .05, ^ < .1
### Table 4-7 (Continued)

<table>
<thead>
<tr>
<th>Institution/Standard</th>
<th>Odds Ratio</th>
<th>S.E</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIMS adoption (NIMS)</td>
<td>1.59^</td>
<td>.43</td>
</tr>
<tr>
<td>Federal and state funding in EM/HS (FSFUND)</td>
<td>1.14^</td>
<td>.08</td>
</tr>
<tr>
<td>County (CNTY)</td>
<td>2.10*</td>
<td>.76</td>
</tr>
<tr>
<td>Central area (CNTRL)</td>
<td>1.70</td>
<td>.67</td>
</tr>
<tr>
<td>Population (unit: thousand people) (POP)</td>
<td>1.00</td>
<td>.00</td>
</tr>
</tbody>
</table>

Model summary
- Efron’s $R^2 = .33$
- LR Chi-square = 175.98
- Prob > Chi-square = .000
- n = 470

** < .01, * < .05, ^ < .1

According to Table 4-7, the establishment of a manager position to deal with EM/HS-related issues is not a significant factor in the adoption of horizontal-intersectoral collaboration. Federal and state funding in EM/HS is only weakly significant to increase the odds of local governments to collaborate with non-governmental organizations. In my hypotheses, these two factors could still have influences on horizontal-intersectoral collaboration through the mediating effect of EM/HS capacity. Therefore, I establish the HSCB-1 model in which the EM/HS capacity of a local government mediates the relationship between the local EM/HS manager position power and horizontal-intersectoral collaboration when other variables are viewed as controls. The HSCB-2 model is created to test the mediating effect of EM/HS capacity between local federal and state funding in EM/HS and horizontal-intersectoral collaboration when other variables are controlled (see Figure 4-3).

![Figure 4-3: Hypothesized mediating effect of EM/HS capacity among local EM/HS manager position power, federal and state funding in EM/HS, and horizontal-intersectoral collaboration](image-url)
Table 4-8: Tested mediating effect of EM/HS capacity between local EM/HS manager position power and horizontal-intersectoral collaboration (HSCB-1)

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Bootstrapped S.E.</th>
<th>bias-corrected confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effect</td>
<td>.04</td>
<td>.02</td>
<td>.011313</td>
</tr>
<tr>
<td>Direct effect</td>
<td>.08</td>
<td>.07</td>
<td>-.0509009</td>
</tr>
<tr>
<td>Total effect</td>
<td>.12</td>
<td>.07</td>
<td>-.0136528</td>
</tr>
</tbody>
</table>

Table 4-9 The result of mediating effect of EM/HS capacity between federal and state funding and horizontal-intersectoral collaboration (HSCB-2)

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Bootstrapped S.E.</th>
<th>bias-corrected confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effect</td>
<td>.04</td>
<td>.02</td>
<td>.0102176</td>
</tr>
<tr>
<td>Direct effect</td>
<td>.14</td>
<td>.08</td>
<td>-.0082984</td>
</tr>
<tr>
<td>Total effect</td>
<td>.19</td>
<td>.07</td>
<td>.0291089</td>
</tr>
</tbody>
</table>

In the HSCB-1 model and HSCB-2 model, I use the bootstrapping bias-corrected confidence interval approach to test the significance of the indirect effect. The indirect effects are computed by using the product of coefficients approach. Preacher and Hayes (2004) and Hayes (2009) propose that the bootstrap confidence interval is preferred, especially when the outcome is not a continuous variable (i.e. binary outcome). According to Table 4-8, we can find that the bias-corrected confidence interval of the indirect effect does not include zero, which represents the indirect effect as significant in the HSCB-1 model. Although the direct effect and the total effect are insignificant, there is a positively significant indirect effect of the local EM/HS manager position power on increasing the odds of horizontal-intersectoral collaboration adoption through EM/HS capacity. Table 4-9 presents that the indirect effect and the total effect are positively significant in the HSCB-2 model. Put differently, for local governments, the federal and state funding in EM/HS indirectly increases the odds to conduct horizontal-intersectoral collaboration through the mediating effect of EM/HS capacity.

In Stata software, the coefficient is rescaled by involving the standard deviation of the underlying latent variable for the binary variable. The indirect effect can therefore be calculated by using the product of coefficients approach even when the outcome is a binary variable.
4.3 Discussion

Observing the tests of the hypotheses (see Table 4-10), EM/HS capacity is positively associated with all three different types of collaboration. A local government with a strong EM/HS capacity provides an advantage to a local government facing any expected and unexpected disaster. Because all types of collaboration play important roles and bring in different resources to a local EM/HS program, a better EM/HS capacity gives local governments a better ability to conduct complex collaborative activities in both vertical and horizontal contexts. This finding is not only consistent with the previous research finding about a positive relationship between organizational/administrative capacity and collaboration (Agranoff and McGuire 2003; Bardach 1998; Gazley 2008; McGuire and Silvia 2010; O'Leary et al. 2009) but also possibly shows that a local government with a strong EM/HS capacity could have a better ability to assist other local governments with a less strong EM/HS capacity through horizontal-interlocal collaboration during a disaster, or attract non-governmental organizations to come in to share and learn the EM/HS intelligence or to earn a better reputation through horizontal-intersectroal collaboration (Graddy and Chen 2009). In other words, in emergency management and homeland security, local governments that collaborate with other organizations may not only seek resources but may also be more effective in providing government assistance, which is unique from other policy areas. I will discuss more details from the interviews to support this argument later.
<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Vertical collaboration model</th>
<th>Horizontal-interlocal model</th>
<th>Horizontal-intersectoral model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EM/HS capacity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1: A local government with higher emergency management and homeland security capacity is more likely to have a greater level of vertical, horizontal-interlocal, and horizontal-intersectoral collaboration.</td>
<td>Accept</td>
<td>Accept</td>
<td>Accept</td>
</tr>
<tr>
<td><strong>Resource shortage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2: A local government facing a shortage of financial resources in the field of emergency management and homeland security is more likely to have a greater level of vertical collaboration.</td>
<td>Accept</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>H3: A local government facing a shortage of human resources in the field of emergency management and homeland security is more likely to have a greater level of horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
<td>-</td>
<td>Reject</td>
<td>Reject</td>
</tr>
<tr>
<td>H4: A local government facing a shortage of skills or knowledge in the field of emergency management and homeland security is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
<td>Accept</td>
<td>Reject</td>
<td>Accept</td>
</tr>
<tr>
<td><strong>Organizational attention and support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H5: A local government with more organizational attention and supports in emergency management and homeland security from is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
<td>Accept</td>
<td>Accept</td>
<td>Accept</td>
</tr>
<tr>
<td><strong>Mutual understanding</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H6: A local government with a higher level of understanding about state and federal governments is more likely to have a greater level of vertical collaboration.</td>
<td>Accept</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>H7: A local government that includes its mutual aid partners in emergency planning and preparedness activities is more likely to have a greater level of horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
<td>-</td>
<td>Accept</td>
<td>Reject</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>Vertical collaboration model</td>
<td>Horizontal-interlocal model</td>
<td>Horizontal-intersectoral model</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td><strong>Institution/ national standard</strong></td>
<td>Accept</td>
<td>Accept</td>
<td>Partially Accept</td>
</tr>
<tr>
<td>H8: A local government adopting an institutionalized emergency management and homeland security system is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration and horizontal-intersectoral collaboration than non-adopters.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EM/HS manager capability-position power</strong></td>
<td>Accept</td>
<td>Accept</td>
<td>Accept</td>
</tr>
<tr>
<td>H9: The extent of local EM/HS manager capability is positively related to the extent of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration, with the mediating effect of EM/HS capacity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Past experience</strong></td>
<td>Untested</td>
<td>Untested</td>
<td>Untested</td>
</tr>
<tr>
<td>H10: When a local government has positive past experience in working with federal and state governments, other local governments, the private sector, and non-governmental organizations, it is more likely to have a greater level of vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Disaster magnitude</strong></td>
<td>Untested</td>
<td>Untested</td>
<td>Untested</td>
</tr>
<tr>
<td>H11: A local government that has faced a more severe disaster is more likely to have a greater level of vertical collaboration, horizontal-intersectoral collaboration, and horizontal-interlocal collaboration.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Resource dependency</strong></td>
<td>Accept</td>
<td>Accept</td>
<td>-</td>
</tr>
<tr>
<td>H12: A local government relying on a greater extent of federal and state funding in emergency management and homeland security is more likely to have a greater level of vertical collaboration, and horizontal-interlocal collaboration.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H13: The extent of federal and state funding in emergency management and homeland security is positively related to the extent of horizontal-intersectoral collaboration, with the mediating effect of EM/HS capacity.</td>
<td>-</td>
<td>-</td>
<td>Accept</td>
</tr>
</tbody>
</table>

Regarding the resource shortage perspective, we found that the budget reductions in local governments are only significantly associated with a higher level of vertical...
collaboration, which suggests the purpose of seeking funds through conducting vertical activities is particularly obvious in emergency management and homeland security. In other words, searching for financial support is not the most important consideration to local governments when they decide to conduct horizontal collaboration. Previous research found that seeking financial resources can be observed in both vertical and horizontal collaborative activities (Agranoff and McGuire 2003; McGuire 2006). However, since emergency management and homeland security can be viewed as the positive externality and public good, local governments are therefore more likely to keep EM/HS-related initiatives in government and use government funding to operate EM/HS functions (Sylves 2007). Therefore, it is more reasonable for local governments to search for financial support from higher levels of government when they face a budget reduction rather than ask for financial resources from other local governments or non-governmental organizations.

Previous research has shown that local governments try to seek technical assistance and information through vertical and horizontal collaborative activities (Agranoff and McGuire 2003; McGuire 2006). This research found that the shortage of skills or information in the field of emergency management and homeland security can significantly explain vertical collaboration as well as the collaboration between local governments and non-governmental organizations in my models. A possible explanation is that local governments work closely with non-governmental organizations to employ their professions in providing shelter, medical assistance, or food-service during a disaster. The association between the shortage of skills and information, and vertical collaboration shows that local governments still view the state and federal governments as better subjects than other county and municipal governments when they need to request training and technical assistance in emergency planning, preparedness and response.

Having layoffs in EM/HS related areas seems to have no significant impact on collaboration in the horizontal context since requesting manpower assistance from other local governments and non-governmental organizations during a disaster is often viewed as a practical strategy (Patton 2007). However, most local governments reported that they faced no layoffs in EM/HS-related areas in this ICMA survey (see Table 3-6 and 3-7) and
the low level of variation could make this variable statistically insignificant in the analysis. The intention of requesting manpower assistance from non-governmental organizations can still be important to explain why local governments collaborate with non-governmental organizations. In the next chapter, I will discuss this part through comments from my interview findings.

Depending on state and federal funding generates a direct and significant impact on the level of vertical and horizontal interlocal collaboration, and indirectly augments the likelihood of horizontal-intersectoral collaboration through EM/HS capacity, according to the analysis. This finding shows that federal and state governments can expand their vertical connection on local governments and secure their influence on the collaboration among local governments in emergency management and homeland security through the grant-in-aid system, which is consistent with the arguments from the resource dependency perspective (Pfeffer and Salancik 2003) and intergovernmental scholarship (Agranoff and McGuire 2003; O'Toole and Meier 2004; Wright 2007). Although funding from higher levels of government seems to not directly increase the collaboration between local governments and non-governmental organizations, the EM/HS capacity can be enhanced through receiving state and federal funding and therefore give local governments more incentives and capabilities to collaborate with non-governmental organizations. This is another interesting finding in this research.

The capacity of local EM/HS managers and their leadership is always critical to the success of emergency management and homeland security (Edwards and Goodrich 2007; Kapucu, Arslan, and Demiroz 2010; McEntire and Dawson 2007; Waugh and Streib 2006). In this research, I only test the impact of local EM/HS manager position power on collaboration due to data limitations. I find that local governments establishing local EM/HS manager positions to specifically to deal with EM/HS initiatives do not directly increase the levels of vertical and horizontal-interlocal collaboration, or the odds to conduct horizontal-intersectoral collaboration. But establishing this position can indirectly promote collaboration in both the vertical and horizontal contexts through the EM/HS capacity of the local government. This finding reminds us that creating an EM/HS manager position in the local government is not enough to substantively increase the collaboration vertically and horizontally. The local EM/HS manager needs to operate
their duties and leadership effectively under a strong local EM/HS capacity environment and further improve their collaboration with different levels of government, other local governments, and non-governmental organizations. In the next chapter, I will discuss how local EM/HS managers define and observe their roles and duties through summarizing a content analysis of the interviews.

Understanding potential partners through frequent communication, sharing information, or face-to-face dialogue is essential for an organization to decrease the transaction costs generated by collaborating with unfamiliar organizations and thereby increase the willingness of an organization to conduct collaboration, or enhance their level of collaboration with the partner (Alter and Hage 1993; Ansell and Gash 2008; Emerson, Nabatchi, and Balogh 2011; North 1990). In this research, we find some interesting results (see Table 4-9). When local governments have a higher ability to understand information from state and federal governments, they are more likely to have a higher level of vertical collaboration, which is consistent with Hypothesis 6. It is not surprising that the extent of understanding of state and federal information has no significant impact on horizontal collaboration. However, the level of vertical collaboration and horizontal-interlocal collaboration can be significantly enhanced when local governments include mutual aid partners in the EM/HS planning and preparedness. Both the extent of understanding state and federal information and including mutual-aid partners in the EM/HS planning and preparedness are not statistically associated with horizontal-intersectoral collaboration. Mutual-aid agreements are often signed “between neighboring jurisdictions, among all jurisdictions in a particular region, among all jurisdictions statewide, between jurisdictions in different states, and between various levels of government” (Cohn 2005, p. 8). Therefore, although most of local governments’ mutual-aid partners are other neighboring local governments in practice, higher levels of government can also be potential mutual-aid partners. In other words, including mutual-aid partners in EM/HS planning and preparedness can be a vertical information-sharing process with higher levels of government or a horizontal information-sharing process with neighboring jurisdictions, and therefore is significantly associated with higher levels of vertical collaboration and horizontal-interlocal collaboration.
For horizontal-intersectoral collaboration, the results show local governments that are willing to share information horizontally with other local governments or even vertically with higher levels of government do not mean that they are statistically more likely to collaborate with non-governmental organizations. Practically, local governments may improve their information-sharing processes with non-governmental organizations and enhance their horizontal-interlocal collaboration through inviting these organizations to an Emergency Operation Center meeting, which will be discussed more in the next chapter on interview findings.

In this research, whether local governments adopted the National Incident Management System (NIMS) is used to measure the effect of national standards on collaboration under the institutional perspective. The federal government expends its role in responding to disasters or terror attacks on the local communities through encouraging governments at all levels to adopt NIMS. The result shows that NIMS adoption is significantly and positively associated with the increase of numbers of vertical actors and horizontal-interlocal actors. But, it is only weakly associated with increasing the odds to conduct horizontal-intersectoral collaboration. This finding presents that NIMS effectively enhances intergovernmental coordination vertically and horizontally. Although NIMS also tries to improve the interoperability among all types of responders, including those in the private and nonprofit sectors when an extreme event happens (McEntire and Dawson 2007), it only generates a limited impact on the increase of the odds that local governments will collaborate with non-governmental organizations, at least before 2005. This result can probably be explained by the criticism of NIMS about its over-formalized structure and complicated paper-work, which adds to the difficulty for local governments to collaborate with other non-governmental partners under the NIMS structure. I will provide the local EM/HS managers’ view on NIMS regarding its advantages and disadvantages in the next chapter.

Local governments with greater attention on emergency management and homeland security, which is measured by local funding on EM/HS initiatives, increase significantly their level of vertical and horizontal-interlocal collaboration, and the likelihood to collaborate with non-governmental organizations according to the analysis. This finding supports Hypothesis 5 and shows that organizational attention on emergency
management and homeland security is a significant factor for local governments to recognize the necessity of collaboration in this policy area and substantively enhance their collaboration in both vertical and horizontal contexts.

Finally, past experience with partners and disaster magnitude are two perspectives which cannot be tested empirically in this research due to the limited data. However, these two perspectives will be discussed in the next chapter through interviewing local EM/HS managers in order to understand the impacts of these two perspectives on the collaboration.
CHAPTER FIVE
FINDINGS FROM INTERVIEWS

In this chapter, the purpose is to understand how collaboration is defined from the point of view of local EM practitioners and to study why and how county and city governments in Florida conduct collaboration in vertical and horizontal contexts. The qualitative data that I collected from interviews allow me to study the topic of local emergency management and homeland security collaboration in depth and in detail through direct quotations and detailed descriptions. This provides directly the perspective of the local emergency managers which can be compared to the growing literature on collaboration in emergency management but the explanations for collaboration are often developed by scholars who may have different perspectives from local managers. I also summarize and analyze the interview responses to study the difficulties encountered in collaboration and the possible influences of local EM manager duties, local EM/HS capacity, National Incident Management System, disaster magnitude, and past experience with partners. These local EM managers’ responses provide us a practical and rich perspective to study my research questions and offer supplements and comparisons to the empirical analysis.

5.1 Definition of Collaboration

Collaboration is viewed as the key to successfully increase the survival probability of local communities during each disaster. The definition of collaboration is very general from the perspective of local EM/HS managers. Several county and city EM directors offer their definitions of collaboration as follows:

“Collaboration, I will say, is all agencies focusing on what the mission is…and everybody is working together” [ID1]

“Collaboration is about building relationships with people, especially in the pre-disaster environment.” [ID4]

“Collaboration for me is getting people to work together for a common goal.” [ID7]
“Collaboration to me is to make more people bring their ideas, resources, information...everything together to the table.” [ID8]

“It [Collaboration] is the development of interrelationships with critical partners to accomplish the mission of emergency management.” [ID10]

“Collaboration to me is a very complex term...it’s a very active word. It’s cooperation, communication...it’s a proactive term, not a passive thing. It means working together, reaching out to get that working together...reaching out to get that communication.” [ID12]

“My definition of collaboration is, when you have a number of like-minded agencies, you have the public’s interests at heart. And both [like-minded agencies] have mission statements...we work together for a common goal for design and resolve.” [ID13]

“Collaboration is when different groups obviously come together and bring different ideas together to benefit everyone...for the benefit for everybody. So everybody coming together, sharing new things, sharing ideas, tools, equipment, those types of things, and obviously knowledge in order to benefit who we’re here for, which is the public.” [ID14]

“The way we define collaboration is our interaction with other members, other communities, other governments, or just I am working with other entities outside of our own organization.” [ID 15-1]

According to the above local EM managers’ views, collaboration is a complex term about proactively building relationships through communication and interaction, particularly in the pre-disaster environment, and working together with people from diverse places, departments, and sectors for dealing with EM/HS-related issues. It is important for EM/HS workers to have a common goal and similar-minds, which refers to establishing a resilient structure to respond to emergencies and bring benefits to the public, to successfully conduct the collaboration.

5.2 Coordination, Cooperation, and Collaboration

During the interviews, it is interesting to find that most EM directors practically view coordination, cooperation, and collaboration as similar concepts which refer to
people from different places working together. But some interviewees point out that coordination or cooperation is a more basic and technical term compared to collaboration. They give the differentiation in the following examples:

I think sometimes there are differences. Coordination is just basically… I will say for the practice of the agencies making each other know what’s going on as far as what they have done. But collaboration is working with one goal. [ID1]

And so far as ‘cooperate’ means… I am just helping somebody else at some level. However, collaboration is where we are both using all of our resources in a common goal. It’s more than just supporting. [ID 9]

To me, coordination is about all of us kind of falling in the ordinary process in a certain order. But collaboration has a much more human interaction. Collaboration is working together for a common good. It requires a unity of effort for going in the same direction. Coordination sometimes…can be a little more technical. In my mind, collaboration is about the people skills also. [ID11]

In other words, they consider that cooperation is about supporting others and coordination could be just following an order to work together or share information with each other about what has been done. In contrast, collaboration focuses on forming a common goal, sharing resources, and cultivating interpersonal skills, which is related to a higher level of reciprocal interactions.

5.3 Vertical Collaboration

5.3.1 Vertical Collaborative Activities

In Florida, the county government is basically the lowest form of government to deal with disasters. It serves as the first and primary responder. County governments are treated as the regular liaison of the state and can request the needed resources and assistance from the state. If the state does not have the needed resources, the state can request assistance from other states or the federal government. City governments need to go through the county to the state if they are looking for a federal declaration. State
government usually plays a supporting role which provides trainings through conferences or workshops in normal times, and offers essential resources to the localities during the disaster. State government also passes federal funding to local governments to assist their mitigation, preparedness, response, and recovery activities. The Florida Division of Emergency Management (FDEM) is the primary state partner with local governments in Florida. According to Florida Statute 252, FDEM is responsible for “for coordination with efforts of the Federal Government with other departments and agencies of state government, with county and municipal governments and school boards, and with private agencies that have a role in emergency management.”

It is unusual for county governments to directly interact with the federal government except during a disaster, or for training and education purposes. However, county governments may receive notices from the Federal Emergency Management Agency (FEMA) when there are policy changes. FEMA will also reach out to localities when some specific projects and involvements from local governments are needed. In sum, state and federal governments play a supporting role to local governments in emergency management. One county EM director pointed out:

“Generally based on the local priority, the federal government and state government are not going to come in, take over an incident, or manage the disaster for a county’s daily-base[work], falling in more of a supporting role providing resources and expertise, or personnel or whatever you need based on the request from that local jurisdiction” [ID5]

5.3.2 Why Do Local Governments Collaborate with Federal and State Governments?

According to the responses from the interviewees, the reasons why local governments collaborate with the state and federal governments include: 1) legal requirements, 2) grant purposes, 3) resource seeking, 4) training purposes, and 5) information and voice exchange. Several county EM directors indicate that vertical collaboration is somehow defined by the laws. In Florida, Florida Statute 252 and Florida Administrative Code 9G define and regulate the role of state, county, and municipal governments and their relationships in emergency management. At the federal
level, the Robert T. Stafford Disaster Relief and Emergency Assistance Act legally authorizes local governments to send a disaster declaration to FEMA in order to receive federal public assistance through state government. In other words, both state and federal law give local governments legal reasons to collaborate with state and federal governments. It is obvious that the legal perspective could also be essential in explaining why local governments conduct vertical collaboration in the real world, although this is not tested in the empirical analysis.

Secondly, grants and finances are other incentives that explain vertical collaboration. In the previous chapter, we found that financial resource shortage and federal and state funding in EM/HS are two factors positively associated with higher levels of vertical collaboration. This result is consistent with the responses from the interviewees. Basically, looking for grants can be viewed as a key reason to explain vertical collaboration. It is particularly essential for small counties. To them, vertical collaboration is typically the grant relationship. They heavily rely on grants from state and federal governments to carry out their jobs, and arrange trainings and exercises in EM/HS because they usually lack the budget to do so. For EM/HS in counties with larger populations, and the big cities that I interviewed, they also work closely with state government to ensure they follow the state guidelines for grant applications in order to be successful in achieving grants.

Local governments seeking additional resources during a disaster are also critically motivated to pursue vertical collaboration. This refers to the basic vertical chain system of requesting resources through state and federal governments when local governments have exhausted their own resources responding to the disaster. But local governments are still the primary actor according to the local priority principle. One county EM director describes this vertical chain system as:

“When the county has utilized all its resources and needs more help, the first step is to reach out to the state and ask the state to provide additional assistance. The state will send us what we need or what they can send us. And then after that, the state will do the same [thing]. They will ask the federal government for help and the federal government will be going to provide assistance. But both the state and federal governments support the
Local governments, the county governments. So at the end of the day, the county governments still retain the control but the state and federal governments provide the assistance. So that is how our system works.”

Local governments could also collaborate with state and federal governments for the purposes of training and exercises. This factor is also positively associated with the increase of higher levels of vertical collaboration in my empirical analysis. They point out that FEMA and FDEM usually provide various EM/HS-related training opportunities through conferences or workshops. Local governments are encouraged to attend. A small county EM director describes a case about how their county EM agency collaborates with state and local health departments to conduct flu exercises. In reality, it could be too much for a small county to successfully conduct a county-wide flu exercise if they did not collaborate with the state health department.

Finally, the purpose of information and voice exchange can also be essential to vertical collaboration, which is related to the concept of mutual understanding in my empirical analysis. In Florida, county governments, on the one hand, would like to exchange information with state government to make sure all plans and procedures work properly and do not conflict with state guidelines, which is important in order to maintain good communication and a good relationship with state government. On the other hand, county governments also want their voices to be listened to by state government to certify that FDEM will not establish an unworkable EM policy or unrealistic EM plan.

5.4 Horizontal Interlocal Collaboration

5.4.1 Horizontal-Interlocal Collaborative Activities

5.4.1.1 County versus municipality

In Florida, county government is designated as the core political subdivision which is responsible for planning and implementing local EM/HS policies and activities. Florida Statute 252 requires each county to establish an EM agency and create an EM director position, while it is optional for municipal governments. But, every municipality in the same county should coordinate their EM activities with the county EM agency.
Each municipal EM plan has to be consistent with and subject to the applicable county EM plan. Therefore, in emergency management, the county serves as the leader of its municipal governments. In general, municipalities within the county usually work closely with county government but still own some level of autonomy during normal times and this pattern is most obvious in big cities. A big city emergency management deputy points out that a big city tends to be more self-supported. It will not always depend on the county for everything. However, during a disaster, county government often views other municipalities as parts of county government, and the relationship between a county and its municipalities could become more directive in disasters.

There are several county-municipality collaborative activities. In order to exchange information and opinions with municipalities, the county may arrange quarterly meeting with its municipalities and most of the municipalities will send their representatives. The county also works with municipalities or school boards within the jurisdiction to develop local mitigation strategy plans, comprehensive emergency management plans, exercises, and trainings. The county EM agency may take responsibility for the training of the city EM coordinator and make sure the county and the cities are on the same page. If a city has no EM coordinator, the county EM agency is in charge of that city’s EM business. Also, since small municipalities usually lack capacity to provide enough public safety services, the county could take care of small municipalities’ business with respect to police, fire, and emergency management. During a disaster, the county may serve as a channel to speak out for their municipalities since the county usually attracts more media attention. The county can also directly communicate the plan for a response or evacuation with municipal managers or majors by conference calls from an Emergency Operation Center (EOC) and inform the municipalities if there is any specific issue or problem.

A large county government may find other ways to organize their relationship with its municipalities, in particular, using the regional approach. A large county EM director mentions that the regional approach is used in their county to structure its county-municipality relationship in emergency management. The county is divided into several regions, and municipalities within the same region are expected to share resources
or collaborate with each other during the emergency. The county will come to help when the municipalities have exhausted their resources.

5.4.1.2 County versus county

In Florida, collaboration between neighboring counties or among county governments in the same region is common and frequent. For example, in normal times, the county may work with neighboring counties to write a proposal to apply for state or federal grants for mitigation. Informal and formal relationships among counties can be built through joining professional networking organizations, such as the Florida Emergency Preparedness Association or local emergency management councils, or attending conferences and workshops.

County governments which are in the same state region of emergency management frequently cooperate with each other. Each region has a coordinator who is responsible to communicate with county EM directors within the region about the daily basic issues related to emergency management and serve as the county government voice to the state government. Counties in the same region may meet together quarterly to update each other’s information and working progress in emergency management. Communication through phone calls and emails on a daily basis to exchange information about work is also common. It helps counties to understand and support each other. These pre-event relationships and collaborations are very critical in order for each county to know their local partners.

When a disaster or an infrequent event happens, the administrative boundary becomes hard to define. The county and its surrounding counties are like siblings, which face similar risks and problems. Thus, it is necessary for them to collaborate with each other to address the needs of the community. The county-county collaboration during a disaster is generally regulated by a mutual-aid agreement. Such an agreement is written between governmental agencies to support each other, primarily in the areas of fire, law enforcement, and emergency medical services. Florida Statute 252.40 authorizes local governments in the State of Florida to develop and sign mutual aid agreements within the state for the purpose of “reciprocal emergency aid and assistance in case of emergencies too extensive to be dealt with unassisted.”
According to the description from an interviewee, there are three different types of mutual aid agreement, including an automatic aid agreement, a local mutual aid agreement, and a statewide mutual aid agreement. The automatic aid agreement is for dealing with a situation when the governmental agency recognizes it does not have adequate resources to effectively respond to the emergency and thus needs to request other agencies to offer support. The closest joining agencies or agencies which are in the automatic aid system will automatically dispatch their resources to the requesting agency.

Usually, a local mutual aid agreement begins to work when a disaster of long duration occurs, such as a wildfire or a hurricane which affects several counties. A local agency that does not have enough resources will request aid from other local agencies which had previously signed the written mutual aid agreement. The agencies being requested will be reimbursed their costs for providing assistance from the requesting agency.

There is a statewide mutual aid agreement for responding to large events that exceeds the capacity of any single local government to cope with. FDEM coordinates the assistance between local governments during disasters and concentrates available resources where needed. This agreement also certifies timely reimbursements.

5.4.1.3 Big city versus other municipality

Compared with small or general size municipalities, the big city seems to play the role of big brother. A big city takes care of other neighboring small municipalities and speaks out for them. Local EM managers in a big city indicate that they usually arrange meetings and invite the neighboring municipal governments to attend. The purpose of these meetings is to understand the needs of these municipalities and help the EM agency in the big city to speak out for these relatively small municipalities when communicating with the county EM agency. In other words, a big city bridges the small municipalities to the county government. The collaboration between a big city and its neighboring relatively small municipalities can be tight.

5.4.2 Why Do Local Governments Collaborate with Other Local Governmental Agencies?
Based on the interviews, Florida local governments collaborate with other local governmental agencies for several reasons: 1) to follow legal requirements, 2) to receive grants, 3) to seek resources, 4) to provide resources, 5) to exchange information and intelligence, and 6) to share similar risks. Let me provide more detail on each of these purposes.

The legal requirement is a critical rationale used to explain horizontal-interlocal collaboration based on the interview responses. They informed me that county-municipality collaboration is required by Florida Statute 252. Moreover, the statewide mutual-aid system also forces local governments to collaborate with each other when a large scale disaster strikes the State of Florida.

With respect to the grant purpose, the empirical analysis shows that dependency on federal and state funding is a significant factor that positively increases the level of horizontal-interlocal collaboration. From the practical standpoint, local EM directors/managers in city and county governments both mentioned that they collaborate with each other when applying for federal and state funding. It is especially beneficial for small counties and small cities to work with their neighboring local governments to design a regional project. They can propose a more influential and attractive project and spend less time and effort in doing so. In fact, state and federal governments also currently encourage partnership and collaboration when applying for grants. A big city EM coordinator points out:

“The new requirement for most grants, specifically those that are issued by any emergency management or homeland security agency, is a partnership. So, often time we will collaborate in the region to go after a grant, such as our Urban Area Security Initiatives, the UASI grant, and the metropolitan medical response system grant” [ID15-2]

Seeking resources and support, especially for physical resources and human resources, is another way to explain collaboration among local governments. Although the layoff problem in EM/HS-related areas does not seem to be a significant factor in explaining horizontal-interlocal collaboration in the empirical analysis, several city and county EM directors did mention that they collaborate with each other for physical resources, and...
resources (i.e. generators or vehicles) or personnel support (i.e. firefighters or law enforcement officers) during a disaster. This resource-searching purpose could be particularly important to local governments with a small population. Although a small county may employ a self-sufficient strategy to operate its emergency management and encourage its EM professionals to cover multi-functional efforts, an EM agency in a small county or city can usually only handle daily EM tasks. When an emergency happens, it is still necessary for a small local government to request assistance through the mutual-aid system from other counties or municipalities which own adequate resources.

In the horizontal context, a local government can be not only a resource-seeker but also a resource-provider in the collaboration. The interviewees mentioned that a large county or big city is often requested by other small local governments to provide assistance. In the same region, a larger county usually owns more resources and has more employees and therefore is often viewed as the resource-provider to assist a small county. Similarly, in a county, the big city also plays the part of big brother and partner with other municipalities. A big city may study the needs of neighboring municipalities and local communities by organizing meetings and will speak for the small municipalities when they need to communicate with the county. When the big cities successfully get grants from the federal government, such as Urban Area Security Initiatives, they usually serve as the funding-administrator for all other municipalities in that area and distribute the funds based on the needs or training in each municipality.

Sharing information and intelligence also explains why local governments collaborate with each other. In the empirical analysis, including mutual aid partners in emergency planning and preparedness activities, which can be viewed as an information-sharing or information exchange process among partners, significantly increases the level of horizontal-interlocal collaboration. The result is consistent with the interview responses. Both county and city EM directors/managers point out that sharing information and intelligence can help them understand each other's positions, make sure everyone stays on the same page, and decrease political squabbles, which is helpful to the success of collaboration and emergency management itself.
Finally, many local EM directors indicate that they collaborate with neighboring counties or municipalities because they have commonalities and they share similar risks. Put differently, for local governments, the community attributes seriously influence who they should collaborate with. Just like a county EM director said:

“So I collaborate horizontally with my partner which is south of me because we share a lot of emergency management commonalities. When it comes to an emergency, we’re going to deal with urban fire issues,…or Hazmat issues.” [ID12]

5.5 Horizontal-Intersectoral Collaboration

5.5.1 Horizontal-Intersectoral Collaborative Activities

5.5.1.1 Local government versus for-profit business

In the horizontal context, local governments not only collaborate with other local governments but also work closely with private companies and local businesses. For example, when the EOC is activated, representatives from the utility companies, telecom companies, infrastructure providers, and local chambers of commerce or economic development councils are seated on the EOC to understand the latest information about the emergency and see what kinds of assistance they can offer. Local restaurants or fast-food chain stores also donate their food to serve rescue staffs, community volunteers, and disaster-survivors. Local grocery stores work with the county EM agency and try to keep open as usual in order to certify that local residents can instantly buy food, water, and other necessities from them during and after the disaster, which is important for the public to pass from the response stage to the recovery stage. A city EM manager gave an example that Walgreen’s and Wal-Mart have partnered with the city through signing a Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA). Through these documents they will identify the needs of the localities and provide assistance.

Private companies or local businesses also frequently collaborate with a local EM agency during normal times. For instance, some county EM directors state that they have collaborated with hardware stores, such as Home-Depot or Lowe’s, to advocate EM preparedness activities through sponsored TV commercials during the pre-event time.
Such collaborative activity provides the local EM agency a free chance to get attention from the public through a TV spotlight. Another private partner with the local EM agency is a theme park, which is a large mass gathering area. There are many famous theme parks in the State of Florida that attract many visitors each year. These theme parks usually continue to train themselves to efficiently evacuate visitors in an emergency. The local EM agency will closely work with them to ensure they have adequate resources to either mitigate the potential event, and also to be prepared with resources to respond if something happens.

5.5.1.2 Local government versus non-governmental organizations

Non-governmental organizations, such as the American Red Cross, Salvation Army, United Way, Southern Baptist Kitchen, and Goodwill, are other groups which heavily collaborate with local governments. In order to totally understand the profession and capability in each non-governmental organization, a local EM agency may regularly or quarterly meet with local non-governmental groups to share information and discuss emergency management issues with each other.

Compared with private companies, non-governmental organizations are viewed more philanthropically as they like to work voluntarily with local governments. They consider human needs and are also involved in the community. They provide shelter, medical services, food, and clothing during a disaster. A small county director mentioned that:

*I will ask help from non-profit [organizations] if I don’t have enough manpower. Like if I had a family that lost their home…we don’t even have a clothing store here, so we may have to have the United Way four miles away send them [the family] the clothes or whatever to help the families or send furniture to help the family, not relying on the staff from other [public] agencies. The non-profit…we have the network and they all work together and try to get the supplies you need to victims.* [ID9]

These non-governmental organizations may partner with local governments to provide assistance through signing memorandums of understanding according to the interview responses. Local faith-based groups are also important volunteer partners who
provide manpower to local governments in response to a disaster. The director of a large county said:

“There are lots of churches within our communities. They have large followings…that is a huge resource there in the way of manpower and facilities…we try to work with the faith-based organization as well.” [ID2]

Each non-governmental organization has its own strength to provide diverse assistance in an event. A local EM agency collaborates with these partners depending on what they can do best. It is the local EM agency’s responsibility to recognize the professional capabilities in each group and assign them appropriate duties when responding to each different disaster:

“You just learn what people are capable of and what they aren’t capable of. And you simply just play with their strengths. When you know somebody could do something well, you let them do it. But, there is something they simply can’t do well or can’t do it at all, you have to know what those things are and try your very best to compensate.” [ID4]

5.5.2 Why Do Local Governments Collaborate with For-Profit Businesses and Non-Governmental Organizations?

Generally speaking, there are three main reasons to explain why Florida local governments conduct horizontal-intersectoral collaboration in emergency management and homeland security, including: 1) resource-seeking, 2) intelligence-requesting, and 3) consulting. Searching for funds is not the key to explain this type of collaboration according to the interviews.

To local governments, cross-sector collaboration is an effective way to request physical resources and manpower during a disaster. For example, the county EM agency may decide to evacuate local residents and establish emergency shelters when the county is seriously hit and damaged by a storm or a hurricane. The county EM agency may request and receive donated foods from local restaurants or fast-food chain stores; water, blankets, and energy cookies from grocery stores; flashlights, batteries, and generators from hardware stores; and medicine from local pharmacies. At the same time, lots of
volunteers from non-profit organizations and faith-based groups give their manpower to help the county establish shelters, cook food, provide emergency medical services, and care for disaster-survivors. The county government usually lacks money and manpower to directly buy these substantive resources and provide the above services, especially in a small county or municipally. Requesting goods and manpower becomes an incentive to conduct horizontal-intersectoral collaboration. Although a layoff problem in EM/HS-related areas is not a statistically significant factor to explain why local governments collaborate with non-governmental organizations based on the empirical analysis conducted, many interviewees agree that local governments have faced layoffs, especially after a financial crisis. It is hard for them to maintain the original EM service level if they only rely on current public employees to provide these EM services. Volunteers from non-governmental organizations actually provide in time manpower to support local governments instantly responding to emergencies.

Requesting intelligence and professional services from for-profit businesses and non-governmental organizations is the second main reason given to explain horizontal-intersectoral collaboration based on the interview responses. Counties and municipalities have to collaborate with utility companies, telecommunication companies, and infrastructure providers to restore electricity, water, roadways, cable, and phone systems as soon as possible. The empirical results also show that a local government that needs training or technical assistance in emergency planning, preparedness, and response is more likely to collaborate with non-governmental organizations. The non-governmental organizations usually offer professional services which local EM agencies cannot provide. For instance, during a disaster, the American Red Cross is known for its capability in providing emergency housing, emergency shelters, and emergency medical services. Local community associations usually know the neighborhood and local needs better. Therefore local government needs their help to effectively and efficiently respond to a disaster or evacuate the residents. A city EM deputy pointed out that:

“They know the neighborhood. They know the people. They get out there more than we do. And then we can’t do it all, so we need them to be able to help to respond [to the disaster] with us....” [ID14]
Finally, during their interviews, several EM directors from large counties proposed that horizontal-intersectoral collaboration can be understood as a consulting process. A local EM agency can be viewed as a consultant who provides local businesses professional advice for improving their skills and knowledge in emergency management and industrial security. This tendency becomes more obvious when security issues are highlighted more and more since the 9/11 event. Although this perspective is not tested in my empirical analysis, several directors from large EM counties pointed out that local businesses have increased their interest in EM/HS-related issues and like to partner with county government because it can enhance their own capability for EM planning and increase their knowledge about protecting infrastructure. It is similar to purchasing insurance.

“I would say that the business partners partner with us because it’s good for them to be included in planning and also in the hardening and strengthening of their own capabilities and their own facilities. So they are doing it more for as a …almost like an insurance policy for their own business.” [ID10]

5.6 Difficulties of Collaboration

Although conducting vertical collaboration is usually viewed as a good way to bring benefits to local governments, several county EM directors mentioned the difficulties they face during vertical collaboration, such as shortened personal relationships, lack of information-sharing, and intervention from higher levels of government. Although building personal relationships with a state or federal agency through vertical collaboration can be beneficial, these relationships may not last long due to a high rate of turnover. A state or federal agency employee who is in charge of EM/HS-related projects may resign or leave to take another position in another agency. Local governments have to build a new relationship with a new employee, which takes time and effort. Moreover, establishing personal contacts at the federal level is also limited because it is unusual for a county or a city to have direct contact with those federal agencies.
Another county EM director proposed a potential information-sharing problem. There could be a lack of a two-way information sharing process during vertical collaboration. Local governments sometimes do not receive instant feedback from higher level governments. Finally, a challenge resulting from vertical collaboration could be the over involvement of a higher level government. Local governments sometimes feel that state and federal governments intervene too much in the local government’s discretion, which disobeys the local priority principle in emergency management. A county EM director said:

“I say it’s a weakness… only when the governments above me want to try to run the operation…. It would be like me trying to tell a doctor how to do his job. If you want me to do the job, sign the paper, and please move out the way. Let me do my job for you. And I take full responsibility for anything that happen. So it does get difficult in the vertical [collaboration], I’d rather operate a flat, horizontal organization.” [ID1]

In the horizontal context, conducting collaboration for local governments is also not an easy task. For example, several small county directors argue that they do not have enough resources, manpower, and training to conduct collaboration. For larger counties, collaborating with their municipalities is complicated because each municipality in the county may have different issues. The county needs to not only treat them individually and approach them separately but also make sure they are on the same page.

The rivalry for funds among public agencies can be harmful to the collaboration. A county EM director acknowledged that inter-agency competition for limited federal funding does exist and may weaken collaboration. Sometimes, agencies not only compete with each other for funds but also for media attention. A county EM director indicated that each agency will compete for media attention to be the top agency when local EM agencies collaborate with non-profit organizations or with public agencies, because attracting media attention helps agencies attain higher budgets or donations for the next year.

Organizational characteristics and institutional structures also make collaboration complicated. An interviewee indicated that each agency, like each human, has its own
characteristics. It is not easy for local EM agencies to manage and work with these agencies, especially when conflicts and competition do exist among them. Therefore, interpersonal skills and interagency skills become necessary to succeed with collaboration. Collaborating with non-governmental organizations is also not an easy task for local EM agencies. This is because non-governmental organizations have different institutional structures and dissimilar working styles compared to governmental agencies.

A county EM director said to me:

“Are they [non-governmental organizations] easy to work with? No. They probably say that ‘We are easy to work with.’ No, because they have different institutional structures than government’s way to do business. That’s one of the reasons why we have to collaborate, and have good relationships with players who oversee these things” [ID6]

5.7 Local Emergency Management Manager Duties and Collaboration

In the empirical analysis, it is found that, for local governments, hiring a specific manager to coordinate EM/HS functions at all levels of government is not a statistically significant factor to increase the level of vertical collaboration and horizontal-interlocal collaboration, or increase the odds of collaborating with non-governmental organizations. However, hiring an EM/HS manager in local government could generate a positive impact on these three types of collaboration through the EM/HS capacity.

The interview provides us another channel to study the relationship between a local EM manager position and collaboration. According to Florida Statute 252.38, the duty of a county EM director is to coordinate emergency management activities, services, and programs within the county and serve as the liaison between the state and other local emergency management agencies. Based on the interview responses, local EM directors/managers generally think their job is to: 1) receive information from the higher government, and depict and certify the local EM plan to follow the federal, state, and county EM framework, 2) enhance local EM capacity, such as applying for grants for mitigation and preparedness activities, conducting EM/HS drills or exercises, and educating administrative agencies and the public about EM-related intelligence, 3) make decisions, calm down the public, and assure the public that the government will provide
the necessary assistance during a disaster, and 4) encourage or implement various
collaborations for successfully dealing with all types of emergencies and disasters. The
interviewees informed me that they have no substantive authority until the local or state
emergency is activated. Local governments are not the people who stand at the first line
to rescue the public and they also have no substantive authority to force or command
other agencies. They can only bring partnering agencies to the same room and help them
collaborate with each other. Two county directors commented on their job in this way:

“I am not actually out there in the field, saving lives… you don’t see me
out there on the beach with the microphone predicting weather. Again, I
am not the one doing the fascinating work. I am the conductor, think of
orchestra, I am not playing the instrument. I am just conducting and I am
the one going to motivate all of the people to play the music, play their
instruments beautifully. And that’s what I do. If I can’t encourage that
collaboration, then I’ve failed.” [ID12]

“I think it is our job to educate and inform the administration of the local
government on what could happen, what needs to be done, should that
occur, and who needs to help to do that. Because, honestly, the community
cannot do this and government cannot do this on their own. It has to be a
community-wide effort. And one of our tasks is trying to bring different
entities within the community together by using collaboration and
coordination to address whatever did happen.” [ID2]

Moreover, in order to complete their duties, they must understand their personal
abilities and quickly adjust to different situations and emergencies. A county director
said:

“Emergency managers have to be flexible in terms of adjusting to different
situations, different emergencies, also adjusting to different leadership
styles based on people’s behavior. So first of all having a good
understanding of your own behavior and how you respond, how your
leadership skill responds to those emergent situations. It’s critical to be able to adjust and account for other people.” [ID6]

In sum, it is interesting to find that interviewees generally think that they only have limited position powers. But they agree that local EM/HS capacity enhancement and collaboration implementation are the core duties of their job. A successful local EM director/manager therefore should be flexible, be equipped with good interpersonal skills, and be able to rapidly adjust to all kinds of situations since collaboration is always expected and encouraged.

I also interviewed local EM directors/managers to understand whether the 9/11 event brought any changes to their duties or to the role of the local EM agency. According to their responses, it did not change that much after 9/11. From an all-hazard approach perspective, local EM directors/managers still think that homeland security is just one type of hazard which has been included in the emergency management system. However, homeland security is indeed highlighted and receives more attention in their daily work. For example, the county did more weather-related disaster trainings and exercises before 9/11. After 9/11, more resources were granted to enhance local intelligence about terrorism and improve local capacities to prevent and respond to homeland security-related events or man-made disasters. Local governments, therefore, learn and gain more knowledge to protect their infrastructures and prevent terror attacks. The relationship between the local EM agency and the local law enforcement agency has also been strengthened. The federal government has become more proactive in requiring localities to have collaborative projects in homeland security issues.

5.8 Local EM/HS Capacity and Collaboration

Local EM/HS capacity, which is measured as the local government’s ability to deal with all kinds of hazards, is a very significant factor associated with the increase of vertical collaboration and horizontal-interlocal collaboration, and is associated with a higher probability of engaging in horizontal-intersectoral collaboration according to the results of the empirical analysis. During the interviews, I asked local EM directors/managers their opinions about local EM/HS capacity. They generally agreed
that local EM/HS capacity enhancement and maintenance is very essential and can be viewed as an important part of their job duties. Interviewees also indicated that local governments’ metropolitan status, geographic location, population size, federal and state grants, local EM resources, EM trainings, and local EM agency size can influence their level of EM/HS capacity, which changes the way local governments respond to emergencies and why they engage in various collaborations. For example, a small rural county with a lower EM/HS capacity has to ask for additional resources from neighboring counties or from the state to respond to an incident, which a large urban county with higher EM/HS capacity could probably handle by itself. A larger urban county with a strong EM/HS capacity can extend their collaboration by providing physical resources to assist neighboring small counties, playing the role of consultant to offer EM/HS-related advice to local businesses, or speaking out as the local voice to state government and further participating in state EM/HS planning. Moreover, we also find that the interviewed county and city EM/HS directors all have extensive experience in EM/HS-related areas and have worked in this area for a long time. In other words, these local EM/HS managers are professionally appointed instead of politically appointed. The professional knowledge and experience of these local EM/HS managers can also help to improve local EM/HS capacity.

5.9 The National Incident Management System (NIMS) and Collaboration

According to FEMA, the NIMS is a national standard that “provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment.” Based on the result of the empirical analysis, the adoption of NIMS can be viewed as a statistically significant factor which is positively associated with a higher level of vertical collaboration and horizontal-interlocal collaboration. But it is only weakly associated with the adoption of horizontal-intersectoral collaboration. Compared to the empirical analysis, Florida city and county EM directors generally view

9 http://www.fema.gov/emergency/nims/AboutNIMS.shtm
NIMS as a useful and important system/model to make people use the same rules, structures, procedures to quickly respond to a disaster. People at different places can use the same language to communicate, which helps to increase efficiency and decrease misunderstandings during an emergency. Everyone can be on the same page. However, NIMS still faces criticism from the local perspective. For example, NIMS is criticized as a top-down system which is full of paper-work and involves a tedious procedure. It is also hard to use because FEMA keeps changing or revising the content of NIMS. NIMS is criticized as a system that formalizes a lot of the relationships that do not need to be formalized. Therefore, local governments lose their flexibility to respond to incidents. A county EM director argues that NIMS is a tool for the federal government to intervene in local government activities in emergency management and homeland security. It ruins the principle that “all disasters are local.”

5.10 Hazard Recognition, Disaster Severity, and Collaboration

In my theoretical framework, disaster magnitude is listed as one of the external factors, which leads to the increase of collaboration in both vertical and horizontal contexts. But, in my empirical analysis, I cannot include this factor into my models and study its impact on different types of collaboration due to the data limitation. Fortunately, the influence of disaster magnitude on collaboration can still be studied through interviewing local EM directors. Several county EM directors point out that hazard recognition and disaster severity influence a local government’s attitude toward collaboration. Two large county EM directors mentioned that:

“I think probably the greatest motivating factor for collaboration is when they recognize the hazard exists and could impact them. Agencies we traditionally didn’t work with prior to the 2004 hurricane season, we’re getting calls all the time after that… Now some of those people know ‘Okay, if you live in Florida, you have a hurricane problem.’ That goes across citizens, business and industry, to government leaders.” [ID3-1]

“When an emergency exceeds that emergency threshold and becomes a disaster, then I need to be able to look to other agencies to support my
activities. That respect is not uncommon. If we can’t find resources locally then we reach vertically to the state warning office, the State Division of Emergency Management, who is at the state level of coordinating agencies.” [ID13]

Put differently, when local governments recognize the existence of hazards in their jurisdictions that could bring damages to them, they are more willing to collaborate with all levels of government, for-profit businesses, and non-governmental organizations. When an emergency scales up to become a disaster and local governments cannot respond to it only relying on local resources, local governments will search for outside support through all types of collaboration to deal with this disaster.

5.11 Past Experience, Relationship-Building, and Collaboration

Past experience with partners is another factor that I list in my theoretical framework but cannot test in my empirical models due to data limitations. According to the literature, the past experience of partners will hinder or facilitate future collaboration. If A organization had collaborated with B organization previously with a good experience, A is more likely to keep collaborating with B. During the interviews, it was found that the influence of good past experience is often understood as the importance of good relationship. Based on their opinions, collaboration is built in relationships. Good relationships facilitate good collaboration in emergency management. Several local EM directors emphasize that building and maintaining relationships with all current or potential partners during normal periods of time is important and necessary, which can help local EM agencies to rapidly and smoothly collaborate with all partners during an emergency. An EM director from a small county indicated that:

“Collaboration is about building relationships, especially in the pre-disaster environment. Nobody wants to meet somebody for the first time when the worst disaster comes in, especially in this small rural community such as we are.” [ID4]
A good relationship in a normal time period can be developed by accumulating positive experiences in daily interactions and communications. Regularly keeping in touch with current or potential partners whom you may know from the workplace or training workshops and further creating friendships with them is also thought to be a strategy to establish a good relationship. Another EM coordinator from a large county pointed out that:

“The relationship, you’re going stay in touch with them and become friends with them. I would say we are good friends with most communities, people from organizations we deal with. So you have friendship more than just a business association…. So it is about going from business partnership to actual relationship. And staying in touch in the off time even when we are not meeting” [ID3-2]

In sum, for local EM agencies, creating and maintain good informal and formal relationships with all current and potential partners is critical since collaboration is always expected and demanded. They believe that collaboration can be broken down when the relationship becomes inharmonious. Therefore, they try hard to keep good relationships with partners to prevent disharmony and conflicts.

5.12 Discussion

In this research, local EM/HS managers provided their views and definitions of collaboration. Collaboration, in which people from different places build long-term relationships and work together to achieve the same goals, is widely viewed as a necessary process in emergency management and homeland security to employ limited resources and manpower to handle expected and unexpected disasters. This is close to the concept of “collaborative emergency management” proposed by Kapucu et al. (2011). Local EM/HS managers’ definition also highlights the importance of mutual goals, partnerships, and problem-solving in constructing the meaning of collaboration, which current literature has also emphasized (Agranoff and McGuire 2003; Ansell and Gash 2008; Bardach 1998; Emerson, Nabatchi, and Balogh 2011; Gazley 2008; McGuire 2006). The interviewed local EM/HS managers particularly underscored relationship-
building and relationship-maintenance with partners in pre-disaster times, which becomes one characteristic of collaboration in this policy area.

The current literature has worked hard to differentiate coordination, cooperation, and collaboration and has argued that collaboration is at a higher level of sharing authority, power, resources, and information than cooperation and coordination (Bryson and Crosby 2008; Bryson, Crosby, and Stone 2006; Kapucu et al. 2011). It is interesting to find that most local EM directors did not particularly distinguish coordination, cooperation, and collaboration in their work, according to the interviews. They generally considered that these are similar terms that refer to people from different places working together. However, some directors agreed that there are differences among these terms. They thought that cooperation is about supporting others and coordination is about following clear orders to work together or share information. In contrast, collaboration is related to building a common goal, sharing resources, and establishing interpersonal skills, which is a substantively reciprocal interaction. In other words, for local governments, collaboration may not only mean to work together for a common purpose but also refer to deeper and substantive interactions and relationships with partners.

Regarding vertical and horizontal collaborations, in the context of emergency management and homeland security, local governments vertically work more closely with state government than federal agencies, which follows the local-state-federal structure that is traditionally designed under the system of American style federalism (Elazar 1962; Grodzins 1966; Kapucu, Arslan, and Demiroz 2010; O'Toole and Meier 2004; Wright 2007). It is interesting to find that horizontal collaboration seems more vigorously used than vertical collaboration. Although local governments may collaborate with state and local governments for grants, trainings, resources, information, or for legal requirements and agenda-setting, local EM/HS managers still think vertical collaboration is relatively less common than horizontal collaboration. They are sometimes afraid of the intervention from higher levels of government. Local governments emphasize the principle of “all disasters are local” and want to strengthen their autonomy. They view higher levels of government as the supporter not the commander, but they acknowledge that when disasters happen, federal officials come afterwards and try to take charge and override local actions.
In the horizontal context, local governments frequently collaborate with public agencies, other local governments, business industries, and non-profit organizations either to develop mitigation and preparedness activities, or to respond to and recover from the disaster. In Florida, the county leads and coordinates its municipalities or local EM/HS-related initiatives. Municipalities within the county still own some level of autonomy during normal times and this pattern is most obvious in big cities. A big city serves as big brother to take care of other neighboring small municipalities and speaks out for them. But, the county-municipality relationship becomes relatively directive during a disaster. County-county collaboration can be conducted through writing a grant project in normal times or activating a mutual-aid system to supply resources to each other during a disaster. Local EM directors popularly believe that surrounding counties are like their siblings, which face similar risks and problems, and therefore they should help each other get through the emergencies.

The necessity of the private sector and non-governmental organization participation for developing preventive or responsive actions in emergency management and homeland security has been recognized (Brudney and Gazley 2009; Kapucu, Arslan, and Demiroz 2010; Patton 2007; Waugh and Streib 2006). The proponents argue that their involvement in responsive actions can effectively increase the capacity and scope of the response. Including them in the planning stage also helps public managers to understand their partners in advance and makes cross-sector collaboration work efficiently during the disaster (Brudney and Gazley 2009). My interview findings also identified that the private sector (i.e. utility companies, telecommunication companies, theme parks, grocery stores, restaurants, pharmacies, and hardware stores) can provide some substantive physical resources or professional knowledge to assist local governments to deal with the disaster. Compared with private companies, these non-profit organizations are thought to be more philanthropic and more willing to voluntarily work with local governments. Non-profit organizations offer lots of volunteers, equipment, and professional knowledge to work with local governments for opening up and constructing shelters, and providing heated food and emergency medical assistance. Many volunteers actually come from faith-based organizations. Local governments have
recognized the importance of cross-sector collaboration and regularly include partners from different sectors in all stages of planning and responding.

There are six reasons to explain why Florida local governments collaborate with each other according to the interviews: 1) to follow the legal requirements, 2) to successfully receive grants, 3) to seek resources, 4) to provide resources, 5) to exchange information and intelligence, and 6) to share similar risks. Regarding horizontal intersectoral collaboration, seeking resources and manpower, requesting intelligence, and providing consultation are the three main factors that motivate local governments. Financial incentive is not a top reason to explain horizontal collaboration although local governments may work together in developing a regional grant project to apply for funding from state and federal governments. Compared with vertical collaboration in which the local government usually is the resource-recipient, it is interesting to find that local governments conduct collaboration horizontally not only for requesting resources or information but also for providing support, intelligence, or consultation. Particularly, after /911, more private companies are concerned with security issues and ask for EM/HS-related knowledge and assistance. Local EM/HS managers generally believe that providing support to local communities through collaboration, especially during a disaster, is their duty. They think such collaboration is reciprocal and essential.

Local emergency management and homeland security collaboration can always be full of difficulties and challenges (Caruson and MacManus 2011; Kettl 2003, 2006b; Scavo, Kearney, and Kilroy 2007). Inconsistent communication, dysfunctional coordination, rule and legal complexity, and competition for funding can disturb the collaboration. Similar results are found in the interviews. In the vertical context, hard to maintain long-term relationships, the shortage of information-sharing, and overintervention from higher levels of government are mentioned as major difficulties. In the horizontal context, a lack of resources and manpower is problematic in conducting collaboration, especially for small jurisdictions. The rivalry for funds among public agencies could be particularly harmful to interlocal collaboration. Different organizational characteristics and institutional structures also make cross-sector collaboration more complicated.
The local EM/HS manager is important to lead, design, and implement the local EM/HS policy and conduct collaboration. Their job duties are: 1) to communicate and coordinate with higher levels of government in normal times and in emergencies; 2) to handle grant applications and administration, 3) to follow federal, state, and county EM/HS frameworks and to design the local EM/HS plan; 4) to improve local EM/HS capacity through trainings, drills, exercises, education; 5) to comfort and assist the public during the disaster; and 6) to implement various collaborations for successfully responding to all kinds of emergencies and disasters. Although they are not the people who stand on the front line to rescue people, they have to handle daily EM/HS work well and be ready to face any emergency at any time. Therefore, a successful local EM/HS worker should have good interpersonal and political skills and be flexible and adaptive to the environment, which current studies have particularly highlighted (Kapucu, Arslan, and Demiroz 2010; Waugh and Streib 2006; Wise 2006). Particularly, EM/HS capacity improvement is not only an important part of a local EM/HS’s job duties but also essential to collaboration. The metropolitan status, geographic location, population size, federal and state funding, local EM/HS resources, EM/HS trainings, and local EM/HS agency size can vary according to local government’s EM/HS capacity level, and further influence how local governments respond to emergencies and disasters through conducting various collaborations. The professional knowledge and experience of local EM/HS managers can also serve a critical role to enhance local EM/HS capacity.

NIMS was originally a national standard which was designed to foster collaboration among all levels of government. However, it is criticized as a synonym of federal control (Lester and Krejci 2006). From the interviewees’ perspective in this research, NIMS is generally viewed as a useful system which helps people in different places communicate efficiently and effectively and therefore decrease misunderstanding during an emergency. However, the over-formalized structure, the centralized control, and the tedious paperwork were mentioned as problematic for local governments, when using NIMS for collaboration.

Past positive experiences with partners and disaster magnitude identification are two theoretical perspectives that have been recognized to be critical to the increase of collaboration, but cannot be tested empirically in this research (Agranoff and McGuire
2001; Ansell and Gash 2008; Connelly, Zhang, and Faerman 2008; Henstra 2010; McGuire and Silvia 2010; Rubin 2007; Thomson and Perry 2006). Based on the interviews, keeping positive informal and formal relationships with all current and potential partners is a good way to generate positive interactive experiences and encourage collaboration. It is believed that collaboration can be hurt or can be hard to develop if the relationship becomes disharmonious. Local EM/HS managers also agree that hazard recognition and disaster severity encourage local governments and communities to pay more attention and invest their resources in emergency management and homeland security. Once a large scale disaster happens and cannot be handled locally, the local government will seek outside support and resources through collaboration vertically and horizontally to deal with the disaster.

Overall, the interview findings show quite consistent results across local jurisdictions with different populations in the State of Florida. Although motivations behind each type of collaboration may vary, both county and city EM/HS managers recognize the importance and necessity of vertical and horizontal collaborations and view collaboration as a critical part of their job. They view themselves like a conductor in a symphony who does not actually play any instrument but is responsible to certify that the team members to play a beautiful melody. Collaboration is identified as the foundation of emergency management and homeland security.
CHAPTER SIX

CONCLUSION

Collaboration has become one of the most important research topics in emergency management and homeland security. Since local governments are designed as the first line to respond to all kinds of emergencies in the U.S., collaboration is generally viewed as a useful strategy for local governments to effectively manage cross-sector resources for handling both natural and man-made disasters. Collaboration is also critical for local governments to connect with higher levels of government and governments in different local jurisdictions and therefore reduce the possible vertical and horizontal fragmentation in managing disasters. This research recognizes the importance of collaboration in local emergency management and homeland security, and is particularly interested in how local governments observe, operate, and define collaboration in their daily work on emergency management and homeland security. In turn, this work provides a chance to connect local practical views with the theoretical intergovernmental collaboration literature.

This study is also interested in whether or not local governments have different incentives when they conduct different types of collaboration in emergency management and homeland security, which the current literature still discusses rarely. This research categorizes collaboration into three different types (vertical collaboration, horizontal-interlocal collaboration, and horizontal-intersectoral collaboration) and develops a framework with three dimensions, including organizational internal factors, organizational external factors, and emergency management/homeland security (EM/HS) capacity to study and compare the impacts of these dimensions on collaboration. This research hypothesizes that there is a potential mediating effect of EM/HS capacity between organizational internal factors and collaboration, and between organizational external factors and collaboration and tries to use the empirical analysis to test this mediating effect.

In order to answer the above questions, a mixed-method approach was applied in this research, in which both quantitative analysis and qualitative analysis are used, to study the research questions. Utilizing the mixed-method approach helps this research to
provide both theoretical and contextual views and advance the current literature related to the topic of local emergency management and homeland security collaboration. The ICMA 2005 Homeland Security Survey data is used to conduct the quantitative analysis and test hypotheses based on the framework. Fifteen county and city emergency management directors/managers in the State of Florida were interviewed to collect qualitative data. These interviews provide us a rich and practical understanding about local emergency management and homeland security collaboration, which not only supplement the limited empirical analysis but also present contextual information and knowledge for us to further study collaboration in this policy area. In the following sections, the contributions of this dissertation are proposed and summarized. The research limitations and possible future studies are also addressed.

6.1 Contributions

First, this dissertation contributes to proposing a definition of collaboration in emergency management and homeland security based on the practitioners’ view. Collaboration can be defined broadly as “people from different places build long-term relationships and work together to achieve the same goal” according to local EM/HS managers’ perspective. Collaboration is consensually seen by EM/HS practitioners as a vital and necessary process to manage limited resources and manpower for handling expected and unexpected disasters, which may not be agreed upon consensually in other policy areas. Relationship-building and relationship-maintenance with partners in the pre-disaster times are especially emphasized. This dissertation particularly finds that local EM/HS managers do not generally differentiate collaboration from cooperation and coordination in practice, although in a small part of my sample, collaboration refers to a more substantive and long-term reciprocity with a common goal compared with cooperation and coordination. In the academic research, there are many theoretical discussions related to distinguishing what cooperation, coordination, collaboration are. However, these concepts may be vaguely understood in the real world. This dissertation identifies this academia-practitioner gap and advocates future research to fill this gap.

Second, this research substantively demonstrates how local governments view and operate collaboration in the vertical and horizontal contexts, which provides us a better
understanding of local emergency management and homeland security collaboration. In
general, local governments follow the local-state-federal structure and vertically work
more closely with state government than federal agencies according to the interview
responses. However, vertical collaboration is still less used than horizontal collaboration.
Local governments sometimes fear the intervention from higher levels of government
through vertical collaboration. They view state and federal agencies as the supporter not
the commander, and prefer the bottom up approach which strengthens the principle of
“all disasters are local” and emphasizes local autonomy. In the horizontal context, the
county generally leads and coordinates local EM/HS-related initiatives with its
municipalities, and these municipalities still have some level of autonomy during normal
periods of time. During a disaster time period, the county-municipality relationship can
turn relatively directive with the county in charge. Big cities have more obvious
autonomy and often serve as a big brother to look after their neighboring small
municipalities and speak out for them. The county-county collaboration can be
implemented by writing a regional grant proposal in normal times or activate a mutual-
aid system to share resources during a disaster. County governments generally believe
that they and neighboring counties are like siblings facing similar risks. Thus, they must
assist each other to deal with disasters, especially when these disasters are cross-
jurisdictions. The reasons that local governments collaborate with other local
governments, business industries, or non-profit organizations are not only to gain more
resources but also to offer their assistance. So, there is a clear regional relationship
established. Although there is a legal basis in these relationships, they are primarily
developed through personal interaction and confidence in each other.

Third, this dissertation recognizes the importance of cross-sector collaboration in
the practice of emergency management and homeland security. Business industries can
offer physical resources, sponsor TV commercials, or offer professional knowledge to
help local governments to prepare, respond, and recover from a disaster, which helps
their corporate image. Non-profit organizations are often considered more philanthropic
and willing to voluntarily work with local governments than private companies. Lots of
volunteers, equipment, and professional knowledge are provided by non-profit
organizations for establishing shelters and providing food and emergency medical
assistance during the disaster. Many volunteers come from faith-based organizations. They supply critical manpower to support local governments in times of disaster.

Fourth, this dissertation tries to study the impact of the 9/11 event on the local EM/HS agency, which helps us to understand the relationship between emergency management and homeland security. Based on the interview responses, local EM/HS managers generally think that homeland security is just one type of hazard which has been included in the emergency management system. Thus, their duties have not changed that much. However, homeland security is indeed highlighted more in their daily work. For example, the county did more trainings and exercises to deal with natural disasters before 9/11. After 9/11, more resources were granted to enhance local intelligence about improving local capacities to prevent and respond to terror attacks or man-made disasters. Local governments, therefore, have acquired more knowledge to protect their infrastructure and prevent terror attacks. The relationship between the local EM agency and the local law enforcement agency has become closer. The federal government also actively requires localities to develop collaborative projects related to homeland security issues. Business industries show more interest in security issues and ask for EM/HS-related information and consultation from local EM/HS agencies.

Fifth, several challenges that local EM/HS managers actually face when conducting collaboration are identified, which help us to understand why collaboration is agreed to be important conceptually but still can be hard to implement practically. In the vertical context, local governments may feel it is difficult to maintain long-term relationships with state and federal government officials, due to a lack of information-sharing and feedback from higher levels of government, or fear of intervention and control from state and federal governments. In the horizontal context, the shortage of resources and manpower to implement collaboration is an issue, especially for small jurisdictions. The rivalry for funds among public agencies can hurt interlocal collaboration. Different organizational characteristics and institutional structures can make cross-sector collaboration harder to be implemented.

Sixth, one of the most important contributions of this dissertation is to create a framework to study whether or not there are different incentives behind each type of collaboration and to what extent organizational internal factors (resource shortage,
organizational attention, institution, manager capacity, and past experience with partners), organizational external factors (disaster magnitude, resource dependency, community attributes), and EM/HS capacity explain the three types of collaboration in emergency management and homeland security, which advances the current empirical research related to studying the determinants of different types of collaboration. The findings in this research recognize the positive influences of EM/HS capacity and organizational attention on all three types of collaboration. Factors related to the perspectives of resource shortage, mutual understanding, and resource dependency are found to have different impacts on the three types of collaboration. Specifically, this research suggests that local governments with a strong EM/HS capacity can have a better ability to operate vertical and horizontal collaborative activities, such as handling federal grant application processes, providing assistance to other local governments with lower EM/HS capacity, or attracting non-governmental organizations to exchange and learn EM/HS intelligence (Graddy and Chen 2009). This argument is also supported by the interview responses.

Seventh, this research contributes to identifying that financial incentive is the main purpose for local governments to conduct vertical collaboration in the area of emergency management and homeland security, but it is not the most critical reason to explain why local governments conduct horizontal-interlocal and horizontal-intersectoral collaborations, which is a unique finding in the collaboration research and can be further studied in the future. If we view emergency management and homeland security as a positive externality and a public good, then EM/HS-related initiatives should be operated and funded by government to avoid market failures. Therefore, it is more reasonable for local governments to seek financial support from higher levels of government when they are confronted with budget reductions instead of asking for financial resources from other local governments or non-governmental organizations. The interview responses also indicate that grant-application is one of the important considerations for local governments when collaborating with state and federal governments. Although local governments may work together to develop a regional grant proposal, they still eventually look for vertical collaboration in order to receive funding from higher levels of government.
Eighth, this dissertation makes another important theoretical contribution in studying the mediating effect of EM/HS capacity, which current literature rarely discusses. It is found that the establishment of a local EM/HS manager position specifically to deal with EM/HS initiatives does not directly generate a positive impact on the three types of collaboration. However, this position can indirectly enhance the collaboration in both vertical and horizontal contexts through the EM/HS capacity. This finding implies that local EM/HS managers must fulfill their duties and leadership effectively through increasing the EM/HS capacity of local governments to improve vertical and horizontal collaboration. EM/HS capacity can also mediate the relationship between the resource dependence on state and federal funding and the horizontal-intersectoral collaboration. We find that funding from state and federal governments generates a direct and positive impact on the enhancement of vertical and horizontal-interlocal collaboration, and indirectly increases the odds of horizontal-intersectoral collaboration through EM/HS capacity. In other words, providing funding is a significant way for state and federal governments to influence and encourage local governments to conduct or improve different types of collaboration.

Ninth, this dissertation contributes to examining the impact of the National Incident Management System (NIMS) on the three types of collaboration and recognizes that although NIMS is used to improve the interoperability among all types of responders at all levels, it only generates limited impacts on the increase of collaboration in the non-governmental context. This result can probably be explained by the criticism of NIMS about its over-formalized structure and complicated paperwork, which makes it more difficult for local governments to collaborate with other non-governmental partners under the NIMS structure. If the federal government still wants to use the adoption of national standards to encourage all types of collaboration at the local level, a critical issue will be how to balance formalization and flexibility.

Tenth, this study identifies that relationships with partners as well as hazard recognition could create positive impacts on collaboration although they cannot be empirically tested. According to the interviews, developing and maintaining good informal and formal relationships with partners is a good way to form positive interactive experiences and encourage collaboration. Collaboration can be discouraged if the above
relationships are disharmonious. Local EM/HS managers also agreed that hazard recognition can stimulate local governments and communities to recognize the importance of emergency management and homeland security and invest more resources in this policy area. Local governments are more likely to recognize and conduct all types of collaboration when they have previously faced large-scale and severe disasters.

Finally, collaboration research is often criticized by its lack of practicability. Practitioners often argue that it is hard for them to use the findings in the collaboration research to solve the problems they face in their daily work. This dissertation recognizes this potential weakness and contributes to connecting theoretical literature with practical experiences by utilizing the mixed-methods approach, which provides us a more complete picture to understand local emergency management and homeland security collaboration.

### 6.2 Research Limitations

Despite the lessons from the findings, this dissertation still faces some limitations. The ICMA 2005 Homeland Security Survey data is an available secondary national data and covers topics related to management, budget, security education/awareness and training in the field of emergency management and homeland security. However, the identifier of each respondent’s local government is eliminated in this dataset due to security reasons. Thus, this dataset cannot be merged with other datasets nor can other variables be added to it. We can only use limited variables to measure the concept of three types of collaboration and each perspective in the framework, which limits the explanatory power of the empirical analysis. Moreover, this one-year survey was conducted seven years ago, which might be criticized as unable to explain the current situation.

The qualitative analysis is applied not only to supplement the limited quantitative analysis but also to provide a more substantive knowledge base to understand the background of local emergency management and homeland security collaboration. Fifteen county and city emergency management directors in Florida were interviewed in the summer of 2011 to provide their perspectives on how they define collaboration--why, when, and how they collaborate vertically and horizontally--and how they view the
impacts of their position power, EM/HS capacity, NIMS, and the 9/11 event on collaboration in the areas of emergency management and homeland security. Although this research only interviewed local EM/HS managers in Florida, previous studies have recognized Florida is an appropriate subject to study intergovernmental and intersectoral collaboration issues in emergency management and homeland security (Caruson and MacManus 2007, 2008, 2011; MacManus and Caruson 2011). Therefore, it is reasonable to view Florida County and City EM/HS directors or managers as well-qualified interviewees to provide their thoughtful opinions on local emergency management and homeland security collaboration.

6.3 Suggestions for Future Study

This dissertation proposes four suggestions for future research. Firstly, in this research, the three types of collaboration are only simply measured by the dimension of actors. A future study could be devoted to utilizing both dimensions of actors and activities to study the quantity, quality, frequency, and density in different types of collaboration in order to propose more accurate measurements of the three types of collaboration.

Second, this dissertation has preliminarily found that local governments’ resource dependency on state and federal governments can directly influence their levels of horizontal-interlocal collaboration and indirectly affect their adoption of horizontal-intersectoral collaboration. Future research could therefore examine other vertical influences and study how and when the vertical and horizontal collaboration could possibly influence each other, which is studied rarely in the current literature.

Third, this dissertation aggregated all types of local governments together to empirically analyze the impacts of the determinants on the three types of collaboration. However, for example, county and city governments could have differing considerations on collaboration since state governments might have their own expectations on different types of local governments regarding emergency management and homeland security. Future research could develop models based on different types of local governments to compare and contrast the impacts of the determinants on the three types of collaboration.
Fourth, this dissertation has tried to use local governments’ perspective to study why local governments want to collaborate with non-governmental organizations and business industries in the policy area of emergency management and homeland security. However, we are still not sure whether there is similar or dissimilar motivation among the profit companies and non-profit organizations when they decide to collaborate with local governments. It is important to include the views from non-governmental organizations and business industries to study their motivations for collaborating with local government in order to thoroughly understand cross-sector collaboration. Therefore, future research can concentrate on filling in this gap.

Finally, it is known that collaboration is a strategy for local governments to effectively and efficiently respond to any expected and unexpected emergencies and decrease local disaster vulnerability. In other words, it is critical to examine the impacts of collaboration and not just view it as the end goal. McGuire (2006) has reminded us of the importance of studying both the positive and negative impacts of collaboration. Therefore, this dissertation suggests that future research further investigate the influences of the three types of collaboration on the increase in local emergency management and homeland security performance on the stages of mitigation, preparedness, response, and recovery.
APPENDIX A

APPROVAL MEMORANDUM FROM INSTITUTIONAL REVIEW BOARD

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 6/15/2011
To: Kaiju Chang
Dept.: PUBLIC ADMINISTRATION AND POLICY
From: Thomas L. Jacobson, Chair
Re: Use of Human Subjects in Research
Studying local emergency management and homeland security collaboration in the vertical and horizontal contexts

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and one member of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 6/11/2012 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is FWA00000168/IRB number IRB00000446.

Cc: Frances Berry, Advisor
HSC No. 2011.6463
APPENDIX B
INTERVIEW INVITATION EMAIL

Dear County/City Emergency Management Manager,

My name is Kaiju Chang, and I am a doctoral candidate in the Askew School of Public Administration and Policy at Florida State University studying public management and emergency management/homeland security. Currently, I am conducting a doctoral dissertation research under the supervision of Professor Frances Berry. The purpose of this research is to study vertical and horizontal collaboration at the local level in emergency management and homeland security. Your county has been selected as part of my research sample. We would like to conduct a short telephone interview with you at your convenience; the interview will take about 20 to 30 minutes to complete. We would appreciate it if you would accept our invitation to be interviewed.

The formal cover letter about this research and interview questions will be sent to you once you agree to be interviewed. We appreciate your time and help and look forward hearing your response soon.

Sincerely,

Frances Stokes Berry
Frank Sherwood Professor of Public Administration

Kaiju Chang
Doctoral Candidate
APPENDIX C

FORMAL INTERVIEW INVITATION LETTER

Reubin O’D Askew School of Public Administration and Policy
The Florida State University
Tallahassee, FL 32306-2250
627 Bellamy Building
Phone: (850) 644-3525/ Fax: (850) 644-7617

July 11th, 2011
Dear County/City Emergency Management Manager,

My name is Kaiju Chang, and I am a doctoral candidate in the Askew School of Public Administration and Policy at Florida State University. Currently, I am conducting a doctoral dissertation research under the supervision of Professor Frances Berry. The purpose of this research is to study different types of collaboration by using a management-resource-institution framework at the local government level in the area of emergency management and homeland security. This study may help us gain a better understanding of why local governments implement types of collaborative activities, and how local governments collaborate with other public agencies and non-government organizations to improve their performance in local emergency management and homeland security initiatives.

I would like to take some of your time to conduct a short interview by asking several structured questions. This interview could be conducted by phone or in person but most will take place over the telephone. The interview takes about 20-30 minutes to complete and will be tape-recorded. The structured interview question guide is also attached here. Your response will be kept confidential to the extent allowed by law. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject or their local government name. Research records will be stored securely and only my advisor and I will have access to the records.

If you have any questions concerning this research study, please feel free to contact me via email or by phone. You may also contact my advisor Professor Frances Stokes Berry via email or by phone. Also, if you have any questions or concerns regarding this research and would like to talk to someone other than the researcher(s), you are encouraged to contact the FSU IRB at 1020 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742, or 850-644-8633, or by email at humansubjects@magnet.fsu.edu.

Sincerely,

Frances Stokes Berry, Frank Sherwood Professor if Public Administration
Kaiju Chang, Doctoral Candidate
APPENDIX D
INTERVIEW CONSENT FORM

Interview Consent Form

1. I agree to be interviewed by Kaiju Chang for the purposes of her doctoral dissertation research. This research is to study why local governments implement types of collaborative activities and how local governments collaborate with other public agencies and non-government organizations to improve their performance in local emergency management and homeland security initiatives.

2. I am aware that my participation in this interview is voluntary with no compensation and it is my right to decline to answer any question that I am asked.

3. The purpose and nature of the interview has been properly explained to me, and I have read the cover letter and the interview question guideline sheet as provided by the researcher.

4. I agree that the interview will be documented through audio recording and transcription.

5. I know there are no specific risks to accept this interview and I understand my name and identity will be kept confidential in any future publications and discussions to the extent allowed by law.

6. I understand that this research study has been reviewed and approved by the Institutional Review Board (IRB) for Studies Involving Human Subjects: Behavioral Sciences Committee at the Florida State University. For research problems or questions regarding subjects, the Institutional Review Board can be contacted at 1020 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742, or 850-644-8633, or by email at humansubjects@magnet.fsu.edu.

7. I have been given a copy of this consent form.

Name of interviewee____________________

Signature of interviewee__________________ Date_____________________

Name of interviewer_____________________

Signature of interviewer__________________ Date_____________________

For further information, please contact:
Kaiju Chang, PhD Candidate, Askew School of Public Administration and Policy, Florida State University
Frances Stokes Berry, Professor, Askew School of Public Administration and Policy, Florida State University
APPENDIX E

INTERVIEW QUESTIONS GUIDELINE

I. Collaboration definitions in the local emergency management (EM) and homeland security (HS) context:

Note: Vertical collaboration will be defined as collaboration across different vertical levels of governments, such as between local and state governments, or between a local and the federal government. Horizontal-intersectoral collaboration specifically refers to collaboration between local governments and non-governmental organizations. Horizontal-interlocal collaboration means collaboration among local governments, such as between cities and counties, or between several cities, or several counties.

1. How do you define collaboration?
Give me a few examples that come to mind when you think of collaborating in EM and HS.

Does your local government collaborate in EM and HS?
If yes,
2-a) Does your local government carry out vertical collaboration? Why?

2-b) Describe the types of activities you use in vertical collaboration.

2-c) What agencies do you consider as primary collaborative partners, and why?

2-d) From your perspective, what are some of the strengths and weaknesses of vertical collaboration for your government jurisdiction?

Next, I want to move to talk about horizontal-interlocal collaboration. This means working with other counties, cities, local military installations, or regional planning agencies.

3-a) Does your local government conduct horizontal-interlocal collaboration? Why?

3-b) What kinds of horizontal-interlocal collaborative activities does your local government have?

3-c) What local agencies do you consider as primary collaborative partners, and why?

3-d) What do you see as the strengths and weaknesses of horizontal-interlocal collaboration?

Next, I want to discuss about horizontal-intersectoral collaboration. This means working with either the private or the nonprofit sector agencies.

4-a) Does your local government conduct horizontal-intersectoral collaboration? Why?
4-b) What kinds of horizontal-intersectoral collaborative activities does your local government have?
4-c) What non-governmental organizations do you consider as primary collaborative partners, and why?

4-d) What do you see as the strengths and weaknesses of horizontal-intersectoral collaboration?

If no,
5. Why doesn’t your local government collaborate in EM and HS?

II. From local emergency management/homeland security manager perspective:
6. Does your agency or unit cover both emergency management and homeland security issues?

7. How long have you been working in this position?

8. What is your professional background as a local emergency management/homeland security manager? (i.e., What have your last several jobs been?)
REFERENCES


BIOGRAPHICAL SKETCH

Kaiju (Kelly) Chang is originally from Taiwan (Republic of China), and received her MPA degree from the National Chengchi University and Bachelor’s degree in political science from the National Taiwan University. She earned her Ph.D. degree in the Askew School of Public Administration and Policy at the Florida State University. Her research interests include emergency management, collaborative public management, performance management, strategic management and planning, policy adoption and diffusion, and intergovernmental relations. She is the co-author of “Testing the Development and Diffusion of E-government and E-democracy: A Global Perspective”, which is published in the Public Administration Review.