The Bush School
of GOVERNMENT & PUBLIC SERVICE
TEXAS A&M UNIVERSITY

Integrated Risk Management at the Local Level: The Gap between Theory and Practice

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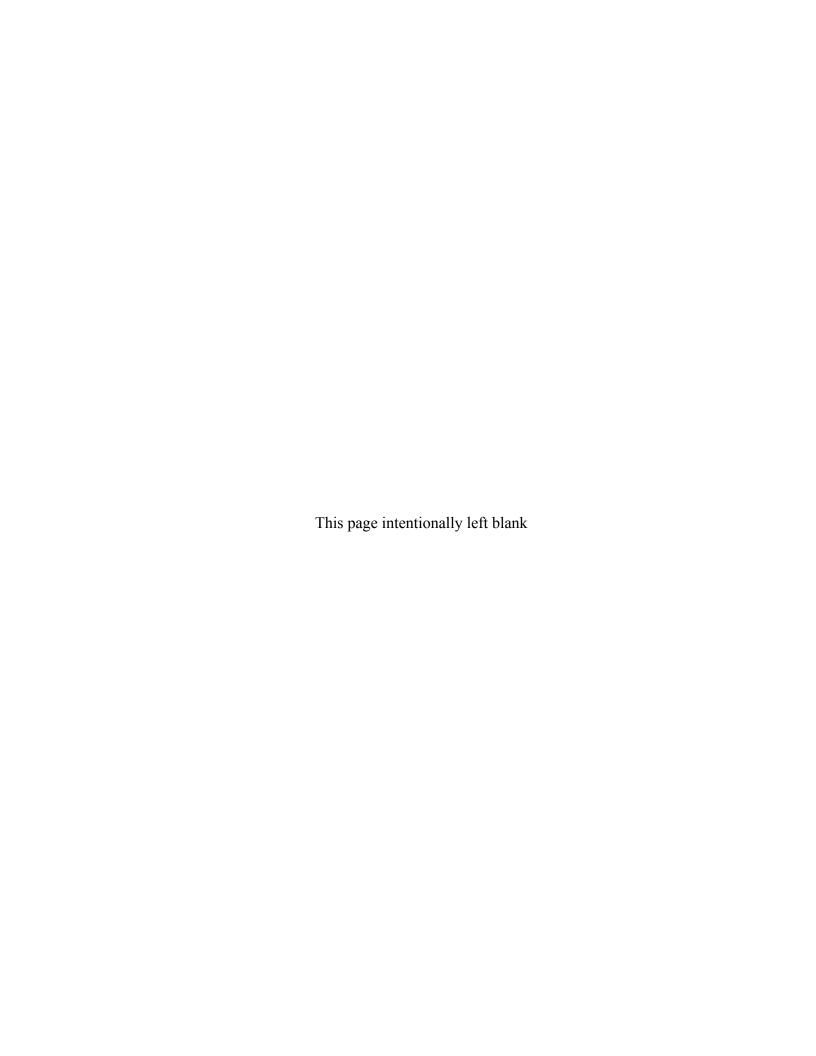
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EXECUTIVE SUMMARY

In the years following September 11, 2001, there has been significant development of Integrated Risk Management (IRM) in the field of Emergency Management. The last decade has brought substantial refinement of federal guidance, an increase in the quantity of guidance, and expansion of many local emergency management programs. While these developments indicate progress, it is not known to what extent federal guidance is reaching the intended clientele; nor what quantity of the guidance has been adopted by local emergency management organizations, jurisdictions and personnel. This study aims to identify a gap, if one exists, between Department of Homeland Security guidance on IRM (theory) and the local application of IRM (practice). Furthermore, there is a need to determine the width and breadth of the gap, if such a gap exists, and what possible improvements could potentially close the gap.

This study included 19 respondent jurisdictions across the State of Texas, whose responses were assayed according to type of governance and population density. The study led the research team to the following conclusions. The research conclusions are thoroughly discussed under the conclusions heading, whereas itemized conclusions can be found in Appendix B: Analysis and Findings.

How do local jurisdictions use Integrated Risk Management?

While all respondent jurisdictions report using Integrated Risk Management in some form or fashion, nearly half of the jurisdictions report they see risk management as a way to minimize their legal and financial liabilities. In most jurisdictions, personnel performing risk management also have other duties. However, the majority of the jurisdictions performing risk assessments utilize personnel who have emergency management duties as their primary function; less populated jurisdictions often use personnel with duties outside of emergency management when performing their risk assessments. Only three jurisdictions use the THIRA method to calculate risk within their jurisdiction; the rest have developed internal methods, and the majority of these methods are not formula based. Multiple jurisdictions perform THIRAs solely to receive grant money. One third of the jurisdictions address the risks rated highest by their risk assessments. Of those jurisdictions which develop solutions to their risks, the majority develop multiple solutions to address those risks. When jurisdictions have multiple ways to address a particular risk, most jurisdictions have different systems of determining which solution to choose. The majority of jurisdictions review their risk assessments every 5 years, though some only do it after major incidents.

How might the use of Integrated Risk Management at the local level be improved?

Several jurisdictions believe a position dedicated solely to risk management would improve its use and outcomes; those with exclusive risk managers had increased use of IRM when compared to those without. Many jurisdictions took issue with differing formats amongst the forms involving Integrated Risk Management; continuity of forms would make the process quicker and easier. Multiple jurisdictions suggest training on risk management should become less theoretical and more practical, and therefore easier to digest. They also suggest those who teach the classes should have an emergency management background.

What are the obstacles to improvement?

Many jurisdictions report having to prepare other documents and forms covering the same information as the THIRA, which are in a different format requiring duplication of work to meet all of the different requirements. Most jurisdictions report personnel performing risk management also had other duties, which took away from their time to focus on risk management. Different size (population) jurisdictions have different needs; smaller ones focus more on time and resources, whereas larger jurisdictions focus more on the details. Some of the risk lexicon is not easily understood by those without emergency management backgrounds, particularly those to whom risk managers report their findings.

The research team carefully addressed these conclusions, and developed a set of recommendations to make IRM useful and practical to local community emergency managers, thereby closing the gap to some degree. The recommendations of the research team are as follows. Aligning federal and state documents and forms involved in the IRM process to a common format would make the process easier to navigate for all involved. Attaching awards, recognitions or incentives to completing the THIRA process could encourage jurisdictions to complete it independently of grant funding opportunities. Providing restricted funding to jurisdictions solely for the purpose of completing Integrated Risk Management functions could increase the number of personnel employed with IRM duties, thereby increasing its use. Differentiating terminology to something other than "risk management" would reduce confusion with insurance and financial responsibilities. Modifying the risk lexicon to make it understandable for those without an emergency management background might increase IRM adoption by local stakeholders. Continued promotion of the THIRA framework could encourage jurisdictions to transition from their formulas to that of the THIRA.

This study indicated conclusions about the local use of Integrated Risk Management in the State of Texas and provides useful recommendations, yet is not intended to be an all-encompassing solution. Future research on the use of IRM at the local level is warranted to account for likely variances in the needs of geographically diverse communities. The research team suggests future research in the following areas as a next-step to understanding the use of IRM at the local level nationwide. Jurisdictions outside of Texas should be sampled to include representation from other states. Due to the possibility of other states having different needs, requirements or practices, including them in a study would broaden the scope and increase the accuracy of the study. The research team was not able to include any municipalities or counties meeting the classification of "rural," therefore future studies should include rural jurisdictions in the sample. This would again increase representation from other jurisdictions, as well as provide insight to the ways in which areas of small populations conduct Integrated Risk Management. Including information on jurisdictions' emergency management budgets may be useful to understanding or quantifying their use of IRM. Follow-up studies are recommended as IRM is refined and becomes more established in local use.

GENESIS OF THE STUDY

During the second year of study at The Bush School of Government and Public Service at Texas A&M University, students in the Master of Public Service and Administration (MPSA) program participate in two semesters of capstone research. The research focuses on addressing problems in the real world, often working in conjunction with a government agency or nonprofit organization to address a contemporary issue. Designed to test the knowledge and abilities students have developed through their coursework and experiences, capstone research necessitates strong teamwork, careful research, writing ability, and often a large amount of ingenuity in identifying ways to approach an issue or find a solution.

THE TASK (IDENTIFYING THE RESEARCH QUESTIONS)

Risk Management encompasses different meanings for people across various professions. The Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA) use "Integrated Risk Management" (IRM) as a way to describe the cycle of management activities. The goal of IRM is to identify, evaluate, prioritize, counter, and monitor the likelihood, vulnerability and consequences of threats, natural hazards and natural disasters to local people, property, infrastructure and the environment.[1] This approach serves as the basis of the Threat and Hazard Identification and Risk Assessment (THIRA), as described in *Comprehensive Preparedness Guide (CPG) 201: Threat and Hazard Identification and Risk Assessment Guide.* THIRAs are required to qualify for grant funding through some federal emergency management programs.

Given there is no uniform definition or approach to IRM, there is the possibility for a lack of understanding and use of IRM, particularly at the local level. This research is designed to investigate whether local jurisdictions are using Integrated Risk Management as defined by DHS guidance. If the research indicates IRM is not being used, the research will identify changes or incentives that would make IRM practical and attractive to local emergency management organizations. With this mission in mind, the research team has worked to answer three primary research questions:

1. **How do local jurisdictions use Integrated Risk Management?**
2. **How might that use be improved?**
3. **What are the obstacles to improvement?**

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[1] Details found in *Risk Management Fundamentals*, published by The Department of Homeland Security, 2011.

Before answering these questions, it is necessary to establish a clear definition for "risk" and "integrated risk management," and to establish an understanding of how they pertain to emergency management. In order to accomplish this task, the research team addressed the following areas:

1. WHAT IS INTEGRATED RISK MANAGEMENT ACCORDING TO DHS?

DHS Risk Lexicon

In September 2008, the Department of Homeland Security Risk Steering Committee created the *DHS Risk Lexicon* to standardize the language used to discuss risk in the homeland security and emergency management context. This study focuses on integrated risk management in emergency management; therefore the definitions from the *DHS Risk Lexicon* will be used. Brief descriptions of risk and risk management, integrated risk management, and the risk management cycle are provided below.

Risk and Risk Management

Risk is the "potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences."[2] Risk can be accepted, avoided, transferred or controlled based on a set of priorities. This process is called risk management. Risk management is a broad term used in a variety of fields including legal, financial, insurance, and emergency management. It is important to note the distinction between risk management and Integrated Risk Management.

Integrated Risk Management

Integrated Risk Management is a "structured approach that enables the distribution and employment of shared risk information and analysis and the synchronization of independent yet complementary risk management strategies to unify efforts across the enterprise."[3]

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[2] Department of Homeland Security Risk Steering Committee, DHS Risk Lexicon: 2010 Edition. Page 27
[3] Department of Homeland Security Risk Steering Committee, DHS Risk Lexicon: 2010 Edition. Page 19

__Risk Management Cycle__

The risk management cycle is a sequence of steps utilized and regularly revisited to manage risks faced by local communities.4 There are six steps to the DHS risk management cycle which are the foundation of Integrated Risk Management. These steps are sourced directly from Homeland Security Risk Management Doctrine: Risk Management Fundamentals, and is delineated in Figure 1.1, and its subsequent expanded outline.5
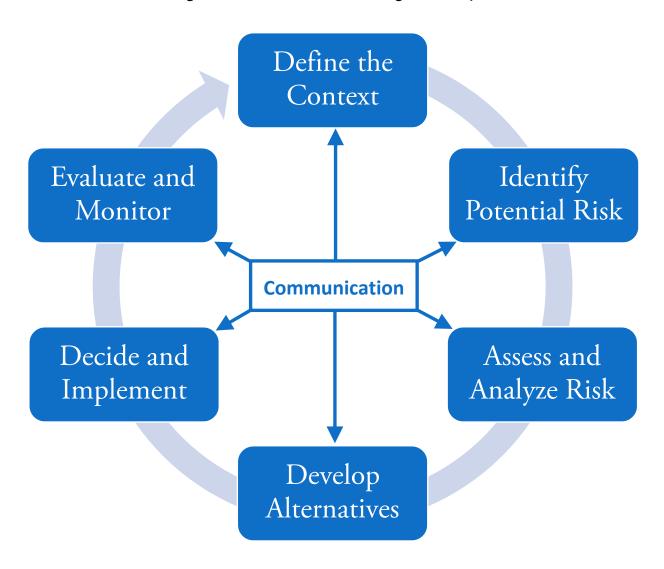
Figure 1.1 - DHS Risk Management Cycle

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4 Department of Homeland Security Risk Steering Committee, DHS Risk Lexicon: 2010 Edition, Page 30.
5 Details of the Risk Management Cycle are published in *Risk Management Fundamentals*, Department of Homeland Security, 2011, Pages 15-26.

1. Define the context – this includes determining the following:
    a. Goals and objectives
    b. Mission space and values
    c. Policies and standards
    d. Scope and criticality of the decision
    e. Decision makers and stakeholders
    f. Decision timeframe
    g. Risk management capabilities and resources
    h. Risk tolerance
    i. Availability and quality of information
2. Identify the risks including unusual, unlikely and emerging risks
    a. Scenarios are used to divide identified risks for individual analysis
3. Analyzing and assessing the risks
    a. Determining a methodology
    b. Gathering data
    c. Executing the methodology
    d. Validating and verifying the data
    e. Analyzing the outputs
4. Developing alternative actions to manage the risks
    a. Be understanding to participants of the process, including policy makers and stakeholders
    b. Match and comply with the organizations relevant doctrine, standards and plans
    c. Provide documentation with assumptions explicitly detailed
    d. Allow for future refinements
    e. Include planning for assessment of progress toward desired outcomes
5. Deciding upon and implementing risk management strategies
    a. Presenting information
    b. Document and implement
6. Evaluate and monitor the risk management strategy
    a. Performance measurement
    b. Models of evaluation

2. WHY STUDY THE USE OF INTEGRATED RISK MANAGEMENT?

Integrated Risk Management fosters communication between policymakers, state and local authorities, and emergency responders, and is vital to identifying "the risks, to the stakeholders and their missions, and the prioritization of those missions" in local jurisdictions.[6] By studying integrated risk management at the local level, gaps can be identified in what is being recommended by DHS guidance, and what is actually being implemented at the local level. This allows identification of possible inefficiencies in current Integrated Risk Management guidance, and what improvements are needed to assist local jurisdictions in better accomplishing their missions of managing the risks faced by local communities. Additionally, this survey in IRM gives local jurisdictions the opportunity to participate in the process by sharing their unique needs, experiences and opinions.

3. WHAT ARE THE BENEFITS OF INTEGRATED RISK MANAGEMENT?

The overall benefit of integrated risk management is it provides a means of reducing risks (i.e., saving lives, reducing property damage, and preventing injuries) and preserving resources, which should incentivize communities to use the integrated risk management processes as outlined by DHS.[7] Integrated Risk Management provides for a "process that is logical and applicable to all jurisdictions regardless of their size, level of sophistication, potential hazards, or current capabilities."[8] Planning requirements vary depending on what resources are threatened or the type of hazardous materials to be dealt with. This variance often results in multiple emergency plans addressing different scenarios, which can be costly to create, cause inconsistencies between the plans, and be difficult to implement.[9] Additionally, the need for multi-agency involvement in certain emergency situations can create communication barriers between involved agencies. Integrated risk management focusing on all-hazards planning allows emergency managers to efficiently utilize response capabilities and simplify multi-agency communications.

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[6] Congressional Research Service. (2013, January 8). Defining Homeland Security: Analysis and Congressional Considerations.

[7] McIntyre, D. (2011, September 6). Strategies and Methods for Informing Risk Management: An Alternative Perspective.

[8] Federal Emergency Management Agency. (2005, October). NIMS--Incident Command System for the Fire Service. *2nd Edition*.

[9] Borak, J., & Silverstein, B. D. (1999, September 1). Emergency Response Plans: The Benefits of Integration.

4. WHAT ARE THE CONSTRAINTS ASSOCIATED WITH INTEGRATED RISK MANAGEMENT?

Risk Management is often difficult because disasters are largely unpredictable. Moreover, "it is difficult to know exactly when or where they will occur and what problems they will generate."[10] Due to this unpredictable nature, it is even more difficult to ensure consensus between government actors.[11] The discord between actors comes from differences such as resources, level of technology and awareness of crisis.[12] Although IRM provides benefits such as "balancing safety, cost, schedule, operational performance, and other elements of risk", the willingness to conduct IRM is often disregarded, due to the low probabilities of disasters occurring.[13]

Estimation of economic loss from hazardous risks is frequently underestimated.[14] According to research conducted in 1999 by Colquitt, Hoyt, and Lee that surveyed risk managers in private insurance companies, the most common constraints or problems associated with IRM are "educating management, internal control/review systems Implementation, and regulatory/accounting requirements."[15]

In summary, the constraints of conducting IRM stem from differences between jurisdictions. These differences can be organizational structures (different procedures or requirements) or resources, and often the way organizations choose to respond to potential risks can be viewed differently. Although DHS requires risk managers at the local level to follow the published IRM guidance, there is no control or authority to oversee how the local level conducts risk management.

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[10] Schneider, S. K. (1992). Governmental Response to Disasters: The Conflict between Bureaucratic Procedures and Emergent Norms. *Public Administration Review*.

[11] Miller, K. D. (1992). A Framework for Integrated Risk Management in International Business. *Journal of International Business Studies*. Page 311

[12] Miller, K. D. (1992). A Framework for Integrated Risk Management in International Business. *Journal of International Business Studies*. Pages 320-323

[13] Connley, W. E., Rad, A., & Botzum, S. J. (2004). *Integrated Risk Management Within NASA Programs/Projects.*

[14] Downton, M. W., & Pielke, R. A. (2005). How Accurate are Disaster Loss Data? The Case of US Flood Damage. *Natural Hazards, 35*.

[15] Colquitt, L. L., Hoyt, R. E., & Lee, R. B. (1999). Integraged Risk Management and the Role of the Risk Manager. *Risk Management and Insurance Review*(2). Pages 43-61

LITERATURE REVIEW

The research team examined how local jurisdictions approach integrated risk management. We considered multiple sources: the Center for Homeland Security and Defense at the Naval Postgraduate School, multiple emergency management journals, a Google Scholar search, and Texas A&M University Library resources, including multiple databases from EBSCO, ProQuest, Elsevier, JSTOR, and OVID. After extensive study, no scholarly research or analysis publications addressing this question were found. This indicates sparse research exists in the field of homeland security and integrated risk management at the local level. Considering the majority of research focuses on the federal government, research on how local jurisdictions approach risk management is needed.

The following documents were reviewed for this research:

- Homeland Security Act 2002, Public Law 107-296, 107th Congress, (2002)

- Presidential Policy Directive (PPD-8), "National Preparedness," March 30, 2011. Note: "This directive replaces Homeland Security Presidential Directive (HSPD)-8 (National Preparedness) issued December 17, 2003, and HSPD-8 Annex I (National Planning), issued December 4, 2007, which are hereby rescinded."

- Department of Homeland Security, *Quadrennial Homeland Security Review Report: A Strategic Framework for a Secure Homeland (*Washington, DC: Department of Homeland Security, February 2010*)*.

- Department of Homeland Security, Directive 007-03: "Integrated Risk Management," (Washington, DC: Department of Homeland Security, March 28, 2011).

- Department of Homeland Security, "Chapter 3: The Strategy: Managing Risk," *National Infrastructure Protection Plan (*Washington, DC: Department of Homeland Security, *2009)*.

- Department of Homeland Security*, National Preparedness Guidelines (Washington, DC:* Department of Homeland Security*, September 2007)*.

- National Protection and Programs Directorate, *Risk Management Fundamentals: Homeland Security Risk Management Doctrine* (Washington, DC: Department of Homeland Security, March 2011).

- Risk Steering Committee, *DHS Risk Lexicon, 2008 Edition* (Washington, DC: Department of Homeland Security, 2008).

- Risk Steering Committee, *DHS Risk Lexicon, 2010 Edition*, (Washington, DC: Department of Homeland Security, September, 2010).

- Risk Steering Committee, *Interim Integrated Risk Management Framework* (Washington, DC: Department of Homeland Security, January 2009).

- McIntyre, David, "White Paper - Strategies and Methods for Informing Risk Management: An Alternative Perspective." (Washington, DC: Homeland Security Studies and Analysis Institute, 2011).

- George Tanner et al., *Risk Management Curriculum Review Group: Findings Report* (Washington, DC: Department of Homeland Security, December 2010).

- Janet Napolitano, Memorandum: "DHS Policy for Integrated Risk Management," (Washington DC: Department of Homeland Security, May 27, 2010). (FOUO)

- Reese, Shawn, *Defining Homeland Security: Analysis and Congressional Considerations*, R42462. (Washington, DC: Congressional Research Service, 2013).

- Todd Masse, Siobhan O'Neil, and John Rollins, *The Department of Homeland Security's Risk Assessment Methodology: Evolution, Issues, and Options for Congress*, RL33858 (Washington, DC: Congressional Research Service, February 2, 2007).

- General Accountability Office (GAO), *Comments on Counterterrorism, Leadership, and National Strategy,* GAO-01-556T, (Washington, DC: GAO, March 27, 2001)

- General Accountability Office (GAO), *Homeland Security: Key Elements of a Risk Managed Approach, GAO-02-150, (Washington, DC: GAO, October 12, 2001)*

- General Accountability Office (GAO), *Homeland Security: A Risk Management Approach Can Guide Preparedness Efforts, GAO-02-208T, (Washington, DC: GAO, October 31, 2001)*

- General Accountability Office (GAO), *Homeland Security: A Framework for Addressing the Nation's Efforts*, GAO-01-1158T, (Washington, DC: GAO, September 21, 2001).

- General Accountability Office (GAO), "Appendix I: Risk Management Framework," *Risk Management: Further Refinements Needed to Assess Risks and Prioritize Protective Measures at Ports and Other Critical Infrastructure*, GAO-06-91, (Washington, DC: GAO, December 2005), 100-112.

- General Accountability Office (GAO), *Risk Management: Strengthening the Use of Risk Management Principles in Homeland Security,* GAO-08-904T, (Washington, DC: GAO, June 25, 2008).

- Connley, Warren, Adrian Rad, and Stephen Botzum. 2004. "Integrated Risk Management Within NASA Programs/Projects." http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20040082140.pdf

- Christopher Cox (Chairman) et al., *The Secretary's Second-Stage Review: Re-thinking The Department Of Homeland Security's Organization and Policy Direction Parts I And II:* Hearing Before the House Committee on Homeland Security, House of Representatives, One Hundred Ninth Congress, First Session, Serial No. 109-32 (Washington, DC: U.S. House of Representatives, July 14, 2005).

- Colquitt, L. Lee, Robert E. Hoyt, and Ryan B. Lee. 1999. "Integrated risk management and the role of the risk manager." Risk Management and Insurance Review 2 (3): 43-61.

- Downton, Mary W., and Roger A. Pielke. 2005. "How Accurate are Disaster Loss Data? The case of US flood damage." *Natural Hazards* 35: 211-228.

- Miller, Kent D. 1992. "A Framework for Integrated Risk Management in International Business." *Journal of International Business Studies* 311-331.

- Emergency Management Institute. FEMA Independent Study Program. https://training.fema.gov/IS/

- Important training documents follow:

  o IS 454: Fundamentals of Risk Management (2012). https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-454

  o IS 395: FEMA Risk Assessment Data Base (2010). https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-395

METHODOLOGY

STUDY DESIGN

This study began with research for literature about risk management in general and how it is applied to emergency management. Guidance from the federal government through DHS and FEMA provided the basis for the study. By understanding what DHS expects, it is possible to analyze what difference may exist between DHS expectations and what is happening at the local level. Documents utilized for background information include:

- *Quadrennial Homeland Security Review* (2010)
- *DHS Risk Lexicon* (2010)
- *Strategic National Risk Assessment* (2011)
- *Comprehensive Preparedness Guide (CPG) 201: Threat and Hazard Identification and Risk Assessment Guide* (2013)

CPG 201 is particularly important to this study because, it provides information about conduction the Threat and Hazard Identification and Risk Assessment (THIRA), and includes information about identifying community-specific risks to be managed by local level emergency management. CPG 201 served as the basis of many areas of this study of IRM at the local level, including the survey instrument used to interview the emergency management officials.

The literature review suggests there has not been research completed about Integrated Risk Management in emergency management at the local level, therefore a unique study design is required. The group consulted texts about designing and conducting a qualitative study. These texts guided the development of the study including identifying the sample population, designing the survey instrument and process, evaluating the results, and producing this report. The research texts used are as follows:

- *Research Methods and Statistics for Public and Nonprofit Administrators: A Practical Guide* by Masami Nishishiba, Matthew Jones, and Mariah Kraner (2014)
- *The Craft of Research, 3rd ed.* by Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams (2008)
- *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 2nd ed.* by John W. Creswell (2013)

Using material from the literature review and qualitative methods derived from the research texts, the research team designed thirty-two open ended questions based upon the risk management cycle, as prescribed in CPG 201 and *DHS Risk Management Fundamentals: Homeland Security Risk Management Doctrine*. This survey instrument addressed the three research questions identified for this study. A list of the interview questions may be found in Appendix A: Survey Instrument.

INTERVIEWS

Emergency management officials for cities and counties in the State of Texas were then interviewed using the survey instrument to determine how IRM is conducted in emergency management at the local level. A 250 mile radius around College Station, Texas was selected as the geographic area of the study, based upon limited resources available for student travel. The research team identified thirty jurisdictions within this 250 mile radius for participation in the study. The selected jurisdictions represented a diverse range of geographic attributes and sizes, potential threats and hazards, and population densities. The cities and counties involved in the study were classified by population density utilizing the Census Bureau definitions of "urban" (more than 50,000 people), "urban cluster" (between 2,500 and 50,000 people), and "rural" (less than 2,500 people).[16] This diverse population was selected in order to determine if a relationship exists between the size and nature of the jurisdiction and the risk management practices. Population estimates from 2013 for the jurisdictions is available on the "Texas State and County Quick Facts" webpage of the Census Bureau website.[17]

Table 1.1 - Population Table

Population Density	Number of Respondents
Urban County (>50,000)	7
Urban Cluster County (2,500-50,000)	2
Rural County (<2,500)	0
Urban Municipality (>50,000)	7
Urban Cluster Municipality (2,500-50,000)	3
Rural Municipality (<2,500)	0
Total Respondents	**19**

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[16] United States Census Bureau. (2014, March 17). *Urban and Rural Classification*. Retrieved from Census.gov
[17] United States Census Bureau. (2014, March 27). *Texas State and County Quickfacts*. Retrieved from Census.gov

The research team contacted emergency management officials with risk management duties from the selected jurisdictions utilizing publicly available contact information. The goals of the project and the process of the study were explained to the emergency management officials to gauge their interest in participating in the study. The research team used Institutional Review Boards (IRB) approved scripts and consent documents. Interviews with the emergency management official who agreed to participate were scheduled at their place of work, and at their convenience between late-February and early-March.

Interviewers documented the responses during each interview in packets containing all of the survey instrument. It is important to note that for some questions, respondents gave more than one answer. If respondents consented to being audio recorded, the interviewers recorded the responses to ensure the accuracy of the notes taken during the interview. Interviews lasted for approximately thirty to forty five minutes.

Participation in the study was completely voluntary and interviewees were able to decline to answer any question(s) if desired. Those interviewed were guaranteed that their anonymity and ensured no responses would be linked to a particular jurisdiction or individual. The only list of the persons and associated jurisdictions interviewed is safeguarded according to the Texas A&M University record retention requirements, and will be destroyed by shredding after the minimum retention time period has passed. Any audio recordings were promptly deleted after their use was no longer necessary.

ANALYSIS OF FINDINGS

The target response rate was at least fifteen out of the thirty identified jurisdictions, with at least three jurisdictions fitting into each of the population categories referenced above. Nineteen jurisdictions agreed to participate in the interviews. Of these nineteen, seven were urban counties, two were urban cluster counties, seven were urban municipalities, and three were urban cluster municipalities. No cities or counties meeting the qualifications of "rural" agreed to participate in the study.

Once all of the interviews were completed, responses were transcribed and aggregated for each question based on the population category of the jurisdiction. Responses were also considered as a whole. The answers were analyzed for trends in responses based upon the frequency or infrequency of similar answers. A detailed analysis for each question and the various responses can be found in Appendix B: Findings and Analysis.

SPECIAL CONSIDERATIONS

The Department of Homeland Security opened its doors 10 years ago, and has put forth many initiatives in that time to try and find best practices. Integrated Risk Management in Emergency Management is a contemporary subject, both in practice and in academia. There have been continuous changes in guidance to suit emerging terminologies and sophistication of responses to achieve the best results. Several sites were found to be doing THIRA for first time. As a result, their experience with the process was limited.

TEXAS SPECIFICS

Texas government is designed with the "county" as the end local unit of the Texas Government, responsible for all unincorporated areas within their jurisdictions'. The Texas government does recognize "municipalities" which are responsible for all incorporated areas in their jurisdictions'. Regarding municipalities, the State of Texas recognizes both "general law" and "home rule" municipalities. The former has quite limited powers, while the latter has sign significantly more. "General law" cities must look to state law to determine what they may do, whereas home rule cities look to the state constitution and statutes to determine what they may not do.[18] Due to the expansive size of Texas and the varying locations, each area faced different primary threats; this could change their views and priorities on Integrated Risk Management. How these cities and county governments work together within the law varies across the state. Within this interface of governing bodies, some counties collaborate on many initiatives with their contained cities to reflect regional interests. Other counties however, leave everything within city limits for the cities to handle.

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[18] Details on Texas County and City powers are available from the Texas Municipal League, *Handbook for Mayors and Councilmembers*: Chapter 1 (2013 edition).

CONCLUSIONS

The following section contains the conclusions drawn of the responses garnered from the interviews and survey instrument. The conclusions are focused in reference to the three research questions identified. A detailed analysis of the responses to each survey question can be found in Annex B: Findings and Analysis.

HOW DO LOCAL JURISDICTIONS USE INTEGRATED RISK MANAGEMENT?

- All jurisdictions reported using IRM in some form or fashion.

- Nearly half of the jurisdictions reported that they see risk management as a method to reduce the legal and financial liability in their jurisdictions.

- Most of the jurisdictions have risk management personnel who perform these duties in conjunction with other responsibilities.

- Around three-quarters of the jurisdictions have the personnel who perform risk assessments selected from emergency management personnel with EM duties as their primary function. It was found that less populated jurisdictions had personnel with duties other than risk management performing their risk assessments.

- Only four jurisdictions use the THIRA method to calculate risk within their jurisdiction; the rest have internal methods that they have developed and the majority of these systems are not formula based.

- Multiple jurisdictions reported performing THIRAs solely to receive grant money.

- Only a third of the jurisdictions stated that they address the risks that are rated highest by their risk assessments, others used varying methods to determine which risks to address.

- Of those that develop solutions to their risks, the majority develop multiple solutions to address that risk.

- When they do have multiple ways to address a risk most jurisdictions have different systems of determining which solution to choose.

- The majority review their risk assessments every 5 years, though some only do it after major incidents.

HOW MIGHT THE USE OF INTEGRATED RISK MANAGEMENT AT THE LOCAL LEVEL BE IMPROVED?

- Several jurisdictions reported that having a position dedicated solely to risk management would improve its use and outcomes.

- It was also stated that having continuity in format and content amongst the various forms and guidelines involving risk management would make the process quicker and easier.

- Multiple jurisdictions suggested that training on risk management should become more practical and less theoretical, making the information easier to digest.

- They also suggested that those who teach the classes should have an emergency management background.

WHAT ARE THE OBSTACLES TO IMPROVEMENT?

- Many jurisdictions stated that they only perform the THIRA process to receive grant funding, and that without the funding they would not go through this process.

- Many also stated that they already have to prepare other documents and forms that cover the same information but are in a different format, thus requiring them to do extra work to meet all of the different requirements.

- Most jurisdictions reported that the personnel performing risk management also had other duties, which took away from their time to focus on risk management.

- Different size (population) jurisdictions have different needs. Smaller jurisdictions have less time and resources and tend to focus more on just completing the objective. Whereas, larger jurisdictions have more time and resources and are able to focus more on the details.

- Some portions of the risk lexicon are not easily understood by those without emergency management backgrounds, and these are the individuals to whom risk managers report their findings.

RECOMMENDATIONS

Our recommendations are based upon suggestions provided by those jurisdictions that we interviewed. They also come from general themes we discovered across all jurisdictions regardless of population size or type of government.

- Provide continuity in format amongst the various forms and guidelines regarding emergency risk management so that information developed for one document can be more easily utilized in similar documents.

- In addition to existing grants, and to further incentivize THIRA use, consider the development of an award system that recognizes jurisdictions for their use of this process.

- In an effort to increase risk management participation at the local level, provide restricted funding to these jurisdictions for the full-time employment of an emergency risk manager.

- In order to avoid confusion with other fields of risk management, develop unique terminology specific to Integrated Risk Management in emergency management.

- Simplify the language used in the risk lexicon to improve the understanding of those without a background in emergency management.

- Improve marketing and promotion of the THIRA framework.

- In an effort to increase the use and understanding of the THIRA process and standardize the training, develop a trainer certification program to improve the quality of local instruction.

AREAS FOR FURTHER RESEARCH

- Jurisdictions outside of Texas should be sampled to include representation from other states. Due to the possibility other states might have different requirements or practices, including them in a study would broaden the scope and increase the accuracy of the study.

- The research group was not able to include any municipalities or counties that met the classification of "rural." Future studies should include rural jurisdictions in the sample. This would again increase representation from other jurisdictions, as well as provide insight to the ways in which areas of small populations conduct Integrated Risk Management.

- Include information on jurisdictions' emergency management budgets.

- A follow-up study in a few years once Integrated Risk Management is refined and becomes more established in local use.

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APPENDICES

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APPENDIX A: THE SURVEY INSTRUMENT

1. How does your jurisdiction define risk management?

2. Does your jurisdiction conduct risk management?

    a. Why?

    b. How?

3. How many personnel have risk management duties in your organization?

    a. Full-time or part-time employees?

    b. Does your Risk Manager primarily perform risk management duties or do they have additional responsibilities?

4. Who does the Risk Manager for your jurisdiction report to directly?

5. What portion, if any, of your jurisdiction's risk management duties are contracted/consulted to an outside source?

6. What value does your jurisdiction place on risk management?

7. Can you provide a brief history of your risk management program?

8. To whom does your jurisdiction report the information from your risk management efforts?

    a. Can you elaborate as to why?

9. How is risk calculated within your jurisdiction?

10. Who performs your risk assessment(s)?

11. How often are risk assessments conducted and updated?

12. Does your risk management staff consult with outside agencies/jurisdictions when conducting risk assessment(s)?

13. What sources of information does your jurisdiction consult when conducting risk assessments?

14. From where does your jurisdiction draw its risk management approach?

15. What risk management education or training has the risk management staff received in the past?

    a. From what proponent agency?

16. How does the risk management staff request and receive training on risk management?

17. Does your Risk Manager receive any federal and/or state guidance on risk management?

    a. If so, in what form and from whom?

18. Does the Risk Manager have routine meetings or educational events with risk managers at state level or federal level?

19. What training would you like the Risk Manager to receive on risk management and from what level (state or federal)?

20. What suggestions for improvement do you have in the areas of risk management?

21. What benefits does your jurisdiction receive from integrated risk management?

    a.   Are those benefits worth the resources and effort?

22. What incentives exist to encourage your jurisdiction to conduct risk management?

23. What suggestions might you have to incentivize risk management?

24. Are you familiar with the Threat and Hazard Identification and Risk Assessment (THIRA)?

    a.   Does your jurisdiction complete THIRA forms?

    b.   If any, what other risk assessment forms are used? (Obtain a copy)

25. Does your jurisdiction attempt to identify any critical infrastructure interdependencies?

26. How does your jurisdiction determine which risks to address?

27. When developing your risk management solutions (for items such as floods, fires, etc), did you consider any alternatives?

    a.   How did you decide on your current risk management solutions from the alternatives?

28. How does your jurisdiction evaluate the effectiveness of your risk management solutions?

    a.   How often is this evaluation performed?

29. How is your risk management program funded?

    a.   How is that funding allocated?

FOR PERSONNEL WITH RISK MANAGEMENT DUTIES ONLY:

30. How did your background prepare you for risk management?

31. How long have you been performing risk management duties?

32. What is your educational background?

    a.   Professional training?

    b.   Certifications?

APPENDIX B: FINDINGS AND ANALYSIS

SECTION 1: HOW DO LOCAL JURISDICTIONS USE INTEGRATED RISK MANAGEMENT?

Question 1: How does your jurisdiction define risk management?

Urban County

Of the urban county respondents interviewed, four of the seven defined risk management by the actions taken to address risks to the public both internal and external to the community. Three out of seven counties defined risk as actions taken to reduce legal and financial liability.

Urban Cluster County

At the Urban Cluster County level one out of two respondents indicated that indicated that they see risk management as necessary for the reduction to loss of life and property. The second respondent cited a reduction in financial loss.

Urban Municipality

Of the urban municipalities interviewed, three of the seven defined risk management by the actions taken to mitigate risks to the community. Four of the seven respondents defined risk as actions taken to reduce legal and financial liability.

Urban Cluster Municipality

Of the urban cluster municipalities interviewed, two of the three defined risk management as focused on reducing potential hazards that directly affect the city and reducing outside influences that may disrupt daily operations. The third jurisdiction defined risk management as actions focused on human resource operations.

Conclusion

Ten out of nineteen respondents defined risk management as the actions taken to address risk to the public, reduce the loss of life and property, and improve public safety. Nine out of nineteen respondents defined risk management as actions taken to reduce legal and financial liability.

Question 2: Why and how does your jurisdiction conduct risk management?

Urban County

Five of the seven of the counties noted that risk management is performed to lower the potential of damage from hazards and threats. One county indicated the motivation behind conducting risk mitigation is the requirement from their higher jurisdiction. The final urban county indicated that risk management is conducted to connect with citizens. All urban counties noted that they utilize some form of formal process to define risks and to develop mitigation plans. Most of these processes are developed at the local level. Two urban counties noted the use of the THIRA process for risk management.

Urban Cluster County

Both of the urban cluster counties indicated that they conduct risk management to reduce potential damage, to protect the loss of life, and to reduce exposure to threats and hazards. One urban cluster indicated that risk management is performed because of legal requirements. Another urban cluster indicated that risk management is performed because it is a means to receive grant money. Both urban cluster counties also noted the use of an internal formal risk analysis and management process only.

Urban Municipality

All seven of the urban municipalities gave several reasons for conducting risk management, including the mitigation of threats, requirements from higher jurisdictions, improved public safety, and FEMA funding. Several methods of risk management were used by the urban municipalities, including internal assessment tools, historical data, professional experience, and one jurisdiction reported using the THIRA process.

Urban Cluster Municipality

The three urban cluster municipalities were split on their reasons for conducting risk management. Two jurisdiction reported citizen protection and reduction of potential hazards as the primary motivation; the third jurisdiction cited the economic advantage of FEMA grants obtained by using the THIRA process.

Conclusion

All respondents indicated that their jurisdiction performs risk management in one form or another. Eleven out of nineteen respondents indicated that the primary motivation to perform risk management was the reduction of loss of life and protection of property. Five out of nineteen respondents reported that the primary motivation to perform risk management was the economic advantages from grants. Three out of nineteen respondents indicated that the primary motivation to perform risk management was the legal requirement to report results to a higher authority. Sixteen out of nineteen jurisdictions reported performing risk management using internally developed assessment tools. Only four of the nineteen jurisdictions report using the THIRA process.

Question 3: How many personnel have risk management duties in your organization?

Question 3.A: Are they Full Time or Part Time employees?

Question 3.B: Does your Risk Manager primarily perform risk management duties or do they have additional responsibilities?

Urban County

Six out of seven urban county respondents indicated that all personnel in the Emergency Management section or department have risk management responsibilities in staffs ranging in size from two to eight personnel, all full time employees. One/seven respondents indicated that the full time Emergency Coordinator was the only one who had the responsibility for risk management. One out of seven urban county respondents indicated that the individual responsible for risk management performed these duties as their sole responsibility. Six/seven counties indicated that risk management was one of many responsibilities for the employees.

Urban Cluster County

In the two urban cluster counties the Emergency Coordinators were the only personnel to perform risk management duties, in fact, all Emergency Management departments at the urban cluster county level consisted of only one full time staff member. In addition, all of these personnel performed multiple other duties aside from risk management.

Urban Municipality

All seven of the urban municipality respondents indicated that all personnel in the Emergency Management section or department have risk management responsibilities in staffs ranging in size from one to 20 personnel, all full time employees. Only one/seven respondents indicated that the full time Emergency Coordinator alone had the responsibility for risk management. All seven of the urban municipality respondents noted a complete lack of employees who were solely tasked to the responsibility of risk management, because all performed additional duties.

Urban Cluster Municipality

Of the three urban cluster municipality respondents, all three indicated that their entire personnel within the Emergency Management departments performed risk management duties. One jurisdiction maintains two full time employees and 14 part time employees. One is staffed by a lone risk manager, and the third jurisdictions is staffed with full time employees. All of the employees at the urban cluster municipality level perform multiple duties in addition to risk management.

Conclusion

Sixteen of the nineteen jurisdictions reported that all personnel in their Emergency Management sections have risk management responsibilities. Three out of nineteen respondents reported that their department has one person entirely dedicated to risk management. All of the jurisdictions reported having at least one full time employee who performs risk management duties. However, Eighteen out of nineteen respondents indicated that those employees have responsibilities in addition to risk management.

Question 6: What value does your jurisdiction place on risk management?

All Groups

Across all jurisdictional types and size the overwhelming answer was that the jurisdictions place a high value on risk management. Several stated the job cannot be truly performed without doing risk management. One of the respondents who rated the value as high did state that the hazards do not change much. One jurisdictions also stated that September 11th changed a lot in regards to its emphasis, and that THIRA has helped to do this. Another jurisdiction stated that disasters that have affected their area has changed has added value to how they view risk management. Two jurisdictions stated that the value depended on recent disasters. When a disaster strikes, the value is considered high. As time increases between disasters, the perceived value tends to decrease until another disaster strikes.

Question 7: Can you provide a brief history of your Risk Management program?

Urban County

Urban counties proved to have some of the longest running risk management programs of all jurisdictions. Three of seven respondents reported that risk management has always been a part of their jobs. One of seven counties stated they have had a risk management program in place since the 1980's, while three others have had programs since the 1990s, although their emergency management programs were established years prior. One county also stated that their emergency manager position was established in the early 2000s to assist with grant programs for the cities in their jurisdiction. Only one jurisdiction stated they began using the THIRA process in the past year.

Urban Cluster County

Of the two respondents, one stated there was a program before they assumed the position, and current THIRA use has assisted in carrying out their emergency manager duties.

Urban Municipality

Several of the seven respondents stated risk management has always been part of their job and emergency operations, without giving any specific timeline. One of these respondents specifically stated that risk management has become more important with the occurrence of disasters across the country. One jurisdiction reported that they have had a program in place since the 1990's, though it changed during this decade due to a disaster in their jurisdiction. Another jurisdiction stated that they did not receive a full time emergency manager until 2009, and that before this position was established, the fire chief took on the additional risk management responsibilities. A city stated that they have had an emergency management plan in place for the past since 2004, but they did not specifically mention their risk management program.

Urban Cluster Municipality

Two of the three jurisdictions in this category stated that their programs began in 2006. One of the respondents stated that the emergency manager was only a part time duty until 2006. One of the jurisdictions noted they initially had a small program, but a major hurricane that occurred in the 2000s caused them to reevaluate and revamp the program.

Conclusion

Overall, the responses indicated that urban counties have the oldest programs, with most starting in the 1980s or 1990s. Urban Municipalities ranked second in regards to program age, which seems to indicate that larger population areas have been incorporating some form of emergency risk management longer than smaller jurisdictions.

Question 8: To whom does your jurisdiction report the information from your risk management efforts, and can you elaborate as to why?

Urban County

The responses by urban counties vary widely between different levels of government. All seven jurisdictions stated they do report the information to some entity. Two of the seven respondents stated that their hazard mitigation plans are sent to FEMA, as the plan requires FEMA approval. Three responses stated that their efforts were reported to the state emergency management agency. Some stated they reported their efforts to the county judge, as this is the highest authority in their chain of command, but that the document itself is public. Two respondents stated it went to the county commissioners for signatures, as this is required to make it an official county document. One jurisdiction stated they keep the information confidential due to critical infrastructure listed in the report. Only one respondent stated that they reported to their region, state, and federal levels.

Urban Cluster County

The respondents in this category had a wide variety of responses regarding who they report their risk management efforts to. Both stated they report the information to the state emergency management agency in the end, but usually have several additional entities to whom they report in the process. Both jurisdictions stated their reports were sent to their COG, which would assist them and then report to the state. The county judge was reported in these responses as well.

Urban Municipality

Urban Municipalities report to a wide range of groups across all levels of government. Of the seven respondents, one reported their information is sent to FEMA. Three respondents stated they report the information to the state emergency management agency. One stated that they do not have a requirement to report to anyone, but that they provide a copy to the county. Two jurisdiction listed that they report to the mayor, and one jurisdiction stated they report to the city manager. The public was only listed once in the reporting requirements. Most of the jurisdictions in this category stated they report their information to these different groups because they are required to do so. One stated they follow the chain of command of the city, with their report going through the fire chief, to the city manager, and ending at the mayor's office.

Urban Cluster Municipality

Of the three respondents in this category, two listed their council of governments in their responses. One jurisdiction stated their hazard mitigation plan must be approved by their council of governments, and one respondent stated they send some information to the council of governments and some to the state emergency management agency. One of these jurisdiction stated they report their efforts to the Corps of Engineers for the purposes of downstream effects. One respondent stated they report their efforts to the COG because their COG liked to be involved and keep copies of the records in case they were misplaced at the state level. The third respondent stated they report their information only to the city government.

<u>Conclusion</u>

Regardless of the size or type of locality, there are a wide range of groups or individuals to whom jurisdictions report their efforts. Many state this is a requirement for them, but the variance in who they report to, especially between jurisdictions of similar size, is interesting to note.

Question 9: How is risk calculated within your jurisdiction?

Urban County

Most jurisdictions in this category calculate risk based on mathematical formulas that typically use "likelihood" multiplied by "impact." One jurisdiction specifically stated that they use the THIRA model, and two stated they use the Hazard Vulnerability Analysis. One respondent did state that they use different formulas for their different departments. Another jurisdiction stated that they assign numerical values based on stakeholder input, and they utilize a particular formula to try and determine which risks are the highest. Only jurisdiction stated they based their calculations off of historical data.

Urban Cluster County

The two respondents in this category stated they look at historical records, with one specifically stating that they use newspapers and websites for their data.

Urban Municipality

Of the seven respondents in this category, only two reported they use a formula based system for calculating risks. Several respondents specifically reported they are not required to use a formula based process. Two reported that they look at historical records, with one of these jurisdiction reporting that they are not required to use a formula. One jurisdiction reported that they are required to make annexes by the state emergency management agency. Only one jurisdiction stated that they handle events as they occur. A process developed by a previous jurisdiction was listed by one respondent, which they use in place of a formal State or DHS process. Two jurisdictions reported they look at threats to the communities, with one jurisdiction focusing on people and then the environment, and the other jurisdiction focusing on vulnerable populations.

Urban Cluster Municipality
Two of three respondents for this category stated that their formulas are based mostly on history and trends that have affected their jurisdictions, as opposed to mathematically based formulas. The third respondent stated they attempt to find insurance coverage for risks at a reasonable cost and that they avoid having uninsured exposures, although this response focuses on insurance and not integrated risk management practices.

Conclusion

Urban Counties were the only group that a majority of jurisdictions use a formula based system. Not all jurisdictions that use a formula based system use the THIRA model though. Many jurisdictions just look at history to determine what to mitigate. Some agencies did note that THIRA has helped them in performing their operations.

Question 10: Who performs your risk assessments?

Urban County

Of the seven urban county respondents, six stated that risk assessments are performed either by the emergency manager/coordinator, or someone under the jurisdictions Office of Emergency Management. One jurisdiction stated they employ a full-time hazard mitigation planner, and three of the seven jurisdictions stated they specifically include county stakeholders and other related entities such as the police, fire, and transportation departments.

Urban Cluster County

Of the two jurisdictions in this category, both reported that the emergency manager is responsible for performing risk assessments. Both respondents also stated they receive assistance from elected officials such as the county commissioners, and one jurisdiction reported that open-hearings are also conducted so that community members can more easily participate.

Urban Municipality

Of the seven respondents, four stated the emergency manager or coordinator performs their jurisdiction's risk assessments with help from other city organizations and entities such as police and fire departments. One jurisdiction stated they conduct a regional risk analysis in conjunction with surrounding jurisdictions. One jurisdiction stated elected officials in the city conduct risk assessments, and one jurisdiction stated they hold public hearings and workshops to make the process as participatory as possible.

Urban Custer Municipality

One of the three respondents stated their assessments are performed by anyone with emergency management duties. The second jurisdiction reported their assessments are performed by a council guided by TDEM and FEMA.   The third respondent their risk assessments were conducted solely by the emergency risk manager.

Conclusion

The data show that larger jurisdictions (> 50,000 population) are more likely to have their risk assessments conducted (or at least overseen) by an assigned emergency manager or someone with a similar title/responsibilities. Of our sample, fifteen respondents stated that assessments were performed by someone(s) with emergency management duties. As the jurisdictions become smaller, we see an increase of other jurisdictional officials participating in the assessment process. This is likely the result of less funding for the employment of a full-time emergency management

coordinator and an increase of information asymmetries, where the input of other officials is necessary due to imperfect information on the part of the assessor.

Question 11: How often are risk assessments conducted and updated?

Urban County

Of the seven respondents in this category, five stated they update assessments every five years, and of these five respondents, two reported they also reexamine their assessments after an incident occurs. One of the seven respondents stated they update their risk assessment every 4 years, and one jurisdiction reported they only update their assessments after an event occurs. One respondent reported they conduct risk assessments annually.

Urban Cluster County

Of the two respondents in this category, one stated they update their risk assessments annually, and one jurisdiction performs updates consistently throughout the year.

Urban Municipality

Of the seven respondents, six responded that they perform updates every five years in accordance with either TDEM requirements, or requirements established for receiving grant funding. Two of the seven respondents stated they additionally review and update assessments after an event occurs. One jurisdiction reported updating their assessments every six months. Three of the seven stated they review, but do not necessarily update assessments on an annual basis.

Urban Cluster Municipality

Two of three respondents in this category stated they perform assessments every five years, while the third perform risk assessments annually.

Conclusion

The majority of the jurisdictions interviewed in our study (thirteen of nineteen) perform risk assessments on a bi-decadal basis, with smaller jurisdictions (< 50,000 population) being more likely to perform assessments more frequently. This is possibly due to limitations on resources and experience, which lends smaller jurisdictions to produce less comprehensive plans than jurisdictions with greater resources.

Question 12: Does your risk management staff consult with outside agencies/jurisdictions when conducting risk assessment(s)?

Urban County

Three of the seven respondents in this category stated they consult outside agencies/jurisdictions on an as-needed basis. Jurisdictions in this category reported they have consulted with TDEM, FEMA, and LEPC when performing risk assessments. One of the seven respondents stated they consult with their COG, and three respondents stated they consult with all other cities within their county. One respondent reported they consult with local businesses as well as institutions related to emergency management, such as hospitals, schools, county departments, NGOs, and VOAD.

Urban Cluster County

Of the two respondents in this category, one stated they consult directly with emergency managers of cities within the county, as well as with emergency managers in other counties. This respondents also stated they consult with their TEDEM representative. One respondent stated their jurisdiction contracts a more qualified individual to perform their risk assessment.

Urban Municipality

All seven respondents in this category stated they consult with outside agencies/jurisdictions when conducting their risk assessments. Two respondents reported consulting with TDEM and LEPC in particular, as well as the National Weather Service, State Health Department, and State Regional Fusion Center. One respondent stated they consult with surrounding jurisdictions. The remaining respondents listed other resources such as various city departments (engineering, planning, and railroad), the local hospital, CERT, area businesses, and the local university.

Urban Cluster Municipality

One the three respondents in this category stated they utilize COG resources. The second respondent reported they consult with surrounding jurisdictions. The third respondent in this category consulted exclusively with insurance agencies.

Conclusion

All jurisdictions consulted outside sources in some manner. Thirteen of nineteen jurisdictions consulted with State or Federal level resources, and six of the nineteen solely consulted other jurisdictions or agencies. Smaller jurisdictions (< 50,000 population) were more likely to consult neighboring jurisdictions, with larger jurisdictions (> 50,000 population) reporting higher instances of consultation with State-level officials. Smaller jurisdictions also reported higher instances of contracting out the assessment process to more qualified entities.

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Question 25: Does your jurisdiction attempt to identify any critical infrastructure interdependencies?

Urban County

All respondents in this category indicated they attempted to identify critical infrastructure interdependencies. Two of the seven jurisdictions responded they have CI/KR plans. One of these jurisdictions specifically replied that within their county, they created contingency plans and kept points of contact lists updated. An interesting point was that one county reported that although there are always interdependencies, they need to work with all players, since having good teamwork helps all jurisdictions at the county level and below. This partially implies that top-level agencies should play a role in bringing players together and creating a unanimous plan. Lastly, two counties responded that even though they try to identify those infrastructures, they do not have the critical infrastructures that meet the DHS definition in their region.

Urban Cluster County

Among the two respondents in this category, one reported that they identify CI and one jurisdiction did not. One of the jurisdictions responded that they categorize information technology as a CI in their region.

Urban Municipality

One of the seven respondents in this category reported that they do not attempt to identify any CI interdependencies because DHS's definition of critical infrastructures does not apply for their region, and FEMA would not recognize new CIs. The remaining six jurisdictions reported that they do make efforts to identify CIs in their regions. These six respondents stated they used the COOP plan when identifying any CI in their regions, but one was unwilling to discuss how or what they define. Two jurisdictions stated that they do identify CI in their region, but did not provide additional details. Two respondents stated that, although they try to identify those infrastructures, they do not have the critical infrastructures that meet the DHS definition in their region. (Note: this answer is exactly the same in urban county response. This indicates that we should make sure this similarity is not a mistake).

Urban Cluster Municipality

All three respondents in this category reported they identify critical infrastructure interdependencies. One of three respondents in our sample identify the CIs in their regions as roads, overhead power, and pipelines.

Conclusion

Twelve of nineteen respondents answered that they try to identify critical infrastructure interdependencies in their regions. However, five of the nineteen respondents who replied yes did not elaborate on how they identify critical infrastructures. Four of nineteen respondents noted that, although they attempt to identify critical infrastructures, there is nothing in the region that meets

the DHS definition of critical infrastructures. One of nineteen interviewees said they use a COOP plan to distinguish critical infrastructures. One of nineteen respondents mentioned that they attempted to identify critical infrastructures such as roads, overhead power, and pipelines in their region. One jurisdiction reported that they categorized information technology as critical infrastructures. One of two who stated they did not attempt to identify CI interdependencies replied that the reason is because the definition of "critical infrastructure" does not apply to their region.

Question 26: How does your jurisdiction determine which risks to address?

Urban County

The answers from seven jurisdictions in this category were divided into three categories: risk assessment (3) historical analysis (2), and hazard planning (2). The methods used by this category are almost equally distributed in the samples. Those counties using risk assessment chose risks to address based on the assessment. Furthermore, two of the counties specifically mentioned that they usually prioritize risks based on the risk assessment matrix to determine where to spend money. Two respondents stated they use historical analysis. They track local newspapers or documents from prior risk managers to analyze the risks to address or the risks most likely to happen again. The remaining two counties responded that they address all risks that are in their hazard planning; however, they did not elaborate on their hazard planning in the interview.

Urban Cluster County

Both respondents in this category have different answers. One mentioned they address risks following the THIRA process, and track local newspapers or documents from prior risk managers to analyze the risks they should address or ones most likely happen again.

Urban Municipality

Two of the seven respondents in this category reported they use an internally developed matrix to address risks. With this tool, they rank risks according to priority. Two respondents specifically mentioned that they usually prioritize risks based on the risk assessment matrix to determine where to spend money. In this group there was a jurisdiction that uses historical analysis and track documents and local newspapers to find the trend of risks, which they called a "common sense" approach. Similarly, two respondents stated they prioritize the risks based on the needs and critical facilities they have. An interesting answer one jurisdiction was that they address only the risks they have money for. This could indicate that financial resources in risk management are an important factor to consider. Two counties responded that they address all risks that are in their hazard planning, and one respondent declined to give information.

Urban cluster municipality

Two of three respondents in this category reported they use historical analysis, tracking local newspapers or documents from prior risk managers to analyze the risks to address or the risks most likely to happen again. The final respondent in this category stated they address all risks, viewing all risks as equally important.

Conclusion

One of nineteen respondents was the only one who was not willing to discuss the question. Six of the nineteen respondents replied that they address risks based on risk assessment results. Furthermore, four of these answered that they focus resources on the highest risks in the threat category. Two of nineteen respondents reported that they prioritize needs and critical facilities, then address risks. Five of the nineteen respondents address risks through historical analysis. Using

historical analysis, they look at what has happened and what is the biggest impact. Four out of nineteen respondents noted that they address all hazards and risks. One respondent replied that they address risks included in the THIRA process guide. One of the nineteen respondents noted that their determinants for addressing risks are based on the money that has been appropriated.

Question 27: When developing your risk management solutions (for items such as floods, fires, etc.), did you consider any alternatives?

Urban County

Saving one respondent, every county in this category reported they consider alternatives as backup when developing solutions. The one respondent without alternative plans said that, in general, their plans are enough to allow flexibility for response. Thus they do not consider alternatives in their plan. Three respondents stated they include all alternatives in the Hazard Mitigation Plan. One jurisdiction reported they encourage all stakeholders to participate and develop a plan, create direction, and decide on the training that is appropriate. Another county said that a minimum of two strategies is chosen for each hazard. This is called "abatement strategies." One jurisdiction reported they do consider alternatives as backup but did not elaborate on the procedure.

Urban Cluster County

One of two jurisdiction stated they receive insight and feedback through networking, especially TDEM conferences that help them broaden their perspectives on problems. This is because people see the same problem from different approaches. The second respondent had a similar approach in which they adopted a neighboring county's plan or contacted them directly. One jurisdiction also mentioned that they use textbook information when looking for alternatives.

Urban Municipality

Three of seven respondents in this group responded yes and three replied no. To the question of consideration of alternatives, two responded they plan their alternatives with group involvement, which attempts to design better approaches. Another one which answered "yes" did not give details on how they plan alternatives. Two respondents replied their plan allowed for flexibility in response; thus, they do not look for alternatives. One responded that they did not think they need alternatives because they have such strong plans of mitigation for flooding, flood retention dams, and fuel reduction methods.

Urban Cluster Municipality

Two of three respondents in this category replied that they recognize they have to prepare alternatives, but they simply do not have enough financial resources and time to plan alternatives. The final respondent reported they considered no alternatives.

Conclusion

Among nineteen respondents, thirteen answered that they do consider alternatives when developing risk management solutions, and six responded they do not. One of the nineteen respondents replied that they choose at least two strategies for each hazard, called "abatement strategies." Three of nineteen respondents indicated that they include all alternatives in the Hazard Mitigation Plan. Another three of the nineteen respondents noted that when considering alternatives, they bring in involved groups and develop plans. One respondent indicated that when they are considering alternatives, TDEM conferences help to develop plans; because talking to

other people finds different solutions to the same problem. One of the respondents reported that they look at the plans of neighboring counties for alternative plans. One respondent also indicated they use reviewed textbooks on Emergency Management from previous formalized education for alternatives. On the other hand, three of the nineteen respondents reported plans are general enough to allow flexibility in response, therefore they do not consider alternative plans. One respondent indicated that they should consider alternatives, but they do not have enough time and money.

Question 27.A: How did you decide on your current risk management solutions from those alternatives?

Urban County

One of the seven respondents in this category replied that the cities in their county identified their own risks. Yet some cities do not have enough funding to address their risks. Three jurisdictions responded that they created their plan by collaboration risk stakeholders. They bring the stakeholders together and develop a plan for the direction they need to take, then create that direction, and decide on the training needed. To summarize, their plan represents the opinion of the stakeholders. The remaining counties surveyed replied that they focus on efficiency of the plan. One jurisdiction pursues using best practices, and another emphasizes having a better way to solve the potential problem quickly.

Urban Cluster County

One of the two jurisdictions in this category mentioned they decide their solutions based on personal needs. Another respondent replied that they choose the most applicable alternative to their jurisdiction, risks and threats.

Urban Municipality

The first and second urban municipalities in our sample group replied that they choose the best practices. The third responded that they "choose the one that fixes the problems." The fourth urban municipality considers the most cost effective and efficient way of managing risks when choosing solutions. The final risk managers surveyed mentioned that they choose their solution based on discussion with impacted groups.

Urban Cluster Municipality

The three jurisdictions in this category stated that their goal is to pick the solution that brings the greatest benefit to their county, but one stated they can also benefit from larger jurisdictions.

Conclusion

One of nineteen respondents reported that twenty-two cities in their county identify their own risks, and some cities do not have enough funding to address their risks. Three of the nineteen respondents indicated that they chose their plans through collaboration with risk stakeholders. Four respondents focused on the efficiency of the plan for their choice. Three pursue using best practices and one prefers to choose the best way in which they can solve problems quickly. One of the nineteen respondents mentioned that they decide their solutions based on personal needs. One respondent replied that they choose the most applicable solution to their jurisdiction, risks, and threats. One respondent indicated they "choose the one that fixes the problems." One respondent reported that when choosing the solutions, they consider the most cost effective and efficient way of managing risks from alternatives. One respondent replied that their goal is to pick the solution they believe will bring the greatest benefit to their county, and will be effective for other groups/jurisdictions by making it larger than an individual problem.

Question 28: How does your jurisdiction evaluate the effectiveness of your risk management solutions?

<u>Urban County</u>

The jurisdictions in this category commonly agree that evaluating the effectiveness of risk management solutions is difficult, because effectiveness can only be evaluated after problems occur. One counties uses historical analysis. Another jurisdiction utilizes formal after-action reports (AAR) to grasp the idea of where they stand when comparing their solutions to the national standards. Another county is using a formal AA, when there is an event, and responders and elected officials discuss the aspects of the event. Finally, one county conducts exercises regularly to evaluate their effectiveness.

<u>Urban Cluster County</u>

Of the two respondents in this category, one employs five inspectors who keep the evaluation of the effectiveness of their risk management solutions as a priority procedure, and another jurisdiction uses an AAR form. One jurisdiction reported that they only review their solutions and actions after an event happens. One jurisdiction also mentioned that they do not evaluate their solutions, but they believe that dedicating their efforts to the tasks performed and the efficiency in performing those tasks is more important.

<u>Urban Municipality</u>

Of the seven respondents, three stated they use AAR, and two of these evaluate the lessons they have learned from incidents. Two of these three respondents also noted it is hard to evaluate the effectiveness of risk management solution, especially when no incident occurs. One municipality conducts drills to evaluate their effectiveness of risk management solutions. Another municipality uses an evaluation form from FEMA (WEBEOC). Two of the seven jurisdictions responded that they could not directly answer the question, because it is not possible to evaluate on a day-to-day basis, they can only evaluate after the event occurs. Three jurisdictions reported their procedures for evaluating the effectiveness of their risk management solutions. One evaluates on a continuing basis as a part of everyday operation. Another uses measurements reported quarterly to evaluate its effectiveness. The final jurisdiction notes that they evaluate their risk management solutions annually.

<u>Urban Cluster Municipality</u>

Two of three respondents in this category stated they evaluate their risk management plan after the solutions have been implemented during a disaster. The third jurisdictions stated that they only evaluate their solutions as far as the funds appropriated for the evaluation will allow.

Conclusions

Twelve of nineteen respondents indicated that evaluating the effectiveness of risk management solutions is difficult, because they can only evaluate its effectiveness after a disaster occurs. Six of these twelve respondents replied that once an incident occurs, they use After Action Reviews to evaluate the effectiveness. One of the respondents reported that they look at the history of how they manage disasters when evaluating effectiveness. Three of nineteen respondents indicated that they evaluate the effectiveness constantly. One jurisdiction responded that they actively evaluate the effectiveness of everyday operations. Another jurisdiction responded that they employ five inspectors who maintain evaluation effectiveness as a priority. One of the respondents stated they do drills to evaluate their effectiveness of risk management solutions. One respondent indicated they use an evaluation form from FEMA (WEBEOC). Two respondents reported they evaluate the effectiveness regularly. One evaluates annually. Another one performs quarterly evaluations through performance measures. One of the nineteen respondents stated they only evaluate their solutions as far as the funds appropriated for the evaluation will allow. Lastly, one of nineteen respondents replied that they do not evaluate their solutions,. Instead, they view the dedication of their efforts towards the tasks performed and the efficiency in performing those tasks as of greater import.

Question 28.A: How often is this evaluation performed?

Urban County

Three of seven respondents in this category stated they perform the evaluation every five years. If a major event occurs, however, they evaluate their plans after the incident. These three commonly agreed AARs may indicate other assessments that were not covered in the mitigation plan. The remaining four counties reported performing evaluations only after an incident occurs. One respondent reports a continuous evaluation process occurring several times per year.

Urban Cluster County

One jurisdiction in this category reported they cannot know if the evaluation is valid until it is actually implemented. Thus, they perform the evaluation after an event.

Urban Municipality

Two of the seven jurisdictions in this category replied that they perform evaluations only when an incident occurs. One urban municipality responded that evaluating the effectiveness of risk management plans is ongoing. Another urban municipality mentioned that they evaluate every five years in addition to when THIRA is due. One respondent stated that they evaluate their plans after every event. Two respondents noted that they perform the evaluation of their plan annually. There was one difference in the responses of these two municipalities. One responded that LECP performed the evaluation.

Urban Cluster Municipality

Two of the three respondents in this category stated they perform evaluation every five years. The third respondent stated that their evaluation of the effectiveness of the risk management solution is performed annually.

Conclusions

Five of the nineteen respondents indicated they perform evaluations every five years. However, three respondents added that when a major event occurs, they assess their performance in an After Action Review by considering what was not accomplished in the mitigation plan. Seven of nineteen respondents mentioned their performance evaluations are only performed when a disaster occurs. Six of the respondents reported they use After Reviews to evaluate performance. Three respondents stated they perform evaluations annually. One of the nineteen respondents reported that evaluations are an ongoing project.

Question 4: Who does the Risk Manager for your jurisdiction report to directly?

Urban County

All seven of the urban county respondents reported that the results of all risk management are reported to the County Judge, either through an administrator or directly from the Emergency Coordinator.

Urban Cluster County

The two respondents in this category indicated that direct reporting authority included FEMA, Texas Council of Governments (COG), Fire Chief, County Judge, Mayor, and City Manager.

Urban Municipality

Responses from the seven urban Municipalities included a variety of reporting authorities, including the Texas Department of Emergency Management (TDEM), FEMA, two report to the Fire Chief, and one reports directly to the Mayor.

Urban Cluster Municipality

The three urban cluster municipality respondents either reported to the City Manager or the Regional Advisory Committee.

Conclusion

Ten of nineteen respondents indicated that risk management results are reported directly to either the Mayor or the County Judge. Two of nineteen respondents report risk management results to the Fire Chief. One of nineteen report risk management results to the Texas Department of Emergency Management (TDEM). One of nineteen respondent reports risk management results to FEMA. Two of nineteen respondents report risk management results to the City manager or a Regional Advisory Committee.

Question 5: What portion, if any, of your jurisdiction's risk management duties are contracted/consulted to an outside source?

Urban County

Urban counties varied widely in their use of consultants/contracting in performing their risk management duties. Only one of the seven jurisdictions stated outright that they use a consultant to perform these operations. Consulting with the jurisdiction's Council of Governments was a method used by two of the seven jurisdictions. For specialized data, two of the jurisdictions stated they used consultants, with one of them being universities for GIS data. Two respondent stated that their Mitigation Action Plan is performed by a consultant, and this plan is then used to develop their risk management strategies. Only one jurisdiction stated that they do not use any form of consultant or contracting to perform these duties.

Urban Cluster County

As with the Urban Counties the Urban Cluster Counties vary in their use of consultants and contractors as well. One of the two jurisdictions in this category used no contracting or consultant services to develop their plans. Another stated they include all of the fire departments within their jurisdiction, although this does not qualify as consulting out the work, as this method is including applicable personnel to make sure all threats and inputs are captured.

Urban Municipality

Unlike most of the counties, the majority or Urban Municipalities stated that they do not use any outside consulting. The only caveats to this were: if they needed extra resources, if the jurisdictions were looking at their regional plan, or if they were receiving input from other government agencies within their jurisdiction. All of these seem to help build their program, and not actually perform any of the risk management duties. One jurisdiction did state that they use consulting for their hazard map and traffic flow map, while all other operations were performed by the risk manager.

Urban Cluster Municipality

One of the three respondents in this category stated that they do not consult anyone to perform their risk assessments, but that they will have engineering firms come in and evaluate those assessments to make sure they were performed correctly.

Conclusion

While there is no requirement to consult or contract to perform risk management duties it is interesting to note the varied differences across jurisdictions. Also of note is the fact that some agencies were still seeing this as related to insurance and workmen's compensation at this point in the interview process.

Question 13: What sources of information does your jurisdiction consult when conducting risk assessments?

**Urban County**

Four of the seven jurisdictions reported consulting their jurisdiction's historical records, and two stated they consulted previous risk assessments such as the Hazard Mitigation Plan. Three jurisdictions mentioned the National Weather service as a consulted source of information, and two jurisdictions stated they perform a Hazard Vulnerability analysis. Other sources of information included stakeholder input, subject matter experts, State Health Department, census, CPG 201, THIRA, and cost estimates of building values.

**Urban Cluster County**

Of the two respondents, one reported consulting their county's historical records and attempt to identify the most likely major disaster that could threaten their jurisdiction, and one respondent stated they consult after-action reports.

**Urban Municipality**

Three of the seven respondents stated they consult NOAA and TWS, two stated they consulted CPG 201, and two jurisdictions reported they conducted TCEQ. One jurisdiction reported following TDEMs written guidelines for updating annexes, and one jurisdiction said they consulted Tier-2 reports. Other sources of information reported as being consulted were the THIRA, previous assessments, and information from the county and region.

**Urban Cluster Municipality**

Of the three respondents, two stated they consult other jurisdictions, and one reported they also look at their jurisdiction's historical records. The third respondent stated they look at cost estimates of building values.

**Conclusion**

Seven of the nineteen jurisdictions consulted, among other things, their jurisdiction's historical records, attempting to identify those threats and hazards that occurred with highest frequency. Larger jurisdictions ($> 50,000$) were much more likely to consult a larger variety of resources, such as past assessments, census data, NOAA, and TCEQ. All smaller ($< 50,000$) jurisdictions that participated in our research only listed other jurisdictions and historical records as consulted sources of information.

Question 14: From where does your jurisdiction draw its risk management approach?

Urban County

Three respondents stated they drew their approach from the Hazard Mitigation Plan, and three stated they follow State requirements. Two jurisdictions reported following the approach outlined in the THIRA, another jurisdiction stated they follow whatever approach FEMA promotes, and one jurisdiction reported using their own system of analysis. Other responses to this question mentioned federal documents such as HSPD-5, the NRF, the Texas Disaster Act, NIMS, EMAP, Stafford Act, and the Post Katrina Act.

Urban Cluster County

Of the two respondents in this category, one reported following the THIRA and NRF approaches.

Urban Municipality

Of the seven respondents in this category, four stated drawing their approach from TDEM, two stated they had no guidance when developing their risk management approach, with one of these jurisdictions reporting they drew off of their county's approach. Two respondents stated they incorporate recommendations from FEMA when developing their risk management approach.

Urban Cluster Municipality

One of the three jurisdictions stated they followed the approaches of other jurisdictions, and one jurisdictions stated they follow the THIRA and FEMA Disaster Mitigation approaches, while also incorporating Stated processes (such as MXP). The third respondent stated they developed an in-house approach unique to their jurisdiction.

Conclusion

Overall, thirteen of the nineteen jurisdictions consulted federal risk assessment guidelines when developing individual risk management approaches. The majority of jurisdictions reported instances of consulting past risk assessment guidelines or utilizing State resources. Four of the nineteen jurisdictions reported they received no guidance when developing their risk management approach. Additionally, smaller jurisdictions (< 50,000 population) were more likely to follow the example of other jurisdictions, while also referencing current federal risk assessment guidelines.

Question 15: What risk management education or training has the risk management staff received in the past, and from what proponent agency?

__Urban County__

The most common source of training for urban counties came in the form of FEMA and Texas A&M Engineering Extension Service (TEEX) courses, both cited by six out of seven urban counties. Four out of seven urban counties stated that they take courses from the Emergency Management Institute (EMI). Two out of seven counties have certified emergency managers and one is a certified emergency manager from the Emergency Management Association of Texas (EMAT). Two out of seven urban counties participated in formal training regarding preparation of the THIRA. Academic education was also cited, with two county emergency managers interviewed having master degrees in homeland security and emergency management and another having been a part of the Emergency Administration and Planning program at the University of North Texas. One out of seven urban counties stated that they hosted numerous risk management training courses for their own agency and other agencies. Finally, conferences, peer entities, National Emergency Response and Rescue Training Center (NERRTC), and the COG provided a source of risk management education for urban counties, each source cited once. One out of seven urban counties receives training for sheltering from TDEM and the Department of Health and Human Services.

__Urban Cluster County__

Urban cluster counties stated that they receive training from TEEX and TDEM. One of the two respondents in this category received training related to threat assessment, and another county received training particular to the THIRA. Communication with the COG and transportation security officers were each cited by one jurisdiction as a source of education about risk management. Emergency managers cited their background as a source of education about risk management, with one receiving a master's degree in emergency management from the American Military University and another having twenty-five years of military experience.

__Urban Municipality__

Of the seven urban municipalities in this category, three stated that they receive risk management training from the state. Courses from FEMA and TEEX were both cited twice as sourced for risk management education. Though not directly related to risk management, one out seven municipalities answered the question that they require all city workers to complete FEMA IS 100, 200, 700, and 800 courses, with those in management positions being additionally required to complete IS 300 and 400. Cities also use annual conferences, tabletop exercises with their LEPC, and guidance from WebEOC for risk management education. One out of seven municipalities requires that staff members take one thirty to forty hour class each year regarding risk management. The American Red Cross, NERRTC, the COG, and the local police department were each cited once as sources of education and training for the cities. One out of the seven respondents does not participate in formal risk management education or training programs, but relies on previous work experience for guidance.

Urban Cluster Municipality

For two of three urban cluster municipalities in this category, FEMA, EMI, the U.S. Fire Administration, and PreparingTx.org were each cited once as sources of risk management training and education. One of the municipalities stated that because there are no defined documents about what training emergency management professionals should have in risk management, they seek out opportunities for formal education such as UNT's Emergency Administration and Planning program. . The third respondent stated they participated in risk management seminars provided by a certified risk manager and the Texas Municipal League.

Conclusion

The large variety of sources for risk management training across the jurisdictions indicate that there is no centralized training that emergency management officials can turn to for risk management education. The most common sources of risk management training across jurisdictions are FEMA (nine/nineteen) or TEEX (eight/nineteen). Because all other types and sources of training are cited minimally throughout the sample, it is difficult to draw conclusions based on this information.

Question 17: Does your risk manager receive any federal and/or state guidance on risk management? And if so, in what form and from whom?

Urban Counties

Urban counties receive state and federal guidance on risk management in many forms. The COG provided guidance at the regional level. At the state level, counties receive guidance and requirements from TDEM, including information about the preparation of the Hazard Mitigation Plan. Texas Government Code 418 (also referred to as Texas Disaster Act) also provides statewide guidance. At the federal level, urban counties receive guidance from DHS, particularly FEMA, and federal documents such as, but not limited to, Homeland Security Presidential Directive/HSPD-5 Management of Domestic Incidents, the National Response Framework (NRF), the Emergency Management Accreditation Program (EMAP), the Stafford Act, Code of Federal Regulations 44 Emergency Management and Assistance (CFR 44), and the Post-Katrina Act.

Urban Cluster Counties

Urban cluster counties stated that they receive guidance through the federal level through FEMA courses. One of the two respondents suggested that they receive information regarding THIRA only. Guidance from the state comes from TDEM via the Regional Liaison Officer.

Urban Municipalities

Urban municipalities receive guidance from TDEM and FEMA about risk management. One out of seven urban municipalities received Continuity of Operations Plan (COOP) guidance from the state and another city received guidance on the THIRA from TEEX. The COG was another source of guidance at the regional level.

Urban Cluster Municipalities

Urban cluster municipalities receive state guidance through TDEM and TEEX, and regional guidance through the COG. One out of the three respondents in this category also received guidance from the federal level through communication with personnel in the FEMA regional office, and one county stated that FEMA advised them on insurance requirements.

Conclusion

All emergency risk managers stated that they receive federal and/or state guidance in some form. FEMA was the most common named entity for federal guidance (seven/nineteen) and TDEM was the most commonly named entity for state guidance (eight/nineteen). Jurisdictions also indicated that they receive regional guidance from the COG (three/nineteen). Only two jurisdictions, both at the urban county level, cited published documents and legislation as guidance for risk management.

Question 18: Does the Risk Manager have routine meetings or education events with other risk managers at a state or federal level?

Urban Counties

Three out of seven urban counties have quarterly emergency management meetings and conduct trainings and exercises on a regular basis. Two out of seven counties have monthly county emergency management meetings. Three out of seven counties attend regular regional emergency management meetings. One of the seven counties answered that they attend conferences.

Urban Cluster County

Of the two urban cluster counties in the sample, one attends an annual conference each May and one county attends conferences throughout the year. One of the two counties does not have routine meetings or educational events at the state or federal level.

Urban Municipality

Four out of the seven urban municipalities attend conferences at the state or federal level. One out of seven city participates in regional meetings regarding the mitigation action plan. Cities also meet with their LEPC and COGs. Other sources educational events urban municipalities participate in include tabletop exercises and drills.

Urban Cluster Municipalities

One out of the three jurisdictions in this category attends at least one conference a year at either the state or federal level. One jurisdiction's emergency manager participates in meetings and educational events because of involvement on committees, but states that other emergency managers in that position might not be able to be as involved or participate in such events. The third respondent reports no attendance at meetings with risk managers at the state or federal level.

Conclusion

Urban counties and urban municipalities are more likely to attend meetings or participate in educational events with risk managers at the state or federal level. Conferences was a commonly cited source for this interaction and collaboration (eight of nineteen). Only one jurisdiction of the sample indicated that they do not meet or participate in educational events at the state or federal level.

Question 19: What training would you like the risk manager to receive on IRM, and from what level?

Urban Counties

One out of seven urban counties would like to see more training and guidance about how overcome the barriers to information that is necessary for the risk identification process. Two out of seven counties would like to see better training about preparing the THIRA. One suggestion for improving the training process is to make trainings more practical and less theoretical. Two of the seven urban counties have no suggestions for additional training they would like to receive regarding risk management.

Urban Cluster Counties

One of the two urban cluster counties suggests that the current trainings available be broken down into smaller topics that are "easier to digest." That county believes that FEMA should provide more guidance and training for initiatives prior to becoming a requirement. One emergency manager in this category answered that he has had enough training and has no suggestions for potential future training.

Urban Municipalities

One out of seven urban municipalities would like to see more training for planning and operations for emergency management staff. Two out of seven cities would like to receive more training about THIRA. One city would like training on how to make the emergency risk management process easier and how to identify if they are doing it properly. One suggestion for the risk management training is for the training to be taught by someone with an emergency management background.

Urban Cluster Municipalities

One of the three jurisdictions in this category answered that they would like to have more training regarding THIRA and how it relates to the work they did prior to THIRA while operating under the Disaster Mitigation Act of 2000.

Conclusion

The ideas for risk management training varied widely across the jurisdictions. Five of the nineteen jurisdictions would like to see more training on THIRA. One other suggestion was to have training on how to better access information for risk identification. Three of nineteen jurisdictions do not believe there needs to be additional training on risk management. Perhaps most interestingly, most jurisdictions answered this question with suggestions for the delivery of the training and not the content. Suggestions included making training more practical and less theoretical, breaking down current trainings into "easier to digest" portions, and having individuals from an emergency management background teaching the courses.

Question 20: What suggestion for improvement do you have in the areas of risk management?

Urban County

The two most frequent suggestions for risk management improvements are to increase the State and Federal requirement for risk management practices, and to also increase funding for meeting those requirements. One participant explained that by creating more requirements to fulfill, there becomes a greater need for a single-hatted risk manager. This would then create greater focus on risk management within the agency, and would help to ensure that all documents revolving around risk management are handled by a single person with high expertise in the area. The final suggestion is for state and federal levels to consolidate information about risk management, such as risk identification, evaluation, into one easily accessible location. Contrary to the suggestions above, it should be noted that there were two participants from the Urban County group that suggested there were no improvements they would like to see regarding the risk management process.

Urban Cluster County

Within the Urban Cluster County group, there were three general responses. The first was to identify some best practices for involving the local community - allowing them to be better prepared and less reliant on the governing body when disasters occur. The second was more locally focused, suggesting that localities should be encouraged to exercise and practice their existing plans. The final suggestion was the FEMA and the State should create more defined processes, and reasoning for those processes, before requiring states to fill a 6 inch binder full of paperwork.

Urban Municipality

In this category, two participants suggested providing a practitioner's perspective to the documents. This would allow risk management personnel, who do not have formalized emergency/ risk management education, to more easily understand and digest the information, as well as supply the correct types of responses/ information. Another answer suggested that State and Federal levels can engage localities in the THIRA process more, which would provide a more well-rounded process. Another suggested that those involved with risk management should search for more opportunities to be involved - such as joining more emergency/ risk management groups or searching for trainings. Two other respondents stated that they have no suggestions because they believe they are either already successful with risk management, or think the process is already well defined.

Urban Cluster Municipality

The sole suggestion from the Urban Cluster Municipality group is to make documents that are complementary or use the same type of information more compatible with each other (such as a disaster mitigation plan approved by the state, THIRA, etc.).

Conclusion

The data for this question shows a trend that answers were locally focused for jurisdictions with populations under 50,000, and that answers focused more on State and Federal level requirements for jurisdictions with a population above 50,000. In the smaller jurisdictions, it was noted that departments have less available time and personnel to fill out documents regarding risk management, and that document requirements from the State and Federal levels should complement existing documents to make the process easier to transfer. They also stressed that these documents should take a better practitioner's perspective and should use language that is easier to understand for people without strong academic back grounds. In the larger groups, it was noted that the requirements from documents should be more specific. The belief for this supports the idea of a risk management specific and individual position within a jurisdiction. With greater requirements from State and Federal levels, there is a greater need for a more specific position. Also, there was one mention that more jurisdictions should be engaged for the THIRA process.

Question 21: What benefits does your jurisdiction receive from integrated risk management?

All Groups

From all persons interviewed, there are some benefits that are experienced at all levels. The first is that it fulfills State or Federal requirements, as well as fulfills the needs for grant money. Another is that it helps with the emergency planning process. Furthermore, it also helps to save lives by reducing risks, or at least by becoming more aware of local risks. Finally, it helps to identify weaknesses of the jurisdiction, and the need to address them.

Urban County

Three participants in the Urban County groups stressed the importance that it increases preparedness within the community, households, and participants in the disaster response process. One of these noted that the county has undertaken a public relations campaign to push households to develop preparedness kits, making them more self-sufficient and less reliant on government support during the response phase. One participant responded that it helps to identify the appropriate human capital and resources. Another stated that it keeps the agency better informed and prepared. Finally, three participants mentioned that it has brought about financial benefits, since the grant money helps to push the potential for a single-hat risk manager.

Urban Cluster County

The two respondents in this category report understanding the risks that are most likely to affect a community, and strategy level decision makers are more likely to handle disasters because of more encompassing plans.

Urban Municipality

In the Urban Municipality group, there were a wide array of answers. One was that it helps to understand risks that affect a greater area, since risks are not contained within jurisdictional boundaries. Another is that understanding what risks affect your community allow for agencies to do more research for how to handle those risks. Another stated that it prevents the jurisdiction from being in a 'vacuum' by providing the means for easier communication between jurisdictions, making the sharing of information smoother and more efficient, which allows for better preparation. One participant noted the ability for jurisdictions to more effectively utilize their resources. On the other hand, one participant stated that risk managers should take caution to not "threat yourself to death"; meaning that it is easy to get lost in the 'what-ifs' when planning and evaluating community risks.

Urban Cluster Municipality

Two of three responses from this category were not mentioned above. The first is that risk management helps reduce health insurance costs, and the second is that the Risk Lexicon has helped to provide clarity to some definitions of terms. One of the three jurisdictions in this category stated the benefit of risk management is that it provides better 'peace of mind' for disaster planners.

Conclusion

The data for this question show that all jurisdictions fill out State and Federal level documents that are required, as well as fill out extra documents for grant-based money. Overall, while these benefits are helpful, the greatest impression was that integrating risk management practices into other mission areas helps the processes associated protecting lives and property. Furthermore, these practices help to identify weaknesses within these jurisdictions. One participant responded that it helps to get access to the general public, which has the potential to lower the amount of people reliant on the government immediately after a crisis event.

Question 21.A: Are those benefits worth the resources and effort?

All Groups

All but two responses agreed that the benefits of risk management practices were well worth the effort and resources put into them. The two responses that did not agree both stated that the benefits from their risk management practices at one point were worth the resources and effort, but are no longer. In large part, the responses showed that the grants received from risk management practices freed up funds for other programs in the agency, were used to acquire more resources, and/or helped to prioritize risk management issues within their jurisdiction.

Question 23: What suggestions might you have to incentivize risk management?

All Groups

There were many suggestions given that are within each county and municipal group. Those are to create more grant funding, and to create standardized training for risk management practices - such as THIRA. Another was specifically about THIRA, which was to reduce the redundancy between THIRA and other mandated emergency management documents, to change the language of THIRA that can translate to leadership roles that are not based in emergency management, as well as to balance terrorism content with other risks associated to emergency management.

Urban County

Within the Urban County group, there were four different answers that are different from the ones listed above. The first is to publicize information about the benefits cities get from counties, such as a wider scope for hazard mitigation plans. This would also publicize how those benefits can create cheaper housing districts and better flood-plain management. The second is to publicize homeowner insurance incentives of the National Flood Insurance Program (NFIP) to citizens, such as hail proof roofs. The third would be to offer simple awards (not necessarily with financial incentives) to acknowledge the extra work agencies complete for THIRA and other documents. The fourth came from an "old school belief…" that there should not be any extra incentives for doing one's job better.

Urban Cluster County

While grant money was mentioned in the introduction paragraph, one participant noted that grant money can be a 'double-edged sword'. Emergency management personnel may spend money trying to earn grant money when they could actually find places to save it within their own budget - so it is important to not be distracted by dollar signs.

Urban Municipality

Within the Urban Municipality group specifically, there were four answers outside of those listed in the introduction. The first is to clearly state the benefits that can be earned from grants. The second is to be transparent about the amount of grants and technicalities, since many require a lot of work or have strings attached to them. The third is to understand that many jurisdictions have money to tackle immediate situations, and are usually less focused on risks that are not guaranteed to occur. The fourth was that there was no suggestion the participant could immediately name.

Urban Cluster Municipality

The only answer from the participants in this group was that other jurisdictions/ agencies should apply for awards, even though they require self-promotion.

Conclusion

The data show that the largest motivator for all jurisdictions to implement and conduct risk management practices is a financial incentive or grant. In general, other responses showed that many emergency management personnel are dedicated to their jobs and serving the public. So, by adding requirements to their job, it allows them be better at and more prepared for their job. Another motivator is the ability of jurisdictions to create better Mutual Aid Agreements. If jurisdictions can completely assess themselves from a risk management perspective, it is easier to 'pitch' ideas for resources that can be shared across a region - such as a HAZMAT response team or a structural collapse team.

Question 24: Are you familiar with the Threat and Hazard Identification and Risk Assessment (THIRA)?

All Groups

All participants, with the exception of two, answered "Yes" to this question. The two participants that answered "No" belonged to the Urban Cluster County group and the Urban Municipality group, respectively.

Question 24.A: Does your jurisdiction complete THIRA forms?

All Groups

There are a wide array of answers for this question, many of which are specific to jurisdictions. All participants, except for four, answered "Yes" to completing their own THIRA forms. Listed below are some of the variances and specifics to answering "Yes" - for example, THIRA work that is completed for the jurisdiction, but is contracted out.

Urban County

Within the Urban County category, here are why these jurisdictions complete THIRA forms:
- The North Texas COG completes the forms
- Complete THIRA for the region Urban Area Security Intelligence grant
- Region prepares an all-hazard THIRA
- The THIRA process is used to identify specific risk areas for their jurisdiction

Urban Cluster County

There were no specific answers for this category, other than that these groups completed the THIRA.

Urban Municipality

Within the Urban Municipality group, three groups stated that THIRA forms are completed at the regional or COG level.

Urban Cluster Municipality

There were no specific answers for this category, other than two of three respondents completed the THIRA form, and one respondent did not.

Conclusion

Although only two participants did not know THIRA (from above), there were four participants who did not complete it - two belonging to the Urban County group and two belonging to the Urban Municipality group.

Question 29: How is your risk management program funded?

Urban County

Six of the seven urban counties are funded through general funds originating from tax dollars. Two of the seven urban counties receive primary funding from federal and state grants but not FEMA grants.

Urban Cluster County

Both of the urban cluster counties are primarily funded through general funds originating from tax dollars.

Urban Municipality

Of the seven urban municipalities are primarily funded through general funds originating from tax dollars. Only three urban municipalities receive funding through federal grants, however, none were from FEMA.

Urban Cluster Municipality

All three urban cluster municipalities are primarily funded through general funds originating from tax dollars.

Conclusion

Eighteen of the nineteen respondents are primarily funded through general funds originating from tax dollars. Two of the nineteen respondents receive primary funding from federal and state grants but not FEMA grants.

Question 16: How does your risk management staff request and receive training on risk management?

Urban County

The method of requesting training depends upon the source of the training. Urban counties request classes on risk management from the state through submitting a formal request to the TDEM District Coordinator. Counties can also request training from their COG, FEMA, or EMI. Two/seven urban counties contract with other agencies, such as TEEX. Two out of seven urban counties stated that they select some staff members for specialized trainings. One out of seven urban counties cited PreparingTexas.org as a source for requesting training on risk management.

Urban Cluster County

Of the two urban cluster counties in this category, one stated that they receive training on risk management through FEMA online courses, programs from TEEX, and the Texas State Agency. One of the two counties stated that because the first responders are volunteers, it is hard to keep them involved and trained properly due to personal time constraints.

Urban Municipality

Three out of seven urban municipalities send formal requests to TDEM for risk management training, and one formally requests training from FEMA. Two out of seven cities contract with other agencies, such as TEEX. The state website, PreparingTexas.org and EMI were all cited as sources to request and receive training.

Urban Cluster Municipality

One three respondents requests and receives risk management training from the International Association of Emergency Management (IAEM) Conference, the CPG working group, and the regional advisory committee. One out of three respondents states that training is an item that is budgeted by their agency. The third respondent stated emergency management coordinator identifies which courses to request and receive.

Conclusion

The process of requesting and receiving training depends on the type of training. Most of the risk management training requested and received by jurisdictions are done through online means including FEMA through EMI or PreparingTexas.org (eight/nineteen). Even though only four jurisdictions stated that they received training from TDEM, when asked about the sources of risk management training, eight jurisdictions indicated that they submit a formal request to TDEM through the district coordinator for training. Jurisdictions also contract with other agencies such as TEEX to receive training (five/nineteen).

Question 22: What incentives exist to encourage your jurisdiction to conduct risk management?

All Groups

For this question, there were several responses that were seen across all county and municipal groups. The first was that funding from the State or Federal levels serve as the number one incentive. Agencies are willing to participate in better risk management practices when they can receive more grants or other funding. The second response was that adopting these practices are an incentive because their jobs are to protect life and property within jurisdiction as best as possible, as well as understanding risks that affect those. Another was that it is required to a certain degree by higher governmental bodies. And finally, risk management practices help to identify what areas need, and can rely upon from mutual aid agreements - such as sharing large resources like structural collapse teams.

Urban County

There are four responses not listed above that are specific to the Urban County group. The first is that it helps risk management actors realize the responsibility and role of citizens. The second is that finding programs that exist for risk management help those who want to learn more, and helps the actor better engage the public. The third was that it helps identify ways for the public to become less reliant on the government and more self-sufficient. The final response was that no incentives exist with the exception of making emergency managers more effective at their jobs.

Urban Cluster County

There are two response not listed above that are specific to Urban Cluster County groups. The first is that it helps emergency managers be more effective at their job, and the second is that emergency managers have a responsibility for their citizens.

Urban Municipality

There are three responses not listed above that are specific to Urban Municipality groups. The first is that risk management provides knowledge of what needs to be done and prepared for by the agency. The second is that it shows different impacts within the jurisdiction based on risk location and population density. The final response is that there are no incentives offered for risk management that are experienced without having to apply or self-promote. Namely, actors can only win the awards they apply for.

Urban Cluster Municipality

The only response seen in the Urban Cluster Municipality group that was not listed above is that awards can only be won if actors apply for them.

Conclusion

The data shows that the largest motivator for all jurisdictions to implement and conduct risk management practices is a financial incentive or grant. In general, other responses showed that many emergency management personnel are dedicated to their jobs and serving the public. So, by adding requirements to their job, it allows them be better at and more prepared for their job. Another motivator is the ability of jurisdictions to create better Mutual Aid Agreements. If jurisdictions can completely assess themselves from a risk management perspective, it is easier to pitch ideas for resources that can be shared across a region - such as a HAZMAT response team or a structural collapse team.

Question 30. How did your background prepare you for risk management?

Urban County

Of the seven urban county respondents, all Emergency Coordinators/Managers have considerable previous experience in either law enforcement, firefighting, or medical first response, and managing Presidentially Declared Disasters. One respondent claimed eighteen years of engineering inspections. Another cited a twenty year career in the U.S. Army.

Urban Cluster County

Both of the urban cluster county respondents indicated considerable previous experience in either law enforcement experience prepared them for the EC/EM position.

Urban Municipality

Of the seven urban county respondents, all Emergency Coordinators/Managers have considerable previous experience in either law enforcement, firefighting, or medical first response. One respondent claimed fifteen years of previous emergency manager experience. Several respondents noted that State and FEMA training has prepared them for the position.

Urban Cluster Municipality

Of the three urban cluster municipalities, two claimed that a bachelor degree in Emergency Administration and another cited a master's degree in Disaster Management has prepared them for the EC/EM position. The third respondent relied upon progressive experience as a police officer, city safety officer and finally emergency risk manager.

Conclusion

Of the nineteen responding Emergency Coordinators/Managers have considerable previous experience in either law enforcement, firefighting, or medical first response, and managing presidentially declared disasters. One respondent claimed eighteen years of engineering inspections. One respondent cited a twenty year career in the U.S. Army. One respondent claimed fifteen years of previous emergency manager experience. Two respondents claimed that a bachelor degree in Emergency Administration and another cited a master's degree in Disaster Management has prepared them for the EC/EM position. Several respondents noted that State and FEMA training has prepared them for the position.

31. How long have you been performing risk management duties?

Urban County

The seven jurisdictions that responded stated the emergency manager/coordinator had performed risk management duties for:

- 25+ years (three respondents)
- 21 years
- 12 years
- 9 years
- 3 years

Urban Cluster County

The respondent in this category has been performing emergency manager/coordinator duties for:

- 5 years

Urban Municipality

The following responses were recorded for the seven respondents in this category:

- 15 years
- 14 years
- 13 years
- 12 years
- 5 years
- 3 years
- 2 years

Urban Cluster Municipality

The respondents in this category have been performing emergency manager/coordinator duties for:

- 16 years
- 2 years

Question 32. What is your educational background?

Urban County

The six responses for this category were as follows:

- Master of Emergency Management and Homeland Security
- Bachelor of Science in Emergency Administration and Planning from University of North Texas
- Bachelor of Arts in Emergency Disaster Management at American Military University
- Master of Public Administration and Bachelor of Arts in Political Science
- EMT and Structural Fire Fighter training
- Master of Emergency Management and Homeland Security

Urban Cluster County

The two responses for this category were as follows:

- Bachelor of Arts in Human Resources Management and Organizational Leadership
- High School Diploma.

Urban Municipality

The respondents in this category listed the following educational information:

- Master of Public Administration related to EM
- Fire Protection Technology degree from Lamar University
- Bachelor of Arts in Emergency Management
- Two Associates degrees, one in Fire Fighting and one in Electronics
- Previous experience as a Police Officer / Fire Fighter / EMT
- Bachelor of Arts in Criminal Justice

Urban Cluster Municipality

The respondents in this category listed the following educational information:

- Masters of Public Administration
- High School Diploma

Question 32.A: Professional Training?

__Urban County__

Two respondents in this category stated they hold a CEM in Texas. Another responded reported receiving professional training from the Naval Post-Graduate School, and another responded that they have had 932 hours of professional training related to EM.

__Urban Cluster County__

One emergency manager/coordinator responded they obtained professional development training from FEMA.

__Urban Municipality__

One emergency manager/coordinator responded that they had professional training as an Executive Fire Officer from the U.S. Fire Administration. Another respondent stated they held a Master Certification in Arson Investigation. One other reported they have received professional development series training from FEMA.

__Urban Cluster Municipality__

One respondent in this category stated they have been taking professional training courses since 1998. Another responded stated they are currently in the process of looking for professional training.

Question 32.B: Certifications?

Urban County

The following are a list of certifications reported by respondents in this category:

- FEMA Instructor
- FEMA Certifications
- CEM from IAEM
- TEM from EM of Texas
- HAZMAT

Urban Cluster County

The following are a list of certifications reported by respondents in this category:

- Certification of emergency management
- Floodplain Manager
- Certified Risk Manager

Urban Municipality

The following are a list of certifications reported by respondents in this category:

- ICS
- FEMA Professional development
- Fire Officer from State
- State TX professional development training
- Police
- Fire
- Hazmat
- Decontamination Training
- EMT

Urban Cluster Municipality

The following training was reported for this category:

- CEM
- Certified Floodplain Manager
- HazMat Technician

APPENDIX C: LIST OF ACRONYMS AND ABBREVIATIONS

AAR	After-Action Report
CI/KR	Critical Infrastructure and Key Resources
CPG 201	Comprehensive Preparedness Guide 201
COG	Council of Governments
COOP	Continuity of Operations Plan
DHS	Department of Homeland Security
EMAP	Emergency Management Accreditation Program
EMAT	Emergency Management Association of Texas
EMI	Emergency Management Institute
FEMA	Federal Emergency Management Agency
HAZMAT	Hazardous Materials
HSPD	Homeland Security Presidential Directive
IAEM	International Association of Emergency Management
IRM	Integrated Risk Management
LEPC	Local Emergency Planning Committee
MPSA	Master of Public Service and Administration
NERRTC	National Emergency Response and Rescue Training Center
NFIP	National Flood Insurance Program
NRF	National Response Framework
NOAA	National Oceanic and Atmospheric Administration
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
TEEX	Texas A&M Engineering Extension Service
THIRA	Threat and Hazard Identification and Risk Assessment
UNT	University of North Texas
WebEOC	Web-based Emergency Operations Command Software

APPENDIX D: RESEARCHER BIOGRAPHIES

Seung-Ho An

Seung-Ho An graduated in May 2014 from the Bush School of Government and Public Service at Texas A&M University with a Master of Public Service and Administration degree. He is originally from South Korea where he gained his bachelor degrees in both public administration and economics from Kyonggi University. His main research interests are research method innovation, organizational stability, and public and financial management. While studying at the Bush School, he was involved in various projects at the *Project, Equity, Representation, and Governance* at the Texas A&M University as a research assistant and a data manager. He also worked as a research assistant for a project, *Statistical Quality Management for Foreign Direct Investment*, with Statistics Korea in 2012. He will pursue his PhD at the Department of Political Science at the Texas A&M University in fall 2014.

Arielle Carchidi

Arielle Carchidi graduated from the Bush School of Government and Public Service at Texas A&M University in May 2014 with a Master of Public Service and Administration degree with concentrations in homeland security, emergency management, and technology policy analysis. In 2012, Arielle graduated from Texas A&M University at Galveston with a Bachelor of Arts in Maritime Studies and minors in Economics and Maritime Administration. As an undergraduate, she conducted research and coauthored an academic paper that was published in *WMU Studies in Maritime Affairs: Piracy at Sea*. She has held the position of IT Policy Graduate Assistant with Texas A&M University and has interned with the Brazos County Sheriff's Office and the Texas Department of Public Safety.

Eric Johnson

Gail Eric Johnson earned a Master of Public Service and Administration, with a concentration in Security Studies from Texas A&M University. He received a Bachelor of Science of Health from Texas A&M University as well. He has served in the Army National Guard for eight and a half years as an infantryman and combat medic. Eric deployed once to Iraq as an infantryman. He has also worked as a 911 dispatcher, and EMT- Paramedic for eight years. He has served in multiple leadership roles, both in the military and emergency medical services.

Sean C. Lester

Sean Lester is an active duty Lieutenant Colonel in the Medical Service Corps in the United States Army. Sean graduated in 1996 from the University of Texas at San Antonio with a Bachelor of Arts in Criminal Justice and earned his active duty commission as a Medical Service Corps Officer in the United States Army. Since graduation he has served 18 years as a Medical Plans, Operations, Training, Intelligence, and Security officer. His leadership experience includes Platoon Leader and Company Executive Officer in the 82d Airborne Division, Company Commander of an Area Support Medical Company, Operations Officer for an Area Support Medical Battalion during Operation Iraqi Freedom, Executive Officer for a Medical Training Battalion and Operations Officer for the largest training brigade in the United States Army. Sean's military education includes the United States Army Combined Arms and Services Staff School, Command and General Staff College, and the Joint Medical Planners Course. In May 2014, Sean earned a Master in Public Service and Administration with a concentration in Security Studies.

Jeremy D. Liversidge

Jeremy Liversidge is a Staff Sergeant in the United States Air Force Air National Guard. Jeremy graduated in 2012 from the University of Houston with a Bachelor of Arts in Criminal Justice, and also holds degrees in Fire Protection and Emergency Medicine. Jeremy has 15 years of experience in Emergency Management as a Firefighter, Paramedic, and Military Police. His leadership experience includes the responsibilities as Fire Suppression Lieutenant, EMS Supervisor, and Security Forces Flight Chief while on active military duty at Ellington Field Joint Reserve Base, Houston, TX. Jeremy has participated in responses to Hurricanes Katrina, Rita, Ike and Gustav. In May 2014, Jeremy earned a Master of Public Service and Administration with a concentration in Homeland Security and Emergency Management from The Bush School of Government and Public Service at Texas A&M University.

Lindsey M. Mathis

Lindsey Mathis received a Master of Public Service and Administration from Texas A&M University in 2014, with a concentration on policy analysis, specifically nuclear security policy. She holds a Bachelor of Arts in Political Science from Sam Houston State University, and worked as a student research assistant for the Nuclear Security Science and Policy Institute at Texas A&M during her time of study at A&M. Lindsey currently resides at the United States Military Academy at West Point with her husband and two children.

Andrew Vannerson

Andrew Vannerson holds a Master of Public Administration Degree from Texas A&M University's Bush School of Government and Public Service, focusing in Emergency Management and Homeland Security. He earned two bachelor degrees from the University of North Texas in 2011, one in Emergency Administration and Disaster Planning, and the other in Spanish Languages and Literature. At the time of this study, he held a two and a half year internship with Texas A&M Engineering Extension Service and Texas Task Force 1.

David H. McIntyre

Dr. Dave McIntyre is a Distinguished Visiting Fellow at the Homeland Security Studies & Analysis Institute (HSSAI) in Washington, DC, and an Adjunct Faculty at the Bush School of Government and Public Service at Texas A&M University. During a 30 year career in the US Army, he served in airborne and reconnaissance units, taught English at West Point, and wrote strategy and congressional testimony for three different four star officers. He retired as Dean of Faculty at the National War College in 2001, and has since taught graduate studies at George Washington University, the LBJ School at the University of Texas, and the National Graduate School.