THE CURRENT STATUS OF HAZARD MITIGATION IN LOCAL EMERGENCY MANAGEMENT: AN EXAMINATION OF ROLES, CHALLENGES, AND SUCCESS INDICATORS

Carlos Samuel

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APPROVED:
Laura Siebeneck, Major Professor
David McEntire, Committee Member
Gary Webb, Committee Member
Abraham Benavides, Chair of the Department of Public Administration
Thomas Evenson, Dean of the College of Public Affairs and Community Service
Mark Wardell, Dean of the Toulouse Graduate School
This dissertation used an organizational structure framework to examine the current status of hazard mitigation from the perspective of emergency managers from four organizational structure categories. This study addressed three primary research questions: (1) What is the role of the local emergency management office in hazard mitigation and what is the function of other stakeholders as perceived by local emergency managers? (2) What are the challenges to achieving hazard mitigation objectives and what are the strategies used to overcome them? and (3) How do local emergency managers define hazard mitigation success?

Thirty North Central Texas emergency managers were recruited for participation in this study, and data was collected through telephone interviews and an internet survey. A mixed methodology was used to triangulate qualitative and quantitative findings. Qualitative analyses consisted of inductive grounded theory, and quantitative data analyses consisted of independent samples t-test analyses, correlation analyses, and Chi-square analyses.

Findings indicate that emergency managers from the different emergency management office categories have six self-identified roles in hazard mitigation planning and strategy implementation; have a similar reported level of involvement in different hazard mitigation-related activities; and perceive stakeholders as having four key functions in hazard mitigation planning and strategy implementation. Second, participants describe five obstacles that are categorized as internal organizational challenges and two obstacles that are categorized as outside organizational challenges. The Disinterested Stakeholders Challenge is rated as a more
significant obstacle by participants from the Non-Fire emergency management office category. Emergency managers describe the use of four strategies for overcoming hazard mitigation challenges, and the ability to master these strategies has implications for achieving hazard mitigation success. Third, emergency managers define a tangible and intangible category of hazard mitigation success, and each category is comprised of distinct indicators. Lastly, the organizational characteristics of emergency management offices had significant relationships with their reported level of involvement in select hazard mitigation activities; the rating assigned to select hazard mitigation challenges; and the rating assigned to select hazard mitigation success measures. For integrated emergency management offices, their parent agency is found to be an asset for achieving hazard mitigation objectives.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xi</td>
</tr>
<tr>
<td>CHAPTER 1 INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>1</td>
</tr>
<tr>
<td>Research Objectives and Questions</td>
<td>2</td>
</tr>
<tr>
<td>Hazard Mitigation Roles and Perceived Stakeholder Functions</td>
<td>3</td>
</tr>
<tr>
<td>Hazard Mitigation Challenges and Strategies</td>
<td>5</td>
</tr>
<tr>
<td>Hazard Mitigation Success</td>
<td>9</td>
</tr>
<tr>
<td>Guiding Theoretical Framework</td>
<td>11</td>
</tr>
<tr>
<td>CHAPTER 2 REVIEW OF LITERATURE</td>
<td>14</td>
</tr>
<tr>
<td>Introduction</td>
<td>14</td>
</tr>
<tr>
<td>Backdrop of Disaster Losses</td>
<td>14</td>
</tr>
<tr>
<td>Hazard Mitigation Defined</td>
<td>15</td>
</tr>
<tr>
<td>Hazard Mitigation History</td>
<td>16</td>
</tr>
<tr>
<td>Hazard Mitigation Strategy Types</td>
<td>19</td>
</tr>
<tr>
<td>Drivers of Local Hazard Mitigation</td>
<td>23</td>
</tr>
<tr>
<td>Local Government Indicators</td>
<td>26</td>
</tr>
<tr>
<td>Hazard Mitigation - Urban Planning Perspective</td>
<td>30</td>
</tr>
<tr>
<td>Hazard Mitigation and the Local Emergency Management Office</td>
<td>34</td>
</tr>
<tr>
<td>Successful Hazard Mitigation Objectives</td>
<td>40</td>
</tr>
<tr>
<td>Chapter Title</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Conclusion</td>
<td>153</td>
</tr>
<tr>
<td><strong>CHAPTER 6 QUANTITATIVE EXAMINATION OF ROLES, CHALLENGES AND SUCCESS</strong></td>
<td>154</td>
</tr>
<tr>
<td>Introduction</td>
<td>154</td>
</tr>
<tr>
<td>Emergency Management Office Grouping</td>
<td>155</td>
</tr>
<tr>
<td>Hazard Mitigation Activity Involvement</td>
<td>155</td>
</tr>
<tr>
<td>Independent Samples $t$-Test for Hazard Mitigation Activity Involvement</td>
<td>158</td>
</tr>
<tr>
<td>Organizational Characteristics</td>
<td>160</td>
</tr>
<tr>
<td>Independent Sample $t$-Test for Organizational Characteristics</td>
<td>164</td>
</tr>
<tr>
<td>Pearson Correlation Analysis for Activity Involvement</td>
<td>165</td>
</tr>
<tr>
<td>Hazard Mitigation Challenges</td>
<td>170</td>
</tr>
<tr>
<td>Independent Samples $t$-Test for Hazard Mitigation Challenges</td>
<td>174</td>
</tr>
<tr>
<td>Pearson Correlation Analysis for Hazard Mitigation Challenges</td>
<td>176</td>
</tr>
<tr>
<td>Hazard Mitigation Success Indicators</td>
<td>180</td>
</tr>
<tr>
<td>Independent Samples $t$-Test for Hazard Mitigation Success Indicators</td>
<td>183</td>
</tr>
<tr>
<td>Pearson Correlation Analysis for Hazard Mitigation Success Indicators</td>
<td>184</td>
</tr>
<tr>
<td>Chi-Square Analysis for Completed Hazard Mitigation Actions</td>
<td>187</td>
</tr>
<tr>
<td>Parent Agency Influence on Hazard Mitigation</td>
<td>190</td>
</tr>
<tr>
<td>Spearman Correlation Analysis for Parent Agency Influence</td>
<td>192</td>
</tr>
<tr>
<td>Conclusion</td>
<td>196</td>
</tr>
<tr>
<td><strong>CHAPTER 7 DISCUSSION</strong></td>
<td>198</td>
</tr>
<tr>
<td>Introduction</td>
<td>198</td>
</tr>
<tr>
<td>An Explanation of Self-Identified Hazard Mitigation Roles</td>
<td>199</td>
</tr>
<tr>
<td>Organizational Structure and Hazard Mitigation Roles</td>
<td>202</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 2.1 Hazard Mitigation Strategies ................................................................. 20
Table 3.1 Breakdown of Telephone Interview Participants and Internet Survey Respondents ................................................................. 49
Table 3.2 Gender Make-up of Study Sample......................................................... 54
Table 3.3 Survey Respondents Job Titles Held .................................................... 55
Table 3.4 Survey Respondent Years of Experience ............................................ 55
Table 3.5 Educational Level of Survey Respondent .......................................... 55
Table 3.6 Professional Certifications and Credentials of Survey Respondents .... 56
Table 3.7 Average Full-Time Staff ...................................................................... 56
Table 3.8 Average Part-Time Staff ...................................................................... 57
Table 3.9 Average Volunteer Workers ................................................................. 57
Table 3.10 Average Weekly Work Hours Devoted to Hazard Mitigation Planning .... 57
Table 3.11 Average Weekly Work Hours Devoted to Other Emergency Management .... 58
Table 3.12 Average Weekly Work Hours devoted to Non-Emergency Management .... 58
Table 3.13 Emergency Management Office Hazard Mitigation Budget ............... 58
Table 4.1 Description of the Importance of Self-identified Roles ......................... 63
Table 4.2 Self-Identified Role Involvement and Emergency Management Office Organizational Structure ................................................... 98
Table 5.1 Hazard Mitigation Challenges and Emergency Management Office Organizational Structure ......................................................... 127
Table 5.2 Examples of Tangible and Intangible Hazard Mitigation Success ............ 146
Table 5.3 Hazard Mitigation Success and Emergency Management Office Organizational Structure ......................................... 152
Table 6.1 Hazard Mitigation Activity Involvement for the Total Study Sample ......... 157
Table 6.2  The Reported Level of Activity Involvement ..................................................... 158
Table 6.3  Independent Samples t-Test Results for the Reported Level of Involvement .... 160
Table 6.4  Average Number of Full-Time Staff ................................................................. 161
Table 6.5  Average Number of Part-Time Staff ................................................................. 161
Table 6.6  Average Number of Volunteer Workers ......................................................... 162
Table 6.7  Average Weekly Work Hours Devoted to Hazard Mitigation Activities ......... 162
Table 6.8  Average Weekly Work Hours Devoted to Other Emergency Management Activities .......................................................... 163
Table 6.9  Average Weekly Work Hours Devoted to Non-emergency Management ...... 163
Table 6.10 Percentage of 2012 Office Budget Used for Hazard Mitigation ......................... 163
Table 6.11 Independent Samples t-Test Results for Organizational Characteristics ............ 165
Table 6.12 Correlation Analysis Between Organization Characteristics and Involvement in Hazard Mitigation Activities .......................................................... 167
Table 6.13 Correlation Analysis Between Organization Characteristics and Involvement in Hazard Mitigation Activities .......................................................... 168
Table 6.14 Correlation Analysis Between Organization Characteristics and in Hazard Mitigation Activities .......................................................... 169
Table 6.15 Rating of Hazard Mitigation Challenges for the Cumulative Sample Internet Survey Respondents .......................................................... 171
Table 6.16 Perceived Ease/Difficulty of Overcoming Challenges for the Cumulative Sample of Internet Survey Respondents .......................................................... 171
Table 6.17 Rating of Hazard Mitigation Challenges for the Two Emergency Management Office Groups .......................................................... 172
Table 6.18 Perception of the Ease/Difficulty to Overcome Challenges ............................... 173
Table 6.19 Independent Samples t-test R for the Rating ...................................................... 175
Table 6.20 Correlation Analysis Between Organization Characteristics and the Rating of Challenges .................................................................................. 177
Table 6.21 Correlation Analysis Between Organization Characteristics and the Severity Rating .................................................................................. 178
Table 6.22  Correlation Analysis Between Organization Characteristics and the Severity Rating ................................................................. 180

Table 6.23  Perception Rating of Hazard Mitigation Success Indicators for the Cumulative Study Sample of Internet Survey Respondents ................................................. 181

Table 6.24  Perception of Hazard Mitigation Success Rating ................................................................. 182

Table 6.25  Independent Samples t-Test Results for the Perception of Hazard Mitigation Success Rating ........................................................................................................... 184

Table 6.26  Correlation Analysis Between Organization Characteristics and Hazard Mitigation Success Indicators .............................................................................................. 185

Table 6.27  Correlation Analysis Between Organization Characteristics and Hazard Mitigation Success Indicators for the Integrated Fire Office ........................................... 186

Table 6.28  Correlation Analysis Between Organization Characteristics and Hazard Mitigation Success Indicators for the Non-Fire Office ........................................................................... 187

Table 6.29  Frequencies for Having an Approved Local Hazard Mitigation Action Plan .... 188

Table 6.30  Frequency of Participation in the NFIP ........................................................................ 189

Table 6.31  Frequency of Grant Application Submission ........................................................................ 190

Table 6.32  Parent Agency Influence on Hazard Mitigation Planning and Strategy ............. 191

Table 6.33  Correlation Analysis Between Parent Agency Influence and Hazard Mitigation Activity Involvement ........................................................................................................... 193

Table 6.34  Correlation Analysis Between Parent Agency Influence and Hazard Mitigation Challenges ............................................................................................................ 194

Table 6.35  Correlation Analysis Between Parent Agency Influence and Hazard Mitigation Success Indicators ........................................................................................................... 195
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1</td>
<td>Conceptualization of guiding theoretical framework</td>
<td>13</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Emergency management coordinator self-identified hazard mitigation roles.</td>
<td>62</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>The list of self-described stakeholders involved in regional hazard mitigation</td>
<td>74</td>
</tr>
<tr>
<td>Figure 4.3</td>
<td>Interaction of self-identified roles.</td>
<td>96</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Internal organizational and outside organization hazard mitigation challenges</td>
<td>100</td>
</tr>
<tr>
<td>Figure 6.1</td>
<td>The level of involvement in hazard mitigation activities</td>
<td>159</td>
</tr>
<tr>
<td>Figure 6.2</td>
<td>The rating of hazard mitigation challenges</td>
<td>173</td>
</tr>
<tr>
<td>Figure 6.3</td>
<td>Respondent Perception regarding the ease and/or difficulty of overcoming hazard mitigation challenges</td>
<td>174</td>
</tr>
<tr>
<td>Figure 6.4</td>
<td>The mean response for hazard mitigation success indicators.</td>
<td>183</td>
</tr>
</tbody>
</table>
INTRODUCTION

Problem Statement

Escalating losses from natural disasters has ushered in the realization that greater effort must be devoted to hazard mitigation (Mileti, 1999). Be it structural or nonstructural, hazard mitigation strategies share the common objectives of providing long-term protection for people and property and reducing community vulnerability to hazardous threats (Godschalk and Brower, 1985). Much of the responsibility related to hazard mitigation and the enhancement of community disaster resilience resides with local emergency management offices. Yet despite the importance of undertaking hazard mitigation actions, it is not always a main focus of local emergency management offices (Schneider, 2002) or a priority of local governments (Godschalk et al., 1989; Burby et al., 1999). Indeed, hazard mitigation has historically been slow in becoming a central focus of the emergency management profession (Edwards and Goodrich, 2007) and the roles and responsibilities of local emergency management offices have had to adapt to this new focus. Thus, it is important to examine and understand how emergency management offices are faring with the shifting position on hazard mitigation planning.

The focus of this dissertation is to examine the current status of hazard mitigation in local emergency management. The theoretical framework which guides this study was crafted based on Labadie’s (1984) explication of the pros and cons of emergency management organizational niche. This framework is an extension of classical management’s ideal-type bureaucracy which highlights, among other attributes, organizational hierarchy. Labadie (1984, p. 489) uses this framework to “examine the problems that bedevil local emergency managers in planning for and responding to disasters.” This study extends Labadie’s framework by exploring
the implications of organizational structure on the emergency management office’s involvement specifically in the area of hazard mitigation planning and strategy implementation. In this study, organizational arrangement comes to represent the specific parent agency that the emergency management office is housed within.

This dissertation aims to advance knowledge and theory in the area of hazard mitigation through examination of the extent to which the organizational arrangement, or home agency of the local emergency management offices influences: (1) the role(s) of local emergency management offices in hazard mitigation planning/strategy implementation and emergency manager’s perceived roles of other stakeholders in this area, (2) the identification of challenges local emergency management agencies encounter in pursuing hazard mitigation initiatives and the strategies used to overcome these obstacles, and (3) emergency manager’s perceptions of hazard mitigation success. These are important for three reasons. First, hazard mitigation activities of local emergency management offices and other stakeholders contribute to reducing disaster vulnerability while simultaneously enhancing community resiliency. Secondly, the ability to overcome challenges holds meaning for successfully accomplishing hazard mitigation objectives. Lastly, measures of successful hazard mitigation may identify those factors whose presence contributes to community disaster safety. The next section elaborates on the specific research questions and objectives.

Research Objectives and Questions

The purpose of this dissertation is to examine the current status of hazard mitigation in local emergency management from the unique and under-examined perspective of the practicing local emergency manager. It is proposed that the emergency management organizational arrangement
is a contextual factor that holds meaning for the three research objectives (roles, challenges/strategies, and emergency manager’s perceptions of hazard mitigation success). It is important to study the organizational arrangements of local emergency management offices (McEntire, 2007) because they provide different benefits and challenges. Having this knowledge would better the understanding of organizational roles and responsibilities in the area of local hazard mitigation. Therefore, this study proposes the following three research questions:

1. What is the role of the local emergency management office in hazard mitigation and what is the function of other stakeholders as perceived by local emergency managers?

2. What are the challenges to achieving hazard mitigation objectives and what are the strategies used to overcome them?

3. How do local emergency managers define hazard mitigation success?

The following sections provide an explanation for the importance of each research question and objective.

Hazard Mitigation Roles and Perceived Stakeholder Functions

1. What is the role of the local emergency management office in hazard mitigation and what is the function of other stakeholders as perceived by local emergency managers?

The first objective examines the extent and manner of the emergency management office’s involvement in local hazard mitigation planning and strategy implementation and the role(s) of other stakeholders (perceived by emergency managers) in this area. Along with a contingent of other stakeholders (planners, health and safety officials, elected officials, business groups etc.), emergency managers play a crucial role in disaster management and the creation of disaster resilient communities (Geis, 2000). Local emergency management offices undertake a myriad of steps in each phase of the comprehensive emergency management framework (Godschalk, 1991) and this notion extends to actions related to hazard mitigation planning and
strategy implementation. However, research examining local hazard mitigation planning and strategy implementation generally emphasizes the role(s) of local planning agencies and of individual planners (Burby and Dalton, 1994; Berke and French, 1994; Brody et al., 2010; Stevens et al., 2008; Stevens, 2010; Schwab, 2011).

Hazard mitigation research has addressed the quality of comprehensive plans (encompassing hazard mitigation) developed by planning agencies (Burby and Dalton, 1994), commitment of planning agencies to state mitigation planning mandates (Berke and French, 1994), the influence of planning organization capacity on attaining mitigation strategy implementation (Brody et al., 2010), and the importance of individual planner commitment to mitigation strategy implementation (Stevens et al., 2008; Stevens, 2010). While planning-related literature has provided valuable insight into local hazard mitigation planning and strategy implementation, a gap exists in that studies have not defined nor addressed the roles in which local emergency management offices hold responsibility. By building upon Labadie’s (1984) framework, the hazard mitigation roles of emergency management offices and the nature of their involvement in hazard mitigation can be explored and delineated based on the organizational arrangement of their office.

Equally important are the perceptions held by local emergency managers about the hazard mitigation roles of other stakeholders. Hazard mitigation planning does not occur in isolation, and local emergency management offices must pursue objectives in a management structure comprised of various experts and other public offices (Mileti, 1999; Graves, 2013). For instance, devising local hazard mitigation plans requires emergency managers to work in tandem with planning and building professionals (familiar with community development patterns and building codes), public work professionals (familiar with local infrastructure design and
location), and elected officials (who can facilitate citizen buy-in towards hazard mitigation) (Graves, 2013).

A downside of local government structure is that various agencies set about to solve hazard-related problems independently of each other and such individualistic efforts are insufficient for undertaking the “interdisciplinary task” of hazard mitigation planning (Mileti, 1999, p. 146). According to Schneider (2002, p. 143-144), “many local officials and community planners assume that emergency management is not their responsibility or their concern.” Consequently, hazard mitigation inaction would pose ramifications for a community’s ability to withstand a disaster. As noted by Godschalk (2007, p. 90), “as the Katrina experience dramatically illustrated, those who fail to invest in mitigation cannot reap its benefits.” Hazard mitigation is a pivotal area and the activities of key players are vital to achieving objectives and creating disaster-resistant communities. It thus becomes important to explore (1) the perceptions of local emergency managers to understand the manner and extent of additional stakeholder involvement in hazard mitigation planning/strategy implementation; (2) to understand the perceptions of emergency managers regarding their mitigation roles vis-à-vis the roles of other stakeholders; (3) to understand how much support/non-support emergency managers receive (by other stakeholders) in pursuing local mitigation endeavors; (4) to examine how the involvement of other stakeholders influences the specific roles adopted by local emergency management offices and; (5) to improve understanding as to how the involvement of other stakeholders factors into the mitigation success of emergency management offices.

Hazard Mitigation Challenges and Strategies

2. What are the challenges to achieving hazard mitigation objectives and what are the strategies used to overcome them?
The second objective of this dissertation examines the current set of challenges that local emergency managers and their offices experience when undertaking their hazard mitigation planning and mitigation strategy implementation as well as the strategies utilized to overcome those obstacles. Local emergency management offices are confronted with less-than-ideal circumstances which may have implications for their pursuit of hazard mitigation initiatives. Two seemingly less-than-ideal circumstances are the employment status of the emergency manager and the organizational arrangement of the emergency management office. In an ideal setting, local emergency managers would be full-time employees whose sole purpose is to oversee emergency management functions (Henstra, 2010). An emergency manager’s full-time employment status may prove beneficial for hazard mitigation efforts as this individual could seemingly budget time for conducting activities in this area. Yet in some localities “the emergency manager may work on a part-time basis, or as the fire chief, police chief, public works director, city manager, or mayor fills this role” (McEntire, 2007, p. 170). These employment status classifications may result in emergency management becoming a secondary (i.e. part-time) function to the primary duties of the aforementioned officials. McEntire (2007) notes that due to budget shortages, some localities are forced to hire part-time emergency managers. He also posits that while integrated departments may benefit from having access to the budgets of their parent agency, stand-alone emergency management offices may not have this same advantage. The implication is that emergency management offices of specific organizational arrangements may be relegated to hiring part-time emergency managers due to budget issues. Indeed, variation in the employment status of local emergency managers and thus effort levels directed at hazard mitigation may be a result of variation in the organizational arrangements of the local emergency management office. Thus, effort levels devoted towards
hazard mitigation as a result of part-time employment status may be compromised. Moreover, part-time and volunteer emergency managers may have trouble gaining credibility with other local stakeholders and agencies (Labadie, 1984) whose involvement is pertinent to hazard mitigation planning and strategy implementation.

A second less than ideal circumstance relates to the organizational arrangement of the local emergency management office. Labadie (1984) suggests that the emergency management office’s position within the local government structure has implications for its effectiveness, authority, and ability to conduct the job. He offers a categorization of local emergency management office organizational arrangement (stand-alone agency, subsumed within a line agency, and intergovernmental council) and notes that each arrangement presents a set of advantages and disadvantages related to the effectiveness of emergency management operations. As a result of their organizational arrangement, emergency management offices may be faced with certain challenges such as being last in line for the allocation of scant local resources, lack of credibility with other line agencies, competition with other line agencies for resources, disinterested local stakeholders unwilling to invest in emergency management objectives, and in the case of an integrated emergency management office, a parent agency whose priorities usurps their own (Labadie, 1984).

The aforementioned challenges may pose implications for the outcome of those hazard mitigation goals pursued by emergency management offices. Yet the challenges mentioned may not constitute a comprehensive list. When mitigation objectives are pursued, it is important to determine the full range of challenges encountered, the severity of those challenges, and the ability to overcome them. In short, overcoming challenges ensures that mitigation objectives are accomplished and that communities are made safer from hazardous threats. Moreover, the
successful use of strategies by emergency management offices to overcome these challenges can serve as a learning mechanism for their contemporaries. However, challenges that prove insurmountable signal that emergency management offices may not be creating safer communities and that escalating losses from disasters will remain a recurring theme. Therefore, the following questions are presented:

(1) What are the challenges faced by local emergency management offices during hazard mitigation planning and strategy implementation?

(2) How do local emergency management offices overcome mitigation-related challenges?

In addition to identifying the current challenges and subsequent strategies used to overcome them, this research question also examines whether organizational arrangement poses a direct challenge to the pursuit of hazard mitigation, as well as examine the manner in which perceptions of common mitigation-related challenges (identified in hazard mitigation planning literature and applied to this study) vary by emergency management office organizational types. Specifically, the following set of subquestions are examined:

(3) To what extent do perceived hazard mitigation challenges vary by emergency management office organizational arrangement?

(4) Does organizational arrangement empower or constrain the involvement of emergency management offices in hazard mitigation planning and strategy implementation?

Lastly, this objective also examines the extent to which organizational characteristics (e.g. personnel resource, financial resource, time resource, parent agency commitment etc.) factor into the local emergency management office’s level of activeness in hazard mitigation planning and action item implementation. The aim is to examine whether organizational characteristics translate into the emergency management office’s level of activeness in hazard
mitigation planning and mitigation strategy implementation. The following sub-question are
examined:

(5) To what extent are organizational characteristics associated with the emergency management office’s involvement in hazard mitigation activities?

Hazard Mitigation Success

3. How do local emergency managers define hazard mitigation success?

The third objective of this dissertation is to examine the local emergency manager’s perceived definition(s) of hazard mitigation success. More specifically, this research objective seeks to identify indicators of mitigation success as perceived by local emergency managers and to determine if perceptions of success vary by the organizational arrangement of emergency management offices. A study by Rose et al. (2007) quantifies the benefits (i.e. success) of hazard mitigation with the use of financial benefit-cost ratio analysis. While their measure represents a solid step toward measuring hazard mitigation success, it may be difficult to verify absent a disaster. Secondly, their notion of success is predicated on a financial (i.e. quantitative) metric whereas additional indicators might not be reflected in this way. As suggested by Stokey and Zeckhauser (1978) and Boardman et al. (2001), the quantitatively-based measure of hazard mitigation largely ignores alternate qualitative measures of mitigation policy (in Godschalk et al., 2009). In short, the measure presented by Rose and his colleagues lacks a human element, or more specifically a perception-based indicator of hazard mitigation success. Henstra (2010) suggests that it is difficult to evaluate the effectiveness of local emergency management program components because infrequent disaster occurrences signify that implemented objectives are seldom challenged (Henstra, 2010). However, this study seeks to formulate indicators of hazard
mitigation success that hinges on the perceptions of emergency management coordinators and would not warrant a disaster’s occurrence to affirm its validity.

A clear definition of hazard mitigation success enables emergency managers to proclaim that the mitigation-related activities of their office contribute to community disaster safety and provides a basis for emergency managers to justify the use of public resources, or in cases where objectives cannot be accomplished (due to resource shortages), to request additional resources that can be put towards successfully accomplishing mitigation efforts. As stated by Henstra (2010, p. 237), elected officials face “pressure to demonstrate that resources allocated to emergency management are used effectively and make concrete contributions to the public good.” In short, definitions of hazard mitigation success can signal to local political leadership that resources allocated to emergency managers for the purpose of hazard mitigation have been well-utilized or that more resources are needed to better protect communities against hazards. In the same way proposed by Henstra (2010), a well-defined understanding of hazard mitigation success can provide a common point of reference for emergency management practitioners to compare their community’s mitigation activities against. Hence, newly-formulated indicators of hazard mitigation success may allow emergency management offices to effectively measure their office’s performance, seeks ways to improve their office’s performance, and increase hazard mitigation within their community.

It is proposed that emergency manager perception of hazard mitigation success may vary by organizational arrangement. That is to say the nature of challenges encountered during the mitigation process may differ as a result of the organizational arrangement of the emergency management office. Similarly, organizational arrangement may influence the ability to overcome these obstacles. Therefore, variations in organizational arrangements may denote
variations in definitions of hazard mitigation success. Subsequently, emergency manager’s
definition(s) of success are compared between the different organization structures (stand-alone
vs. integrated) and are used to examine the following subquestions:

(1) To what extent do perceived definitions of hazard mitigation success vary by
emergency management office organizational configuration?
(2) What makes some local emergency management offices more successful in hazard
mitigation than others?

Guiding Theoretical Framework

The organizational niche inspired framework outlined by Labadie (1984) is used to
examine the proposed research questions. This framework, which is an extension of the ideal-
type bureaucracy framework of Weber (1946), describes some of the advantages and
disadvantages of emergency management office organizational structure on disaster
preparedness and response. Bureaucratic organizations are concerned with establishing
operational control and facilitating efficient operations through, among other attributes,
hierarchical structuring of organizational offices (i.e. centralization) and the division of
organizational tasks into functionally distinct offices (Fry and Raadschelders, 2008). By way of
their various existing office structures, local emergency management offices are representative of
the ideal-type bureaucracy framework.

Throughout this study, emergency management offices are categorized as either an (1)
integrated emergency management office, or a (2) stand-alone emergency management office.
An integrated emergency management office is defined as an office housed within and subject to
the supervision of an upper hierarchy parent agency (fire departments, police departments,
mayor’s office, county government office). A stand-alone emergency management office is one
performing functions and having independent decision-making autonomy free of an upper
hierarchy parent agency. Labadie (1984) notes that independent emergency management line agencies (i.e. stand-alone offices) experience the benefit of having direct communication to elected officials, but can find themselves competing with other line agencies for limited local resources. He also asserts that integrated offices experience the benefit of being isolated from the political infighting of independent agencies, but can have their priorities overshadowed by that of the parent agency.

Bureaucratic organizations have been criticized because their rules and procedures allow little autonomy and constrain the talents and innovative potential of their personnel (Morgan, 2006). While the rules and procedures associated with organizational is known to impact organizational personnel (Morgan, 2006), this study deviates by exploring the potential influence of organizational arrangement on an entire office’s/department’s activities in hazard mitigation planning and strategy implementation. Figure 1.1 illustrates this study’s theoretical framework which was crafted based on Labadie’s (1984) explication of the pros and cons of emergency management organizational niche. As conceptualized, it examines whether self-identified roles, challenges, and practitioner definition of success vary by emergency management organizational arrangement and also explores the interplay between these key areas. This study also seeks to examine any challenges that organizational structure (and other factors) present for the emergency management office’s level of activeness in hazard mitigation planning and strategy implementation. The proposed framework depicts those emergency management organization types that are most active in hazard mitigation. Additionally, the proposed framework aids in increasing the current understanding of emergency management by revealing those organizational arrangements that are most advantageous for the profession, and indicating the organizational types that are better adept at successfully accomplishing hazard mitigation
Guiding Theoretical Framework

Organizational Structure
(Stand-Alone Office or Integrated Office)

Characteristics → Role(s) of Offices/Other Stakeholders → Challenges → Hazard Mitigation Success

Figure 1.1. Conceptualization of guiding theoretical framework modified from Labadie (1984) and Weber (1946).
CHAPTER 2
REVIEW OF LITERATURE

Introduction

This purpose of this chapter is to provide an overview of previous work in hazard mitigation planning. The chapter contains information on the evolution of hazard mitigation in emergency management, and delineate the two hazard mitigation strategy types. Second, an overview of the contributors of hazard mitigation planning at the organizational and local government level is also provided. A myriad of this research accounts for the involvement of the local planning agency in hazard mitigation planning. Finally, an overview of literature that emphasizes the local emergency management office is presented in conjunction with opportunities for this study’s research objectives.

Backdrop of Disaster Losses

Burby et al. (1999) note that the United States experiences $26 billion in annual financial losses from natural disasters. This understated estimate was eclipsed by the estimated $96-126 billion price tag of Hurricane Katrina (Amadeo, 2012) and estimated $29.2 billion in losses attributed to Hurricane Sandy in the state of New Jersey (Renshaw and Spoto, 2012). With disaster loss totals amounting to such epic levels, strategies must be instituted to reduce the impact of hazards, limit individual community exposure to hazards, and strengthen the built environment in order to limit community susceptibility (Burby and Dalton, 1994). Indeed, escalating losses from natural disasters has ushered in the realization that greater effort must be devoted to hazard mitigation (Mileti, 1999).
Hazard Mitigation Defined

From a practitioner perspective, the Federal Emergency Management Agency (FEMA) defines hazard mitigation as those activities taken to reduce the loss of life and property from disasters (FEMA, 2012). Preventing and reducing the impacts of disasters is attained through mitigation-related activities such as “hazard and vulnerability assessment, improved construction practices, and better land-use decisions” (McEntire, 2007, p. 172). Hazard mitigation activities must be proactive and taken in advance of the hazard in order to reduce or eliminate the risks of people and property to hazards and their impacts (Reddy, 2000).

It is suggested that hazard mitigation is the least visible phase of the emergency management cycle “despite being the most important tool for protecting communities from disasters” (Kapucu and Garayev, 2013, p. 21). In order to be effective, FEMA posits that long-term mitigation efforts should be pursued with an understanding of the risks and needs of the community. This entails conducting in-depth analysis to identify hazard exposures, local vulnerabilities and susceptibilities. To be successful, the pursuit of hazard mitigation strategies should be undertaken from a bottom-up approach because local jurisdictions—as opposed to state and federal government—are most knowledgeable about their vulnerabilities and the mitigation needs of their community (Reddy, 2000).

Mitigation outcomes hold value in that if successful can yield safer communities, expedited post-disaster recovery, lessening of financial losses experienced by individual households, businesses, and entire communities (FEMA, 2012). Scholars (Godschalk and Brower, 1985; Mileti, 1999) note that the objectives of hazard mitigation include the use of structural mechanisms to modify the hazard, protect individuals and the community, and prevent
citizens from inhabiting hazard prone areas through land use planning (i.e. nonstructural strategies) (Godschalk and Brower, 1985).

Hazard Mitigation History

Hazard mitigation planning and strategy implementation have not always been a central focus of the emergency management profession. The civil defense era of emergency management (1950’s and 1960’s) witnessed an emphasis being placed on disaster response while disaster planning and preparedness became the primary focus in the 1980s (Edwards and Goodrich, 2007). Hazard mitigation gained federal attention with the enactment of The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (i.e. Stafford Act). As noted by Schwab (2011, p. 16), the Stafford Act provided “the first statutory package encompassing all four basic disaster management functions—mitigation, preparedness, response, and recovery—supplied limited post-disaster funding to strengthen communities through hazard mitigation planning and projects under the Hazard Mitigation Grant Program (HMGP) as a hedge against recurrence of similar disasters in the future.” Regarded as the centerpiece of national disaster policy, the Stafford Act formally outlined the federal disaster declaration process, federal disaster assistance programs (i.e. Individual Household Assistance Program and Public Assistance Program), disaster cost sharing plan, and promoted incorporating hazard mitigation (during disaster recovery) in Section 404’s Hazard Mitigation Grant Program (HGMP) (Moss et al., 2009). Schwab (2011) notes that another seldom utilized provision of the Stafford Act’s which accounts for disaster recovery hazard mitigation falls under Section 406 of the Public Assistance Program (Schwab, 2011). This section authorizes additional grant money for incidental hazard mitigation costs during disaster recovery.
Increased attention was granted to hazard mitigation throughout the FEMA executive leadership of James Lee Witt, a President Bill Clinton appointee, in the 1990s (McEntire, 2007). Under Witt’s leadership, emergency management began to emphasize risk reduction which could subsequently improve disaster recovery time (Haddow and Bullock, 2003). During the 1990’s under the oversight of the Clinton Administration, FEMA developed Project Impact: Building Disaster-Resistant Communities to facilitate increased local activity in hazard mitigation (Edwards and Goodrich, 2007). Project Impact represented one of the first attempts by the federal government to generate a higher degree of hazard mitigation planning at the local level and subsequently curtail the rising financial costs associated with disaster impacts. Under this program, federal grant money was issued to pilot communities to build partnerships among local stakeholders integral to hazard mitigation and to empower those communities to address their most pressing hazard mitigation needs (Edwards and Goodrich, 2007; Holdeman, 2008). Indeed, establishing and sustaining collaborative partnerships was central to Project Impact and necessary for the successful implementation of local hazard mitigation strategies.

Shortly after the dissolution of Project Impact, the Disaster Mitigation Act (DMA) of 2000 was enacted to further promote mitigation among states and local communities. As noted by Schwab (2011, p. 17), a driving force behind the enactment of the DMA was “was the growing volume and severity of preventable, repetitive losses from various kinds of disasters, aggravated by the widespread occurrence of local development that ignored hazards, risk, and vulnerability issues.” An amendment to the Stafford Act, the DMA mandated that communities have an existing hazard mitigation plan as a prerequisite to seeking federal mitigation funds. While local mitigation planning was slow to gain traction, by July 2005 over 88,000 local jurisdictions were eligible for federal funds as a result of their existing mitigation plans and by
July 2009, 19,000 local jurisdictions had FEMA-reviewed and approved plans (Schwab, 2011). Shortly after this strengthened commitment to disaster reduction, the emphasis placed on hazard mitigation efforts would be altered.

The September 11, 2001 terrorist attacks shifted federal efforts toward anti-terrorism initiatives and subsequently away from natural hazard mitigation programs. The creation of the Department of Homeland Security (DHS) resulted in FEMA (previously a president cabinet-level agency) being absorbed by this new agency. Moss et al. (2009, p.6) notes that “the federal government’s natural disaster programs became lost among a 21st century resurgence of civil defense.” A 2003 report by the Government Accountability Office (GAO) signaled the likely consequence of FEMA’s realignment and a diminished federal focus on natural hazard mitigation:

For many years, FEMA has focused increased emphasis on reducing the impact of natural hazards, not only to lessen the impact to property and individuals, but also to reduce federal disaster costs. Two of the agency’s major efforts in this regard have been its mitigation programs and the National Flood Insurance Program. These programs seek to strengthen structures against the effects of hazards or remove them from harm’s way and to minimize the need for future FEMA disaster assistance. However, concerns exist in both these efforts that may limit their effectiveness in achieving these objectives. Moreover, the placement of FEMA within DHS represents a substantially changed environment in which FEMA will conduct its missions in the future, and missions that focus on reducing the impacts of natural hazards, such as hazard mitigation and flood insurance, may receive decreased emphasis.

In light of modern large scale disasters, studies have been inconclusive regarding the general outlook toward hazard mitigation in emergency management. For instance, Evans-Cowley and Gough (2007) found that in the 18 months following Hurricane Katrina, some communities in coastal Harrison County Mississippi had integrated hazard mitigation into their

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long-range community plans while other communities did not (Evans-Cowley and Gough, 2007). Cigler (2009) proclaims that while leaders and decision-makers understand the importance of mitigation for protecting against future natural hazards, it is unknown whether government (at all levels) and other stakeholders will make it a focal point of post-disaster recovery. Thus, the opportunity exists to explore whether hazard mitigation has gained favorability among practitioners and provide a snapshot of hazard mitigation’s current status within the emergency management discipline.

Hazard Mitigation Strategy Types

The two broad categories of mitigation strategies are structural and nonstructural hazard mitigation (Table 2.1). These strategies can be represented by action items that fall into one of several broader categories outlined by the Texas Department of Public Safety Emergency Management G-710 Mitigation Planning Handbook (2012). These include (1) preventing the hazard from occurring through regulations, zoning measures, ordinances, and open space preservation, (2) property protection measures in the event of a hazard’s occurrence through land acquisition, relocation, elevation, and retrofitting, (3) public education and awareness (via speaker series and outreach programs) aimed at prompting mitigation action at the individual level, (4) protecting natural resources/habitats (through wetland restoration, floodplain protection, fire resistant landscaping) that buffer against natural hazard impacts, and (5) structural projects construction aimed at reducing the hazard’s impact.
Table 2.1

Hazard Mitigation Strategies Courtesy of Godschalk et al. (1989) and Salvesen (2004)

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<th>Structural Mitigation Strategies</th>
<th>Non-Structural Mitigation Strategies</th>
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<td>Building Codes</td>
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Structural Hazard Mitigation Strategies

Referred to as the traditional means of hazard impact reduction, structural mitigation strategies are the earliest approaches to hazard impact reduction (Godschalk et al., 1989). The fundamental purpose of structural mitigation strategies is to “increase resilience and damage resistance” (Schneider, 2002). For instance, coastal communities use structural mitigation strategies such as coastal environment alteration, shoreline protection works (i.e. seawalls, revetments, bulkheads, terraces, breakwaters), sand movement/relocation, flood control works, building code adoption, and public facilities/infrastructure strengthening (Godschalk et al., 1989). Burby and Dalton (1994) notes that these conventional approaches to natural hazard mitigation are incorporated to limit the hazard’s impact, limit the susceptibility of buildings, and limit the exposure of people and their communities to financial loss. While conventional measures have been supported through federal legislation, the use of these strategies (flood control programs, building codes, insurance and disaster relief) has not resulted in a decline of annual disaster financial loss estimates (L.R. Johnston Associates, 1992).
Despite their aim to reduce hazard impacts, structural mitigation strategies can present some drawbacks. One downside of structural strategies is that local governments incur expenses when working to institute these measures (Godschalk et al., 1989; Brody et al., 2010; Koch 2010). As noted, the construction of seawalls for coastal storm flood reduction can cost between $300 to $800 per foot of shoreline with an additional cost of $100 to $300 per foot for revetments and bulkheads (Pilkey et al., 1983). Other findings reveal that in 2009 dollars, the cost to construct a mile of new seawall exceeded $35 million, with annual maintenance costs ranging from 5 to 10 percent (Koch, 2010). A study by the California Climate Change Center (2009) found that the cost of constructing a new level was $1,500 per linear foot in the year 2000 and increased to $1,922 per linear foot by 2009. Moreover, the construction of mitigation structures presents a fiscal investment for local jurisdictions as continued maintenance and upkeep is warranted (Pilkey et al., 1980; Godschalk et al., 1989).

Another drawback is that structural mitigation measures do not provide complete protection against disaster impacts. Charlier (2003) implies that the use of structural mitigation measures to protect against rising sea levels is a foolish undertaking because rising ocean levels will ultimately win out against these strategies. Moreover, hazard magnitude can surpass the design standards of structural mitigation devices (Godschalk et al., 1989; Burby and Dalton, 1994; Burby, 2006). Graves (2013, p. 45) notes that “engineered structural mitigation measures such as levees are always subject to failure.” As experienced with Hurricane Katrina, levee and floodwall failure/breaching occurred because storm magnitude surpassed the design standards of these poorly-maintained flood control structures (Brody et al., 2010). The existence of structural mitigation devices can present a false sense of security as inhabitants are likely to continue occupying hazard-prone areas with the misconception that complete protection is assured (White,
Thus, the presence of structural mitigation devices encourages development in hazard-prone areas (Cigler, 2009).

**Nonstructural Hazard Mitigation Strategies**

The drawbacks of structural mitigation make nonstructural strategies a viable alternative for hazards such as floods (Godschalk et al., 1989; Brody et al., 2010). For instance, non-structural development management strategies have become an increasingly utilized comprehensive approach to coastal flooding hazard mitigation (Godschalk et al., 1989). As noted, across the United States local governments are beginning to realize the benefits of land use planning as an important tool in disaster loss reduction (Burby et al., 2000). Nonstructural hazard mitigation strategies use land use planning and regulations to limit, restrict, or direct development away from known hazardous areas (Schneider, 2002).

The creation of stand-alone or comprehensive plans (addressing hazard mitigation) is an important step in the pursuit non-structural hazard mitigation strategies. Stand-alone plans have a specific hazard focus and are of greater technical sophistication (Burby et al., 1999) while comprehensive plans have a broader policy focus (Burby et al., 2000). Local governments who pay attention to hazard mitigation in their comprehensive planning will contribute to the reduction of property losses from natural disasters (Burby, 2005). While both plans may vary in the scope of their objectives and technical sophistication, they are both representative of a local jurisdiction’s attempt at coping with natural hazards (Burby et al., 1999). “Where they have been adopted, stand-alone plans and the hazard mitigation elements of comprehensive plans have a positive effect in fostering more robust local government hazard mitigation programs and a reduction in property damage in natural disasters” (Burby et al., 1999, p. 249).
Another nonstructural hazard mitigation strategy, land use planning, is viewed as being critical for reducing losses from natural hazards (Godschalk et al., 1989; Mileti, 1999). Land use practices such as restricting development, compact development (i.e. clustering), and the transferring of development rights can reduce flooding impacts when directing growth away from flood prone areas (Brody et al., 2010). Land use planning has also been associated with an increase in community disaster resiliency. Burby et al. (2000) assert that communities having sound land use plans and hazard mitigation strategies are able to construct settlements that are disaster resistant, recover more expeditiously from a disaster event, and avoid any human lives and/or financial cost for their inhabitants.

Drivers of Local Hazard Mitigation

Although there are many hazard mitigation strategies to choose from, there are notable factors which prompt local government to act. Such factors can either aid or inhibit the ability of local jurisdictions to successfully bring about hazard mitigation outcomes. These factors relate to the community characteristics of a jurisdiction, the government make-up of a jurisdiction, and the capacities of the local planning agency most often associated with the pursuit of hazard mitigation initiatives. The degree to which local communities and planning agencies exemplify these characteristics dictates the fervor with which hazard mitigation strategies are pursued and the efficacy of hazard mitigation initiatives.

Local Community Characteristics - Disaster History

There appears to be a relationship between the disaster history of a community and their pursuit of hazard mitigation objectives (Drabek, 1986; Godschalk et al., 1989). In other words, greater local interest in pursuit of hazard mitigation planning is associated with greater
community hazard exposure. Local jurisdictions are able to call upon lessons learned from repeated disasters to improve community disaster resilience (Comfort, 1999). Local emphasis on hazard mitigation in the post-disaster window is a reflection of the focusing event characteristic of disasters (Birkland, 1996). Emergency managers, planners, and elected officials are presented with a window of opportunity to effectively pursue and implement hazard mitigation initiatives while widespread attention towards reducing disasters is still heightened. For instance, Yoon et al. (2012) find that an increase in the number of past presidential disaster declarations is positively associated with developing a local FEMA-approved hazard mitigation plan.

Local Community Characteristics - Sociodemographic Characteristics

Some research suggests that sociodemographic characteristics of a community influence hazard mitigation action. In a study of flood mitigation, Brody et al. (2010) suggest that the education level of community residents spurs the implementation of nonstructural flood mitigation strategies because educated citizens might be aware of the previous failing of structural strategies. They go on to assert that “an educated public is more likely to be receptive to and supportive and training, targeted education, training, and referendums for specific flood mitigation projects” (Brody et al., 2010, p. 180). Moreover, since media coverage may have increased awareness of structural mitigation failures during previous disasters, educated citizens may be me more inclined to acknowledge the benefits of nonstructural mitigation techniques. Another community characteristic having a positive influence on the adoption of development management programs is the median home value of local jurisdictions. In a study of coastal community hazard mitigation measure adoption, local jurisdictions having higher median home values have a greater likelihood of adopting development management programs because these
communities may have more resources, have a greater extent of property risk, or may have higher levels of local support for mitigation programs (Godschalk et al., 1989).

A causal study by Godschalk et al. (1989) also determined that the population size of community has a positive correlation on local government’s adoption of coastal flooding hazard mitigation programs (Godschalk et al., 1989). In other words, “the greater the population size of a locality, the more likely it is to have adopted development management measures” (p. 221). The rationale behind this finding is that larger localities tend to have a more extensive history of using development management measures and continued population growth will warrant the use of mitigation strategies to prevent occupation of hazardous areas. On the other hand, Burby and Dalton (1994) find that an increase in population density and amount of land exposed to hazards is associated with a decrease in the adoption of nonstructural mitigation development management measures. This suggests communities that are more dependent on hazardous areas for growth find it more difficult to adopt development limiting measures.

A jurisdiction’s population size is also associated with the capacity of its local government (Godschalk, 1989; Handmer, 1996). Jurisdictions with greater populations generally have greater availability of funding and experts whose knowledge can aid in the pursuit of hazard mitigation strategies (Handmer, 1996). Smaller jurisdictions are at a capacity (i.e. resource) disadvantage and require assistance from the state and federal government in their pursuit of nonstructural development management measures (Godschalk et al., 1989). The disposition of smaller jurisdictions has highlighted the “diversity of situations among local jurisdiction” and initiated recommendations that state government “focus their attention” on less-populated jurisdictions (Burby and May, 1998, p. 105).
Local Community Characteristics - Economic Base

In states that do not enact planning mandates, local land use planning is influenced by various factors such as planning agency staff capacity and commitment, local political activity for hazard reduction, and possessing a diverse economic base that would not be adversely impacted by halted land use development (Burby and Dalton, 1994). In other words, local communities having a diverse economic base are able to forego development as tax revenue can be generated from other areas. In a study of hazard mitigation measures adopted by coastal communities, Godschalk et al. (1989) find that where there is a desire for local economic development, hazard mitigation planning will be compromised. This is due to the notion that local elected officials often view matters of economic development as more pressing than minimizing risks from natural disasters. In short, local nonstructural land-use mitigation measures are secondary to economic development aspirations.

Local Government Indicators

Leadership

Reddy (2000) states that one factor that contributes to the failure of hazard mitigation programs during disaster recovery is a lack of clear local leadership. He suggests that it is imperative that strong leaders and advocates be present within the ranks of local government if hazard mitigation objectives are to be realized. In an examination of the adoption of mitigation measures during the long-term recovery phase of three South Carolina communities post-Hurricane Hugo, Reddy (2000) found that leaders of hazard mitigation projects can hold various local government positions such as mayors, city administrators, and board organizations. Schwab (2011) notes that local elected officials are in an advantageous position to give credibility to
hazard mitigation initiatives, can facilitate public support and understating of these objectives, and can demonstrate their commitment by voting on the formal adoption of the jurisdiction’s hazard mitigation plan. Indeed, “mitigation can benefit from a champion—a community leader or an elected or appointed official who can make a strong and convincing case for mitigation” (Godschalk, 2007, p. 105).

State-Local Government Relationship

While the implementation of nonstructural mitigation strategies (i.e. land use planning) can result in the reduction of disaster loss estimates, there is often failure on the part of local governments to undertake such actions. Steinberg and Burby (2002) note that over the past two decades research suggests that when states do not mandate community land use planning, many local governments will fail to develop comprehensive plans to account for hazard mitigation and loss reduction, will not update comprehensive plans accounting for hazard mitigation, and will not grant enough attention to hazards. There are noted reasons for the failure of local government to undertake hazard mitigation planning initiatives. One reason is that local governments will place community development, growth, and economic interests above the risks of developing in hazard prone areas (Burby et al., 1999; Godschalk et al., 1989). A second reason is that some local governments “tend to view natural hazards as a minor problem that can take a back seat to more pressing concerns such as unemployment, crime, housing, and education” (Mileti, 1999, p. 160). A third reason is that local governments have reassurance that the federal government will subsidize losses through disaster relief payments and facilitate rebuilding in hazard prone areas (Burby et al., 1999). Consequently, local governments would lack the incentive to proactively pursue hazard mitigation planning initiatives.
Where there is local failure to proactively undertake hazard mitigation planning, intervention by federal and/or state government is warranted. The federally-enacted DMA is represents the federal government’s attempt to financially incentivize local hazard mitigation activity. The DMA requires state and local governments develop approved multi-hazard mitigation plans in order to qualify for HMGP and additional federal mitigation grants, and also established the competitive Pre-Disaster Mitigation (PDM) which makes money available to localities before a disaster strikes (Schwab, 2011). State government may also enact mandates to prompt hazard mitigation action from local governments. Brody et al. (2010, p. 180) find that “greater commitment to planning and preparedness at the state level may thus lead to more extensive mitigation strategies at the local level, resulting in decreased property damage and human casualties from floods.” This suggests that local government pursuit and implementation of hazard mitigation planning can be attributed to the dynamic between local and state government. Burby and Dalton (1994) find that jurisdictions in states that have promulgated planning mandates are slightly more likely to have enacted planning mandates that jurisdictions in states that have not enacted planning mandates. While not all states mandate local governments to undertake hazard mitigation planning, those that do are at an advantage in facilitating local disaster damage reduction.

According to Burby (2005), studies have revealed that insured losses resulting from natural disasters are lower within states that mandate localities to have general comprehensive plans and even lower in states that require local jurisdictions to have comprehensive plans that account for natural hazard mitigation. Moreover, jurisdictions located in states prescribing planning mandates tend to have better quality comprehensive plans that account for hazard mitigation development (Berke and French, 1994). In other words, not only do state mandates
result in local implementation of land use development plans, those plans tend to be of higher quality than those found in plans belonging to local jurisdictions in states without mandates.

In most instances, local government agencies lack the capacity to carry out mandates prescribed by higher levels of government. Lacking the capacity to pursue mitigation initiatives can compromise desired outcomes (Handmer, 1996). Local governments may lack the financial resources, staff capacity, or capital to successfully pursue and implement mitigation strategy outcomes. As identified by Burby and May (1998), local officials often lament higher level of government’s failure to fund the implementation costs for the very mandates they are required to carry out. In a survey of local Florida officials tasked with developing mitigation-related plans, the majority of respondents (73%) lauded the importance of state-backed funding to support their efforts in developing higher quality land use plans (Burby and May, 1998). In this same survey, a vast majority of respondents also thought that state-provided hazardous area maps and other technical data aided in the development of higher quality land use plans. In order to facilitate successful local implementation of prescribed mitigation mandates, state government should seek to build the implementation capacity of local government planning agencies (Berke and French, 1994).

*Local Government Hazard Mitigation Commitment*

While increasing the capacity of local governments is vital, garnering local elected official commitment to state-mandated mitigation policies is suggested to be of even greater importance (Burby and May, 1998). Indeed, “the primary impediment to the adoption and enforcement of effective natural hazard regulatory policy has to do with the willingness rather than the capacity of governmental law-making bodies to act” (Petak and Atkisson, 1982, p.422).
Local governments may have the resources to institute flood mitigation programs, but a lack of commitment from local bureaucrats and elected officials will undoubtedly compromise the implementation of those programs (Handmer, 1996; Ivey et al., 2002). As a result, states should seek to increase the commitment of local governments and particularly elected officials before they seek to increase the expertise of local planning agency staff or provide planning agencies with technical data that can be used for the development of local plans (Berke and French, 1994).

To build the commitment of local elected officials, it is suggested that state governments work to improve the budget, technical, data, and staffing capacities of planning agencies so that they are able to develop higher quality plans (Burby and May, 1998). Another suggested strategy is for state governments to institute requirements that local governments involve citizens in the mitigation planning process (Burby and May, 1998). The rationale behind this suggestion is that informed citizen advocacy coalitions will positively influence the commitment of locally-elected officials to hazard mitigation planning.

Hazard Mitigation - Urban Planning Perspective

Much of the literature addressing local government pursuit of nonstructural hazard mitigation initiatives has been written with emphasis placed on the local planning office (Godschalk and Brower, 1985; Burby and May, 1998; Laurie et al., 2004; Brody et al., 2010) and individual planners (Stevens et al., 2008; Stevens, 2010). Lindell et al. (2002) note that hazard mitigation planning has been largely viewed as the domain of community planners while the overseeing of other emergency management functions (e.g. preparedness and response) is thought to best be handled by local emergency management coordinators. As suggested by Godschalk and Brower (1985), mitigation advocacy is managed by planners and public work
directors while emergency managers are kept busy dealing with activities related to disaster preparedness and response. In many ways, the effectiveness of local hazard mitigation planning has largely been associated with the characteristics of local planning agencies.

**Organizational Capacity**

In local jurisdictions, the adoption and implementation of hazard mitigation initiatives is predicated on the capacities of the organization tasked with overseeing these objectives (Brody et al., 2010). In most cases, this organization is thought to be the local planning agency (Lindell et al., 2002). Capacity conceptualized denotes among other criteria the ability of an organization to attract and manage resources as well as development programs that can be utilized for policy implementation (Honadle, 1981). Previous studies have determined that the quality of local plans is increased when planning agencies wield higher capacity (staff, budget, expertise, and authority) to develop these land use plans (Burby and May, 1998). In an international study on mitigation planning, it was also determined that local comprehensive plan implementation is tied to the capacity of planning agencies (Laurian et al., 2004). This reaffirms the association between local hazard mitigation actions and planning agencies.

**Financial Capacity and Personnel Capacity**

As suggested by Godschalk et al. (1989), while the effectiveness of building code enforcement is predicated on enforcement, many coastal communities lack the budget or sufficient personnel to assure outside adherence to building standards. “The one characteristic of organizational capacity that favors the implementation of structural mitigation initiatives is available financial resources to plan effectively for flood-resilient communities” (Brody et al.,
Yoon et al. (2012) find that state per capita Pre-Disaster Mitigation (PDM) funds significantly increases the percentage of a state’s population that is covered by a FEMA-approved hazard mitigation plan.

Another element of organizational capacity is having adequate staff (Brody et al., 2010) to conduct policy monitoring, enforcement, and ensure compliance with mitigation-related policies. Having sufficient staff capacity is found to positively influence local adoption of measures that limit development within hazardous areas (Burby and Dalton, 1994). Consequently, when local government organizations lack the needed staff capacity, the effectiveness of hazard mitigation strategies are impacted. Tang et al. (2006) suggest that when seeking to devote more time to the implementation component of their plans, local jurisdictions should also consider building adequate staffing. On the other hand, Yoon et al. (2012) find that staff capacity does not have a significant positive correlation to local development of FEMA-approved hazard mitigation plans.

Commitment Capacity

The importance of organizational capacity to pursuing hazard mitigation projects indicates that “state and regional entities should not only focus solely on encouraging localities to adopt mitigation strategies, but also on facilitating the development of strong and enduring public organizations” (Brody et al., 2010, p. 179). Local agency commitment is one indicator of organizational capacity (Brody et al., 2010) and state level government should also strive to strengthen this area. As discovered by Burby and Dalton (1994), the commitment of local planning agencies to state mandates has a significant positive correlation to development management program implementation.
The commitment of planning agency personnel is also necessary if hazard mitigation strategies are to be realized. Stevens et al. (2008) finds a correlation between greater individual planner commitment to hazard mitigation planning and the construction of newly-developed residential/commercial structures outside of hazardous floodplains. Moreover, Stevens (2010) emphasizes the role that individual planners play in the promotion, advocacy, and implementation of hazard mitigation plans. He further asserts that “individual planners who are committed to hazard mitigation are in an advantageous position to be able to identify and address natural hazard threats during the process of working with developers to agree upon site design features, in the same way that planning agencies are committed to hazard mitigation can help ensure natural hazards threats are addressed in official community development management programs” (394).

Knowledge and Technology Building

Prior to implementing sustainable mitigation and community planning initiatives, hazard and risk vulnerability analyses needs to be carried out (Godschalk et al., 1985). Conducting these functions warrants technical capacity for conducting hazard identification and vulnerability analyses functions (Godschalk and Brower, 1985; Schwab and Brower, 2008). Indeed, lacking the in-house technical expertise for conducting risk/vulnerability/economic analyses is one barrier to local government’s implementation of comprehensive emergency management programs (Godschalk and Brower, 1985). As suggested by (Mileti, 1999, p. 160), “the science of identifying hazards and designing to reduce their adverse impacts has far outrun the ability of local governments to put this new knowledge into practice.” Personnel involved in hazard mitigation planning and in the implementation of hazard mitigation strategies should
undoubtedly wield the technical knowledge and skills needed for these areas. However, previous literature indicates that emergency managers may be lacking those skills.

In a survey of local Texas emergency managers and land use planners, Lindell et al. (2002) find that there is a significant difference between the two groups in the use of hazard analysis statistical software (e.g. GIS) related to community hazard identification and vulnerability mapping. They find that local planners are more likely to utilize this software than local emergency management coordinators primarily because planners are more competent and proficient in such software. As the use of hazard analysis software is tied to hazard mitigation functions, the finding from Lindell and his colleagues has an implication for accomplishing hazard mitigation objectives. Their findings suggest that local emergency managers are less involved than planners in an important aspect of hazard mitigation planning (i.e. the use of technical hazard mitigation software), and this may impact their ability to complete hazard mitigation planning and strategy implementation initiatives.

Hazard Mitigation and the Local Emergency Management Office

Mitigation Roles

As part of local government make-up, the emergency manager is a central figure in local emergency management operations (Labadie, 1984). For instance, local emergency management officials are noted to be involved in all aspects of devising hazard mitigation plans (Graves, 2013). Schwab (2011, p. 7) suggests that “in many states and communities, emergency managers have been given the lead role in developing local hazard mitigation plans.” However, hazard mitigation planning is a collaborative effort requiring emergency managers to work in partnership with other key stakeholders. For instance, McEntire (2007) posits that local
emergency managers do not operate independently and the success of their endeavors is determined by the degree to which they, among other strategies, involve other departments. 

Graves (2013) suggests that the development of mitigation plans require emergency managers to work in tandem with planning and building professionals (familiar with community development patterns and building codes), public work professionals (familiar with local infrastructure design and location), and elected officials (who can facilitate citizen buy-in towards mitigation goals). 

Godschalk (2007) asserts that along with a host of other state, regional, and local agencies (planners, commerce, transportation, environmental protection, housing and community development), emergency management offices are typically involved in the hazard mitigation process. Indeed, hazard mitigation planning does not occur in a vacuum and local emergency management offices must pursue objectives in a management structure comprised of various experts and problem-solving agencies (Mileti, 1999; Graves, 2013).

Consequently, a downside of local government structure is that various agencies set about to solve hazard-related problems independently of each other and such individualistic efforts are insufficient for undertaking the “interdisciplinary task” of hazard mitigation planning (Mileti, 1999, p. 146). In one prominent example, pre-Katrina attempts to reinforce New Orleans’ system of levees was compromised by the involvement of numerous local/external actors (e.g. levee district boards, U.S. Army Corp of Engineers) as well as by intergovernmental complexities about funding and responsibility that “created a complex and stalemated condition, increasing the chance that New Orleans’ levees would not be able to withstand a large and strong hurricane like Katrina” (Col, 2007, p. 117). According to Schneider (2002, pp. 143-144), “many local officials and community planners assume that emergency management is not their responsibility or their concern.” As a consequence, hazard mitigation inaction would pose
ramifications for the disaster-related well-being of communities. “As the Katrina experience dramatically illustrated, those who fail to invest in mitigation cannot reap its benefits” (Godschalk, 2007, p. 90). Indeed, organizational fragmentation is one factor that compromises local mitigation efforts (Godschalk et al., 1999).

Hazard mitigation is a pivotal area and the activities of involved stakeholders, and particularly local emergency management agencies, is vital to achieving set about objectives and creating disaster-resistant communities. For instance, in some communities emergency managers (as opposed to the often referenced planning agency) may be leading local hazard mitigation efforts by facilitating collaboration among key stakeholders, performing the technical aspects of hazard mitigation (hazard/vulnerability/risk analyses), developing hazard mitigation plans, or procuring mitigation funding. In other cases, local emergency agencies may be a proxy stakeholder acting on behalf of the often-referenced planning agency or, where leading, may altogether delegate hazard mitigation planning to outside consultants while focusing on other phases of the comprehensive emergency management cycle, such as preparedness and response. As noted by Schneider (2002, p. 146), “reacting to individual disasters, focusing on response often to the neglect of mitigation and other disaster phases, and a focus on narrow technical capabilities often define the world of the emergency manager.”

Despite their inferred involvement (Godschalk, 2007; Graves, 2013), the specifics roles of emergency management offices (particularly in the area of hazard mitigation planning and strategy implementation) has went undefined in hazard mitigation studies. This knowledge gap provides the impetus for determining the current status of local hazard mitigation as reflected in the role(s) of local emergency management offices in this area. It is important to discern the extent to which emergency management offices are involved in the practicing of hazard
mitigation activities which bring about diminished disaster losses. This is especially warranted because emergency managers use valuable public resources for achieving objectives and are involved in mitigation decisions that directly contribute to community safety. Therefore, it is important to understand if local emergency management offices have the capabilities and wherewithal to effectively undertake their mitigation-related roles. As also revealed, emergency management offices must often work in tandem with other local stakeholders in the midst of their roles (Mileti, 1999; Geis, 2000; McEntire, 2007; Graves, 2013). Hazard mitigation is a pivotal area and the activities of key players are vital to achieving set about objectives and creating disaster-resistant communities.

_Hazard Mitigation Challenges_

Local emergency management offices are oftentimes confronted with less than ideal circumstances that may compromise their ability to undertake specific tasks. For instance, local emergency management offices often find themselves last in line with respect to the allocation of scant local resources (Labadie, 1984). On average, local governments provide minimal financial support to their emergency management departments (Lindell and Perry, 1992). As noted by Henstra (2010), when faced with limited resources and competing demands, local governments will often forego emergency management in order to address more pressing concerns. Moreover, emergency management offices oftentimes operate in a local environment where there is disinterest among elected officials and waning public interest for hazard mitigation objectives (Labadie, 1984; Perry and Mushkatel, 1984). Local elected officials view mitigation as being at odds with preferred economic development objectives (Godschalk et al., 1999). Local politicians often see their roles as promoting economic development and limiting growth (via nonstructural
land use mitigation controls) is viewed as being in opposition to this objective (Schneider, 2002). Diminished stakeholder regard for disaster reduction efforts can pose implications for the ability of local emergency management to obtain needed resources so that hazard mitigation objectives are successfully accomplished.

**Emergency Manager Employment Status and Organizational Arrangement**

The emergency management position varies across jurisdictions (Kreps, 1991). In an ideal setting, local emergency managers would be full-time employees whose sole purpose is to oversee emergency management functions (Henstra, 2010). Yet in some localities, the emergency manager may be of part-time employment status or assigned to the fire chief, public works director, police chief, city manager, or mayor (McEntire, 2007). Some communities having smaller budgets are forced to leave emergency management oversight in the hands of a part-time or volunteer emergency manager (Labadie, 1984). These employment status categorizations may result in emergency management becoming a secondary (i.e. part-time) function to the primary duties of the aforementioned officials. Another consequence is that part-time/volunteer emergency managers may have trouble gaining credibility with other stakeholders and agencies (Labadie, 1984). Moreover, the part-time or volunteer status of emergency managers could have implications for effort levels devoted towards hazard mitigation planning. Part-time/volunteer emergency managers may have limited time to devote towards hazard mitigation planning or devote their energies towards other phases of the comprehensive emergency management framework. Part-time and volunteer emergency managers may also lack the competencies needed for pursuing mitigation objectives as highly-skilled emergency managers may opt for full-time employment opportunities. In short, the employment status (full-
time vs. part-time) of emergency managers may pose implications for local hazard mitigation efforts.

Organizational Arrangement

Another factor relates to the particular parent agency tasked with hosting the emergency management department. As previously mentioned, across jurisdictions the emergency management function can be the responsibility of any number of stakeholders—fire chief, police chief, public works director, city manager, or mayor (McEntire, 2007). As various local parent agencies specialize in different functions, the particular agency tasked with overseeing emergency management may hold implications for efforts directed at hazard mitigation. The proficiencies of the parent agency (housing the emergency management department) may hold meaning for effort levels devoted towards local hazard mitigation.

Using ten years of observations and direct involvement in emergency management operations, Labadie (1984) offers a typology of local emergency management office organizational arrangements (stand-alone agency, subsumed within a line agency, intergovernmental council) and notes that each presents a set of advantages and disadvantages for the effectiveness of emergency management operations. For instance, some disadvantages are that stand-alone emergency management offices find themselves competing with other line agencies for limited resources (McEntire, 2007) while emergency management offices housed within a primary line agency find that their priorities are usurped by those of the parent agency (Labadie, 1984). In other words, should emergency management department priorities be supplanted by more pressing priorities of a parent agency, implications may be held for efforts levels devoted toward hazard mitigation. Labadie (1984) recommends that local emergency
management offices be housed within the office of the local executive (e.g. mayor or city manager) in order to get things done. The degree of attention afforded to hazard mitigation may ultimately be a result of the particular agency tasked with overseeing emergency management and the employment status of the emergency manager.

Little is known about how the challenges of local emergency management agency translate to their involvement (i.e. role) in hazard mitigation planning. For instance, their position might denote having a limited role in mitigation. Their position may also indicate that emergency management offices are a proxy stakeholder acting on behalf of the often referenced planning agency. Lastly, their position may indicate that the local emergency management office has no role in hazard mitigation and will therefore concede all mitigation involvement to planning agencies or other stakeholders. The aforementioned challenges may not reflect an exhaustive list as local emergency management offices may experience additional obstacles that affect their pursuit of hazard mitigation objectives. It becomes important to determine the full range of challenges, the pervasiveness of those challenges, and the innovative strategies utilized to overcome them.

Successful Hazard Mitigation Objectives

To be successful, hazard mitigation should be undertaken locally because local jurisdictions-as opposed to state and federal government-are most knowledgeable about the vulnerabilities and mitigation needs of their community (Reddy, 2000). Geis (2000) states that while state and federal governments lend political, policy, information, and technical support, local government efforts are most integral to creating disaster resistant communities. While achieving successful mitigation is the intended goal, little is known about local emergency
management’s notion of success and the meaning that success holds for community disaster resiliency.

Previous studies have quantified the benefits (i.e. success) of hazard mitigation. In one notable study, Rose et al. (2007) find that the overall benefit-cost analysis (BCA) ratio for FEMA mitigation grants invested from 1993-2003 was 4:1. In other words, $4 is saved in potential disaster damages for every $1 invested in hazard mitigation. BCA demonstrates that the benefits (i.e. costs savings) of hazard mitigation strategy implementation outweigh the financial costs of a disaster incurred by a community failing to take protective actions. A second measure which has previously been proposed as an indicator of local emergency management program quality is the existence of a hazard mitigation plan (Henstra, 2010). The purpose of a mitigation plan is to delineate a local jurisdiction’s goals and to identify short and long term strategies for achieving them (FEMA, 2003). By instituting components of their hazard mitigation plans, local governments implementing land use practices and other non-structural mitigation strategies such as zoning, urban growth boundaries, floodplain regulations etc. can effectively control their hazard exposure. While mitigation plan development is an initial step, bringing the components of that plan to fruition demonstrates local government’s commitment to reducing/eliminating community exposure to hazards. In light of recent natural disaster events, successfully accomplishing hazard mitigation objectives is of great importance because such action increases a community’s disaster resiliency. While the benefits (i.e. success) of hazard mitigation has been depicted quantitatively (Rose et al., 2007), an attempt has not been made to generate a qualitative measure of mitigation success from the perspective of practicing emergency managers. Thus, current measures of hazard mitigation may not be comprehensive enough. In summarizing several critiques of BCA, Godschalk et al. (2009, p. 740) posit that it “fails to reckon with the
comprehensive nature of planning, which recognizes that government actions must be judged both qualitatively and quantitatively.” Therefore, the opportunity exists to formulate a qualitative measure of hazard mitigation success from the perspective of emergency management practitioners.

Conclusion

Hazard mitigation activity is important for reducing community risk to hazards. Literature covering the topic of hazard mitigation has generally accounted for the involvement of local planning agencies. However, while other writings have suggested the involvement of emergency management offices and stakeholder groups in hazard mitigation planning, studies have not systematically examined their roles, confronted challenges, and perception of hazard mitigation success in this area. The proposed research methodology for examining the objectives of this dissertation is discussed in the next chapter.
CHAPTER 3

RESEARCH METHODOLOGY

Introduction

This purpose of this dissertation is to examine the current status of hazard mitigation in emergency management. This chapter presents an overview of the research methods used to achieve the research objectives. The chapter also provides details on the mixed method of data analysis, study area, participants selected, study sample, and specific modes of data collection.

Mixed Methods Data Analysis

For this study a concurrent embedded mixed methodology (combining both qualitative and quantitative techniques) was used for the data analyses. In this approach, quantitative and qualitative data are collected concurrently and one technique is assigned more weight and guides the study while the other technique is used in a supplementary manner (Creswell, 2009). When a mixed methods approach is utilized, the qualitative component oftentimes supplements the larger study (Strauss and Corbin, 1990). Additionally, the use of mixed methods facilitates a more robust, well-developed, and comprehensive theory about the current status of hazard mitigation in local emergency management from the perspective of practicing emergency management coordinators.

The use of mixed-methods ensures that the strength of one technique compliments the strength of the other technique or that the strength of one technique compensates for the shortcomings of the other technique (Creswell, 2009). For instance, Rank (1992) asserts that while randomly sampled quantitative data may allow for generalizability to a larger population and can statistically model events and relationships within that population, it does not depict the
complete context which undergird those relationships (as cited from Hesse-Biber and Leavy, 2004). He goes on to suggest that additional benefits of mixed methods usage include bringing about insights that would otherwise have been unattainable with the use of a single method; it increases the validity of the research findings particularly when qualitative and quantitative findings are consistent; and it forces the scientist to redirect the research in a novel direction when qualitative and quantitative findings are incongruent.

In this research, the purpose of using quantitative and qualitative data analysis is to achieve what Creswell (2009) identifies as concurrent triangulation strategy. The objective of this triangulation strategy is to identify convergence, divergence, or some combination thereof with the two types of data. In short, quantitative and qualitative data can be merged, integrated, or compared side-by-side, with accompanying discussion to explicate the interplay between the two data sets. In this research, quantitative analysis of survey data was used to characterize regional emergency management with descriptive statistics of study respondents and their emergency management office; to quantify participant responses to survey questions; to determine relationships and conduct significance testing among key variables; and to arrive at findings that can be potentially generalizable to the larger population of regional North Central Texas emergency management coordinators. Qualitative analysis (of interview data) was used to provide deeper meaning by illuminating or clarifying quantitative findings (Corbin and Strauss, 1990).

Site Selection

Data was collected within the North Central Texas region (Figure 3.1). The region encompasses 16 counties in and around the Dallas-Fort Worth (DFW) metropolitan area; is a
total 12,800 square miles; and has a population of more than 5.5 million people (What is NCTCOG?, 2005). The region is made up of both urban and rural jurisdictions and contains approximately 155 public sector emergency management offices of varying organizational arrangements. Within the region are two of the three most populous counties in Texas (Dallas and Tarrant) and 3 of the 7 most populous cities in the state (Dallas, Fort Worth, Arlington).

Study Sample and Participant Recruitment

Emergency management coordinators representing county and local jurisdictions within the North Central Texas region comprised the study sample. For initial recruiting, attempts were made to contact regional emergency management coordinators by telephone. Approximately 45 emergency management coordinators were repeatedly called until the commitment of thirty (N=30) participants was eventually secured for this study. Purposeful sampling was used to recruit interviewees due to its sufficiency in selecting “information rich” participants for a study.

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2 The estimated 155 public sector emergency management offices was obtained from a representative of the North Central Texas Council of Governments (NCTCOG) on October 7, 2014. The NCTOG is a voluntary association of local governments and was established to assist them in planning for common needs, cooperating for mutual benefits, and coordinating for sound regional development. Among the numerous functions of NCTCOG is bringing together urban, suburban, and rural jurisdictions and facilitating information sharing, collaboration, cooperation between jurisdictions, and to provide comprehensive emergency management program support. Retrieved April 4, 2014 from http://www.nctcog.org/about.asp
Purposeful sampling ensures that those recruited for participation possessed information that would illuminate the topic of hazard mitigation planning. Hence, it was important that prospective participants have knowledge, insight, and familiarity about the dynamics of emergency management activities in their community and the broader region. For this study, local emergency management coordinators were purposely identified for recruiting because they are tasked with overseeing the emergency management program of their jurisdiction and subsequently hazard mitigation planning.

Local and county emergency managers were recruited based on their contact information (e.g. job title, direct telephone number, or email) listed on their local government and/or agency website. Criteria for recruiting participants for this study included those whose formal job title(s) encompassed emergency management (e.g. emergency management coordinator, preparedness and mitigation coordinator, emergency management officer, emergency management specialist), and whose duties extended to overseeing general emergency management and/or the hazard mitigation function (e.g. hazard mitigation specialist). In cases where it was difficult to determine an individual’s affiliation with emergency management and/or hazard mitigation, a telephone call was made to the county/city government office to determine the specific agency or individual tasked with overseeing local emergency management. The names, job title(s), email address, and jurisdiction and/or county names were then organized into an electronic file. The participant’s contact information, emergency management office organizational classifications (stand alone or integrated) and, where applicable, the parent agency of integrated offices (e.g. fire department or police department) was outlined in the file. Prior to this study, the researcher had no rapport with emergency managers in the North Central Texas region. Thus, recruitment strategies required cold-calling to recruit participants. The recruitment protocol included
formally introducing the interviewer to prospective participants (my name, title, institution affiliation), the reason for contacting them, and a description of the scope of the study. The recruitment narrative was approved by the University of North Texas Institutional Review Board (IRB) on September 30, 2013 and is included in Appendix A. After detailing the study’s scope, participants were asked to verbalize yes or no to indicate their willingness to participate in this study. While a handful of those contacted inquired further about the study, the overwhelming majority of participants exhibited a willingness to participate after given the initial explanation.³ During the early recruitment stage, one semi-retired emergency manager respectfully declined participation. The cold-calling recruitment strategy was repeated over a four month period until 30 interviews were completed.

Upon confirming a participant’s willingness to be involved with the study, a date and time was arranged to contact participants for the telephone interview. In some cases, and prior to ending the introductory telephone call, an inquiry was made with the emergency management coordinator about the names of colleagues from other emergency management offices that might be recommended for participation in this study. Throughout the recruiting process, 1 participant was helpful in facilitating snowball sampling by providing the contact information of other colleagues who were not yet targeted for recruitment.

On average, telephone interviews were scheduled for one week after the introductory telephone call. At a participant’s request, the interview questionnaire (see Appendix B 2013 Hazard Mitigation Telephone Interview Guide) was emailed to them before the scheduled

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³ A select number of participants requested that an email (outlining the parameters of the study) be provided to them before they would commit to being interviewed. After providing these prospective participants with an email which outlined the study’s parameters, three (3) replied via email and confirmed their consent to participate. It was incumbent upon the researcher to follow-up with these 3 individuals and schedule a date and time for the telephone interview.
interview date. The email also provided detailed narrative about the scope of the study, and outlined the participant’s rights with being involved in this study.

The study sample resulted in a diverse population of emergency management coordinators. As a result of the geographic variation of participants sampled, the variation in the size and population of counties and local jurisdiction represented, and variation in the emergency management office organizational configurations represented, this research provides a picture of the current status of emergency management for the region.

A total of 83% of telephone interview participants represented city-level emergency management offices and the remaining 17% represented county-level emergency management offices. For this study, county-level emergency management coordinators were recruited because various smaller and/or rural jurisdictions throughout the region do not operate their independent emergency management office. For these jurisdictions, the county’s office of emergency management retains stewardship of their emergency management functions, and exists as the nearest operating office of emergency management to the local government structure. Additionally, the county-wide hazard mitigation plan will also account for those jurisdictions.

In total, 90% of the study sample was categorized as integrated emergency management offices and the remaining 10% represented stand-alone emergency management offices. A more-detailed breakdown of integrated emergency management offices reveals 63% as being located in fire departments (i.e. integrated fire) and 27% are located in non-fire department agencies (i.e. integrated non-fire). The 63% of integrated fire emergency management offices presented a unique case that warranted further dissection. In 13% of integrated fire department offices, the fire chief also has the job title of lead emergency management coordinator (i.e. integrated fire/chief). As the leader of the fire department, the dual fire chief/emergency management...
Coordinator has the authority to make all executive decisions regarding the daily emergency management operations of their agency. However, in 50% of integrated fire departments the title of emergency management coordinator (EMC) is held by an employee other than the fire chief (i.e. integrated fire/EMC). Some examples included an assistant fire chief/EMC, fire marshal/EMC, or an individual whose sole title is emergency management coordinator. These individuals may ultimately remain accountable to the fire chief. Thus, the integrated fire/EMC office arrangement introduces an added layer of organizational bureaucracy that may pose implications for hazard mitigation planning.

As shown in Table 3.1, there are 4 emergency management office organizational configurations represented in the study sample. Also shown in Table 2 are the variations in the number of emergency management office observations in the 2 modes (telephone interview and internet survey) of data collection. For instance, while 3 stand alone office representatives participated in the telephone interview, only 2 participants from this organizational configuration completed the online survey.

Table 3.1

*Breakdown of Telephone Interview Participants and Internet Survey Respondents by Emergency Management Office Arrangement*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Telephone Interview Frequency</th>
<th>Telephone Interview Percentage</th>
<th>Organizational Structure</th>
<th>Internet Survey Frequency</th>
<th>Internet Survey Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>3</td>
<td>10</td>
<td>Stand Alone</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>8</td>
<td>13</td>
<td>Integrated Non-Fire</td>
<td>7</td>
<td>23</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>4</td>
<td>50</td>
<td>Integrated Fire/Chief</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>15</td>
<td>27</td>
<td>Integrated Fire/EMC</td>
<td>16</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
Data Collection (Phase 1)

In this study, there were two primary strategies for data collection including (1) a series of in-depth semi-structured telephone interviews and (2) an internet survey\textsuperscript{4}. The telephone interviews were the first mode of data collection. The interview questionnaire consisted of 20 closed-ended and open-ended questions. The closed-ended interview questions allowed participants responses to be examined with quantitative methods. The open-ended interview questions allowed emergency managers to share narrative of their perceptions and experiences within the parameters of the questions.

The interview is an appropriate strategy of inquiry (Creswell, 2009) due to its effectiveness at eliciting a participant’s perception or perspective on things that cannot be directly observed (Patton, 1990; Creswell, 2009). As Miller and Crabtree (2004) state, the depth interview incorporates “open, direct, verbal questions that elicit stories and case-oriented narratives” (as cited from Hesse-Biber and Leavy, 2004, p. 189). Hence, the experiences and involvement of emergency managers in hazard mitigation allowed for the capturing of detailed narrative addressing this area.

For this study, a sample of $N = 30$ was proposed to be sufficient for achieving redundancy (i.e. saturation) in participant interview responses, and for conducting meaningful quantitative data analysis. With purposeful sampling, achieving redundancy is the primary criteria by which a study’s sample size is determined (Lincoln and Guba, 1985). Once redundancy is achieved, sampling ceases because novel information is unlikely to be obtained through additional sampling (Lincoln and Guba, 1985).\textsuperscript{5} During the interview process,\textsuperscript{4} See Interview and Survey in Appendix B.\textsuperscript{5} Through first-hand observation, and without having conducted systematic qualitative analysis, redundancy began emerging in participant responses at approximately the 20\textsuperscript{th} interview.
redundancy began emerging around the 20th interview. Thus, the predetermined interview sample size of \( N = 30 \) proved appropriate for qualitative data collection.

The first telephone interview took place on October 30, 2013 and the final telephone interview was completed on February 24, 2014. Participants were contacted on the date of the scheduled interview. Before proceeding with formal interview questioning, contacts were informed of their rights as a participant in this study. Participants were informed that they had full discretion to decline response to any interview question; could conclude the interview at any juncture; and that neither their name nor that of their city or office would be disclosed in this study. Participants were then asked to verbally grant informed consent to acknowledge the understanding of their rights. Lastly, permission was sought from participants to have the interview audio-recorded for verbatim transcription at a later date. Throughout the interview process, each participant granted verbal permission to have the interview audio-recorded. Upon receiving permission to record the interview, the tape recorder was activated and formal questioning commenced.

The interview began with three closed-ended questions to establish a level of comfort and openness with participants. The interview then transitioned to open-ended questioning. However, as common to a semi-structured interview, probing questions emerged as a result of participant response to prewritten open-ended interview questions and these probing questions remained confined to the topic of local hazard mitigation planning and strategy implementation. During the interview handwritten notes were taken to later reference during the transcription process. Telephone interviews lasted anywhere from 30 to 45 minutes. Some participants were extremely engaged while other participants did not provide detailed narrative. The length of the interview was a reflection of a participant’s openness and the extent of information they were willing to
provide. At the conclusion of the interview participants were asked if they needed to revisit earlier questions to clarify previous responses and none of the interviewees elected to do so. At this juncture, participants were informed about and asked to complete the internet survey as a follow-up to the interview. All emergency management coordinators confirmed a willingness to complete the internet survey. The link to the internet survey was emailed to interview participants immediately after completing the telephone interview. Audio-recording of participants through the telephone’s speakerphone feature resulted in high-quality recordings. However, technical issues did emerge with one recorded interview and the transcription proved problematic after the first half of the recording. The first half of this interview was used for qualitative analyses.

Data Collection (Phase 1A)

The second mode of data collection was an internet survey consisting of 28 questions, the majority of which were close-ended (see Appendix B 2013 Hazard Mitigation Survey). The survey was emailed to participants immediately after the interview. The online survey was developed using Qualtrics research software which allowed for the survey to be sent directly to participants through a personalized email. They were able to access the survey by clicking on a survey link that was included in the email. A notable feature of Qualtrics is that it allows for confirmation for when participants successfully received, started, and completed the survey in its entirety. Prior to beginning the survey, participants were required to read a short narrative that outlined the scope of the study and their informed consent rights. Participants were then required to select yes to indicate an understanding of those rights before they could begin to answer the
survey questions. I began administering the survey on October 30, 2013 and the final survey was completed on March 28, 2014.

As an instrument of data collection, the online survey was appropriate because it “provides a quantitative or numeric description of trends, attitudes, and opinions of a population by studying a sample of that population” (Creswell, 2009, p. 12). The survey also proved beneficial as a data collection instrument because it was less time-consuming than the interviews, and less obtrusive because it allowed participants to complete it at their own leisure. The shortest time taken to complete an internet survey was five minutes and thirty-two seconds. In total, 28 emergency management coordinators that were previously interviewed also completed the internet survey. Eighteen (18) previously interviewed emergency managers completed the internet survey after the initial post-interview email was forwarded to them. Participants who did not complete the survey after the phone interview were reminded (via email) to do so at seven day intervals. In total, 28 out of the 30 interviewed participants that were interviewed also completed the internet survey. The final two surveys were completed by participants who were not previously interviewed.

**Quantitative Data Analysis**

In this research, three methods of quantitative analyses were used to examine responses for the cumulative survey sample and for the different emergency management office categories. First, independent sample tests were used to compare the mean response of survey respondents across emergency management office categories, and to test for statistically significant differences in those responses. Independent samples t-tests were also used to examine organizational characteristics among the different emergency management office categories.
Second, Pearson or Spearman correlation analyses (depending on the classification of correlated data) was used to examine the linear relationships between organizational characteristics and variables representative of the 3 key areas of this research (i.e. activity involvement, challenges, and hazard mitigation success). For survey respondents representing integrated emergency management offices, correlation analyses was used to examine the relationship between the parent agency’s influence on hazard mitigation planning and the 3 primary areas of this research. Finally, chi-square analysis was used to examine the relationship between emergency management office categories and the probability of completing certain hazard mitigation actions.

The first step of quantitative analysis was to organize the descriptive data for survey respondents and their emergency management office. The gender make-up of respondents was noted upon their completion of the survey. As outlined in Tables 3.2, 80% of survey respondents were male and 20% were female.

Table 3.2

<table>
<thead>
<tr>
<th>Participant Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>24</td>
<td>80%</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>

Survey respondents were prompted to indicate all job title(s) held. Table 3.3 outlines the job title(s) held by survey respondents from the 4 emergency management office categories. Results indicate that respondents from the stand alone and integrated non-fire offices generally have one job title. On the other hand, survey respondents from integrated fire/chief and integrated fire/EMC emergency management offices generally have dual job titles (e.g. assistant fire chief/emergency management coordinator).
Table 3.3

Survey Respondents Job Titles Held by Emergency Management Office Category

<table>
<thead>
<tr>
<th>Number of Job Title(s)</th>
<th>Stand Alone Office</th>
<th>Integrated Non-Fire Office</th>
<th>Integrated Fire/Chief Office</th>
<th>Integrated Fire/EMC Office</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Job Title</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>Multiple Job Titles</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>7</td>
<td>5</td>
<td>16</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 3.4 outlines the years of experience in the emergency management profession for internet survey respondents. The majority (90%) of emergency managers reported having more than 5 years of professional emergency management experience. A smaller percentage of respondents (10%) have 1 to 3 years of professional emergency management experience.

Table 3.4

Survey Respondent Years of Experience in the Emergency Management Profession

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 Years</td>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>3-5 Years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>More than 5 Years</td>
<td>27</td>
<td>90%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3.5 highlights the educational level of survey respondents and reveals that the majority (86%) of emergency management practitioners had either a Bachelors or Master’s degree. In addition to their highest level of academic education, Table 3.6 depicts the number of internet survey respondents that hold the listed professional emergency management credentials and/or professional certifications. Sixteen respondents have a bachelor’s degree followed by ten respondents that possess a master’s degree.

Table 3.5

Educational Level of Survey Respondent.

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Some College</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>2) Associates Degree</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>3) Bachelor’s Degree</td>
<td>16</td>
<td>53%</td>
</tr>
<tr>
<td>4) Master’s Degree</td>
<td>10</td>
<td>33%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 3.6

Professional Certifications and Credentials of Survey Respondents

<table>
<thead>
<tr>
<th>Certification(s) Held</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>7</td>
<td>23%</td>
</tr>
<tr>
<td>Associate Emergency Manager</td>
<td>9</td>
<td>33%</td>
</tr>
<tr>
<td>Certified Emergency Manager (CEM)</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Certified Floodplain Manager (CFM)</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Certified Business Continuity Professional</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Homeland Security Exercise and Evaluation Program Certification (HSEEP)</td>
<td>5</td>
<td>19%</td>
</tr>
<tr>
<td>American Institute for Certified Planners</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Fire Academy Graduate</td>
<td>11</td>
<td>41%</td>
</tr>
<tr>
<td>Police Academy Graduate</td>
<td>4</td>
<td>15%</td>
</tr>
<tr>
<td>Other (Please specify)-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive Fire Program Officer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master Exercise Practitioner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2 Incident Management Team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMT Paramedic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Management Professional, Certified Texas Emergency Manager</td>
<td>5</td>
<td>9%</td>
</tr>
</tbody>
</table>

Survey respondents were also required to provide information on the characteristics of their emergency management office. Organizational characteristics obtained from the internet survey included the number of full-time/part-time employees in their office; the division of their weekly work hours; and the percentage of their 2012 budget appropriated for hazard mitigation initiatives. Tables 3.7 to 3.9 provide an overview of the average number of full time staff, part time staff, and volunteer workers across the 4 emergency management office categories.

Table 3.7

Average Full-Time Staff by Emergency Management Office Category

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Average Part-time Staff</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>1.50</td>
<td>.707</td>
<td>1.50</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>2.43</td>
<td>1.62</td>
<td>3.00</td>
<td>0</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>0.80</td>
<td>.447</td>
<td>1.00</td>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>2.69</td>
<td>3.93</td>
<td>1.00</td>
<td>0</td>
<td>13</td>
<td>16</td>
</tr>
</tbody>
</table>
Table 3.8

*Average Part-Time Staff by Emergency Management Office Category*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Average Part-time Staff</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>1.00</td>
<td>1.41</td>
<td>1.00</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>0.71</td>
<td>1.25</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>0.40</td>
<td>.894</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>0.13</td>
<td>.342</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3.9

*Average Volunteer Workers by Emergency Management Office Category*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Average Volunteer Staff</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>5</td>
<td>7.07</td>
<td>5.00</td>
<td>0</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>3.57</td>
<td>7.04</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>7.63</td>
<td>20.45</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>16</td>
</tr>
</tbody>
</table>

Additional organizational characteristic reported by internet survey respondents were the average number of weekly work hours they devote to hazard mitigation planning activities (Table 3.10); the average number of weekly hours devoted to other emergency management activities (i.e. emergency preparedness, response, and recovery planning) (Table 3.11); and the average number of weekly hours devoted to non-emergency management activities (Table 3.12). In general, more work hours are devoted to other emergency management activities than is devoted to hazard mitigation planning and strategy implementation.

Table 3.10

*Average Weekly Work Hours Devoted to Hazard Mitigation Planning*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Weekly Mitigation Hours</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>2.50</td>
<td>2.12</td>
<td>2.50</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>18.29</td>
<td>29.61</td>
<td>10.0</td>
<td>2</td>
<td>85</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>2.00</td>
<td>1.87</td>
<td>2.00</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>4.69</td>
<td>4.80</td>
<td>3.50</td>
<td>0</td>
<td>20</td>
<td>16</td>
</tr>
</tbody>
</table>

57
Table 3.11

*Average Weekly Work Hours Devoted to Other Emergency Management Activities*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Weekly Other EM Activity Hours</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>37.50</td>
<td>2.12</td>
<td>37.50</td>
<td>36</td>
<td>39</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>37.29</td>
<td>31.42</td>
<td>30.00</td>
<td>3</td>
<td>80</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>3.60</td>
<td>1.52</td>
<td>4.00</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>27.38</td>
<td>15.44</td>
<td>30.00</td>
<td>0</td>
<td>70</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3.12

*Average Weekly Work Hours devoted to Non-Emergency Management Activities*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Weekly Non EM Activities</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>3.00</td>
<td>4.24</td>
<td>3.00</td>
<td>0</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>7.86</td>
<td>5.61</td>
<td>8.00</td>
<td>2</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>36.40</td>
<td>2.61</td>
<td>36.00</td>
<td>34</td>
<td>40</td>
<td>5</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>10.75</td>
<td>11.61</td>
<td>7.00</td>
<td>0</td>
<td>40</td>
<td>16</td>
</tr>
</tbody>
</table>

Lastly, Table 3.13 outlines the average amount of each office configuration’s year 2012 budget that was devoted to hazard mitigation. Results show that integrated fire/EMC offices devote the greatest percentage of their 2012 office budget to hazard mitigation. Integrated non-fire and integrated fire/chief emergency management offices were second and third respectively. Stand alone offices devoted no portion of their 2012 office budget to hazard mitigation planning and strategy implementation.

Table 3.13

*Emergency Management Office Hazard Mitigation Budget for Year 2012.*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>2012 Office Mitigation Budget</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stand Alone</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Non-Fire</td>
<td>5.00</td>
<td>7.64</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Integrated Fire/Chief</td>
<td>1.40</td>
<td>2.07</td>
<td>1.00</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Integrated Fire/EMC</td>
<td>6.31</td>
<td>6.98</td>
<td>5.00</td>
<td>0</td>
<td>20</td>
<td>16</td>
</tr>
</tbody>
</table>
Qualitative Data Analysis

Qualitative analysis is useful for its ability to illuminate and facilitate the understanding of an area of which little is known (Strauss and Corbin, 1990). With regard to this study, very little was previously understood about emergency manager involvement in hazard mitigation and the current status of hazard mitigation. Hence, qualitative analysis was selected as an appropriate way to generate new knowledge. According to Rank (2004), the strength of qualitative data is that it contains richness and depth and allows the researcher to acquire a deeper understanding of the research topic (as cited in Hesse-Biber and Levy, 2004).

The first step of qualitative data analyses was the verbatim transcription of in-depth interviews. The transcription process began on October 31, 2013 and ended on March 10, 2014. On average, transcription of individual interviews required three (3) to four (4) hours for completion. When the transcription process was completed, interview transcripts were checked against their respective audio-recording to ensure accuracy in capturing participant responses. After confirming the accuracy of the transcribed interviews, data analysis progressed to the usage of the appropriate strategy of inquiry.

Qualitative data analysis took place through an inductive grounded theory process (Strauss and Corbin, 1990). As a strategy of inquiry (Creswell, 2009), inductive grounded theory is one in which “the patterns, themes, and categories of analysis come from the data; they emerge out of the data rather than being imposed on them prior to data collection and analysis” (Patton, 1990, p. 390). Charmaz (2003) notes that grounded theory employs a series of inductive strategies suitable for analyzing data (as cited from Hesse-Biber and Leavy, 2004). The first of these inductive strategies was open coding which is used to create information categories based on participant narratives (Creswell, 2009). Open coding entailed analyzing raw qualitative
interview data in order to break it down into discrete parts that are labeled as concepts which reflect the ideas, events, or incidents being represented (Strauss and Corbin, 1990). Open coding required line-by-line coding of raw interview data to develop initial codes and to note the actions observed to be occurring in the data (Hesse-Biber and Leavy, 2004). Undertaking line-by-line coding required meticulous study and immersing oneself in the data in order to develop appropriate codes. The next step of grounded theory was axial coding which positions the open-coded categories within a theoretical model (Creswell, 2009). The process of selective coding is finally used to convey a story based on the interconnectedness of the positioned categories. Selective coding, which is aided by reviewing hand-written memos, involves the process of orienting categories around a central idea/theme (i.e. integration) and using explanatory statements to highlight meaningful relationships (i.e. theoretical schemes) among central themes and categories (Strauss and Corbin, 1990).

Chapter Summary

This chapter provided an overview of the research design for this study. Specific details were provided about the site selected for study, the participant selection process, the study sample, primary data collection instruments, and methods of quantitative and qualitative data analysis. Chapter 4 outlines the qualitative analysis findings and presents the self-identified roles of emergency management coordinators in hazard mitigation planning and strategy implementation and the perceived functions of additional stakeholders involved in these areas.
CHAPTER 4

SELF-IDENTIFIED ROLES AND PERCEIVED STAKEHOLDER FUNCTIONS

Introduction

This chapter examines the involvement of regional North Central Texas emergency management coordinators in hazard mitigation planning and strategy implementation, and in doing so delineates their self-identified roles in these areas. Additionally, this chapter presents the results of qualitative analyses pertaining to participant’s perception regarding the function of other stakeholders involved in hazard mitigation planning. As is indicated, the majority of participants describe their office as leaders of local hazard mitigation, and as leaders, they undertake a variety of key roles in the promotion and execution of hazard mitigation activities.

Generally speaking, a role is defined as a behavior or action expected of an individual that holds a position or status in society (Stewart and Glynn, 1971). In the context of hazard mitigation planning, a role denotes the routine actions carried out by practitioners as a result of their emergency management position. These routine actions contribute to the efficacy of local hazard mitigation planning and strategy implementation, and subsequently has implications for community disaster resiliency.

Emergency management coordinators describe their office as being the leaders of hazard mitigation in their community, and in doing so have six broad self-identified roles (See Figure 4.1). Scholarship literature that emphasize the involvement of local planning agencies in the mitigation process have identified (either explicitly or implicitly) three of these hazard mitigation-related roles as advocacy (Reddy, 2000), public educator (Lindell et al., 2002), and collaborator (Stevens, 2010). Two roles have not received extensive mention in existing hazard mitigation literature and include the administrator role and the facilitator-coordinate role.
McEntire and Myers (2004) briefly allude to the fund seeker role but in the context of disaster preparedness planning. As outlined in Table 4.1, each role is important to the hazard mitigation planning and strategy implementation process.

In their collaborator role, regional emergency management coordinators work with a wide array of stakeholders, and view these entities as performing important functions. Analyses of the transcribed interviews indicate that emergency management coordinators view stakeholders as true hazard mitigation leaders, subject-matter-experts, the hands-on-guys, and supporters of hazard mitigation planning and strategy implementation efforts.

This chapter describes the six self-identified roles of emergency management coordinators in hazard mitigation. Presented as qualitative themes, their self-identified roles are supported by a definition, participant’s quotes discussing the activities associated with each theme, and an interpretation of each quote.

Figure 4.1. Emergency management coordinator self-identified hazard mitigation roles.
Table 4.1

Description of the Importance of Self-identified Roles

<table>
<thead>
<tr>
<th>Self-Identified Role</th>
<th>Role Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>Accounts for those activities associated with the framing, researching, acquiring, documenting, and organizing of all information included in the hazard mitigation plan.</td>
</tr>
<tr>
<td>Collaborator</td>
<td>Provides emergency management coordinators with the opportunity to engage valuable stakeholders in hazard mitigation planning and strategy implementation.</td>
</tr>
<tr>
<td>Facilitator-Coordinator</td>
<td>Represents emergency management coordinator’s part in orchestrating the hazard mitigation planning process, and bringing synergy to stakeholder interactions and information-sharing.</td>
</tr>
<tr>
<td>Fund Seeker</td>
<td>Tasks emergency management coordinators with pursuing and acquiring essential financial resources necessary for funding hazard mitigation planning and strategy implementation.</td>
</tr>
<tr>
<td>Advocate</td>
<td>Presents an opportunity for emergency management coordinators to educate and generate buy-in from political stakeholders and other agencies.</td>
</tr>
<tr>
<td>Public Educator</td>
<td>Presents emergency management coordinators with the opportunity to educate citizens about the importance of hazard mitigation planning and persuade them to take individual action.</td>
</tr>
</tbody>
</table>

Leaders

Literature has presented emergency management offices as a central figure in local emergency management operations (Labadie, 1984). Schwab (2011) notes that in some states and communities the emergency management coordinator is charged with leading the drafting of the emergency management plan, and are often viewed as holding the preeminent hazard mitigation-related leadership position in their community. In this research, analyses of participant responses corroborated earlier studies (Labadie, 1984; Schwab, 2011) by indicating that emergency management coordinators describe their office as the leaders of community hazard mitigation planning and strategy implementation. A leader is defined as “a person who has commanding authority or influence” (Merriam-Webster’s online dictionary, n.d.). While not designated as an official hazard mitigation role, the leadership function is important because it grants emergency management coordinators the authority to carry out their 6 self-identified roles. When asked to categorize their office’s role in hazard mitigation, at least one participant...
from each organizational arrangement configuration noted their leadership in local hazard mitigation planning:

We are the primary entity in that manages the development of the HMAP (hazard mitigation action plan). (Integrated Non-Fire, #1, 2013)

We are the lead department on that. We lead the hazard analysis. We bring the group together to identify the actions. (Stand-Alone, #11, 2013)

(Integrated Fire/Fire Chief) We would be responsible for it for the city. (Integrated Fire/Chief, #15, 2014)

I categorize it as definitely involved. We are pretty much the primary mover of mitigation actions as far as planning and long-term planning goes. A lot of departments play a large role in it as well, but as far as keeping it going and long-term forecasting stuff like that it mainly falls to my office. (Integrated Fire/EMC, #19, 2014)

Emergency management coordinators execute several other functions that are associated with their local hazard mitigation leadership title. One function entails the initial development of their community’s hazard mitigation plan. The purpose of the hazard mitigation plan is to identify hazards within a community through risk and vulnerability assessments, outline a community’s strategy for reducing or preventing disaster losses, and to provide a vision for pursuing this strategy. As two fire chiefs explain:

Well I’m responsible for writing our piece of the (County Name) County plan because I am the city’s Emergency Management Coordinator. (Integrated Fire/Chief, #12, 2014)

Currently with this plan, just for (city name) portion of it we’re taking the lead on that and then coordinating with our other city departments that have a part of it. (Integrated Fire/Chief, #13, 2014)

Federal guidelines mandate that local hazard mitigation plans be updated every 5 years so that communities remain eligible for hazard mitigation-related grant money and specific disaster recovery mitigation-related funding (Robert T. Stafford Act of 1988, 2013). Adhering to these guidelines ensures that hazard mitigation planning is not a one-time occurrence and suggests that communities are remaining committed and current in their hazard mitigation planning.
Respondents demonstrated their on-going commitment to hazard mitigation planning by articulating their actions in updating the community’s hazard mitigation plan. Three participants communicated the following:

The Office of Emergency Management is the lead division in drafting and coordinating responses and updates for the plan for the City of (City Name). (Integrated Non-Fire, #2, 2013)

So the county this time around as we’re updating the plan we’ve taken more of a leading role in terms of facilitating the writing the preparation updates of the plan. (Integrated Non-Fire, #6, 2013)

Pretty much we review it annually and we just did a major revision in October of 2013. (Integrated Fire/EMC, #29, 2014)

In the phone interviews, emergency management coordinators of all office configurations identified their office as leaders of local hazard mitigation planning. They are responsible for determining the community’s hazard mitigation objectives, prioritizing those objectives, and outlining a plan to accomplish those objectives. In order to achieve their community’s mitigation-related objectives, emergency management coordinators must adopt various roles. The first of these roles is to identify their community’s hazard threats, document those threats, and outline a vision for mitigating those threats.

Self-Identified Roles

Administrator Role

The first self-identified role of emergency management is the administrator role. The development and continual update of the community hazard mitigation plan requires actions that typify administrative duties. An administrator is defined as “a person whose job is to manage a company, school, or other organization” (Merriam-Webster’s online dictionary, n.d.). In order to efficiently and effectively manage an organization, Gulick (1936) suggests that organizational
leaders be skilled at POSDCORB duties (planning, organizing, staffing, directing, coordinating, reporting, budgeting). The administrator role is important because it accounts for those activities associated with the framing, acquiring, and organizing of all information included in the hazard mitigation plan. Analyses of the transcribed interviews indicate that emergency management coordinator’s self-described duties are representative of POSDCORB and subsequently the administrator role. These duties, as determined through participant responses include planning, research/information gathering, documenting/recordkeeping, and tracking and verifying. Moreover, these self-described duties were expressed by 13 interview participants. Regarding their administrative duties, one participant explained:

We want to make sure that we outline first our plan-of-attack so to speak in the plan and then we follow-up with how we got it done. (Integrated Non-Fire, #2, 2013)

In reference to research and information gathering administrative duties, several participants representing integrated non-fire and integrated fire/EMC offices mentioned the following:

We gather all the information and we actually draft the initial response so that people are able to edit it. (Integrated Non-Fire, #2, 2013)

We’re responsible for gathering information about what projects to do (Integrated Non-Fire, #3, 2013).

Well we evaluated our hazards and specifically the hazards that we’ve had in the past and kind of done an analysis of those. Say what our vulnerabilities and natural hazards are. (Integrated Non-Fire, #8, 2013).

Probably researching the hazard to begin with and making suggestions for how we can mitigate for the hazard. (Integrated Fire/EMC, #25, 2014)

It’s just to see one the mitigation has been identified, and the hazard has been identified, to then follow through with the steps to make sure the mitigation is complete. (Integrated Fire/EMC, #27, 2014)

We’re actually intently looking at where our hazards are in our community and we are working with our citizens to find out what’s important with them so that when we create these plans we factor in their opinions. Integrated Fire/EMC, #29, 2014)
Documenting and recordkeeping are additional administrative duties of the emergency management coordinator. Regarding these duties, participants representing stand alone and integrated fire/EMC offices articulated the following:

The way the plan will work, cities will have some autonomy to do grants and work on their own projects but if they do those projects they’ll let me know about them and that way I can record the information on what we do towards our action items in our mitigation plan so that when we do review the plan and update it every 5 years we can incorporate that into the plan. (Stand-Alone, #10, 2013)

So really it’s a way to organize and have a record of what you’d like to do. As opposed to prior to the hazard mitigation plans it was relegated to a disaster declaration and okay there’s some mitigation funds available now through FEMA. What do you think we ought to do? Now we have a process in place through the hazard mitigation plan on what are priorities are, what we want to do, and where our problem areas are. (Integrated Fire/EMC, #20, 2013)

And more importantly that I’m documenting the work that’s done because there’s a lot of work that goes on within the city mitigation-wise that previously wasn’t really considered mitigation. You know and so it’s been an effort to kind of re-frame the way that we look at some of our projects so that we’re appropriately documenting all of our efforts. (Integrated Fire/EMC, #22, 2013)

In explaining their tracking and verifying administrative duties, several participants stipulated the following:

…as far as the conquered mitigation actions (like the floodplains and shoring up building new drainage with (inaudible), and improvements to the sewer system), we’ll keep track with the engineering department on where their progress is with that project and we’ll keep that updated within the plan (i.e. status checks and progress/plan updates). (Stand-Alone, #11, 2013)

Mainly now because I know what is in the plan, and know that we’ll be updating it again in the next 4-5 years. Now I can make contacts with those offices and see where they’re at on different projects or kind of remind them about the strategies in implementation things that we have in place. (Integrated Fire/Chief, #13, 2014)

So as far as implementing goes it’ll be our responsibility to make sure the things put out for (city name) are being followed up on. (Integrated Fire/EMC, #19, 2014)

It’s just to see one the mitigation has been identified, and the hazard has been identified, to then follow through with the steps to make sure the mitigation is complete. If we have a hazard or something that happens to see if the mitigation worked and if not make corrections or coordinate the corrections. (Integrated Fire/EMC, #27, 2014)
The initial crafting and periodic updating of the local hazard mitigation plan requires emergency management coordinators to assume multiple administrative duties. These duties are integral to laying the foundation for emergency management and systematically managing the local hazard mitigation planning process. Additionally, administrative duties are conducted by participants of all regional office configurations. Emergency management coordinators must master their administrative duties if hazard mitigation objectives are to be brought to fruition.

**Collaborator Role and Perceived Stakeholder Functions**

The second self-identified role of emergency management coordinators is the collaborator role. To collaborate is defined as “to work with a person or group in order to achieve something” (Merriam-Webster’s online dictionary, n.d.). Hazard mitigation planning warrants partnerships and collaborations with other stakeholders (McEntire, 2007) who bring value to the planning process. Graves (2013) notes that crafting the hazard mitigation plan calls for emergency managers to work in tandem in with a wide-array of stakeholders. The collaborator role is important because emergency management coordinators use this as an opportunity to engage valuable stakeholders in hazard mitigation planning and strategy implementation. Analysis of the transcribed interviews indicate that approximately 13 emergency management coordinators expressed some manner of collaboration during the hazard mitigation planning and strategy implementation process.

An important step in collaboration is to identify and recruit the appropriate stakeholders to involve in the hazard mitigation planning and strategy implementation process. Several participants provided explanation of their recruiting activities. As explained by four participants:

Make sure that the right departments are involved with the project. (Integrated Non-Fire, #1, 2013)
So we bring different organizations (internally and externally) together. (Stand-Alone, #11, 2013)

I’ve gotten my, and this goes for a number of cities, gotten my Public Works, Police Department, Zoning all together and we’ve met, gathered up information from FEMA (on flooding), things of that nature. (Integrated Non-Fire, #16, 2014)

You know our job is to get the right people in the room and then hopefully help them get along and play well together. (Integrated Fire/EMC, #26, 2013)

When presented with an interview question on carrying out the more technically-oriented steps (e.g. risk analysis, GIS mapping) associated with developing the hazard mitigation plan, a fire chief/emergency management coordinator provided an indication of their recruiting activities and stated the following:

    It was done in-house. [I] formed a team with the Public Works Directors, General Services Director, building officials, myself, [and] my Deputy Chief. (Integrated Fire/Chief, #14, 2014)

Another participant representing an integrated fire/EMC office was presented with an interview question about actively recruiting other city departments for involvement in hazard mitigation planning and responded with the following:

    Everybody I’ve asked for help on mitigation for (city name) has given me information I’ve needed. So whether they’ve came from the zoning people or if it came from Public Works for flooding issues or things as that such. (Integrated Fire/EMC, #27, 2014)

After recruiting the appropriate stakeholders into the planning process, emergency management coordinators can then engage in the communication, discussion, and information-sharing that reflects collaborative activity. In hinting at collaboration, at least one participant from each regional office configuration communicated the following:

    We’re the ones working with state emergency management offices. We’re the ones that are working with FEMA (Federal Emergency Management Agency) in developing/writing the actual the plan itself. (Integrated Non-Fire, #1, 2013)
Our office is the lead agency and we do most of the coordination and covering the planning issues and working with all the other jurisdictions and agencies involved to put the plan together. (Stand-Alone, #10, 2013)

Well the county had coordinated as series of both in-person meetings and you know conference-type calls. Just collaborating on the process and formulating of the drafts and coming to a consensus on things. Other than that I mean we deal locally with our automatic aid partners all the time (neighboring city names) on a host of things not just hazard mitigation. (Integrated Fire/Fire Chief, #14, 2014)

We have a number of engineers that are part of our Engineering Department that they manage a number of large projects. So if it comes to anything Public Works then they would probably be involved since they do a lot of our construction bids and they ensure that those projects (from start to finish) are managed. So you know I have the opportunity or I guess the ability to lean on other departments that this again falls more in line with what they do every day. (Integrated Fire/EMC, #17, 2013)

Collaboration is typically carried out for a particular purpose and this was evident through the response of several emergency management coordinators who indicated that collaboration is undertaken for the purpose of acquiring information incorporated in the hazard mitigation plan. As explained by two participants:

My office’s role is to gather information, talk to a wide variety of different department heads to see what their concerns and how they would like to see different issues mitigated if we have the funding. (Integrated Fire/EMC, #18, 2013)
Just basically to 1) do the threat assessment and to gather information to be able to mitigate any of those threats in conjunction with the other city departments. (Integrated Fire/EMC), #27, 2014)

Two other participants suggested that collaboration is typically done with regard to the budget or grant funding purposes. As explained:

…like in the budget process what my intent is now that I’m aware of is to visit with those other two departments that have strategies and to talk about if it’s going to be budget money. If we can budget for some of them in this upcoming year. (Integrated Fire/Chief, #13, 2014)

We’re sort of unique because we didn’t have a mitigation plan before so we didn’t have the luxury of getting federal money for a lot of mitigation problems. But one thing that came about is the safe rooms that the County’s got money for so individuals would be reimbursed half of the cost for the safe room or tornado shelter…We’ve been dealing
with COG (Council of Governments) and our citizens on how to get those funds, how to sign up, and who is eligible and who isn’t. (Integrated Fire/EMC, #18, 2013).

Participants also pointed out that collaboration takes place for the purpose of disseminating hazard mitigation-related information or for assisting stakeholders who are in a less-advantageous position. As two participants representing an integrated non-fire and integrated fire/EMC offices indicated:

So we’re really fortunate to have a lot of resources (as a larger city) that we’re able to use. We work with our communication department to do press releases…some of the other things that I’ve worked with our Communications Department to create, we’ve shared those with some of the smaller cities who don’t necessarily have a communications department because we want to make sure that they have the same opportunities to promote their update and get that involvement as well. You know with governments a lot times we want to make sure we’re not reinventing the wheel and that we are sharing those resources that we’re fortunate enough to have. So in our (county name) meetings we’re all very into coordination/partnerships and those kinds of things. (Integrated Non-Fire, #2, 2013)

Well once it was approved and we tell the state it’s in our advantage, there’ll be a copy in the engineering department and the city’s secretary’s office and emergency management coordinator’s office will put those plans out and make them available to everybody that has any involvement in it. (Integrated Fire/EMC, #29, 2014).

In affirming the assertion of Graves (2013), collaborative partnerships are a mainstay between emergency management coordinators and other stakeholders. As one participant from an integrated fire/EMC office explains:

Well you know when necessary we’ll talk to outside stakeholders; we’ll talk to other city departments; we’ll gather information from them and kind of see where we’re falling short and try to develop a plan to see if we can you know get more information out to the public or whatever it is-a corrective solution- you know a corrective problem, [and] find a solution for a problem-whatever’s necessary. So we might be talking to local businesses. We might be talking to citizens, we might be talking to other departments within the city. We might be talking to other agencies around us. (Integrated Fire/EMC, #28, 2014).

Emergency management coordinators made mention of various stakeholders involved in hazard mitigation planning and action item implementation and these entities can be categorized as intra-city stakeholders or external stakeholders (see Figure 4.2). Despite the assigned category

71
of stakeholders (intra-city vs. external), emergency management coordinators have collective views on the tasks of participating stakeholders, and present them as having four prominent functions in hazard mitigation planning and strategy implementation. These four functions include 1) true leaders, 2) subject-matter-experts, 3) hands-on guys, and 4) supporters.

**True Leaders Stakeholder Function**

As described by several emergency management coordinators, select stakeholders are the true leaders of community hazard mitigation planning and strategy implementation. The leadership of stakeholders is particularly evident in participant’s description of the North Central Texas Council of Governments (NCTCOG). Emergency management coordinators face various challenges that preclude them from being a catalyst of hazard mitigation planning. When unable to initiate local hazard mitigation planning, participants delegate the leadership function to the NCTCOG. Several participants were effusive about the NCTCOG being the initiating agent and leader of hazard mitigation for the region. Without the involvement of the NCTCOG, hazard mitigation planning for the region might be a fledgling endeavor. According to several participants:

> Well I’d say North Central Texas Council of Governments received some type of grant and they’ve kind of helped develop [the hazard mitigation plan]. We got a 16-county COG (Council of Governments) here…Everything they did was with the 4 main counties. Anyway, they got their plan done first. Once they got done with theirs then they got another planning grant and offered to (County Name) and all of the cities within (County Name). So most of the cities I think within (County Name) are in this planning process now. So what helped to have somebody kind of lead the planning. Plus they had the resources to get the statistics (and information and all that), and planning members to

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6 The North Central Texas Council of Governments (NCTCOG) is a voluntary association of local governments and was established to assist them in planning for common needs, cooperating for mutual benefits, and coordinating for sound regional development. Among the numerous functions of NCTCOG is bringing together urban, suburban, and rural jurisdictions and facilitating information sharing, collaboration, cooperation between jurisdictions, and to provide comprehensive emergency management program support. Retrieved April 4, 2014 from http://www.nctcog.org/about.asp
help develop that plan and help put it together so it made it easier on us. (Integrated Fire/EMC, #4, 2014)

For the hazard mitigation planning I think the Council of Governments is putting it in as a regional project and that money will be used to hire a consultant to come in and meet with the various jurisdictions. Each of the jurisdictions will have to for a committee to figure out what their priorities are and choose strategies. They’ll fill out a bunch of questionnaires on what’s important to them and then the consultant will compile all of that information into a specific hazard mitigation plan for their jurisdiction. (Integrated Non-Fire, #5, 2013)

The county plan that is in its finalized portion, COG (Council of Governments) is actually doing the coordination of that. They’re coordinating for two counties. They’re doing the coordination for (Regional County Name) and their also doing one for (Regional County Name). (Integrated Non-Fire, #7, 2013)

I think the partnership with the Council of Governments in [the city of] (City Name) has definitely helped. Prior to them taking on developing the mitigation plan it was kind of floundering on the whole region as far as everyone trying to do their own thing. And so now we have a coordinated effort and not just to develop the hazard mitigation plan but also to coordinate and eliminate competition on mitigation action and so at least on a regional basis. (Integrated Fire/EMC, #20, 2013)

And so specifically the North Central Texas Council of Governments (NCTCOG) actually headed up the projected for us and translated all the information from the different jurisdictions into this one plan. (Integrated Fire/EMC, #21, 2013)

As an external stakeholder, the NCTCOG is vital to regional hazard mitigation planning, and to the development of the 16-county regional hazard mitigation plan. Participants credited the NCTCOG with securing the federal funds that were invested in the development of hazard mitigation plans. Moreover, the NCTCOG has the important task of collecting and organizing individual municipality information that is incorporated into the regional plan, and coordinating information-sharing and partnerships between the various regional counties and jurisdictions.
Absent their involvement, progress in regional hazard mitigation planning would be stifled. Thus, while emergency management coordinators identified their office as hazard mitigation leaders within their jurisdiction, leadership is designated to the NCTCOG (with reference to crafting the larger regional hazard mitigation plan) and participants took on a support role. As explained by some participants:

…like I said the COG is really the lead on this planning for the plan so we’re more of a supporting role. I kind of feel like they’re kind of leading the effort and we’re kind of just trying to help them develop this overall plan. We have to put together stuff obviously for our city. All of the other cities you know get their little action items I think for their city. (Integrated Fire/EMC, #4, 2013)

They’re pretty much taking all the data from all of the communities that are participating in the (County Name) County side of it. I guess it still is a (County Name) what they’re calling the plan—they’re calling it a (County Name) local mitigation action plan. (Integrated Fire/Chief, #13, 2014).

Figure 4.2. The list of self-described stakeholders involved in regional hazard mitigation planning and strategy implementation.
Well they’re actually serving more as the administrative peace. We’re providing them the hard data to actually create the plan, and they’re just pretty much putting it into a document. (Integrated Fire/EMC, #29, 2014)

A select number of participants also designated the hazard mitigation leadership title to intra-city stakeholders. The proficiencies and work area of these stakeholders compelled emergency management coordinators to profess them as the logical option for assuming the leadership mantle. For instance, in referring to the local Department of Public Works three participants explained:

There [are] a lot of things that mitigation would affect that would be involved with for example building codes and fire codes or you know designing of bridges and culverts or drainage areas. The things that we’re not involved with, we’re not the floodplain manager for example. That’s in Public Works. So the mitigation is really done by Public Works or would be done by a Public Works Department or a Precinct Office which are local bridge departments. It’s not really a function of Emergency Management but because it’s kind of included in emergency management and because of state requirements or federal requirements to get certain grants we’re involved with it. (Stand-Alone, #9, 2013)

I would actually defer to Public Works because they have the bulk of our projects for mitigation. Flood control mechanisms, improvements (you know drainage improvements, streets improvements, those types of things). (Integrated Fire/EMC, #22, 2013)

That’s who really runs you know who does a lot of our mitigation activities. We just help coordinate and make sure if there’s anything related out there, that they’re eligible for grants. So Public Works is probably the department that does mitigation. And then it is their job for the most part so. (Integrated Fire/EMC, #28, 2014)

Emergency management coordinators delegate the leadership function to knowledgeable and skilled stakeholders. However, when retaining the leadership mantle, emergency management coordinators continually acknowledge the need for participating stakeholder involvement. Their desire for stakeholder involvement is predicated on the second perceived function of these agencies.
Subject-Matter-Experts Stakeholder Function

A second perceived function of participating stakeholders is subject-matter-experts. This function was primarily used to describe intra-city stakeholders. The expertise of participating stakeholders is viewed as a valuable commodity, and necessary to compensate for the knowledge limitations of emergency management coordinators. As noted by one participant:

We coordinate with a bunch of different folks who are the experts. (Integrated Non-Fire, #2, 2013).

Another participant responded:

[The Floodplain Manager] over drainage obviously knows which areas needs improvements (as far as drainage) or cleaning out creeks. The floodplain manager obviously knows about areas that might be flood-prone or [where] we need to do a buy-out program or some of the areas that might need that. (Integrated Fire/EMC, #4, 2014)

More participants communicated the importance of stakeholder subject-matter-expertise:

So we’re really looking to these departments of subject-matter-expertise. So if we are seeing flooding is a major hazard in (City Name), which it is one of our most likely hazards, we need someone that has that understanding of say-from a development side- we’ve got folks that are in the floodplain we need to know where the floodplain even is. So we’ll rely heavily on engineering. If we’re in a community that wildfire might be an impact, we need to make sure we have the fire department weighing in on what that is. So they’re really defining and assisting us in defining what risk is (you know where it impacts) and where hazards are because emergency management doesn’t know everything about the technical side of those things. (Integrated Non-Fire, #1, 2013)

I think something internally that helps us be successful having knowledgeable staff that know all the guidelines in and out. Having a certified floodplain manager on staff helps us because we can go directly to them without having to go to a consultant or third party vendor to help us out on different areas. Having certified civil engineers that work for the city that know that’s going to work or that will now work and things like that. Having certified and professional staff on hand really helps us out without having to go outside to get information. (Integrated Non-Fire, #3, 2013).

Public works in regards to mitigation of bridges, or drainage areas, building construction you know typical mitigation pieces. They were engaged to have some input. (Stand-Alone, #9, 2013)

So for instance my Public Works and my engineering and my economic development, they’re really looking for those opportunities for mitigation projects to make a difference in our community and properly mitigate those hazards that we identify. We look to them
to identify specific projects. Specific things that we can do to mitigate our hazards and our risks. (Integrated Fire/EMC, #21, 2013)

In speaking to the Department of Public Works and other local agencies, two participants stated:

The main stakeholders we use [are] Public Works, Engineering, [and] Environmental Services. We had some consultation with Economic Development and Parks as well. And then we also have fire on there as well of course…Each of those persons either had someone on the actual committee itself or the ones I went to on my own and had just several meeting with us with me asking them questions I needed [to have answered]. (Integrated Fire/EMC, #24, 2014).

… our floodplain manager, he manages all the purchasing the houses, contracts, and all of that. And he works pretty closely with the Parks Department on that. Sometimes, a lot of this stuff is close to the park property and the Parks Department has the money they can put in…Anyway they work pretty close together. (Integrated Fire/EMC, #29, 2014)

Emergency management coordinators also use collaboration as an opportunity to engage with and delegate tasks to the appropriate stakeholders. According to one participant:

Oh most certainly…That’s one of the reasons I wasn’t able to get it done by myself. I was able to delegate some of things I needed out, especially our floodplain manager. He was able to help out quite a bit with a lot of the floodplain things that we had to get done there. (Integrated Fire/EMC, #24, 2014)

Other emergency management coordinators stated that certain technical tasks (e.g. usage of GIS software and carrying out the risk assessment) were delegated to other stakeholders. Lindell et al. (2002) finds that participants do not possess the same skills as local planners in the use of GIS mapping, and the time and effort required to learn this software is not afforded to emergency managers. As noted by several participants:

We have our own GIS department so we coordinate with them through IT and do our own mapping and all of that. (Integrated Non-Fire, #2, 2013)

When it comes to GIS, depending on whether they would like to do that on their side. They can do it. But again for many of them I have to tell them hey look at this. When you’re looking at those maps you want to get those maps out I give them the guidance in terms of what we’re trying to look at. (Integrated Non-Fire, #6, 2013)

The outside [consulting firm] has done one [risk assessment] but we had already done one and we provided that. So we are just kind of checking each other out. Make sure
what I’ve found is the same thing they’ve found so to speak. I mean I wanted to make sure I didn’t miss something. And by them doing it, then I can look at what they did and compare notes. (Stand Alone, #10, 2013).

We have a pretty robust GIS department so we do it all right there. And like most of the plan you know, I’m sure you’ve looked through the county plan and things like that, they have the historical data that we can get from them...[The GIS department is] under the IT Department with the city. So it’s in a different department. (Integrated Fire/EMC, #11, 2013)

That [GIS mapping) was provided through the COG and they worked with the National Weather Service and all types of other federal and state agencies to obtain historical records and develop the GIS information and the mapping and all that’s included in the plan. But all that was provided through the Council of Governments GIS department. (Integrated Fire/EMC, #20, 2013)

Some emergency management coordinators noted that their office remains engaged in carrying out the technical duties associated with the hazard mitigation plan’s development. However, their involvement is confined to collecting and providing historical hazard data to expert stakeholders, and not in the actual use of GIS software. In alluding to their role in GIS mapping, three participants noted the following:

We do that internally... Anything that’s involved with creating our plan our department handles. (Integrated Non-Fire, #3, 2013

…we also attend the planning meetings [that] the COG put together. So we’ve had several of those...they request some type of data say on wild land fires or you know something going on in your city. We’ll try to get it and put it together for them in whatever format they need in it. (Integrated Fire/EMC, #4, 2014)

It was done I’d say about half and half. I was able to do some of it. I collected some of the GIS information our self. Other parts of it I [had the] aid of the key leaders of the team and they have some GIS knowledge so they were able to put together some of the maps for me. And then also I had our GIS coordinator (we have a separate GIS coordinator in the city) she was able to help me. I’d say about half and half. And the ones that I didn’t do myself, I told people what I needed and they were able to put it together for me. (Integrated Fire/EMC, #24, 2014)

(Consulting firm name) is doing it (GIS mapping) through a contract with COG for this version [of the hazard mitigation plan]. Last time we did it pretty much in-house. We have a big city so we have excellent GIS support...So this time around (consulting firm name) sent out questionnaires and surveys. We sent information back and then they
pooled it together from that information...You know they were looking for historic information about different hazards. Obviously here the biggest hazard is natural hazards (winter weather, thunderstorms, tornadoes, and things like that). They went out to the National Climactic Data Center pulled some data. You can do a lot of searches there based on the type of hazard you know flash floods, tornadoes things like that and then we provide that information about specific events that affected the jurisdiction. (Integrated Fire/EMC, #26, 2013)

Emergency management coordinators must be strategic in determining the stakeholders to involve in hazard mitigation planning and strategy implementation. Because much of their skills fall within their administrator role, emergency management coordinators must involve stakeholders that are skilled in other areas of hazard mitigation. Specifically, emergency management coordinators involve stakeholders that are skilled in the implementation of hazard mitigation strategies. This is a reflective of another perceived function of participating stakeholders.

**Hands-On Guys Stakeholder Function**

A third perceived function of participating stakeholders is the hands-on function. Discussion centered on the implementation of hazard mitigation strategies presented participating stakeholders as having the vital hands-on duty. While emergency management coordinators remain active in the planning aspect of hazard mitigation, the implementation of hazard mitigation strategies is a function of other stakeholders. Thus, the subject-matter-expertise of participating stakeholders translates into their hands-on involvement in hazard mitigation strategy implementation while emergency management coordinators present their office as playing a diminished part in this area. As stated by some participants:

In terms of implementation, that one is left up to the jurisdictions to follow through at their level. Why the county at least in my initial discussion (as I was taking up the role) was to just have a much better presence or leadership in terms of emergency management in the county. (Integrated Non-Fire, #6, 2013).
…our only role is I do the inspections on them when they’re done and answer the questions from the public calls, and the [Department of] Development Services does the check on the floodplain thing. So in terms of implementation that’s pretty much the extent of it. (Integrated Non-Fire, #5, 2013)

Our role in that would probably most likely be facilitating any type of paperwork that would be required if we received any type of grant allocation to implement some of our strategies or projects…For instance, we have a number of engineers that are part of our Engineering Department that they manage a number of large projects. So if it comes to anything Public Works then they would probably be involved since they do a lot of our construction bids and they ensure that those projects (from start to finish) are managed. So you know I have the opportunity or I guess the ability to lean on other departments that this again falls more in line with what they do every day. (Integrated Fire/EMC, #17, 2013)

The hands-on function of participating stakeholders was depicted in the response of several emergency management coordinators representing different emergency management office configurations. As described by these participants:

Public Services is sort of our facilities guys. A lot of times they’re the ones who actually do the work and implement the projects for us. So they’re the ones who fix things for us. Those are just departments within the city. When we work on updates for the plan we have those departments coordinate with their existing groups and communities that they work with. (Integrated Non-Fire, #2, 2013)

The Public Works guys do all the maintenance on the dams which is primarily mowing them. And then the county engineers do some stuff I guess when they’re building highways and building roads but I don’t know if that’s really considered mitigation. (Integrated Non-Fire, #3, 2013)

And in terms of the city’s Public works, we often have a lot of flash flooding. Not so much long-term flooding like you might see along the Mississippi [River] or something like that but Public Works can clean out the creeks and drainage ditches and things throughout the cities and the county that keep that water flowing and keep it from backing up causing those flash flooding situations. (Stand-Alone, #10, 2013)

I look to my public works department, my engineering department, my economics and development department to implement those structural projects that we’ve got going on. (Integrated Fire/EMC, #21, 2014)

Well when it comes to zoning you’re talking about things like when-proof construction. We have ordinances in mitigating that type of construction. Public Works, they mostly deal with the flooding issues. You know the culverts and the water run-off here in the city. So I get with them to see what codes we have when it comes to the zoning and
public works with the water flow and the drainage of the city. (Integrated Fire/EMC, #27, 2014)

The implementation of hazard mitigation strategies is, in large part, carried out by participating stakeholders. Emergency managers note that stakeholders possess the knowledge to perform this function. Moreover, stakeholder skills are suited for hazard mitigation strategy implementation. The involvement of emergency management coordinators—in hazard mitigation strategy implementation—remain confined to overseeing administrative duties.

Supporters Stakeholder Function

The final perceived function of participating stakeholders is supporters of hazard mitigation planning. For emergency management coordinators proclaiming their office as leaders of community hazard mitigation planning, participating stakeholders are noted to play a pivotal support role. Stakeholder support is necessary to supplement the mitigation efforts of emergency management coordinators and this was evident in the response of several participants, for example:

The City Manager’s Office I’ve mentioned is our overarching department that we’re under. So of course we coordinate everything through them. They’re our bosses even. So we work with them very closely and we’re really actually...really lucky I guess to have their support I guess. We’ve never been supported to the level that we are now so we’re very fortunate when it comes to that. (Integrated Non-Fire, #2, 2013)

The engineering department I would say plays the biggest role just because they do so much to support us on the floodplain. They actually take a lot of mitigation actions within their department. (Stand-Alone, #11, 2013)

…I’ve leaned on a lot of other cities (you know emergency management coordinators to kind of make sure I’m not going down the wrong path. So our regional partners have been a blessing for me this last year... But beyond that would be (neighboring city names) all have full-time emergency management coordinators and they have the time (I guess more so the patience) to help when you have questions or working with different areas. But they’ve been a blessing for. So those three cities that I’ve dealt with have been
very good to deal with. They understand and see some things from different angles than what I do as a fire chief. (Integrated Fire/Chief, #13, 2014)

We have our own GIS department that I reach out to. (Integrated Fire/EMC, #25, 2014)

Emergency management coordinators also explained the importance of securing support from neighboring jurisdiction external stakeholders. As communicated by four participants representing the integrated fire/EMC office configuration:

We work with all our partner cities and all our neighboring jurisdictions…My previous position I was in Dallas County and it’s a lot different because jurisdictions are bigger and they don’t have to rely on each other because the size and resource of that. But here in Tarrant County there’s a lot of small jurisdictions and so there’s a lot of coordination and there’s a lot of partnership on projects because there’s only so many of us and it takes a strain and effort on things. We’re allowed to band together and help each other out. (Integrated Fire/EMC, #19, 2014)

We share borders, we share creeks, [and] we share facilities. As far as you know if something happens to a facility in our city it’s going to affect the cities around us. We’re all smaller cities so maybe that’s the reason why that we probably work together so much is because not one of us has everything we need. So we kind of share roles/ we share information…We just have relationships through the fire departments that provide probably the collaboration to be honest with you. (Integrated Fire/EMC, #28, 2014)

We have meetings periodically through the county where all the emergency management coordinators/emergency management departments meet and talk about projects that they’re working on; we get UASI (Urban Areas Security Initiative). A couple of the jurisdictions here in (County Name), we get UASI grants every year so we have to work on that together. We divvy up the money between us depending on what project we’re working on… you get ideas from each other and you know you learn what other people are working on. (Integrated Fire/EMC, #25, 2014).

Collaboration is an essential part of hazard mitigation planning and action item implementation. In pursuing community hazard mitigation objectives, emergency management coordinators must collaborate with intra-city stakeholders and outside city stakeholders. Moreover, the collaborator role is undertaken by emergency management coordinators of all regional office configurations. Collaboration is important because it enables emergency management coordinators to establish a support system; to capitalize on the subject-matter-
expertise of stakeholders; and to delegate the implementation of hazard mitigation strategies to those having the appropriate skills and knowledge. Failure to collaborate isolates emergency management coordinators and limit their effectiveness in hazard mitigation planning and strategy implementation. Thus, collaboration must be continually put into practice.

Facilitator-Coordinator Role

The third self-identified role of regional emergency management coordinators is the facilitator-coordinator role. In their collaborator role, emergency management coordinators forge partnerships with multiple stakeholders. Moreover, emergency management coordinators must bring individual stakeholders together, bridge partnerships among them, and orchestrate the communication between these entities. These actions exemplify the facilitator-coordinator role of the emergency management coordinator. To facilitate is defined as “to help (something) run more smoothly and effectively” (Merriam-Webster’s online dictionary, n.d.) and to coordinate is defined as “to make arrangements so that two or more people or groups of people can work together properly and well” (Merriam-Webster’s online dictionary, n.d.). Thus, the facilitator-coordinator role is important because it represents emergency management coordinator’s part in orchestrating the hazard mitigation planning process and bringing synergy to stakeholder interaction and information-sharing. Throughout the telephone interview, at least 14 emergency management coordinators acknowledged their facilitator-coordinator role. As explained by participants representing all office configurations:

So that would be our role. For us we are more concerned with the (county name) unincorporated area as we put the plan together but then we are serving as the kind of like the coordinator, the facilitator of the plan for the 22 jurisdictions that are now participating in the plan. (Integrated Non-Fire, #6, 2013)
Coordinating the entities and the meetings. Hosting meetings to coordinate the development of the plan. (Stand-Alone, #9, 2013)

I would call myself facilitator…I coordinate emergency response of course that isn’t really mitigation. (Integrated Fire/Chief, #12, 2014)
I’ve gotten my, and this goes for a number of cities, gotten my Public Works, Police Department, Zoning all together and we’ve met, gathered up information from FEMA (on flooding), things of that nature. (Integrated Non-Fire, #16, 2014)

Very similar to most of the emergency operations planning that you know we coordinate the different departments that have a vested interest in the plan itself and what projects we submit as part of the plan. Integrated Fire/EMC #21, 2013)

Yeah you know the emergency management office is more of a coordination role. (Integrated Fire/EMC, #26, 2013)

Emergency management coordinators demonstrate their facilitator-coordinator role at various phases of the hazard mitigation planning and strategy implementation process. As stated by one participant representing an integrated fire/EMC office, coordination was exercised during the recruitment of stakeholders to the collaboration process:

Well I wasn’t in this position at the time but it was mainly just helping them coordinate getting the different groups together for their meetings and stuff. You know getting the city officials together for their meetings to put it together and then disseminating [information]. (Integrated Fire/EMC #29, 2014)

Other participants noted that coordination was necessary while facilitating stakeholder discussion and idea-sharing. As explained by two participants representing Integrated Fire/EMC offices:

What I see Emergency Management through our process is really facilitating the discussion and what I’ve told a lot of our stakeholders as far as when we’re meeting as far as our committee for the planning process meets is that this is their plan. This is where we identify projects that can benefit the city…but going back to your originally question in terms of local hazard mitigation planning it’s more or less facilitating the discussion between stakeholders so that we have a plan that is not only realistic but that is applicable for these other departments that have a more direct day-to-day handling of implementation of these hazard mitigation projects. (Integrated Fire/EMC, #17, 2013)

So my role was to coordinate/liaison with the COG (Council of Governments) and then also with our individual departments to talk through our hazard analysis and what projects we would like include for the different components within the plan. (Integrated Fire/EMC, #21, 2013)
The facilitator-coordinator role is essential to managing the various administrative duties associated with hazard mitigation planning and strategy implementation. Developing and updating the local hazard mitigation requires the compilation of vast amounts of information. Emergency management coordinators must acquire information from individual stakeholders, facilitate discussion between stakeholders, and ensure that relevant information is organized and incorporated into the final plan. As three emergency management coordinators explained:

Well our office basically is the one that coordinates the plan development. (Integrated Non-Fire, #8, 2013)

So with me I am coordinating the plan development and updates because that was on the first part of the plan when it was being developed. So I am trying to coordinate it with (city name). (Integrated Fire/EMC, #23, 2013)

I was a leader in the plan. We basically formed a hazard mitigation planning team which I was the leader. So I basically outlined the project, I coordinated it and gathered all the information and put it together in a single annex. So I am the overall coordinator of it. (Integrated Fire/EMC, #24, 2014)

The facilitator-coordinator role is also exhibited during the development and submission of federal grant application paperwork. Having an approved local hazard mitigation plan qualifies local communities to apply for federal hazard mitigation grant funding. Emergency management coordinators must coordinate with stakeholders to complete and submit grant paperwork, and to disseminate acquired grant funds to stakeholders performing the hands-on function. This was explained by two participants representing integrated fire/EMC offices:

Our role in that would probably most likely be facilitating any type of paperwork that would be required if we received any type of grant allocation to implement some of our strategies or projects. (Integrated Fire/EMC, #17, 2013)

…you know once our department is made eligible for grants and those grants flow into those individual people’s hands and it’s like the tornado shelters or if you know it flows into the city’s hands to build a building or to improve a creek, or rebuild a bridge then we’ve just coordinated that flow of money and then we kind of back out of that and it becomes that department’s…their area of responsibility. They become the chief coordinating point to get it done. (Integrated Fire/EMC, #28, 2014)
Emergency management coordinators must act as facilitators while overseeing the implementation of hazard mitigation strategies. This requires ensuring that the appropriate stakeholders are involved in hazard mitigation planning, being a liaison between stakeholders, and bringing harmony to cooperative efforts. As some emergency management coordinators stated:

My role as coming in serving as the lead person on hazard mitigation for the county right now is one of the functions is to have a much better way of monitoring and following through on the mitigation items that we identify in the plan. So right now I think that’s what it would be like a monitoring coordination aspect of meeting to review where we are with the status of our mitigation action items. (Integrated Non-Fire, #6, 2013)

The role of my office is more of the coordination point for efforts. Hazard mitigation projects occur within individual departments …we’re a medium-sized city that sees itself as a small city, and so a lot of our project aren’t single department projects. They overlap and require the assistance multiple departments. So there will be a project lead out of one department but there will be assistants that come from multiple departments in the successful completion of that project. (Integrated Fire/EMC, #22, 2013)

It would be just coordination. A couple of items are ones that we already have the capabilities to do here in the city. Implementing some new types of mapping and things like that. So it’ll just be to coordinate between our individual agencies here in town. (Integrated Fire/EMC, #24, 2014)

Emergency management coordinators expressed their ability for undertaking the facilitator-coordinator role. This role is undertaken by emergency management coordinators of all office configurations and is especially important because hazard mitigation planning and strategy implementation requires partnerships among various stakeholders that have divergent organizational missions and infrequently interact. Thus, emergency management coordinators must coordinate information sharing among stakeholders, bring synergy to stakeholder interaction, and facilitate each stakeholder’s implementation of their respective duties.
Funder Seeker Role

The fourth self-identified role of emergency management coordinators is the fund seeker role. McEntitre and Myers (2004) note that emergency managers must seek grants to support the normal functions of their office (e.g. hiring personnel, acquiring equipment, and for carrying out training and exercises). However, grants are also pursued for use in hazard mitigation planning. Hazard mitigation planning and strategy implementation is a financially costly endeavor and emergency management coordinators must acquire the monetary resources to subsidize community mitigation initiatives. The fund seeker role is important for pursuing and securing essential financial resources. This role was expressed by 2 participants representing the stand alone office and 3 participants from the integrated fire/EMC office.

As the self-described leaders of local hazard mitigation planning, emergency management coordinators must adopt the crucial fund seeker role. As indicated by emergency management coordinators, the most plausible option for securing financial resources is to pursue federal hazard mitigation grant funding that can be utilized for hazard mitigation initiatives. As reported by multiple participants:

Well our role would be to facilitate the hazard mitigation grant application and to coordinate that. Obviously most of our mitigation action and items and strategies are developed around some sort of need for funding. So we would coordinate our hazard mitigation grant application with the state and then after that…we would be responsible for tracking and coordinating the implementation of that project and its reporting as it’s associated with the grant. (Stand-Alone, #9, 2013)

We have intentions of applying for mitigation funding for fume reductions. Developing wildfire mitigation planning…So we’ll be looking at funding for trying to reduce our fuel loading in certain areas or communities where wildfire is a major threat. We can apply for it through hazard mitigation grants funds and there’s some Texas Forest Service Grants to help us implement those. (Stand-Alone, #10, 2013)

A similar type of situation is that once we get an approved plan then we have the opportunity to apply for hazard mitigation grants that we can help fund some of these projects because a lot of them are a little bit expensive and as you know probably the
public sector is the last one to recover from any type of an economic down turn and right
now I can tell you that we don’t just have enough money laying around to do a lot of
these projects without looking for FEMA or another type of federal agency to help fund
some of these projects and that’s really where we’re hoping to gain traction. (Integrated
Fire/EMC, #17, 2014)

We have the action items listed out, the departments know what funding they have
available to do those items, we work cooperatively to seek funding if we don’t have
budget funding to pursue those items. And so then we implement those as funding is
made available. Sometimes funding is from budget funding or capital funding, and then
sometimes that funding we have to seek unique funded opportunities. (Integrated
Fire/EMC, #22, 2014)

Some of the things we that we want to do are some possible items we need grant money
for after it’s approved. So I’ll be the one that actually goes out and finds the grant and
actually is going to write the grant itself and try to get those done. (Integrated Fire/EMC,
#24, 2014)

In some regional communities the fund seeker role is the responsibility of other
partnering stakeholders. Much like their deferring of the leader title, the emergency management
coordinator can also defer the fund seeker role (in certain instances) to other entities, while
subsequently adopting a support role in the pursuit of federal mitigation-related grant funding.

As stated by three participants representing integrated fire/chief and integrated fire/EMC offices:

[Stakeholders] have projects and they wanted to do that well obviously their going to be
the ones running that….my efforts as far as emergency management is just more of the
coordination of planning for the mitigation plan and assisting them with some grants and
things like that they need help with. They’re really going determine really what needs to
be done and how other studies and whatever would need to be done with that project.
(Integrated Fire/EMC, #4, 2014)

However, as far as any grant funding and stuff that we’ve received, it’s been Public
Works that’s really taken the lead because a lot if it has to do with drainage and some
flood management. I think that if our director had more experience with emergency
management then he would probably have taken more of a lead role with mitigation
because they’re the ones in my opinion that tend to do more of it. They have more of the
meat of the particular projects or topics where as I really serve more of a coordination

The Floodplain Manager does all that and I really couldn’t tell you but most of those have
been FEMA grants just because it’s cheaper to tear them down than to pay or them every
every few years. I really couldn’t tell you what grants he applied for. A lot of times when he’s
working on grants he wants some historical event. Information [like] where houses flooded and where we do water rescues at, stuff such as that. (Integrated Fire/EMC, #29, 2014)

The fund seeker role is paramount to hazard mitigation planning and strategy implementation. The fund seeker role was not expressed by participants representing integrated fire/chief emergency management offices. The fund seeker role is oftentimes held by emergency management coordinators, but in lesser instances is held by other stakeholders. The effectiveness of emergency management coordinators in their fund seeker role has direct implications for getting the job done and ensuring that mitigation goals are brought to fruition. Securing the necessary funds facilitates the completion of hazard mitigation objectives because without financial resources local hazard mitigation projects would go unfulfilled.

**Advocator Role**

The fifth self-identified role of emergency management coordinators is the advocator role. An advocator is defined as “a person who works for a cause or group” (Merriam-Webster’s online dictionary, n.d.). Emergency management coordinators are faced with various obstacles of which include local elected official disinterest toward hazard mitigation planning (Lindell and Perry, 1992; Godschalk et al., 1999; Henstra 2010). As noted by Henstra (2010), local governments often use their limited resources to address issues viewed to be of greater importance than emergency management. Emergency management coordinators operate in an environment where there is minimal stakeholder regard for hazard mitigation planning. The advocator role is important because it introduces an opportunity to educate and generate buy-in from elected officials or local public agency leaders. Emergency management coordinators must advocate hazard mitigation in order to build elected official support and secure their commitment
to hazard mitigation initiatives. Oftentimes, local agencies do not recognize the important role they play in disaster management, so emergency managers must strive to educate and engage these entities as much as possible in prevention and preparedness planning (McEntire, 2007).

The advocator role was expressed by 3 participants representing integrated non-fire and 2 participants from the integrated fire/EMC office. As stated by two participants representing integrated non-fire offices:

> All of our projects or any expenditure that we make, or plans that we make that we want to execute we again take up through the City Council. So they originally adopt the plan-whatever new version that we put out after the end of this year they’ll adopt again. And then any projects that follow-up we also take back up through the City Council. So it’s them originally approving what we have said (here’s what we want to do) and then when we go to implement those action items we take it back up through the city council again because they represent our citizens. They’re elected, you know it’s very important to keep them involved throughout the whole process. (Integrated Non-Fire, #2, 2013)

> Once all the public intake has been gathered up and what not, we submit it to (County Name) County; (County Name) County will submit to the state; And then I’ll take this before council (our local City Council), let them review it (and it’s all in their hands basically), I’ll present it to them and see what they want to do with it and go from there. (Integrated Non-Fire, #16, 2014)

Emergency management coordinators are oftentimes the sole advocate for hazard mitigation objectives. Being an advocate suggests that they must be able to succinctly communicate the community’s hazard mitigation-related needs to relevant stakeholders including the local mayor, city council members, and agency leaders. As one participant representing an integrated non-fire office stated:

> It’s primarily just gathering and coordinating the goals of my specific jurisdiction and the representatives. [To be a] spokesman and advocate for my jurisdiction. (Integrated Non-Fire, #7, 2013)

Another participant representing an integrated fire/EMC office stated that it is important to demonstrate the benefits of hazard mitigation in order to secure stakeholder buy-in:
Looking at what a prepared city would look like especially with one that’s less-prepared and cannot handle a situation because they don’t have those policies or codes in place to prevent certain things from happening. I think it’s just going out there and showing what a mitigation item will do for you and what it really does for the city is a good way to get people bought in as well. (Integrated Fire/EMC, #19, 2014)

Emergency management coordinators must also extend advocacy to other participating local agencies: One participant stated the following:

So encouraging department and agencies to fund mitigation projects. And then trying to recognize when some kind of mitigation action is in progress so that we can document it. (Integrated Fire/EMC, #26, 2013)

Emergency management coordinators must work excessively to educate local elected officials and agency leaders of the benefits of hazard mitigation. If not for their advocator role, elected and agency stakeholders would remain uninformed of the benefits of hazard mitigation. Advocacy entails being a spokesperson for hazard mitigation, and also being able to outline the importance of hazard mitigation. As the sole advocate of hazard mitigation, emergency management coordinators must be extremely effective in their advocator role because stakeholder support reinforces hazard mitigation planning and strategy implementation.

**Public Educator Role**

The sixth self-identified role of emergency management coordinators is the public educator role. Similar to the challenge of elected official apathy, emergency management coordinators are also confronted with the challenge of general public disinterest toward hazard mitigation initiatives. The public educator role is important because emergency management coordinators have the opportunity educate citizens about the importance of hazard mitigation planning and secure their involvement in hazard mitigation planning. Studies suggest that the development of effective hazard mitigation plans (Burby, 2001), and the successful
implementation of hazard mitigation strategies relies on public participation (Pearce, 2003). The failure to engage the public diminishes the ability to devise reasonable solutions for disaster issues (Pearce, 2003). Godschalk et al. (2003) also claim that failing to involve citizens in the preparation of hazard mitigation plans can compromise policy implementation efforts. There were approximately 9 emergency management coordinators that alluded to the public educator role. As stated by six participants:

We have our own communications department as well for promotion of the plan/public involvement and those kinds of things. So we’re really fortunate to have a lot of resources (as a larger city) that we’re able to use. We work with our communication department to do press releases. So it’s been published in the Dallas Morning News for example. For promotion, we also do it through our website and through the usual avenues for our public meeting promotion—we post them outside of city hall and those types of things. (Integrated Non-Fire, #2, 2013)

Well as far as this planning process obviously we have had some open meetings and stuff that are required for the plan. We did have stuff for our website about mitigation planning but that’s kind of it to date I think. (Integrated Fire/EMC, #4, 2014)

To a degree a safer and more-educated public is a big one for us. If we can get them to do it in their own home that’s less people for us to respond to and they can take care of that. (Stand-Alone, #11, 2013)

Again, a lot of our goals would be that regarding that public education and maintaining the current codes and standards, and enhancing our ability for building notification and things along those lines. (Integrated Fire/Chief, #14, 2014)

We do all kinds of stuff….We have a couple of events during the year that we provide information at on a regular basis. It’s a standard/standing appoints like on a (Event Name). It’s a two-day event that we put information out at. We have our fire department open house that we provide information at. And then I have various public education events I do throughout the year that I do with either homeowner’s association or specific folks that call and ask for that kind of stuff where we incorporate that info. (Integrated Fire/EMC, #21, 2013)

We basically had under this FEMA grant we have to have 2 periods of public comment. One was during the putting together the actual plan itself, and the other that we’re doing right now actually is after that draft is complete. And the way we did that was with (City Name) we put out a press release and we also used our website and social media, and it’s up on our website right now actually. (Integrated Fire/EMC, #24, 2014)
Some emergency management coordinators also communicated that their public educator role is driven by the need to meet mandate requirements. As stated by three participants:

And for public involvement we already talked about that but for us it’s very important and of course it’s a requirement on the crosswalk that you show how you’ve involved the public and how you’ve encouraged them to participate. We’ve actually gotten very good information from them as well so. You never know what’s in somebody’s back yard until they get the opportunity to tell you. (Integrated Non-Fire, #2, 2013).

Well as far as this planning process obviously we have had some open meetings and stuff that are required for the plan. We did have stuff for our website about mitigation planning but that’s kind of it to date I think so. (Integrated Fire/EMC, #4, 2014)

We do the community outreach that’s required by the plan and so the lead department would be our main role on that plan. (Stand-Alone, #11, 2013)

In their public educator role, emergency management coordinators must attempt to educate and create a more mitigation-informed citizenry. Burby (2001) notes that emergency managers must use the most appropriate techniques for public education, and ensure that information is readily accessible by citizens. Emergency management coordinators must use various instruments to effectively engage the public. Several participants made mention of these instruments, for example:

We go out to the schools, the church groups, the homeowner’s association, the bigger employers within (City Name) and talk to them about preparedness and things like that. How they can be prepared at home, work, and school. So one of our big priorities as well is public education. (Integrated Non-Fire, #3, 2014)

We also for the public comment period of tested information of the social media and online or public comment and review. So the public hosting. The public did fill out quite a few of the initial survey that we did in conjunction with the (County Name) group. Public Works Directors, General Services Director, building officials, myself, my deputy chief. (Integrated Fire/Chief, #14, 2014)

Well you know we have a twitter account, we have Facebook accounts…we have the city magazine (that we’ll publish things in). Right now (for the last 8 months or so) we’ve had just on our website you can click on and kind of write…you can write what are the worst things that can happen in (City Name) and then give us any suggestions on how to fix them. (Integrated Fire/EMC, #28, 2014)
….We’ve been posting our information on our social media site; Having access in local elementary schools it creates product. It encourages kids to be involved. So you name it we do it. (Integrated Fire/EMC, #30, 2014)

Emergency management coordinators engage in public education to generate citizen involvement in the hazard mitigation planning process, and to meet requirements of the hazard mitigation plan’s development. To educate citizens, emergency management coordinators use a variety of communication mediums including social media, news publications, and in-person forums. The public educator role is important for enhancing emergency management coordinator’s presence in the community, and for creating a disaster-informed citizenry.

Hazard Mitigation Role Interaction

Emergency management coordinator self-identified roles are important because they provide participants with an opportunity to undertake critical hazard mitigation-related duties. While each brings value to the hazard mitigation planning process, the 6 self-identified roles are not mutually-exclusive. As illustrated in Figure 4.3, participant self-identified roles are intertwined with collaboration at the core of their interplay. Additionally, the employing of one self-identified role may result in the exercising of another. The following section provides an explication of the interaction between the 6 self-identified roles.

Administrator: Facilitator-Coordinator: Collaborator Interaction

These roles interact because emergency management coordinators must confer with various stakeholders in order to acquire, organize, and document a wealth of subject-matter information regarding hazard mitigation planning and strategy implementation. Emergency management coordinators must facilitate and coordinate communication between stakeholders
and ensure that these entities have a shared vision. For instance, emergency management coordinators can use 1-on-1 meetings, public meetings, conference calls, or other forums to solicit information from stakeholders, facilitate their interaction, and coordinate the transfer of information between them. The information acquired from stakeholders may contribute to the crafting and completion of the local hazard mitigation plan.

*Administrator: Fund Seeker: Collaborator Interaction*

The interaction of roles is based on the need of emergency management coordinators to confer with stakeholders to identify community hazard-related problems, and determine the financial cost of rectifying these issues. Emergency management coordinators must research, document, and concisely organize information relevant to the hazard mitigation grant application. Moreover, information obtained from stakeholders can be used as a basis to justify the amount of funding to seek in hazard mitigation grants.

*Advocator: Fund Seeker: Collaborator Interaction*

The interaction of these 3 roles results in emergency management coordinators taking steps to engage local elected and non-elected decision-makers; to forge partnerships with these stakeholders; and to bring them into the hazard mitigation planning process. For instance, emergency management coordinators must be able to successfully convince central decision makers (e.g. city manager) of the need to invest additional financial resources in the emergency management office or in community hazard mitigation projects. In short, emergency management coordinators must be a prime advocate for hazard mitigation-related causes if progress is to be made in improving community disaster resiliency.
The need to educate citizens about hazard mitigation provides the basis for the interaction of the public educator and collaborator roles. Emergency management coordinators must compel citizen action at the individual level. Finally, emergency management coordinators can use different mediums to educate and engage citizens including the local government website, social media forums, or community newsletters.

Figure 4.3. Interaction of self-identified roles.

Conclusion

As outlined in this chapter, emergency management coordinators of all emergency management office configurations are involved in hazard mitigation planning and strategy implementation. The majority of participants describe their office as leading the pursuit of community hazard mitigation planning and their leadership extends to conducting the initial
drafting of the community hazard mitigation plan and ensuring that the plan is periodically revised and updated. In their leadership position, emergency management coordinators identified their office as having six broad roles in hazard mitigation planning and strategy implementation. As indicated in Table 4.2, participants from all emergency management office configurations expressed their involvement in the administrator, collaborator, facilitator-coordinator, and public educator roles. This suggests that the employing of these roles does not vary across emergency management organizational types.

Participants from all emergency management office configurations did not express an involvement in the fund seeker and advocator roles. Specifically, emergency management coordinators representing the integrated fire/chief office did not articulate an involvement in the fund seeker role and participants representing stand alone and integrated fire/chief offices did not communicate an involvement in the advocator role. However, this does not suggest that participants of these organizational arrangements are not actively engaged in these roles. Failure to make mention of a role may be attributed to it merely not coming to mind during their telephone interview, or because participants from these offices have not been presented with an opportunity to undertake these roles.

In their collaborator role, emergency management coordinators must identify, recruit, and involve the appropriate stakeholders in hazard mitigation planning. Emergency management coordinators view some stakeholders as the true leaders of hazard mitigation planning. When discussing the development of the regional hazard mitigation plan, several participants designated the leadership title to the external NCTCOG stakeholder. A minority of participants also proclaimed other intra-city stakeholders as the leaders of hazard mitigation planning and strategy implementation. Also, stakeholders are important to hazard mitigation because they
provide valuable subject-matter-expertise, carry out the hands-on implementation of hazard mitigation strategies, and lend support to the pursuit of hazard mitigation initiatives. The physical implementation of hazard mitigation strategies reveal emergency management coordinators as having a diminished support role while presenting participating stakeholders as having the more prominent hands-on involvement.

Table 4.2

*Self-Identified Role Involvement and Emergency Management Office Organizational Structure*

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<tr>
<th>Self-Identified Role</th>
<th>Office Structure</th>
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<td></td>
<td>Stand-Alone</td>
<td>Integrated Non-Fire</td>
<td>Integrated Fire/Chief</td>
<td>Integrated Fire EMC</td>
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<td>Collaborator</td>
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<tr>
<td>Facilitator-Coordinator</td>
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<td>Fund Seeker</td>
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<td>Advocator</td>
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<td>Public Educator</td>
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The findings from this chapter suggest that emergency management coordinators have a varying level of involvement in hazard mitigation planning and strategy implementation. Despite their varying level of involvement, they undertake 6 key roles in hazard mitigation planning and strategy implementation. Their ability to carry out these roles has implications for getting the job done and improving community disaster resiliency.
CHAPTER 5
CHALLENGES, STRATEGIES AND SUCCESS INDICATORS

Introduction

This chapter examines the challenges that emergency management coordinators in North Texas encounter through their involvement in hazard mitigation planning and strategy implementation; the key strategies used to overcome those challenges; the indicators of hazard mitigation success based on the perception of regional emergency management coordinators; and the challenges and benefits of the integrated office structure.

The chapter is divided into four sections. Section 1 describes the results of the qualitative analysis conducted on the interview data and presents the themes that emerged in the emergency management coordinators description of the challenges that impact their pursuit of hazard mitigation. In total, emergency management coordinators describe 5 themes that are classified as internal organizational challenges and 2 themes that represent outside organizational challenges. This section also presents the themes communicated by participants in describing the challenges of their integrated office arrangements. Additionally, some benefits of the integrated emergency management office configuration is implemented to provide a contrasting image of this organizational structure.

Section 2 of this chapter presents the findings of qualitative analyses in the examination of strategies used to overcome mitigation-related challenges. Section 3 applies qualitative analysis techniques in the examination of hazard mitigation success. Specifically, the analysis delineates the themes that emergency management communicated when describing indicators of hazard mitigation success. Participants describe two broad categories of hazard mitigation success that are categorized as tangible and intangible indicators.
Regional emergency management coordinators are confronted with internal organizational challenges and outside organizational challenges while pursuing hazard mitigation planning and strategy implementation. Some of these challenges have been referenced in planning agency literature and include lack of financial support (Lindell and Perry, 1992) and lack of interest from local elected officials (Perry and Mushkatel, 1984; Labadie, 1984). Emergency management coordinators participating in this study also alluded to these challenges as well as other challenges they experience in conducting mitigation activities. Figure 5.1 illustrates the five internal organizational challenges and 2 outside organizational challenges confronting regional emergency management offices identified through this study. Each of these challenges are discussed in the subsequent sections of this chapter.

Figure 5.1. Internal organizational and outside organization hazard mitigation challenges.
The first internal organizational challenge encountered by local emergency management coordinators is the funding challenge. Possessing sufficient financial resources is important in pursuing and accomplishing costly hazard mitigation initiatives. However, emergency management coordinators communicated that their organization lacked the funding needed for planning and instituting hazard mitigation strategies. McEntire (2007) states that in many jurisdictions the emergency management office remains underfunded. The funding challenge was conveyed by approximately 17 emergency management coordinator from all emergency management office configurations. As communicated by some participants:

…Funding is always good but it’s not always there to do projects fully or maybe put off (i.e. projects) due to funding. I think that hurts us sometimes not having enough funding to do all the projects we want to do. (Integrated Non-Fire, #3, 2013)
And then also another big hindrance is just money. If we don’t have the money to get some of these things accomplished then that’s going to hurt us. Have to seek out the grant for it but the mitigation grants are very competitive and difficult to get so money is a big hindrance. (Stand Alone, #11, 2013)

Money [and] lack of funding. (Integrated Fire/Chief, #12, 2014)

Funding, you know everything falls into funding being a challenge. It always does. (Integrated Fire/EMC, #26, 2013)

Funding is important because mitigation projects can be very costly and monetary resources are needed to subsidize these initiatives. Three participants explained that the price tag associated with hazard mitigation projects can be costly. As these participants describe:

I would say that the biggest issue is funding. Mitigation projects can be expensive and that’s the biggest issue. (Integrated Non-Fire, #5, 2013)

I think two-fold the greatest thing is the financial cost associated with mitigation projects. (Stand Alone, #9, 2013)

…Mitigation projects are expensive…So being able to get the funding for a lot of those projects is difficult to do. (Stand-Alone, #11, 2013)
Other participants indicated that the funding challenge hinders their ability to conduct the administrative duties associated with crafting the community hazard mitigation plan: As stated by two participants:

Locally I’ll say the challenge for us to come up with the money to create our own plan has obviously been a challenge that’s why we had to wait as long as we did. (Integrated Fire/EMC, #4, 2014)

In light of the funding challenge, participants conveyed a bleak outlook regarding their ability to accomplish hazard mitigation-related objectives. In other words, participants felt that persistent funding challenges make it improbable that mitigation objectives will be completed in their entirety. According to several participants:

I would say that I’m hoping to get the hazard mitigation plan, the grant done and all of those plans done in the next year. But in terms of funding all of the mitigation projects, I doubt that will ever occur. At least not in my career and I doubt it will ever occur in my opinion. (Integrated Non-Fire, #5, 2013)

I’m not real optimistic because most of the funding goes to large cities. It seems like the more money a city has the more funding they receive. So the challenge for us because we are considered to be a small player we don’t sit at the table when the grants are passed out. (Integrated Fire/Chief, #12, 2014)

I think just the grant funding is going to be the major obstacle because all cities their budgets are tight and being able to get substantial amount of money to complete a project for mitigation purposes s really hard…I think it’s going to be tough to implement the mitigation problems with our city just because of the financial reasons because most of these projects are $5 million plus projects and you know we can do some of the education and all that to make people aware of the different hazards but you know trying to take care of low water crossings or build bridges over those you’re talking significant funds. (Integrated Fire/EMC, #18, 2013)

In summary, the lack of funding invested into hazard mitigation-related projects is a crucial challenge communicated by multiple emergency management coordinators. Money is necessary to fund the drafting of local hazard mitigation plans and to carry out the physical implementation of hazard mitigation strategies. Moreover, sufficient funding can be used to hire additional staff for involvement in local hazard mitigation planning. Emergency management
coordinators present funding shortage as a prominent challenge, and some participants were not optimistic about overcoming this obstacle.

**Multiple Duties Challenge**

The second internal organizational challenge is the multiple other duties that emergency management coordinators must perform in conjunction with their hazard mitigation-related roles. As a result, participants find it difficult to (1) balance their various duties; (2) to devote time solely to hazard mitigation-related functions; and (3) become overwhelmed by the sheer volume of duties they are tasked with performing. According to McEntire (2007), in most jurisdictions emergency managers have traditionally been overworked. His statement may be attributed to the various tasks carried out by emergency managers. The multiple duties challenge was conveyed by approximately 11 emergency management coordinators representing all office configurations. As explained by multiple participants:

I’m torn between 10 or 20 other things and if I’m sitting here working on mitigation and a pipeline ruptures I’m more likely going to have to go down there and see what’s going on, then I’ve got to come back, activate the EOC, get the judge and all the officials in here and you know if I had help I could send somebody down there and stay here and bring the EOC up. But you know there is not enough time in the day. (Stand-Alone, #10, 2013)

We do multiple duties [including] permits, inspections of [building] projects, zoning situations, things of that nature. Yeah so there’s just not enough hours in the day. (Integrated Non-Fire, #16, 2014)

I love what I do but it’s a constant battle understanding and balancing what it is I’m trying to do with all of these external factors…So trying to balance all of those external challenges with very little help. You know it becomes comical sometimes when you look at the level of work that comes out of the office. (Integrated Fire/EMC, #22, 2013)

The volume of work when you’re not stand alone. You know life goes on and there’s other challenges for the fire department. There’s other challenges for public works. This is not my primary task and so making sure that I can get time put together to make sure that I can make it happen. (Integrated Fire/Chief, #15, 2013)
Augmenting the multiple duties challenge is the time-consuming nature of hazard mitigation planning activities. As communicated by three participants:

That’s probably been our biggest challenge. We have a lot of ideas. It’s just having the money or time to back it up. (Integrated Fire/Chief, #13, 2014)

I’m just one person so you can’t. It’s just me so I. No I don’t ever have enough time to devote towards mitigation. It’s time-consuming. (Integrated Fire/EMC, #23, 2013)

I guess emergency management coordinator is one of my major duties because I’m the Assistant [Fire] Chief...But I’m the only one in [the] emergency management end of it so I stay pretty busy. It really can be a full-time position dedicated solely to emergency management. You know if this is all I had to do I would be better at it. (Integrated Fire/EMC, #29, 2014)

Two participants stated that that the time-consuming nature of hazard mitigation planning is a direct result of the need to meet extensive state and federal requirements. Emergency management coordinators must work diligently to ensure that their local plans adhere to prescribed mandates. This in turn presents a time-consuming issue. According to these participants:

No there’s never enough time. Again because there’s always other responsibilities that you have. That’s why the planning process’ put forward by the state and the federal government, the more complicated they make it obviously it takes more time and that becomes even more difficult to have. (Integrated Fire/Chief, #15, 2014)

Well I would love to say mitigation (it’s always there), but just from a one-person office perspective (and I have to submit this to the state as well that’s why I’m pretty familiar with where the bulk of my time is on preparedness)...Just the bulk again is for federal requirements on our emergency management performance grant on items that we’re required to do. But that’s also a focus. We have to train, and exercise, and have our plans ready. I just can’t spend as much time with that as I can other items. (Integrated Fire/EMC, #20, 2013)

Some participants explained that one especially time-consuming hazard mitigation-related task is completing the federal hazard mitigation grant application. This time intensive task discourages some participants from engaging in their fund seeker role. In regard to pursuing grants, four participants articulated the following:
And a lot of the mitigation grants to be specific for the fire department aren’t that big a number so I wouldn’t spend my time on it. If it’s a $50,000 rule, if it’s less than $50,000 I won’t spend the time, the paperwork, the management required to take care of that grant. It doesn’t make sense to do it. Yea and that’s a big thing as your thinking about administering an organization, there’s time and effort to manage something. If it takes more time and effort to manage what you’re getting then don’t do it. (Integrated Fire/Chief, #15, 2013).

Definitely the risk versus reward for the mitigation grants. The amount of money versus how much your expected and what the likelihood is you’ll receive it is definitely a factor. It’s a lot of effort to go through the process of the grant application and to go through everything else and then to not get it is one of those things that’s just kind of a you know write it off but the time and the money has already been spent. (Integrated Fire/EMC, #19, 2014)

Time-consuming and then you submit it… And then you just get so frustrated and beat down/worn down it’s be easy to say well why bother? I’m not going to get anything anyway. (Integrated Fire/EMC, #20, 2013)

Time-[consuming]. Especially the PDM process. It’s extremely time-consuming. I mean the application is significant. It takes a lot time and expertise to go through it. (Integrated Fire/EMC, #26, 2013)

As revealed by emergency management coordinators, hazard mitigation-related duties comprise a small segment of their job description. Participants frequently find themselves attempting to balance their duties and invest the appropriate amount of time in activities related to hazard mitigation planning and strategy implementation. However, some emergency management coordinators were critical of the time-consuming nature of hazard mitigation planning and often find it difficult to invest a sufficient amount of time toward it.

Secondary Priority Challenge

The third internal organizational challenge plaguing emergency management coordinators is the second tier status assigned to tasks affiliated with hazard mitigation planning and strategy implementation. In other words, among their various duties, participants relegate hazard mitigation planning to secondary status while other duties (e.g. disaster preparedness and
disaster response) receive greater priority. During the interview process, 18 emergency management coordinators (from all regional office configurations) expressed these sentiments thus indicating the secondary priority challenge to be an obstacle for offices of all varieties. In the words of several participants:

On a day-to-day basis preparedness, response, and recovery are more of a priority because that’s dealing with people’s lives, property, critical infrastructure and things like that. And hazard mitigation comes after the fact…With the lack of funding we don’t have $20-30 million dollars every year to put towards mitigation projects. It’s just not there when you have to ensure that people have clean drinking water and their trash is picked up and public safety and all that stuff. It’s very important but it’s just not up on the scale as response is or planning for response. (Integrated Non-Fire, #3, 2013)

Yes [hazard mitigation] is much less of a priority. Preparedness strategies, response strategies, and recovery planning are easier things to implement. They require less resources. They’re easier to facilitate. An example of that is it’s fairly simple to go out and do a presentation about disaster preparedness and the hazards the community faces and what you can do to protect yourself…It’s harder to go out and redesign a bridge to mitigate the effects of water flow on our infrastructure. You know it’s more cumbersome, it’s more detail-oriented, it takes a lot more engineering, and it takes a lot more funding. And the same thing in regard to you know response and the planning efforts. It’s just a matter of us sitting down and working with some stakeholders and writing a plan on how we’re going to respond…You can have more of an impact on greater numbers of people in other parts of an emergency management program than you can with mitigation on a whole. (Stand Alone, #9, 2013)

Well [hazard mitigation] always been a less because like I say again we have never had one (i.e. hazard mitigation plan) and we just started this year on it. The priorities lie in the planning, and preparedness, and recovery from any type of disaster. That’s pretty much where our priorities line. (Integrated Non-Fire, #16, 2014)

We have our community emergency response teams, we’re always training people within the community for that; we talk about recovery; we focus on preparedness aspect and response during our EOC tabletops and actual drills out in the field. But very little is done to talk about planning as far as recovery planning or the mitigation… So they may not have been less of a priority to my predecessor but they weren’t as evident in some of the things that we did as far as when we did the training or did some of the preparation that I was involved in. (Integrated Fire/Chief, #13, 2014)

So I think that the big challenge I guess really is that a lot of folks face (and I can tell you that it affects me every day) is just that there’s so much that emergency management is tasked with. Sometimes it [hazard mitigation planning] can take a lower priority. (Integrated Fire/EMC, #17, 2013)
Emergency management coordinators expressed several reasons why hazard mitigation planning and strategy implementation garner secondary status. Two participants noted that federal grant money is more abundant for disaster preparedness and/or disaster response initiatives. Thus, participants are inclined to be more involved with preparedness activities in order to qualify for preparedness funding. As stated by these participants:

For jurisdictions like myself that are funded partially through federal emergency management performance grants, there’s a list of requirements that you have to do. Every quarter in order to obtain reimbursement and the bulk of those are on preparedness. You have to do so much training. You have to do these exercises. You have to do planning. You have to go out and do so many public presentations. You have to attend these meetings and on and on. And so those are requirement in order to get funding. And so mitigation sometimes comes up short in those areas because it’s not a primary focus. (Integrated Fire/EMC, #20, 2014)

The preparedness and response will be cheaper. If you’re going out and getting those accomplished you know. And the response grants are far more funded than mitigation grants and they’re a lot easier to get to. We have a lot of UASI (Urban Area Security Initiative) grants to get our bomb squad and our S.W.A.T. team equipment. Those are just more funded than mitigation grants. (Stand Alone, #11, 2013)

Two participants explained that hazard mitigation is a lesser priority due to the shifting objectives of their office. As previously mentioned, emergency management coordinators undertake multiple duties, and the spontaneous emergence of pressing matters usurps the time needing to be invested in hazard mitigation planning. As noted by these participants:

My day is typically driven by whatever the pressing need is for the day. (Integrated Fire/EMC, #2, 2014)

I’m the only full-time emergency manager. I’ve got two part-time people that help me….Any given day everything in our office fluctuates. You know right now we’re doing a senior officials workshop and yesterday I spent more time on that than anything. Today I may send more on mitigation. Tomorrow it may be emergency notification systems. You know that’s kind of a rough figure. (Stand-Alone, #10, 2013)

Another reason for the diminished emphasis on hazard mitigation planning is the lack of sensationalism surrounding activities in this area. Several participants highlighted reasons that
other phases of the emergency management cycle (i.e. preparedness and response planning) receive greater emphasis than hazard mitigation planning. As explained by these participants:

I think it’s less of a priority. Response is kind of the high-profile. That’s the pretty girl you take to the dance really…Preparedness is what I think that we probably spend the most time doing because we’re writing all these plans…You know we’ve done public outreach for the citizens on disaster preparedness. You know we’re not doing public outreach to the citizens on hazard mitigation. I think it’s all about disaster preparedness. I think it’s what we spend the most time on. Response stuff is the fun stuff. That’s probably where we have our most amount of resources in terms of equipment and that sort of thing. (Integrated Non-Fire, #5, 2013)

…You know when you respond to disasters everybody sees the flashing lights, everybody seeks the City of (City Name) personnel are out helping the…either remove debris or put the fire out or whatever. You know it’s more visible and that makes the city looks good. So mitigation is always the hardest one to justify and get organized. So I think the money factor is the big thing with mitigation and not being clearly out in the open and publicized is what hurts mitigation the most. (Integrated Fire/EMC, #18, 2013)

…you know mitigation isn’t the shiny stuff. It isn’t the loud stuff and the explosion and what not. It’s the calm after the storm; It’s figuring out what we have to do to stop that from happening again. And so it’s definitely tough just as far as time management, resources, and just overall focus on it I think as a community as a whole because mitigation is often the last thing to get touched. (Integrated Fire/EMC, #19, 2014)

It’s not as sexy. There’s not as much excitement therefore it does not get as much attention. But the truth is we’re dealing with it in everything that we do…mitigation is as important as any of the other 3 phases of emergency management. It just doesn’t get nearly as much attention because it’s not as sexy as response and planning are. (Integrated Fire/EMC, #30, 2014)

Two participants noted that hazard mitigation garners a lesser focus because of the financial cost associated with it. As stated by these participants:

On a day-to-day basis preparedness, response, and recovery are more of a priority because that’s dealing with people’s lives, property, critical infrastructure and things like that. And hazard mitigation comes after the fact…With the lack of funding we don’t have $20-30 million dollars every year to put towards mitigation projects. It’s just not there when you have to ensure that people have clean drinking water and their trash is picked up and public safety and all that stuff. It’s very important but it’s just not up on the scale as for response is or planning for response. (Integrated Non-Fire, #3, 2013)
So but mitigation it costs money of course and time. And so I think that’s why it’s on the backburner until something happens. That’s how people are. (Integrated Fire/EMC, #23, 2013)

One participant also attributed the lack of time invested in hazard mitigation to the funding challenge, in addition to their lack of expertise in the skills needed for hazard mitigation planning. As this participant explained:

…Yeah I think it’s definitely less of a priority… The mitigation things, like I said a lot of those are big ticket to high dollar items basically that you can’t afford to do anyway so it’s kind of hard to short-term budget for that in a year’s budget…and since most emergency manager’s like myself aren’t public works people. That’s a lot of public works people drive those mitigation efforts you’re probably not going to have much luck getting them done anyway. (Integrated Fire/EMC, #4, 2014)

One emergency management coordinator explained that their previous professional career provided them with experience in preparedness and response, while affording them little exposure toward hazard mitigation. Thus, they were more inclined to invest time in the activities in which they are already familiar. As mentioned by this participant:

…like I said, I spent 26 years in police and fire so I was always in the response and recovery part. You know a little bit of the preparedness. Mitigation was foreign to me. And so I understand the importance of it now and fortunately we don’t have major disaster very often so response and recovery. While we need to make sure we plan and we have that, I want to say the majority of my office’s time is spent on preparedness. (Integrated Non-Fire, #8, 2014)

A lack of community hazard exposure was also an explanation for one participant’s lack of time invested in hazard mitigation planning. This is consistent with previous studies that suggest a relationship between community disaster history and the pursuit of hazard mitigation initiatives (Drabek, 1986; Godschalk et al., 1989). As revealed by one participant:

From my standpoint because of the nature of the community it’s less than you know disaster preparedness and certainly response. And again it’s kind of the nature of the community. You know we aren’t exposed to river flooding, or tidal flooding. We’re not prone to repetitive losses except from ice storms. (Integrated Fire/Chief, #14, 2014)
As noted by another participant, a lack of community hazard exposure has provided little impetus for engaging in their hazard mitigation fund seeker role. As reported by this participant:

…since I’ve been an emergency management coordinator we haven’t had any disasters in the county so we haven’t been able to move forward with the opportunity to apply for any grants if we want to with the mitigation side of it. (Integrated Fire/EMC, #18, 2013)

One fire chief felt that hazard mitigation planning was a lesser priority because they had little control over this area. As highlighted by this participant:

…I have very much control over response, some over recovery, and very little control over mitigation other than code enforcement. (Integrated Fire/Chief, #12, 2014)

In contrast to responses noted by other emergency management coordinators, three participants explained that hazard mitigation planning held equal importance to other phases of the emergency management cycle. In the words of these participants:

I wouldn’t say at this point it’s more or less. It’s on par at the same level as our other mission areas-preparedness, response, recovery. We’ve really in the last 6 months tried to put mitigation more at the forefront of what we do and it will continue to be that way. (Integrated Non-Fire, #1, 2013)

I don’t know. Each has a role. I mean we’re American so obviously it’s the response. We’re reactive to everything. So having the ability to respond is always apriority. That’s where the biggest threat to life is so being able to respond to it. You know obviously you get it mitigated to you don’t have to respond-that’s there. You know I don’t think I’d have it any more out of whack than any of the other ones…Somewhat all equal but response obviously leading the way. Because you can have the best plans in the world if you can’t respond it doesn’t matter. (Integrated Fire/Chief, #15, 2013)

I’d say it’s probably about equal. I think it’s kind of come up from being just sort of an afterthought some times to its sort of come up equal with the other phases. I think it’s one that is now seen as not just ancillary but a primary task I think. (Integrated Fire/EMC, #24, 2014)

Despite the rare perception that hazard mitigation planning held equal importance to other phases of the emergency management cycle, the majority of participants viewed hazard mitigation planning as having secondary status and this was evident in the lesser percentage of their work time devoted to this area. Participants representing all regional office configurations
proclaimed that a smaller percentage of their work time was devoted to hazard mitigation planning activities, for example:

- Right now we’re probably sitting at 30%. It’s a fluctuating number with us. I’m the only full-time emergency manager. (Stand-Alone, #10, 2013)

- Well because we’ve been working on it I’d say 20-25% but normally it would probably only equate to about 5-10% normally. We spend a lot of time in preparedness and things like that and training. (Integrated Non-Fire, #8, 2013)

- A small percent. Probably 5%...I’m not sure if it’s standard but I mean it’s a small percentage of the time dedicated to that [hazard mitigation] project. (Integrated Fire/Chief, #14, 2014)

- I would say 10% or less. (Integrated Fire/EMC, #29, 2014)

Emergency management coordinators stated that hazard mitigation planning held secondary priority among their work duties, and particularly those duties associated with emergency preparedness and response planning. The diminished focus on hazard mitigation can be attributed to a variety of factors including the lack of resources, and specifically the financial resources necessary for hazard mitigation; the day-to-day spontaneous events that take attention away from hazard mitigation planning; the not-so-glamorous perception of hazard mitigation; and a personal lack of knowledge about hazard mitigation planning. Moreover, the lack of time devoted to hazard mitigation planning is reflected by the minimal amount of work time (as communicated by participants) invested in this area. Finally, the secondary priority status afforded to hazard mitigation planning was expressed by emergency management coordinators representing all regional office configurations. In short, the secondary priority challenge is a seeming bi-product of the multiple duties challenge. In other words, when emergency management coordinators become overwhelmed by multiple duties, hazard mitigation planning becomes a downgraded priority.
Personnel Shortage Challenge

The fourth internal organizational challenge afflicting emergency management coordinators is the personnel shortage challenge. Staff capacity is integral to hazard mitigation planning and strategy implementation (Godschalk et al., 1989; Brody et al., 2010). Lacking adequate personnel limits the amount of time that can be invested in hazard mitigation activities and overburdens emergency management coordinators with a multitude of tasks. During the interview process, at least 17 emergency management coordinators (representing all regional office configurations) made reference to the personnel shortage challenge. As reported by some participants:

We definitely don’t have the staff to develop that [hazard mitigation] plan or we would have had a real hard time to get it right within those guidelines. Don’t have the staffing to spend the time or even the expertise locally to put that together…It’s pretty much me. (Integrated Fire/EMC, #4, 2014)

Being a 2 person office [is a challenge]. (Integrated Non-Fire, #8, 2013)

We have an office staff of 2 for a jurisdiction that’s 700 square miles or 650 square miles whatever it is…Even if the financial resources were there the staffing’s not. (Stand-Alone, #9, 2013)

There’s also personnel issues that are also a challenge. (Integrated Fire/Chief, #15, 2013)

Number 2 is personnel and just being me and my secretary, my secretary has been out a great deal. But yeah it’s just a manpower thing. (Integrated Non-Fire, #16, 2014)

Unfortunately we’re all a bunch of one-person offices so it tends to be difficult to plan out your time and focus on anything for very long before you’re forced to fix something else or deal with something else. (Integrated Fire/EMC, #21, 2013)

A participant representing one of the larger regional jurisdictions alluded to the personnel shortage challenge. This suggests that larger and more populated regional municipalities are not immune to the personnel shortage challenge. As mentioned by this individual:
Staff time is a huge issue. You know we’re fortunate we’re a big city/big office but even then having time to sit around and focus on mitigation is tough. You know so because everybody wears lots and lots of hats. (Integrated Fire/EMC, #26, 2013)

One participant attributes the lack of time invested in hazard mitigation planning to their office’s personnel shortage. As explained by this participant:

> I think [it would be better] if there was another staff that was here. But because there’s not my focus is definitely more on preparedness planning, response, and things like that. There’s a lot of other duties as assigned that that affects a single office and it definitely one of those things I’d like to spend more time on I just don’t have the time. (Integrated Fire/EMC, #19, 2014)

Another participant described a downside of the personnel shortage challenge. As reported by this participant:  

> You know you get to focus on everything a little bit and hardly anything to its full need. So yeah staffing shortages. (Integrated Fire/EMC, #21, 2013)

Two participants representing the integrated fire/EMC office configuration stipulated that prior to their current employment, the personnel shortage challenge hindered their city’s ability to establish a local hazard mitigation plan. As indicated by their responses:

> Well I’ll preface I guess my answer with that we’re in the process of writing one. We received a grant through HMGP to hire contractors to facilitate the development of that and we’re in the process a matter of fact I’m reviewing a number of drafts/chapters. It will probably be submitting for approval probably end January to the state and then subsequently for FEMA for their review as well. The reason why we haven’t developed one thus far is (to be honest with you) that the emergency management program here is probably a bit developing. Over the last I guess 10-15 years. I’ve only been here 2 years and I’ve seen you know quite a bit of change since I’ve been here. But they just didn’t have the staff availability to get this done and that’s pretty much where we’re at. (Integrated Fire/EMC, #17, 2013)

> I think it was just primarily the reason they didn’t have anyone whole sole purpose was to work in emergency management. Prior to me was the fire chief who was the EMC (emergency management coordinator) and he was planning to do it but he just didn’t have the time to focus on it. Back in 2008 was the last time (City Name) had their own stand-alone emergency management personnel until I came. (Integrated Fire/EMC, #24, 2014)
In a rare finding, one participant (representing an integrated non-fire emergency management office) articulated that they are able to effectively balance hazard mitigation planning with their other duties. By way of their job title (i.e. preparedness and mitigation coordinator), this individual’s sole duty is to manage the hazard mitigation planning and emergency management preparedness functions of their office, while an in-office colleague manages the response and recovery planning duties. The division of labor ensures that this participant does not become overwhelmed with multiple duties and provided them with sufficient time for hazard mitigation planning. As revealed by this participant:

You know I feel like if we had even more staff we could do even more in all areas (i.e. mitigation, preparedness, response, recovery) just like most people feel I’m sure…But we do our best and now that we are up to three staff [so] it is so much better. Because I am (all year long) able to focus on preparedness/mitigation and (co-worker’s name) (all year long) is able to focus on response/recovery. (Integrated Non-Fire, #2, 2013)

A fire chief hinted that despite being a one-person emergency management office, he/she was able to effectively undertake the various duties they were tasked with performing. As outlined by this individual:

I think that’s mainly because I am one person. I’m one person with three hats and then my counterparts in another city department (like Public Works or Community Development) are also one person with two or three hats. And so definitely it’s the amount of time. You have to make time to focus on these things. (Integrated Fire/Chief, #13, 2014)

Echoing the personnel shortage theme, one participant representing an Integrated Fire/EMC office explained that their staff shortage challenge has been longstanding, with no immediate solution likely to emerge. As stated by this participant:

…As it is (as an office of one), I like to joke that I have a bunch of plates spinning and my goal is just to keep them all spinning. You know I hope one doesn’t stop, and fall, and break…I’ve been here 7 years, I’ve asked for personnel every year. This past year I got an intern for 380 hours so you know the magic in the office the outlook is not good. Eventually yes but we’re just not there yet. (Integrated Fire/EMC, #22, 2013)
The personnel shortage challenge plagues emergency management coordinators of all regional office configurations. As revealed, this challenge can hinder the ability to develop a community hazard mitigation plan. While two participants expressed a keen ability to engage in hazard mitigation planning despite the personnel shortage challenge, the majority of participants describe their office as being adversely impacted by staff shortages.

As also explained, the Personnel shortage challenge forces understaffed emergency management coordinators to undertake multiple duties and diminishes the time that would otherwise be invested in hazard mitigation planning. Thus, the personnel shortage challenge seemingly perpetuates the multiple duties challenge (as short-handed staff are forced to undertake multiple duties) and secondary priority challenge (hazard mitigation is secondary among the list of various duties) internal organizational challenges. Additionally, the funding challenge inhibits the ability to hire additional staff thus sustaining the personnel shortage challenge.

**Competency Challenge**

The final internal organizational challenge confronting regional emergency management coordinators is the competency challenge. There were 6 participants that articulated their lack of knowledge in areas of hazard mitigation planning. Various tasks associated with hazard mitigation planning require skills that are beyond that of regional emergency management coordinators. For instance, developing the community hazard mitigation requires a degree of technical understanding and regional emergency management coordinators confess to lacking certain competencies. Thus, lacking the ability to conduct risk, vulnerability, and economic analysis is one barrier to implementing comprehensive emergency management programs.
One study has highlighted a competency challenge among Texas emergency management coordinators. A survey by Lindell et al. (2002) determined that local Texas emergency management coordinators were less knowledgeable than local community planners about geographic information system (GIS) mapping, and were also less likely use this software when compared to their planning agency counterparts. Their study illustrated a competency challenge in one area of emergency management planning. Echoing the findings of Lindell and his colleagues, one study participant also expressed lacking the knowledge to conduct the technical aspects of drafting the hazard mitigation plan. According to this participant:

> The technical expertise of being able to do some of the planning itself because some of these plans are 400/500 pages long and there’s some technical aspect of it. I mean I grew up in the police and fire and things like that. So I’ve been doing this for almost a little over 32 years now and so I’m kind of [new to this]…some of these things I’ve been going to training and things like that. I still need to do some of them. (Integrated Non-Fire, #8, 2013)

As implied by one participant, emergency management coordinators are not subject-matter-experts and therefore should be expected to face competency challenges. This supports the need for collaboration (i.e. collaborator role) by emergency management coordinators and reinforces the need for additional stakeholder involvement. In the words of this individual:

> I definitely think technical understanding is a huge part of it. From and emergency management standpoint we’re here to coordinate this plan, facilitate this plan, but we’re not the SME (subject-matter-expert) in this. (Integrated Non-Fire, #1, 2013)

Another participant representing a county-level Integrated Non-Fire emergency management office noted the challenge of working with city emergency management coordinators who lack knowledge in hazard mitigation planning. As communicated by this participant:

> One of the challenges that we have of course is trying to bring you know everybody together and sell the whole idea. Some of them have no idea. They have heard about hazard mitigation but not all of them knew what that was or what that entailed. Some
may have been confused as to what’s the difference between the emergency operations plan or the emergency management plan and the hazard mitigation plan. So there’s that kind of confusion that you’re trying to address. (Integrated Non-Fire, #6, 2014).

A participant representing a stand-alone office expressed lacking competencies for the skills required for hazard mitigation strategy implementation. As communicated by this participant:

Almost nationally emergency managers aren’t designing buildings or designing building codes or doing any of those things that really you would think of as mitigation projects of mitigation items. That’s not really our function so I think the biggest challenge is one (again) financial, and two the fact that it’s beyond the scope of what we do. That skill set exist in other departments. (Stand-Alone, #9, 2013)

An emergency management coordinator representing an integrated non-fire office described the competency challenge of being unable to determine where information needed for geographic information system (GIS) mapping could be acquired. According to this participant:

I was just discussing about not having access to GIS mapping [and] getting information through COG. Things of that nature has been the most challenging. Like your wetlands, and wild fire acreage, and things of that nature. Having to know where to go look for it and find it. (Integrated Non-Fire, #16, 2014).

A participant representing an integrated fire/chief office explained their lack of understanding of the federal hazard mitigation grant process. This competency challenge inhibits their ability to engage in the fund seeker role. As mentioned by this participant:

I’m not familiar with the hazard mitigation grant process. You know some other grant processes that are out there, the biggest hindrance is the grant writing process and trying to justify your need and show I guess more so why you are in need. (Integrated Fire/Chief, #13, 2014)

Emergency management coordinators articulated competency challenges in several areas of hazard mitigation planning. Individual participants voiced knowledge limitations in the technical aspects of hazard mitigation planning; in the acquisition of GIS mapping data; in the implementation of hazard mitigation strategies; and in the federal hazard mitigation grant writing process. This challenge was expressed by emergency management coordinators representing the
stand alone, integrated non-fire, and integrated fire/chief, but not by participants representing the integrated fire/emc emergency management office. The competency challenge of emergency management coordinators suggests the need for additional stakeholder involvement (in hazard mitigation planning) to compensate for participant knowledge limitations and affirms the value of perceived stakeholder functions (e.g. leaders, subject-matter-experts, hands-on guys, and supporters).

**Outside Organizational Hazard Mitigation Challenges**

Regional emergency management coordinators also encounter outside organizational challenges that originate beyond the boundaries of their office that hold implications for the outcome of hazard mitigation initiatives. Unlike internal organizational obstacles, external organizational challenges are imposed on emergency management coordinators from outside sources. Though primarily beyond their span of control, emergency management coordinators must successfully overcome these challenges if hazard mitigation goals are to be accomplished.

*Disinterested Stakeholders Challenge*

The first outside organizational challenge faced by regional emergency management coordinators is the lack of additional stakeholder involvement in hazard mitigation planning. A widespread obstacle, the disinterested stakeholders challenge was communicated by 15 interview participants from the stand alone, integrated non-fire, and integrated fire/EMC offices. As determined through their collaborator role, emergency management coordinators work with multiple stakeholders, and these stakeholders in turn perform valuable functions that supplement local hazard mitigation planning efforts. Additional stakeholders represent a range of sectors.
including political, bureaucratic, and private citizens. Regardless of their domain, emergency management coordinators often find it difficult to procure additional stakeholder involvement in hazard mitigation planning. For a variety of reasons, additional stakeholders are not exceedingly invested in hazard mitigation planning efforts, and at least one participant from each emergency management office configuration made reference to this drawback. Thus, the disinterested stakeholder challenge impacts emergency management offices of all office configurations.

Previous studies have noted elected official disinterest to be an obstacle to community emergency management programs (Perry and Mushkatel, 1984; Labadie, 1984). In their study of planning processes, Godschalk et al. (2003) find that citizens had little to no interest in assisting planners with addressing local hazard concerns. Labadie (1984) suggests that emergency managers are confronted with dealing with the apathy of local agency leaders, politicians, and citizens. In this research, the narrative from emergency management coordinators corroborated these findings. A participant representing a stand-alone office revealed that elected officials and the general public are both apathetic toward hazard mitigation planning. In the words of this participant:

The biggest one is getting all the elected officials, department heads, employees, and citizens to understand the need for such planning...Getting them to understand what mitigation is, how it works, and why we need it is a major challenge. And I would be willing to say it’s a major challenge in most counties. [ME:] You know what an emergency notification system is like a reverse 911 system. It took me three years to get the county to authorize funding for an emergency notification system for the county. And to me that’s paramount in my job in order to notify people when something is about to hit them. And it literally took Moore, Oklahoma getting destroyed (i.e. tornado disaster in May 2013) for them to understand what I was saying and say okay we’ll pay for that this time. (Stand Alone, #10, 2013)

The two biggest ones would be buy-in and that’s just getting buy-in from the public and from the local government on actually carrying out projects, and getting in the planning process, and getting them to see say this is an issue we can take care of it. You know a lot of people just don’t think it’s going to happen here. They don’t think it’s going to happen to them so getting buy-in on mitigation action is tough. (Stand-Alone, #11, 2013)
As explained, diminished stakeholder involvement is attributed to their lack of understanding about hazard mitigation’s importance. Two emergency management coordinators representing integrated fire/EMC offices alluded to the issue of uninformed stakeholders, for example:

I’d say one of the biggest things is that generally as far as emergency management goes it’s the last thing on the list…Mitigation is often that afterthought that people say well we need to do this. And so sometimes it’s somebody who hasn’t experienced that situation or has the personal history of going through hazard mitigation or that reimbursable event or whatnot. It’s kind of hard to get that point across. So the challenge would be trying to explain it to management/local officials who may not understand that this is something we have to take care of now so that we don’t have to worry about it later. (Integrated Fire/EMC, #19, 2014)

It’s just that again, people don’t understand (I don’t believe). Hazard mitigation is not sexy. There’s no one running out with the hose or a gun or anything like that. There’s no wonderful stories you can create about hazard mitigation…So people are just not understanding that what they’re looking at (the origin or the foundation of it) is your hazard mitigation action plan. (Integrated Fire/EMC, #30, 2014)

Another reason for the lack of involvement is stakeholders are preoccupied with various duties of their own, and are therefore unable to lend their time to hazard mitigation planning. As reported by three participants:

I mean it all comes down to elected officials but more than that it’s selling the benefits to the departmental folks that already have a full workload; that are doing their daily jobs; that have things to do…more than enough to do and then all of a sudden hey we want you to get involved with this huge project. Very intensive project that may benefit us in the future but we can’t necessarily tell you what all those benefits are and define what they all are at this point. (Integrated Non-Fire, #1, 2014)

Some of it too is having to deal with different departments. Well not really departments but certain individuals that feel that may feel that this isn’t really important. You know why are we doing this type of deal is some challenge…or they don’t have time to deal with it or want to deal with it…I would say both. A lot of people dealing with this (i.e. mitigation) this isn’t their full-time job. It’s just something they get handed off or something they do periodically. It’s not their day-to-day job. (Integrated Non-Fire, #3, 2013)

That’s a bit of a challenge for some jurisdictions so when we call meetings not everybody is able to come at one time. So you always have to follow up with them in terms of just bringing them up to speed. Also taking the extra time to try and explain and provide the
benefits that they would have in participating in such a plan. So there’s a coordination of
the meetings and then there’s the follow-up. (Integrated Non-Fire, #6, 2014)

Another explanation for the lack of stakeholder involvement is the infrequency of disaster
events within communities. Previous writings have noted the linkage between a community’s
disaster history and the implementation of local hazard mitigation objectives (Drabek, 1986;
Godschalk et al., 1989). Apparently, a community’s disaster history, or lack thereof, also
influences the level of stakeholder involvement in hazard mitigation planning. Five participants
alluded to the apathy which results from community disaster infrequency. As articulated by these
participants:

So because we haven’t had a history of big disasters like that…It’s kind of out of sight
out of mind sort of thing. Especially by the general public. I mean obviously we think
about it. How much political support are you going to spend to do mitigation when
nothing [has] ever happened? (Integrated Non-Fire, #5, 2013)

I would classify it I think pretty much in line with most jurisdictions in that when things
are quiet for an extended period of time it’s somewhat apathetic. But if there is a major
event someplace that is very newsworthy then that pushes it to the front of citizen’s
minds [and] apathy is lessened. (Integrated Non-Fire, #7, 2013)

Nobody gives as much thought until an incident occurs and then it’s on top of
everybody’s minds. So to prevent it, like to go out and buy properties out in the flood
area, that’s something they don’t see as a concern until such time as those area flooding
and we’re doing swift water rescues and things of that nature. Then all of a sudden it
becomes an issue. (Integrated Non-Fire, #16, 2014)

Well I think a large part just like anything emergency management-wise is getting the
buy-in and getting people (especially with mitigation) to spend money on something that
hasn’t occurred yet. It’s easier for certain types of mitigation. Like it’s easier for me to
sell a flood mitigation project because we’ve had floods before. And so I can go and
show them high water marks and I can go and get them pictures of the water width here
and you know we had to close these roads. That’s an easier sell for me than it is for me to
sell I need to go and put safe rooms in my fire station because right now we don’t have
them. So if we have some sort of tornado bearing down on the fire station, it’s kind of
every man for himself. You know I mean but we’ve never had a tornado strike a fire
station before. So it’s a harder sell than the flood which we’ve had happen before.
(Integrated Fire/EMC, #22, 2013)
One (1) of them is the public really doesn’t want to hear much of it. They don’t want to give you input. They just want just in time information you know. The don’t think about their house being safe until there’s been major disaster somewhere and then it’s just a very short-lived attention span that they. They don’t focus on it very long…It’s hard for people to make themselves build shelters when then the return on their investment (although it can be high when a tornado goes over) they just don’t see many tornadoes. Integrated Fire/EMC, #28, 2014

Finally, participants suggest that the widespread preoccupation with disaster preparedness and response lessens the focus on hazard mitigation planning. Moreover, an overreliance on the capacity to respond diminishes concerns for hazard mitigation planning. Two emergency management coordinators alluded to the reactive culture of first responder stakeholders. In the words of these participants:

Wildfires is something that I actually think we can do some mitigation very effectively but we don’t and I think part of the reason for that is we’ve got 25 or 30 departments in the county so if we have a wildfire, it’s rare that those wildfires, they don’t get very big. Because we can throw so many resources at so fast that they don’t get big. We’ve for 30 [fire departments in the county]! So we can throw a whole lot more resources on stuff a lot quicker because our response capacities are a lot better so there’s probably less of a need for hazard mitigation for that. I would rather do the hazard mitigation stuff than buy fire trucks but good luck telling the fire department that. So it’s something that I think is a little bit skewed and we’re also coming from the position of when was the last time we has a bad disaster. (Integrated Non-Fire, #5, 2013)

I would have to say we more react than prepare. I mean people think under the assumption of it’s not going to happen here, I’m not too worried about it. So at that point it’s hard to get support and it’s hard to get funding…And of course down in New Orleans all the mitigation steps that has taken place, I think it wakes people up a little bit. But as a whole no. People just want their shopping centers built back up and don’t think about it again once it’s been rebuilt. (Integrated Fire/EMC, #27, 2014)

Stakeholder involvement is vital to hazard mitigation planning and strategy implementation. However, emergency management coordinators encounter difficulties when attempting to recruit stakeholders into the hazard mitigation planning process. This challenge was mentioned by emergency management coordinators representing the stand alone, integrated non-fire, and integrated fire/EMC offices, but not by participants representing the integrated

122
fire/chief emergency management office. As determined through participant narrative, the lack of stakeholder involvement can be attributed to their busy schedules; their lack of knowledge about the importance of hazard mitigation; the infrequent occurrence of disasters; and their reliance on the capacity to respond. The lack of stakeholder involvement diminishes the efficacy of hazard mitigation planning objectives.

**Bureaucratic Challenge**

The second outside organizational challenge impacting emergency management coordinators is the bureaucratic challenge. This challenge introduces delays in the approval of the hazard mitigation plan and in the hazard mitigation grant approval process. McLoughlin (1985) notes that the federal government’s role (in emergency management) is to support the efforts of local jurisdictions. However, participants expressed their frustration with the federal government’s role in hazard mitigation planning. Ten emergency management coordinators, representing stand-alone and integrated office/EMC configurations, were critical of the bureaucracy associated with the hazard mitigation plan’s review and approval. Much of their criticism was directed at the Federal Emergency Management Agency’s (FEMA) plan review process. Participants felt that FEMA’s review procedures delayed the approval of their community’s hazard mitigation plan. As reported by two participants:

> My predecessor attempted to do a plan about 8-9 years ago and I think she said about 8 times tried to get it through FEMA and they (i.e. FEMA) kept changing reviewers and kept changing stuff and it just got to be where it didn’t look like it was going to work and she gave up. (Stand Alone, #10, 2013)

> It’s a time-consuming process to get it all approved. The plan was done long before it was actually approved but FEMA has so many they they’re doing that sometimes it takes a while to get back around and actually get approved. It actually got approved on the first review but it took that long for it to get through. You just got to go through so many different levels of bureaucracy you know. (Stand-Alone, #11, 2013)
One participant representing an integrated fire/EMC stipulated that a desire to avoid FEMA’s bureaucracy provided the impetus for joining a multi-jurisdictional hazard mitigation plan. As described by this participant:

I think it comes down on some of the bureaucracy. Instead of having so many jurisdictional plans go through that process and have to go through state review, and then for FEMA review, and back-and-forth, it’s easier is the correct terminology but…just less bureaucracy to have it on a county-wide basis. You can include every jurisdiction and if there’s something that needs to be tweaked, it can be easily done within that multi-jurisdictional plan. (Integrated Fire/EMC, #20, 2013)

A majority of criticisms were directed at the bureaucracy associated with the federal hazard mitigation grant process. In alluding to their fund seeker role, several participants noted the bureaucratic challenges associated with pursuing hazard mitigation grant money. McEntire and Myers (2004) note that completing federal grants can be an overwhelming undertaking. Two participants noted that grant applications were extremely cumbersome to complete. According to these participants:

… just the rules and regulations on some of these grants is a losing battle. You’re wasting more time trying to implement the grant than actually do good for the community…Just the requirements on them and filling out the paperwork and you know if there’s a little you have to fill out paperwork and all that stuff so just the requirements on them get to be a big burden. (Integrated Fire/EMC, #18, 2013)

…one of the things that we put in our plan in 2008 and that I had to put in there (and it’s for good reason) is that every action had a caveat that went something like subject availability of state and local funding and staff time. And that’s the kicker because when we did [our plan] in 2008, the way FEMA had us do it was just a nightmare because the requirements kept growing and growing and the staff kept changing and changing so it wound up being almost an (inaudible) document before it was said and done. I remember like two action items for every hazard you know for every jurisdiction that participated. So a lot of times there were things that we knew we weren’t going to do but we had to identify those. (Integrated Fire/EMC, #22, 2013)

Time. Especially the PDM process. It’s extremely time-consuming. I mean the application is significant. It takes a lot time and expertise to go through it. (Integrated Fire/EMC, #26, 2013)
Other participants explained that continuously evolving federal hazard mitigation grant application guidelines present a challenge for the procurement of federal grant money. As mentioned by three participants from integrated fire/EMC emergency management office configurations:

They (FEMA) always add more things that you need to apply, or more things to manage it. [It] needs to stay constant. [And] when you have someone on the other end that you’re talking to about your grant it always seems to be a different person all the time. (Integrated Fire/EMC, #25, 2014)

That turns out to be an issue that there’s no such thing as free money. When you are receiving federal grant funds, there is a lot of documentation, a lot of work that is required to meet [the] standards that they set (their guidelines for the grant). And so sometimes it’s pretty expensive to take free money. You know all the time you have to put in to accomplish all the guidelines. (Integrated Fire/EMC, #30, 2014)

I have applied for some (i.e. mitigation-related grants) in the past and additional sirens… And so I did all the leg work (very time-consuming as I’m sure you know), all the environmental impact, even putting out a poll...It’s extremely time-consuming and you have to work with so many different organizations and again limited on staffing and funding but regardless did all of that. Got it done, submitted to the state, got word back that it’s approved. You’re good to go!...A few months away that this project would have had to have been completed I believe. But anyway, we were held up again by that point (this as still on-going between the COG and FEMA) and so that plan never was approved and so we lost that opportunity. (Integrated Fire/EMC, #20, 2013)

One participant representing an integrated fire/EMC office implied that the time required to complete the funding application, coupled with uncertainty of being awarded the funding, could serve as a deterrent to pursuing grants. As reported by this participant:

Definitely the risk versus reward for the mitigation grants. The amount of money versus how much your expected and what the likelihood is you’ll receive it is definitely a factor. It’s a lot of effort to go through the process of the grant application and to go through everything else and then to not get it is one of those things that’s just kind of a you know write it off but the time and the money has already been spent. (Integrated Fire/EMC, #19, 2014)

Another participant explained that bureaucracy is also introduced by their local government. As stated by this participant:
We had a little bit of red tape within the city to go through. One thing you know we have a lady that pretty much does most of our grant work so you know they just tell me if I want a grant to go to her. And any grants that we apply for have to be approved by the city council before we apply for them. Because a couple of years ago we got a pretty nice grant but the city had to put in quite a bit of matching funds and they just decided they didn’t want to do it. It was for hiring personnel-hiring fire fighters...There’s a little bit of hoops to jump through just to put up a little to get to apply for the grant. (Integrated Fire/EMC, #29, 2014)

The bureaucratic challenge is a prevalent problem for emergency management coordinators. As described, this problem is especially prominent during FEMA’s review of the hazard mitigation plan, and during the completion, submission, and review of the federal hazard mitigation grant application. Though not proponents of the bureaucratic challenge, participants remain subject to its adverse consequences, particularly with FEMA as gatekeepers to the financial resources they covet.

Emergency management coordinators articulated seven challenges during the course of hazard mitigation planning and strategy implementation. Five challenges are confined to the inside of the emergency management office and 2 challenges are attributed to outside organizational factors. As outlined in Table 5.1, the internal organizational funding, multiple duties, secondary priority, and personnel shortage challenges were mentioned by participants representing all emergency management office configurations, and suggest that they are ubiquitous in their impact. However, the internal organizational competency challenge was not expressed by participants representing the integrated fire/EMC emergency management office. The outside organizational disinterested stakeholders challenge was not communicated by emergency management coordinators representing the integrated fire/chief office. Additionally, the outside organizational bureaucratic challenge was not voiced by participants from the integrated non-fire and integrated fire/chief emergency management office.
### Table 5.1

**Hazard Mitigation Challenges and Emergency Management Office Organizational Structure**

<table>
<thead>
<tr>
<th>Identified Challenge</th>
<th>Stand-Alone</th>
<th>Integrated Non-Fire</th>
<th>Integrated Fire/Chief</th>
<th>Integrated Fire/EMC</th>
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<tr>
<td>Bureaucracy</td>
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### Integrated Emergency Management Office Challenges

The interview sample was comprised of 27 participants from integrated emergency management offices. Participants were prompted to articulate the benefits and challenges of their emergency management office structure, and provided novel insight. Literature has outlined one challenge faced by integrated emergency management offices. For instance, integrated emergency management offices are faced with the likelihood of having their directives overshadowed by the objectives of their parent agency (Labadie 1984; McEntire, 2007).

Qualitative findings presented two additional challenges for integrated offices in hazard mitigation planning. The primary challenge resulting from their integrated office configuration is role conflict. Emergency managers find it difficult to balance their dual job titles. As described by participant a from the integrated fire/chief and integrated fire/EMC office:

But at the same time from a personal level, there’s things that I feel that we can’t get to because I can’t focus all my time on emergency management; I can’t focus all my time as the Fire Chief. And I am afraid that something’s going to fall in a crack that’s going to affect us later. Now do I personally feel effective (being a dual role as emergency management coordinator and fire chief)? I do not. That I think may be one of the bigger
hindrances for me personally and for our community, is that we just can’t focus and switch gears and focus 100% effort into mitigation issue or the plan itself. I can work on this a little bit and I get to work on another problem for a little bit, work on fire station placement for a little bit. So that’s probably been the challenge. (Integrated Fire/Chief, #13, 2014)

The biggest challenge you know like everybody who does a collateral duty is just time and that effort you put into it. You’re dedicating the staff hours to the problem. (Integrated Fire/Chief, #14, 2014)

What’s really challenging is when storms do come in and I’m on duty with the fire department and tracking the storms and (inaudible) and all that stuff. So yeah there’s definitely a downside to it. (Integrated Fire/EMC, #18, 2013)

…time constraints. I’m not a full-time emergency manager so I got to spend a certain amount of time doing other stuff so. [If] anything I think it’s just time for whatever activities. (Integrated Fire/EMC, #4, 2014)

Participants note that it is also difficult to distinguish their emergency management duties from the function of their parent agency. As explained by 2 participants from integrated fire/EMC offices:

One of the challenges is the understanding (both internally and our external departments and agencies) about the roles of emergency management because you’re housed under the fire department and you’re not surely a fire department function. Again it becomes having to constantly sell and articulate what your job is, and what you do. You know some people know me because I’ve done grants and so they think I only do grants. And having to explain no grants are only a small portion of my job. You know I also do this planning. Even though I’ve worked with them on planning projects that’s not what sticks in their head. What sticks in their head is I got their department money and so the challenge of having to explain, and re-explain, and identify what my job and what my position is (especially if it relates to mitigation) is a challenge. (Integrated Fire/EMC, #21, 2013)

…You know the disadvantage is as opposed to being like a stand-alone office where you have your own sense of ownership, people sometimes see you as coming from another area. I don’t know if that makes sense, but sometimes that can be a challenge. (Integrated Fire/EMC, #24, 2014)

The challenges resulting from the integrated emergency management office configuration are role conflict and the difficulty in distinguishing the office’s function from that of the parent agency. The role conflict challenge is similar to the multiple duties challenge in that it suggests
there are multiple other duties for the emergency manager. Unfortunately, the scope of these duties may have negative implications for the time invested in hazard mitigation planning.

Integrated Emergency Management Office Benefits

Emergency management coordinators from the integrated office configuration expressed several benefits of their office configuration in relation to hazard mitigation planning. Two benefits of the integrated office arrangement is it reduces expenses for a city (by combining emergency management with another agency), and protects the emergency management office from political and budgetary infighting (Labadie, 1984). Another suggested benefit is having access to the larger budget of the parent agency (McEntire, 2007). In addition to having access to their parent agency’s budget, emergency managers also gain access to their parent agency’s personnel resources, for example:

Another benefit is that I can utilize a number of things within the fire department that if I were a stand-alone department that may not be as easy for us. There’s 3 Administrative Assistants within the fire department. Each one of them kind of having their own role for instance purchasing, payroll, and so forth that I lean on to do a lot of jobs that if I were stand-alone department I would need an admin myself. But you know coming with some administrative support within the department is also beneficial to me especially the purchasing side of things. (Integrated Fire/EMC, #17, 2013)

I wouldn’t think it hinders it. Anything I ever ask for and need from the emergency management side I’ve been able to obtain with very little challenge. (Integrated Fire/EMC, #27, 2014)

Because I work for the fire department I have a standing militia when needed. So when we have the need to get information out to the public you know, or I need to have personnel set up a shelter, we have fire engine crews that will go take care of that for us based on the orders of the assistant chief or the fire chief himself. So we have resources at our disposal that are outside your normal emergency management resources because we are a small shop and have 300 additional firefighters that I can call upon if needed…And those shops (i.e. emergency management offices) that are in other public safety departments they relatively voice the same opinion. When you’re director of a stand-alone department (in my experience) what happens when you are needing additional resources (to be able to respond to an emergency) you might find yourself having to
negotiate with command for those different public safety perks or departments to be able to donate resources to help support your response. (Integrated Fire/EMC, #30, 2014)

Emergency management coordinators expressed additional advantages of the integrated emergency management office structure. One benefit is having the opportunity to make use of the relationships established by their parent agency. As four participants from integrated fire/EMC and integrated fire/chief offices explained:

Yeah I think there are benefits. [It] provides a level of cooperation with responders and other agencies when it’s going through the fire department. (Integrated Fire/Chief, #12, 2014)

There’s certain value within the city I think being associated with the city manager’s office. Externally, outside the city I’m not sure it really…the fire department has more value. Because people recognize what the fire department…most people know that cities have city managers but that’s (inaudible) make it happen. The average guy walking down the street. But they know the fire department is people that come and help them. So there’s certain value when you say who you work for…well I’m a civilian employee of the fire department. I work for the office of emergency management. Typically I introduce myself I’m with the Office of Emergency Management. I’m with the Fort Worth Office of Emergency Management. But there’s some value sometimes especially if you’re trying…the first time you talk to somebody…you’re trying to get a hold of somebody you say Hi, my name is (participant name) I’m with the (City Name) Fire Department Office of Emergency Management. You say fire department they tend to listen to you. (Integrated Fire/EMC, #26, 2013)

I think it’s better being in the fire department. It helps more than it hinders…I guess I already have a good working relationship with those people just from you know staff meetings and different things, and I see them when we’re at different city events and when we’re working…we have a parade coming up in March so I’m working with the folks from the newspaper; I work with the police department and the parks department and everything. So you know it helps me to work with other people [getting] involved. (Integrated Fire/Chief, #28, 2014)

Emergency management coordinators stated that their parent agency also provides the emergency management office with the name credibility that is vital for engaging stakeholders and securing their buy-in. As explained by two participants:

I think it does actually because especially in (city name). (City name) Fire is deeply committed to public safety [and] is pretty well-known in the city so I think it does help. (Integrated Fire/EMC, #24, 2014)
I don’t think it has an effect on it… They do a great job of supporting us… a lot of times if I call somebody and I don’t know them, you know I’ll say Hi my name is (participant name) [and] I’m with the (city name) Fire Department Office of Emergency Management and you get credibility from the fire department. And then they provide some overhead support for us… That can be huge. Especially if you’re trying to get to talk to somebody. You know the emergency management is much more widely known than it was a few years ago. Gosh 10, 15, 20 years ago you used to have to explain what emergency management was. It was kind of handy to say I’m with the fire department. And then you explain what you do and it’s like oh okay. There’s some good will with that. (Integrated Fire/EMC, #26, 2013)

Another benefit of the integrated office arrangement is the institutional knowledge of the parent agency. As a result of their routine activities, the parent agency acquires important knowledge regarding community hazards. Emergency managers can reference this knowledge to determine local hazard mitigation planning needs. As explained by four participants:

I think it helps in the fact that being not a stand-alone own office or isolated we have the opportunity to hear what’s going on day in and day out and you know be a part of the solutions. You’re sort of knowing what’s going on day in and day out. So I think that it’s a big help. (Integrated Fire/EMC, #18, 2013)

It gives you a lot of institutional knowledge on this hand about where all the problem spots are. I mean you know when the fire departments they respond they know a lot about where the flooding is and things like that. Some of the things that you might otherwise just run on an analyses you can actually talk about the institutional knowledge. They know where the trouble spots are. A lot of things like that. So I think that the advantage is there. (Integrated Fire/EMC, #24, 2014)

I’d say they [fire department] have very good city knowledge would be a good way to put it. They know who I would need to go talk to for certain things. Most of the guys here have been here a long time (so has my direct chief) and they know… if I’m not sure about something they will tell me who to go talk to about it and they have a lot of contacts. That’s very helpful! (Integrated Fire/EMC, #24, 2014)

I think it helps because the fire department understands you know the issues that are out there and they’ve prevent them before. Because we’re big into fire prevention and warning. (Integrate Fire/EMC, #25, 2014)

In some cases the parent agency has legitimate enforcement authority within the local community. Moreover, the parent agency is able to use their enforcement authority to secure stakeholder buy-in, or to limit, restrict, or regulate unsafe development practices. As suggested
by three participants, the authority of their parent agency bodes well for emergency management
and subsequently hazard mitigation planning. As three participants explained:

I think it enforces us because we’re a part of an agency that’s more of an enforcement
agency. They have a lot of pull within the city. So like I said we have buy-in from our
chief officer within the police department. We have a strategic plan and part of some of
our goals, part of the emergency management programs hazard mitigation projects is part
of the strategic plan of the police department. So it really helps having that buy in. It
helps to do what we need to do…and they give us justification on why we need to spend
X amount of dollars to get certain projects done. (Integrated Non-Fire, #3, 2013)

Being the fire chief in some circles garners more authority for some things than
emergency management coordinator would. (Integrated Fire/Chief, #13, 2014)

Being in the department that I’m in with inspections and permits and what not, kind of
gives me the opportunity to (when the applications comes in) it gives me the ability to
look where the new construction is going to be in relation to flood zones or any other
hazard area, and that allows me to prevent that type of construction going on without
proper elevation, meeting FEMA requirements, or just flat denying the process.
(Integrated Non-Fire, #16, 2014)

In addition to their enforcement authority, the parent agency may also advocate on the
emergency management office’s behalf. Labadie (1984) suggests that the emergency
management office should indeed be housed within a local executive office (e.g. city manager
office). His position may be a reflection of the power of the local executive’s office. Two
participants convey the benefit of their current and previous location in the city manager’s office.

In the words of these participants:

Our Assistant City Manager is who we report to directly and then our Deputy City
Manager and City Manager as a whole, they take items for us up to City Council; They
advise us on the best way to move forward and to get things done. So when we have
those actions items later on and if there’s a project that we really want to implement, they
can take those steps between departments and make sure that it gets done. They’ve also
been extremely integral in making sure the other city departments are involved.
(Integrated Non-Fire, #2, 2013)

In some of the previous offices that I’ve worked for it’s been in the City Manager’s
Office. There you have a little bit more opportunity to speak with folks that dictate
overall city strategies and goals. So it’s a little bit easier to implement something if you
have the ears of the people at the top. Even though in my [current] organization (the fire
department) I don’t have anybody between me and the fire chief. I answer directly to him. So that cuts down on some bureaucratic-type red tape if I had to answer through somebody else. However, working with Public Works or with some of their divisions such as streets, it can get a little complicated and sometimes it doesn’t bring as much strength coming from the fire departments it does if it was coming from say for instance the City Manager’s Office. So I would say that sometimes it hinders. (Integrated Fire/EMC, #17, 2013)

A final benefit of the integrated office arrangement is the autonomy provided by the parent agency. As previously noted, emergency management coordinators are confronted with the multiple duties challenge. As communicated by participants, this challenge has negative implications for the efforts devoted to hazard mitigation planning. Five participants stated that the parent agency provides them with sufficient autonomy to carry out their hazard mitigation duties. In short, the parent agency does not augment the multiple duties challenge by placing additional burdens on the integrated emergency management office. As explained by participants:

You know it’s really a neutral impact. On the emergency management side we are free to move forward with the mitigation plan. We’ve for the full support for the director to work with other departments. It’s just recently with our new staff turnover we’re kind of re-starting that whole process. The plan update was a good start and so moving forward through we’ll be able to do what we need to do. (Integrated Non-Fire, #1, 2013)

I would say that that are the second one (supportive). I got the okay to do this tornado safe room rebate program and they’ve free me up to go these inspections and spend hours on the phone talking with people that are trying to get this rebate. So they’ve been pretty supportive of it but they also realize the inherent challenges with funding for doing more mitigation type projects. (Integrated Non-Fire, #5, 2013)

No I mean I have a lot of autonomy and all the support I need in whatever I’m doing. (Integrated Non-Fire, #8, 2013)

Our city manager allows me to spend as much time as I can on emergency management (i.e. autonomy). And I’ve explained to him what we’re doing on the hazard mitigation program. He has no concerns with it so it’s working out real well. (Integrated Non-Fire, #16, 2014)

I don’t think it’s always just department so much as personnel. My fire chief’s been in emergency management for a long time and so is one of our assistant chiefs. So they’re
very familiar with the process and what’s needed. So I think that plays a huge role is how much your management and your leadership understands about your position… I think as long as they’re confident in you as whole, I don’t think it’ll matter which project (be it mitigation, response, recovery whatnot), as long as they’re confident in your abilities and what you’re focused on they’re going to support your (inaudible) either way. (Integrated Fire/EMC, #19, 2014)

Participants noted that there is indeed a challenge to the integrated emergency management office configuration. The primary challenge is role conflict and having to distinguish (to stakeholders) their office’s function from that of the parent agency. However, participants also communicated several benefits of the integrated emergency management office arrangement. The different benefits include access to financial and personnel resources of their parent agency; benefiting from the relationships of their parent agency; garnering name credibility as a result of their affiliation with their parent agency; the enforcement authority of their parent agency; benefiting from the advocacy efforts of their parent agency; and gaining the trust and autonomy from their parent agency. In short, participants articulated more resulting benefits (than challenges) from their integrated emergency management office arrangement.

Strategies for Overcoming Hazard Mitigation Challenges

The pursuit of hazard mitigation and strategy implementation is rife with challenges that originate both within and outside of the emergency management office. Regardless of their origin, local emergency management coordinators must overcome these challenges to successfully accomplish their objectives through utilization of appropriate strategies. While some strategies are generalized in their applicability, others are appropriate for specific challenges. In total, emergency management coordinators identified four strategies that are suitable for overcoming hazard mitigation-related challenges. This section presents those strategies identified by emergency management coordinators for overcoming the challenges they
encounter, and where applicable, specifies the challenge that each strategy targets.

Collaborate Strategy

The first strategy communicated by emergency management coordinators is the collaboration strategy. Collaboration is important or engaging others in emergency management activities (Mileti, 1999; Waugh and Strieb, 2006; McEntire, 2007; Godschalk, 2007; Graves, 2013). In their collaborator role, participants work with a variety of stakeholders (both locally and regionally) in pursuing hazard mitigation initiatives. As described by participants, the collaboration strategy is used to overcome the competency challenge, personnel shortage challenge, and multiple duties challenge. In regard to the competency challenge, participants partner with stakeholders who are knowledgeable in certain areas, and who compensate for their limited understanding of subject matters. As asserted by two participants:

And that’s a strategy to overcome that challenge is just to make sure you’ve got the right people there but then you’ve got…depending on what hazards you’re targeting, you’re going to need a lot of subject-matter support to make sure you have the right understanding of those. (Integrated Non-Fire, #1, 2013)

So what I’ve done is I’ve partnered with University of Texas at Dallas (UTD) (the GIS folks) and they’re creating a computer model for me that will tell us what’s going to flood downstream. So what we’ve done here I guess is that we’ve partnered with UTD (University of Texas at Dallas) to handle some of the technical expertise. (Integrated Non-Fire, #5, 2013)

The collaboration strategy also assists in overcoming the multiple duties challenge and personnel shortage challenge. As a result of their limited staff size, emergency management care forced to undertake an increased number of job duties. Collaboration helps to partner and divide the workload with additional stakeholders and ensure that emergency management coordinators are not overwhelmed by various duties entailed in hazard mitigation planning and strategy implementation. In other words, emergency management care able to delegate tasks to partnering
stakeholders thus reducing their own workload. Three participants alluded to collaboration’s effectiveness at overcoming the personnel shortage challenge. As mentioned by these participants:

…So on the county-wide plan allows us to have a much larger group who can help with updates, upkeep, and also just assuring that things are taken care of. (Integrated Fire/EMC, #19, 2014)

But the outlook [of local emergency management] overall is good because I do rely heavily on those relationships that I’ve built with those other departments so that it’s not me alone pulling all of the weight. (Integrated Fire/EMC, #22, 2013)

Well by working with our other jurisdictions and working with the COG. That helps tremendously. Being able to sit down with them and work on [the hazard mitigation plan]. (Integrated Fire/EMC, #25, 2014)

Participants also explained that in part, collaboration is used to overcome the funding challenge. Specifically, collaboration at the regional level increases the likelihood of receiving federal grant awards. Multiple participants noted that federal grants programs typically favor regional application packages. Thus, participants have incentive to work collaboratively with neighboring jurisdictions when applying for federal grants. According to multiple participants:

…I don’t think that if we had just put in the grant for (County Name) we would have gotten it but when you factor in us, (Neighbor county name), and (Neighbor county name) and this next year when they put in for grants their going to include the other 16 counties in the region. So that’s about 7 million people that that covers. So that improves our odds significantly…I think it’s the typical government where they’re trying to do the most good for the most amount of people. So if they give to the COG region up here that a grant even it’s only a million dollars divided amongst 16 counties evidentially helping out. If you’re helping the same amount of people whether it’s in (County Name) or the whole region but you can look at it on paper and say we’re helping out…this money went to a region you know that covers 7 million people. So we’re helping more people even though you’re helping the same amount. (Integrated Non-Fire, #5, 2013)

Well number 1 we cooperate. Now that’s part of my job description is cooperating with other agencies. So I do that. And number 2 we realized by working with others we have a much better chance of getting the funding that we need. (Integrated Fire/Chief, #12, 2014)
But I think now we do some regional partnerships. It’s a possible way to help us overcome some of the money issues…We’ve talked about some possible regional partnerships when it comes to emergency management. Because having a full-time emergency manager in (City Name) is not going to happen because there’s no funding really for that position and there’s not another person to put in that role. (Integrated Fire/Chief, #13, 2014)

Federal funding is more geared towards regional projects so anything that we can show is a benefit to a regional area versus just our area of course would increase its benefit thereby making it a more viable project from a federal standpoint and those are competitive grants. It’s kind of a more bang for the buck type of scenario. (Integrated Fire/EMC, #21, 2014)

…I believe that when you do things regionally, that helps. Yeah it does help with acquiring grants. (Integrated Fire/EMC, #23, 2013)

One of them would be through this process we try to coordinate with other cities and make some of our projects within regional. Because that’s one of the big things now that both FEMA and state look for is that want to fund projects that are regional. (Integrated Fire/EMC, #24, 2014)

To confront the funding challenge, one participant noted that several regional jurisdictions were exploring the possibility of establishing a joint partnership (i.e. collaborating) with the purpose of sharing in the financial costs associated with hazard mitigation projects. In the words of this participant:

We have a 14-city group that has a regional response to hazardous materials and technical rescues and things of that manner. (Pronoun) actually brought the idea that we can have that same regional approach to emergency management to where we may have 4-5 Emergency management coordinators kind of help with all the 14 cities in the region. It’s really just an idea but if that was to come into play later down the road then that might show where we may have some cost-sharing. So not only cost-sharing in that role but maybe cost-sharing with some of these [hazard mitigation] strategies like is it a drainage issue affecting (neighboring cities names) because we border... I know our city’s open to getting people to help pay for our stuff as well as help us pay of somebody else’s stuff. (Integrated Fire/Chief, #13, 2014)

Collaboration is presented as a strategy for overcoming various challenges including the personnel challenge, multiple duties challenge, and funding challenge. Collaboration enables emergency management coordinators to involve knowledgeable stakeholders in hazard
mitigation planning; to divide (with stakeholders) the workload associated with hazard mitigation planning; and to acquire support for their hazard mitigation planning initiatives. McEntire (2007) notes that the success of emergency manager’s endeavors is predicated on the involvement of additional stakeholders. Indeed, regional emergency management coordinators use collaboration as a mechanism to overcome challenges and successfully accomplish hazard mitigation-related objectives.

**Persistence Strategy**

The second strategy used to overcome hazard mitigation challenges is the persistence strategy. While collaboration is necessary for overcoming challenges, emergency management care confronted with outside stakeholders that are frequently apathetic toward hazard mitigation, are disinterested in hazard mitigation planning, or are too preoccupied with other duties to be concerned with hazard mitigation planning. To change stakeholder disregard for hazard mitigation, emergency management coordinators must work tirelessly to educate them of the benefits of hazard mitigation, and induce their involvement. This warrants persistence through continued education and advocacy from emergency management coordinators. Multiple participants expressed the persistence strategy:

A lot of it sometimes it may be going to [the] departmental director and saying look this is the deal. And having it come from the top-downwards priority. We have good buy in from our city management and our police chief and fire chief. When the employees hear it come from the city manager or the police chief [that] hey this is important, it really helps out to get that done more quickly. (Integrated Non-Fire, #3, 2013)

Some of it you know with the commissioners and elected officials and things like that education has helped a lot. By me sitting down with them and explaining what this is about, why we’re doing it that’s helped a lot. Funding as you mentioned is an issue and it will always be an issue. We had a devastating crash of our economy and we’re only now starting to see the light at the end of the tunnel…You know grants in all levels of government is getting fewer…And overcoming that is talking to our politicians at the
state and federal levels to get them to understand why we need to keep this up. And a good set of knee pads and crawling on your knees and begging helps to. (Stand-Alone, #10, 2013)

I think the biggest thing is that just to get up there and spread the word and talk about what it will do with it. Sharing those experiences [that] we’ve had. (Integrated Fire/EMC, #19, 2013)

A single participant representing an integrated fire/EMC office asserted that advocacy and education is also applied to those within the emergency management office. As reported by this participant:

You have to get buy-in. You know and that’s identifying appropriate projects and then selling them...Half the time it’s either you convince whoever your manager is that it’s worth your time or you know if you have enough funding you hire somebody to do specifically that. (Integrated Fire/EMC, #26, 2013)

According to participants, persistence also entails engaging in the periodic review, revision, and update of the community hazard mitigation plan. Hence, the persistence strategy symbolizes a commitment to hazard mitigation by emergency management coordinators. As described by three participants:

So my title for example is Preparedness and Mitigation Coordinator. So all the way to my title, [hazard mitigation is] important for [the] city and they really make sure that it’s integrated and allow me to integrate it in our other plans as well. So it’s not just a stand-alone thing that we pick up every 5 years and look at again. We actually integrate it into our other emergency operations plans. We work with our other departments on a regular basis. You know we really try to address those things and make it a living document. So that’s something that I think has been a better success for us for example just having my position where it’s that important to me. (Integrated Non-Fire, #2, 2013)

…And continued involvement is a big one. To constantly review that plan. You know it’s only due every 5 years but you can get everybody in the same room every 6 months or every years (just as much as possible) and keep going over the plan, and keep going over the risks, and keep the mitigation plan relevant. (Stand-Alone, #11, 2013)

You just keep pushing the information out there and when it comes to rewriting plans, writing plans, and updating plans you just keep pushing and get the information you need so you can put it in those plans. (Integrated Fire/EMC, #28, 2014)
Hazard mitigation advocacy and educating of stakeholders are two pillars of the persistence strategy. Both activities are essential for improving stakeholder support for hazard mitigation planning. Despite the importance of these actions, one participant representing an integrated fire/EMC office noted that enacting them is an arduous undertaking. Moreover, advocacy and the educating of stakeholders contribute to an already extensive list of job duties. As mentioned by this participant:

So I have to be a constant champion and cheerleader. As a police officer I don’t have to go and explain why it’s important for them to have a vest or a gun you know. A firefighter doesn’t have to explain why it’s important for them to have bunker gear or a fire engine…But I am constantly having to go and be a champion and be a cheerleader, and explain, and constantly beyond both internally (to my department, and my council, and my politicians) and then externally to the people (citizens, community partners) and that can get exhausting. (Integrated Fire/EMC, #22, 2013)

The persistence strategy is necessary when confronted with disinterested, apathetic, or those stakeholders having little to no interest in hazard mitigation planning. Emergency management coordinators must make a concerted effort to improve stakeholder involvement in hazard mitigation planning because these entities bring technical knowledge and perform valuable functions. Increasing stakeholder involvement is accomplished through advocacy or other activities that help educate these entities. The persistence strategy also entails remaining actively involved in the periodic update, review, and revision of the local hazard mitigation plan. Incorporating the persistence strategy helps facilitate the successful accomplishment of local hazard mitigation objectives.

Pursue Grants Strategy – Proactively and Reactively

The third strategy used to overcome hazard mitigation challenges is the pursuit of hazard grant funding. McEntire and Myers (2004) suggest that state/federal grants are the lifeline that
sustains some emergency management offices. However, pursuing grants is also important for implementing hazard mitigation goals. As determined from earlier quotes, pursuing grant money is targeted at overcoming the funding challenge. Securing grant funding supports the costs associated with hazard mitigation planning and strategy implementation. Additionally, submitting regional, as opposed to single jurisdiction, grant applications reduces the amount of red tape (i.e. bureaucracy) that would otherwise be encountered when multiple jurisdictions/counties go at it alone. Participants note that submitting a multi-jurisdiction grant application reduces the amount of grant paperwork to be reviewed at the federal level. Lastly, some participants posit that submitting federal hazard mitigation grant applications in tandem with neighboring cities/counties increases the chances of being awarded the sought after funding.

Emergency management coordinators use two contrasting strategies to pursue hazard mitigation grant funding. The first approach entails proactively going after federal hazard mitigation grants, such as the Pre-Disaster Mitigation Grant (PDM), before a disaster event. In line with the traditional definition of hazard mitigation, participants seek to prevent or limit the damage created by disasters by investing in projects proactively. The second approach is the contrasting reactive strategy, and relies on a state disaster declaration to make hazard mitigation funds available. In abiding by a wait and see approach, emergency management coordinators accept the risk of a disaster occurring. In speaking to the proactive pursuit of grants and reducing the bureaucracy challenge, five participants stated the following:

Well like I said the grants has helped with that. The COG, obviously they’re getting paid to do it so the grant obviously helps with that. And having that lead agency to kind of run the whole thing [has] definitely been a help. (Integrated Fire/EMC, #4, 2014)

Well in regards to the funding piece you overcome it through applications for hazard mitigation grants funds either pre or post-disaster (Stand-Alone, #9, 2013).
[You overcome the funding challenge by] applying for grants. (Integrated Fire/EMC, #12, 2014)

Well when we get to funding available then working to implement some of the items that are on our wish list. Our mitigation strategies that we have in here. And one example is some of those actually come through the COG to cut down on competition amongst the jurisdictions. So recently we were able to obtain (through the Council of Governments) a tornado safe room rebate program for Tarrant, Dallas, Denton, and Collin County. And so instead of each jurisdiction competing with each other at the federal level (everybody submitting applications and so forth), the COG submitted a package for those 4 counties and we were able to obtain that grant. (Integrated Fire/EMC, #20, 2013)

You try to look for additional funding sources primarily through grants. Part of the reason why we became part of this multijurisdictional plan was to make us eligible for additional grant funding that we wouldn’t otherwise be eligible for. You also look for opportunities within projects that are coming up to incorporate some of those mitigation efforts. So it’s a lot of awareness and making sure that you tap into opportunities as they come up. (Integrated Fire/EMC, #21, 2013)

In contrast to the proactive approach, some regional emergency management coordinators adopt the wait and see (i.e. reactive) approach to acquiring federal hazard mitigation grants. Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the Hazard Mitigation Grant Program (HMGP) provides long-term mitigation grant funding to eligible state and local governments after a major disaster declaration (FEMA, 2014). Aware of this opportunity, some participants patiently await the availability of funds in the wake of a disaster within the state. Three participants alluded to the reactive approach to pursuing hazard mitigation grant funding. According to these participants:

You know the hazard mitigation grant program (one is pre-disaster and one is post-disaster). Pre-disaster has to go through the state and it’s typically competitive nationally for that money. So the only other option is then we have to wait for a disaster to occur somewhere in the state for the state to get post-disaster hazard mitigation grant funds. So obviously you can’t predict when you’re going to have a disaster [but] that opens up mitigation funds. So we’ll have limited success in our mitigation strategies based on how many disaster we have in the state of Texas that brings hazard mitigation funds. (Stand-Alone, #9, 2013)

…but [with] Texas being a big state disasters will always impact some part of the state. So that opens up the ability or opportunity for funding to be available. So really I would
say an optimistic view in that once we have a plan that has been approved by both state and FEMA, I have really good relationships with stakeholders in that I can communicate that there’s some funding opportunities and that we have opportunity to really carry out some of those projects that we’ve identified. (Integrated Fire/EMC, #17, 2013)

So any time there’s a presidentially-declared disaster in the state HMGP (Hazard Mitigation Grant Program) gives so much funds. At one time it was like 15% of the total cost of the disaster would go back to the state on mitigation grants...And then they throw that out state-wide and say okay if you want to apply we have a window of opportunity here. Again preference goes to those communities that are impacted directly by the disaster. So there’s mitigation funds right now that also ties back to the state mitigation plan. So here I’m looking at a letter I got yesterday from the state on hazard mitigation grant program funds are available following the West, Texas fertilizer plant explosion...And so here’s some funds where they can apply for that again as a result of the West, Texas explosion. (Integrated Fire/EMC, #20, 2013)

Regional emergency management coordinators seek hazard mitigation grants primarily to overcome the funding challenge. However, submitting multi-jurisdiction grant applications also helps in overcoming the bureaucratic challenge. Participants revealed two divergent strategies for pursuing hazard mitigation grants. The proactive strategy relies on pursuing grants before a disaster while the reactive strategy relies on a major disaster declaration (anywhere within the state) to make mitigation grants available. Regardless of the strategy of pursuit, securing grant funding is crucial to the success of community hazard mitigation initiatives.

Combination Strategy

Though not widely mentioned by study participants, a fourth strategy used to overcome challenges is to combine the implementation of hazard mitigation strategies with other community initiatives (i.e. combination strategy). The funding challenges poses a problem for the implementation of hazard mitigation projects. Therefore, emergency management coordinators must identify other means of implementing local hazard mitigation strategies. A viable solution is to implement hazard mitigation strategies in conjunction with other community
development projects (Schwab, 2011). In other words, while stand-alone hazard mitigation strategies are difficult to implement, merging these strategies with other community initiatives can facilitate successful hazard mitigation. For instance, scheduled capital improvement projects provide an ideal opportunity to utilize the combination strategy. Godschalk et al. (2003) state that opportunities should be identified for combining hazard mitigation strategies with components of the local comprehensive plan to facilitate easier implementation of these projects. Five participants articulated the combination strategy. As asserted by these participants:

Things have occurred through our capital improvement process, our city’s capital improvement process that has assisted in mitigation. (Integrated Non-Fire, #1, 2013)

So we want to make sure that we implement it in our other plans and because it is integrated and not just a stand-alone [or] sit on the shelf kind of document. It is something that we work on more often. (Integrated Non-Fire, #2, 2013)

And then one major thing for me whenever I get to planning is I really got to have capital improvement plan involved in it. So the local government produces capital improvement plans so they can come up with different projects throughout the city…Engineering, who I mentioned earlier, they do so many activities with drainage and things like that. So getting the capital improvement plan incorporated into the HAZMAP really gave us a lot of actions that we accomplish and it gave us opportunities to seek funding for the actions that weren’t accomplished. So the things that the Engineering Department did get done, we were able to put those in the plan and say that this helped us with our flooding and the things that they couldn’t get done we put them in there and to seek funding for those and to lay more emphasis on those projects. (Stand-Alone, #11, 2013)

And so from a city standpoint we actually are in kind of a positive place because we’re in the middle of a vision 2025 project which is kind of a redevelopment of our city…And there’s been a big project to look at areas of town that we’d like to redevelop or revitalize based on the citizen’s request and the developer’s wants and however that’s going to get laid out. And so right now there’s several area of town that are being evaluated for revitalization programs and once we get into that that offers those opportunities (like I mentioned previously) to incorporate those mitigation projects. (Integrated Fire/EMC, #21, 2013)

Another way [to] overcome [challenges] is by making sure that we’re constantly aware of the activities that are going on in our city. Because again we’re having these meetings, we’re talking to the individuals, they’re giving us information and it may not be that the meeting’s about hazard mitigation, but they may tell us something that is directly related to our hazard mitigation action plan. So just constantly being aware of the plan and
activities when someone gives you information on some study they’ve just done. You being able to tie it back to hey that’s one of our mitigating activities! I need to go back and update the plan. (Integrated Fire/EMC, #30, 2013)

The funding challenge is a significant barrier to hazard mitigation strategy implementation. Emergency management coordinators must find alternative methods to implement hazard mitigation strategies. A noted solution is to integrate hazard mitigation strategies with the implementation of other community initiatives. Capital improvement projects provide an ideal opportunity to do so. In short, combining hazard mitigation with capital improvement projects is a potential key to successfully implementing these initiatives.

Hazard Mitigation Success Indicators

Regional emergency management coordinators revealed four strategies used to overcome hazard mitigation-related challenges. The value of these strategies resides in their ability to facilitate hazard mitigation success. Moreover, achieving hazard mitigation success has direct implications for disaster risk reduction. In calling upon their experience, emergency management coordinators communicated their perception(s) of hazard mitigation success. Participant’s description of hazard mitigation success is categorized as tangible and intangible indicators (Table 5.2). Tangible indicators are physical, observable, and measurable. At least 26 emergency management coordinators articulated some notion of tangible hazard mitigation success. In contrast, intangible indicators are less discernible, but as expressed by participants, epitomize hazard mitigation success. Seven interview participants conveyed some indicator of intangible hazard mitigation success. This section delineates both success indicator categories.
Table 5.2

Description and Examples of Tangible and Intangible Hazard Mitigation Success

<table>
<thead>
<tr>
<th><strong>Tangible Success Indicators</strong></th>
<th><strong>Intangible Success Indicators</strong></th>
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<tbody>
<tr>
<td><strong>1. Description</strong></td>
<td>Improving stakeholder attitudes toward hazard mitigation.</td>
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<tr>
<td>The implementation and completion of hazard mitigation strategies.</td>
<td><strong>Example</strong></td>
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<tr>
<td>• Tearing down dilapidated homes.</td>
<td>• Agency involvement in hazard mitigation.</td>
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<tr>
<td>• Removing overgrown vegetation that pose a fire hazard.</td>
<td>• Citizen participation in hazard mitigation.</td>
</tr>
<tr>
<td>• Completed land buy-outs.</td>
<td>• Citizen satisfaction with completed community hazard mitigation projects.</td>
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<tr>
<td><strong>2. Description</strong></td>
<td>Initiating the hazard mitigation planning process.</td>
</tr>
<tr>
<td>A reduction in observed and/or measurable damage resulting from hazard events.</td>
<td><strong>Example</strong></td>
</tr>
<tr>
<td>• A reduction in financial losses from post-hazard mitigation strategy completion.</td>
<td>• Identifying and prioritizing community hazards.</td>
</tr>
<tr>
<td>• Reduce insurance claims or losses post-hazard mitigation strategy completion.</td>
<td>• Initial pursuit of hazard mitigation initiatives and moving toward developing a local plan.</td>
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Hazard Mitigation Success – Tangible Indicators

The first tangible indicator of hazard mitigation success is the physical implementation of hazard mitigation strategies. As outlined, emergency management coordinators adopt various roles and are confronted with various challenges throughout the course of hazard mitigation planning. The implementation of hazard mitigation strategies is the culmination of a long and arduous planning process. Thus, participants proclaim this as an indicator of success. This description of hazard mitigation success was articulated by at least 1 participant representing each organizational office configuration. This suggests that the physical implementation of hazard mitigation strategies is viewed as a success by emergency management coordinators of all regional office varieties. According to four participants:

Like ultimately that’s what you outline/what you said you were going to do so when you actually go back and follow-up and are able to sort of check that box (like I mentioned earlier) that is you know the exact definition of success is to be able to go okay this is what
we said we were going to do. This is what we said would fix this problem for us and we did it. (Integrated Non-Fire, #2, 2013)

Success would be if the plan is adopted and we start implementing these action items and we start seeing how these grants have benefited these communities being better-prepared. That’s what I kind of gauge the success of them by…like in the (neighboring city name) for example there was an area that floods pretty much every time we get a really hard rain and if a grant comes in and they can clear that channel…actually it needs to be directed which would mean buying out a couple pieces of property. When they can do that and we don’t have that flash flooding in that area anymore, that’s success. (Stand-Alone, #10, 2013)

Well I think one is you know something that I’m very close to is fire prevention which mainly is a function of our code enforcement division. Tearing down dilapidated houses and having overgrown brush removed and mowing tall weeds (that kind of thing) and that’s through code enforcement. (Integrated Fire/Chief, #12, 2014)

…the city has been fairly proactive and I mentioned a couple of things a couple of times (land buy-outs and some of our flood protection) initiatives that have been implemented. Those have been done without an existing plan…So I would say that’s going to be an indicator moving forward (once we have a plan) is to see what we’ve done once we’ve established a mitigation strategy. (Integrated Fire/EMC, #17, 2013)

Two participants assert that a function of the emergency management coordinator is to protect citizens. They also go on to state that successful strategy implementation has direct implications for public safety. As explained by this participant:

I think in my view would be knowing that the right thing was done like buying out a mobile home park that constantly floods every time we get 8 inches of rain. By buying that area it can saves people’s lives because they’re not put in harm’s way…So you know it’s more of a public safety thing. It improves the without putting people like first responder’s lives by doing that you don’t have to put fireman’s and policeman’s lives at risk and the people when it floods these areas. (Integrated Non-Fire, #3, 2013)

(Integrated Fire/EMC)…but I think on the top end wide that helps facilitate it is again if you’re running a hazard mitigation action plan and writing it from the end like okay we’re writing the hazard mitigation action plan. We’ve identified our hazards and what activities we need to try to mitigate (these different hazards)…You write the hazard mitigation action plan, you create these activities to try to mitigate... And we know we were successful because one of things that we did not have (which others weren’t as fortunate to say) is we didn’t have a single loss of life. And the tornadoes that we had in 2012 we did not have a single loss of life. So that lets us know that our mitigation activities are working. (Integrated Fire/EMC, #30, 2014)
Another participant representing an integrated fire/EMC office stipulated that tangible indicators are important for validating (to elected officials) the importance of hazard mitigation and inducing stakeholder support. In the words of this participant:

…I think it is because for me being able to define success is always what I can prove to my elected officials. And they need something tangible; They need something that they can see; Or they can feel; Or something that they can take a picture of. (Integrated Fire/EMC, #21, 2013)

A second tangible indicator of hazard mitigation success is a reduction in observed and/or measurable damage-resulting from hazard events-as a result of hazard mitigation strategy implementation. A reduced number of negative outcomes (i.e. incident losses) signals that hazard mitigation strategies have achieved their objective of preventing or lessening the impact of disasters. Emergency management coordinators representing all office configurations expressed this notion of hazard mitigation success, for example:

A lot of things that’s really indicators of success is if something happens somewhere else and is there some mitigation process or planning that has taken place to help reduce that likelihood here. (Integrated Non-Fire, #8, 2013)

…if we look at the number of flooding issues that we have across the county, we don’t have a great number. And I think some of that’s because there’s been mitigation done historically to limit that…So you know that’s one of the indicators that we would look at—Are we reducing?…when we have instances of hazards are we seeing a reduction in the number of homes or infrastructure affected by those hazards. (Stand-Alone, #9, 2013)

Going back to the drainage issues that were addressed, definitely an indicator was when we did have some more flooding and they weren’t the same residents and the neighborhoods were not affected. (Integrated Fire/Chief, #13, 2014)

Indicators-basically we can see actual improvement the next time a similar situation occurs and we do not have the exact same problems that we had the previous time would be an indicator of success for hazard mitigation. (Integrated Fire/EMC, #20, 2013)

Two participants noted the difficulty of demonstrating hazard mitigation success without hard data to validate disaster loss reduction. As mentioned by these participants:
I don’t know how you can justify your success if you don’t have an incident to say her prior to this we had X amount of impact. But now we’ve done X project and we’ve seen this amount in reduction in people being impacted or property being impacted…without having some kind of event to point to or some kind of data to show what’s been done and the impact of that, it’s really hard to justify. (Integrated Non-Fire, #1, 2013)

I would think the issues that you would always look to the output and that would be our loss data. And how much, what type of loss we have based on flooding or what type of loss we had based on winter storm or based on severe weather. We have not suffered tremendous loss based on natural or man-made. (Integrated Fire/Chief, #15, 2013)

Three participants stipulated that tangible indicators can be measured in dollar figures or insurance claims. This is similar to the benefit-cost analysis (BCA) findings of Rose et al. (2007) because participant’s notion of success is predicated on financial cost estimates. As reported by these participants:

Another indicator could be response costs when we actually get into one of these hazards that we have done mitigation for if we can show that in this flood it cost us $2 million dollars (city wide) to response to this and now we can show (after our mitigation action) well it’s reduced to $500,000 dollars, no one got hurt, and it was really a non-event. That would be a great indicator of success. (Integrated Non-Fire, #1, 2013)

Well one example, going back, I keep talking about flooding issues…one example would be reduced inconveniences and impacts of severe re-events or fewer flood claims [by] both business and residence. (Integrated Non-Fire, #7, 2013)

…I think you can also quantify [success] through insurance costs. If you went through and talked to you know local insurance providers, they can tell you the amount of costs in claims [for that] disaster. Depending on what regulations and such the city has put in it could directly affect that for sure. (Integrated Fire/EMC, #19, 2014)

Tangible indicators are discernible measures of hazard mitigation success. Regional emergency management coordinators describe them as the physical implementation of hazard mitigation strategies, and the observation of reduced disaster losses as a result of hazard mitigation strategy implementation. Some participants asserted that hazard mitigation success be outcome driven, and supported by hard data or cost saving numbers. Tangible indicators are important because they represent steps to protect the public; they, when effective, provide
Hazard Mitigation Success – Intangible Indicators

Emergency management coordinators also summarized intangible indicators of hazard mitigation success. Unlike tangible measures, intangible indicators do not directly prevent or lessen the impact of disasters. Moreover, intangible indicators are not predicated on hard data, but as suggested by emergency management coordinators, are emblematic of hazard mitigation success. For instance, a notable hazard mitigation-related challenge is stakeholder disinterest or apathy toward hazard mitigation planning. As stated by two emergency management coordinators, a contrasting change in stakeholder attitudes is an indicator of hazard mitigation success. As mentioned by these participants:

And then when you have citizen support (like at a council meeting) thanking the city for hey we appreciate what you all did for the drainage problems in our neighborhood. I think that’s a good indicator we have some customer satisfaction. (Integrated Fire/Chief, #13, 2014)

And so by the city taking part in mitigation projects it’s inspired the community to take part in mitigation projects. And I think being able to inspire communities to be impassioned and take action to mitigation projects is an indicator of success as well. (Integrated Fire/EMC, #20, 2013)

Two participants representing a stand-alone and integrated fire/EMC office configurations suggest that inspiring stakeholder involvement and/or improving stakeholder hazard mitigation knowledge are indicators of hazard mitigation success. As expressed by these participants:

…And getting the public to take on mitigation as well and for them to really prepare for the disaster within home and stop things at their own home and at their own level to where it’s not coming out of our own pocket. (Stand-Alone, #11, 2013)

…with the fire department and Texas Forest Services with the wildfires and one of the neighborhoods, I think that’s a success-that’s mitigating. Being able to train and get with
the [local] university, and the city, and Texas Fire Services to go out there and see what hazards are out there for them with the wildfires and stuff. And then coming back and have a plan. I feel like that’s a success. (Integrated Fire/EMC, #23, 2013)

Another one would be tracking our number of people who participate in the storm safe room program. We started out last year we had a couple so... I think another one would be if we’re able to get the mass notification system installed that would be a good outcome (a good output). And then if we can see how many people sign up/are able to use it that would be a good outcome. (Integrated Fire/EMC, #24, 2014)

I think that the council and the powers that be understanding the problem and that it needs to be fixed and addressed. (Integrated Fire/EMC, #27, 2014)

Emergency management coordinators are confronted with various hazard-mitigation challenges. The severity of these challenges can preclude or delay the initiation of hazard mitigation planning. Recognizing the significance of overcoming challenges, emergency management coordinators present the initiation of the hazard mitigation planning process as a success indicator. As reported by 2 participants:

We’ve kind of identified some things that would fall under mitigation planning. That would be one successful thing is the face that we’ve identified that there is a need for mitigation planning and there’s opportunities out there...I think the fact that we’re working on the plan and working towards completion of the plan would be a first step of success in our communities. Having that and identifying what we can to mitigating future incidents. (Integrated Non-Fire, # 8, 2013)

Probably identifying what your hazards are then trying to prioritize those. And like I say creating a list of those things you’d like to do then that kind of gives you someplace to go and hopefully try to obtain funding based on your priorities. (Integrated Fire/EMC, #4, 2014)

Intangible success indicators are not defined by their ability to physically protect against hazardous events. Instead, these indicators are represented by increased stakeholder involvement, committed stakeholder attitudes, and enhancing stakeholder awareness of hazard mitigation planning. The presence of intangible indicators suggests that hazard mitigation strategies are achieving their intended purpose and affirms that emergency management coordinators are doing the right thing.
At least 1 participant from each office configuration presented the first (i.e. mitigation strategy implementation) and second (i.e. reduced losses) tangible indicators as measures of success (see Table 5.3). Based on the narrative of a select number of participants, it can be suggested that the completion of hazard mitigation projects and the ability to reduce disaster-related losses are representative of hazard mitigation success. Participants of all office configurations also described the first intangible indicator (i.e. changing stakeholder attitudes) as a measure of success. This finding reinforces the importance of stakeholder buy-in, involvement, and commitment to local hazard mitigation. Emergency management coordinators representing the integrated non-fire and integrated fire/Chief office described the second intangible indicator (i.e. starting the hazard mitigation planning process) as a measure of success while participants representing stand-alone and integrated fire/EMC offices did not. Ironically, participants from the stand-alone and integrated fire/EMC office arrangements did not present Intangible Indicator 2 as a success measure despite having initiated hazard mitigation activities within their community. This suggests that the description of intangible success indicators is subjective or based on the opinion of the emergency management coordinator.

Table 5.3

<table>
<thead>
<tr>
<th>Hazard Mitigation Success and Emergency Management Office Organizational Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Office Structure</strong></td>
</tr>
<tr>
<td><strong>Success Indicators</strong></td>
</tr>
<tr>
<td>Tangible Success Indicator 1</td>
</tr>
<tr>
<td>Tangible Success Indicator 2</td>
</tr>
<tr>
<td>Intangible Success Indicator 1</td>
</tr>
<tr>
<td>Intangible Success Indicator 2</td>
</tr>
</tbody>
</table>
Conclusion

Emergency management coordinators in this study encounter multiple challenges in their pursuit of hazard mitigation planning and strategy implementation. Five of these challenges are classified as internal organizational challenges and 2 categorized as outside organizational challenges. Emergency management coordinators must use innovative strategies to overcome hazard mitigation-related challenges and achieve hazard mitigation success. While some strategies are generalized in their use, others are suited for overcoming specific challenges. For instance, the collaboration strategy is effective for overcoming the competency challenges and multiple duties challenge, and the pursuing grants strategy helps overcome the funding challenge. The identified strategies are necessary for ensuring hazard mitigation success.

Participant perceptions of hazard mitigation success are defined on two dimensions—tangible and intangible indicators. Tangible indicators are measured by concrete data or observable evidence, and intangible indicators are marked by renewed stakeholder support, commitment, and involvement in hazard mitigation planning and strategy implementation. Both dimensions depict the efficacy of hazard mitigation planning and strategy implementation and go a long way in facilitating community disaster resiliency.
CHAPTER 6

QUANTITATIVE EXAMINATION OF ROLES, CHALLENGES AND SUCCESS

Introduction

The purpose of this chapter is present of results of statistical analyses examining hazard mitigation roles, challenges, and success in local emergency management organizations. Quantitative findings include descriptive statistics for survey responses in 3 key areas: (1) The reported level of involvement in activities associated with hazard mitigation planning and strategy implementation; (2) The perceived rating of hazard mitigation challenges; and (3) Survey respondent’s rating of hazard mitigation success indicators. Descriptive data are presented for the cumulative study sample and for the emergency management office categories within the study sample.

In addition to descriptive findings, independent samples $t$-tests is used to determine if there is a statistically significant difference in the mean responses of survey respondents based on their emergency management office category (non-fire and integrated fire). In addition to independent samples $t$-tests, correlation analyses are used to examine the linear relationship between organizational characteristics and variables representing the 3 primary areas. Chi-square analyses were also conducted to examine the relationship between emergency management office categories ($0=$ non fire, $1=$ integrated fire) and the completion of actions associated with hazard mitigation. Finally, for those respondents representing integrated emergency management offices, correlation analysis are used to examine the linear relationship between the parent agency’s role in hazard mitigation planning and the 3 key areas.
Hazard Mitigation Activity Involvement

The internet survey contained 8 questions that measured participant level of involvement in activities associated with hazard mitigation planning and strategy implementation, and 1 additional question targeted at assessing participant’s rapport with other stakeholders involved in hazard planning and strategy implementation. The survey questions were rated on an ordinal 4-point scale (1 = not at all involved, 2 = involved to a little extent, 3 = moderately involved, and 4 = involved to a great extent) and were derived from existing literature (Graves 2013; Geis, 2000;
McEntire, 2007; Mileti, 2009) that highlight the planning agency’s involvement in hazard mitigation, and made explicit and/or implicit reference to activities representative of the crafting of the hazard mitigation plan (Graves, 2013), hazard mitigation advocacy (Stevens, 2010), collaboration (Geis, 2000; Waugh and Strieb, 2006; McEntire, 2007; Graves, 2013), and public education (Mileti, 1999). The survey question measuring participant’s level of involvement in pursuing grants was crafted based on literature describing the financial hardships associated with hazard mitigation planning (Pikey et al., 1980; Godschalk et al., 1989; Koch, 2010). This provided the basis to formulate a survey question to measure a participant’s level of involvement in pursuing hazard mitigation grants to overcome financial challenges. Questions were also included in the survey that allowed participant’s to rate their level of involvement GIS mapping (Gunes et al., 2000), hazard analysis (Ferrier and Haque, 2003), and in hazard mitigation strategy implementation. Table 6.1 presents the survey questions that measure each respondent’s level of involvement in hazard mitigation activities and descriptive data (mean, standard deviation, minimum, maximum) for the cumulative study sample.

Descriptive findings reveal survey respondents have varying levels of involvement in the different activities associated with hazard mitigation planning and strategy implementation. Overall, respondents rated their office as having the least extent of involvement in applying for hazard mitigation grants (M = 2.37) and in performing GIS mapping (M = 2.23) when compared to other activities. The question examining the relationship with other stakeholders yielded the highest response average (M = 3.57) followed by an involvement in the development and continual update of the local hazard mitigation plan (M = 3.47). Respondents reported a moderate level of involvement in all other hazard mitigation activities.
Table 6.1

Hazard Mitigation Activity Involvement for the Total Study Sample

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>In terms of hazard mitigation, to what extent do you perceive your office to be:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active in the development and/or continued updating of the local hazard mitigation plan.</td>
<td>30</td>
<td>3.47</td>
<td>0.68</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Active in applying for mitigation grants.</td>
<td>30</td>
<td>2.37</td>
<td>1.00</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Active in advocating for the pursuit of hazard mitigation projects from local stakeholders (e.g. meeting with elected officials, local agencies, etc.)</td>
<td>30</td>
<td>2.87</td>
<td>0.73</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Active in hazard mitigation public outreach and education programs.</td>
<td>30</td>
<td>3.07</td>
<td>0.69</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>To what extent do you perceive your emergency management office as having a good relationship with other community stakeholders involved in hazard mitigation?</td>
<td>30</td>
<td>3.57</td>
<td>0.50</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Active in conducting hazard analysis (e.g. risk and vulnerability assessment)</td>
<td>30</td>
<td>3.27</td>
<td>0.79</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Active in GIS mapping.</td>
<td>30</td>
<td>2.23</td>
<td>0.90</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Active in integrating hazard mitigation plan with components of your community’s local comprehensive plan?</td>
<td>30</td>
<td>3.30</td>
<td>0.70</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Active in implementing hazard mitigation strategies.</td>
<td>30</td>
<td>2.87</td>
<td>0.73</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

1 = not at all involved; 2 = involved to a little extent; 3 = moderately involved; 4 = involved to a great extent.

Table 6.2 presents the descriptive statistics for the 2 emergency management office categories. As described in this table, respondents from the non-fire office reported slightly higher involvement in all activities associated with hazard mitigation planning with the exception of collaboration and involvement in GIS mapping activities when compared to Integrated Fire emergency management offices. Figure 6.1 presents a line chart that plots the mean response for each activity-related question for the entire study sample and the 2 emergency management office categories. The line chart illustrates that the reported level of involvement in collaboration and GIS mapping were very similar for the cumulative sample and for the 2 organizational arrangement categories. Also, respondents from non-fire emergency management offices reported greater involvement than the cumulative study sample in all other activities, while
participants from Integrated Fire emergency management offices had less involvement than the cumulative study sample.

Table 6.2

The Reported Level of Activity Involvement for the Two Emergency Management Office Groups

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>In terms of hazard mitigation, to what extent do you perceive your office to be:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active in the development and/or continued updating of the local hazard mitigation plan.</td>
<td>NF=3.56</td>
<td>NF=0.73</td>
<td>NF=1</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=3.43</td>
<td>IF=0.70</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Active in applying for mitigation grants.</td>
<td>NF=2.67</td>
<td>NF=1.00</td>
<td>NF=1</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.24</td>
<td>IF=1.00</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Active in advocating for the pursuit of hazard mitigation projects from local stakeholders (e.g. meeting with elected officials, local agencies, etc.)</td>
<td>NF=3.22</td>
<td>NF=0.83</td>
<td>NF=1</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.71</td>
<td>IF=0.64</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Active in hazard mitigation public outreach and education programs.</td>
<td>NF=3.44</td>
<td>NF=0.88</td>
<td>NF=1</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.90</td>
<td>IF=0.54</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>To what extent do you perceive your emergency management office as having a good relationship with other community stakeholders involved in hazard mitigation?</td>
<td>NF=3.56</td>
<td>NF=0.53</td>
<td>NF=3</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=3.57</td>
<td>IF=0.51</td>
<td>IF=3</td>
<td>IF=4</td>
</tr>
<tr>
<td>Active in conducting hazard analysis (e.g. risk and vulnerability assessment)</td>
<td>NF=3.56</td>
<td>NF=0.73</td>
<td>NF=2</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=3.14</td>
<td>IF=0.70</td>
<td>IF=2</td>
<td>IF=4</td>
</tr>
<tr>
<td>Active in GIS mapping.</td>
<td>NF=2.22</td>
<td>NF=0.44</td>
<td>NF=2</td>
<td>NF=3</td>
</tr>
<tr>
<td></td>
<td>IF=2.24</td>
<td>IF=1.04</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Active in integrating hazard mitigation plan with components of your community’s local comprehensive development plan.</td>
<td>NF=3.44</td>
<td>NF=0.73</td>
<td>NF=2</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=3.24</td>
<td>IF=0.70</td>
<td>IF=2</td>
<td>IF=4</td>
</tr>
<tr>
<td>Active in implementing hazard mitigation strategies.</td>
<td>NF=3.00</td>
<td>NF=0.87</td>
<td>NF=2</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.81</td>
<td>IF=0.68</td>
<td>IF=4</td>
<td>IF=4</td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21); 1 = not at all involved; 2 = involved to a little extent; 3 = moderately involved; 4 = involved to a great extent.

Independent Samples t-Test for Hazard Mitigation Activity Involvement

As Figure 6.1 indicates, respondents from the 2 emergency management office categories varied in their mean reported level of involvement in the different hazard mitigation activities.
Figure 6.1. The level of involvement in hazard mitigation activities.

An independent samples $t$-test was used to test whether there was a statistically significant differences between the mean involvement in hazard mitigation activities between the two emergency management office configurations. The following null and research hypothesis are provided:

$H_0: \mu_{\text{Non-Fire}} = \mu_{\text{Integrated Fire}}$  
The mean reported level of involvement in hazard mitigation activities is equal for the two categories of emergency management offices.

$H_1: \mu_{\text{Non-Fire}} \neq \mu_{\text{Integrated Fire}}$  
The mean reported level of involvement in hazard mitigation activities is not equal for the two categories of emergency management offices.

As observed from the $p > .05$ values in Table 6.3, the independent samples $t$-test provided no evidence of statistically significant differences in the reported level of involvement in any of the hazard mitigation activities for the 2 emergency management office categories. Therefore, there is a failure to reject the null hypothesis and the determination that respondents from both
office categories have a similar level of involvement in the different activities associated with hazard mitigation planning and strategy implementation.

Table 6.3

Independent Samples t-Test Results for the Reported Level of Involvement in Hazard Mitigation Activities for the Two Emergency Management Office Categories

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active in the development and/or continued updating of the local hazard mitigation plan.</td>
<td>NF=3.56 IF=3.43</td>
<td>NF=0.73 IF=0.70</td>
<td>0.46</td>
<td>0.08</td>
</tr>
<tr>
<td>Active in applying for mitigation grants.</td>
<td>NF=2.67 IF=2.24</td>
<td>NF=1.00 IF=1.00</td>
<td>1.08</td>
<td>0.29</td>
</tr>
<tr>
<td>Active in advocating for the pursuit of hazard mitigation projects from local stakeholders (e.g. meeting with elected officials, local agencies, etc.)</td>
<td>NF=3.22 IF=2.71</td>
<td>NF=0.83 IF=0.64</td>
<td>1.81</td>
<td>0.08</td>
</tr>
<tr>
<td>Active in hazard mitigation public outreach and education programs.</td>
<td>NF=3.44 IF=2.90</td>
<td>NF=0.88 IF=0.54</td>
<td>1.70</td>
<td>0.12</td>
</tr>
<tr>
<td>To what extent do you perceive your emergency management office as having a good relationship with other community stakeholders involved in hazard mitigation?</td>
<td>NF=3.56 IF=3.57</td>
<td>NF=0.53 IF=0.51</td>
<td>0.08</td>
<td>0.94</td>
</tr>
<tr>
<td>Active in conducting hazard analysis (e.g. risk and vulnerability assessment)</td>
<td>NF=3.56 IF=3.14</td>
<td>NF=0.73 IF=0.70</td>
<td>1.34</td>
<td>0.19</td>
</tr>
<tr>
<td>Active in GIS mapping.</td>
<td>NF=2.22 IF=2.24</td>
<td>NF=0.44 IF=1.04</td>
<td>0.04</td>
<td>0.97</td>
</tr>
<tr>
<td>Active in integrating hazard mitigation plan with components of your community’s comprehensive development plan.</td>
<td>NF=3.44 IF=3.24</td>
<td>NF=0.73 IF=0.70</td>
<td>0.73</td>
<td>0.47</td>
</tr>
<tr>
<td>Active in implementing hazard mitigation strategies.</td>
<td>NF=3.00 IF=2.81</td>
<td>NF=0.87 IF=0.68</td>
<td>0.65</td>
<td>0.52</td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21); 1 = not at all involved; 2 = involved to a little extent; 3 = moderately involved; 4 = involved to a great extent; *p < .05

Organizational Characteristics

The internet survey required respondents to provide information that defined the characteristics of their emergency management office. The survey questions prompted respondents to provide details for the (1) number of full-time staff, (2) number of part-time staff,
(3) average number of volunteer staff, (4) average weekly work hours devoted to hazard mitigation activities, (5) average weekly work hours devoted to other emergency management (EM) activities, (6) average weekly work hours devoted to non-emergency management activities, and (7) the percentage of their year 2012 office budget allocated for hazard mitigation initiatives. Tables 6.4 to 6.10 outline the mean response for each organizational characteristic survey question. Moreover, the responses are distinguished by the 2 emergency management office categories.

Descriptive statistics indicate that both office categories, on average, employ approximately 2 full-time employees. Additionally, non-fire emergency management offices employ an average of 1 part-time employee and Integrated Fire offices employ none. Lastly, Integrated Fire offices employ more volunteer workers (M=5.81) than Non-Fire offices (M=3.89).

Table 6.4

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Average Full Time Staff</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Fire</td>
<td>2.22</td>
<td>1.48</td>
<td>2.00</td>
<td>0</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Integrated Fire</td>
<td>2.24</td>
<td>3.51</td>
<td>1.00</td>
<td>0</td>
<td>13</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 6.5

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Average Part Time Staff</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Fire</td>
<td>0.78</td>
<td>1.20</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Integrated Fire</td>
<td>0.19</td>
<td>0.51</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>21</td>
</tr>
</tbody>
</table>
Table 6.6

*Average Number of Volunteer Workers*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Average Volunteer Staff</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Fire</td>
<td>3.89</td>
<td>6.62</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>Integrated Fire</td>
<td>5.81</td>
<td>18.02</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>21</td>
</tr>
</tbody>
</table>

Variations also exist in the division of weekly work hours among the 2 emergency management office categories. Respondents from both emergency management office categories devote less hours to hazard mitigation activities than they do to activities associated with other phases of the emergency management cycle (e.g. disaster preparedness, response, and recovery planning). Additionally, descriptive data indicate that respondents from Non-Fire emergency management offices devote the fewest amount of their weekly work time to non-emergency management activities (which may include day-to-day small scale first responder calls). On the other hand, respondents representing integrated fire offices devote the fewest number of their weekly work hours to activities related to hazard mitigation planning, while dedicating more hours to other emergency management activities and non-emergency management-related tasks.

Table 6.7

*Average Weekly Work Hours Devoted to Hazard Mitigation Activities*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Weekly Mitigation Hours</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Fire</td>
<td>14.78</td>
<td>26.58</td>
<td>8.00</td>
<td>1</td>
<td>85</td>
<td>9</td>
</tr>
<tr>
<td>Integrated Fire</td>
<td>4.05</td>
<td>4.40</td>
<td>2.00</td>
<td>0</td>
<td>20</td>
<td>21</td>
</tr>
</tbody>
</table>
Table 6.8

*Average Weekly Work Hours Devoted to Other Emergency Management Activities*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Weekly Other EM Activity Hours</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Fire</td>
<td>37.33</td>
<td>27.22</td>
<td>36.00</td>
<td>3</td>
<td>80</td>
<td>9</td>
</tr>
<tr>
<td>Integrated Fire</td>
<td>21.71</td>
<td>16.94</td>
<td>25.00</td>
<td>0</td>
<td>70</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 6.9

*Average Weekly Work Hours Devoted to Non-emergency Management Activities*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>Weekly Non-EM Activity Hours</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Fire</td>
<td>6.78</td>
<td>5.52</td>
<td>6.00</td>
<td>0</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Integrated Fire</td>
<td>16.86</td>
<td>15.09</td>
<td>8.00</td>
<td>0</td>
<td>40</td>
<td>21</td>
</tr>
</tbody>
</table>

Respondents also provided numbers regarding the use of their year 2012 office budget. As observed in Table 6.10, respondents from both emergency management office categories used 4% to 5% of their 2012 office budget for hazard mitigation purposes. However, respondents from integrated fire emergency management offices used slightly more of their budget for hazard mitigation.

Table 6.10

*Percentage of 2012 Office Budget Used for Hazard Mitigation*

<table>
<thead>
<tr>
<th>Organizational Structure</th>
<th>2012 Office Mitigation Budget</th>
<th>Standard Deviation</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Fire</td>
<td>3.89</td>
<td>6.97</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Integrated Fire</td>
<td>5.14</td>
<td>6.48</td>
<td>2.00</td>
<td>0</td>
<td>20</td>
<td>21</td>
</tr>
</tbody>
</table>
Independent Sample $t$-Test for Organizational Characteristics

Descriptive statistics indicate differences in the average for organizational characteristics variables for the two emergency management offices. The independent samples $t$-test is used to test for statistically significant differences in the organizational characteristic variables (average full-time staff, average part-time staff, average volunteer workers, average weekly mitigation hours, average weekly non-mitigation hours, average weekly other emergency management activities, and average year 2012 office mitigation budget). The following null and research hypothesis are provided:

$H_0: \mu_{\text{Non-Fire}} = \mu_{\text{Integrated Fire}}$  
Organizational characteristic averages are equal for the two emergency management office categories.

$H_1: \mu_{\text{Non-Fire}} \neq \mu_{\text{Integrated Fire}}$  
Organizational characteristic averages are not equal for the two emergency management office categories

Results of the independent samples $t$-test are provided in Table 6.11. Findings indicate a statistically significant difference in the average number of weekly work hours devoted to non-emergency management activities. In other words, respondents from integrated fire ($M = 16.86, SD = 15.09$) emergency management offices devote significantly more hours to non-emergency management activities than respondents from the non-fire ($M = 6.78, SD = 5.52$) emergency management office, $t(28) = 2.67, p < .05, d = .40$. Statistically significant differences were not identified in any of the other mean organizational characteristic categories.
Table 6.11

*Independent Samples t-Test Results for Organizational Characteristics*

<table>
<thead>
<tr>
<th>Organizational Characteristic</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of full-time staff.</td>
<td>NF=2.22</td>
<td>IF=2.24</td>
<td>0.01</td>
<td>.990</td>
</tr>
<tr>
<td></td>
<td>IF=1.48</td>
<td>IF=3.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of part-time staff</td>
<td>NF=0.78</td>
<td>IF=0.19</td>
<td>1.41</td>
<td>.191</td>
</tr>
<tr>
<td></td>
<td>IF=1.20</td>
<td>IF=0.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of volunteer workers</td>
<td>NF=3.89</td>
<td>IF=5.81</td>
<td>0.31</td>
<td>.760</td>
</tr>
<tr>
<td></td>
<td>IF=6.62</td>
<td>IF=18.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of weekly work hours devoted to hazard mitigation.</td>
<td>NF=14.78</td>
<td>IF=4.05</td>
<td>1.20</td>
<td>.262</td>
</tr>
<tr>
<td></td>
<td>IF=26.58</td>
<td>IF=4.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of weekly work hours devoted to other emergency management activities.</td>
<td>NF=37.33</td>
<td>IF=21.71</td>
<td>1.92</td>
<td>.065</td>
</tr>
<tr>
<td></td>
<td>IF=27.22</td>
<td>IF=16.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of weekly work works devoted to non-emergency management activities.</td>
<td>NF=6.78</td>
<td>IF=16.86</td>
<td>2.67</td>
<td>.012*</td>
</tr>
<tr>
<td></td>
<td>IF=5.52</td>
<td>IF=15.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average year 2012 office budget dedicated to hazard mitigation purposes.</td>
<td>NF=3.89</td>
<td>IF=5.14</td>
<td>0.48</td>
<td>.63</td>
</tr>
<tr>
<td></td>
<td>IF=6.97</td>
<td>IF=6.48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NF=Non-Fire Office (n = 9); IF=Integrated Fire Office (n = 21); *p < .05

Pearson Correlation Analysis for Activity Involvement

Correlation analysis was used to examine the association between emergency management organizational characteristic data and the variables used to represent the reported level of involvement in different hazard mitigation activities. Specifically, a correlation analysis was conducted to examine the strength of a linear relationship between variables, and where applicable, identify statistically significant relationships. A Pearson correlation analysis was selected as the appropriate statistical methodology for examining the association between continuous organizational characteristic data and ordinal data that represent the reported level of involvement in hazard mitigation activities. This analysis was carried out for the cumulative...
study sample \((n = 30)\), non-fire observations \((n = 9)\), and integrated fire observations \((n = 21)\) emergency management offices. The following research and null hypothesis are provided:

\[ H_0: \rho = 0 \quad \text{There is no relationship between organizational characteristics and the reported level of involvement in the different hazard mitigation activities.} \]

\[ H_1: \rho \neq 0 \quad \text{There is a relationship between organizational characteristics and the reported level of involvement in the different hazard mitigation activities.} \]

Table 6.12 provides the result of the Pearson correlation analysis for the cumulative sample. As observed, there is a statistically significant positive relationship between the average number of full-time employees in the total sample and the reported level of involvement in GIS mapping, \(r(28) = .48, p < .01\) in that as the number of employees increases, so does involvement in GIS mapping. Additionally, there is a statistically significant positive correlation between the number of weekly work hours devoted to other emergency management activities and the reported level of involvement in hazard mitigation grant writing, \(r(28) = .41, p < .05\). Regarding the year 2012 organizational budget, a statistically significant positive association exists between the budget percentage used for hazard mitigation planning and the reported level of involvement in public outreach and education, \(r(28) = .39, p < .05\).

A statistically significant negative relationship was identified between the number of work hours devoted to weekly non-emergency management activities and the level of involvement in three hazard mitigation activities. First, there is a statistically significant negative relationship between the number of weekly work hours devoted to non-emergency management activities and the level of involvement in performing hazard mitigation analysis, \(r(28) = -.39, p < .05\). Second, a statistically significant negative relationship exists between the number of weekly work hours devoted to non-emergency management activities and the level of involvement in hazard mitigation advocacy, \(r(28) = -.44, p < .05\). Lastly, a significant negative
relationship exists between the number of weekly work hours devoted to non-emergency management activities and level of involvement in public outreach and education, $r(28) = -.42$, $p < .05$.

Table 6.12

Correlation Analysis Between Organization Characteristics and Involvement in Hazard Mitigation Activities for the Cumulative Sample of Internet Survey Respondents

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>Plan Dev Up</th>
<th>Collab</th>
<th>Integ Strat</th>
<th>Seek Grant</th>
<th>Haz Anal</th>
<th>GIS Map</th>
<th>Mit Adv</th>
<th>Pub Out</th>
<th>Strat Imp</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.37</td>
<td>3.01</td>
<td>-.12</td>
<td>.00</td>
<td>.30</td>
<td>-.22</td>
<td>-.32</td>
<td>.48**</td>
<td>-.10</td>
<td>.03</td>
<td>.06</td>
</tr>
<tr>
<td>PT</td>
<td>0.37</td>
<td>0.81</td>
<td>.054</td>
<td>.07</td>
<td>-.02</td>
<td>-.001</td>
<td>.06</td>
<td>.12</td>
<td>.014</td>
<td>.20</td>
<td>.14</td>
</tr>
<tr>
<td>VW</td>
<td>5.23</td>
<td>15.39</td>
<td>.078</td>
<td>-.05</td>
<td>-.04</td>
<td>-.17</td>
<td>-.03</td>
<td>.08</td>
<td>-.07</td>
<td>.08</td>
<td>.11</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>7.27</td>
<td>15.27</td>
<td>.020</td>
<td>.16</td>
<td>-.05</td>
<td>-.16</td>
<td>-.22</td>
<td>-.01</td>
<td>.17</td>
<td>-.23</td>
<td>-.15</td>
</tr>
<tr>
<td>WeeklyOther EM</td>
<td>26.40</td>
<td>21.34</td>
<td>.274</td>
<td>-.21</td>
<td>.31</td>
<td>.41*</td>
<td>-.22</td>
<td>.21</td>
<td>-.03</td>
<td>.31</td>
<td>.31</td>
</tr>
<tr>
<td>WeeklyNonEM</td>
<td>13.83</td>
<td>13.70</td>
<td>-.00</td>
<td>-.09</td>
<td>-.06</td>
<td>-.22</td>
<td>-.39*</td>
<td>-.27</td>
<td>-.44*</td>
<td>-.43*</td>
<td>-.06</td>
</tr>
<tr>
<td>2012Mit Budget</td>
<td>4.77</td>
<td>6.54</td>
<td>.10</td>
<td>-.10</td>
<td>.13</td>
<td>.28</td>
<td>.08</td>
<td>.07</td>
<td>.20</td>
<td>.39*</td>
<td>.21</td>
</tr>
</tbody>
</table>

Note. The sample size is N=30. FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeeklyMit= Average weekly work hours invested in mitigation; WeeklyOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; PlanDev=Level of involvement in hazard mitigation plan development and continual update; Collab=Level of involvement in collaboration; IntegStrat=Level of involvement of integrating hazard mitigation strategies with comprehensive development plan; SeekGrant=Level of involvement in pursuing hazard mitigation grants; HazAnal=Level of involvement in conducting hazard analysis; GISMap=Level of involvement in conducting GIS mapping; MitAdv=Level of involvement in hazard mitigation advocacy; PubOut=Level of involvement in public outreach; StratImp=Level of involvement in hazard mitigation strategy implementation. *p<.05 **p<.01

A separate Pearson correlation analysis was conducted on the sample of integrated fire emergency management offices (Table 6.13), and evidence of a statistically significant associations were identified between several variables. Analyses identified a statistically significant positive relationship between the number of full-time office employees and the level of involvement in GIS mapping, $r(19) = .52$, $p < .05$. A statistically significant positive
correlation exists between the number of weekly work hours devoted to hazard mitigation activities and the level of involvement in hazard mitigation advocacy, \( r(19) = .46, p < .46 \).

Table 6.13

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>Plan Dev Up</th>
<th>Collab</th>
<th>Integ Strat</th>
<th>Seek Grant</th>
<th>Haz Anal</th>
<th>GIS Map</th>
<th>Mit Adv</th>
<th>Pub Out</th>
<th>Strat Imp</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.22</td>
<td>2.51</td>
<td>-.15</td>
<td>.00</td>
<td>-.29</td>
<td>-.19</td>
<td>-.30</td>
<td>.52*</td>
<td>-.10</td>
<td>.15</td>
<td>.19</td>
</tr>
<tr>
<td>PT</td>
<td>0.19</td>
<td>0.51</td>
<td>.041</td>
<td>.14</td>
<td>.15</td>
<td>-.09</td>
<td>-.07</td>
<td>.19</td>
<td>-.28</td>
<td>.07</td>
<td>.11</td>
</tr>
<tr>
<td>VW</td>
<td>5.51</td>
<td>18.02</td>
<td>.04</td>
<td>-.05</td>
<td>-.11</td>
<td>-.24</td>
<td>-.06</td>
<td>.08</td>
<td>-.11</td>
<td>.07</td>
<td>.10</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>4.05</td>
<td>4.40</td>
<td>.20</td>
<td>-.01</td>
<td>.13</td>
<td>.36</td>
<td>.26</td>
<td>.16</td>
<td>.46*</td>
<td>.04</td>
<td>.29</td>
</tr>
<tr>
<td>WeeklyOther EM</td>
<td>21.71</td>
<td>16.94</td>
<td>.36</td>
<td>.08</td>
<td>.23</td>
<td>.41</td>
<td>.02</td>
<td>.34</td>
<td>.16</td>
<td>.56**</td>
<td>.56**</td>
</tr>
<tr>
<td>WeeklyNonEM</td>
<td>16.86</td>
<td>15.09</td>
<td>.04</td>
<td>-.11</td>
<td>-.08</td>
<td>-.24</td>
<td>-.39</td>
<td>-.29</td>
<td>-.46*</td>
<td>-.43</td>
<td>-.42</td>
</tr>
<tr>
<td>2012MitBudget</td>
<td>5.14</td>
<td>18.02</td>
<td>.20</td>
<td>-.22</td>
<td>.21</td>
<td>.24</td>
<td>-.00</td>
<td>.11</td>
<td>.18</td>
<td>.51*</td>
<td>.29</td>
</tr>
</tbody>
</table>

*Note. The sample size is N=21. FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeekMit=Average weekly work hours invested in mitigation; WeekOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; PlanDev=Level of involvement in hazard mitigation plan development and continual update; Collab=Level of involvement in collaboration; IntegStrat=Level of involvement of integrating hazard mitigation strategies with comprehensive development plan; SeekGrant=Level of involvement in pursuing hazard mitigation grants; HazAnal=Level of involvement in conducting hazard analysis; GISMap=Level of involvement in conducting GIS mapping; MitAdv=Level of Involvement in hazard mitigation advocacy; PubOut=Level of involvement in public outreach; StratImp=Level of involvement in hazard mitigation strategy implementation  \*p<.05  **p<.01

On the other hand, a significant negative association exists between the number of weekly work hours devoted to non-emergency management activities and the level of involvement in hazard mitigation advocacy, \( r(19) = -.46, p < .05 \). A significant positive relationship was found between the number of weekly work hours devoted to other emergency management activities and two hazard mitigation activity areas. First, there is a significant positive relationship between the number of weekly work hours devoted to other emergency management activities and the...
level of involvement in public outreach and education, $r(19) = .56, p < .01$. Second, there is a significant positive relationship between the number of work hours devoted to other emergency management activities and the level of involvement in hazard mitigation strategy implementation, $r(19) = .56, p < .01$. Lastly, a positive statistically significant relationship exists between the percentage of the 2012 office budget used for hazard mitigation purposes and the level of involvement in public outreach and education, $r(19) = .51, p < .05$.

Table 6.14

Correlation Analysis Between Organization Characteristics and in Hazard Mitigation Activities for Non-Fire Emergency Management Offices

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>Plan Dev</th>
<th>Collab</th>
<th>Integ Strat</th>
<th>Seek Grant</th>
<th>Haz Anal</th>
<th>GIS Map</th>
<th>Mit Adv</th>
<th>Pub Out</th>
<th>Strat Imp</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.22</td>
<td>1.48</td>
<td>-.01</td>
<td>- .01</td>
<td>-.45</td>
<td>- .53</td>
<td>- .59</td>
<td>-.09</td>
<td>-.15</td>
<td>-.37</td>
<td>-.49</td>
</tr>
<tr>
<td>PT</td>
<td>0.78</td>
<td>1.20</td>
<td>.02</td>
<td>.02</td>
<td>-.32</td>
<td>-.07</td>
<td>.01</td>
<td>.10</td>
<td>.31</td>
<td>.11</td>
<td>.12</td>
</tr>
<tr>
<td>VW</td>
<td>3.89</td>
<td>6.62</td>
<td>.40</td>
<td>-.12</td>
<td>.48</td>
<td>.28</td>
<td>.35</td>
<td>.10</td>
<td>.16</td>
<td>.37</td>
<td>.31</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>14.78</td>
<td>26.58</td>
<td>.25</td>
<td>.34</td>
<td>-.25</td>
<td>-.62</td>
<td>-.78*</td>
<td>-.17</td>
<td>-.03</td>
<td>.58</td>
<td>-.42</td>
</tr>
<tr>
<td>WeeklyOther EM</td>
<td>37.33</td>
<td>27.22</td>
<td>-.69*</td>
<td>.37</td>
<td>.35</td>
<td>.12</td>
<td>-.00</td>
<td>-.53</td>
<td>-.12</td>
<td>-.29</td>
<td></td>
</tr>
<tr>
<td>WeeklyNonEM</td>
<td>6.78</td>
<td>5.52</td>
<td>.47</td>
<td>-.12</td>
<td>.46</td>
<td>.33</td>
<td>-.09</td>
<td>-.29</td>
<td>-.15</td>
<td>-.36</td>
<td>-.24</td>
</tr>
<tr>
<td>2012MitBudget</td>
<td>3.89</td>
<td>6.62</td>
<td>-.11</td>
<td>.19</td>
<td>-.01</td>
<td>.48</td>
<td>.38</td>
<td>-.11</td>
<td>.37</td>
<td>.40</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note. The sample size is N=9. FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeekMit= Average weekly work hours invested in mitigation; WeekOtherEM=Average weekly work hours devoted to other emergency management activities; WeekNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; PlanDev=Level of involvement in hazard mitigation plan development and continual update; Collab=Level of involvement in collaboration; IntegStrat=Level of involvement of integrating hazard mitigation strategies with comprehensive development plan; SeekGrant=Level of involvement in pursuing hazard mitigation grants; HazAnal=Level of involvement in conducting hazard analysis; GISMap=Level of involvement in conducting GIS mapping; MitAdv=Level of involvement in hazard mitigation advocacy; PubOut=Level of involvement in public outreach; StratImp= Level of involvement in hazard mitigation strategy implementation *p<.05 **p<.01

A third correlation analysis was carried out to examine the association between Non-Fire emergency management organizational characteristics and the reported level of involvement in hazard mitigation activities. Results from this analysis are provided in Table 6.14. As observed,
two significant associations were identified. First, a significant negative relationship exists between the number of weekly work hours devoted to hazard mitigation and the reported level of involvement in hazard mitigation analysis, \( r(7) = -.78, p<.05 \). Second, there is a statistically significant negative relationship between the number of weekly work hours devoted to non-emergency management activities and collaboration, \( r(7) = -.69, p<.05 \).

**Hazard Mitigation Challenges**

The internet survey contained 11 questions used to measure the extent to which specific challenges impact the pursuit of hazard mitigation planning and strategy implementation. The rating for each challenge was measured on an ordinal 4-point scale (1 = *not a challenge*, 2 = *minor challenge*, 3 = *moderate challenge*, 4 = *great challenge*) and the development of survey questions were guided by hazard mitigation literature that outlined the obstacles faced by planning agencies involved in hazard mitigation planning. Specifically, these writings, whose noted challenges were extrapolated to this study, alluded to funding (Lindell and Perry, 1992; Brody et al., 2010), staff/personnel (Burby and Dalton, 1994; Brody et al., 2010), competency (Lindell et al., 2002), and apathetic/disinterested stakeholders challenges (Labadie, 1984; Perry and Mushkatel, 1984). Table 6.15 contains the survey questions used to measure the rating for each challenge and descriptive statistics (mean, standard deviation, minimum, maximum) for the cumulative study sample.

One additional challenge-related question was included in the survey that examines the perception of respondents regarding the extent of ease or difficulty in accomplishing hazard mitigation objectives in light of the obstacles faced. The survey question was rated on a 4-point ordinal scale (1 = *easy*, 2 = *somewhat easy*, 3 = *somewhat difficult*, 4 = *difficult*). Table 6.16
contains the survey question used to measure respondent perception regarding the ability to successfully overcome challenges and descriptive data (mean, standard deviation, minimum, maximum) for the cumulative study sample.

Table 6.15

Rating of Hazard Mitigation Challenges for the Cumulative Sample Internet Survey Respondents

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>N</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of office budget.</td>
<td>30</td>
<td>3.17</td>
<td>0.91</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lack of internal staff/personnel.</td>
<td>30</td>
<td>3.23</td>
<td>0.94</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lack of familiarity with state/federal guidelines.</td>
<td>30</td>
<td>2.47</td>
<td>0.73</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lack of technical knowledge by staff.</td>
<td>30</td>
<td>2.63</td>
<td>0.85</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Low concern for mitigation by local elected officials.</td>
<td>30</td>
<td>2.53</td>
<td>0.78</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Low concern for mitigation by local citizens.</td>
<td>30</td>
<td>2.67</td>
<td>0.66</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Competition with other local departments for limited resources.</td>
<td>30</td>
<td>3.03</td>
<td>0.90</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Community preference for economic development.</td>
<td>30</td>
<td>2.67</td>
<td>0.80</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lack of internal technical resources.</td>
<td>30</td>
<td>2.70</td>
<td>0.80</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lack of state support for local mitigation activities.</td>
<td>30</td>
<td>2.17</td>
<td>0.83</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lack of federal support for local mitigation activities.</td>
<td>30</td>
<td>2.30</td>
<td>0.80</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6.16

Perceived Ease/Difficulty of Overcoming Challenges for the Cumulative Sample of Internet Survey Respondents

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>N</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, to what extent do you perceive it to be easy/difficult for your office to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Successfully accomplish hazard mitigation objectives in light of the challenges faced.</td>
<td>30</td>
<td>3.00</td>
<td>0.59</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6.17 outlines the descriptive statistics for the survey questions that measure the rating assigned to hazard mitigation challenges for the 2 emergency management office categories, and Figure 6.2 presents a line chart depicting these ratings. As indicated, respondents from non-fire emergency management offices rated the lack of stakeholder (i.e. elected officials,
citizens, and state officials) support for hazard mitigation as a greater challenge for their office. Emergency managers from both emergency management office categories provided the same rating for their local community’s preference for economic development challenge. Finally, respondents from the integrated fire emergency management office rated all other challenges as more prominent for their office.

Table 6.17

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of office budget.</td>
<td>NF=2.89</td>
<td>NF=1.27</td>
<td>NF=1</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=3.29</td>
<td>IF=0.71</td>
<td>IF=2</td>
<td>IF=4</td>
</tr>
<tr>
<td>Lack of internal staff/personnel.</td>
<td>NF=2.67</td>
<td>NF=1.12</td>
<td>NF=1</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=3.48</td>
<td>IF=0.75</td>
<td>IF=2</td>
<td>IF=4</td>
</tr>
<tr>
<td>Lack of familiarity with state/federal guidelines.</td>
<td>NF=2.22</td>
<td>NF=0.83</td>
<td>NF=1</td>
<td>NF=3</td>
</tr>
<tr>
<td></td>
<td>IF=2.57</td>
<td>IF=0.68</td>
<td>IF=2</td>
<td>IF=4</td>
</tr>
<tr>
<td>Lack of technical knowledge by staff.</td>
<td>NF=2.56</td>
<td>NF=0.88</td>
<td>NF=1</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.67</td>
<td>IF=0.86</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Low concern for mitigation by local elected officials.</td>
<td>NF=3.00</td>
<td>NF=0.50</td>
<td>NF=2</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.33</td>
<td>IF=0.80</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Low concern for mitigation by local citizens.</td>
<td>NF=3.00</td>
<td>NF=0.00</td>
<td>NF=3</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.52</td>
<td>IF=0.75</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Competition with other local departments for limited local resources.</td>
<td>NF=2.89</td>
<td>NF=0.93</td>
<td>NF=2</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=3.10</td>
<td>IF=0.89</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Community preference for economic development.</td>
<td>NF=2.67</td>
<td>NF=0.87</td>
<td>NF=2</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.67</td>
<td>IF=0.80</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Lack of internal technical resources.</td>
<td>NF=2.44</td>
<td>NF=0.73</td>
<td>NF=1</td>
<td>NF=3</td>
</tr>
<tr>
<td></td>
<td>IF=2.81</td>
<td>IF=0.81</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Lack of state support for local mitigation activities.</td>
<td>NF=2.22</td>
<td>NF=0.44</td>
<td>NF=2</td>
<td>NF=3</td>
</tr>
<tr>
<td></td>
<td>IF=2.14</td>
<td>IF=0.91</td>
<td>IF=1</td>
<td>IF=4</td>
</tr>
<tr>
<td>Lack of federal support for local mitigation activities.</td>
<td>NF=2.22</td>
<td>NF=0.44</td>
<td>NF=2</td>
<td>NF=3</td>
</tr>
<tr>
<td></td>
<td>IF=2.95</td>
<td>IF=0.59</td>
<td>IF=2</td>
<td>IF=4</td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21).
Figure 6.2. The rating of hazard mitigation challenges.

Tables 6.18 contains the survey question used to measure respondent perception of the ability to successfully overcome hazard mitigation challenges, and the descriptive data (mean, standard deviation, minimum, maximum) for the two emergency management office categories.

Table 6.18

Perception of the Ease/Difficulty to Overcome Challenges for the Two Emergency Management Office Groups

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, to what extent do you perceive it to be easy/difficult for your office to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Successfully accomplish hazard mitigation objectives in light of the challenges faced.</td>
<td>NF=3.11</td>
<td>NF=.601</td>
<td>NF=2</td>
<td>NF=4</td>
</tr>
<tr>
<td></td>
<td>IF=2.95</td>
<td>IF=.590</td>
<td>IF=2</td>
<td>IF=4</td>
</tr>
</tbody>
</table>

Descriptive statistics suggests that, on average, participants from both emergency management office categories find it somewhat difficult to overcome the range of challenges confronting their office. Additionally, Figure 6.3 presents a bar chart that illustrates the mean response for this question for the entire study sample and the 2 emergency management office categories. As
examined in Figure 9, responses across the 3 categories indicate that it is somewhat difficult to overcome challenges and accomplish hazard mitigation objectives.

![Figure 6.3](image)

**Figure 6.3.** Respondent Perception regarding the ease and/or difficulty of overcoming hazard mitigation challenges.

**Independent Samples t-Test for Hazard Mitigation Challenges**

The independent samples $t$-test was used to further examine the mean rating assigned to challenges for the two emergency management office categories. Specifically, the independent samples $t$-test was used to test for equality of means in the severity rating assigned to each challenge, and to test for a statistically significant difference. The following null and research hypothesis are provided:

$H_0: \mu_{\text{Non-Fire}} = \mu_{\text{Integrated Fire}}$

The mean rating for hazard mitigation challenges is equal for the two categories of emergency management offices.

$H_1: \mu_{\text{Non-Fire}} \neq \mu_{\text{Integrated Fire}}$

The mean rating for hazard mitigation challenges is not equal for the two categories of emergency management offices.

The independent samples $t$-test indicated a statistically significant difference in the rating of two hazard mitigation challenges. As observed in Table 6.19, respondents from non-fire (M =
3.00, SD = .550) emergency management offices had a significantly higher rating for the disinterested elected officials challenge than respondents from integrated fire (M = 2.33, .796) emergency management offices, t(28) = 2.31, p < .05, d = .92. Respondents from non-fire (M = 3.00, SD = .000) emergency management offices also had a significantly higher rating for the disinterested citizens challenge than respondents from the integrated fire (M = 2.52, .750) emergency management office, t(28) = 2.91, p < .05, d = 1.16. The null hypothesis is rejected for both statistically significant findings.

Table 6.19

Independent Samples t-test R for the Rating assigned to Hazard Mitigation Challenges for the Two Emergency Management Office Groups

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of office budget.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.89</td>
<td>IF=3.29</td>
<td>NF=1.27</td>
<td>0.88</td>
<td>0.40</td>
</tr>
<tr>
<td>Lack of internal staff/personnel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.67</td>
<td>IF=3.48</td>
<td>NF=1.12</td>
<td>1.99</td>
<td>0.07</td>
</tr>
<tr>
<td>Lack of familiarity with state/federal guidelines.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.22</td>
<td>IF=2.57</td>
<td>NF=0.83</td>
<td>1.21</td>
<td>0.24</td>
</tr>
<tr>
<td>Lack of technical knowledge by staff.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.56</td>
<td>IF=2.67</td>
<td>NF=0.88</td>
<td>0.32</td>
<td>0.75</td>
</tr>
<tr>
<td>Low concern for mitigation by local elected officials.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=3.00</td>
<td>IF=2.33</td>
<td>NF=0.50</td>
<td>2.31</td>
<td>0.01*</td>
</tr>
<tr>
<td>Low concern for mitigation by local citizens.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=3.00</td>
<td>IF=2.52</td>
<td>NF=0.00</td>
<td>2.91</td>
<td>0.01*</td>
</tr>
<tr>
<td>Competition with other local departments for limited local resources.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.89</td>
<td>IF=3.10</td>
<td>NF=0.93</td>
<td>0.58</td>
<td>0.57</td>
</tr>
<tr>
<td>Community preference for economic development.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.67</td>
<td>IF=2.67</td>
<td>NF=0.87</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Lack of internal technical resources.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.44</td>
<td>IF=2.81</td>
<td>NF=0.73</td>
<td>1.16</td>
<td>0.26</td>
</tr>
<tr>
<td>Lack of state support for local mitigation activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.22</td>
<td>IF=2.14</td>
<td>NF=0.44</td>
<td>0.24</td>
<td>0.82</td>
</tr>
<tr>
<td>Lack of federal support for local mitigation activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NF=2.22</td>
<td>IF=2.95</td>
<td>NF=0.44</td>
<td>0.45</td>
<td>0.66</td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21); p < .05.
The independent samples \( t \)-test did not indicate a statistically significant difference in the mean rating for any other challenge. Hence, there is a failure to reject the null hypothesis for all other hazard mitigation-related challenges. Additionally, the independent samples \( t \)-test did not identify a statistically significant difference in the mean response for non-fire (\( M = 3.11, \ SD = .601 \)) and integrated fire (\( M = 2.95, \ SD = .590 \)) emergency management offices for the ease and/or difficulty of accomplishing hazard mitigation objectives in light of the obstacles faced, \( t(28) = .672, \ p > .05, \ d = .268 \). There was also a failure to reject the null hypothesis for this question.

Pearson Correlation Analysis for Hazard Mitigation Challenges

A Pearson’s correlation analysis was used to examine the linear relationship between organizational characteristic variables (represented by continuous data) and the list of challenge-related variables (represented by ordinal data). A correlation analysis was carried out for the cumulative study sample (\( n = 30 \)), non-fire (\( n = 9 \)) observations, and integrated fire (\( n = 21 \)) observations. The following research and null hypothesis are provided:

\[ H_0: \rho = 0 \]

There is no relationship between organizational characteristics and the rating of hazard mitigation challenges.

\[ H_1: \rho \neq 0 \]

There is a relationship between organizational characteristics and the rating of hazard mitigation challenges.

Table 6.20 depicts the results of the Pearson’s correlation analysis for the cumulative study sample, and significant positive relationships were identified between several variables. As findings suggest, there is a significant positive association between the number of in office volunteer workers and the perceived lack of federal support for local hazard mitigation challenge,
A statistically significant positive relationship was also identified between the number of weekly work hours devoted to hazard mitigation and the perception of respondents regarding the ease and/or difficulty of accomplishing hazard mitigation objectives in light of the obstacles faced, $r(28) = .36, p < .05$.

Table 6.20

*Correlation Analysis Between Organization Characteristics and the Rating of Challenges for the Cumulative Study Sample of Internet Survey Respondents*

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>Con Poli</th>
<th>Con Citiz</th>
<th>Agen Comp</th>
<th>Budg</th>
<th>Dev Pref</th>
<th>Staff</th>
<th>Com Fed State</th>
<th>Lack Res</th>
<th>Lack Kno</th>
<th>Lack State</th>
<th>Lack Fed</th>
<th>Ov Chall</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.23</td>
<td>3.01</td>
<td>-.16</td>
<td>-.05</td>
<td>.13</td>
<td>-.12</td>
<td>-.04</td>
<td>-.11</td>
<td>.04</td>
<td>.07</td>
<td>.12</td>
<td>.29</td>
<td>.36</td>
<td>-.10</td>
</tr>
<tr>
<td>PT</td>
<td>0.37</td>
<td>0.81</td>
<td>.01</td>
<td>.11</td>
<td>.22</td>
<td>-.23</td>
<td>.14</td>
<td>-.30</td>
<td>.17</td>
<td>.18</td>
<td>.00</td>
<td>-.04</td>
<td>.09</td>
<td>.00</td>
</tr>
<tr>
<td>VW</td>
<td>5.23</td>
<td>15.39</td>
<td>-.11</td>
<td>-.23</td>
<td>-.01</td>
<td>.17</td>
<td>-.11</td>
<td>-.26</td>
<td>-.20</td>
<td>-.09</td>
<td>-.06</td>
<td>.29</td>
<td>.44*</td>
<td>.00</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>7.27</td>
<td>15.27</td>
<td>.08</td>
<td>.09</td>
<td>.01</td>
<td>-.08</td>
<td>-.02</td>
<td>.14</td>
<td>.09</td>
<td>-.01</td>
<td>.00</td>
<td>-.05</td>
<td>-.11</td>
<td>.36*</td>
</tr>
<tr>
<td>WeeklyOther EM</td>
<td>26.40</td>
<td>21.34</td>
<td>.10</td>
<td>-.03</td>
<td>.27</td>
<td>.27</td>
<td>.24</td>
<td>.17</td>
<td>.18</td>
<td>.43*</td>
<td>.40*</td>
<td>.29</td>
<td>.32</td>
<td>.11</td>
</tr>
<tr>
<td>WeeklyNon EM</td>
<td>13.83</td>
<td>13.70</td>
<td>.13</td>
<td>-.15</td>
<td>.21</td>
<td>.06</td>
<td>.42*</td>
<td>.20</td>
<td>-.16</td>
<td>.03</td>
<td>-.17</td>
<td>-.26</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>2012Mit Budget</td>
<td>4.77</td>
<td>6.54</td>
<td>.16</td>
<td>.02</td>
<td>-.15</td>
<td>.21</td>
<td>.06</td>
<td>.42*</td>
<td>.20</td>
<td>-.16</td>
<td>.03</td>
<td>-.17</td>
<td>-.26</td>
<td>.03</td>
</tr>
</tbody>
</table>

*Note. The sample size is $N = 30$. FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeeklyMit= Average weekly work hours invested in hazard mitigation; WeeklyOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; ConPolil=Low concern for hazard mitigation by elected officials; ConCitiz=Low concern for hazard mitigation by citizens; AgenComp=Competition with other local agencies for resources; Budg=Lack of office budget; DevPref=Community preference for economic development; Staff=Lack of internal staff/personnel; CompFedState=Lack of familiarity with state/federal guidelines; LackRes=Lack of internal technical resources; LackKno=Lack of technical knowledge by staff; LackState= Lack of state support for local hazard mitigation; LackFed=Lack of federal support for local hazard mitigation; OvChall=Ease/Difficulty to overcome challenges. *$p < .05$  **$p < .01$*

Two hazard mitigation challenges had a significant positive relationship with the number of weekly work hours devoted to non-emergency management activities. First, a statistically significant positive relationship exists between the number of weekly work hours devoted to non-emergency management activities and the lack of technical resources necessary for hazard
mitigation planning, \( r(28) = .43, p < .05 \). Second, there is a significant positive correlation between the number of weekly work hours devoted to non-emergency management activities and the lack of staff knowledge in the technical functions of hazard mitigation planning, \( r(28) = .40, p < .05 \). One statistically significant negative correlation was identified in the analysis. A significant negative correlation exists between the number of weekly work hours devoted to other emergency management activities and the lack of technical resources required for hazard mitigation planning, \( r(28) = -.37, p < .05 \).

Table 6.21

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>Con Poli</th>
<th>Con Citiz</th>
<th>Agen Comp</th>
<th>Budg</th>
<th>Dev Pref</th>
<th>Staff</th>
<th>Comp Fed State</th>
<th>Lack Res</th>
<th>Lack Kno</th>
<th>Lack State</th>
<th>Lack Fed</th>
<th>Ov Chall</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.23</td>
<td>3.01</td>
<td>-.16</td>
<td>-.05</td>
<td>.19</td>
<td>-.07</td>
<td>-.04</td>
<td>-.22</td>
<td>.02</td>
<td>.10</td>
<td>.18</td>
<td>.32</td>
<td>.41</td>
<td>-.21</td>
</tr>
<tr>
<td>PT</td>
<td>0.37</td>
<td>0.81</td>
<td>-.16</td>
<td>-.01</td>
<td>.07</td>
<td>-.29</td>
<td>.16</td>
<td>-.12</td>
<td>.10</td>
<td>.09</td>
<td>.04</td>
<td>.05</td>
<td>.18</td>
<td>-.47*</td>
</tr>
<tr>
<td>VW</td>
<td>5.23</td>
<td>15.39</td>
<td>-.13</td>
<td>.23</td>
<td>-.03</td>
<td>.11</td>
<td>-.28</td>
<td>-.43</td>
<td>-.28</td>
<td>-.14</td>
<td>-.07</td>
<td>.31</td>
<td>.42</td>
<td>.03</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>7.27</td>
<td>15.27</td>
<td>-.21</td>
<td>-.08</td>
<td>.10</td>
<td>-.15</td>
<td>-.48*</td>
<td>.01</td>
<td>-.21</td>
<td>-.29</td>
<td>-.29</td>
<td>-.16</td>
<td>-.18</td>
<td>.12</td>
</tr>
<tr>
<td>WeeklyOther EM</td>
<td>26.40</td>
<td>21.34</td>
<td>-.08</td>
<td>-.13</td>
<td>-.08</td>
<td>.05</td>
<td>-.03</td>
<td>.28</td>
<td>.14</td>
<td>-.21</td>
<td>-.14</td>
<td>-.22</td>
<td>-.17</td>
<td>.01</td>
</tr>
<tr>
<td>WeeklyNon EM</td>
<td>13.83</td>
<td>13.70</td>
<td>.32</td>
<td>.10</td>
<td>.37</td>
<td>.14</td>
<td>.30</td>
<td>.01</td>
<td>.20</td>
<td>.45*</td>
<td>.49*</td>
<td>.36</td>
<td>.32</td>
<td>.20</td>
</tr>
<tr>
<td>2012Mit Budget</td>
<td>4.77</td>
<td>6.54</td>
<td>.27</td>
<td>.07</td>
<td>-.06</td>
<td>.26</td>
<td>.13</td>
<td>.43</td>
<td>-.25</td>
<td>-.11</td>
<td>-.28</td>
<td>-.36</td>
<td>.12</td>
<td></td>
</tr>
</tbody>
</table>

*Note. The sample is N=21. FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeeklyMit= Average weekly work hours invested in hazard mitigation; WeeklyOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; ConPoli=Low concern for hazard mitigation by elected officials; ConCitiz=Low concern for hazard mitigation by citizens; AgenComp=Competition with other local agencies for resources; Budg=Lack of office budget; DevPref=Community preference for economic development; Staff=Lack of internal staff/personnel; CompFedState=Lack of familiarity with state/federal guidelines; LackRes=Lack of internal technical resources; LackKno=Lack of technical knowledge by staff; LackState= Lack of state support for local hazard mitigation; LackFed=Lack of federal support for local hazard mitigation; OvChall=Ease/Difficulty to overcome challenges. *p < .05  **p < .01
A second Pearson correlation analysis was carried out for the sample of integrated fire emergency management offices (Table 6.21), and statistically significant correlations were found for four challenge-related variables. First, there is a significant negative relationship between the number of part-time employees in integrated fire offices and the perception of respondents regarding the ease and/or difficulty of accomplishing hazard mitigation objectives in light of the obstacles faced, \( r(19) = -0.47, p < 0.05 \). Second, a significant negative correlation exists between the number of weekly work hours devoted to hazard mitigation and the perceived community preference for economic development challenge, \( r(19) = -0.48, p < 0.05 \). Third, there is a statistically significant positive relationship between the number of weekly work hours devoted to non-emergency management activities and the lack of internal technical resources required for hazard mitigation planning, \( r(19) = 0.45, p < 0.05 \). Lastly, a significant positive association exists between the number of weekly hours devoted to non-emergency management activities and the lack of staff knowledge in the technical aspects of hazard mitigation planning, \( r(19) = 0.49, p < 0.05 \).

A third correlation analysis was conducted for the sample of non-fire emergency management offices. Table 6.22 indicates a statistically significant positive correlation between the number of volunteer workers in non-fire emergency management offices and the local community’s preference for economic development challenge, \( r(7) = 0.87, p < 0.01 \). A significant positive correlation also exists between the number of volunteer workers in office and the lack of federal support for local hazard mitigation challenge, \( r(7) = 0.69, p < 0.05 \). Another statistically significant positive correlation emerged between the number of weekly work hours devoted to

\[7\text{ The nine survey respondents from the Non-Fire office group provided the same rating for the ConCitiz challenge. The lack of variation in responses resulted in the inability to carry out a Pearson correlation between organizational characteristics and the ConCitiz variable.} \]
non-emergency management activities and the lack of an office budget challenge, \( r(7) = .76, p < .05 \). Lastly, a statistically significant negative association exists between the number of weekly hours devoted to other emergency management activities and the lack of familiarity with federal/state hazard mitigation guidelines, \( r(7) = -.72, p < .05 \).

Table 6.22

**Correlation Analysis Between Organization Characteristics and the Severity Rating of Challenges for Non-Fire Emergency Management Offices**

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>Con Poli</th>
<th>Con Citiz</th>
<th>Agen Comp</th>
<th>Budg</th>
<th>Dev Pref</th>
<th>Staff</th>
<th>Comp Fed State</th>
<th>Lack Res</th>
<th>Lack Kno</th>
<th>Lack State</th>
<th>Lack Fed</th>
<th>Ov Chall</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.23</td>
<td>3.01</td>
<td>- .34</td>
<td>- .16</td>
<td>- .38</td>
<td>- .03</td>
<td>.28</td>
<td>.16</td>
<td>-.10</td>
<td>-.20</td>
<td>-.07</td>
<td>-.28</td>
<td>.53</td>
<td></td>
</tr>
<tr>
<td>PT</td>
<td>0.37</td>
<td>0.81</td>
<td>.21</td>
<td>.54</td>
<td>-.10</td>
<td>.16</td>
<td>-.25</td>
<td>.43</td>
<td>.56</td>
<td>.01</td>
<td>-.24</td>
<td>.11</td>
<td>.39</td>
<td></td>
</tr>
<tr>
<td>VW</td>
<td>5.23</td>
<td>15.39</td>
<td>.38</td>
<td>- .00</td>
<td>.56</td>
<td>.89**</td>
<td>-.04</td>
<td>-.04</td>
<td>.01</td>
<td>-.07</td>
<td>.18</td>
<td>.69*</td>
<td>-.09</td>
<td></td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>7.27</td>
<td>15.27</td>
<td>- .038</td>
<td>.04</td>
<td>.02</td>
<td>.15</td>
<td>.48</td>
<td>.36</td>
<td>.27</td>
<td>.16</td>
<td>-.07</td>
<td>-.18</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>WeeklyOther EM</td>
<td>26.40</td>
<td>21.34</td>
<td>.055</td>
<td>- .52</td>
<td>.22</td>
<td>.11</td>
<td>-.47</td>
<td>-.72*</td>
<td>-.56</td>
<td>-.50</td>
<td>-.07</td>
<td>.09</td>
<td>-.28</td>
<td></td>
</tr>
<tr>
<td>WeeklyNon EM</td>
<td>13.83</td>
<td>13.70</td>
<td>.181</td>
<td>- .37</td>
<td>.76*</td>
<td>.11</td>
<td>.19</td>
<td>-.22</td>
<td>.06</td>
<td>.08</td>
<td>.02</td>
<td>.23</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>2012 Mit Budget</td>
<td>4.77</td>
<td>6.54</td>
<td>.000</td>
<td>- .41</td>
<td>.13</td>
<td>-.07</td>
<td>.43</td>
<td>.16</td>
<td>-.01</td>
<td>.32</td>
<td>.19</td>
<td>.09</td>
<td>-.12</td>
<td></td>
</tr>
</tbody>
</table>

*Note. The sample is N=9. FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeeklyMit= Average weekly work hours invested in hazard mitigation; WeeklyOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; ConPoli=Low concern for hazard mitigation by elected officials; ConCitiz=Low concern for hazard mitigation by citizens; AgenComp=Competition with other local agencies for resources; Budg=Lack of office budget; DevPref=Community preference for economic development; Staff=Lack of internal staff/personnel; CompFedState=Lack of familiarity with state/federal guidelines; LackRes=Lack of internal technical resources; LackKno=Lack of technical knowledge by staff; LackState=Lack of state support for local hazard mitigation; LackFed=Lack of federal support for local hazard mitigation; OvChall=Ease/Difficulty to overcome challenges. *\( p < .05 \) **\( p < .01 \)

**Hazard Mitigation Success Indicators**

The internet survey contained three questions that measured each respondent’s perceived level of success in hazard mitigation planning and strategy implementation. Each survey question was rated on a 4-point ordinal scale (1 = disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = agree). Table 6.23 contains the survey questions that measure each success
indicator question and descriptive data (mean, standard deviation, minimum, maximum) for the cumulative study sample. Descriptive findings for the overall sample show that, on average, respondents somewhat agreed that their office has been successful in both hazard mitigation planning \((M = 3.27)\) and strategy implementation \((M = 2.87)\). Additionally, respondents ‘somewhat agreed’ that their office has been effective as reducing the community’s risk to hazards \((M = 2.80)\).

Table 6.23

*Perception Rating of Hazard Mitigation Success Indicators for the Cumulative Study Sample of Internet Survey Respondents.*

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>N</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>My office is successful in mitigation planning.</td>
<td>30</td>
<td>3.27</td>
<td>0.69</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>My office is successful in implementing mitigation strategies.</td>
<td>30</td>
<td>2.87</td>
<td>0.77</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>The mitigation-related activities of my office have greatly reduced my community’s risk to hazards.</td>
<td>30</td>
<td>2.80</td>
<td>0.80</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6.24 contains the survey questions that measure each success indicator question and descriptive data (mean, standard deviation, minimum, maximum) for the two emergency management office categories. Descriptive findings indicate that respondents from non-fire \((M = 3.56)\) and integrated fire \((M = 3.14)\) emergency management office categories somewhat agree that their office has been successful in hazard mitigation planning. Respondents from non-fire \((M = 3.22)\) and integrated fire \((M = 2.71)\) also somewhat agree that their office has been successful in hazard mitigation strategy implementation. However, respondents from non-fire emergency management offices had a slightly higher rating for their office’s success in these two areas. Finally, respondents from non-fire \((M = 2.89)\) and integrated fire \((M = 2.76)\) emergency
management office groups had nearly similar responses regarding the success of their office at reducing the community’s risk to hazards.

Table 6.24

*Perception of Hazard Mitigation Success Rating for the Two Emergency Management Office Groups.*

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent do you agree or disagree with the following statements:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My office is successful in mitigation planning.</td>
<td>NF=3.56</td>
<td>IF=3.14</td>
<td>NF=3</td>
<td>IF=4</td>
</tr>
<tr>
<td></td>
<td>NF=0.52</td>
<td>IF=0.73</td>
<td>NF=0</td>
<td>IF=0.52</td>
</tr>
<tr>
<td>My office is successful in implementing mitigation strategies.</td>
<td>NF=3.22</td>
<td>IF=2.71</td>
<td>NF=3</td>
<td>IF=4</td>
</tr>
<tr>
<td></td>
<td>NF=0.44</td>
<td>IF=0.85</td>
<td>NF=3</td>
<td>IF=1</td>
</tr>
<tr>
<td>The mitigation-related activities of my office have greatly reduced my community’s risk to hazards.</td>
<td>NF=2.89</td>
<td>IF=2.76</td>
<td>NF=2</td>
<td>IF=4</td>
</tr>
<tr>
<td></td>
<td>NF=0.60</td>
<td>IF=0.89</td>
<td>NF=2</td>
<td>IF=1</td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21).

Figure 6.4 plots the mean rating of each hazard mitigation success indicator for the total study sample and the 2 emergency management office categories. As shown, respondents from non-fire emergency management offices had the highest response average for all hazard mitigation success indicators and participants from integrated fire offices had the lowest response average. Additionally, descriptive findings indicate that response averages for the cumulative study sample are situated between the response averages for the 2 emergency management office groups.
Independent Samples $t$-Test for Hazard Mitigation Success Indicators

The independent samples $t$-test was used to compare the mean rating of hazard mitigation success indicators for the two emergency management office groups, and to test for a statistically significant difference. The following null and research hypothesis are provided:

$H_0$; $\mu_{\text{Non-Fire}} = \mu_{\text{Integrated Fire}}$ 

The mean rating for hazard mitigation success indicators is equal for the two categories of emergency management offices.

$H_1$; $\mu_{\text{Non-Fire}} \neq \mu_{\text{Integrated Fire}}$ 

The mean rating for hazard mitigation success indicators is not equal for the two categories of emergency management offices.

As shown in Table 6.25, the independent samples $t$-test did not generate statistically significant findings. As a result, there is a failure to reject the null hypothesis. This suggests that respondents from both emergency management office groups had a similar rating for each hazard mitigation success indicator as there was no statistically significant difference in reported success based on the office configuration.
Table 6.25

*Independent Samples t-Test Results for the Perception of Hazard Mitigation Success Rating for the Two Emergency Management Office Groups.*

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Mean (M)</th>
<th>Standard Deviation (SD)</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My office is successful in mitigation planning.</td>
<td>NF=3.56</td>
<td>IF=3.14</td>
<td>1.53</td>
<td>0.14</td>
</tr>
<tr>
<td>My office is successful in implementing mitigation strategies.</td>
<td>NF=3.22</td>
<td>IF=2.71</td>
<td>1.70</td>
<td>0.10</td>
</tr>
<tr>
<td>The mitigation-related activities of my office have greatly reduced my community’s risk to hazards.</td>
<td>NF=2.89</td>
<td>IF=2.76</td>
<td>0.39</td>
<td>0.70</td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21), *p < .05

Pearson Correlation Analysis for Hazard Mitigation Success Indicators

A Pearson’s correlation analysis was used to examine the association between emergency management organizational characteristics and the three variables used to measure respondent’s perception of hazard mitigation success. Correlation analyses were used to examine linear relationships and to provide evidence of a statistically significant relationship. Lastly correlation analyses were carried out for the cumulative study sample (n = 30), non-fire observations (n = 9), and integrated fire observations (n = 21) emergency management offices. The following research and null hypothesis are provided:

**H₀:** ρ=0 There is no relationship between organizational characteristics and the rating of hazard mitigation success indicators.

**H₁:** ρ ≠ 0 There is a relationship between organizational characteristics and the rating of hazard mitigation success indicators.

Findings from the Pearson correlation analyses are outlined in Tables 6.26 to 6.28. There were two significant relationships identified for the cumulative sample of internet survey respondents. A statistically significant negative relationship exists between the average number
of weekly hours devoted to non-emergency management activities and the perceived success in hazard mitigation strategy implementation, \( t(28) = -0.68, p < .01 \). A second significant positive correlation was identified between the average number of weekly hours devoted to non-emergency management activities and community hazard risk reduction, \( t(28) = -0.58, p < .01 \).

Correlation analysis for the sample of integrated fire offices presented three statistically significant relationships. As observed in Table 6.27, a significant positive association exists between the number of weekly work hours devoted to other emergency management activities and perceived effectiveness in community hazard risk reduction, \( r(19) = 0.49, p < .05 \). Next, a statistically significant negative correlation exists between the number of weekly work hours devoted to non-emergency management activities and the perceived success in hazard mitigation strategy implementation, \( r(19) = -0.68, p < .01 \). Finally, there is a significant negative relationship between the number of weekly work hours devoted to non-emergency management activities and community hazard risk reduction, \( r(19) = -0.59, p < .01 \).

Table 6.26

*Correlation Analysis Between Organization Characteristics and Hazard Mitigation Success Indicators for the Cumulative Sample*

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>SuccPlanning</th>
<th>SuccImplementation</th>
<th>RiskReduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.23</td>
<td>3.01</td>
<td>0.35</td>
<td>0.12</td>
<td>0.16</td>
</tr>
<tr>
<td>PT</td>
<td>0.37</td>
<td>0.81</td>
<td>0.004</td>
<td>0.14</td>
<td>0.12</td>
</tr>
<tr>
<td>VW</td>
<td>5.23</td>
<td>15.39</td>
<td>0.16</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>7.27</td>
<td>15.27</td>
<td>0.21</td>
<td>0.09</td>
<td>-0.07</td>
</tr>
<tr>
<td>WeeklyOtherEM</td>
<td>26.40</td>
<td>21.34</td>
<td>0.26</td>
<td>0.34</td>
<td>0.27</td>
</tr>
<tr>
<td>WeeklyNonEM</td>
<td>13.83</td>
<td>13.70</td>
<td>-0.29</td>
<td>-0.68**</td>
<td>-0.58**</td>
</tr>
<tr>
<td>2012Mit Budget</td>
<td>4.77</td>
<td>6.54</td>
<td>-0.03</td>
<td>0.22</td>
<td>0.11</td>
</tr>
</tbody>
</table>

*Note.* The sample is \( N = 30 \). FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeekMit= Average weekly work hours invested in hazard mitigation; WeekOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; SuccPlanning=Office success in hazard mitigation planning;
SuccImplementation=Office success in hazard mitigation strategy implementation; RiskReduction=Office effectiveness at reducing community risk to hazards. *p < .05  **p < .01

Table 6.27

**Correlation Analysis Between Organization Characteristics and Hazard Mitigation Success Indicators for the Integrated Fire Office**

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>SuccPlanning</th>
<th>SuccImplementation</th>
<th>RiskReduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.23</td>
<td>3.01</td>
<td>.38</td>
<td>.14</td>
<td>.15</td>
</tr>
<tr>
<td>PT</td>
<td>0.37</td>
<td>0.81</td>
<td>.06</td>
<td>.02</td>
<td>.11</td>
</tr>
<tr>
<td>VW</td>
<td>5.23</td>
<td>15.39</td>
<td>.17</td>
<td>.12</td>
<td>.09</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>7.27</td>
<td>15.27</td>
<td>-.02</td>
<td>.14</td>
<td>.05</td>
</tr>
<tr>
<td>WeeklyOtherEM</td>
<td>26.40</td>
<td>21.34</td>
<td>.056</td>
<td>.39</td>
<td>.49*</td>
</tr>
<tr>
<td>WeeklyNonEM</td>
<td>13.83</td>
<td>13.70</td>
<td>-.276</td>
<td>-.68**</td>
<td>-.59**</td>
</tr>
<tr>
<td>2012Mit Budget</td>
<td>4.77</td>
<td>6.54</td>
<td>.04</td>
<td>.36</td>
<td>.25</td>
</tr>
</tbody>
</table>

*Note. The sample is n = 21. FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeekMit= Average weekly work hours invested in hazard mitigation; WeeklyOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; SuccPlanning=Office success in hazard mitigation planning; SuccImplementation=Office success in hazard mitigation strategy implementation; RiskReduction=Office effectiveness at reducing community risk to hazards.*p < .05  **p < .01

The third correlation analysis was conducted for the sample of non-fire emergency management offices, and results are outlined in Table 6.28. One significant association was identified between the variables in that there is a statistically significant negative relationship between the number of weekly work hours devoted to non-emergency management activities and success pertaining to reduction in the community’s risk to hazards, r(7) = -.73, p < .05.
Table 6.28

*Correlation Analysis Between Organization Characteristics and Hazard Mitigation Success Indicators for the Non-Fire Office*

<table>
<thead>
<tr>
<th>Organization Characteristic</th>
<th>Mean</th>
<th>SD</th>
<th>SuccPlanning</th>
<th>SuccImplementation</th>
<th>RiskReduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT</td>
<td>2.23</td>
<td>3.01</td>
<td>.30</td>
<td>-.09</td>
<td>.31</td>
</tr>
<tr>
<td>PT</td>
<td>0.37</td>
<td>0.81</td>
<td>-.37</td>
<td>.11</td>
<td>.14</td>
</tr>
<tr>
<td>VW</td>
<td>5.23</td>
<td>15.39</td>
<td>.38</td>
<td>.10</td>
<td>.12</td>
</tr>
<tr>
<td>WeeklyMit</td>
<td>7.27</td>
<td>15.27</td>
<td>.33</td>
<td>-.17</td>
<td>.10</td>
</tr>
<tr>
<td>WeeklyOtherEM</td>
<td>26.40</td>
<td>21.34</td>
<td>.50</td>
<td>-.01</td>
<td>-.19</td>
</tr>
<tr>
<td>WeeklyNonEM</td>
<td>13.83</td>
<td>13.70</td>
<td>.31</td>
<td>-.29</td>
<td>-.73*</td>
</tr>
<tr>
<td>2012Mit Budget</td>
<td>4.77</td>
<td>6.54</td>
<td>-.15</td>
<td>-.11</td>
<td>-.33</td>
</tr>
</tbody>
</table>

Note. The sample is \( n = 9 \). FT=Average number of full-time employees; PT=Average number part-time employees; VW=Average number of volunteer workers; WeekMit= Average weekly work hours invested in hazard mitigation; WeekOtherEM=Average weekly work hours devoted to other emergency management activities; WeeklyNonEM=Average weekly work hours devoted to non-emergency management activities; 2012MitBudget=2012 office hazard mitigation budget; SuccPlanning=Office success in hazard mitigation planning; SuccImplementation=Office success in hazard mitigation strategy implementation; RiskReduction=Office effectiveness at reducing community risk to hazards. *\( p < .05 \)  **\( p < .01 \)

Chi-Square Analysis for Completed Hazard Mitigation Actions

The internet survey contained 10 questions that allowed respondents to indicate their completion of actions associated with hazard mitigation planning and strategy implementation.

The specific actions examined included (1) possessing an approved local hazard mitigation action plan, (2) participating in the National Flood Insurance Program (NFIP) and (3) having submitted an application to any of 8 national/state hazard mitigation grant programs.  

Respondents were prompted to answer Yes=0 or No=1 to indicate their completion of the three aforementioned actions. A chi-square test was performed to determine the relationship between emergency management office category and the probability of having an approved local hazard

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8 The National Flood Insurance Program (NFIP) provides a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Retrieved September 26, 2014 from http://www.usa.gov/directory/federal/national-flood-insurance-program.shtml
mitigation action plan. The following null and research hypothesis are provided:

\[ H_0: \] There is no relationship between emergency management office category and having an approved local hazard mitigation plan.

\[ H_1: \] There is a relationship between emergency management office category and having an approved local hazard mitigation plan.

Presented in Table 6.29, findings from the chi-square analysis determined that there is no statistically significant relationship between the category of emergency management office and having an approved local hazard mitigation action plan, \( X^2 = 0.29, df = 1, p = .589 \). Findings result in a failure to reject the null hypothesis.

Table 6.29

<table>
<thead>
<tr>
<th>Hazard Mitigation Completed Action</th>
<th>Observed Frequency</th>
<th>Expected Frequency</th>
<th>( X^2 )</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having an approved local hazard mitigation action plan.</td>
<td>Yes</td>
<td>NF=6 IF=16</td>
<td>NF=6.6 IF=15.4</td>
<td>.29</td>
</tr>
<tr>
<td>No</td>
<td>NF=3 IF=5</td>
<td>NF=2.4 IF=5.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21); *p < .05

A second chi-square analysis was conducted to determine the probability that respondents from a particular emergency management office group is more likely to participate in the NFIP.

The following null and research hypothesis are presented:

\[ H_0: \] There is no relationship between emergency management office category and community involvement in the National Flood Insurance Program.

\[ H_1: \] There is a relationship between emergency management office category and community involvement in the National Flood Insurance Program.

Findings from the second chi-square analysis are presented in Table 6.30. The results indicate that there is not a significant difference in the emergency management office category
and community involvement in the NFIP, $X^2 = 0.44$, $df = 1$, $p = .506$. Therefore, there is a failure to reject the null hypothesis.

Table 6.30

*Frequency of Participation in the NFIP by Emergency Management Office Category*

<table>
<thead>
<tr>
<th>Community Involvement in the NFIP</th>
<th>Hazard Mitigation Completed Action</th>
<th>Observed Frequency</th>
<th>Expected Frequency</th>
<th>$X^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>NF=9 IF=20</td>
<td>NF=8.7 IF=20.3</td>
<td>.44</td>
<td>.51</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>NF=0</td>
<td>NF=0.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NF = non-fire office ($n = 9$); IF = integrated fire office ($n = 21$); *$p < .05$

A third chi-square analysis was carried out to examine the relationship between emergency management office category and the probability of submitting an application for one of the eight presented hazard mitigation grant programs. To guide this analysis, the following null and research hypothesis are provided:

$H_0$: There is no relationship between emergency management office category and submitting for a hazard mitigation grant.

$H_1$: There is a relationship between emergency management office category and submitting for a hazard mitigation grant.

Findings from this analysis are presented in Table 6.31. Results suggest that there is no statistically significant relationship between emergency management office category and submitting an application for a hazard mitigation grant. Based on the findings, there is a failure to reject the null hypothesis.
Table 6.31

*Frequency of Grant Application Submission by Emergency Management Office Category*

<table>
<thead>
<tr>
<th>Hazard Mitigation Action Completion Submitting for the following grant:</th>
<th>Observed Frequency</th>
<th>Expected Frequency</th>
<th>X²</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hazard Mitigation Grant Program (HGMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=5 IF=6</td>
<td>NF=3.3 IF=7.7</td>
<td>1.98</td>
<td>0.16</td>
</tr>
<tr>
<td>No</td>
<td>NF=4 IF=15</td>
<td>NF=5.7 IF=13.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Hazard Mitigation Assistance Grants (HMA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=0 IF=3</td>
<td>NF=9 IF=2.1</td>
<td>1.43</td>
<td>0.23</td>
</tr>
<tr>
<td>No</td>
<td>NF=9 IF=18</td>
<td>NF=8.1 IF=18.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. FEMA Planning Pilot Grant Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=0 IF=2</td>
<td>NF=0.6 IF=1.4</td>
<td>0.92</td>
<td>0.34</td>
</tr>
<tr>
<td>No</td>
<td>NF=9 IF=19</td>
<td>NF=8.4 IF=19.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Pre-Disaster Mitigation Program (PDM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=3 IF=5</td>
<td>NF=2.4 IF=5.6</td>
<td>0.29</td>
<td>0.59</td>
</tr>
<tr>
<td>No</td>
<td>NF=6 IF=16</td>
<td>NF=6.6 IF=15.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Flood Mitigation Assistance Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=0 IF=4</td>
<td>NF=1.2 IF=2.8</td>
<td>1.98</td>
<td>0.16</td>
</tr>
<tr>
<td>No</td>
<td>NF=9 IF=17</td>
<td>NF=7.8 IF=18.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Severe Repetitive Loss Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=0 IF=2</td>
<td>NF=0.6 IF=1.4</td>
<td>0.92</td>
<td>0.34</td>
</tr>
<tr>
<td>No</td>
<td>NF=9 IF=19</td>
<td>NF=8.4 IF=19.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Repetitive Flood Claims Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=0 IF=2</td>
<td>NF=0.6 IF=1.4</td>
<td>0.92</td>
<td>0.34</td>
</tr>
<tr>
<td>No</td>
<td>NF=9 IF=19</td>
<td>NF=8.4 IF=19.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. State/Local Grants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>NF=4 IF=11</td>
<td>NF=4.5 IF=10.5</td>
<td>0.16</td>
<td>0.69</td>
</tr>
<tr>
<td>No</td>
<td>NF=5 IF=10</td>
<td>NF=4.5 IF=10.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NF = non-fire office (n = 9); IF = integrated fire office (n = 21); *p < .05

**Parent Agency Influence on Hazard Mitigation**

The internet survey contained three questions that examined the parent agency’s influence on hazard mitigation planning and strategy implementation. The survey sample was comprised of 28 respondents from integrated emergency management offices (see Table 2 for
office breakdown). Each survey question was rated on a 4-point ordinal scale (1 = not at all, 2 = little extent, 3 = moderate extent, 4 = great extent) and required respondents to report their perception of the level of support provided by their parent agency to pursue hazard mitigation planning; the level of decision-making autonomy granted by their parent agency to pursue hazard mitigation planning; and the extent to which hazard mitigation planning is a priority of their parent agency. Table 6.32 contains the survey questions used to measure the parent agency’s effect on hazard mitigation planning and descriptive statistics (mean, standard deviation, minimum, maximum) for each question.

Table 6.32  

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>In terms of mitigation, to what extent do you perceive your parent agency:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To be supportive of your office’s pursuit of hazard mitigation.</td>
<td>28</td>
<td>3.36</td>
<td>0.68</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>To allow your office to have decision-making autonomy in terms of mitigation</td>
<td>28</td>
<td>3.32</td>
<td>0.77</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>planning and strategy implementation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To make hazard mitigation a priority.</td>
<td>28</td>
<td>2.86</td>
<td>0.85</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Descriptive findings suggest that respondents from integrated emergency management offices perceive their parent agency as being moderately supportive (M=3.36) of pursuing hazard mitigation. Also, respondents reported that their parent agency provide them with a moderate amount of autonomy (M=3.32) to pursue hazard mitigation initiatives. Lastly, respondents quantified hazard mitigation as a moderate priority (2.86) for their parent agency.
Spearman Correlation Analysis for Parent Agency Influence

Correlation analysis was used to examine the linear relationship between the parent agency’s influence on hazard mitigation planning and the 3 primary areas of this study (i.e. hazard mitigation activity involvement, hazard mitigation challenges, hazard mitigation success). Spearman’s rank-order correlation was the statistical methodology used to examine the association between the nonparametric rank-order 1) parent agency variables, 2) hazard mitigation activity involvement variables, 3) hazard mitigation challenge variables, and 4) hazard mitigation success variables.

The Spearman correlation analyses was carried out between parent agency variables and the reported level of involvement in hazard mitigation roles. As shown in Table 6.33, statistically significant relationships were identified for the parent agency variables. Specifically, a statistically significant positive relationship exists between the level of parent agency support and collaboration, \( r(26) = .62, p < .01 \), in that as parent agency support increases, collaboration activities also increase. There is also statistically significant positive association between the level of parent agency support and the reported level of involvement in GIS mapping, \( r(26) = .36, p < .01 \). Finally, a significant positive correlation exists between the level of parent agency support and the level of involvement in hazard mitigation advocacy, \( r(26) = .48, p < .01 \).

There are two statistically significant associations with the level of autonomy provided by the parent agency. A significant positive correlation exists between level of the decision-making autonomy provided by the parent agency and the degree in which hazard mitigation is integrated with components of the local comprehensive plan, \( r(26) = .41, p < .05 \). A statistically significant positive association exists between the level of discretion allowed by the parent agency and the level of involvement in hazard mitigation advocacy, \( r(26) = .38, p < .05 \) .
Two significant positive relationships exists with level of autonomy granted to hazard mitigation by the parent agency. First, a significant positive relationship exists between the priority level assigned to hazard mitigation planning from the parent agency and collaboration, \( r(26) = .40, p < .05 \). Another statistically significant positive relationship exists between the priority afforded to hazard mitigation from the parent agency and the level of involvement in hazard mitigation advocacy, \( r(26) = .46, p < .05 \).

Table 6.33

*Correlation Analysis Between Parent Agency Influence and Hazard Mitigation Activity Involvement for Integrated Emergency Management Offices*

<table>
<thead>
<tr>
<th>Parent Agency</th>
<th>Mean</th>
<th>SD</th>
<th>PlanDev</th>
<th>Up</th>
<th>Collab</th>
<th>Integ Strat</th>
<th>Seek Grant</th>
<th>Haz Anal</th>
<th>GIS Map</th>
<th>Mit Adv</th>
<th>Pub Out</th>
<th>Strat Imp</th>
</tr>
</thead>
<tbody>
<tr>
<td>ParSupp</td>
<td>3.36</td>
<td>.678</td>
<td>.40</td>
<td></td>
<td>.62**</td>
<td>.34</td>
<td>.20</td>
<td>.40</td>
<td>.36*</td>
<td>.48**</td>
<td>.09</td>
<td>.31</td>
</tr>
<tr>
<td>Auton</td>
<td>3.32</td>
<td>.772</td>
<td>.24</td>
<td></td>
<td>.25</td>
<td>.41*</td>
<td>.35</td>
<td>.37</td>
<td>.12</td>
<td>.38*</td>
<td>.04</td>
<td>.24</td>
</tr>
<tr>
<td>HazPri</td>
<td>2.86</td>
<td>.848</td>
<td>.11</td>
<td></td>
<td>.40*</td>
<td>.12</td>
<td>.15</td>
<td>.29</td>
<td>.37</td>
<td>.46*</td>
<td>.04</td>
<td>.18</td>
</tr>
</tbody>
</table>

*Note.* The sample size is \( n = 28 \). ParSupp=Parent agency support for hazard mitigation planning; Auton=Decision-making autonomy provided by the agent agency; HazPri=Hazard mitigation priority of parent agency; Collab=Level of involvement in collaboration; IntegStrat=Level of involvement of integrating hazard mitigation strategies with comprehensive development plan; SeekGrant=Level of involvement in pursuing hazard mitigation grants; HazAnal=Level of involvement in conducting hazard analysis; GISMap=Level of involvement in conducting GIS mapping; MitAdv=Level of involvement in hazard mitigation advocacy; PubOut=Level of involvement in public outreach; StratImp=Level of involvement in hazard mitigation strategy implementation. *\( p < .05 \)  **\( p < .01 \)

The second correlation analysis was conducted between parent agency variables and the perceived hazard mitigation challenges. Findings from this analysis are presented in Table 6.34 and significant relationships were identified between multiple variables. One noted finding is a significant positive relationship between the priority level assigned to hazard mitigation planning from the parent agency and the lack of an office budget challenge, \( r(26) = .65, p < .01 \). There are two significant correlations with the level of hazard mitigation support provided by the parent agency. A statistically significant positive relationship exists between the level of parent agency support and the lack of an office budget, \( r(26) = .48, p < .01 \). An additional significant negative
relationship exists between the amount of parent agency support and the perception of respondents regarding the ease and/or difficulty of accomplishing hazard mitigation objectives in light of the obstacles faced, \( r(26) = -.39, p < .05 \).

Table 6.34

**Correlation Analysis Between Parent Agency Influence and Hazard Mitigation Challenges for Integrated Emergency Management Offices**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ParSup</td>
<td>3.36</td>
<td>.678</td>
<td>-.07</td>
<td>.24</td>
<td>-.17</td>
<td>.48**</td>
<td>-.28</td>
<td>.002</td>
<td>-.13</td>
<td>-.23</td>
<td>-.20</td>
<td>-.12</td>
<td>-.15</td>
<td>-.39*</td>
</tr>
<tr>
<td>Auton</td>
<td>3.32</td>
<td>.772</td>
<td>-.03</td>
<td>.13</td>
<td>-.25</td>
<td>-.39*</td>
<td>-.26</td>
<td>-.24</td>
<td>-.43*</td>
<td>-.57**</td>
<td>-.44*</td>
<td>-.081</td>
<td>-.030</td>
<td>-.23</td>
</tr>
<tr>
<td>HazPri</td>
<td>2.86</td>
<td>.848</td>
<td>-.03</td>
<td>.12</td>
<td>-.20</td>
<td>.65**</td>
<td>-.31</td>
<td>.08</td>
<td>-.02</td>
<td>-.22</td>
<td>-.18</td>
<td>-.06</td>
<td>-.11</td>
<td>-.14</td>
</tr>
</tbody>
</table>

Note. The sample is \( N=28 \). ParSup=Parent agency support for hazard mitigation planning; Auton=Decision-making autonomy provided by the agent agency; HazPri=Hazard mitigation priority of parent agency. ConPoli=Low concern for hazard mitigation by elected officials; ConCitiz=Low concern for hazard mitigation by citizens; AgenComp=Competition with other local agencies for resources; Budg=Lack of office budget; DevPref=Community preference for economic development; Staff=Lack of internal staff/personnel; CompFedState=Lack of familiarity with state/federal guidelines; LackRes=Lack of internal technical resources; LackKno=Lack of technical knowledge by staff; LackStat=Lack of state support for local hazard mitigation; LackFed=Lack of federal support for local hazard mitigation; OvChall=Ease/Difficulty to overcome challenges. *\( p < .05 \) **\( p < .01 \)

Four hazard mitigation challenges were found to have significant negative associations with the amount of decision-making autonomy (for pursuing hazard mitigation) granted by the parent agency. First, a significant negative relationship exists between the level of decision-making autonomy allowed by the parent agency and the lack of an office budget challenge, \( r(26) = -.39, p < .05 \). Second, a statistically significant negative correlation exists between the amount of discretion allotted by the parent agency and the lack of familiarity with federal/state hazard mitigation guidelines, \( r(26) = -.43, p < .05 \). Third, there is a negative association between the decision-making autonomy granted by the parent agency and the lack of internal technical resources required for hazard mitigation planning, \( r(26) = -.57, p < .01 \). Lastly, a negative association was identified between the amount of hazard mitigation discretionary authority
afforded by the parent agency and the lack of staff knowledge in the technical functions of hazard mitigation planning, $r(26) = -.42, p < .05$.

A third correlation analysis was carried out to examine the relationship between the parent agency’s influence on hazard mitigation planning and respondent’s perception of local hazard mitigation success. Results from this analyses are presented in Table 6.35, and significant correlations were found to exist between the amount of decision-making autonomy granted by the parent agency to pursue hazard mitigation initiatives and two hazard mitigation success indicators. A significant positive correlation exists between the amount of decision-making autonomy allowed from the parent agency and the success attained in hazard mitigation planning, $r(26)=.49, p<.01$. There is also a statistically significant positive correlation between the amount of decision-making autonomy received from the parent agency and the success achieved in hazard mitigation strategy implementation, $r(26)=.46, p<.05$.

Table 6.35

<table>
<thead>
<tr>
<th>Parent Agency</th>
<th>Mean</th>
<th>SD</th>
<th>SuccPln</th>
<th>SuccImp</th>
<th>RedRisk</th>
</tr>
</thead>
<tbody>
<tr>
<td>ParSupp</td>
<td>3.36</td>
<td>.68</td>
<td>.11</td>
<td>.27</td>
<td>.33</td>
</tr>
<tr>
<td>Auton</td>
<td>3.32</td>
<td>.77</td>
<td>.49**</td>
<td>.46*</td>
<td>.23</td>
</tr>
<tr>
<td>HazPri</td>
<td>2.86</td>
<td>.85</td>
<td>.20</td>
<td>.33</td>
<td>.24</td>
</tr>
</tbody>
</table>

Note. The sample is $n = 28$. ParSupp=Parent agency support for hazard mitigation planning; Auton=Decision-making autonomy provided by the agency; HazPri=Hazard mitigation priority of parent agency; SuccPln=Success in hazard mitigation planning; SuccImp=Success in hazard mitigation strategy implementation; RedRisk=Mitigation activities has reduced community hazard risk.*$p < .05$ **$p < .01$
Conclusion

The internet survey allowed respondents to rate their perception in 3 key areas including (1) their level of involvement in activities associated with hazard mitigation planning and strategy implementation, (2) the rating of different hazard mitigation challenges, and (3) their perceived level of success in hazard mitigation planning and strategy implementation. Descriptive data indicated variations in the responses for the cumulative study sample, and the subsample of integrated fire and non-fire emergency management offices. The independent samples $t$-test, correlation analysis (Pearson and Spearman), and chi-square analysis was used to examine the variation between the sample groups. For respondents representing integrated emergency management offices, correlation analysis examined their parent agency’s influence on hazard mitigation planning and strategy implementation, and suggested the parent agency to be an asset to hazard mitigation planning and strategy implementation.

The independent samples $t$-test found no statistically significant difference in the mean reported level of involvement in hazard mitigation activities between the two emergency management office categories. Additionally, there was no evidence of a statistically significant difference in the mean rating of hazard mitigation success indicators between the two emergency management office configurations. However, a statistically significant difference was identified for two hazard mitigation challenges. Respondents from the non-fire emergency management office rated the (1) local elected official disinterest for hazard mitigation and the (2) local citizen disinterest for hazard mitigation as significantly greater challenges for their organization than respondents from the integrated fire office. Lastly, results from the independent sample $t$-tests analyses indicated that respondents from the integrated fire emergency management office
devote significantly more weekly work hours to non-emergency management activities than respondents from the non-fire emergency management office.

Chi-square analysis provided to evidence of a statistically significant difference between emergency management office category and the completion of specific hazard mitigation actions. Pearson correlation analysis identified statistically significant relationships between organizational characteristics and the three primary areas of this study (i.e. hazard mitigation activity involvement, challenges, success). Spearman correlation analysis also identified statistically significant associations between parent agency variables and the three key areas. The statistically significant correlations are expanded upon in the next chapter, and discussed in conjunction with earlier qualitative findings.
CHAPTER 7
DISCUSSION

Introduction

This chapter presents a discussion of the findings of this research. Qualitative findings are triangulated with quantitative findings to identify convergence or divergence in the findings. The use of triangulation provides a more holistic understanding of the current status of hazard mitigation in emergency management.

This dissertation took a unique approach to studying hazard mitigation by using an organizational structure framework to examine the factors surrounding the emergency manager’s involvement in this area. Labadie (1984) presented an organizational niche framework to delineate three emergency management office groups (stand-alone office, integrated office, and intergovernmental council) and to describe some benefits and disadvantages of each office configuration. This dissertation expanded Labadie’s framework and advanced knowledge and scholarship in two distinct ways. First, a more nuanced breakdown of integrated emergency management offices was incorporated to include the integrated non-fire office, integrated fire/emergency management coordinator office (i.e. integrated fire/emc), and the integrated fire/chief (i.e. integrated fire/chief) office. In total, this study delineated four distinct emergency management office structures. Second, this dissertation used the expanded organizational structure framework to examine the roles and challenges, of emergency managers in hazard mitigation planning and strategy implementation, and the perception of emergency managers regarding hazard mitigation success.

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9 The stand alone office was the fourth emergency management office category and had no distinction from that described by Labadie (1984).
An Explanation of Self-Identified Hazard Mitigation Roles

The first objective of this study was to examine the roles of emergency managers in hazard mitigation, and to identify the roles of other stakeholders as perceived by study participants. Open-ended interview questions allowed emergency managers to detail their roles in hazard mitigation planning and strategy implementation. In describing their involvement, participants communicated having six broad roles in hazard mitigation planning and strategy implementation. As found through the qualitative analyses, participants described six self-identified roles: (1) administrator, (2) collaborator, (3) facilitator-coordinator, (4) fund seeker, (5) advocator, and (6) public educator. As suggested through qualitative interviews, each role is valuable for hazard mitigation planning and strategy implementation. Qualitative findings are important because it provided insight into the duties of emergency managers in hazard mitigation, and allowed participants from each emergency management office configuration to express their involvement these self-identified roles. Despite the importance of each role, two were not unanimously expressed by emergency managers from each office category.

The fund seeker role was not mentioned by participants representing the integrated fire/emc and integrated fire/chief emergency management office. Additionally, the advocator role was not expressed by emergency managers from the integrated fire/chief emergency management office. A potential explanation for the failure to articulate these roles is that local emergency managers frequently have dual job titles, which introduces additional day-to-day responsibilities that compete with emergency management interests. In some communities the emergency manager designation can be assigned to the police chief, fire chief, public works director, or others (Labadie, 1984; McEntire, 2007). Qualitative findings revealed that some emergency managers participating in this study do indeed have two job titles which may result in
work duties that fall outside of traditional emergency management. Specifically, responses to the surveys indicated that emergency managers from integrated fire offices commonly have dual job titles (e.g. fire chief/emergency management coordinator or assistant fire chief/emergency management coordinator), and that various responsibilities may subsequently preclude or minimize their involvement in hazard mitigation advocacy or grant writing. Additionally, grant writing and hazard mitigation advocacy may be relegated to secondary priority status—which was a noted challenge of hazard mitigation planning—for emergency managers having dual job duties. One self-identified role was found to be extremely important to hazard mitigation planning and strategy implementation.

Existing literature has noted the importance of collaboration in emergency management (Mileti, 1999; Waugh and Streib, 2006; McEntire, 2007; Godschalk, 2007; Graves, 2013). Findings from this study substantiated the importance of the collaborator role as well because participants from each emergency management office configuration described their collaborative activity and articulated its value in hazard mitigation planning and strategy implementation. Qualitative analyses also suggested that the six self-identified roles of emergency managers are interconnected, and that the collaborator role is central to their interplay. In other words, the carrying out of each self-identified role requires some level of interaction with other stakeholders. Graves (2013) writes that developing the local hazard mitigation plan requires emergency managers to work with multiple stakeholders. Waugh and Streib (2006) state that collaboration is the mechanism by which emergency managers accomplish their tasks. According to Labadie (1984), an effective emergency manager acts as a resource and support system for other agencies. As noted by this study’s qualitative findings, emergency managers are indeed engaged in collaboration. Descriptive data from the internet survey reinforced the importance of
collaboration because emergency managers reported it highest among (M=3.57) their list of activities. Interview participants also articulated other reasons for the value for collaboration in hazard mitigation.

Emergency managers use collaboration to overcome their individual and organizational challenges (e.g. lack of personnel, lack of resources, and lack of knowledge); to engage stakeholders in hazard mitigation planning; and to have stakeholders perform key functions. Participants mentioned that collaboration is also important for leveraging information from subject-matter-expert stakeholders; for receiving guidance from stakeholders that are deemed to be the true leaders of local hazard mitigation planning; to build a support team comprised of stakeholders; and to delegate hazard mitigation strategy implementation tasks to hands-on stakeholders.

Emergency managers expressed having a diminished level of involvement in hazard mitigation strategy implementation. The internet survey was used to rate their limited involvement in this area (M=2.87). Moreover, the reported level of emergency managers in hazard mitigation strategy implementation did not vary across emergency management office categories. Due to the limited involvement of emergency managers in this area, stakeholder involvement is especially important during hazard mitigation strategy implementation. As communicated by interview participants, the physical implementation of structural hazard mitigation strategies is carried out by stakeholders having the hands-on expertise in these areas. Some emergency managers explained that the primary reason for their limited involvement in hazard mitigation strategy implementation is their lack of knowledge and skill in this area. Other emergency managers stated that their involvement in hazard mitigation strategy implementation only extends to inspecting project sites, verifying project completion, and updating the hazard
mitigation plan to reflect completed projects. One participant noted that their involvement entails managing the dissemination of grant funding (to appropriate stakeholders) for hazard mitigation strategy implementation. Qualitative findings suggest that the involvement of emergency managers in hazard mitigation strategy implementation extends to carrying out the administrative duties associated with this area.

Organizational Structure and Hazard Mitigation Roles

The internet survey enabled emergency managers to rate their level of involvement in various hazard mitigation activities; their involvement in the implementation of hazard mitigation strategies; and in carrying out two technical tasks associated with the hazard mitigation plan’s development—hazard analysis and Geographic Information System (GIS) mapping. In order to compare the responses of participants across the different emergency management categories, the original four office configurations were combined into the (1) integrated fire office group (formerly integrated fire/chief and integrated fire/emc) and the (2) non-fire office (formerly stand alone and integrated non-fire). Using the internet survey’s four point ordinal scale, emergency managers reported their office’s involvement in the various hazard mitigation activities and in hazard mitigation strategy implementation. Results from the independent samples t-test did not indicate a statistically significant difference in the reported level of involvement in hazard mitigation activities by respondents from the different emergency management office categories.

Some quantitative results did not match the failure of emergency managers to articulate specific hazard mitigation roles. For instance, emergency managers from the integrated fire office category did not verbalize their involvement in the fund seeker role. While descriptive
statistics were not presented for each individual emergency management office configuration, findings indicate that respondents from the integrated fire/chief (M = 2.20) and integrated fire/EMC (M = 2.25) offices have an involvement in applying for hazard mitigation grants. Additionally, emergency managers from the integrated fire/chief office did not mention their involvement in the advocator role, but used the internet survey to rate their involvement in advocating for the pursuit of hazard mitigation projects from local stakeholders (M = 2.40). Finally, stand alone office participants did not express their involvement in the advocator role during the interview, and quantitative analysis was not carried out to examine their individual involvement. However, responses to the internet demonstrate that emergency managers from stand alone offices are in fact involved (M = 3.00) in advocating for the pursuit of hazard mitigation projects from local stakeholders. A likely explanation for not mentioning the advocator role is the fire chief/emergency management coordinator and their organization is widely-recognized in the community, and unlikely to be ignored by stakeholders. This explanation may be plausible because participants from Integrated Fire offices rated the disinterested elected officials/citizens challenge as a significantly lesser obstacle for their office than participants from Integrated Fire emergency management offices. Moreover, participants from Integrated Fire offices noted that their parent agency provides them with several benefits among which include better name recognition. On the other hand, stand alone emergency management offices are fortunate enough to be in the position where their office title is not overshadowed by that of a parent agency. As suggested by Labadie (1984), a challenge for integrated emergency management offices is having their agenda usurped by that of their parent agency. Consistent with Labadie, one participant from an integrated office articulated the challenge of continually having to educate stakeholders of the importance of their office, and
having to distinguish their office’s function from that of their parent agency. However, Stand Alone offices are not subject to a parent agency and have the opportunity to establish an individual identity.

Respondents from the integrated fire office (M = 3.43) and the non-fire office (M = 3.56) reported their involvement in the initial development and continual updating of the hazard mitigation plan. As articulated by participants, the development and update of the hazard mitigation plan involves various administrative duties including researching, analyzing, verifying, document, recordkeeping, and others. Participants were also keen to report their involvement in the technical duties entailed in the hazard mitigation plan’s development.

Geographic information system (GIS) mapping and carrying out the community hazard analysis are two technical functions associated with the hazard mitigation plan’s development. McLoughlin (1985) noted that hazard mitigation strategy implementation requires, among other practices, having the technical capacity and cooperation between a diverse set of stakeholders. Qualitative findings revealed that some emergency managers frequently delegate GIS mapping duties to other stakeholders because this technical task is beyond their knowledge. However, emergency managers remain engaged and assist these stakeholders by carrying out administrative duties associated with GIS mapping (e.g. collecting and relaying hazard information). Lindell et al. (2002) concluded that Texas emergency managers are significantly less likely than local planners to carry out GIS mapping due to their inexperience in this task. However, in light of the finding by Lindell and his colleagues, data from the internet survey indicated that emergency managers are indeed engaged in the technical aspects of hazard mitigation planning, albeit in an administrative capacity—as indicated by qualitative findings. Emergency managers from the integrated fire (M = 3.14) and non-fire (M = 3.56) offices
reported their involvement in carrying out hazard analysis duties. However respondents from the integrated fire (M = 2.24) office and non-fire office (M = 2.22) reported being less involved in GIS mapping. Moreover, participants reported involvement in GIS mapping and carrying out hazard analysis function does not significantly vary by emergency management office category.

A limitation of this study was the inability to quantitatively examine the self-identified facilitator-coordinator role. As described by emergency managers, the facilitator-coordinator role is important for acquiring information from individual stakeholders and disseminating this knowledge to other entities. The facilitator-coordinator role is also useful for completing and submitting hazard mitigation grant applications, and for overseeing the implementation of hazard mitigation strategies. Finally, the Facilitator-Coordinator is integral because emergency managers—in functioning as a liaison—must bring synergy to the interaction between stakeholders. Future studies should take a closer examination of the strategies used by emergency managers to facilitate stakeholder interaction, and determine if the use of these strategies vary across emergency management offices.

Another limitation of this study was the indirect rating of collaboration. Respondents were presented with a survey question that rated their level of rapport with partner stakeholders, which was subsequently taken as an indicator of collaborative activity. As previously mentioned, emergency management literature alluded to the emergency manager’s collaborative activities and these writings helped guide the development of the collaboration-based survey question. The question was used to gauge the tenor of the relationship between emergency managers and their partner stakeholders. Survey respondents used a four point ordinal scale to rate the status of their relationship with partnering stakeholders (M=3.57) in general. However, the survey question was not framed in a manner that directly rated emergency manager’s level of rapport with individual
stakeholders, or their level of involvement in collaboration. Future research can examine collaboration by (1) measuring the number of weekly hours that emergency managers spend engaging in collaborative activity specifically for hazard mitigation planning, (2) identifying the stakeholders that emergency managers most frequently collaborate with for hazard mitigation planning and strategy implementation, and (3) examining the status of their relationship with individual stakeholders. Research of this genre may highlight the stakeholders that are most integral to local hazard mitigation planning and strategy implementation.

Organizational Characteristics Correlation with Hazard Mitigation Challenges

Correlation analyses identified significant relationships between emergency management organizational characteristics and the reported level of involvement in select hazard mitigation activities. The organizational characteristics of emergency management offices fell into three broad categories including (1) staff resource, (2) time resource, and (3) financial resource. The first significant relationship indicated that the average number of full-time employees had a positive correlation with the reported level of involvement in GIS mapping. During telephone interviews, one full-time emergency manager communicated that GIS mapping was carried out in part by their office and by another stakeholder. The majority of participants that articulated their involvement in GIS mapping stated that their duties extend to collecting, organizing, and relaying hazard history data to stakeholders that conduct the analysis. While some emergency managers remain engaged in GIS mapping, their duties are primarily in a support role, and not in the actual use of GIS software. The support duties associated with GIS mapping is seemingly carried out by emergency management office personnel of full-time employment status, and not by part-time staff or volunteer workers.
A second statistically significant positive relationship was identified between the average number of weekly hours devoted to other emergency management activities (e.g. disaster preparedness, response, and recover planning) and the reported level of involvement in seeking grants. The internet survey explicitly defined other emergency management activities as tasks associated with disaster preparedness, response, and recovery planning. As communicated during qualitative interviews, hazard mitigation planning is a secondary priority (i.e. secondary priority challenge) for a majority of emergency managers. One disclosed reason for the secondary priority of hazard mitigation is the greater importance placed on disaster preparedness and response by emergency management offices. Schneider (2002) explains that the emphasis placed on disaster response (by emergency managers) often occurs at the expense of hazard mitigation planning. Emergency managers also note that there is an abundance of federal grants available for local disaster preparedness and response planning. Participants expressed that they are more inclined to pursue such grants. On the other hand, emergency managers note that hazard mitigation grants are in short supply, provide minimal financial incentive to pursue them, and require and extensive amount of time for completion. Indeed, writing grants can be a painstaking and overwhelming undertaking (McEntire and Myers, 2004). In short, while emergency managers invest time in grant writing, their efforts are likely spent pursuing the more readily-available disaster preparedness and response grants.

In another finding, the average number of weekly hours devoted to non-emergency management activities was negatively correlated with the reported level of involvement in carrying out hazard analysis, hazard mitigation advocacy, and public outreach. This finding suggests that devoting more time to tasks unrelated to hazard mitigation diminishes the level of involvement in specific hazard mitigation activities. As previously noted, emergency managers
presented hazard mitigation as a secondary priority for their office. Therefore, the time invested in hazard analysis, hazard mitigation advocacy, and public outreach is reduced when more work hours are devoted to objectives unrelated to hazard mitigation.

Finally, a significant positive association was found between the average year 2012 budget used for hazard mitigation and the reported level of involvement in public outreach and education initiatives. One self-identified role of emergency managers was the public educator role. This role is reflected in the steps taken to educate citizens and change their apathy toward disasters (McEntire and Myers, 2004), and compel them to carry out hazard mitigation activities at the household level. The significant relationship suggests that emergency managers may have used their 2012 hazard mitigation budget for carrying out nonstructural public outreach and education hazard mitigation strategies. This finding is consistent with the results of Brody et al. (2010), which concluded that the implementation of nonstructural hazard mitigation strategies has a significant positive correlation with the availability of financial resources.

Correlation Findings for Integrated Fire Emergency Management Offices

Several significant correlations were identified between the organizational characteristics of integrated fire emergency management offices and the reported level of involvement in hazard mitigation activities. First, the number of full-time organizational employees had a positive correlation with the reported level of involvement in GIS mapping. As was previously noted, interview participants communicated their involvement in the technical functions of hazard mitigation (i.e. GIS mapping) albeit in a support and administrative role. Brody et al. (2010) find that the involvement of local planning offices in hazard mitigation is correlated with organizational staff capacity. Though centered on another type of office, the results from this
dissertation also suggests that the extent of involvement of local emergency management offices in hazard mitigation is correlated with organizational staff capacity.

For participants representing integrated fire offices, a significant positive association was also identified between the number of weekly work hours devoted to hazard mitigation planning and the reported level of involvement in hazard mitigation advocacy. In other words, it is possible that more work hours devoted to hazard mitigation bodes well for the self-identified advocator role. Or it is likely that greater involvement in mitigation advocacy allows for more time to be devoted for hazard mitigation planning. In a similar finding, a significant negative relationship emerged between the number of weekly work hours devoted to non-emergency management activities and the level of involvement in hazard mitigation advocacy. In describing the multiple duties challenge, emergency managers from integrated fire offices noted that their office oversees numerous other duties that are unrelated to emergency management and subsequently hazard mitigation planning. The various duties managed by emergency managers seemingly have negative implications for the time devoted to hazard mitigation planning. In short, while emergency managers from integrated fire offices verbalized their involvement in hazard mitigation advocacy (i.e. advocator role), their engagement in this activity relies on their ability to manage the other duties they are tasked with overseeing.

In another finding, the number of weekly hours devoted to other emergency management activities had a significant positive relationship associated with the reported level of involvement in public education/outreach and hazard mitigation strategy implementation. Qualitative findings were inconsistent with the significant relationship. Emergency managers communicated that their office is charged with managing various other duties, and these duties are frequently of greater priority and garner more focus than hazard mitigation planning. Therefore, tasks
associated with other emergency management activities (e.g. disaster preparedness and response planning) receive more attention during the work week, and were not described as being positively associated with the reported level of involvement in public education for hazard mitigation planning purposes. The likelihood exists that in rating their involvement, emergency managers did not differentiate between public outreach for hazard mitigation and public education for other hazard mitigation activities. As suggested by McEntire (2007), emergency managers (like first responders) have for too long taken a reactionary approach to disaster events. Emergency managers must make a concerted effort to devote more time to hazard mitigation planning.

Correlation Findings for Non-Fire Emergency Management Offices

For non-fire emergency management offices, two significant relationships were discovered between organizational characteristics and the reported level of involvement in hazard mitigation activities. First, there was a significant negative correlation between the number of weekly work hours devoted to hazard mitigation planning and the reported level of involvement in carrying out hazard analysis. Qualitative findings were consistent with this significant relationship because emergency managers expressed their involvement in hazard mitigation planning and associated tasks (e.g. hazard analysis). However, some technical tasks are delegated to other stakeholders that specialize in these functions, because emergency management reported their lack of knowledge in carrying out these functions.

One participant stated that local hazard analysis was performed by a consulting firm. Therefore, emergency managers maintain involvement in local hazard mitigation, but have a diminished involvement in carrying out technical tasks. Godschalk and Brower (1985) state that
the lack of expertise in conducting risk, vulnerability, and economic analyses presents a challenge for the implementation of comprehensive emergency management programs. Findings suggest that to compensate for their limited knowledge, emergency managers delegate technical functions to other stakeholders. A second statistically significant negative relationship was identified between the number of weekly work hours devoted to other emergency management activities and collaboration. Qualitative findings delineated the secondary priority challenge. In describing this challenge, emergency managers from non-fire offices noted that hazard mitigation planning is a lesser priority for their office than activities associated with disaster preparedness, response, and recovery planning. As disclosed, participants devote a lesser percentage of their work time to hazard mitigation planning and associated activities (e.g. collaboration). According to Schneider (2002), emergency management has generally been a reactionary or event-driven system. Qualitative findings from this research support this notion.

Correlation Findings for Integrated Emergency Management Offices

For integrated emergency management offices, there was a significant positive correlation between parent agency support for hazard mitigation planning and the reported level of involvement in hazard mitigation advocacy, collaboration, and GIS mapping. Emergency managers described several advantages of their integrated office configuration. One benefit is the level of autonomy provided by their parent agency. As explained by some participants, their parent agency provides them with the freedom to pursue hazard mitigation initiatives absent interference. The independence granted by their parent agency suggests that emergency managers have the discretion to focus on hazard mitigation planning and their associated GIS mapping tasks. Two other benefits gained from the integrated office arrangement, as explained,
is the ability to exploit their parent agency’s relationships and the ability to gain credibility due to their association with the parent agency. These two advantages reinforce the public educator role and advocator role because participants are able to channel the authority of their parent agency to exert influence and secure stakeholder commitment in hazard mitigation planning. A final articulated benefit is the opportunity to benefit from the authority and influence of their parent office. Labadie (1984) asserts that local emergency management offices should be situated within a high level executive’s office (e.g. mayor or city manager’s office). The legitimate authority of a top local executive is a likely reason for his position. One participant expressed the advantage of being housed in the city manager’s office—the ability of the city manager to secure the participation of other agencies in hazard mitigation planning.

In other significant findings, the level of decision-making autonomy granted by the parent agency had a significant positive correlation with the reported level of involvement in hazard mitigation advocacy, and the degree in which hazard mitigation is integrated with components of the local comprehensive plan. Lastly, a significant positive correlation emerged between the priority afforded to hazard mitigation from the parent agency and the reported level of involvement in hazard mitigation advocacy and collaboration. Interview findings help support these significant relationships. Emergency managers stated that their parent agency undertakes various actions in support of the emergency management office. One action is to assist in the recruitment of hazard mitigation partners, or to urge local stakeholders to fulfill their hazard mitigation obligations. A second action is to advocate on behalf of the emergency management office by bringing hazard mitigation proposals before the local city council. This particular action provides an opportunity for hazard mitigation proposals to be heard, voted on, and if ratified, integrated with components of the local comprehensive development plan. Another
action is to provide emergency managers with resources as needed. McEntire (2007) previously noted that integrated offices benefit from having access to the budgets (i.e. financial resource) of the parent agency. However, emergency mangers may benefit from having access to another resource of their parent agency. One participant stated that having access to the personnel resources of their parent agency was a particularly important advantage.

The actions of the parent agency helps support the involvement of integrated emergency management offices in hazard mitigation planning and strategy implementation. Labadie (1984, p. 490) explained that integrated emergency management office arrangements helps local governments save money and also “insulate emergency management from the budgetary and political infighting by tucking it away inconspicuously within the budget of a larger agency.” Findings of this research presented additional benefits for integrated emergency management offices. In short, the parent agency was found to be an asset for emergency management offices, and their involvement in hazard mitigation planning and strategy implementation.

An Explanation of Hazard Mitigation Challenges

The second objective of this dissertation was to examine the challenges encountered by emergency managers in their pursuit of hazard mitigation planning and strategy implementation, and the strategies used to overcome those challenges. Participants described five obstacles that were categorized as internal organizational challenges and two obstacles that were categorized as outside organizational challenges. The five internal organizational challenges included: funding, secondary priority, multiple duties, personnel shortage, and competency. The two outside organizational challenges included: disinterested stakeholders and bureaucracy. Qualitative results were important because they indicated the range of challenges encountered by emergency
managers during hazard mitigation planning and strategy implementation. Findings also revealed internal organizational challenges to be more prevalent than outside organizational challenges. The five internal organizational challenges were mentioned by participants from the four individual office configurations but participants from each emergency management office configuration did not voice the two outside organizational challenges.

The disinterested stakeholders challenge was not expressed by participants from the integrated fire/chief office configuration. However, emergency managers used the internet survey to rate the disinterest of two stakeholder groups. Using the internet survey’s four point ordinal scale, respondents were prompted to rate the (1) low concern for hazard mitigation by elected officials challenge and (2) the low concern for hazard mitigation by the local public challenge. Respondents from the integrated fire/chief office rated the elected official (M = 2.40) and citizen (M = 2.20) obstacles as a challenge for their office. Literature has noted the disinterested citizens or elected officials challenge in emergency management (Labadie, 1984; Perry and Mushkatel, 1984; Godschalk et al., 2003). Consistent with these writings, findings of this study presented the disinterest among two stakeholder groups to be an obstacle for both emergency management configurations. However, a novel finding is that the disinterested stakeholders challenge was a significantly smaller obstacle for Integrated fire offices than for respondents from non-fire fire emergency management offices. Interview participants provided several reasons for the lack of stakeholder interest in hazard mitigation planning, and these reasons provide the impetus for engaging in specific self-identified hazard mitigation roles.

One reason for stakeholder disinterest in hazard mitigation planning is their busy schedules. The various other duties of stakeholders keep them occupied and limit/preclude their involvement in hazard mitigation planning. A second reason is that stakeholders are not informed
about hazard mitigation planning and are not apt to engage in this activity. A study by Godchalk et al. (2003) revealed that citizens simply had no interest in examining natural hazards as a local problem or in assisting local planners with devising solutions to these problems. The lack of citizen interest may be attributed to their lack of knowledge of the hazards that threaten their community. Rigorous public education and outreach initiatives may help generate greater citizen involvement in hazard mitigation planning. The third articulated reason for stakeholder disinterest was the infrequent occurrence of local disasters that subsequently results in stakeholder disinterest or apathy. Scholars have also noted the link between community disaster history and hazard mitigation strategy implementation (Drabek, 1986; Godschalk et al., 1989). In other words, infrequent disaster occurrences result in reduced mitigation activity at the local level. A final reason for the lack of engagement in hazard mitigation planning is an overreliance on the capacity to respond to disasters and the prevalent reactive culture among first responder stakeholders. As a result of the expressed reasons, emergency managers are provided with the impetus to engage in their self-identified public educator role or advocator role. The purpose of these roles is to inform, educate, and engage stakeholders in hazard mitigation planning.

Emergency managers from the integrated fire/chief and integrated non-fire emergency management offices did not articulate the outside organizational bureaucracy challenge. As explained by participants, this challenge is a criticism of the extensive delays encountered during the Federal Emergency Management Agency’s (FEMA) review/approval of the local hazard mitigation plan or of submitted grant applications, and the continually changing federal emergency management policies and requirements. The internet survey was not constructed to specifically evaluate the bureaucracy challenge. However, results from the internet survey suggest that participants from both emergency management office groups are equally engaged in
the two roles that require their interaction with FEMA, and subsequently exposes them to the self-described bureaucracy challenge—the administrator role and fund seeker role. The administrator role encompasses the initial development and continual update of the hazard mitigation plan. The fund seeker role relates to the pursuit of grants to subsidize hazard mitigation strategy implementation. Unfortunately, the ability to reform the external organizational bureaucracy challenge is beyond the emergency manager’s span of control, and resides with state and/or federal decision-makers.

While unable to measure the outside organizational bureaucratic challenge, survey respondents from the integrated fire (M = 2.95) and non-fire (M = 2.22) office rated the lack of federal government support for local hazard mitigation planning for their office. McLoughlin (1985) posits that the federal government’s role is to provide state and local governments with support in all phases of emergency management. However, survey findings suggest that federal support is indeed lacking, and this perception does not vary across emergency management office configurations. State governments are also tasked with guiding and assisting local emergency management planning efforts (McLoughlin, 1985). Emergency managers from the integrated fire (M = 2.14) office and the non-fire office (M = 2.22) also rated the lack of state government support in hazard mitigation planning as a challenge for their office. Qualitative findings did not indicate the area(s) that state and federal government support was lacking, and this presents an opportunity for future hazard mitigation research.

Organizational Structure and Hazard Mitigation Challenges

The internet survey allowed emergency managers to rate several challenges identified in emergency management literature. Some survey questions allowed respondents to rate
challenges that were similar to the funding challenge, personnel shortage challenge, competency challenge, and disinterested stakeholders challenge. The remaining challenge-related survey questions prompted respondents to rate their competition with other local agencies for limited government resources; the local government’s preference for economic and land use development; the lack of internal technical resources; the lack of state support for local hazard mitigation planning; and the lack of federal support for local hazard mitigation planning. An independent samples t-test was used to examine the variation in challenge rating by respondents from the two emergency management office categories.

As previously mentioned, findings indicated a significant difference in the rating of the low concern for hazard mitigation by elected officials challenge and the low concern for hazard mitigation by local citizens challenge. Specifically, emergency managers from the integrated fire office group had a significantly lower rating for these challenges than participants from the non-fire office category. While collaboration is integral to local emergency management (Waugh and Streib, 2006), quantitative findings suggest that this may be of greater difficulty for emergency managers from non-fire emergency management offices because stakeholder disinterest is a significantly greater challenge for them. As a consequence, emergency managers from non-fire offices may face more difficulty in recruiting stakeholders for hazard mitigation planning. There was no statistically significant different in the rating assigned to the other hazard mitigation challenges by respondents from the two emergency management office categories, and suggests that the other obstacles may have a similar effect on emergency management offices.

Organizational Characteristic Correlation with Hazard Mitigation Challenges

Correlation analyses identified significant relationships between emergency management
organizational characteristics and the rating assigned to several hazard mitigation challenges. Though examined through quantitative analyses, some challenges did not emerge in qualitative findings. However, the significant association of these challenges with organizational characteristic variables warranted further discussion on account of their implications. First, there was a statistically significant positive correlation between the average number of office volunteer workers and the lack of federal government support for local hazard mitigation planning. A similar result emerged for the subsample of non-fire emergency management offices. These significant relationships suggest that the lack of federal support may not enable emergency managers to hire full-time or part-time staff. Emergency managers are likely referencing the lack of federal support in the form of grant funding. As noted by McEntire and Myers (2004) emergency managers seek grants to hire personnel. Therefore, the lack of federal support in the form of funding relegates emergency management offices to retain the services of volunteer staff.

Second, the average number of weekly work hours devoted to non-emergency management activities had statistically significant relationships with (1) the lack of technical resources needed for hazard mitigation planning and (2) the lack of staff knowledge in the use of technical resources. The finding suggests that the increased number of work hours devoted to hazard non-emergency management activities reduces the amount of time that emergency managers spend learning and carrying out the technical functions (GIS mapping, hazard analysis) associated with hazard mitigation planning. However, interview participants noted that these technical functions are typically delegated to other stakeholders for completion. Finally, the average year 2012 office mitigation budget had a statistically significant positive correlation with the shortage of office staff needed for carrying out hazard mitigation planning. This finding
suggests that emergency managers may not have had enough in their office budget to hire additional personnel for their office. The result proves problematic because organizational staff capacity is integral to hazard mitigation planning and strategy implementation (Godschalk et al., 1989; Brody et al., 2010).

There were significant correlations between the organizational characteristics of integrated fire emergency management offices and the rating of hazard mitigation challenges. First, a statistically significant negative correlation emerged between the number of weekly hours devoted to hazard mitigation and perception of community preference for hazard mitigation planning. A possible explanation is that emergency managers devote less work hours to hazard mitigation planning in realizing that local government preference for economic and land use development is high. Emergency managers may invest less hours in hazard mitigation planning if realizing that their efforts is likely to be met by resistance or apathy from local government officials. Second, the number of weekly hours devoted to non-emergency management activities had a significant positive correlation with the lack of staff knowledge in hazard mitigation planning. An explanation for this finding is that devoting work hours to activities outside of emergency management diminishes the time that could be spent learning about hazard mitigation planning.

Statistically significant relationships were identified for non-fire emergency management offices. First, the average number of weekly hours devoted to other emergency management activities had a significant negative correlation with the lack of familiarity with federal and state hazard mitigation guidelines. Schneider (2002) notes that other stages of the emergency management cycle have typically garnered more attention than hazard mitigation planning. As an outcome, emergency managers from non-fire offices have likely been unable to learn and gain an
understanding of federal hazard mitigation policies. In describing the competency challenge, some emergency managers from the non-fire office group noted their knowledge shortcoming with grant writing and other areas associated with hazard mitigation planning. Lastly, the average number of weekly hours devoted to non-emergency management activities had a statistically significant positive correlation with the office budget challenge. One plausible explanation is that the time spent engaged in non-emergency management activities magnifies the office budget challenge. For instance, engaging in non-emergency management activities diminishes the time that could be spent pursuing hazard mitigation grants to alleviate office budget issues. Indeed, financial resources are necessary for carrying out hazard mitigation planning efforts (Godschalk et al., 1989; Brody et al., 2010).

Correlation analyses for integrated emergency management offices resulted in multiple significant findings. First, the level of support provided by the parent agency was positively correlated with the budget challenge. Second, the level of priority assigned to hazard mitigation from the parent agency had a statistically significant positive correlation with the office budget challenge. Writings have noted some benefits of the parent agency-emergency management office organizational arrangement (Labadie, 1984; McEntire, 2007). Based on survey findings, it appears that parent agencies provide support in ways outside of funding. As explained by some emergency managers, support from their parent agency (for hazard mitigation causes) is received in other avenues (e.g. access to personnel resources, enhanced name credibility, parent agency advocacy, or parent agency relationships).

Strategies for Overcoming Hazard Mitigation Challenges

Emergency managers described four strategies used for overcoming hazard mitigation
challenges. Two strategies are engaging in the collaborator role and fund seeker role. As explained by emergency managers, collaboration is used to overcome the internal organizational competency challenge, personnel shortage challenge, and multiple duties challenge. As a strategy, collaboration allows participants to engage subject-matter-expert stakeholders in hazard mitigation planning, and allows them to overcome the multifaceted and complex area of emergency management planning (Waugh and Streib, 2006). Indeed, there are various additional stakeholders for emergency managers to share the workload (McEntire, 2007). In order to alleviate their challenges, emergency managers should invest more time and effort in engaging other actors in hazard mitigation planning (McEntire, 2007). On the other hand, the fund seeker role is important for dealing with another hazard mitigation challenge.

Emergency managers pursue grants to overcome the internal organizational funding challenge. Brody et al. (2010) notes the importance of financial resources for implementing hazard mitigation strategies. Emergency managers explained the use of two approaches for pursuing hazard mitigation funding. First, the proactive approach to pursuing grants is carried out before a hazard event and aligns with the traditional definition of hazard mitigation planning. The second reactive approach relies on a disaster occurring within the state to make post-disaster hazard mitigation funds available. While this study did not explicitly examine these two contrasting approaches for pursuing hazard mitigation funds, future studies can examine both approaches and reveal the one that is most frequently used by emergency managers, or to indicate the approach that yields greater grant acquisition success for practitioners.

The two other strategies used for overcoming challenges are the persistence strategy and the combination strategy. The persistence strategy represents emergency manager’s commitment to long term hazard mitigation goals, and their continued efforts to secure stakeholder buy-in for
hazard mitigation planning—through education and outreach practices. The persistence strategy denotes staying the course when faced with a myriad of hazard mitigation challenges. In short, this strategy warrants dedication from emergency managers. The combination strategy is useful for facilitating the implementation of hazard mitigation strategies.

Godschalk et al. (2003) suggests that hazard mitigation strategies be combined or integrated with elements of the local comprehensive plan to ensure that hazard concerns are factored into future community growth and development. Moreover, the combination strategy can be used to offset the price tag associated with implementing stand-alone hazard mitigation strategies. As stated by Godschalk et al. (1989), the implementation of structural hazard mitigation strategies can create expenses for local governments. As communicated by interview participants, local capital improvement projects present an ideal opportunity for using the combination strategy to usher in the implementation of hazard mitigation initiatives. The internet survey was also used to further examine the combination strategy by prompting respondents to rate their level of involvement in integrating hazard mitigation planning with components of the local comprehensive plan. Emergency managers from the integrated fire office (M = 3.24) and non-fire office (M = 3.44) rated their involvement in this practice. Findings from the independent samples t-test indicated that there was no statistically significant difference in the use of this strategy by respondents from the two emergency management office categories. In short, findings reveal that emergency managers are using the combination strategy to facilitate the implementation of hazard mitigation initiatives, and the use of this strategy does not vary across emergency management office categories.
Emergency Managers Perception of Hazard Mitigation Success

The third objective of this study was to examine hazard mitigation success as perceived by emergency managers. Specifically, this research attempts to arrive at a qualitative-based definition of hazard mitigation success. A study by Godschalk et al. (2009) proposed a methodology that captured both the quantitative and qualitative benefits of natural hazard mitigation. In interviewing multiple local mitigation planners and policy makers, Godschalk and his colleagues found that interviewees “believed that the benefits of mitigation projects and processes went beyond what could be measured quantitatively to include increased awareness, espirit de corps, and peace of mind” (p.747). Findings from this dissertation are important because they also present several qualitative indicators of hazard mitigation success. Emergency managers described two broad categories of hazard mitigation success, and each category is marked by specific indicators.

The first hazard mitigation success indicator was categorized as tangible, and is marked by the implementation of hazard mitigation strategies which subsequently leads to a reduction in the number of measurable/observed losses resulting from a hazard event. As explained by interview participants, tangible indicators are represented by a decrease in the number of post-disaster insurance claims or a decrease in post-disaster financial losses (in comparison to previous events). The two indicators are similar to the benefit-cost analysis (BCA) of Rose et al. (2007) in that both are predicated on financial estimates. Tangible indicators have also been used by the federal government to measure emergency management effectiveness. Waugh and Strieb (2006) note that in the 1980s, FEMA measured outputs in terms of the number of dollars spent in administered disaster assistance. They go on to state that in the 1990s FEMA gauged its effectiveness by measuring the number of lives saved, a reduction in post-disaster property loss
estimates, and the level of customer satisfaction. Tangible indicators have been consistently referenced in emergency management, and study participants also subscribe to these measures. The second hazard mitigation success indicator distinctly varies from tangible measures. Unlike tangible measures, intangible indicators do not directly prevent or lessen the disaster’s impact. However, emergency managers recognize these indicators as measures of hazard mitigation success because they signal advancements in local hazard mitigation planning. First, participants note that securing stakeholder involvement in hazard mitigation planning is a measure of success. Hence, the persistence exhibited by emergency managers is useful for eventually garnering stakeholder involvement local hazard mitigation planning. This indicator is also indicative of the value that emergency managers assign to stakeholder involvement in hazard mitigation planning. Another indicator of success is the praise received from local citizens (i.e. customer satisfaction) for completed hazard mitigation actions. This is similar to the customer satisfaction measure used by FEMA in the 1990s (Waugh and Strieb, 2006). Lastly, initiating the development of the local hazard mitigation plan was an articulated indicator of hazard mitigation success.

Organizational Arrangement and Perception of Hazard Mitigation Success

The internet survey allowed emergency managers to rate their perceptions in three areas of hazard mitigation success. First, survey respondents from the integrated fire office (M = 3.14) and non-fire office (M=3.56) rated their office’s level of success in hazard mitigation planning. Second, respondents from the integrated fire office (M = 2.71) and non-fire office (M = 3.22) rated the success of their office in hazard mitigation strategy implementation. Finally, emergency managers from the integrated fire office (M = 2.76) and non-fire office (M = 2.89) rated the
overall success of their office in reducing community risk exposure. Findings from the Independent samples $t$-test indicate that there is no statistically significant difference in the rating assigned to each success measure by participants from the two emergency management office categories.

In general, participants from the two emergency management office groups had similar perceptions of their office’s success in hazard mitigation planning, hazard mitigation strategy implementation, and effectiveness at reducing community hazard risk. This finding is cogent because emergency managers from the different organizations, in using the internet survey, rated a similar level of involvement (i.e. give similar effort) in the different hazard mitigation activities. Another way of saying this is that similar levels of involvement across emergency management offices potentially yield similar outlooks of hazard mitigation success. However, caution must be exercised in interpreting this finding because while perceptions of hazard mitigation success may be comparable across emergency management office categories, disaster outcomes may demonstrate otherwise.

One final survey question required emergency managers to rate the ease and/or difficulty of accomplishing hazard mitigation objectives in light of the challenges faced. Participants from the non-fire ($M = 3.11$) and integrated fire ($M = 2.95$) rated their office’s ability to accomplish their hazard mitigation goals. Findings from the independent samples $t$-test did not indicate a statistically significant difference in the perceived ease and/or difficulty of overcoming challenges in light of the challenges faced. Results from quantitative analyses suggest that the articulated strategies (i.e. collaboration, persistence, seeking grants, combination strategy) used for overcoming challenges are effective. Findings did not indicate the strategy that is most
effective for achieving hazard mitigation success, and this leaves open an opportunity for future emergency management research.

Correlation analyses for the sample of survey respondents indicated a statistically significant positive correlation between the average number of weekly hours devoted to hazard mitigation planning and the perceived ease and/or of accomplishing hazard mitigation objectives in light of the challenges faced. Findings suggest that accomplishment of hazard mitigation objectives is predicated on devoting sufficient time to hazard mitigation planning duties. However, for integrated fire offices, a significant negative correlation was identified between the average number of part-time staff and the perceived ease and/or difficulty of achieving hazard mitigation objectives in light of the challenges faced. Labadie (1984) claims that part-time emergency managers may find it difficult to gain credibility with local stakeholders. Quantitative findings suggest that part-time emergency managers may also find it difficult to accomplish their hazard mitigation objectives.

Correlation Findings - Organizational Characteristics and Hazard Mitigation Success

One organizational characteristic was found to have significant correlations with hazard mitigation success measures. Specifically, the time resource characteristic had significant relationship with measures of hazard mitigation success. For the sample of survey respondents, the average number of weekly hours devoted to non-emergency management activities had a significant negative correlation with the perceived effectiveness in reducing community risk to hazards, and perceived success in hazard mitigation strategy implementation. For non-fire offices, the time invested in non-emergency management activities had a significant negative correlation with community disaster risk reduction. Also, for the group of integrated fire office
respondents, the average number of weekly hours devoted to non-emergency management activities had a statistically significant negative relationship with the reported level of success in hazard mitigation strategy implementation and the perceived level of success in reducing community risk to hazards. Findings from the correlation analyses suggests that the work hours devoted to activities unrelated to hazard mitigation has negative implications for hazard mitigation success measures. Indeed, devoting time to activities in other areas of the emergency management cycle has traditionally occurred at the detriment of hazard mitigation planning (Schneider, 2002). Brody et al. (2010) notes that organizational staff capacity is significantly correlated with the implementation of structural and nonstructural hazard mitigation strategies. However, findings from this research suggest that hazard mitigation strategy implementation may be jeopardized should emergency management office staff not have sufficient work time to carry out their relevant duties.

Correlation analyses for the subsample of integrated fire offices indicated that the average number of weekly hours devoted to other emergency management activities had a statistically significant correlation with the perceived level of success in reducing community risk exposure. However, this finding was inconsistent with qualitative results. The multiple duties (i.e. multiple duties challenge) carried out by emergency managers was described as being an obstacle for hazard mitigation planning and strategy implementation.

Conclusion

This study used an expanded version of Labadie’s (1984) organizational niche framework to examine the current status of hazard mitigation in emergency management through the lens of four emergency management office configurations. Specifically, the expanded framework was
used to examine the roles of emergency managers in hazard mitigation planning, and their perceptions regarding the roles of stakeholders in this area; the challenges that emergency managers are confronted with in pursuing hazard mitigation planning and the strategies used to overcome those challenges; and the perception of emergency managers regarding hazard mitigation success. The findings of this study provided new insight into hazard mitigation planning and strategy implementation.

First, emergency managers described having six broad roles in hazard mitigation planning and strategy implementation. These roles included the administrator role, collaborator role, fund seeker role, advocator role, public educator role, and the facilitator-coordinator role. Consistent with other emergency management literature, findings of this research indicated that their collaborator role is central to hazard mitigation planning and strategy implementation. Emergency managers also articulated the valuable function of stakeholders which include serving as the true leaders of hazard mitigation planning, subject-matter-experts, and hands-on specialists. Emergency managers also carry out various activities associated with hazard mitigation planning and strategy implementation. Based on quantitative findings, emergency manager’s reported level of involvement in these activities does not vary across emergency management office configurations. Additionally, the organizational characteristics of emergency management offices is associated with emergency manager’s involvement in select hazard mitigation activities. Emergency managers also encounter different challenges in hazard mitigation planning and strategy implementation while undertaking their roles.

There were seven described challenges in hazard mitigation planning and strategy implementation. Five obstacles were categorized as internal organizational challenges and two obstacles were categorized as outside organizational challenges. Survey respondents also rated
various hazard mitigation-related challenges. The various internal organizational challenges were given similar ratings by emergency managers from the different organizational configurations. However, a different result emerged for one particular outside organizational challenge. The disinterested stakeholders challenge was rated as a more significant obstacle by survey respondents from the non-fire office category. This finding suggests that emergency managers from the non-fire office group may encounter more difficulty in their attempts to engage stakeholders in hazard mitigation planning. Also, quantitative findings indicated significant relationships between emergency management organizational characteristics and the rating assigned to some hazard mitigation challenges. Emergency managers reported the use of different strategies to overcome hazard mitigation challenges.

Two strategies used for overcoming hazard mitigation challenges included (1) engaging in collaboration and (2) pursuing hazard mitigation grants to alleviate the funding obstacle. Emergency managers from the different office configurations reported a similar level of involvement in these two areas. The other two strategies entail remaining persistent (i.e. persistence strategy) and committed to hazard mitigation goals (despite challenges), and combining (i.e. combination strategy) hazard mitigation initiatives with local capital improvement projects to facilitate their implementation. The persistence strategy was not examined quantitatively, but emergency managers from the different office categories provided a similar rating for the combination strategy. The ability to utilize these strategies has implications for achieving hazard mitigation success.

Emergency managers described two broad categories of hazard mitigation success. One category is categorized as tangible measures and the second category is categorized as intangible measures. While each category is comprised of distinct indicators, they both represent progress
in community hazard mitigation planning and strategy implementation, and improvements in community disaster resiliency. As determined through survey results, emergency managers from the different office categories have a similar outlook regarding their office’s success in hazard mitigation planning; success in hazard mitigation strategy implementation; and success in reducing their community’s hazard risk. For integrated emergency management offices, the parent agency was found to be an asset for achieving hazard mitigation objectives.
CHAPTER 8
CONCLUSION

Introduction

This dissertation set out to examine the current status of hazard mitigation in local emergency management from the under-examined perspective of the emergency manager. The research was guided by three questions: (1) What is the role of the local emergency management office in hazard mitigation and what is the function of other stakeholders as perceived by local emergency managers? (2) What are the challenges to achieving hazard mitigation objectives and what are the strategies used to overcome them? and (3) How do local emergency managers define hazard mitigation success?

To answer each research question, thirty North Central Texas emergency management coordinators were recruited for participation in this study. Data was collected through telephone interviews and an internet survey. A mixed methodology was used to analyze and triangulate data obtained with the two collection instruments. Qualitative analyses consisted of inductive grounded theory, and quantitative data analyses consisted of independent samples t-test analyses, correlation analyses, and chi-square analyses.

Qualitative findings revealed emergency managers as having six self-identified roles in hazard mitigation planning and strategy implementation. These roles included the (1) administrator role, (2) collaborator role, (3) facilitator-coordinator role, (4) fund seeker role, (5) advocator role, and (6) public educator role. Each self-identified role is crucial to accomplishing hazard mitigation outcomes. Qualitative analyses revealed the six roles to be interconnected with the collaborator role at the core of their interaction. In other words, the practice of each self-identified role warrants some degree of collaboration. Consistent with other writings, findings of
this dissertation suggest the necessity of collaboration in emergency management, and in particular hazard mitigation. Emergency managers from all organizational arrangements expressed their involvement in all roles except the fund seeker role and advocator role. However, results from the internet survey revealed that respondents from all office configurations were indeed involved in activities suggestive of the various self-identified roles.

The internet survey allowed respondents to rate their involvement in eight hazard mitigation activities. Some activities were similar to the administrator, advocator, collaborator, fund-seeker, and public educator role. Quantitative analyses indicated that there is no statistically significant difference in the reported level of involvement in the different hazard mitigation activities by emergency managers from the different office categories. This suggests that involvement in the roles related to hazard mitigation generally were consistent across all organizational arrangements. It seems that the nature of the job and roles that emergency managers take on in pursuit of hazard mitigation are the same across the organization structures. However, as found in the dissertation, some characteristics of emergency management offices of different organization arrangements are associated with their extent of involvement in different hazard mitigation activities. For example, the average number of weekly ours devoted to other emergency management activities generally had a significant positive correlation with the reported level of involvement in pursuing grants. For integrated fire emergency management offices, the average number of weekly hours devoted to other emergency management activities had a significant negative correlation with the reported level of involvement in public outreach, and a significant positive correlation with the reported level of involvement in hazard mitigation strategy implementation. Finally, for non-fire emergency management offices, the reported involvement in other emergency management activities had a significant negative correlation
with collaboration. Regardless of their office’s organizational configuration, emergency managers responsible for mitigation must manage their time, and effectively balance their various work duties to ensure that their involvement in hazard mitigation planning is not adversely affected. Lastly, emergency managers must identify strategies to effectively manage hazard mitigation planning, along with the various other duties carried out by their office.

Study participants described a total of seven hazard mitigation-related challenges that affect their office. Five of these obstacles were categorized as internal organizational challenges and included the (1) funding challenge, (2) secondary priority challenge, (3) multiple duties challenge, (4) personnel shortage challenge, and (5) competency challenge. Two obstacles were categorized as outside organizational challenges and included the (7) disinterested stakeholders challenge and the (8) bureaucracy challenge. Participants from the four emergency management office categories articulated being affected by the five internal organizational challenges. However, participants did not unanimously express the outside organizational bureaucracy challenge and disinterested stakeholder challenge.

While unable to examine the bureaucratic challenge through quantitative analyses, findings from the internet survey indicated that emergency managers from all office categories were indeed confronted with the disinterested stakeholders challenge. As explained by some participants, stakeholder disinterest in hazard mitigation planning is a result of their busy schedules, lack of knowledge regarding hazard mitigation, the lack of community disaster history, or their overreliance on the capacity to respond. A key finding was that the disinterested stakeholders challenge is a significantly smaller obstacle for emergency managers belonging to the integrated fire/chief and integrated fire/EMC office. Therefore, in order to overcome this challenge, emergency managers from the stand alone and integrated non-fire emergency
management office must work hard to encourage and secure stakeholder involvement in hazard mitigation planning. Additional quantitative findings suggest that the time resource organizational characteristic had statistically significant correlations with the rating assigned to select hazard mitigation challenges. The inability of emergency managers to effectively manage their multiple duties exacerbates the different challenges they are confronted with.

Emergency managers from integrated emergency management offices also articulated two challenges resulting from their organizational structure. These challenges include role conflict and having to distinguish their function from that of their parent agency. Specifically, the role conflict extends to performing various job functions that compete with and diminish the level of involvement in hazard mitigation planning and strategy implementation. The challenge of having to distinguish their function also has implications for hazard mitigation planning. Emergency managers must convince stakeholders that their responsibility extends beyond the familiar duties of the parent agency, and promote their hazard mitigation duty as a legitimate matter.

However, participants articulated several benefits as a result of their integrated emergency management office structure. Some benefits include having access to their parent agency’s personnel resources; making use of their parent agency’s relationships; gaining name credibility as a result of their association with the parent agency; and the parent agency advocating on the emergency management office’s behalf. Quantitative findings also presented the parent agency’s involvement as being significantly correlated with select hazard mitigation success measures. In short, the benefits resulting from the integrated office configuration seem to outnumber the challenges presented by this organizational structure. Hence, this arrangement is
viewed as an asset to emergency management offices and for local hazard mitigation planning efforts.

Emergency managers described four strategies used for overcoming hazard mitigation challenges. Two strategies were the persistence and combination strategy. The persistence strategy suggests remaining committed to hazard mitigation planning despite the continuous challenges encountered. The combination strategy promotes using capital improvement or comprehensive development projects to facilitate the implementation of hazard mitigation strategies. The other two strategies were reflective of the collaborator role and the fund seeker role. Independent samples $t$-test analysis determined that the reported level of involvement in these two roles did not vary across the different emergency management office categories.

Lastly, emergency managers expressed two indicators of hazard mitigation success. The first indicator was categorized as tangible and is marked by actions that directly contribute to preventing or lessening the impact of a hazard event. Tangible indicators are predicated on physical, measurable, and discernible outcomes and include the implementation of hazard mitigation projects or a decrease in the number of post-disaster financial losses (in comparison to previous events). The second indicator of hazard mitigation success was categorized as intangible indicators. Intangible are less discernible but, as articulated by emergency managers, are a representation of hazard mitigation success. These indicators are represented by citizen satisfaction for local hazard mitigation planning, or improving stakeholder outlook toward hazard mitigation planning. Both indicators of success reflect advancements in local hazard mitigation planning and strategy implementation.

Quantitative findings indicated that participants from the different organizational arrangements shared similar perceptions of their office’s success in hazard mitigation planning,
hazard mitigation strategy implementation, and effectiveness at reducing community hazard risk. In short, emergency managers from the different organizational categories are similar in their reported levels of success. Findings also generated key outcomes regarding hazard mitigation success. First, emergency managers of part-time employment status may find it more difficult to achieve their hazard mitigation objectives. This may be a reflection of the limited time available (due to part-time hours) for investing in local hazard mitigation planning. Second, devoting additional work hours to unrelated activities does not fare well for attaining success in hazard mitigation planning. In conclusion, the multiple duties carried out by emergency managers, coupled with the extensive work hours invested in other areas, does not lend to success in hazard mitigation planning and strategy implementation.

Theoretical Implications

This dissertation advanced knowledge and theory in emergency management by expanding Labadie’s (1984) organizational niche framework, and providing a more detailed breakdown of emergency management office structures that included the stand alone office, integrated non-fire office, integrated fire/chief office, and the integrated fire/emergency management coordinator (EMC) office. The expanded framework indicated that integrated emergency management offices are housed in a variety of parent agencies including the fire department, police department, city manager’s office, sheriff’s department, and others. Findings also indicated that the integrated emergency management office arrangement pose some challenges for emergency management offices. However, there are more benefits than challenges generated from the parent agency-emergency management office configuration. The expanded
organizational structure framework was used to examine the status of hazard mitigation in emergency management.

Findings from the analyses contributed to emergency management scholarship in several ways. First, findings presented insight into the important roles of emergency managers and their partner stakeholders in hazard mitigation planning and strategy implementation, and the discovery that the reported level of involvement in hazard mitigation activities does not vary by emergency management office category. Second, this dissertation provided a synthesis of the challenges that emergency managers are confronted with in hazard mitigation planning and strategy implementation, and the strategies used to overcome these impediments. Third, this research introduced qualitative-based indicators of hazard mitigation success that was crafted from the perception of practicing emergency managers. Finally, quantitative analyses indicated the different significant relationships between emergency management organizational characteristics and variables representing the study’s three key areas (i.e. roles, challenges, and success). The aforementioned findings provided valuable insight into the current status of hazard mitigation planning in emergency management.

Research Limitations and Future Research Directions

This dissertation has several limitations. First, the researcher was unable to verify the accuracy of the number of public sector emergency management offices in the North Central Texas region. In speaking with a representative from the North Central Texas Council of Governments (NCTCOG), the researcher was provided with an estimated number of public sector emergency management offices in the region. Additionally, the cumulative study sample of N=30 emergency managers contained three stand-alone emergency management office
practitioners that participated in the interview and two participants that completed the internet survey. The overall sample size also imposed restrictions on the study’s research design. The limited sample size did not allow for the use of more intricate methods of quantitative data analysis. Correlation analysis indicated important significant relationships between emergency management organizational statistics and variables representative of the study’s three key areas (i.e. roles, challenges, and success). While correlation analysis revealed significant associations, the causation between organizational statistics and variables representing the three key areas was not determined. A future study should be carried out with a more robust sample size that would allow for the use of regression analysis, or other advanced quantitative analysis methods. For instance, findings indicated that emergency management offices are generally understaffed, confronted by the multiple duties challenge, and devote less time to hazard mitigation planning than to activities associated with other stages of the emergency management cycle. However, emergency managers used the internet survey to provide a favorable rating for the various hazard mitigation activity and success measures. Future research can examine the causal relationship between organizational characteristic variables (e.g. time resource or average office staff) and hazard mitigation success measures. Additionally, further studies should examine whether the favorable rating reflect indicators of activities or success not captured in the research literature. Because emergency managers noted they had a high degree of success in hazard mitigation but reported engagement in activities and specific successes to a lesser extent, there may be additional activities that emergency managers undergo that are not noted in the existing literature. Future studies should also recruit additional stand-alone office participants to better understand this office arrangement.
The second limitation is in the area of study. This research was confined to the North Central Texas region and findings provided a picture of hazard mitigation planning for this geographic area. Therefore, caution should be used when attempting to extend these findings to other regions. Expanding the area of study may reveal different or alternative emergency management office configurations. Also, additional roles, challenges, and success indicators not expressed or experienced by participants in this study may exist in other locations. Future research examining roles, challenges, and perceptions of success should be carried out in a different study area in order to test whether the findings of this research are generalizable to other areas as well as extend further knowledge in hazard mitigation planning.

Future studies can also build upon this research by thoroughly examining the collaborator role. Consistent with other writings, this research presented collaboration as being central to emergency management. Further examination of collaboration will entail examining the average work time spent interacting with stakeholders for hazard mitigation planning; examining the stakeholders that emergency managers most frequently collaborate with for hazard mitigation planning purposes; examining emergency manager’s level of rapport with individual stakeholders; and delineating the stakeholders that are most integral to hazard mitigation planning and strategy implementation.

Lastly, future research can take a closer examination of the parent agency’s participation in hazard mitigation planning and strategy implementation. As explained by emergency managers, the parent agency is important to their efforts in hazard mitigation planning. Research can examine the characteristics (e.g. title, mission area, length of existence etc.) of the parent agency that most greatly contribute to success in hazard mitigation planning and strategy implementation. Also, research can determine the parent agency-emergency management office
configuration that is most optimal for success in hazard mitigation planning and strategy implementation.

Implications for Emergency Management Practice

The findings of this dissertation present some implications for emergency management practice. First, the collaborator role is central to hazard mitigation planning and strategy implementation. This finding has been presented in existing emergency management literature, and was also revealed in this study. To attain success in hazard mitigation planning, emergency managers must learn and cultivate the skills that are essential to teamwork, partnership building, and idea-sharing. Also, emergency managers must devise strategies for recruiting, engaging, inspiring, motivating, and retaining the involvement of stakeholders—whose participation is integral—in hazard mitigation planning and strategy implementation. In short, emergency managers must become adept at building and sustaining coalitions.

Second, the disinterested stakeholder challenge was a significantly smaller obstacle for participants from integrated fire offices. Emergency managers from non-fire offices can learn from the practices of their integrated fire office counterparts, and determine the factors that are integral to securing and maintaining the involvement of stakeholders in hazard mitigation planning and strategy implementation. In other words, examining the operations of Integrated Fire emergency management offices may generate best practices in hazard mitigation planning and strategy implementation.

Finally, emergency managers expressed their displeasure with the Federal Emergency Management Agency’s (FEMA) procedures for reviewing the local hazard mitigation plan and hazard mitigation grant applications (i.e. bureaucratic challenge). Also, emergency managers
from all office configurations rated the state/federal government’s lack of support in hazard mitigation planning as a challenge for their office. Emergency management officials at the state and federal levels of government should reevaluate their processes with intentions of modifying their current practices, or instituting new mechanisms to simplify/streamline their grant application process. An effort must also be made to solicit input from local emergency management practitioners to refine those processes. Strengthening or finding new means for federal and state agencies in supporting and facilitating the planning and grant submission process could be one avenue towards enhancing mitigation practices in local communities.

Conclusion

This research used an expanded organizational structure framework to examine the current status of hazard mitigation in emergency management from the perspective of North Central Texas emergency management practitioners. Findings indicated that emergency managers from the different emergency management office categories have six self-identified roles in hazard mitigation planning and strategy implementation, and have a similar reported level of involvement in their various hazard mitigation-related activities. Second, emergency managers articulated five internal organizational challenges and two outside organizational challenges that confront their office during the pursuit of hazard mitigation planning and strategy implementation, and rated the severity of several other challenges. The disinterested stakeholders challenge was a significantly smaller obstacle for emergency managers from the integrated fire office configuration. Four strategies were articulated for overcoming the range of hazard mitigation challenges, and the use of these strategies has implications for achieving hazard mitigation success. There were two broad categories of hazard mitigation success described by
emergency managers. The first category is categorized as tangible success and the second category is categorized as intangible success. Emergency managers from the different office configurations also have a similar perception of their office’s success in hazard mitigation planning, hazard mitigation strategy implementation, and in reducing their community’s hazard risk.

The organizational characteristics of emergency management offices had significant relationships with their reported level of involvement in select hazard mitigation activities; the rating assigned to select hazard mitigation challenges; and the rating assigned to select hazard mitigation success measures. For integrated emergency management offices, parent agency indicator variables had a significant correlation with the rating assigned to select hazard mitigation success measures. Fortunately, the involvement of emergency managers in hazard mitigation planning and strategy implementation signals their attempts to improve community disaster resiliency.

Finally, this dissertation set out to provide an overview of the current status of hazard mitigation in emergency management from the perspective of emergency managers. It is apparent that emergency managers are knowledgeable about hazard mitigation and are invested in carrying out the different tasks associated with this area. For instance, emergency managers spoke cogently regarding their aspirations to generate outcomes that are aligned with the traditional definition of hazard mitigation—sustained action taken to lessen or prevent the risk to hazards. However, through no fault of their own, it appears that the hazard mitigation-related activity level of emergency managers does not parallel their noble intentions.

In general, emergency management offices of all configurations are understaffed; are entrusted to carry out multiple duties both related and unrelated to hazard mitigation planning;
and are confronted with a range of challenges. The aforementioned factors pose implications for the hazard mitigation activity efforts of emergency managers. It was indicated that a greater amount of work time is invested in carrying out activities associated with the other stages of the emergency management cycle—most notably preparedness and response planning—than in hazard mitigation planning because such activities are less time-consuming, and were generally deemed to be more important. In closing, although hazard mitigation has indeed garnered attention from regional emergency managers, additional steps must be taken to promote its importance.
APPENDIX A

INSTITUTIONAL REVIEW BOARD STUDY APPROVAL LETTER
September 30, 2013

Supervising Investigator: Dr. Laura Siebeneck
Student Investigator: Candice Samuel
Department of Public Administration
University of North Texas

Re: Human Subjects Application No. 13438

Dear Dr. Siebeneck:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled "Roles, Challenges, and Successful Outcomes: An Exploration of the Current Status of Hazard Mitigation in Local Emergency Management." The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol is thereby approved for the use of human subjects in this study. Federal Policy 45 CFR 46.109(c) stipulates that IRB approval is for one year only, September 30, 2013 to September 29, 2014.

When building your online consent notice, please copy the text exactly as it appears on the version approved by the IRB.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. The IRB must also review this project prior to any modifications. If continuing review is not granted before September 29, 2014, IRB approval of this research expires on that date.

Please contact Sheila Bourns, Research Compliance Analyst, or Boyd Herndon, Director of Research Compliance, at extension 3940, if you wish to make changes or need additional information.

Sincerely,

Patricia L. Kaminski, Ph.D.
Associate Professor
Department of Psychology
Chair, Institutional Review Board

UNIVERSITY OF NORTH TEXAS
1155 Union Circle #305300
Denton, Texas 76203-5017
940.565.3940 940.565.4277 fax http://research.unt.edu
APPENDIX B
DATA COLLECTION QUESTIONNAIRES
I am going to begin by asking a few short questions about your agency.

1. Is your local emergency management office a stand-alone agency or an integrated department located within a larger officer (e.g. mayor’s office, fire department, police department, planning department, other?)

* A stand-alone emergency management office operates autonomously from any other agency while an integrated department is located within a larger line agency (fire department, police department, mayor’s office etc.)

___ Stand Alone     ____ Integrated Department

1a. If an Integrated Department, what line agency is the emergency management department located within?

___ Not Applicable (Stand-alone agency) _____ Mayor’s Office _____ Police Dept. _____ Fire Dept.

_____ County Emergency Management Office _____ County Judge Office _____ Other (please specify)_____

MITIGATION ROLES

I am going to ask you a few short questions about local hazard mitigation planning.

2. Does your community have an approved hazard mitigation plan?

   Approved: ___ Yes ___ No

   2a. If no, why does your community not have a hazard mitigation plan?

3. If yes, is your plan a single or multi-jurisdictional plan? Please mark to indicate. ___ Single  ____ Multi-jurisdictional

4. How often has your existing hazard mitigation plan been updated in the last 10 years? ______
5. In terms of local hazard mitigation planning, what is your office’s role in the development of the hazard mitigation action plan?

6. What key stakeholders do you work with in local hazard mitigation planning and strategy implementation?

6a. What are the roles of these key stakeholders in the areas of local hazard mitigation planning and strategy implementation (leading or supporting)?

Now I am going to ask you a few short questions about hazard mitigation strategy implementation.

7. In terms of hazard mitigation strategy implementation, what is your office’s role in this area?

8. If involved in local hazard mitigation planning and implementation, what do you perceive to be the greatest contributors (e.g. resources) to your office’s involvement in hazard mitigation strategy implementation and successful accomplishment of goals?

Challenges

Now I am going to ask you questions about hazard mitigation challenges.

9. What are the challenges faced by your office in pursuing hazard mitigation objectives?

9a. How do you overcome these challenges?

10. If not involved in local hazard mitigation planning and strategy implementation, what do you perceive to be the greatest challenges which hinders your office’s ability to become involved in local hazard mitigation planning and strategy implementation?

11. (If applicable) Do you believe that your parent agency hinders or contributes to your office’s activeness in local hazard mitigation activities? In what way?

12. What do you perceive to be the future outlook of your office’s ability accomplish hazard mitigation goals in light of the challenges encountered?

12a. Where is hazard mitigation headed in your community (i.e. future outlook)?

Grants

Next, I would like to ask some questions about grants

13. Have you applied for any mitigation-related grants? If so, what specific grants have you applied for?

14. (If successful in obtaining grants): What do you feel has contributed to your office’s success in acquiring grants?
15. (If not pursued grants) What do you feel has hindered your office’s pursuit of grants?

16. What type(s) of local mitigation projects have grants obtained been used to implement?

SUCCESS AND HAZARD MITIGATION PRIORITIZATION

Lastly, I would like to ask a few questions about mitigation successes and your views on the future of mitigation in your community.

17. What do you feel are some indicators of hazard mitigation success in your community? Why?

18. What do you think facilitates and/or hinders your office’s success in hazard mitigation (resources, external support etc.)?

19. From your perspective, is hazard mitigation in your office more or less of a priority than disaster preparedness, response, and recovery planning? Why?

19a. Please explain your office’s priorities as a whole.

20. With comparison to other office objectives (preparedness, response etc.), do you feel that your office has enough time in general to devote specifically towards hazard mitigation activities?

Thank you for your participation in this telephone interview.

As a follow-up to this interview would you be willing to participate in a 10-15 minute online survey?  ____Yes  ____No
2013 Hazard Mitigation Survey
Internet Version
Department of Public Administration
The University of North Texas

RESPONDENT CHARACTERISTICS

1. Please mark to indicate all job title(s) currently held: ___ Mayor ___ Police Chief ___ Fire Chief/Marshall ___ Planner ___ Local Emergency Manager/Coordinator ___ County Emergency Manager ___ Other Position If Other, please specify: _______________________________________

2. On average, how many hours in your work week is devoted to: ______ Hazard Mitigation Activities ______ Other Emergency Management Activities ______ Non-Emergency Management-Related Activities

*Other emergency management activities relate to activities involving the preparedness, response, and recovery stages of the comprehensive emergency management cycle.

3. How many years have you held your current emergency management title? _____________

4. How many years of experience do you have in the emergency management profession? ________

5. Please mark to indicate your highest level of education.
1. ___ High School 2. ___ Some College 3. ___ Associates Degree 4. ___ Bachelors Degree 5. ___ Masters Degree 6. ___ PhD ___ Other(s) If Other(s) please indicate: ______________________

6. Please mark to indicate any professional emergency management-related certificates that you hold:
   ___ None ___ Certified Emergency Manager (CEM) ___ Associate Emergency Manager Certificate ___ Certified Floodplain Manager (CFM) ___ Certified Business Continuity Professional ___ Homeland Security Exercise and Evaluation Program ___ American Institute of Certified Planners ___ Fire Academy Graduate ___ Police Academy Graduate ___ Other(s) (specify): ______________________

7. Please indicate any previous professional background experience prior to taking on your current emergency management role.
   ___ None (college graduate) ___ Ex-Military ___ Law Enforcement ___ Fire Department ___ County Judge ___ Private Sector ___ Other (specify): ______________________

8. How many years were you in your previous position? ____
### COMMUNITY CHARACTERISTICS

9. To what extent do you perceive the following hazards to be a threat to your community?

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Not a threat</th>
<th>Minor Threat</th>
<th>Moderate Threat</th>
<th>Major Threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Flash flooding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>b. Riverine flooding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>c. Hurricane</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>d. Tornado</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>e. Drought</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>f. Wind</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>g. Wildfire</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>h. Earthquake</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>i.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>j. Heat</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>k.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>l. Dam / levee failure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>m. Coastal erosion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>n. Land subsidence / sinkholes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>o. Expansive soils</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
10. Does your community participate in the National Flood Insurance Program (NFIP)? ___Yes ___No

11. Does your community have an approved hazard mitigation plan?  
   Approved: ___Yes ___No

   11a. If no, why does your community not have a hazard mitigation plan? ________________________

12. If yes, is your plan a single or multi-jurisdictional plan? Please mark to indicate. ___Single ___Multi-jurisdictional

13. How often has your existing plan been updated in the last 10 years? ________________________

**********************************************************

ORGANIZATION CHARACTERISTICS

14. Is your local emergency management office a stand-alone agency or an integrated department located within a larger office (e.g. mayor’s office, fire department, police department, planning department, other)?  
   *A stand-alone emergency management office operates autonomously from any other agency while an integrated department is located within a larger line agency (fire department, police department, mayor’s office etc.)

   ___ Stand Alone     ____Integrated Department

14a. If an Integrated Department, what line agency is the emergency management department located within?  
   ____ Not Applicable (Stand-alone agency)  ____Mayor’s Office  ____Police Dept.  ____Fire Dept.  
   ____ County Emergency Management Office  ____County Judge Office  ____Other  (please specify)________________

15. What is the employment status of your emergency management office employees:  
   a. Total number of volunteers __________  
   b. Total number of part-time employees __________  
   c. Total number of full-time employees __________

16. Of those employed in your agency, how many are directly involved in hazard mitigation planning and/or strategy implementation?  
   a. Number of volunteers __________  
   b. Number of part-time employees __________  
   c. Number of full-time employees __________

17. Approximately what percentage of your office’s budget was utilized for hazard mitigation purposes in:  
   a. Year 2010 ________  
   b. Year 2011 ________  
   c. Year 2012 ________

18. Since holding your current emergency management title have you ever applied for grants through any of the following federal programs?  (If yes, was funding obtained-{OF})  
   1. Hazard Mitigation Grant Program (HGMP)  ___Yes  ___No  ___(OF)  
   2. Hazard Mitigation Assistance Grants (HMA)  ___Yes  ___No  ___(OF)
3. FEMA Planning Pilot Grant Program (PPGP)  ____Yes      ____No      _____(OF)
4. Pre-Disaster Mitigation Program (PDM)           ____Yes      ____No     _____(OF)
5. Flood Mitigation Assistance Program  ____Yes      ____No    _____(OF)
6. Severe Repetitive Loss Program (RFC)             ____Yes      ____No     _____(OF)
7. Repetitive Flood Claims Program  ____Yes      ____No     _____(OF)
8. Any local / state grants? Please explain:

19. In terms of mitigation, to what extent do you perceive your office to be:

<table>
<thead>
<tr>
<th>Areas</th>
<th>Not at all</th>
<th>Little Extent</th>
<th>Moderate Extent</th>
<th>Great Extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Active in the development and/or continued updating of the local hazard mitigation plan.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>b. Active in integrating hazard mitigation plans with components of your community’s local comprehensive plan.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>c. Active in applying for mitigation grants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>d. Active in conducting hazard analysis (e.g. risk and vulnerability assessment).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>e. Active in GIS Mapping.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>f. Active in advocating for the pursuit of hazard mitigation projects from local stakeholders (e.g. meeting with elected officials, local agencies, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>g. Active in hazard mitigation public outreach and education programs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>h. Active in implementing mitigation strategies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

20. In general, to what extent do you perceive your emergency management office as:

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Not at all</th>
<th>Little Extent</th>
<th>Moderate Extent</th>
<th>Great Extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Being committed to hazard mitigation planning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*Commitment is defined as the level of dedication an office has to pursuing hazard mitigation planning.*

b. Being committed to implementing mitigation strategies                                                                                       | 1          | 2             | 3               | 4            |
c. Having good relationships with other community stakeholders involved in hazard mitigation.

*A good relationship between your office and other stakeholders (involved in local hazard mitigation) is marked by routine communication, sharing of resources, agreement on respective roles and on the manner in which goals are pursued.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>d. Holding the pursuit of hazard mitigation as a priority.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PARENT AGENCY**

21. In terms mitigation, to what extent do you perceive your parent agency (fire department, police department, mayor’s office, county government office etc.):

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Not at all</th>
<th>Little Extent</th>
<th>Moderate Extent</th>
<th>Great Extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. To be supportive of your office’s pursuit of hazard mitigation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support is defined as your parent agency providing your office with mitigation-related directives, encouraging your office’s pursuit of hazard mitigation objectives, and allocating funding to your office for pursuing hazard mitigation objectives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. To allow your office to have decision-making autonomy in terms of mitigation planning and strategy implementation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. To make hazard mitigation a priority.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Not a Challenge</th>
<th>Minor Challenge</th>
<th>Moderate Challenge</th>
<th>Great Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Low concern for mitigation by local elected officials………</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Low concern for mitigation by local citizens ………………..</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

********************************************************************************************

**CHALLENGES / STRATEGIES**

22. To what extent do the following challenge your office’s ability to conduct local hazard mitigation activities?

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Not a Challenge</th>
<th>Minor Challenge</th>
<th>Moderate Challenge</th>
<th>Great Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Low concern for mitigation by local elected officials………</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Low concern for mitigation by local citizens ………………..</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
e. Competition with other local agencies for limited resources……………………………………………………………………

f. Competition with other local departments for limited local resources……………………………………………………………………

h. Community preference for economic development ….

i. Lack of internal staff / personnel……………………………………

j. Lack of familiarity with state/federal guidelines ……..

k. Lack of internal technical resources ……………………………

l. Lack of technical knowledge by staff……………………………

c. Lack of state support for local mitigation activities ……..

d. Lack of federal support for local mitigation activities ……..

22a. Please list and rate any challenges NOT already listed that affects your office’s ability to become involved in local hazard mitigation planning:

23. In general, to what extent do you perceive it to be easy/difficult for your office to:

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Easy</th>
<th>Somewhat Easy</th>
<th>Somewhat Difficult</th>
<th>Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Successfully accomplish hazard mitigation objectives in light of the challenges faced?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

HAZARD MITIGATION SUCCESS

24. To what extent do you agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. My office is successful in mitigation planning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>b. My office is successful in implementing mitigation strategies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>c. The mitigation-related activities of my office has greatly reduced my community’s risk to hazards.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Thank you for taking the time to complete this online survey.
REFERENCES


257


Graves, J. V., Jr. (2013). Intergovernmental relations and hazard mitigation. In A. Jerolleman and J. J. Kiefer (Eds.), *Natural hazard mitigation* (pp. 43-58). Boca Raton: CRC.


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