

EMERGENCY MANAGEMENT SINGLE POINTS OF FAILURE

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

Disaster management begins and ends at the local level and encompasses every aspect of public administration. Emergency management practices using jurisdictional authority are central to protecting communities during incidents and events. Although contemporary emergency management plans, procedures, and policies are methodically developed over time, a single point of failure may cause preventable issues that result in a measurable loss of time, funding, or opportunity. A single point of failure can be any moment where a process, action, or detail was either overlooked or executed incorrectly and caused emergency management challenges. Fred Fiedler and William Scott's descriptions of *Contingency Theory*, a human relations-oriented framework, were used to evaluate emergency management single points of failure situations and the contingent response to incident and event situations (Fiedler, 2008). The data collection methods used in this research included document analysis, interviews, an online survey, and a focus group session that explored emergency management single points of failure to develop better intervention processes that may minimize or eliminate identified failure impacts and create a new grounded theory. Key takeaways from this exploratory research highlight the importance of developing effective public administrative strategies. Through qualitative methods, data collection, and analysis, the study provides insights that can help emergency managers identify and prevent potential failures while uncovering commonalities in single points of failure related to new independent variables. This research addressed a real-world issue and contributed to past literature and theory by addressing the gaps linked to the single points of failure in the public administration of emergency management.

Keywords: Contingency theory, emergency management, government, single points of failure, after-action reports, incident management, planned events

Copyright Page

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Dedication

This dissertation is dedicated to my father, Terry L. Smith, who was born on April 28, 1947, and raised in Jacksonville, Florida. My Dad went to Heaven on January 22, 2022, after a terrible battle against COVID-19. He spent his entire life serving, whether in his church, the military, the city, the private sector, or the Federal Government. His life mentorship and lessons have also allowed me to serve my community. I will forever owe him my life's success and ongoing happiness.

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I acknowledge my mother, Rita Jean Smith, a mentor and cherished friend, as the individual who influenced the writing and completion of this dissertation. Deciding to embark on this journey required this great life leader's constant support and direction. Her drive and commitment, demonstrated throughout my life and my brother's, placed us all on the best course we could take in completing life's many tasks. Thank you, Mom; I love you all there is.

I also acknowledge former Jacksonville Fire and Rescue Department Deputy Fire Chief Leslie McCormick, my professional mentor, who continually influenced my participation in all available training to begin my doctoral journey with Liberty University. Throughout my career, Chief McCormick showed me how to build a real team, hold that team to a high standard, and educate me with the acumen to effectively and efficiently complete decades of public administrative service. He also taught me how genuinely meaningless the cunning, manipulative, and spiteful individuals who work in some of the most critical public administration roles are.

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List of Abbreviations

All Hazards Incident Management Team (AHIMT)

Collaborative Institutional Training Initiative (CITI)

Command and Control (C2)

Comprehensive Emergency Management Plan (CEMP)

Cybersecurity and Infrastructure Security Agency (CISA)

Department of Homeland Security (DHS)

Emergency Alert System (EAS)

Emergency Coordination Center (ECC)

Emergency Operations Center (EOC)

Emergency Management Accreditation Program (EMAP)

Emergency Support Function (ESF)

Federal Emergency Management Agency (FEMA)

Florida Department of Law Enforcement (FDLE)

Florida Division of Emergency Management (FDEM)

Florida Emergency Preparedness Association (FEPA)

Incident Action Plan (IAP)

Incident Command System (ICS)

Incident Commander (IC)

Incident Management Team (IMT)

Institutional Research Board (IRB)

International Association of Emergency Management (IAEM)

Integrated Public Alert & Warning System (IPAWS)

International Association of Fire Chiefs (IAFC)

Joint Information Center (JIC)

Law Enforcement Officer (LEO)

Local Emergency Planning Committee (LEPC)

National Center for Education Statistics (NCES)

National Emergency Management Association (NEMA)

National Homeland Security Conference (NHSC)

National Weather Service (NWS)

Point of Distribution (POD)

Public Information Officer (PIO)

Single Point of Failure (SPOF)

Small Business Administration (SBA)

Subject Matter Expert (SME)

Special Weapons and Tactics (SWAT)

Urban Area Security Initiative (UASI)

Urban Search and Rescue Team (USAR)

Wireless Emergency Alerts (WEA)

CHAPTER ONE: INTRODUCTION

Overview

A disaster is frequently the primary encounter where a local public administration's emergency management program delivers vital resources to a community in need. Because local governments are the first level of oversight, and resources can be limited, these incidents and events provide a substantial probability of challenges. When incidents unfold, the local first responders make the most crucial decisions, relying upon their existing comprehensive emergency management plans. Although emergency management organizations are structured differently and vary in their responsibilities, they all have similar expectations. Providing emergency managers with a better understanding of challenges, such as single points of failure, helps avoid negative public administrative consequences. Each emergency management team's practices drive the results of the national primary mission areas of prevention, protection, mitigation, response, and recovery for each community (Kapucu et al., 2009). As public sector professionals, emergency managers continually seek new and emerging innovations and opportunities to learn about trends and solutions for their community's challenges. Insights learned from single points of failure help create innovative, practical tips and strategies for real-world application.

The lack of literature investigating the single point of failure problem is the foundation that necessitates research by first understanding what has been written about overall emergency management failure and further examining specific single point of failure causes. The study is needed because the problem is that when the outcomes are unfavorable to those communities being served, consequences may often unknowingly result from an unanticipated single point of failure. The existing literature on the emergency management discipline has primarily examined

failure problems from an after-action viewpoint. A lead responsible agency typically conducts an after-action process for a specific incident that brings together groups of public service administrators, responders, and other incident participants. The purpose of after-action processes is to gather positive and negative information about the incident or event response.

This evidence is provided in the Clark County Fire Department and the Las Vegas Metropolitan Police Department One October After-Action Report compiled in collaboration with the Federal Emergency Management Agency National Exercise Division (Federal Emergency Management Agency [FEMA], 2018). That sixty-page report provides the best practices and lessons learned from that incident that help other communities better prepare for a mass casualty incident. The report offers seventy-one observations with subsequent recommendations that identify, highlight, and document the lessons learned during the incident. The document analysis for this research found that only twice was the term failure used, and no specific details are regarded as single points of failure. Although the recommendations are remarkably detailed, this report confirms that what is written in the existing emergency management literature and analysis only focuses on broad topic issues and is not specific to emergency management single points of failure.

The identified gap in the literature established the justification for further study, and this manuscript differs from what has been written in the existing literature by adding new knowledge about single points of failure in emergency management and how a specific analysis of this research topic is unavailable. This dissertation applies theory and investigation with the central research question: How does Contingency Theory explain the key factors that promote emergency management's single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure? This dissertation

applied the analysis of unfavorable outcomes to develop a new grounded theory from existing literature and new research findings. The data collection included non-probability sampling methods by working with targeted populations for online surveys comprised of semi-structured questions, direct interviews using open-ended questions, document analysis, and a focus group session. Process tracing of causal influences was applied to formal emergency management plans to identify single points of failure. This dissertation provides the reader with interesting findings that offer an overview of the context of existing literature in which the research is founded and identify the importance of the study for the emergency manager audience.

Background

An emergency management single point of failure causing incident or event challenges is of interest because if addressed and solved in advance, the consequences during already disastrous circumstances can be reduced or eliminated. The background for this research study derives from the literature and emergency management practitioner reports, verbal or otherwise, that have experienced a single problem that caused cascading issues. The problem is specifically of interest to those professionals responsible for completing incident and event responsibilities because, primarily, their objective is to provide disaster-related efforts most effectively to ensure the community's safety. Over time, disasters have severely impacted the public sector without discriminating against which community is affected. Emergency management literature provides significant and relevant historical perspectives on when multiple incident and event problems evolve; however, they are described in generalities and do not address the single point of failure. For emergency managers, exploring the single point of failure problem can improve service delivery and the lives of many others affected by the problem.

Research has been done to investigate or address agency-specific challenges in managing incidents and events. After-action reports are the traditional mechanism for explaining emergency management incidents and event outcomes; however, most after-action reports discuss the entire scenario as it unfolds and, for various reasons, do not provide all the available details. The deadliest mass shooting in U.S. history occurred in Las Vegas on October 1, 2017; the after-action report detailed all aspects of the incident of that magnitude (Rice & Bloomfield, 2022). The Las Vegas Shooting after-action report, like many others, included a list of observations and recommendations for every aspect of the entire tragedy. The same occurs, for example, for an airliner crash after-action report, where every aspect of the tragedy and the many associated causes of the crash are detailed extensively. These levels of research that have been done do not investigate or address the single point of failure problem.

The literature explains that Hurricane Katrina in 2005 brought increased attention to pre-incident and event disaster planning due to the nationally publicized failures that occurred not only in New Orleans but throughout the entire area impacted by the storm. Many lives were lost due to, among other things, the failure of generators, disorganized rescue response, and inadequate communications, which offer lessons about the lack of preparedness, emergency planning, and multi-agency coordination between organizations, local agencies, and state and federal governments (Ingram et al., 2021). The literature confirms that analysis does not investigate beyond the overarching topics, such as inadequate planning or equipment failures, and does not seek out the single point of failure for these and other broad topics. Whether the incident or event is a pandemic or a hurricane, the public's safety depends on responsible emergency management organizations remaining prepared before the incident or event and

examining how and when single points of failure could occur and negatively impact the community's safety.

The literature explains that following Hurricane Michael in 2018, countless roads throughout the impacted communities were damaged and could not be reopened quickly due to limited emergency resources, causing intense challenges with access to water, electricity, food, gas, and medical supplies (Pathak et al., 2020). Ensuring area residents get life-sustaining resources after a disaster requires comprehensive preparedness before the incident or event. The literature explains that emergency managers acknowledge limited resources and that local infrastructure conditions are well-known to be potential challenges following a disaster. However, the limited supply of resources and inaccessibility due to damage or debris is where, according to the literature, most of the analysis ends. Emergency management single points of failure research is necessary to determine what influences can prevent available resources from activation and infrastructure access, such as during Hurricane Michael. Practical perspectives are essential to provide an improved comprehensive understanding of the dynamics of the systems that require more proactive and timely processes that are well-aligned with community priorities and address future disaster resilience challenges.

Although the literature about overall and publicly known emergency management failures is abundant, returning many scholarly articles, a search specifically for single points of failure returns results where topics are too overarching. Those results describe how to create emergency management organizations, write better plans, improve technology, or create collaborative networks rather than what single item can or will halt or eliminate emergency efforts of organizations, written plans, or collaborative networks. This research extends and refines the existing knowledge to add single points of failure, specifically in emergency

management, to provide an explicit understanding of the underlying causes of less obvious incident problems. Emergency management leaders will benefit from and use the proposed research. They must ensure each aspect of their program performs correctly during a crisis, critically assess their team, identify single points of failure, and correct the issue in advance. This research adds new information regarding single points of failure to the body of existing literature through document analysis, interviews, surveys, and a focus group session of those professionals mainly responsible for ensuring their team can achieve incident and event objectives regardless of any scenario.

Historical

Managing social expectations is one of many essential priorities that emergency managers must address through ongoing planning, training, and education. The problem of emergency management single points of failure from the historical research perspective is that the literature is limited and focuses on the most central or catastrophic problems occurring during an incident or event in those foundational studies. Early studies do not specifically address the reasons for individual challenges occurring for the emergency manager. The literature also does not identify root causes or specific areas of interest for the emergency manager to investigate and mitigate potential single points of failure within a public service program to ensure quality service delivery that meets social expectations.

Over time, the capability of emergency managers to recognize a rapidly unfolding event and any approaching failure has become very important. Historical research has been done that generally investigates or addresses emergency management failures during incidents and events. Little direct research has been completed to investigate or address the specific public administration problem of emergency management single points of failure. Relevant literature

includes research and case studies for incidents and events, such as when a car plowed through a group of counter-protesters, killing one and injuring more than nineteen others in Charlottesville, Virginia, on August 12, 2017 (Blout & Burkart, 2021). This example is where officials faced a rapidly expanding event that turned into a massive incident; protestors descended upon that small city, including those intent on terrorizing its residents and committing acts of violence.

Authorities could have legally disbanded the protest event once it became violent enough under existing unlawful assembly laws. For this example, the literature explains how many cascading events create an environment that allows greater tragedy. This dissertation expands the historically available research literature by identifying, in advance, the major causes of single points of failure. Once identified and assessed in a specific incident or event context, the single points of failure can be managed before they impact the public.

Although historical and contemporary research exists regarding general emergency management failures, most focus on incident after-action reports, the general failures of a program, or an overall event, such as well-known failures of the Federal Emergency Management Agency (FEMA) and, notably, its incompetent response to Hurricane Katrina in 2005 (Davies, 2019). Emergency managers have reported general observations of the effectiveness and limitations of the systems used to protect communities, such as when mass emergency alert notification systems mistakes unnecessarily caused issues during the devastating multiple-vortex tornado that struck Joplin, Missouri, in 2011. These general failures have short-term impacts that cause unnecessary alarm and potential panic, and worse, can cause long-term consequences of diminishing public trust and responsiveness to subsequent emergency alerts (Pelfrey, 2020). As the profession of emergency management has evolved, so has this problem. Emergency managers should first understand that a single point of failure should be investigated

and examined in a more specific context rather than the overall failures of an incident.

Culminated historical research shows that the many reported problems during Hurricane Katrina are similar to those of any given community, including failure to comply with emergency notifications because of misuse of technical communication systems. Similarly, the failure to implement early and expansive testing will likely be identified as a crucial shortcoming during the national response to the COVID-19 Pandemic in 2020 (Postavaru et al., 2021).

Social

For emergency management, social contexts are often measured in how communities believe they have or have not been treated during a disaster. A community receives the most significant benefit when incident management, resource delivery, and recovery are more efficient and effective. The 2014 Flint water crisis is an example of how cascading failures among emergency management became more socially complex than the actual problem of technically prioritizing budget over public health (Morckel, 2017). When considering who else is affected by the problem, the single points of failure can impact every community stakeholder affected by a disaster, and having a greater understanding achieved through analysis and experience provides a better public service. Those who will benefit from or use this research are emergency management professionals who can use the research to conduct internal analysis, including agencies with single points of failure that face hazards compromising public safety. In addition to those charged with leading emergency management programs, this research's primary benefit and use is the other public service communities, such as healthcare, infrastructure, transportation, communications, and higher learning centers training future emergency managers. This study adds new information to the existing literature while drawing attention to previously considered focus areas.

Theoretical

The research identified specific failure guidance to extend and refine existing knowledge by developing grounded theory research to address current gaps in the approach to single points of failure. The problem with emergency management's single point of failure is that consequences manifest across the public administration for communities. It is of interest because the contribution of simultaneously identifying commonalities among existing theory and past literature can help address gaps that may be linked to single points of failure. Specific search keywords included emergency management, emergency management organizations, single points of failure, government, emergency planning, after-action reports, incident management, planned events, *Chaos Theory*, *Contingency Theory*, complex adaptive systems, resilience, regional flooding, blizzards, hurricanes, and tornado disasters. Important variables included the dependent variable, emergency management single points of failure, and the independent variables of personnel, technology, planning, politics, intelligence, communications, equipment, and training. A noted weakness in the research was that independent variables were biased because all independent variables impact the dependent variable. The theoretical context for the research problem theories connected to the single point of failure problem included grounded theory analysis, Malcolm Knowles's *Adult Learning Theory*, Erik Hollnagel and David D. Woods's *Joint Cognitive Systems Theory*, Albert Bandura's *Social Cognitive Theory*, Arthur F. Bentley's *Public Policy Group Theory*, and Fred Fiedler and William Scott's *Contingency Theory* (Buck et al., 2006; Changwon et al., 2018; Constantinescu & Moore, 2019; Durrance, 2022; Fiedler, 2008; Hird, 2018; McGlown, 2020; Puah et al., 2021; Tarhini et al., 2021; Wehde & Choi, 2021). The data collection for this research applied non-probability sampling methods to targeted populations and completed document analysis, direct interviews, surveys using semi-

structured questions, and a focus group session. The data collection linked the research background to future research to reveal new information and also added to the existing literature on emergency management single points of failure. It showed additional segments affected by the problem, such as non-profit providers, at-risk populations, and underserved populations.

Situation to Self

The primary motivation for conducting this study was based on direct personal experiences as a public administrator where well-intended plans and purposes were unraveled in a single moment, failing during an incident or event. It is commonly understood in the emergency management community that teams must remain highly flexible because the plans will change or fail at some point, and a course correction will be necessary. The study investigated known failure points and communicated those points as likely occurrences across segments to help develop early responses to minimize impacts. The leading organization during disasters manages the overall response and reduces damaging outcomes for communities. Normative philosophical commitments and assumptions were considered in this research regarding subject areas that could be made better in emergency management when a better understanding of failures is realized. Rhetorically, the analysis considered each element for the argument, including the stakeholder audience, professional purpose, the medium of service delivery, and the single overall point of failure context.

Brought to the research and within the paradigm that guided this study is the consideration for scientific approaches to psychology. The philosophical positions of positivism and post-positivism supported observations during the study that knowledge goals are not intended to oversimplify and superficially describe the phenomena emergency managers experience regarding single points of failure (Krlev, 2023; Petroski, 2011). The science of what

can be observed and measured using a post-positivist mindset also allowed better recognition of the everyday real-world experiences of life that are not specifically different in emergency management, validating conclusions. Using a commonsense approach, this scientific reasoning assured verifiable, consistent, and accurate observations. The empirical evidence from the research provided through positivism was supported by constructivism's learning using social interactions of the emergency management teams managing public service programs. Gaining objective knowledge using positivism and the subjective understanding of constructivism provided results and determinations that can be better applied at the community level.

A participatory approach was applied in the research to help solve the single point of failure problem for emergency managers. By designing the public administration study, the professionals directly concerned with this topic can trust and apply the results better. The characteristics of this research component identified that emergency managers were the appropriate individuals to participate. The research used a comprehensive literature review and policy and procedural analysis to ensure the proper preexisting knowledge was explicitly included. As a demonstration of participant empowerment, a degree of sharing control of the discussion was provided in the focus group, entitling participants to influence the data collection honestly, completely, and thoroughly. The research provides educational benefits because the participants possess higher education experiences; however, awareness and prevention are primary concerns. Community-level public administration political circumstances influence the personnel charged with managing emergency management programs, and politics is a primary topic, especially during resource allocation before, during, and after a disaster.

In pragmatic terms, the practical way to address the research problem was to begin with significant examples of disaster failure that have played out on the national stage. These failures

have a considerable amount of literature, and through analysis, those failures were sorted into common themes. This approach did not, however, explicitly apply abstract research principles or existing theories. The research design included a pragmatic approach to ensure operational decisions were identified and correlated with adequate procedures to find the answers and solve the single point of failure problem. Answering the research questions was better enabled when a pragmatic approach was included, increasing innovation and creating a dynamic research environment. A psychological strategy, and following justification for constructing specific knowledge, established the methodology to evaluate emergency management operations fully as linked to each method and technique for the research.

The ontological nature of reality is that failures in managing incidents and events exist. Often, failures are accepted as part of the disaster, and if most of the operations are conducted well, the failures do not specifically halt the response. Organizations do not learn effectively from past incidents and events; therefore, future incidents and events cause consequential yet preventable failure due to a failure to learn (Drupsteen & Hasle, 2014). The epistemological relationship between the emergency manager and knowing where failures can or have occurred is the knowledge that can be derived through this research study's data collection and analysis. Having conducted an axiological survey on analysis value and theoretical application, the whole nature of the value of the survey has armed emergency managers with data for developing tools that prevent and manage single points of failure. The good and bad reality for emergency managers is that a focus is often placed on the issues emergency managers personally deem most worthy or have a political priority, and, unfortunately, other topics with more significant impacts can be overlooked. This research axiologically incorporated the ethical responsibility of public administration emergency management officials to create public service value. Where service

value is not continuously evaluated against emergency management services' programmatic value and usefulness, it can place communities at greater risk or impact those most in need. The philosophy of thinking about interdisciplinary connections was a cornerstone of emergency management planning and a core principle of this research.

Problem Statement

The problem is the lack of research literature on emergency management single points of failure and the reoccurring real-world manifestation of single points of failure challenges during incidents and events. This problem needs to be investigated because the reason why public administration programs or processes fail is not always explicitly captured compared to the overall failure, which often becomes the focus of after-action formalities and not the specific issues causing a more significant challenge. This dissertation is different from existing literature because, although existing emergency management research literature provides an understanding of the overall problems that lead to public administration failures, it studies the specific causes of emergency management single points of failure. This dissertation applies Contingency Theory perspectives, including how no specific path to success or failure exists because of contextual elements and that a leader's success depends not only on individual leadership style but also the ability to control the situation (Sunder M & Prashar, 2020). The problem of emergency management's single points of failure is influenced by the variations presented in each incident or event, and through this research, the emergency manager can better understand how to use contingency theory perspectives for the problem of single points of failure.

This research study contributes to existing literature using a grounded theory approach to create new knowledge and construct a new theory by explaining the role of emergency managers in promoting single points of failure. For example, in 2014, while awaiting the completion of a

new water infrastructure, the City of Flint, Michigan, switched its water source from Lake Huron to the Flint River (Morckel, 2017). A cascade of failures occurred; however, speculation in the research blames the emergency manager for prioritizing budget concerns over public health. The literature demonstrates that disaster response and recovery, such as for the City of Flint, are often based on contingency decisions and generate a series of general conclusions concerning specific management decisions; emergency managers should better understand how this process can create single points of failure because a deficient understanding of incident management causes confusion and delay (Choi, 2020).

This dissertation contributes to research on solutions for the emergency management problem of single points of failure. It further provides a pathway for general educational challenges and supports the development of specific educational needs to avoid single points of failure. Where existing research is summarized, an overall shortfall exists; this research completed the necessary depth of study for single points of failure causes. This research answers the following question: How does Contingency Theory explain the key factors that promote emergency management single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure? The research design included a comprehensive literature review focusing on significant elements of traditional social science research through descriptions, explanations, and justification. The literature review provides theoretical implications for the topic. The public administrative qualitative research design, which is well-connected to the problem as it has been defined, included analysis in grounded theory, a comprehensive literature review, data collection, and data analysis. The data collection applied a non-probability sampling method of targeted populations using document analysis, direct interviews, surveys with semi-structured questions, and a focus group session.

Emergency managers can prevent, for example, unnecessary loss of time, unjustified funding requests, or loss of opportunities by fully understanding the problem of a single point of failure. This research provides administrators in collaborative governance networks with actionable methods to safeguard and accomplish their goals. Where prior failures to address an issue through other means drive stakeholders to establish a collaborative governance network, stakeholders need further support to manage problems to reduce risk (Kapucu et al., 2009). This concrete problem for public administration emergency management has become integrated into many other programs, specifically resilience and social access. Failure requires a shift from traditional problem-solving that achieves enlightenment and departs from technical policy analysis to a more intellectual process (Hird, 2018). This research is empirically significant and relevant to emergency management because, although public administrators observe positive and negative outcomes, they are not likely to conduct any level of experimentation to determine a failure's root cause. The contribution this research makes to the problem is identifying commonalities among past literature and theory while addressing the gaps linked to single points of failure. This problem needs to be investigated to achieve continuous, academically driven improvements in the emergency management profession, and this research is relevant to emergency management organizations to ensure failures do not remain undiscovered or, worse, duplicated.

Purpose Statement

This grounded theory study examined and developed a framework that explains emergency management's single points of failure and provides a better understanding of public service professionals managing incidents and events at the community level. A new grounded theory for emergency management considers the findings from prior research, including the

concepts for different threats, hazards, and risks. For this research, a single point of failure was generally defined, as evidenced by the literature, as any moment where a process, action, or detail flaw was either overlooked or executed incorrectly and caused emergency management challenges. The theory guiding this study is the Contingency Theory, and the relationship between theory and this focus of inquiry is based on a review of theoretical frameworks that, from a contingency theory perspective, there is no one generalized path to success or failure where factors vary based on several contextual elements. The contingency approach was appropriate for studying emergency management single points of failure, and its presence in an organization depends on multiple contingencies and associated contexts, such as the program's size and composition (Sunder M & Prashar, 2020). The emergency management environment for incidents and events drives the appropriate leadership style or course of action because emergency management is task-oriented. Emergency managers must lead in favorable and very unfavorable situations. The Contingency Theory as a human relations-oriented framework was used to evaluate effective leadership comparisons for single points of failure situations and the attributes of leadership contingent upon response to a situation (Fiedler, 2008).

Significance of the Study

For emergency management, it is conceivable that a single all-encompassing theory is not currently ascribed because of the impossible nature of developing a single theory that could embody every single disaster variable or challenge associated with it; some frameworks, such as chaos theory do prevail, and incorporate causative variables in emergency management disciplines (McEntire, 2005). This study contributes theoretically and empirically to the emergency management knowledge base and related public administration disciplines. It relates to similar studies investigating and examining general failures noted following disasters and how

correlated failures cause challenges. The study's practical significance is that communities are increasing the demands on emergency managers, and when those demands stress program capacity, failure opportunity also increases. Public service administration emergency managers apply a decision framework when approaching and understanding community vulnerabilities to determine the optimal pathway for many critical determinations. This research addresses known failure points and identifies emerging failures requiring new responsibilities. This research is essential to the -level emergency manager service communities; single points of failure affect the emergency manager's capability to carry out the community's demands during routine efforts and disasters (Ambrozik, 2019; Changwon et al., 2018).

This public administration research improves, among other things, the conditions to conduct disaster operations, the lives of those in each community, and the work environment of emergency managers by providing findings applicable to any community. This study can now be used on a broader scale to affect change and help a wider group of people across interactional segments because many emergency management topics are similar throughout the international community. Concepts represented by disaster management explain when response mechanism scenarios may overwhelm the capacity of emergency management structures and systems in a single moment (Shan et al., 2019). Prevalent scenario-based innovations have been developed to provide real-time assessments of subsequent results from failures and damages. This study further explored innovations identified or employed by emergency managers that improve negative individual or repetitive outcomes. Disaster management solutions validate the analysis of single points of failure and determine the significance of a specific adoption of new policy, training, or personnel adjustments. (Shan et al., 2019; Sinha et al., 2017).

Research Questions

Emergency management is uniquely positioned at all levels of government to provide an all-hazard approach to public service and central regulatory, statutory, or ordinance oversight of incidents and events. These teams of public administration professionals are structurally organized in many ways, often within agencies or administrative functions or as separate county authorities. Regardless of the size, composition, or responsibilities, emergency managers have experienced an increasing specialization of the work being completed. Highlighting the interplay among public administration programs, systems, and stakeholders better correlates with the research manuscript's objective, identifying emergency management single points of failure (Changwon et al., 2018; Day et al., 2021). Personnel, technology, policy, and training demands, among other things, have all changed significantly in recent times, which creates a high probability of failure points.

Collaborative governance networks can help offset failures using expert knowledge and the concerted problem-solving process; however, as a resource-consuming activity, it can often be difficult to ensure effective action where single failures are not addressed timely (Ambrozik, 2019). This applied study used a qualitative research approach to explore the single points of failure in emergency management. This matter is highly relevant to the emergency management community as they continually yield critically practical efforts and responsibility for managing disasters to meet the many communities' needs. Disaster readiness of emergency management public administration programs is historically measured by weather-related disaster response capability, which can cause inequities in the community, affecting the effectiveness of individual readiness (Dzigbede et al., 2020; Son et al., 2020a).

The central research question for this research was: *How does Contingency Theory explain the key factors that promote emergency management's single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure?* Four sub-questions were also explored in this research. Sub-question one: *How do emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events?* Sub-question two: *How do emergency managers apply real-world insights to demonstrate learning organization aptitudes?* Sub-question three: *How do Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans?* Sub-question four: *How do emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management?* The following provides a brief description and discussion of each question through the literature that supports the main focus of each question. This manuscript's data collection, analysis, and discussion sections will also address each research question.

The central research question for this study was: *How does Contingency Theory explain the key factors that promote emergency management's single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure?* Direct interviews with directors of emergency management were conducted to provide available explanations of the role emergency managers play in managing single points of failure. The interview questions address how planning and building require years of development and how project management ensures value and uses contemporary techniques that avoid costly failures (Haque et al., 2018; Mergel et al., 2020). The municipal planning topic of effectively managing emergencies is only one component of the overall research to determine where community planning is vital for dealing with threats and if emergency managers play a role in

any failures. Critical root causes of emergency management failures can infer that probability models and the most likely incident evolution reveal known versus unknown consequence evolution paths (Chang et al., 2018).

Sub-question one for this research study was: *How do emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events?* The information provided by after-action reports to address single points of failure and challenges experienced in disasters and emergencies does not always provide necessary insights to improve disaster operations. On October 1, 2017, the deadliest mass shooting in U.S. history occurred in Las Vegas Shooting, where a lone gunman fired into a country music festival, killing 60 people and injuring hundreds (Rice & Bloomfield, 2022). Despite emergency managers reviewing and studying prior mass shootings, existing policies for Las Vegas at that time could not sufficiently manage the magnitude of that incident. Emergency managers are facing the inevitable future in which more significant incidents will challenge policies, training, and resources, and better preparedness and training are necessary. Although after-action reports intend to deliver a sensible organizational framework, post-crisis sense-making efforts often clash based on the function of each professional field that may seek to deflect organizational trauma. This research aims to isolate the emergency manager's role in managing single points of failure without concern for administrative boundaries and norms prevalent in after-action reports.

Sub-question two for this research study was: *Are elements of the Decision-Making model being applied by emergency managers for real-world insights to demonstrate learning organization aptitudes?* The research discovered real-world insights emergency managers use that demonstrate learning organization aptitudes and where single points create challenges.

Management guidelines supporting coordinating and synchronizing emergency-response operation activities are not always completed in a learning environment. This absence can reduce the effectiveness of managing adaptive capacity and developing practical procedural checklists that address real-world scenarios (Steen et al., 2023). When emergency managers understand learning patterns, this helps build learning recommendations. The most challenging training and education topics include communications interoperability, critical specialized equipment, and critical staffing positions (McGlown, 2020; Steen et al., 2023). Learning organizations better ensure proper planning, which helps manage incidents that can result in temporary or permanent failures and impair crucial community resources (McGlown, 2020). Emergency management programs must also teach plan development personnel to fully integrate emergency operations plans with coordinating and cooperating organizations and appropriate agencies.

Sub-question three for this research study was: *How do Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans?* Emergency plans cause operational failures, requiring deliberate analysis of the planning and execution of incident objectives. During the threats, hazard identification, and risk assessment process, the failures are discovered and communicated as well-known issues that can and will likely occur during emergencies. Policy options are also developed to properly evaluate and determine the implementation of scenario-based planning recommendations that ensure hazard identification and collaborative interagency stakeholders perform and adapt to real-world environments (Bradley, 2018). The ability to classify threat levels through assessment offers emergency managers a consequence-free test environment that can identify planning errors (Zhao & Tian, 2021). Operational environments are not the ideal time for conducting and evaluating planning

results or determining threshold values of warning criteria that identify a hazard source identification.

Sub-question four for this research study was: *How do emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management?*

How emergency managers provide operational flexibility and personnel problem-solving skills for the disaster environment varies from program to program. Regional or isolated emergencies require specific emergency management responses. Emergencies occurring at a single remote location compared to a regionalized disaster are unique, as represented in the tornado impacts of train derailments. Because every situation requires emergency management programs to apply specific response efforts, operational flexibility and personnel problem-solving skills are essential. The Joplin tornado occurred on May 22, 2011, in Joplin, Missouri, and caused one hundred and sixty-one fatalities and more than a thousand injuries. This EF-Five tornado, for example, exposed that public alerts and warnings do not automatically compel residents at risk to seek protection because of behavioral weather cues, prior false alarms, misconceptions about geography, or emergency communication that is confusing or inconsistent (Kuligowski, 2020).

The dependent variable for this research was emergency management single points of failure, and independent variables included personnel, technology, planning, intelligence, communications, equipment, and training. This research expands on existing works as other traditional social science research projects, using a qualitative approach to explain the necessity for real-world application to better arm emergency managers against failure impacts. Grounded Theory has many applications in sociology fields and emphasizes areas of knowledge that can provide a comprehensive interpretation of the phenomenon of single points of failure (de Lucas Ancillo et al., 2020). In analyzing emergency managers' single points of failure, mitigation

recommendations and the use of grounded theory have contributed to addressing current gaps in approaches that address single points of failure.

Emergency management agencies and organizations from across the United States were the primary focus of the study to provide a better understanding of single points of failure within the crisis management profession. New and emerging topics in the research included how the relationship between leadership, culture, and personnel management explains the complex, multidimensional phenomena relevant to emergency management that improves service delivery (Bhaduri, 2019; Haque et al., 2018). The research design included a comprehensive literature review focusing on significant elements of traditional social science research through descriptions, explanations, and justification. Ongoing research is necessary to address the limitations of this research and fill the remaining literature gaps identified in this study.

Definitions

1. After-Action Report (AAR) – A management tool used to catalog the strengths and areas for improvement reported or discovered during the actual and simulated incident, exercise, disaster response, or activations (Barnett et al., 2020).
2. Air-gapped – Computer, device, or network with no externally connected network interfaces, wired or wireless (Music et al., 2022).
3. Community Lifelines framework – A Federal Emergency Management Agency recommendation for developing solid relationships with key stakeholders and community partners to increase overall situational awareness for the support of rapid restoration of services following catastrophic incidents, addressing cascading impacts and interdependencies that exist among critical lifelines requires cross-sector coordination during disaster response and recovery (Kruger, 2019).

4. Disaster – When emergency managers must prioritize objectives for incident areas of effort, manage incident personnel, and communicate with stakeholders to address critical infrastructure interdependencies. Essential lifeline services (e.g., energy and communications) were inoperable for many months, which led to increased attention from policymakers, the media, and the public (Kruger, 2019).
5. Disaster Risk Reduction – Promoting community disaster resilience by enabling disaster recovery attention to and investment in local adaptation capacities that change outcomes for uncertain environments. (Mayer, 2019).
6. Disaster Recovery – The operational efforts necessary for returning and even enhancing community capacity at the local level through technical or financial coordination (Mayer, 2019).
7. Event – A planned and scheduled nonemergency activity such as a sporting event, concert, or parade (Cavalieri d'Oro & Malizia, 2023).
8. Federal Emergency Management Agency (FEMA) – The United States Federal agency charged with supporting citizens and emergency personnel to build, sustain, and improve the nation's capability to prepare for, protect against, respond to, recover from, and mitigate all hazards (U.S. Department of Homeland Security, 2019).
9. Groupthink – A phenomenon that occurs in a cohesive group where members let the need to agree with others interfere with the ability to critically think through decisions (U.S. Department of Homeland Security, 2019).
10. Incident – An unplanned situation that public service agencies and organizations respond to using personnel and other resources to effect hazard control and mitigation for a

rescue, performing fire suppression, delivering emergency medical care, conducting special operations, or providing law enforcement (Wolf-Fordham, 2020).

11. Interoperability – The foundation for immediate, seamless, straightforward, and secure communication among multiple response entities for incidents and events (Popplewell et al., 2019).
12. Authority – The multipurpose responsibility codified in legislative action for delivering public services such as public safety, roads, housing, recreation, and economic development as defined by county and municipality-level governmental jurisdictions (de Lange & Adua, 2022).
13. Community – A county or municipality-level governmental jurisdiction (de Lange & Adua, 2022).
14. Emergency Management – The managerial function responsible for developing an all-hazards community framework that reduces vulnerability to hazards through risk analysis before, during, and after incidents and events (Jamieson & Louis-Charles, 2022)
15. Emergency Management Profession – The emergency management field is the working environment for frontline expert professors and leaders who prepare plans and procedures for responding to incidents and events in coordination with other organizations, entities, government agencies, public safety officials, and elected officials (Jensen & Kirkpatrick, 2022).
16. Emergency Management Agencies and Organizations – Entities that conduct prevention, mitigation, preparedness, response, and recovery for public and private organizations or local, state, federal, and tribal governments and non-profit and private sector entities (Wang et al., 2017).

17. Emergency Support Functions (ESF) – A structure for coordinating interagency cooperation for an incident by grouping functions that provide federal support (U.S. Department of Homeland Security, 2019). The federal ESFs include transportation, communications, public works and engineering, firefighting, information and planning, mass care, emergency assistance, temporary housing and human services, logistics, public health and medical services, search and rescue, oil and hazardous materials, agriculture, and natural resources, energy, public safety, and security, cross-sector business and infrastructure, external affairs, and standard operating procedures.
18. Essential Functions – Critical organizational activities required before, during, and after a service disruption (U.S. Department of Homeland Security, 2018).
19. Emergency Management – A federal, county, or municipality-level government agency, private sector organization, or non-profit entity where private or public administrators are responsible for the phases of the incident and event management using a whole community approach (Rivera & Knox, 2022).
20. Emergency Manager – A private or public employee responsible for ensuring that required public services have plans and procedures for responding to incidents and events such as natural or human-made disasters through coordination with the public, government agencies, public safety officials, elected officials, and non-profit organizations (Rivera & Knox, 2022).
21. Resilience – A disposition that emergency management uses to resist, absorb, or accommodate disruption effects of an incident or event hazard using adaptation performance to preserve or restore essential infrastructure and function (Son et al., 2020).

22. Stakeholders – In the emergency management context, stakeholders are public, private, and non-profit sectors and community individuals who hold important values that may be affected by decisions or lack of decisions policymakers make for a community (Pathak et al., 2020).
23. Threat and Hazard Identification and Risk Assessment (THIRA) – A methodology that emergency management programs use to determine gaps in recurring, real-world interagency activities, such as mass-gathering contingency planning (Bradley, 2018).
24. Whole Community – An emergency management guiding principle for developing preparedness documents that ensure the appropriate roles and responsibilities are included from the local, state, tribal, territorial, and federal government partners, families, individuals, the private sector, faith-based organizations, non-profit groups, community organizations, schools, academia, and the media (U.S. Department of Homeland Security, 2019).

Summary

Incidents and events begin and end at the level; therefore, emergency management is the government entity responsible for using an all-hazard approach to public safety services and central oversight beyond a typical response to incidents and events (Kapucu et al., 2009; U.S. Department of Homeland Security, 2019). Building and sustaining plans and processes that protect against disaster impacts is an ongoing programmatic responsibility of emergency management. The problem is that a single point within a program or process can fail, and that failure is not always explicitly known, evaluated, or captured in advance. When single points of failure potential are not considered, outcomes can result in more significant failure potential, often becoming the focus of after-action reports. Emergency disaster management knowledge

that any disaster requires many stakeholder organizations and inter-organizational integration can reveal challenges for disaster management (Dwivedi et al., 2017; O'Toole et al., 2013). This research differs from existing literature because the specific problems that cause single points of failure at the emergency management level are not well researched. This grounded theory study helps emergency managers understand single points of failure and the potential or actual moment overlooked processes, actions, or details that create minor or significant challenges. This study also explored Malcolm Knowles's *Adult Learning Theory*, Erik Hollnagel and David D. Woods's *Joint Cognitive Systems Theory*, Albert Bandura's *Social Cognitive Theory*, Arthur F. Bentley's *Public Policy Group Theory*, and Fred Fiedler and William Scott's Contingency Theory to better associate leadership, personnel, equipment, and processes with failures (Buck et al., 2006; Changwon et al., 2018; Constantinescu & Moore, 2019; Durrance, 2022; Fiedler, 2008; Hird, 2018; McGlown, 2020; Puah et al., 2021; Tarhini et al., 2021; Wehde & Choi, 2021).

CHAPTER TWO: LITERATURE REVIEW

Overview

Emergency managers' key topics include the fact that effective leadership is contingent upon the situation at hand, an essential characteristic for leaders striving to build a high-performing, highly adaptable emergency management team. Providing an effective program is a foundational aspect of flexible units to empower individuals to better adapt to the continually changing disaster environment that occurs in real-time. The emergency management field requires that leaders maintain a transparent environment that allows teams to adjust and adapt to incident event circumstances and scenarios. The deficiencies in the plans, systems, and processes can be resolved by examining the leadership actions at major incidents and events that drive significant changes in the roles and responsibilities of emergency management (Sylves, 2019). Leadership transparency is a demonstrated effort, and disaster operations are more fluid when trust is developed in advance. The approach leaders choose when navigating team challenges includes the practice of adaptability, using a posture of trust and transparency to help emergency managers decrease the impacts of a single point of failure.

This study provides emergency managers with knowledge about avoiding the negative consequences of single points of failure. Unfavorable outcomes for a community can often unknowingly result from a single point of failure. Incident after-action reports typically capture broad topic challenges; however, they do not explicitly identify single points where emergency management programs fail. The organizational setting for emergency management has also expanded beyond historically county-based emergency management programs to agency and authority units and private-sector groups such as hospitals and contract providers. Regardless of the program format, structure, or authority, populations with a wide array of stakeholders are

impacted by emergency management decisions. Improved frameworks for building capabilities and avoiding single points of failure in emergency management operations are needed (Imperiale & Vanclay, 2020).

This research dissertation's literature review demonstrates that little empirical work has been conducted regarding emergency management single points of failure. The key literary streams in the research reveal that failures in emergency management have been examined in general, using overarching themes, and have not explicitly examined single points of failure. The literature's study of single points of failure includes critical infrastructure failure that results in severe consequences to residents and society or where crisis management is addressed as the primary aspect of emergency management (McConnell, 2011; Steen et al., 2023). Sources for the research completed in this dissertation included the search keywords emergency management, single points of failure, emergency management organizations, resilience, complex adaptive systems, after-action reports, chaos theory, and regional disasters that specifically searched for flooding, blizzards, hurricanes, and tornadoes. The sources for the literature review search libraries included the Liberty University Jerry Falwell Library, Google Scholar, the U.S. Fire Administration National Emergency Training Center Library, the Center for Homeland Defense and Security at the Naval Postgraduate School, and the Naval Postgraduate School Dudley Knox Library. Sources across this literature topic that are highly influential include those specifically addressing the Incident Command System, personnel challenges, and federal mandates. The literature has been studied using several theoretical frameworks.

The preliminary conclusion in this literature review is that future research is highly warranted because of the need for more specific literature that addresses the research topic. Research has provided many articles and studies for the overarching failure points; however,

limited empirical studies are available that correlate single points of failure to emergency management. Reports are available regarding general government failures. It was easier to find scholarly work that addressed single points of failure if related to information technology or infrastructure. This lack of specific work completed to understand single points of failure is a significant gap in existing literature and was a focus of this research study. This research capitalizes on the opportunity to develop academic literature and scholarly work that fills this gap. This research differs from existing research by identifying valuable methods to predict and prevent failure points.

Theoretical Framework

The contribution of this study is a new grounded theory, where the research dissertation derives a new construct to explain the key factors that promote emergency management single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure. This study comprises what has already been explained and then takes new evidence from research to forge that new construct. The theoretical approach to studying emergency management and single points of failure phenomena required expanding upon limited work completed in the field. This research dissertation is directly connected to theoretical frameworks that guide the study of emergency management's single points of failure. This connection allowed for discovering findings that apply to the greater context of disaster control and other vital matters in emergency management. The relevant work previously completed helped guide and make sense of the theoretical approach to the phenomena of single points of failure. This study applies to previous relevant training, personnel, public policy, leadership, and technology work.

Each area's theories and major theorists were considered to advance or inform this dissertation's literature review (Maher et al., 2018; Skjott Linneberg & Korsgaard, 2019). The review of theoretical frameworks included Malcolm Knowles's *Adult Learning Theory* for training, Erik Hollnagel and David D. Woods's *Joint Cognitive Systems Theory* for personnel, Albert Bandura's *Social Cognitive Theory* for personnel, Arthur F. Bentley's *Public Policy Group Theory* for public policy, and the *Contingency Theory* for leadership. This theoretical framework helped underpin this research study. The research dissertation hypotheses were developed from the literature review: single points of failure increase the risk to the community; mitigation efforts can influence independent variables; single points of failure are not entirely avoidable. This exploratory research study explored appropriate literature to discover new sources that do not explicitly address single points of failure.

For emergency management training, the Adult Learning Theory principles provide a basis for how adults learn, an essential concept for teaching the incident command system. The *Decomposed Theory of Planned Behaviors* further explains how working adults assess their ability to determine the intention to participate in a short micro-learning session (Puah et al., 2021). Educators determine usage based on how the topics are broken down into complex issues to identify significant factors that support micro-learning applications. Public safety professionals managing incidents and events have various backgrounds; when requested or instructed to participate in training, most adult learners maintain a positive attitude toward training (O'Donovan, 2017; Quinlan, 2020). The single point of failure in training exists when participants have a positive attitude but do not consider the training necessary and fail to understand and remember critical concepts (Puah et al., 2021).

Emergency Management in literature, specifically the role of managers in addressing single points of failure, is not found specific to the growth of emergency management higher education programs driven by strategic priorities necessitating professionals prepared to manage preparedness and response activities for incidents and events (Danko, 2019). Although these educational programs continually grow in scope and size, a historical foundation of research-based best practices for these adult learners does not exist like in other advanced academic fields. Adequate education for creating competent emergency management professionals in many communities is currently lacking in scale and continuity; increasing education in emergency management can offer necessary concepts to programs to increase knowledge (Tušer, 2019). This research dissertation aims to determine possible targeted interventions that help draw focus on best practices that encourage participants to engage with and adopt concepts fully.

Emergency management personnel are the most valuable resource that emergency managers have at their disposal. Exploring Joint Cognitive Systems Theory provides that co-agency human and mechanical systems seek boundaries that determine how personnel function in complex environments and create co-agency (Changwon et al., 2018; Wehde & Choi, 2021). This theory further explains that when interactions are not efficient or straightforward, this can create hazardous environments. This research will provide emergency management practitioners with personnel problem-solving options for complex real-world situations (Steen et al., 2022). The inter-relational components of the Joint Cognitive Systems Theory include human cognitive agents and machines, real-world requirements upon cognitive work, and representative consequences that often manipulate the incident or event. Mastery of the system and behavioral modification can improve the basis of experience to achieve an organized incident response.

When applied to understanding personnel, the Social Cognitive Theory offers a management approach that better analyzes and understands problems to provide solutions for incident management teams (Tarhini et al., 2021). Changes are often required to implement information systems that better manage critical processes; emergency management administrators must be aware of necessary changes to achieve effectiveness. The management process requires changes throughout an incident or event to resolve problems safely. Errors are reduced by identifying data and information discrepancies within the cognitive function. Cognitive analytics management also means the right questions are asked, and answers are provided understandably. Behaviorally, the emergency management process is simple; however, when steps are omitted in some or all approaches, the corresponding information necessary to resolve incidents is reduced (Buck et al., 2006).

When critical data variables are identified in the research, appropriate guidelines are established to determine relevant data sources. The analysis of interactions within parts of a management system reveals how, for example, the level of improvisational skills among units or personnel is adequate or leads to unsuccessful action when other system layers cannot support the necessary improvisations because of policy or technological failures (Coetzee & Van Niekerk, 2018; Cunha et al., 2022). During the analytics process, emergency managers can apply techniques to understand when technological or mechanical systems must be used more effectively. The following decision-making data must be more accurate (Tarhini et al., 2021). These and other perceptions can confuse personnel. This research includes the concepts of the inductive theory, which helps to identify patterns in observations during situations of urgency. The perception of danger can indicate how personnel can contribute to failures within system-wide communications (Cunha et al., 2022). When practitioners lack the experience of judging

risk, they traditionally rely on systems to alert them, which can and does fail. Structured mentoring is necessary to prepare practitioners to perceive and act safely and effectively during dangerous conditions.

Administrators who understand how to improve disastrous circumstances require interdisciplinary knowledge, specifically in public policy. The manner of teaching public policy and the necessary ongoing analysis must include identifying the goals for adult learners, the format of discussions, providing helpful case studies, and creating a group environment with permanent understanding (Durrance, 2022; Hird, 2018). Ongoing public policy analysis helps policymakers determine how best-informed policy decisions will likely result before the emergency. Public Policy Group Theory provides that systems rely on informational concepts requiring cyclical input, feedback, and output to process decisions to improve complex circumstances (Durrance, 2022). The policy analysis process for public safety problems constantly considers data collection for identified stakeholders for a rational government decision.

In the evaluation process, a criterion for determining resource allocation and operational actions informs which policy alternative recommendation will be selected. Identifying single points of failure when addressing public problems is only sometimes evaluated and found relevant during a disaster (McGlown, 2020). Prior research pre-identifies policy alternatives that can determine objective criteria and help recognize and select the optimal solution (Durrance, 2022). Administrative policies are a broad, often political, set of beliefs that explain preferences and characteristics of desired outcomes. Policy analysis is traditionally less technical and more intellectual; therefore, when research such as this seeks a technical solution, it must apply tasks appropriately to better understand how decision-makers think about their problems (Hird, 2018).

This research aims to improve understanding through relevant findings and technical and analytical perspectives. This research dissertation will address these issues by applying Policy Process Theory to help demonstrate individual challenges related to policy analysis partiality (Wehde & Choi, 2021).

A single point of failure for emergency management technology is where, for example, agencies unknowingly rely on a single individual for technological decisions and application executions. When a single individual possesses all the knowledge, access, and maintenance, countless circumstances can interrupt the system when needed most. Technology research has created applicable theories, including the *Deterrence* Theory and Early *Deterrence* theory, which explain technology independence for critical systems used by essential personnel. The development of new technology specifically for online training education within the emergency management discipline has identified a further need to capture best-practice teaching and learning for responding to incidents and events (Hackerott et al., 2021). Technology for technical education is often conducted following community stakeholder assessments for ongoing needs and demands for workforce personnel that strategically improve existing programs using technology and expand new programs. Critical success and critical failure factors across the stages of different systems can benefit from applying contingency theoretical perspectives. This study investigates related failure points from leadership vulnerability associations alongside emergency management technological variables.

Modern emergency management technology systems are complex, and significant expertise is required to use them effectively. Prompted by Psychological Learning Theory, this research applies concepts for organizational learning, which is explained using the results of rates of change within continuous improvement practices initiatives (Sunder M & Prashar, 2020).

Technology initiatives are used to support the order of processes. Order is related to the sequence or pattern of individual system differentiations. Including concepts of Chaos Theory in this research can help explain the unexpected or unpredictable behaviors of systems that are supposed to be deterministic yet allow failure to create conflicts (Postavaru et al., 2021). The Contingency Theory will also be applied in the research to explain that organizations must implement continuous leadership improvement practices to ensure processes remain available (Sunder M & Prashar, 2020).

Related Literature

To synthesize emergency management knowledge, this research links existing knowledge to this new study of emergency management single points of failure. The literature addresses overall failures, which is significant for providing public service administrators better solutions during disaster response and recovery. Extensive literature is available on emergency management, and most interdisciplinary topics applying to emergency management activities have been completed to some level or degree. Areas that have been examined include, among others, incident management systems, community lifelines, after-action analysis, silos in governments, the social science of response entities, lobbying, comprehensive planning, resilience, and stakeholder engagement. Specifically, the single points of failure in emergency management have not been examined well. To understand the topic better, this research focused on developing perspectives of emergency managers that isolate single moments of issues that, if addressed in advance and prevented, decrease negative impacts on the community before, during, or after an incident or event (Mergel et al., 2020). This study fills the gap in understanding emergency management's single points of failure within a greater understanding of the field of emergency management.

This literature review focuses on synthesizing the knowledge of emergency management into single points of failure. A significant gap was immediately identified: only a few sources had conducted a lot of work for single points of failure in the topical area. This research dissertation links the existing knowledge for the study; the literature review provided a substantial explanation and foundation regarding emergency managers' plans to address community threats. Patterns in policy change are often a reaction to extreme events where policy learning is achieved by public institutions (Haque et al., 2018). Public impacts correlate to local program results, and the literature review revealed many sources with failure insights that identify personnel training and policy as significant challenges. The real-world emergency management environment knows threats and risk behaviors can also determine failures.

When administrators identify policies, processes, or systems that can create failures, they may only occasionally take the necessary actions to prevent them. When terrorism is experienced, failure is often the focus of after-action reviews; however, not all failures require a significant incident or event. This literature review revealed that policymakers and practitioners seek innovative solutions to avoid substantial issues identified following a disaster. The single points of failure impact problems extend beyond traditional operations, and this research addresses those challenges. When emergency management programs ensure that critical systems are monitored, associated hazards are reduced or eliminated, allowing for the focused development of a plan for managing new and emerging risks by expanding or modifying the emergency response to better reflect the present risk (Giang, 2020). Personnel, policy, training, and technologies are common literature themes and categories that have occurred within the topic for review. The themes for each category were provided in the theoretical framework section.

Analysis of the literature provided methodology and theoretical contributions that government growth correlates to emergency management integration responsibilities. Synthesis of economic theory for development provides a historical perspective that better explains how single points of failure are sometimes caused by swift government growth and have economic effects on emergency management (Campbell et al., 2021). Community-level homeland security responsibilities crosscut federal, state, and municipal boundaries, which creates an environment that can cause local-level stakeholder coordination failures for those inexperienced in intergovernmental relations (Caruson & MacManus, 2006). Federally mandated policies for homeland security requirements are imposed upon the state and local governments across networks of intergovernmental relations. The demands of homeland security policy implementation can force intergovernmental relations and increase vertical networking strains for response and recovery organizations due to political, financial, legal, or administrative requirements.

Incident management integration demonstrates generalities across stakeholder groups but fluctuates in specific execution throughout each emergency management community. Cognitive methods for understanding process behavior and the flow of corresponding data help managers make the right decisions if armed with the right policy (Tarhini et al., 2021). The subjectivity of defining policy correctness is demonstrated in the incident command processes, where the National Incident Management System (NIMS) is a massive policy mandate designed to restructure and standardize emergency management entities' efforts (Jensen & Waugh, 2014; Jensen & Youngs, 2014). Municipal agencies decided how or even whether to implement the mandate based on their perceptions of this policy's correctness, often regardless of federalism's financial implications. The literature explained that policy influences on personnel are often

individual, and emergency management is personally complex, multidimensional, and individualistic (Day et al., 2021). A well-known example is when the Chornobyl Nuclear Power Plant, civil defense director Serafim Vorob'ev dissented from the insensible assessment by others that no localized threat existed for what became a massive unfolding deadly international disaster (Geist, 2015). Team interaction patterns affect the effectiveness of an emergency management team, and critical characteristics of interaction dynamics provided in the Chornobyl example are better understood through a complex analysis of the adaptive systems for emergency management programs (Hoogeboom & Wilderom, 2019).

Emergency managers function in complex environments where constant changes in incident severity adjust to increase intergovernmental collaboration demands necessary to address such challenges (Kapucu et al., 2009; McGuire & Silvia, 2010). The intergovernmental collaboration variations among emergency managers reflect many influences ranging from the severity of a problem, the capacity to manage issues effectively, and how the emergency management program is structured. How these public administrators perceive challenge severity measured against individual managerial skills and organizational capacity is tied directly to the complex nature of single points of failure when left unrecognized along the pathway to a more significant loss (Barnett et al., 2020; McGuire & Silvia, 2010). The effect of a given problem and how severity affects organizational and managerial capacity further impacts the emergency management's programmatic structure and other intergovernmental collaborations.

After action analysis and reporting should address emergency management holistically to construct audits, for example, pointing out a single point of failure and further identifying the systems that frequently emerge as the source (Bryant, 2013). As internal and external risks are determined in the audit, mitigation efforts are more easily defined, and ongoing strategies are

created. When decisions for hazard mitigation are coupled with governments continuing to permit the development of hazardous areas, residents ultimately suffer the consequences of dangerous events (Blout & Burkart, 2021; Cavalieri d'Oro & Malizia, 2023). When infrastructure flood protection systems are constructed, the effect on the seemingly protected areas behind these structures can fail to meet design expectations and compound impacts. Municipal governments can access funding programs to remedy residential community hazards. Still, these programs take years to complete, are subject to economic fluctuations in property value, and can frustrate property owners, causing their departure from the arduous process (Morckel, 2017; Son et al., 2020a). For this issue, emergency managers face economic development pressure, dangerous infrastructure systems, and poorly designed federal relief programs.

This research reviewed and analyzed single points of failure in reports from jurisdictions that have experienced disasters and have completed after-action analysis as a measurement tool for quality improvement (Barnett et al., 2020; McGuire & Silvia, 2010). A common issue when jurisdictions embark on after-action reporting is collecting objective data during and after an incident or event response. Creative methods are necessary to collect and utilize objective observations, which is a better drive for change. Observations included the requirement for improvement in personnel management, verification of credentials, logistics management, situational information sharing, identifying unmet needs, and inadequate technological support (Barnett et al., 2020; Kruger, 2019). Additional findings included consistent shortcomings in objective data, inconsistent report format, and poorly distributed content (Cutter et al., 2018). Single points of failure cannot be identified without quality analysis following incidents and events, much less the organizational culture that can identify failure potential in advance. Poorly

executed after-action reports are directly tied to failing to adhere to the lessons learned and developing a framework that provides more objective reporting measures (Chang et al., 2018; Summers et al., 2018).

Figure 1

Community Lifelines for Incident Stabilization



Note. This figure represents the seven most basic community lifeline services communities rely on. When stable, other activities can function within a community. The lifelines are designed to help emergency managers, infrastructure, and other key stakeholders analyze the root cause of incident and event impacts to prioritize and deploy resources, by U.S. Department of Homeland Security, 2019.

Objective reporting measures that assess the incident management process and outcomes increase the rapid stabilization in response and recovery. Community Lifelines is a response dashboard aimed at facilitating the scope, complexity, and coordination of emergency response efforts for the whole community, which includes government, the public, and private sector partners (Cypress, 2018; Kruger, 2019). The platform allows the visualization of critical and non-critical functions; the Community Lifeline components align closely with the existing emergency support functions. Municipal emergency management programs that use the community lifeline framework can better leverage multi-agency resources established throughout an affected area alongside federal partners and national organizations (Calloway et al., 2022; Kruger, 2019; Mayer, 2019). The safety and health of each community relies upon the vital

services enabling critical government operations and functions of industry, which are essential to the nation's economic security.

This research explored the activities and challenges correlated to community lifeline single points of failure and provided recommendations for emergency managers and responders. Additionally, by reinforcing empirical findings from after-action reports, understanding how authorities anticipate providing public service during incidents and events can prevent failures (Calloway et al., 2022). Security matters during disaster response are presented in many ways, such as food and utility. This study can better inform emergency managers during future incidents and events by developing practical takeaways (Luk, Sabrina Ching Yuen, 2009). The recommendations provided through after-action reports related explicitly to community lifelines often describe a particular disaster response activity that caused or did not prevent a single point of failure. The resilience concept is applied broadly across community lifelines and stressors to organizational response structures and societal systems that should be considered for increasing communities' integrated incident resistance capacity (Kruger, 2019; Mayer, 2019). Understanding emergency management principles is not the only community lifeline solution; emergency managers must continually seek the fundamental principles that connect with cross-organizational community stakeholders and provide cross-functional best practices for new and emerging challenges.

Governmental characteristics, such as jurisdictional size and type, also influence cooperative perceptions and the creation of operational silos. When cross-jurisdictional incidents include cascading hazards or those resulting directly or indirectly from an initial threat, a robust understanding of how natural events are often based on proximity and time can allow failures for multi-hazard risk assessment to create risk reduction (Cutter, 2018; O'Toole et al., 2013). The

level of societal unpreparedness and a lack of foresight regarding probable events will always determine the ultimate size or origin of an event's impact. The consequences often result from disconnected governance or how modern society has interlocked the social, physical, technical, psychological, moral, and political domains (de Lucas Ancillo et al., 2020; Drisko, 2005). A recurring theme in existing literature addresses jurisdictional administrative policy. Catastrophic consequences of flood-prone areas, for example, are historically the result of pre-existing policy conditions that have not reduced flood risk (Cutter, 2018). However, federal policies seek to reduce the number of hazardous areas to create safer environments, and unfortunately, have resulted in opposite effects.

Incidents and events can create cascading economic, financial, and social challenges; single points of failure inflame those challenges; however, comprehensive emergency planning and response can decrease or eliminate those impacts (Wolf-Fordham, 2020). Incidents and events begin and end locally, closest to the most significantly impacted individuals within communities. As these situations unfold, and municipal government levels become overwhelmed and request assistance from a higher level of government, the local state of emergency does not surrender control to the higher level of government (Dwivedi et al., 2017). Municipal emergency management agencies should be prepared to assert power and manage the potential of any mandated action, especially in home-rule states. With the fragmented nature of emergency management systems, the single point of failure is more likely when government silos and restricted communication limit coordination and collaboration (Popplewell et al., 2019; Wolf-Fordham, 2020).

To specifically combat the fragmentation effects of silos, informational exchanges must be deliberate and seek solutions that dismantle silos, such as more effectively using technological

or communication options. Systems that rely upon technology and personnel interoperability, or socio-technical systems, cannot perform intended functions individually (Popplewell et al., 2019; Rice & Bloomfield, 2022). Critical infrastructure is a prevalent example of socio-technical systems. Where organizational structures rely heavily on this resource, they can create a single point of failure within their most critical operations (de Lange & Adua, 2022; Popplewell et al., 2019). Highly complex interdependent links exist between personnel and their technological aptitudes, creating silos of specialty, hence, fostering a failure in the system. Preventing cascades of failures and any situations that make associated risks requires calculated efforts, which are not simple and often require considerable time commitments (Popplewell et al., 2019; Rose et al., 2018). Thoroughly evaluating single points of failure impacts among other damaging elements within an incident can be assessed in advance using simulation models, which are more likely and only fully understood using systematic analysis of several aspects following the problem.

Because local agencies directly experience and then learn from disasters, the key to forward-looking policies is to have relationships that encourage honest interaction and feedback (Haque et al., 2018). Considering interdisciplinary social sciences can help communities achieve resilience is a primary goal of emergency management policies. An essential concept for emergency managers is that the federal government focuses on a nationally applicable preparedness approach; municipal governments must continually establish and improve inter-cooperative agreements that enhance their capacity to manage high-frequency events (Clovis, 2011). Within disaster risk science, conventional thinking argues that reducing vulnerability and hazards creates a disaster-impact-free society, or at least a capacity to survive disaster results better. Establishing collaborative governance networks requires coordinated action, which is

likely to evolve as individual stakeholders realize they cannot accomplish goals without alternative resources (Ambrozik, 2019; Rivera & Knox, 2022).

This review explored and applied the edge of chaos concept. Additionally, traditional disaster risk planning is a testing opportunity for the Complex Adaptive System Theory to understand better how multiplex relationships and emergency management organizations can intelligently influence the function of systems operating at the edge of chaos (Coetzee & Van Niekerk, 2018; Kapucu & Hu, 2014). Assessing and managing potential positive and negative social consequences of incidents and events can support planned interventions. As developmental projects consider impacts on the community, the emergency manager often applies a process of identifying, analyzing, and managing project implications during disasters (de Lange & Adua, 2022). A commonly used method of anticipating planned intervention's potential social impacts is the comparative case study approach, where analysis and learning are achieved using prior projects in similar situations. This approach is valuable for emergency managers because challenges and opportunities are various, less costly, and can provide valuable insights for preventing failures among community stakeholders. This research focused on the social sciences available to emergency managers where interdisciplinary tasks are required.

Emergency management professionals delivering public services to the community often face challenges in finding an innovative method for improving shared experiences using a supportive approach. Increasing supportive learning delivered through preparedness and response training creates professionalism beyond a student's certification and enhances employee professional development to enable better knowledge transfer (Constantinescu & Moore, 2019; Puah et al., 2021). The influence of individual community experiences and actions explained by the Social Cognitive Theory can be amalgamated with the professional training

opportunities for emergency management teams in the context of existing environmental factors (Puah et al., 2021). Agencies applying these principles have determined what focus actions make better decisions for known failures or the threats that failures can escalate. As single points of failure awareness become increasingly common among emergency management programs, necessary actions and appropriate measures can be shared to protect essential services better and deliver service more efficiently. Peer-to-peer and leadership influence creates normative beliefs and support forming different referent groups that affect individual opinions about learning (Puah et al., 2021).

The perceived expectations of each social group for other's professional deficiencies are not permanently remedied in multidisciplinary professional skills and knowledge building; innovative management, improved communication, better project management, and problem-solving team skills are necessary (Wei et al., 2022). Applying learning theory and adopting inputs for necessary risk mitigation creates the most significant learning opportunity for new disaster activities. Improving understanding of extreme incidents and event impacts through social science provides community resilience and prepares for uncertain future incidents. Conducting a critical examination of the program material's design and content against social science cultivated among the emergency management cross-disciplinary environment allows personnel talent development that responds better to incidents and event management (Puah et al., 2021; Wei et al., 2022). Significant value exists in differing perspectives of incidents and events, and these perspectives can help professionals improve circumstances within a jurisdiction.

Personnel use critical tools to provide crucial situational information about organizational programs, communication services, and formalized mutual expectations. Delineating

expectations creates opportunities to explain risks within the organization and for the community (Waardenburg, 2020). The organizational possibility also exists in enhancing shared social values that agency individuals apply as performance improvements or as impediments that decrease objective competition and correlated liability (Cho & Moon, 2019; Wei et al., 2022). The interactional experience between emergency management personnel and the community determines social trust in the government's capacity to provide public services in the context of the relationship with residents; it influences other relationships contingent on the social construction of community groups (Cho & Moon, 2019). Supportive learning underpins organizational strategies by learning social relationship perspectives within social science to ensure personnel commitments do not conflict with procedural and administrative safeguards (Puah et al., 2021; Waardenburg, 2020; Wei et al., 2022). Single points of failure exist in personnel understanding community vulnerabilities that fail to create the optimal program design or identify proper communication pathways of chief interest to long-term resilience.

Lobbying for emergency management is a contemporary matter. Understanding the community and individuals within a community that face threats to health and safety from incidents and events is critical to emergency management planning. Lobbying at the state and local levels often provides needs related to planning assumptions. The most vulnerable populations are likely to be the hardest hit by disasters. A view through the emergency manager's lens helps interlace civic and corporate leaders in evaluating their investments for risk mitigation. This research helps emergency management officials understand how a community's overall social ties can influence disaster response. Although the effects of emergency management from lobbying efforts are not always understood or measured, expenditure is positively associated with appropriations (Jamieson & Louis-Charles, 2022). Lobbying efforts

are related to several community topics, especially socially vulnerable populations, and collectively, lobbying insights can help raise important questions about the lobbying process.

Emergency managers who identify single points of failure and cannot resolve them without additional financial or statutory support can avail themselves of lobbying efforts. Examples of overall failures exist across all phases of a disaster life cycle and for specific incidents. Voters are reported to have increased support for elected officials that provide disaster relief and preparedness spending when enacting resilience strategies such as building visual elements such as berms, flood walls, and flood gates (Jamieson & Louis-Charles, 2022; Jensen & Kirkpatrick, 2022). Municipal programs communicate known failures as gaps, define the resolution, and seek funding sources to resolve the issue. Some losses are too substantial to solve without lobbying. The significance of lobbying efforts and the number of resources expended upon that effort is primarily driven by appropriations, not damage or frequency of disasters (Jamieson & Louis-Charles, 2022). Emergency management is joining the ranks of organizations heavily lobbying for better support incidents and events.

Comprehensive emergency management planning provides communities with a guide to prepare, respond, and recover from incidents and events. The single point of failure in hazardous risk circumstances is only sometimes easily identified. A comprehensive data collection process is needed to determine the problematic issues that require greater understanding. Co-agency of critical actors and the technical tools establish respective boundaries for how teams manage the incident action planning processes, a view far removed from how national policy dictates a funded or less funded response (Son et al., 2020a). Debates in the literature accuse prioritization during disasters of congressional mishandling. For example, hurricane aid to affected areas and how this assistance is nationally subjective and supported by policy relies on Congressional

participants' deliberations regardless of how states were comparatively at risk of natural disasters (Willison et al., 2021; Zebrowski, 2019). The need for revision of aid is a significant community matter. An example is coastal zone management, where some advocates agree with protecting beaches. In contrast, others continue to allow ineffective seawall repairs and reinvest in development sites where erosion rates exceed protection measures (Summers et al., 2018).

Emergency management is increasingly responsible for facilitating an all-hazards framework that undertakes preparedness, response, mitigation, and recovery for a given community, known as comprehensive emergency management planning (Jensen & Kirkpatrick, 2022). Although technically responsible, municipal-level emergency management personnel may have little or no experience in each of these phases of emergency management. The more specific and demanding technical requirements are needed to meet the five mission areas of the National Preparedness Goal — prevention, protection, mitigation, response, and recovery (Jensen & Kirkpatrick, 2022; U.S. Department of Homeland Security, 2019). Because disaster occurrences are increasing and negative consequences are more significant, the capacity to address community vulnerabilities and create meaningful mitigation is only possible when relevant disaster root causes are systematically and thoroughly assessed.

If an emergency management professional is not highly knowledgeable in each topic's practice and technical details, an environment for single points of failure is fostered. The workforce culture for emergency management personnel demonstrates sincerity and extraordinary devotion to their community, parallel to traits exhibited in other front-line workers. Dedication to preparedness and response alone is insufficient to create a dependable community emergency preparedness program (Imperiale & Vanclay, 2020). Because professional emergency management often claims its expert purview for local emergency management practices, the best

comprehensive emergency management planning is expected (Bradley, 2018; Jensen & Kirkpatrick, 2022). The quality of all hazard planning that applies a framework for preparedness, response, mitigation, and recovery is developed by local-level personnel and evidenced through planning documents, ordinance language, position descriptions, and the vernacular of an emergency management program's online sources.

Emergency management programs have a comprehensive arrangement of established primary mission essential functions that provide appropriate support for incidents and events. To ensure these functions continue performance during a disruption of everyday activities, continuity of operations planning organizes, integrates, and synchronizes continuity efforts with partners, stakeholders, and other coordinating structures (U.S. Department of Homeland Security, 2018). Continuity is a whole community responsibility, not limited to any specific discipline, because it encompasses the interdependent concept of society across all communities and organizations. If taken into earnest consideration by emergency managers, the essential interconnected nature of continuity will prevent isolated entities from functioning during interruptions of essential services (Tyler & Sadiq, 2019; Verheul & Dückers, 2019). Further, Continuity of government is the coordinated effort within a government that prepares its executive, legislative, and judicial branches to maintain essential functions before, during, and after an incident or event (Sawalha, 2021; U.S. Department of Homeland Security, 2018).

Continuity of government and continuity of operation are both complex stakeholder-driven efforts that require a scalable and flexible approach to meet the requirements set by each supported organization. Emergency managers possess the most extraordinary, localized understanding for developing the best plans to protect community health, safety, and welfare and assessing risks and hazards to effectively plan and implement continuity strategies and programs

(U.S. Department of Homeland Security, 2018). Municipal governments directly correlate to stakeholder groups, including authorities and agencies responsible for creating community plans that provide their residents with critical services and essential functions. State and federal partners rely heavily on municipal governments to know a community's ability to conduct essential functions, contributing to resilience and preserving authority. Each local entity must define the roles and responsibilities of crucial employees and where relocation facilities can best execute organizational processes (Sawalha, 2021; Verheul & Dückers, 2019).

Emergency managers help other organizations define critical programmatic functions when normal activities are disrupted. For the categories of essential functions, the primary mission's essential functions must be continuously performed to ensure the community's uninterrupted performance. Matters such as defining orders of succession for offices impacted by an incident or event to ensure they can still execute their legal duties and ensure that proper delegations of authority exist pre-incident (U.S. Department of Homeland Security, 2018; Zhang et al., 2021). Emergency management single points of failure may exist in policy guidance, political discrepancy, or other policy agreement issues. Continuity facility locations that temporarily replace primary facilities may also be a single point of failure, for example, multiple agencies unknowingly planning to use the same facility during multi-agency disruptions (Sawalha, 2021; Tyler & Sadiq, 2019). These and other planning consequences emphasize the importance of all continuity of government and continuity of operation plans reviewed by emergency management programs being subject to an intensive crosswalk (Zhang et al., 2021).

Flood risk is one matter of resilience, and many failures in disaster risk reduction require a top-down approach to policy. A sustainable and inclusive social learning environment is needed to work cooperatively under the traditional emergency management command and

control approach, and municipal authority figures should engage resilient communities (Haque et al., 2018; Sunder M & Prashar, 2020). Mitigation begins and ends at the local level; therefore, local governments must ensure risk assessments are correct, for example, in low-lying risk areas and flood-prone areas (Son et al., 2020). Conversely, a constant interplay of the types of public administrative learning can prevent a transparent and participatory discourse that does not restrict development for the sake of restriction but protects communities using intelligent, well-designed strategies (Dzigbede et al., 2020). Politicians involved in emergency management policies can cause policy changes to be incrementally slow, miss risk perception entirely, and provide little incentive for fully addressing the most catastrophic environmental events, such as hurricanes or floods (Haque et al., 2018). This research dissertation discovered that investigation is necessary regarding protocols for understanding the learning and effectiveness of public service professionals.

Public safety goals seek to continually improve community protection and enhance accessibility to safeguards for residents and visitors; emergency management has increased participation in resilience programs that support public safety goals. A growing need exists in community resilience for managing unexpected incidents and events during disasters in the context of emergency management (Son et al., 2020a). Because disasters create severe community challenges, preparing for and responding to incidents and events must include planning for the unpredictable nature of disasters. When emergency managers do not consider where single points of failure propagate severe disaster consequences, increased risks coupled with time pressure can stress or deplete resources (Jensen & Kirkpatrick, 2022; Jensen & Waugh, 2014; Son et al., 2020a). A typical example includes comprehensive emergency management plans detailing the use of generators for power restoration and multiple agencies and critical

organizations unknowingly sharing refueling contractors, limiting refueling resources and causing confusion and delay.

When established emergency plans are rendered ineffective, resilience is diminished. Understanding key resilience dimensions and utilizing technology tools all aid emergency managers in resilience matters (Son et al., 2020a). If conducted, advanced forecasting of plans, personnel, and organizations can identify where failures will occur and how to adjust and apply improvisation or real-time innovations to situations cascading into a catastrophic event. A new and emerging position in government is the Chief Resilience Officer, a facilitator of the framework that communities address the root causes of the disaster and what mitigation efforts can improve disaster recovery (Barnett et al., 2020; Jensen & Kirkpatrick, 2022). Emergency management personnel dedicated solely to preparedness and response roles should explore resilience participant roles within emergency simulations and incident scenarios to improve resilience in emergency management.

Crisis management imposes significant stress on the relationship among agency leaders, often shaping organizational culture; the subsequent crisis management depends on the network effect of emergency managers (Bhaduri, 2019; Choi, 2020). When engaging the stakeholders responsible for disaster operations, a key component is understanding that culture is a complex and multidimensional phenomenon. System elements requiring consideration during a crisis include agency structure, human factors, and organizational culture. Public service management can better understand the psychology that impacts each detail, beginning with how the causal or consequential factors interact in the workforce. When disasters affect the more significant and crucial organizational units, naturally widespread effects reach areas within an organization and extend to external stakeholders (Bhaduri, 2019). These circumstances create organizational

cultural stresses, and it is essential to clearly define and differentiate the concepts that can reveal how crisis management requires different leadership competencies and interventions.

Multi-sector stakeholders span segments from community residents to public, private, and nonprofit sectors. These stakeholders hold multiple values with varying degrees of importance, high merit, and great utility, forming a system of value priorities as part of their dynamic, time-sensitive, and event-driven value system (Pathak et al., 2020). Identifying and understanding stakeholder values across disaster phases can be identified and then classified into specific categories included in Schwartz's Theory of Basic Human Values, which include conservation, openness to change, self-transcendence, and self-enhancement. Following a disaster, community stakeholders need an immediate response for public safety services followed by a recovery period (Ripley et al., 2020). A short-term recovery that reestablishes critical services and a long-term recovery that returns communities to pre-disaster conditions are complex processes involving an amalgamated approach to communication and coordination.

Because disaster response and recovery require a stakeholder-centered approach, emergency managers need a locally driven differential process that appropriately restores, rebuilds, and may require reshaping the physical, social, economic, and natural environment (Cutter, 2018; Pathak et al., 2020; Ripley et al., 2020). Municipal officials must engage in thorough pre-event planning that fully supports post-event real-world operations to ensure single points of failure do not disrupt stakeholder-driven efforts. As emergency managers consider future activities to enhance recovery planning quality, stakeholder workshops may help promote inter- and intra-community collaborative conversations. This research explored where emergency management programs have identified and engaged working groups that consistently and

effectively consider a stakeholder relationship-building process pre-incident and throughout recovery-based activities (Ripley et al., 2020).

Stakeholder engagements are affected by participant personality characteristics ranging from negative traits such as unsociability and neuroticism to positive traits such as openness, conscientiousness, and agreeableness (Szostek, 2021). Emergency management organizations are often assessed based on the first behavioral interactions between participants and official personnel in a particular situation. The community expects public safety personnel to understand complex matters such as community risk index, social vulnerability, and resilience gaps while maintaining a respectful and cooperative disposition. Localized complex variables can frustrate involved parties and even stray into difficult and toxic experiences because one or all parties are unwilling to work well together. Emergency managers may find that personnel repeatedly involved in antagonistic interactions do not take responsibility for making excuses for behavior or blaming others involved rather than take ownership of workplace issues (Constantinescu & Moore, 2019; Iqbal et al., 2022). The challenge may also exist for the emergency manager personally, where despotic leadership attitudes build adversity and emotional stress. Both circumstances are possible single points of failure because the subordinate or the leader cannot recognize the issue or will not receive counsel from others, regardless of how excellent a program may be. The community may ultimately lose trust in the program, high turnover may occur, a toxic workplace may develop, cognitive distractions evolve, or financial losses result, which are unnecessary problems (Iqbal et al., 2022; Szostek, 2021).

Emergency management's primary concern is for people before, during, and after disasters to reduce the devastating impacts of incidents and events; advancements and the widespread use of digital platforms, devices, and professional services have made technology an

imperative complement to emergency management programs (Wang et al., 2020). Themes from the literature review about using technology and digital data explain how mobile device data can improve technical service for emergency management planning, training, and warning solutions (Wang et al., 2020; Youngblood & Youngblood, 2018). Digital technologies have reshaped emergency management operations, and emergency managers must cognitively, affectively, and behaviorally adjust to these structural and organizational changes (Misra et al., 2020). The pervasive nature of technological environments has intensified communication and informational sharing patterns with the public, public officials, and cooperating agencies, impacting the balance between the public and emergency managers (Misra et al., 2020).

Learning more about how previous emergencies were influenced by technology can help enhance response abilities (Williamson et al., 2020). When applying data to practical problems retrieved through technology devices or services, the application of helpful information can be analytically categorized. The categories can be divided into processing path perspectives, including population mobility, location, social media network interface, device data patterns, and information diffusion (Ferri et al., 2020; Wang et al., 2020). Emergencies that cause significant and widespread community impacts prompt emergency management resource intervention for many stakeholder groups. The response to major incidents and events is often improved using contemporary technological options. However, multi-agency stakeholder technical resources are expensive and inherently possess intersecting challenges (Cutter, 2018; Williamson et al., 2020).

Implementing technology can also require organizations to gain public support to implement and maintain new and emerging technology options (Ferri et al., 2020; Ivanov et al., 2021). When government authorities choose to implement technologies, understanding how each community will accept and interact with the technology is vital (Ripley et al., 2020; Wang et al.,

2017). The single point of failure of emergency management in implementing technology includes poorly assessing community needs and selecting a system or device that is too complex or falls short of the community requirements to be fully effective. Some emergency management technology systems fail to consider the differences in community members accessing information or available resources, and success depends on residents' cognitive and physical abilities (Malizia et al., 2010).

Technologies and social media continually transform the emergency and disaster management landscape, enabling all stakeholders to access digital, real-time information (Poblet et al., 2017). This study evaluated simple technological challenges among the many technological platforms that cause single points of failure. For example, suppose a single team member creates and manages sole access to a stakeholder group's contact information, such as direct phone numbers and email addresses. In that case, the team members were entirely separated from their position in the organization, and the contact information was lost. A similar issue may result when a single emergency management team member has the only login information for critical systems that support bidirectional information sharing and workflow collaboration. Using technology to provide the most significant details among stakeholder agencies and organizations has become a prerequisite of emergency management programs.

Cybersecurity is a current chief priority across all segments, critical in securing the technological environments interlaced among all stakeholders. Emergency management programs face cybersecurity challenges because, to a significant extent, the program does not fully control many programs and platforms but is controlled by other information technology officials (Norris et al., 2018). Emergency managers may not be fully protected against cyberattacks if the problem is not explicitly addressed in all vulnerable network areas being met

by attacks. The constantly advancing nature of cybersecurity systems distributed throughout the technical aspects of physical, informational, and *social cognitive* domains requires a complex understanding of the network structures of thousands of processes (Ganin et al., 2017). Providing cybersecurity management actions for emergency management should be a high priority and ongoing for improving cybersecurity practice. A single point of failure includes failing to recognize that critical systems are not air-gapped, and information is unknowingly being shared with others, including threat actors and cybercriminals (Music et al., 2022).

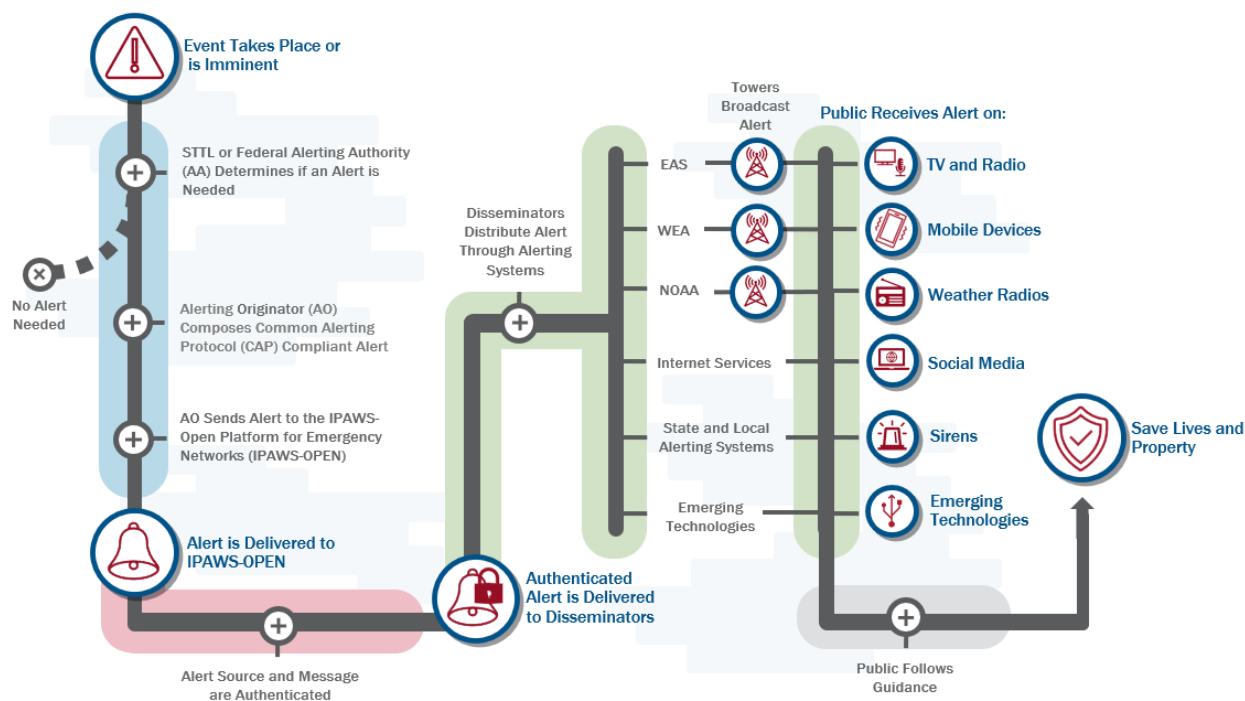
The complicated aspects of communicating vital safety information to the public have created mixed results in both community and emergency management successes. Emergency communications and public notification systems are critical for transmitting timely information that residents rely on during incidents and events (Misra et al., 2020; U.S. Department of Homeland Security, 2022). Emergency management's ability to communicate time-sensitive information must be reliable to minimize the risk to all stakeholders. Because emergency communications can be compromised with confusing messages or delivery system failures, the public may have difficulty determining what actions to take based on the expected situation. Emergency managers should be prepared to use multiple public notification systems, especially if direct emergency communications become compromised (Misra et al., 2020). Notification delivery sources offer different accessibility, emergency response, and devices, requiring emergency managers to consider the abilities of the emergency management staff managing the systems and the population's ability to react to alarms (Malizia et al., 2010).

The Integrated Public Alert and Warning System (IPAWS) Program is a complex network system that allows the transmission of geographically targeted alerts and warnings (U.S.

Department of Homeland Security, 2022). Using IPAWS requires training and education by competent, technologically proficient emergency management personnel.

Figure 2

The IPAWS-OPEN Network



Note. IPAWS quickly distributes alerts to communities using multiple pathways of EAS, WEAs, the National Oceanic and Atmospheric Administration (NOAA), internet services, State and Local alerting systems, and emerging technologies, by U.S. Department of Homeland Security, 2022.

Maintaining responsiveness to all stakeholders builds public trust, ensures equity, and creates confidence in emergency management officials, which is required during incidents and events that demand fast and practical actions. When communication is ineffective, critical resources significantly impact public safety; mass notification systems that provide text and other messaging are excellent platforms to inform the community of an emergency and provide

essential recommendations (Pelfrey, 2020). Communication efforts promptly place the community at an advantage during incidents and events, and to influence the effectiveness, emergency managers must fully understand the requirements and limitations of public messaging systems.

Using a multi-method approach to public notification offers multiple options for the public; methods requiring public registration must be both easy to enroll and utilize. Emergency management programs often create an online presence for messages and organize their brand of community access to preparedness resources. Methods include commercially available subscriptions that public safety leaders use to communicate risk, enabling real-time collaboration, and distributing public warnings to keep people safe. Emergency managers characteristically identify individuals who use publicly and commercially available technological systems to conduct public messaging. The individual must ensure that systems used for emergency messages reach the population and safeguard the subscribed community against unnecessary message fatigue (Pelfrey, 2020). Message decision-making tools can improve communication methods with a community under imminent threat from incidents and events (Kuligowski, 2020). This research examined how poorly executed testing of public notification systems has caused communities to turn off government alerts on personnel wireless devices, which places residents at risk during actual incidents and events.

A warning response model asserts that specific threat cues initiate a series of processes that, if routinely experienced by individuals, may or may not elect to perform protective actions. When a protective action message is received, the community decisions require that a cue is received. Individuals decide if they want to pay close attention to the notification and, if so, accurately determine the message's validity and whether to believe and personalize the threat or

risk (Kuligowski, 2020). Emotional intelligence shows that sentiment is necessary to make decisions and act. Having previous and direct experience with tornado hazards, for example, can determine the perception of risk and the performance of community members' protective measures. On May 22, 2011, an EF-Five tornado occurred in Joplin, Missouri, causing over one thousand injuries and one hundred and sixty-one fatalities. For those at risk in Joplin, the decision-making concluded that protection measures were unnecessary for some residents and necessary for others (Kuligowski, 2020). Survivors reported they did not initially seek shelter due to the lack of tornado-related physical cues, prior false tornado alarm experiences, confusing emergency communication, and inaccurate community beliefs about geography (Houston et al., 2017; Kuligowski, 2020).

Summary

Delivering emergency management services to the community should be conducted to promote preparedness and recovery through equitability and resilience. The staff providing these services is better positioned to achieve positive outcomes following guided principles developed through informed internal and external engagement that prioritize community experiences. This research explored emergency management's single points of failure and determined that the impacts on communities can be better understood and prevented. By examining these and other essential topics, the overall professionalism of emergency management is continually advanced. Exploring failures is critical because the problem is constantly happening. A gap exists in the empirical literature that considers incident and event failures, specifically single points of failure. When emergency management professionals access the collective knowledge of their stakeholder networks to gain a fuller view of the issues creating failures and what opportunities can ultimately help make positive differences in the community (Ambrozik, 2019; Cutter, 2018).

This literature review included significant contemporary emergency management topics that offer context for data collection and analysis. The focused summary and critical argument for single points of failure explain what is currently known and unknown regarding each matter from the literature. This study explicitly addressed gaps in existing literature that require increased academic focus.

A direct connection is provided to the theoretical framework, which helps connect theory to predominate explored topics. As guided by the literature, findings within a greater context give rise to other emergency management matters not previously considered in the context of single points of failure. The research used specific research to focus and relate to existing theory, to advance or extend the applied approaches, and to increase understanding in the emergency management professional community. Recommendations gleaned from the literature on incident and event activities prove relevant across many program responsibilities for numerous disasters and emergencies (Calloway et al., 2022). Furthermore, linking existing emergency management knowledge to the study of single points of failure supports the significance of the study; including previously examined topics has determined there are future matters that will require review. The topic of single points of failure is still developing; this research looks extensively beyond an individual organization, assessing the many experiences emergency managers are reporting while managing complex problems faced repeatedly (McGuire & Silvia, 2010). This research also explored the implications of frameworks that guide future work and how to fill the gap that single points of failure have not been studied extensively to provide the field of emergency management with greater understanding.

CHAPTER THREE: METHODS

Overview

The nature of this research was to build on existing knowledge about the role of emergency managers in addressing single points of failure. Key theoretical frameworks were to examine this role and to develop and create a new theoretical construct on the role of emergency managers that adds new knowledge to the existing body of literature. This research has found that relationships exist within plans and programs where facts and data explain failure impacts and provide logical, verified, and useful conclusions. This chapter presents the procedures, research design, and analysis conducted during the study and details of what occurred throughout the execution of the research. This grounded theory study has improved the understanding of how public service professionals managing at various government levels address emergency management's single points of failure. The research study defines single points of failure as when a process, action, or detail was either overlooked or executed incorrectly and caused emergency management challenges. The theories used to guide this grounded theory study included Malcolm Knowles's *Adult Learning Theory*, Erik Hollnagel and David D. Woods's *Joint Cognitive Systems Theory*, Albert Bandura's *Social Cognitive Theory*, Arthur F. Bentley's *Public Policy Group Theory*, and Fred Fiedler and William Scott's *Contingency Theory* (Buck et al., 2006; Changwon et al., 2018; Constantinescu & Moore, 2019; Durrance, 2022; Fiedler, 2008; Hird, 2018; McGlown, 2020; Puah et al., 2021; Tarhini et al., 2021; Wehde & Choi, 2021). The relationships between the theories and this focus of inquiry, based on a review of theoretical frameworks, identified that the *Adult Learning Theory* applies to training, the *Joint Cognitive Systems Theory* applies to personnel, the *Social Cognitive Theory* also applies to personnel, the

Public Policy Group Theory applies to public policy, and Fred Fiedler and William Scott's descriptions of *Contingency Theory* applies to leadership.

Due to the complexity, frequency, and expense of incidents and events, as well as the ongoing and increasing challenges of matters such as supply chain uncertainty, there is a greater need for emergency management agencies to correct outdated plans and technology. A simultaneous need exists for increasing professional maturity that creates opportunities for emergency management agencies to become more efficient, agile, and resilient to fulfill their missions better. Ongoing single points of failure challenges are often revealed within mission creep, personnel shortfalls, communications, and the increasing severity of incident and event consequences. This research explored various ways to consider the future of emergency management and what implications it can have for community preparedness and response. This research also strengthens the ability of emergency managers to better consider future single points of failure possibilities as complex yet predictable influences.

Design

Emergency management programs continue to add responsibilities beyond their central role in overseeing incidents and events, while team practices continue to drive the outcomes for their primary mission effort. Exploring the presence of emergency management single points of failure allowed this research to provide both understanding and intervention process options to minimize or eliminate failure impacts. If a failure problem occurs and unfavorable community outcomes are realized, they can unknowingly result from a single point within managerial processes. Specific programmatic or functional failure details are lost in what becomes a more significant general failure. Providing emergency managers with more knowledge of single points of failure better prepares them to avoid subsequent negative consequences. The goals

accomplished in this qualitative grounded theory research include a greater understanding of the nature of the single points of failure phenomena. The research has answered questions about why single points of failure exist and how to manage them, which requires assessments using complex multi-component interventions.

This study incorporated grounded theory research as the research method and overall strategy to explain single points of failure. This design provided a broader capability to deliver findings from a larger emergency management population beyond each isolated experience. This research drew from interpretive and constructive research paradigms that provide the necessary understanding of the study of emergency management and used creative processes of insight and discovery within the well-established structure of the scientific inquiry blueprint, which delivered meaningful, practical outcomes (King et al., 1994; Tomaszewski et al., n.d.). The appropriate general design for this research was selected by considering the need for flexibility of mind by looking at emergency management, asking new questions, and collecting valuable data. A grounded theory approach was chosen to describe the meaning of the different viewpoints from emergency managers' experiences of single points of failure.

The research design strategy and specific method within the approach for this dissertation integrate data collection, measurement, and analysis to address the research problem thoroughly. The research problem of single points of failure for programs, personnel, training, and policy required a design relevant to this unique argument through reliable, valid, and neutral design characteristics. The most appropriate research design for the study was a qualitative method to accurately discover how and why failures occur using, among other things, semi-structured, open-ended questions that indeed discover subject perspectives (Hird, 2018). The research design also provided generalized findings applicable to broad situations or encounters beyond the

subjects' immediate personal and educational experiences. In addition to participant interviews, the data collection approach included ongoing literature reviews, document analysis, an online survey, and a focus group session.

Specific abstract concepts were constructed into measurable observations to operationalize the dependent and independent variables. Significant matters of drivers, such as political influence, were considered for discovering failure evidence. Using a primarily nominal systematic data collection process, those circumstances not reported as first-hand experiences were captured better. The topics were not always organized because of the variation in the structure of different emergency management programs. Independent variables included emergency management personnel, training, planning, intelligence, technology, communications, and equipment. Observable implications for the dependent variable, emergency management single points of failure, revealed that multiple incidents and events have frequently included failures.

To ensure the research problem is received as intended, findings unfamiliar or complex for the audience are explained in understandable terms, and concepts and ideas that require additional background information, such as incident command nuances, are provided. The literature review derived from completed research includes findings that single points of failure increase public risk and are not entirely preventable, and mitigation efforts for failures are similar in nature. This qualitative research used exploratory survey study tools, measurements, and methods that helped determine how emergency managers subjectively applied to these topics (Hird, 2018). Process tracing was used to create open-ended interview questions during the assessments of formal emergency management plans. Each question's background was substantiated using data from the exploratory research. This theoretical research interpreted those

findings and provided valuable insights into the presence of failures and how impacts have been mitigated.

This research design used a qualitative research methodology relevant to the research questions regarding emergency management single points of failure. A systematic, theoretical analysis of data collection methods was applied to study the emergency management field. A theoretical analysis of the body of principles and practices associated with a branch of knowledge was completed, and applicable theories were determined to understand the research problem better. The study was conducted in a manner that draws upon literature and collected valuable data through multiple means that link the identified theories, literature, and results to real-world applications (Hird, 2018). The strengths of the research design included that the professional subject participants and the respondent audience were already familiar with survey and interview procedures, were readily available, and provided numerous experience accounts. Based on industry discourse, this survey topic interested the audience and increased participation and willingness to help support the research and, in turn, the design. A weakness in research designs was that independent variables revealed some bias, as found during early analysis that all the independent variables impacted the dependent variable.

Following the literature review for this research study was an analysis of all the methods and procedures for an investigation and a review of theoretical frameworks. The theoretical frameworks found that particular theories supported understanding the independent variables. Subsequently, training was addressed using Malcolm Knowles's *Adult Learning Theory*; personnel was addressed using the *Joint Cognitive Systems Theory* and the *Social Cognitive Theory*; public policy was addressed using the *Chaos Theory*, the *Public Policy Group Theory*, and the *Stakeholder Theory*; and leadership was addressed using the *Contingency Theory*

(Ambrozik, 2019; Day et al., 2021; O'Donovan, 2017; Rose et al., 2018; Zebrowski, 2019). In addition to the theoretical application, the research dissertation applied real-world empirical facts to bridge abstract concepts presented throughout dissertation development that discovered empirical relationships among variables (Puah et al., 2021; Rose et al., 2018). A grounded theory methodology was employed in this qualitative research, and a new theory was constructed from the data that was systematically acquired and processed through a comparative analysis.

Research Questions

The central research question for this research was: *How does Contingency Theory explain the key factors that promote emergency management's single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure?* Four sub-questions were also explored in this research. Sub-question one: *How do emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events?* Sub-question two: *How do emergency managers apply real-world insights to demonstrate learning organization aptitudes?* Sub-question three: *How do Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans?* Sub-question four: *How do emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management?*

Setting

To complete the research requirements, primary data collection included document analysis of digitally available planning documents, virtual settings for interviews using Microsoft Teams, an online survey using SurveyMonkey, and an in-person setting for the focus group session that occurred in a large conference room at the Jacksonville Fire and Rescue Training

Division's Academy location in the Florida State College South Campus. The physical setting for the focus group was located in Jacksonville, Florida, and was selected for its familiarity with the researcher and convenience for all focus group participants. All of the settings encouraged the research and data collection process. As the former City of Jacksonville Fire and Rescue Department Director of Emergency Management and the Emergency Operations Center and Division Chief for the Jacksonville Fire and Rescue Department, the researcher was familiar with the professional setting benefits of the focus group location. The authority having jurisdiction for the focus group setting's organization structure at the highest level is the City of Jacksonville Mayor, then the current Fire and Rescue Department Director, then the Division Chief of Training, then the Assistant Chief of Training, who has the authority and granted permission to access the Training Division Campus, appropriate staff, and corresponding conference room setting.

The primary source of the interview participants was from multiple personnel rosters for emergency management programs throughout the United States, who regularly participate in committees, boards, incident management teams, conferences, mutual aid deployments, training, exercises, virtual presentations, and interviews. Twenty-eight interviews were completed using the Microsoft Teams secure virtual meeting platform, as requested by each participant. Virtual interviews were the most convenient, provided audio and video recordings and transcripts, and eliminated traveling to site locations. Interview participants made themselves conveniently available throughout the workday for the research study. Local, state, federal, health care, transportation, non-profit, private-sector, and higher learning center emergency managers participated in the interviews (Appendix B). Because virtual interviews were conducted, no

official agreements were necessary to protect location confidentiality for the interviewees and researcher.

Participants and Respondents

The incident action planning cycle used by emergency managers occurs across multiple scales measuring, among other things, the resilience of incidents, recovery time, resources, and allocation; valuable interactions with participants were evidenced in the performance of the methods utilized (Son et al., 2020a). Providing ongoing discussion of critical issues, such as systematic failures facing emergency managers in the emergency management community, requires comprehensive investigation using, for example, academic and policy research (Caruson & MacManus, 2006). Qualitative methods were used in this research study because they are suited for the complex individual responses collected for the single points of failure phenomenon. A carefully designed qualitative method provided the most available data because the sample sizes were significant. The research study phenomenon, emergency management single points of failure, is a known challenge and of interest to emergency managers.

This research study accessed the professional emergency management population, using an appropriate sampling to formulate the data sources that create a better understanding of the processes used by emergency managers during an incident or event. The robustness of the data was derived from each professional actively responsible for protecting a given community. Eliciting participants for the study was also assured because of the large professional population of emergency managers who seek process improvement opportunities as regular work practice. It was recognized that emergency management professionals have time restrictions and limitations; therefore, collecting the data through interviews and surveys required regular follow-up requests

throughout the research study. This research dissertation created a comfortable, transparent atmosphere for participants to share openly during data collection.

The source of the sample pool for interview participants was selected from the currently published emergency management programs (Appendix B). Virtual interviews included emergency managers from the Federal Emergency Management Agency (FEMA), Florida Division of Emergency Management (FDEM), Florida Department of Law Enforcement (FDLE), United States Department of Defense (DoD), and the Department of Homeland Security (DHS). The virtual setting was selected for all twenty-eight interviews, protecting confidentiality. Consent (Appendix D & E) and ethics documentation were completed in advance as required. Pseudonyms for each interview participant were designated as emergency manager one (EM1), emergency manager two (EM2), emergency manager three (EM3), and so on.

Survey distribution was conducted through local, state, and national organizations such as the National Homeland Security Conference (NHSC), Urban Area Security Initiative's (UASI) 100 Cities Working Groups, the International Association of Emergency Management (IAEM), the National Fire Academy (NFA), the International Association of Fire Chiefs (IAFC), Florida Emergency Preparedness Association (FEPA), and the National Emergency Management Association (NEMA). These organizations maintain ongoing contact with emergency managers, helping this survey reach a broad audience and providing otherwise unattainable data. Surveys were collected using the commercially available online survey instrument SurveyMonkey, which included embedded data analysis tools. After completing the online survey and as requested in the research recruitment message, several survey respondents joined the research as interview participants by contacting the researcher directly or through the local, state, and national organizations, as mentioned earlier.

Procedures

Procedures for processing and completing data analysis included coding to determine whether emergency managers, stakeholders, and others participating in interviews effectively provided perspective regarding single points of failure rather than blaming opportunities or attitudes for asserting fault and failure responsibility (Luk, Sabrina Ching Yuen, 2009). This research study provides insights into the identified problem of emergency management single points of failure. An extensive literature evaluation was conducted, and the developed research questions and sub-questions have been answered. The research design was created, the subject population was identified, data collection procedures were completed as described in this chapter, and data analysis immediately followed (Giorgi, 1997). The procedures for this research provided the necessary details for any researcher to replicate this study and produce the same results. The research assumptions include that public service professionals make decisions in interconnected environments, which frames the research process to operationalize better how the research procedures were used, how research findings were reported, and how future policy additions create and improve best practices (Schachter & Freeman, 2020).

The procedures included, among other things, completing requirements for the Collaborative Institutional Training Initiative (CITI) and the approval process for the Institutional Research Board (IRB) (Appendix A), securing study participants, administration of the procedures, processes for gathering data, recording procedures, and reporting findings. A non-probability sampling method was used to collect data from individuals with expert knowledge and answer the research questions. It has been noted that non-probability sampling can be subject to a higher risk of research biases. The sensitivity and breadth of the sources for real-world data required both privacy and discretion for a complex and nebulous matter that

deals with community incidents and events. The range of interview and focus group participants and the survey respondents depended on their willingness to share or donate their real-world experiences with the researcher (Hendricks-Sturup et al., 2022).

These procedures are presented in a chronological, step-by-step format. First, document analysis was conducted to identify any potential single points of failure. Document analysis was completed using publicly accessible comprehensive emergency management plans and after-action documents that revealed specific local, state, and federal failure evidence. Second, virtual interviews were conducted with the participants described in this research. Third, an online survey was distributed to multiple emergency management stakeholder groups. Fourth, an in-person focus group session was conducted to collect group dynamics, group question answers, and observed body language to guide the research data collection. Specifically for the virtual interviews, pilot interviews were conducted with experts in the field of emergency management to ensure question clarity and wording, which occurred following IRB approval. The interview questions were further validated in a review by emergency management subject-matter experts and thorough anchoring in the literature.

The Researcher's Role

The researcher's role as the human instrument in this study was to foster the advancement of emergency management and address government challenges; by fulfilling congruent inquiries, the objective contributes to fundamental knowledge while engaging with experienced actors broadly (Gruber et al., 2023; Kang & Evans, 2020). The straightforward explanations regarding the researcher's relationship with participants include that because the emergency management community is widely interconnected throughout the U.S., the researcher and the participants have likely interacted during disasters, incidents, events, conferences, training, or exercises.

Observing this increased connectedness in the emergency management network provides the necessary and engaged consortium for the research to stay collaborative and relationship-based for deriving solid ties to the knowledge network consistent with the public service environment (Gruber et al., 2023). The researcher has actively engaged and participated in dialogues to learn the fundamentals of relevant practices that ensure the effectiveness of research interviews.

By collaborating with practitioners, the learning outcomes provided by the research aid researcher dialogue and better navigate tensions (Kågström et al., 2023). This participatory research allowed the researcher to serve as a translator, facilitator, and self-esteem builder throughout the dissertation and adapt to situations as needed. The researcher's role in the research setting was to make each participant comfortable with the research and interview process. The researcher removed barriers to conducting quality, respectful, and effective data collection. The bias and assumptions the researcher brought to the study did not influence how the data was viewed, and analysis was conducted to include direct single points of failure experiences while working in the field of emergency management. This step required the researcher to avoid assumptions that similar outcomes occurred during similar past personal experiences. In light of the selected design, and because some of the study participants may have also experienced failures with the researcher, participant perspectives remained the goal and priority to capture those responses untarnished by the researcher's opinions. Because the implications of the researcher's role in the data collection and analysis procedures could have caused assumptions not likely to be collected, so refraining from guiding responses based on the researcher's experiences was paramount.

Data Collection

Critical for this qualitative research was executing data collection techniques that were both rigorous and varied. This research collected data from multiple sources, using human and nonhuman options. The data collection methods and related strategies are provided in the order in which they were conducted, including document analysis, virtual interviews, an online survey, and the focus group session (Cypress, 2018; Drisko, 2005). Human instruments included interviews, the focus group, and the survey, while nonhuman sources included documents and after-action analyses of participant-created artifacts (Cypress, 2018). The following sections also explain why these methods were chosen and conducted in this sequence. The method, manner, and feasibility of data collection applied techniques that ensure effective collection and subsequent analysis.

These data collection procedures followed the recommendations of established qualitative researchers in the field. Interview procedures were founded on critical and social realist concepts and guided by methodological realist principles to improve the practice of inquiry and create research transparency, validity, and replicability (Brönnimann, 2021). The validated instruments measure each variable, including, among others, interviewing for leadership, training, political influence, planning, intelligence, communications, and personnel; the survey for policy, communication, leadership, and after-action failure evidence; and the focus group for emergency management, training, technology, communications, politics, and equipment. For this research dissertation, requests were made for professional leaders, stakeholders, and other personnel to participate in interviews, a focus group, and an online survey to complete meaningful research regarding emergency management single points of failure (Hennink et al., 2019; Stancanelli, 2014).

These data collection methods provided in-depth information on the emergency management community's perceptions, attitudes, insights, beliefs, and experiences for single points of failure (Tušer, 2019). This research dissertation's data collection and interpretation connected qualitative methods through a unified logic of inference gained from social science research methodologies (Kang & Evans, 2020; Luke & Goodrich, 2019). The research has expounded upon and codified in a comprehensive discussion that explains the data collected from participants, providing insights for incident and event preparedness, response, and recovery (Jensen & Kirkpatrick, 2022). For this qualitative research, the primary audience was the emergency management community's representation of relevant encounters and experiences. The research found recommendations for real-world practice that help readers understand where the single point of failure implications exist and how to target the best crucial plans for making research implications useful (Cunha et al., 2022; Drisko, 2005).

This research proves the work's authenticity and plausibility to the audience, using a data collection and analysis systems approach, as reflected in the research findings. For example, the interview instrument used numerous peer-reviewed emergency management-focused studies (Bryant, 2013; Calloway et al., 2022; Jensen & Kirkpatrick, 2022). The findings of this research should now be viewed within the context of its limitations. A non-random sample study determined how comprehensive emergency management prompted interviews with emergency managers focusing on resilience programs (Jensen & Kirkpatrick, 2022). Those interviews revealed that when subjects decline or do not respond to interview requests, non-response bias may be introduced into research results; thus, study findings could have failed to reflect the generalizable views of the majority of similar human subjects (Danko, 2019; Jamieson & Louis-Charles, 2022). This point prompted the researcher to actively ensure that the field of emergency

management is reflected in the study, specifically developing the interview questions that accurately reflected the study's intent.

The design for this qualitative study contemplated the extent to which the methods were decided in advance and whether development and modification were necessary during the research process (Cypress, 2018). This qualitative research is empirically grounded using unstructured approaches for data collection, such as a broad strategy of triangulation, which provided a greater focus on the failure phenomenon within emergency management and avoided the risks that research conclusions reflected systematic biases (Cypress, 2018). An organized manner also ensured accurate collections, facilitating proper data analysis. The research data collection plan addressed the logistical feasibility of the collection process and the time, places, manner, and population to illustrate the research questions better.

Document Analysis

As a traditionally underused approach, the processes of qualitative document analysis were valuable for analyzing existing texts required for conducting studies that might otherwise be unable to be fully discharged (Morgan, 2022; Wood et al., 2020). In emergency management, decisions, among other things, are often based on official statements, directives, policies, legislation, maps, official minutes, personal correspondence, after-action reports, photographs, marketing material, media narratives, and electronic channel information. The data collection strategy for this research used primary sources from publicly available information such as ordinances, state statutes, and electronic media sources, as well as published comprehensive emergency management plans and those that will be requested directly from emergency managers and public sector teams. This instrument was selected first in the particular sequence because it provided a baseline of the current state of affairs in emergency management.

Document analysis avoided further discussions that have already solved a specific contemporary issue related to single points of failure.

This document analysis procedure followed recommendations established by qualitative researchers, including how the documents provided the context within which the participants in the research operated and provided an understanding of historical change over time, impacts on their views, and actions or development in the community (Calloway et al., 2022; Jensen & Kirkpatrick, 2022; Wood et al., 2020). Using pre-existing documents as a source of data also limited ethical concerns compared to other qualitative methods because they encompass trusted government sources, examining public records that were available to anyone and conducted anonymously (Barnett et al., 2020; Morgan, 2022). The document analysis undertaken through the national organizations achieves the necessary far-reaching data that has enhanced the outcomes of the other research instruments. This process of document analysis identified the types of documents for the study and ensured authenticity, credibility, representativeness, and meaning (Morgan, 2022).

The research questions that this data collection strategy answered included the central research question for this research about how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure; sub-question one about how emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events; sub-question two about how emergency managers apply real-world insights to demonstrate learning organization aptitudes; sub-question three about how the Contingency Theory and Path-Goal Theory explains why emergency plans cause failures in the operational environment; and sub-

question four about how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management. Each research question was considered against data relevancy to demonstrate that the data captured key research question-specific elements using the in-depth, systematic assessment of each data source against the requirements of the study (Gatto et al., 2021). In this way, using quality document analysis was methodologically congruent with the worldview of the researcher's chosen analytic framework. Acknowledging document context made the rich data source worth working with each relative source to find how the discussions of purpose, rationale, decision-making, and analytical procedures were revealed during the remaining data collection techniques (Wood et al., 2020).

Interviews

The researcher chose semi-structured interviews using open-ended questions as the second step in this particular sequence, allowing the solid initial gain of rich and detailed data from the document analysis that accelerated interview conversations. That drive enabled the participants to help understand how policy, plan, and procedures were operationalized, in their own words, expressing feelings, providing meanings, and detailing motivations related to single points of failure. Interview participants were local, state, federal, non-profit, and private sector emergency management directors, senior ranking staff, planners, supervisors, incident management team members, and emergency operations center personnel with emergency incident and event-focused responsibilities (Appendix B). The government invests substantial resources in community disaster preparedness, response, and recovery. The concepts for addressing failure points for incidents and events are not clearly defined or operationalized; therefore, this research gathered an understanding of the perspectives of those actively or

recently working in disaster preparedness to develop best practices that offer improvements for the emergency management profession (Verheul & Dückers, 2019).

The population sampling for this research provided the data necessary to explain how emergency management programs experience single points of failure. Data derived from the document analysis, interviews, survey responses, and focus group questions for the professionals responsible for protecting communities has determined that existing gaps are leading to failures. The data developed resolutions for reported failure occurrences. The proportional quota sampling pool included emergency management program personnel throughout the United States. This non-probability sampling involved available, geographically convenient, expert individuals who helped answer the research questions. Using a non-random selection for this research was convenient and allowed for accessible data collection from government, non-profit, and private sector employees.

Interviews were coupled with other data collection that provided the research with a well-rounded collection of information from the in-depth, qualitative interviews that offered a significant, relevant understanding of the single points of failure phenomenon (Cypress, 2018; Turner, 2010). Additional interviews occurred from self-selection sampling of participants beyond the county emergency managers who voluntarily participated in the research. This population included professionals in emergency management or homeland security programs such as municipalities, transportation authorities, and higher learning centers. These participants were invited to participate using direct messaging from pre-existing and readily available stakeholder groups actively participating in emergency management disciplines.

Protecting the rights of participants was accomplished using IRB-approved informed consent forms (Appendix D & E), and the storage of consent data was achieved using the secure

online program SurveyMonkey (Cypress, 2018). The interviews were overt and employed questions that aligned with the research topic to foster an inquiry-based conversation where feedback was measurable. The protocol for this study focused on comprehensive semi-structured interviews of participants with pre-established and logically arranged questions for use by the interviewer. Before the interview session, unique probing questions were developed, and timing interjection was determined to achieve the most significant amount of data from the interview session. Time for introductions and small talk was provided as part of the interview planning to help set participants at ease and gather additional information. Following all interviews and the focus group session, all participants were debriefed; considerations were made for special issues, including vulnerable participant population considerations (Stancanelli, 2014).

The research questions that this data collection strategy answered include the central research question for this research about how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure; sub-question two about how emergency managers apply real-world insights to demonstrate learning organization aptitudes; and sub-question four about how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management. The correlated interview questions were generated from and grounded in the emergency management literature review. The participants were provided with a brief overview of the research context. For this research study, the participants were also provided with the definition of a single point of failure as any moment where a process, action, or detail was either overlooked or executed incorrectly and caused emergency management challenges. The

researcher leveraged each question's accompanying probes and follow-ups to support robust data collection.

The following interview questions are provided in a numbered list, with an item-by-item discussion of each question and its basis in the appropriate literature.

1. Tell me about yourself and your experience as an emergency manager.
 - a. This first question set participants at ease and provided a base understanding of the participant's background, training, and experience.
 - b. The literature review, which explained how emergency managers have many experiences that are not always publicly correlated and provide insights that improve many other disciplines, was the basis of this question (Music et al., 2022).
2. Can you discuss individual or recurring challenges you have experienced while managing incidents or events?
 - a. This question answered the central research question regarding how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure. A probing or follow-up question depended on the answer; however, the participant was asked to elaborate upon the correlation between their challenges and their official authority or decision-making role.
 - b. The basis of this question was the literature review, which explained how reoccurring challenges are experienced despite readily available after-action

findings that provide improvement processes aimed at helping future incident operations (Barnett et al., 2020; Houston et al., 2017).

3. What emergency management focus areas are most challenging, and how do you specifically manage those tasks?
 - a. This question answered the second research sub-question regarding how emergency managers apply real-world insights to demonstrate learning organization aptitudes. A probing question focused on specific skills that have supported the emergency manager most when addressing challenges.
 - b. The basis of this question was from the literature review that explained how challenging focus areas are often based on the number of resources emergency managers can allocate to each topic, as well as the political priority given to a preparedness topic (Williamson et al., 2020; Zebrowski, 2019).
4. When challenges impact operations, how have you adjusted operations to ensure safe and effective outcomes for an incident or event?
 - a. This question answered the fourth research sub-question regarding how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management.
 - b. The basis of this question was from the literature review that explained how education level, previous experiences, and age influence disaster outcomes and how individual outlooks of the personnel assigned to an activity may be applied negatively in determining operational results (Hendricks-Sturup et al., 2022; Szostek, 2021)

5. What has your experience consisted of where a single point of failure clearly caused a challenge during an incident or event?
 - a. This question answered the central research question for this research regarding how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure; however, the participant was asked to elaborate on their ability to recognize single points of failure occurrences.
 - b. The basis of this question was from the literature review that explained how the shift from historically civil defense to protection failed to advance disaster management in the practice of disaster risk reduction and resilience because the command-and-control approach among civil protection systems stops short of complex analysis of authorities managing disasters (Bryant, 2013; Haque et al., 2018; Imperiale & Vanclay, 2020).
6. How have personnel challenges impacted your operations, and how have you adjusted staffing responsibilities to ensure safe and effective outcomes for an incident or event?
 - a. This question answered the fourth research sub-question regarding how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management.
 - b. The basis of this question was from the literature review that explained how emergency management programs vary in size, experience, and capability across this segment, and this question drew attention to those potential staffing

challenges (Cavalieri d'Oro & Malizia, 2023; Changwon et al., 2018; Clovis, 2011).

7. Have you observed political influences determining the appointment of emergency managers, where less qualified are appointed above more qualified or capable individuals?
 - a. This question answered the second research sub-question regarding how emergency managers apply real-world insights to demonstrate learning organization aptitudes, specifically, whether emergency managers are spending time guiding less qualified administrators due to political correlations. A follow-up question included whether the participant had possibly observed a single point of failure as a politically appointed official.
 - b. The basis of this question was the literature review that explained how politics had been reported to plague the emergency management community; this question provided an opportunity for emergency managers to provide insights regarding politicization over qualification (Davies, 2019; Williamson et al., 2020; Willison et al., 2021; Zebrowski, 2019).

Survey

The researcher chose an online survey as the third step in this particular sequence to allow for a solid initial gain of insights collected during the document analysis and the interviews to inform the survey data analysis. These data collection procedures followed the recommendations of established qualitative researchers in the field, such as that questions must provide reproducible results to demonstrate reliability and measure the intended topic to confirm validity (Story & Tait, 2019). The advantages of conducting a survey were that respondents

could answer the questions conveniently and contemplate their answers carefully. A greater audience was also reached using SurveyMonkey's online service. The survey questions that this data collection strategy answered include the central research question regarding how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure; sub-question one about how emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events; sub-question two about how emergency managers apply real-world insights to demonstrate learning organization aptitudes; and sub-question four about how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management.

The primary aim of the survey was to collect answers using quality research questions that were interesting to respondents. Sound, straightforward, interrelated survey questions decreased the completion time and enhanced the response rate (Story & Tait, 2019). Further, the survey focused on need-to-know queries and did not collect nice-to-know data, securing an average completion time of eight minutes and fifty seconds. The survey included open-ended questions enabling the respondents to provide additional insights, clarify information regarding specific questions, and provide final comments on single points of failure (Story & Tait, 2019). The data analysis plan for this research organized and analyzed the survey data to achieve the objectives for the research questions, especially for the more specific questions, where better understanding was provided for each answer. The survey solicited enough feedback to effectively compare opinions regarding single points of failure from survey respondents who work as emergency management professionals.

On the first page of the electronic survey, respondents were provided with a brief overview of the research context and the definition of a single point of failure as any moment where a process, action, or detail was either overlooked or executed incorrectly and caused emergency management challenges and the consent form (Appendix E). To understand more about the survey respondents, a demographic question was included at the end, requesting years of public service and the respondent's role in emergency management.

The following survey questions are provided in a numbered list, with an item-by-item discussion of each question and its basis from the appropriate literature.

1. Considering the definition above, have you observed or experienced single points of failure in emergency management? The respondents selected either (1) Yes or (2) No.

Respondents were also provided with a space to provide specific comments.

- a. This first question determined if the respondent had direct knowledge about single points of failure, collected details of those experiences and answered sub-question two regarding how emergency managers apply real-world insights to demonstrate learning organization aptitudes.
 - b. The literature review was the basis of this question, which explains how experiences by emergency management professionals may not create perceptions that a problem exists or is creating challenges (Day et al., 2021; Klimek et al., 2019).
2. If observed or experienced, what was your position or area of responsibility during the incident or event when single points of failure occurred? The respondents selected answers from a list consisting of (1) Agency Administrator or Director, (2) Command or General Staff, (3) Other supervisor type, (4) Unit personnel, (5) Other agency, (6) Private

Sector Support, or (7) I have never experienced emergency management single points of failure.

- a. This question determined whether the survey respondents were in a position of authority to prevent or decrease the impacts from a single point of failure and answered sub-question four regarding how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management.
 - b. The literature review was the basis of this question, which explained how position, area of responsibility, or authority might play a role in the perception of decision-making processes or outcome-based observations by levels of an emergency management team managing an incident or event (Geist, 2015; Zebrowski, 2019).
3. Please rate your experience regarding how your agency or organization managed single points of failure that caused challenges during an incident or event. The respondents selected answers from a 5-point Likert scale was used as a psychometric response method where (1) Excellent, (2) Above Average, (3) Average, (4) Below Average, or (5) Very Poor. Respondents were also provided with a space to provide specific comments.
 - a. This question answered sub-question two regarding how emergency managers apply real-world insights to demonstrate learning organization aptitudes.
 - b. The literature review was the basis of this question, which explained how effectively an emergency management program responds to incidents where failures occur that may have been prevented (Kapucu & Hu, 2014; Steen et al., 2022; Tarhini et al., 2021).

4. How does your emergency management team specifically plan to address single points of failure, if experienced? The respondents were provided with an option to select from a list where (1) No existing plans, (2) Some formal plans or processes have occurred, (3) Comprehensive plans exist, or (4) Other responses. Respondents were also asked to provide specific planning comments.
 - a. This question answered sub-question three: How do Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans?
 - b. The literature review was the basis of this question, which explained how emergency management programs vary in preparing and operationalizing formal plans (Cavalieri et al., 2023; Cunha et al., 2022; Wolf-Fordham, 2020).
5. Thinking about your emergency management experiences, did the after-action process accurately or effectively capture incident or event challenges? The respondents were provided an option to select from (1) Yes, the after-action process accurately and effectively captured incident or event challenges; (2) No, the after-action process did not accurately and effectively capture incident or event challenges; or (3) Other response where respondents were provided a space to provide after-action process comments.
 - a. This question answered sub-question one regarding how emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events.
 - b. The literature review was the basis of this question, which explained how, although many organizations complete formalized after-action processes, the findings are not often memorialized effectively and communicated to personnel

that can benefit most from the post-incident information (Barnett et al., 2020; McCreight & Harrop, 2019).

6. Are emergency management leaders in your agency or organization doing enough to address challenges posed by single points of failure appropriately? The respondents were provided with an option to select from (1) Yes, (2) No, or (3) Other responses, where respondents were provided a space to provide comments.
 - a. This question answered the central research question regarding how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure.
 - b. The literature review was the basis of this question, which explained how emergency management professionals may have recognized, communicated, and determined solutions to single points of failure and received varying results in the efforts to correct the issue (Hu et al., 2021; Tyler & Sadiq, 2019).
7. If single points of failure challenges have impacted your incidents or events, how did you adjust operations to ensure safe and effective outcomes for an incident or event? The respondents were provided with a space to provide comments.
 - a. This question answered the central research question for this research regarding how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure and the fourth research sub-question regarding about how emergency managers promote

or support operational flexibility and personnel problem-solving skills for disaster management.

- b. The literature review was the basis of this question, which explained how contemporary emergency management programs are required to be agile from moment to moment during a disaster and that agility or adjustment capacity varies from program to program and community to community (Cutter et al., 2018; Quinlan, 2020; Sawalha, 2021).
8. Please provide additional comments to help others better understand single points of failure experiences. Respondents were provided with space to provide comments.
 - a. This question allowed respondents to provide comments they wished to add to the data not provided in the other survey questions and to answer the fourth research sub-question (Story & Tait, 2019).
 - b. The literature review was the basis of this question, which explained how professionals in emergency management, regardless of tenure, have quickly learned numerous lessons and lived extraordinary experiences that are not always captured or communicated to others to foster understanding (Hu et al., 2022; Siedschlag et al., 2021).
9. Please select your years of public service experience. The respondents were provided with an option to choose from (1) 1-5 years, (2) 5-10 years, (3) 10-20 years, or (4) More than 20 years.
 - a. This demographic question provided additional understanding about the survey respondents and answered the fourth survey research sub-question. It also

determined whether responses correlated with years of public service, roles in emergency management, or both.

- b. Understanding people through demographic analysis was essential to collecting helpful information that connected the characteristics of respondents to observations, decision-making, and perceptions of single points of failure (Hendricks-Sturup et al., 2022; Story & Tait, 2019).
10. Select your current role in emergency management. The respondents were provided with an option to select from (1) Agency Administrator, (2) Director, (3) Command or General Staff, (4) other supervisor type, (5) Unit level or Planning personnel, (6) Other agency, or (7) Private sector support.
 - a. This demographic question helped better understand the survey respondents, answer the third survey research sub-question, and determine whether responses correlated with position, responsibility, and authority within public service roles in emergency management.
 - b. Understanding people through demographic analysis was essential to collecting helpful information that connected the characteristics of respondents to observations, decision-making, and perceptions of single points of failure (Hendricks-Sturup et al., 2022; Story & Tait, 2019).

To address face and content validity, the survey underwent expert review by emergency management subject-matter experts who assessed the survey and provided a preliminary screening of the design and their subjective judgment on whether the survey was measuring its intent (Chetwynd, 2022; Salkind, 2010). The survey questions were validated by anchoring in the literature review. For piloting procedures, specifically for the survey, a background for the

research and verbal instructions was provided to experts in the field of emergency management for review. This step was a pilot survey to ensure question clarity and wording and a technological test of SurveyMonkey's online survey platform (Cypress, 2018; McGuire & Silvia, 2010). To collect piloting data, the survey test occurred with a small sample of emergency management professionals outside the study sample, which followed IRB approval (Appendix A).

Focus Group

The researcher chose a focus group session as the fourth step in this particular sequence to allow for the solid initial gain of insights collected during the document analysis, interviews, and online survey to inform the focus group data collection. These data collection procedures followed established qualitative researchers' recommendations, such as focus groups being a practical, time- and cost-efficient mechanism (Luke & Goodrich, 2019). This data collection method provided reproducible results that demonstrated reliability and validity in accurately measuring the single points of failure. Saturation influences that determined sample sizes were considered in this qualitative research to elect that the sample size for this focus group session in advance of the data collection was ten participants (Hennink et al., 2019)

Using a qualitative research perspective, the researcher planned for group dynamics when implementing and following the analysis of the focus group's results (Luke & Goodrich, 2019). Challenges considered included unrecognized groupthink that discourages participants from providing negative input, which silences participants' nuanced experiences. Further, from an epistemological perspective, this research process believed the focus group session could influence how participants form their reality about emergency management and failures; expressly, it acknowledges that single points of failure can change participant reality from a

socially constructed perspective (Luke & Goodrich, 2019). The researcher used the focus group to allow interaction with multiple-disciplinary professionals who explored complex concepts from the participants' perspectives. These data collection procedures followed the recommendations of established qualitative researchers in the field, and the following focus group questions were developed using the same format as interview questions. The focus group session was digitally recorded and transcribed; participants were de-identified.

The research questions that this data collection strategy answered include the central research question regarding how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure; sub-question one about how emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events; sub-question three about how Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans; and sub-question four about how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management. In the opening comments for the focus group session, participants were provided with a verbal brief overview of the context of the research and the definition of a single point of failure as any moment where a process, action, or detail was either overlooked or executed incorrectly and caused emergency management challenges.

The following survey questions are provided in a numbered list with an item-by-item discussion of each question and the basis of the question from the appropriate literature.

1. How does your emergency management team collectively plan for single points of failure?

- a. This question explained how knowledgeable emergency management teams are about plans and whether they understand the plan's intent. It also relates to the survey question about plans and whether the participants know about existing plans or those in development. It answered sub-question three about how the participant views programmatic plans that address failures in the operational environment.
 - b. The literature review was the basis of this question, which explained how effective emergency planning is correlated to real-world operations.
2. If your team has experienced a single point of failure in emergency management, how was it managed?
 - a. This first question determined whether the participants had any direct knowledge about single points of failure and collected details of those experiences to answer sub-question two regarding emergency managers' real-world insights about single points of failure.
 - b. The literature review was the basis of this question, which explained how emergency management work is deeply personal; where failures may exist, a professional emergency manager who lived that experience has most likely seriously contemplated the outcomes (Meier et al., 2015; Meier et al., 2019).
3. Please discuss your personal experiences regarding how your agency managed a single point or points of failure that caused a challenge during an incident or event.
 - a. This question relates to the 5-point Likert scale as a psychometric response method that was used in the online survey, where a scale of (1) is Excellent; (2) is Above Average; (3) is Average; (4) is Below Average; or (5) is Very Poor. This

question also answered sub-question two about how emergency managers apply real-world insights to demonstrate learning organization aptitudes.

- b. The literature review was the basis of this question, which explained how emergency management professionals who believe in the effectiveness of their administrative team can handle not only the incident or event but also the unexpected or expected challenges that inevitably occur amid a response (Don et al., 2020; Radović, 2019).
4. How does your position or area of responsibility during the incident or event determine if a single point of failure occurs or is allowed to occur, meaning does or should responsibility or authority dictate failure, such as an agency administrator or director versus the command or general staff versus support personnel?
 - a. This question relates to survey question two, where the participant will select their role in emergency management from a list consisting of (1) Agency Administrator or Director, (2) Command or General Staff, (3) Other supervisors, (4) Unit personnel, (5) Other agency, or (6) Private Sector Support. This question determined whether focus group participants believed positions of responsibility or authority affect single point of failure occurrences and answered sub-question four regarding how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management.
 - b. The literature review was the basis of this question, which explained how organizations might not readily allow information to flow to all logical personnel and how information can be vital in mitigating challenges or avoiding failures altogether (Kato et al., 2022; Nasir et al., 2022).

5. In your experience, how does the after-action process capture incident or event challenges accurately or effectively, and why?
 - a. The focus group participants were asked to provide additional feedback based on their answers to whether the after-action process works or has not worked. This question answered sub-question one regarding how emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events.
 - b. The literature review was the basis of this question, which explained how organizations vary on the degree of after-action completions, those statistically completing after-actions repeat learned behaviors, and whether or not after-actions are being completed to the same standard or communicated effectively (Barnett et al., 2020; Davies et al., 2018; Parker, 2020).
6. What do emergency management leaders need to do to address single points of failure more appropriately, and why?
 - a. This question answered the central research question regarding how the Contingency Theory explains the key factors that promote emergency management's single points of failure and what critical challenges emergency managers face in understanding and overcoming single points of failure.
 - b. The literature review was the basis of this question, which explained that although each emergency management program's effectiveness is often determined by the resource commitments of the overseeing entity, key leaders have or have not developed the insights necessary to manage complex challenges that single points of failure may cause (Bhaduri, 2019; Hu et al., 2022; Silva et al., 2021).

Data Analysis

Manual content analysis was used to examine the data for this qualitative research study. The manual analysis process examined verbal and behavioral data from interviews and the focus group session; manual narrative analysis was used for the document analysis data and the survey data. The decision was made to code data manually to ensure a deep engagement with all data sets. This choice ensured greater flexibility for a richer understanding of data nuances to develop codes as this complex data was explored. An automated system was not selected to ensure subtle meanings were not missed. Although manual coding was time-consuming, it was best suited for this research study dataset to ensure that a detailed analysis was completed.

The data analysis began with preparing and organizing the data into categories of document analysis, interview transcripts, survey responses, and focus group transcripts. All notes and electronic documents were gathered to review and explore the data. Initial codes were created, reviewed, revised, and combined into organized themes to present cohesively. Grounded theory was used to develop causal explanations of single points of failure cases. The assessment of saturation helped to identify the occurrences of new themes to the understanding of themes across the exceptionally detailed or insightful data to capture the meaning of the issue thoroughly and understand the depth, breadth, and nuance of single points of failure (Hennink et al., 2019; Morgan, 2022). The data analysis procedures aligned with the study's phenomenological research design as the study involved multiple data collection sets. Each data set was analyzed to achieve triangulation, and the findings were synthesized across all four data sets. A significant part of the research study's thematic analysis process involved coding the data using descriptive words or phrases that assigned meaning to the data. Although the coding was completed

unstructured, a thematic analysis was vital for the multiple data analysis phases (Lester et al., 2020).

Coding was critical in the approach and framework of this grounded theory research and for analyzing the data. To complete the qualitative inquiry for this research, a word or short phrase was symbolically assigned to summarize the essence using an evocative attribute for a portion of the data (Cooper, 2016). Data was manually coded primarily using an interpretive act that created discovery through an analytical lens. The coding process and choices were shaped using the data's emergent patterns, themes, concepts, categories, and subcategories that led to a new theory. As a critical part of the evaluation of data results, the research utilized the bottom-up approach of the inductive coding method that codified the qualitative data by using generalizations of research observations to help conclude the contributions from the participant and respondent population (Skjott et al., 2019). A deductive approach was applied to perform a top-down analysis using coding schemes predicated on the literature review. The data analysis from participant responses revealed personal phenomena that correlated to the artifact reviews and answered the research questions, using code choices and critical term definitions to reveal patterns and themes.

First-cycle codes were grouped into categories such as affective methods, elemental methods, literary methods, procedural methods, and exploratory methods; second-cycle coding practices included, among other things, theoretical coding, axial coding, and pattern coding (Cooper, 2016). The second-cycle coding methods helped to reorganize and reanalyze the data coded through the first-cycle methods. Among other things, key terms include assumptions for planning, leadership, communication, management, incident response, policy, and procedures (Cooper, 2016). Those open codes and themes were broken into separate and distinct parts and

labeled to provide a path to the new theory; frequency codes that spanned the data distribution of a variable provided the summary of frequency proportion among data categories (Skjott et al., 2019). A continuous interplay between data collection and analysis occurred while subsequent groups revealed emerging analytic issues that were compared against the coded data (Cooper, 2016; Maher et al., 2018). Using these codes for further analysis offered additional review and interpretation of segment relationships that were categorically based.

Trustworthiness

This qualitative research answered important questions addressing how or why single points of failure occur in emergency management and understanding further process-oriented phenomena that cause associated challenges (Lemon & Hayes, 2020). Trustworthiness is the rigor of the research that ensures confidence in the data, analysis, and methods used to address study credibility, dependability, transferability, and confirmability. To ensure these research methods for this study are trustworthy, qualitative study procedures were assessed in both a selection and soundness review (Adler, 2022). Reflexivity was also considered in this study to ensure that reflections and sharing of personal feelings, reactions, motives, and social position of the researcher and research participants avoid interfering with objectivity, potential misunderstanding, and bias, which equally affect research participants upon the researcher and the researcher upon research participants. The procedures to increase and prove research trustworthiness and credibility include prolonged engagement with data, triangulation, enumeration, persistent observation, direct quotes, member checks, expert review, external audit, and negative case analysis (Lemon & Hayes, 2020).

Triangulation as a qualitative research strategy tests validity using information convergence from different sources, methods, or data to measure and corroborate a single point

from at least three autonomous sources (Lemon & Hayes, 2020). Triangulation identifies emergent pattern inconsistencies to reduce systematic bias, leading to a deeper understanding of a phenomenon and proving strength in the research. Triangulation then reinforces study dependability and credibility. Enumeration provides the accounting of distinct word quantities using in-depth interpretation to consider the nuances of the meaning of words in context to make sense of evaluative dimension projections (Kang & Evans, 2020). Persistent observation identified situational characteristics most relevant to the single point of failure issues and focused on those observational indicators, refined for better data analysis (Hays & McKibben, 2021). As the inductive coding of data was completed and themes emerged from the data without priori definitions, direct quotes from the analysis units were used to highlight themes and maximize analytic and inferential generalizability (Hays & McKibben, 2021; Kang & Evans, 2020).

In this qualitative research, a member check was used for participant and respondent validation to help improve accuracy, credibility, validity, and transferability by soliciting participant feedback about the data and interpretations (Motulsky, 2021). A contemporary version of member checks, reflexive participant collaboration, also describes the strategy of participatory research design that guided this researcher during the decision-making for validity, which required thoughtful integration. Furthering trustworthiness for this study included external validity in determining the degree to which findings are transferable to other settings to collectively yield replicability and ensure research rigor (Hays & McKibben, 2021). As a measure to engage with methodologically and analytically adept professionals not embedded in the research topic, peer debriefing assisted in questioning these methodological practices and analytical techniques, providing additional research clarity (Rose & Johnson, 2020).

Credibility

To prove the credibility and integrity of this qualitative research study, both the researcher and reader must agree that the findings accurately describe the reality of emergency management single points of failure. Credibility depends on the richness of the gathered information and the researcher's analytical capabilities to increase policy relevance and impact (Angrist & Pischke, 2010; Wood et al., 2020). Credibility replaces internal validity because it is rooted in the truth value of whether this researcher has created the requisite confidence in the phenomenon's findings using an in-depth exploration of human experiences. In this research, it is understood that a truth derived from an in-depth understanding of each participant's unique reality from actual experiences may not specifically lead to universal truths (Lemon & Hayes, 2020). As the research probed and processed qualitative document analysis to inform and provide insights into the emergency management lessons, the strengths and limitations further gave the guidelines for ensuring credibility (Wood et al., 2020).

Ensuring credibility and considering the liability of conducting document analysis, the interviews, the online survey, and a focus group were paramount for providing reliable information and valuable findings that reflect those of other credible empirical studies. The theories on credibility explain paradigms of effectiveness and the extent to which a source is perceived as relevant for the expertise that can be trusted for an objective opinion to signal the trustworthiness, honesty, and reliability of the study (Halder et al., 2021; Lemon & Hayes, 2020). The challenge was making decisions that were based on reliable information from verified sources to help professionals make decisions that are both effective and timely. These and other concerns among interviewees were addressed to ensure they understood the intent of this

research, to spread accurate and helpful information deliberately, and to help others make actionable decisions (Harrison & Johnson, 2019).

Dependability and Confirmability

A compliment to reliability and the root of quality is dependability and conformability, which asserts that findings are distinct and consist of explanations present across the research data and those existing within the presence of dependability (Lemon & Hayes, 2020).

Confirmability specifically presents the findings objectively, considering the single points of failure phenomenon, and further addresses the fact that interpretations and findings are from lived participants' experiences without researcher biases (Wood et al., 2020). By ensuring this element of trustworthiness, the researcher has demonstrated the use of the approaches for exploring and constructing new knowledge. Dependability and confirmability are similar matters to reliability in quantitative research that address consistency and the provision to provide rich details about the context and settings of the study (Halder et al., 2021; Lemon & Hayes, 2020).

A purposive sampling approach for this research strategy selected participants, and the survey audience was integrated into the overall logic of the study, where the sample selection rationale was aligned from an epistemological perspective (Campbell et al., 2020). In this qualitative study, a purposively selected sample was employed that increased the depth rather than breadth of understanding, amplifying and exploring the phenomenon comprehensively. Participant selection from a broad stakeholder group provided a purposive and structured method that created the most significant variability based on stakeholder knowledge for the best research outcomes. Dependability and conformability enhanced the careful documentation of this research and the conclusions as the research evolved to ensure that others reviewing the data arrive at comparable interpretations (Nassaji, 2020). As part of the research strategy, an audit trail

recorded each decision step taken for data coding and analysis; those results are available for later evaluation for research confirmation. Ensuring that other researchers can review and examine documentation meets accuracy demands because conclusions are grounded in the data as confirmed by the researcher's interpretations.

Transferability

The extent to which the researcher's interpretations or conclusions are transferable to the contexts of similar conditions required a thorough and rich description of the activities and assumptions completed in this research. Transferability in this research looked for corresponding or comparable emergency management matters that determined how beneficial these research results are for the broad population or other linked situations (Nassaji, 2020). The transferability likelihood that single points of failure exist in the context of emergency management applies to government and private practices at large. As transferability compliments the concepts of generalizability and external validity, the degree to which findings from this study apply to other contexts and settings is high (Lemon & Hayes, 2020). Since this qualitative research is interpretive and the participants represent the more significant population of government and private sector disaster professionals, the findings are transferable and allow the researcher to make generalizable claims.

Ethical Considerations

Throughout the research process and during additional literature, key ethical considerations were maintained regarding the respect of all participants, properly citing sources, and remaining alert to any conflicts of interest. Transparency was ensured throughout each methodology, and participant privacy and confidentiality were constantly upheld. Only proven and reliable sources were used to maintain responsible research practices and academic integrity

(Morgan, 2022). Trusted government public records, available to anyone, were used for conducting document analysis data collection, also limited ethical concerns (Barnett et al., 2020; Morgan, 2022). The rights of participants were protected using IRB-approved informed consent forms (Appendix D & E), and consent form data storage was accomplished utilizing the secure online program SurveyMonkey.

This research study addressed ethical implications such as data storage, usage, influence, confidentiality of sites, and participant pseudonyms. Data sources relevant to the research question and design were collected from document analysis, interviews, the online survey, and the focus group. The data sets on which the research was based are considered critical issues related to data collection. Participants were advised that data collection sessions would be audio-recorded and transcribed using an intelligent verbatim transcription process in the Microsoft Teams online meeting software program. Because data collection involved more than just the forms of data and procedures for collecting them, consideration of security, ethical issues, and matters such as research site approval were addressed. Data security and protection obtained through this research were accomplished using a redundant storage method to ensure that ethical considerations and implications were managed completely.

All physical forms and documents from the research are locked in a secure filing cabinet. All related material, including recordings, notes, records, and transcriptions, are saved using a new password-protected semiconductor-based flash memory solid-state drive storage device to protect persistent data. The pseudonym list is stored separately from all transcripts to protect the participants further. The solid-state drives are backed up continually in real-time using a commercially available, secure cloud-based program. The technology used in the data collection was checked for sufficient security features and updated regularly for technological currency. All

electronic and physical documents are limited to the researcher and accessed only in a private, secure space. The confidentiality agreements and participant pseudonyms list will always be protected.

Summary

This study addressed emergency management's single point of failure to provide emergency managers with practical, real-world solutions for application to their programs. The literature review demonstrated that a greater understanding of the causes of emergency management single points of failure is necessary. As this critical topic for governments evolves, elected officials can better ensure that their emergency manager can fully inform them about the numerous issues required for a comprehensive disaster preparedness portfolio. Fully informed officials about each disaster-related implication provide the optimal incident management setting where information criteria are better suited for ensuring consistency. Real-world environmental threats and risk behaviors can determine where failure potential lurks. This research continues to question where emergency managers allow single points of failure to exist and further threaten a community.

The literature review exposed a gap in existing theory for this research, and to fill the gap, this dissertation applies a new approach that addresses failures through innovations. The boundaries of emergency managers' subjective perceptions are tied to the network of limited theoretical provisions for emergency management organizations (Choi, 2020; Rose & Johnson, 2020). Academic gaps were specifically identified regarding single failure points among emergency management programs and intergovernmental policy arrangements for response efforts. The focused summary of the current study helped narrow the primary research categories to emergency management personnel, policy, training, and technology variables. Following the

literature review, the status of emergency management's single points of failure was better understood explicitly since few empirical studies are available.

Emergency management planning scenarios aim to create a desirable network structure using an empirical investigation, a valuable and powerful tool to discover the underlying principles that lend themselves to helping practitioners (Choi, 2020). Emergency and disaster systems respond to situations that are otherwise not easily controlled. Additional independent variables considered in the ongoing research include leadership, equipment, intelligence, and communications. Each variable is essential to improving the overall professionalism of the emergency management environment. Future research is necessary to address existing limitations, and this dissertation fills the literature gaps.

An ongoing effort occurred during this research study to refine the work that addresses the problems and develop solutions that advance existing theories. As this research used exploratory methods to investigate the single points of failure problem for emergency management, findings of this research now shed light on what occurrences influence the real world and provide greater insight into the people, incidents, and events in and among the emergency management setting. These observations and data collection from document analysis, interviews, the survey, and the focus group have driven the conclusions that present practical processes to increase learning about failure events. This qualitative analysis used data collection and organization criteria to develop statistical inferences and discover case trends and patterns.

The research sought to discover a correlation between single points of failure factors and adverse outcomes, as well as critical drivers such as national policies, politics, training, and technology. These research findings provided a better understanding of emergency managers and their processes and actions leading to single points of failure. The research also sought to

discover whether failed systems and processes prevent organizational leaders from achieving the most effective service delivery and how single points of failure variable differences create associated confusion. Therefore, the goal of the research manuscript was to determine whether the gap in preventing single points of failure can be resolved with, among other things, training, decision-making skills, equipment, or policy. Using the detailed research design and methodology, theoretical justification, and research method for this study, a tangible improvement opportunity was provided for future emergency management operations, translating into improved disaster response for the whole community.

CHAPTER FOUR: FINDINGS

Overview

This grounded theory study examined and explained emergency management's single points of failure for developing a framework that better explains how public service professionals manage incidents and events at each government level. This chapter presents the results of the data analysis, specifically the findings from the data, in the form of narrative themes, tables, and figures. The data is presented in the order in which the research questions were given, and each research question is answered in this chapter. Research questions were answered using document analysis, virtual interviews, an online survey, and an in-person focus group session.

The population group included public and private sector emergency managers currently employed or retired from a local, state, federal, private sector, or non-profit professional emergency management position, including directors, managers, supervisors, planners, and incident command staff (Appendix B). To ensure a maximum variation sample participant pool, emergency managers were included who met the all-hazards inclusion criterion from each disciplinary aspect of emergency management, including prevention, protection, mitigation, response, and recovery (U.S. Department of Homeland Security, 2019). Perspectives include senior-level officials, incident commanders directly managing the incidents, emergency managers indirectly managing public service programs, professionals responsible for large emergency response agencies and organizations, and those members from a single agency jurisdiction or organization and multi-agency jurisdiction or organization.

Participants and Respondents

Twenty-eight individuals participated in the virtual interviews, one hundred and forty-one respondents joined the anonymous online survey, and eleven participated in the focus group session. All virtual interviewees and focus group participants met the same population group criteria.

Interview Participants

The twenty-eight individuals for the interview portion of the study were identified using purposive sampling of public and private sector emergency managers currently employed with a local, state, or federal professional emergency management position, including directors, managers, supervisors, planners, and incident command staff (Appendix B). The participant's average experience among participants was twenty-one years. Interviews were scheduled in advance for one-hour sessions and conducted via Microsoft Teams. The shortest interview was twenty-eight minutes, and the longest was one hour and forty-three minutes. The interview participants are identified only by the pseudonym EM, which stands for emergency manager, and a number designation starting with one through twenty-eight, where Emergency Manager One is EM1, Emergency Manager Two is EM2, Emergency Manager Three is EM3, and so on. This pseudonym is realistic and reflective of the participants' professional culture, and it does not in any way compromise anonymity. Each interview's transcripts and audio and video recordings were generated using the Microsoft Teams transcripts option. All audio and video recordings and transcripts have been safely and securely stored in a password-protected location only accessible by the researcher.

EM1

At the time of the study, participant EM1 had retired from a significant public safety organization as a senior executive staff member after twenty-eight years, and then, for the last two years and six months, was working for a municipality agency, where both positions have been integrated into all aspects of emergency management responsibilities. Participant EM1 also has professional experience with urban search and rescue, deploying to complex natural disasters.

EM2

At the time of the study, participant EM2 had recently retired from a significant public safety organization after thirty-six years of serving as a senior officer and an emergency manager. EM2 has conducted many complex emergency management exercises and was responsible for dozens of natural and human-made disaster response operations.

EM3

At the time of this study, participant EM3 explained that over the last three years, they predominantly filled incident command structure positions at the unit level, such as situation and supply unit leader, during hurricane activations and locally planned events. Participant EM3 has significant stakeholder communication experience, explicitly using FEMA's community lifeline model, which, along with mass communication, represents individual or recurring challenges while managing incidents or events.

EM4

Participant EM4 worked for eleven years in communications and then joined a public safety emergency management agency about twelve years ago. Participant EM4 has significant

operational field experience with urban search and rescue teams and swift water rescue team deployments.

EM5

Participant EM5 has been in emergency management for sixteen years and is currently employed by a homeland security entity conducting cybersecurity and infrastructure security efforts. Graduate education led EM5 to emergency management, which they use today to ensure agency resources, knowledge, skills, and abilities to identify improvement opportunities for enhancing, refining, and starting conversations in the all-hazard spectrum of what could happen to infrastructure.

EM6

Participant EM6 has a thirty-one-year background with local and federal governments conducting operations, making personnel decisions, ensuring long-term recovery, and managing a county emergency operations center, including responding to COVID-19 and seven other nationally declared disasters.

EM7

Participant EM7's experience began twenty-eight years ago with a law enforcement agency; it evolved to include coordination with other public safety partners, including, among other things, functions of an emergency operations center and a local incident management team program.

EM8

Participant EM8 has an extensive forty-two-year public safety service background, including developing an emergency management program that evolved from the civil defense era. EM8's portfolio includes all aspects of emergency management, serving on special public

service committees, in senior administrative positions, and for specialized incident response teams.

EM9

Participant EM9's emergency manager experience represents eighteen years, including undergraduate and graduate-level studies in emergency management, a state-level leadership emergency management role, and experience at a higher learning center in emergency management. EM9 has helped manage sixty-six disasters, of which thirty-seven were federally declared.

EM10

Participant EM10 has served in a senior public safety role for fifteen years and is responsible for an extensive emergency management recovery program, including over three hundred million in public assistance disaster recovery for nine presidentially declared disasters. EM10 also serves on a Hazardous Materials Team, an Urban Search and Rescue Team (USAR), a state All Hazards Incident Management Team (AHIMT/IMT), and a County Incident Management Team. Participant EM10 has served in almost every command and general staff position outlined in the National Incident Management System for more than one hundred local and state activations, which include deployments throughout the southeastern United States for hurricanes, tornadoes, floods, and wildfires.

EM11

Participant EM11 was introduced to the emergency management profession twenty years ago due to a disaster, a common theme for other emergency managers, according to EM11. A Small Business Administration (SBA) external affairs position to manage resources and support across the whole community spectrum for disasters was secured by EM11. Since that initial role,

EM11 has managed many local, state, and federal disasters, working for multiple government organizations.

EM12

Participant EM12 began their emergency manager career working for a large organization following September 11, 2001. EM12 discussed their twenty-three years of experience began when President George Bush completely rearranged his cabinet and started putting different agencies together under the Department of Homeland Security; EM12 became highly experienced using the new Incident Command System (ICS) that shortly followed aimed to help communities manage large-scale disasters in the homeland in a more effective way.

EM13

Participant EM13 started ten years ago as an intern for a county emergency management program and was quickly hired full-time as an emergency coordinator; some responsibilities included health and medical coordination, EOC manager, operations, and logistics. EM13 later moved to another emergency management planner role, where the main focus was planning and procedures, including operational plans, hazard-specific plans, and continuity of operations planning program, to secure certification with the Emergency Management Accreditation Program (EMAP). EM13 now works in the private sector, conducting emergency management planning and preparedness for different clients throughout the United States.

EM14

Participant EM14 has been a disaster manager for a central teaching hospital system for seventeen years, seven years before that as a courthouse emergency manager, paramedic, graduate nurse, and volunteer firefighter. EM14 has deployed to natural and human-caused disasters in several incident command positions, serving many local communities.

EM15

Participant EM15 has worked in public information and emergency management for thirteen years, including on-scene survivor support at significant multi-response incidents, multiple complex incident activations, the COVID-19 pandemic, and severe weather incidents.

EM16

Participant EM16 has worked in emergency management at local and state levels for eighteen years, initially entering public service with a public safety agency. EM16 has been activated in an EOC as an emergency management planner and logistical specialist and has participated in several disaster deployments as a liaison officer and state logistics specialist. Most recently, EM16 has conducted recovery operations, addressed unmet needs, and assisted with training and exercises.

EM17

Participant EM17 has worked in emergency management for twenty years, specializing in individual and public disaster recovery assistance. EM17 has an extensive background in nationally declared disasters and coordinating significant special events.

EM18

Participant EM18 has a diverse fifteen-year local, regional, private sector, and state emergency management professional and education background, having conducted many private sector activations and conducted training, planning, and exercises.

EM19

Participant EM19 has an extensive public service career, spanning thirty-three years, at local, state, and federal levels of emergency manager. EM19 explained that the first emergency

management position was not based on academic or professional experience in emergency management but on an effective professional transition from prior military service.

EM20

Participant EM20 has conducted public safety and emergency management activities for over twenty years, including planned events, significant disaster activations, and locally isolated incidents. EM20 has administered large emergency management logistical response programs for local and state agencies.

EM21

Participant EM21 has provided local, state, and federal agencies with emergency management technical specialist efforts for over twenty-three years, assisting these large multi-state county programs, military installations, and public safety partners to make more informed decisions.

EM22

Participant EM22 is an executive and advanced emergency management academic graduate with over thirty years of local, state, and federal disaster management and activation experience. EM22 has also chaired a Local Emergency Planning Committee (LEPC) and serves regionally and nationally on emergency management associations.

EM23

Participant EM23 has worked in emergency management and special events for twenty-four years, managing response resources and filling incident management command and general staff roles. EM23 has participated in an extensive list of training and post-graduate education.

EM24

Participant EM24 has an extensive local and state emergency management background spanning thirty-four years, which includes managing the response and recovery from tornadoes, hurricanes, and major flood events.

EM25

Participant EM25 is an emergency management professional with eight years of experience in public assistance, recovery, mitigation planning, public education, and emergency operations. EM25 has been deployed for local, state, and national natural disasters and human-caused technological incidents.

EM26

Participant EM26 has been an emergency manager for over fifteen years and currently works in public safety leadership with extensive experience in command and general staff roles and conducting preparedness, planning, mitigation, operations, and logistics efforts.

EM27

Participant EM27 has over twenty years of public safety leadership experience, serving in several emergency management and state law enforcement positions. EM27 is currently responsible for a safety management system with an extensive transportation facility and that authority's emergency operations control center, which includes the emergency dispatchers and customer service team.

EM28

Participant EM28 has served in local government for fifteen years and has developed a comprehensive portfolio in emergency management and information technology, including managing their county activation and response to the COVID-19 pandemic. EM28 has an

extensive background in understanding tropical systems and other severe weather events, as well as all-hazards preparedness, and has public relations and communications education.

Survey Respondents

Survey distribution was conducted through local, state, and national organizations, maintaining ongoing contact with emergency managers. Individuals who received and completed the survey portion of the study are local, state, federal, public, or private sector professional emergency management experience in positions such as directors, managers, supervisors, planners, and incident command staff. The anonymous online service Survey Monkey served as the source of the data collection survey instrument. Before engaging the survey instrument, the Information Consent Form (Appendix E) identified participation criteria for the survey candidates. Over fourteen weeks, one hundred and forty-one survey responses were collected, with a one hundred percent completion rate and an average completion time of eight minutes and fifty seconds. In the following sections, the survey questions are provided in the order they were presented in the survey instrument, along with corresponding respondent answers and additional comments.

Focus Group Participants

The eleven individuals participating in the focus group portion of the study were identified using purposive sampling of public and private sector emergency managers currently employed with a local, state, or federal professional emergency management position, including directors, managers, supervisors, planners, and incident command staff (Appendix B). The average experience among participants was twenty-one years. The individuals participating in the focus group portion of the study are identified only by the pseudonym EM, which stands for emergency manager, and a number designation starting with one through twenty-eight, where

Emergency Manager One is EM1, Emergency Manager Two is EM2, Emergency Manager Three is EM3, and so on. This pseudonym is realistic and reflective of the participants' professional culture, and it does not in any way compromise anonymity.

Eight of the eleven focus group participants were also interviewed, and three were not interviewed. Before the focus group session, all participants completed the online consent form using SurveyMonkey (Appendix D). For the context of the discussion, the focus group participants were provided with the research definitions of an emergency manager and a single point of failure. The focus group session was scheduled in advance for two hours and was completed in one hour and fifty-nine minutes. An abridged transcript was generated using the Microsoft Teams transcripts option. All audio recordings and transcripts have been safely and securely stored in a password-protected location only accessible by the researcher.

EM4

Participant EM4 worked for eleven years in communications and then joined a public safety emergency management agency about twelve years ago. Participant EM4 has significant operational field experience with urban search and rescue teams and swift water rescue team deployments.

EM10

Participant EM10 has served in a senior public safety role for fifteen years and is responsible for an extensive emergency management recovery program, including over three hundred million in public assistance disaster recovery for nine presidentially declared disasters. EM10 also serves on a Hazardous Materials Team, an Urban Search and Rescue Team (USAR), a state All Hazards Incident Management Team (AHIMT/IMT), and a County Incident Management Team. Participant EM10 has served in almost every command and general staff

position outlined in the National Incident Management System for more than one hundred local and state activations, which include deployments throughout the southeastern United States for hurricanes, tornadoes, floods, and wildfires.

EM12

Participant EM12 began their emergency manager career working for a large organization following September 11, 2001. EM12 discussed their twenty-three years of experience began when President George Bush completely rearranged his cabinet and started putting different agencies together under the Department of Homeland Security; EM12 became highly experienced using the new Incident Command System (ICS) that shortly followed aimed to help communities manage large-scale disasters in the homeland in a more effective way.

EM17

Participant EM17 has worked in emergency management for twenty years, specializing in individual and public disaster recovery assistance. EM17 has an extensive background in nationally declared disasters and coordinating significant special events.

EM20

Participant EM20 has conducted public safety and emergency management activities for over twenty years, including planned events, significant disaster activations, and locally isolated incidents. EM20 has administered large emergency management logistical response programs for local and state agencies.

EM23

Participant EM23 has worked in emergency management and special events for twenty-four years, managing response resources and filling incident management command and general staff roles. EM23 has participated in an extensive list of training and post-graduate education.

EM27

Participant EM27 has over twenty years of public safety leadership experience, serving in several emergency management and state law enforcement positions. EM27 is currently responsible for a safety management system with an extensive transportation facility and that authority's emergency operations control center, which includes the emergency dispatchers and customer service team.

EM28

Participant EM28 has served in local government for fifteen years and has developed a comprehensive portfolio in emergency management and information technology, including managing their county activation and response to the COVID-19 pandemic. EM28 has an extensive background in understanding tropical systems and other severe weather events, as well as all-hazards preparedness, and has public relations and communications education.

EM29

Participant EM29 has served in local government for eighteen years, with highly specialized intelligence training and experience. Participant EM29 also has extensive incident command training and exercise experience and has served locally on hazardous material and urban search and rescue teams, deploying multiple times in various capacities to communities impacted by disasters. EM29 has participated in the development of emergency management plans and response activities.

EM30

Participant EM30 has served in local and federal public safety and emergency management government roles for over thirty years, including multi-discipline training and exercising senior leadership positions. Participant EM30 also has extensive technical rescue

incident command experience and has served locally on an urban search and rescue team. EM30 has been deployed to many disasters and complex exercises throughout the United States.

EM31

Participant EM31 has served in local government for almost forty years and has an extensive emergency management background, including administering local comprehensive emergency management plans, training, and exercise. EM31 has conducted many emergency management and public safety training sessions and exercises at the senior management level. Participant EM31 also has extensive community preparedness, prevention, mitigation, response, and recovery experience.

Results

During the data analysis, the researcher reviewed the document analysis and studied the survey responses, interview and focus group transcripts, audio recordings, and video recordings numerous times, following the procedures for data analysis outlined in Chapter Three. The data was analyzed using manual content analysis procedures described in Chapter Three, where descriptive coding summarized extracts using single words that encapsulate the general idea of the data in a highly condensed manner by topic area. Coding is critical in the approach and framework of this grounded theory research for analyzing the data; when completing the qualitative inquiry, a word or short phrase was used to summarize the essence of the data (Cooper, 2016). Line-by-line manual coding then refined and expanded the coding in the inductive approach to capture the richness of the data that reflects thorough analysis; the coding used in the data analysis from each collection method was integrated into theme development (Skjott et al., 2019). Codes are presented on meaningful tables demonstrating how they were organized to inform themes. Research question responses supply narrative answers to each

research question using data collected using the themes. Participant quotes are provided to support the responses to the research questions.

Theme Development

Using thematic analysis, research themes were derived by examining all qualitative data collected from the document analysis, interviews, survey responses, and the focus group session. Multiple data sources, or data triangulation, corroborate and strengthen the developed themes. The inductive coding process was applied to create codes without a predetermined set, allowing the codes to emerge as the analysis progressed. The coding derived from the data explores emergency management single points of failure and investigates new ideas and concepts that help create a new grounded theory. The initial coding, through the essence of the data, revealed the first set of codes; the second stage, line-by-line analysis, was used to organize the codes into a formalized set and conduct theme identification. No unexpected codes and themes that were not correlated to specific research questions evolved. Relevant codes were assigned to the data segments that aligned with prospective themes, allowing the grouping and categorization of related information. The recurring patterns and connections in the codes from the data capture the essence of the data and provide meaningful themes. Synthesizing the codes to articulate the themes in the data determined the meaning to produce the narrative.

The researchers identified recurring patterns and unique concepts from each data set, which were then grouped to form the overarching themes, representing the significant meanings and insights that emerged from participant and respondent experiences and perspectives. The major themes include leadership insufficiency, communication restrictions, personnel challenges, managing incidents and events errors, technology and equipment mistakes, after-action process flaws, and planning shortfalls, which are thematically organized and presented with definitions in

Table One. The evidence in each data set demonstrates the presence and significance of each theme, resulting from the data analysis that supports theme development. Each theme is discussed in detail, including how and what influenced it, from the interview and focus group responses to the surveys and document analysis, using appropriate narrative and data from each collection method. Specific examples are provided from participant and respondent quotes and information directly from the document analysis.

Table 1

Major themes emerging from thematic analysis

Theme	Definition
Leadership Insufficiency	Insufficiencies in the managerial functions used to influence and guide personnel, agencies, organizations, or a community through emergency planning, prevention, mitigation, response, and recovery.
Communication Restrictions	Restrictions in the sharing of information during an incident or event using verbal, written, or visual messages through alerts, warnings, or directives that ensure people are informed to take appropriate actions.
Personnel Challenges	Challenges related to the people who work for public safety and service agencies and organizations that prepare for, respond to, and recover from disaster incidents and events.
Managing Incidents and Events Errors	Errors in the management process of responding to and resolving community impacts during disaster incidents or planned

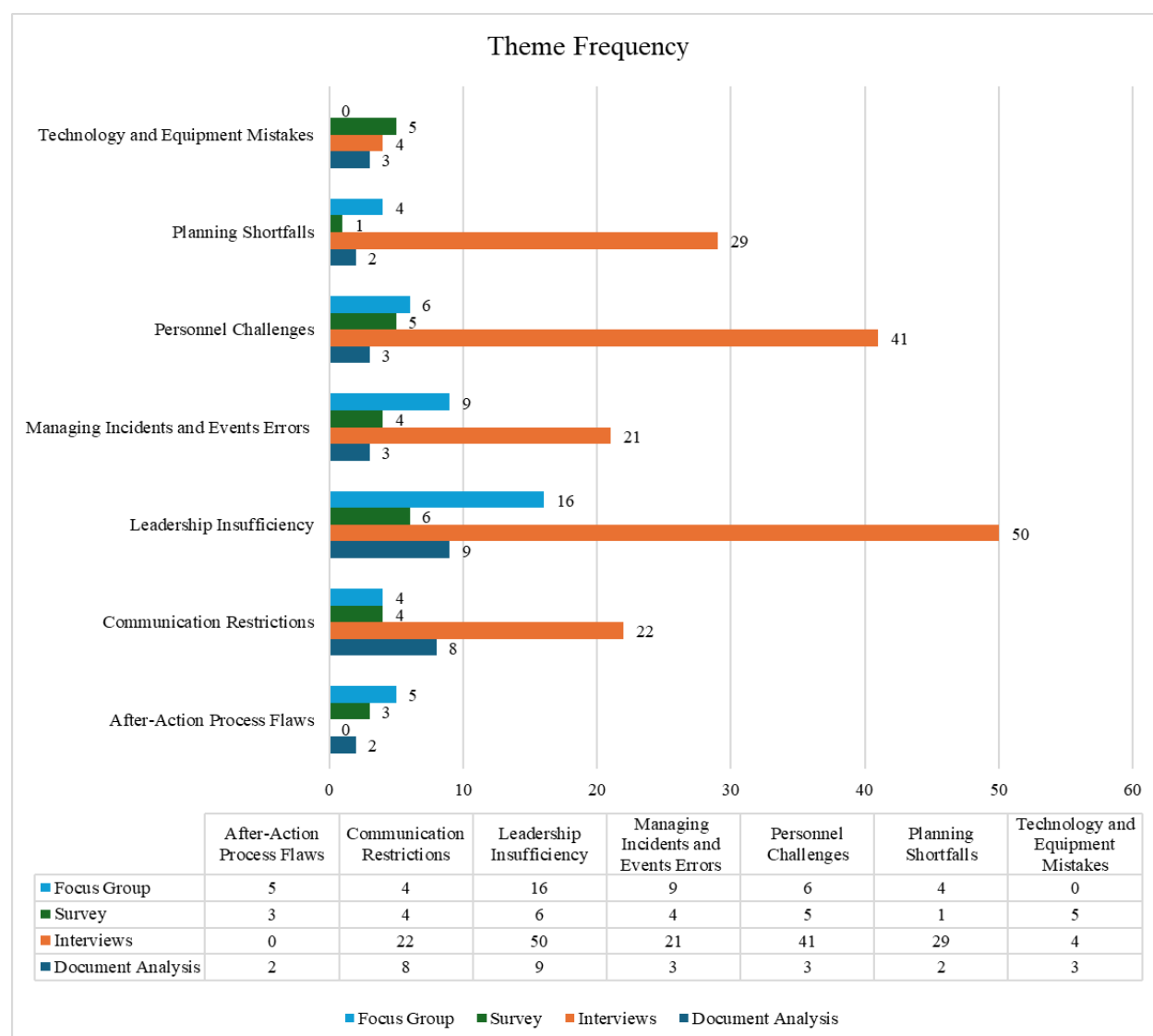
	events that disrupt public services or reduce service quality.
Technology and Equipment Mistakes	Mistakes among tools, hardware, software, and resources used for disaster preparedness and response to resolve impacts caused by disaster incidents and planned events.
After-Action Process Flaws	Flaws in reviewing and reporting emergency management incidents and event actions to create lessons and improve responses to incidents, events, or exercises.
Planning Shortfalls	Gaps in coordinating and integrating emergency management documentation activities that outline how to protect people, property, and the environment by building, sustaining, and improving capabilities that mitigate against, prepare for, respond to, and recover from threats or actual disaster incidents or planned events.

The key steps in the analysis began with the researcher becoming thoroughly familiarized with all collected data to understand patterns and nuances before identifying the themes. In shaping how the data was categorized and extracting meaning from each dataset, each theme was influenced by the researcher's interpretation of the data, each research question in the context of the research study, and the Contingency theory's theoretical framework. The researcher first identified all significant statements, grouped similar statements into categories, and subsequently reduced those categories into themes and subthemes associated with the central research question and sub-research questions. Throughout the process, labeling and grouping were also used,

further validating the process for transparency. Counterarguments and alternative interpretations were also considered for each theme to ensure a strong case based on the analysis provided for each theme. Theme frequency was continually assessed to determine the number of times a particular theme appeared in each dataset to determine what proportion of participants and respondents experienced each phenomenon. To provide a clear visual comparison of how often each theme occurred within the data, major theme frequency is provided in Table Two.

Table 2

Major Theme frequency



Leadership Insufficiency

Leadership was a significant topic during data gatherings related to the single point of failure occurrence. This topic was triangulated in the data and presented eight times in the document analysis, fifty times during the interviews, four times in the survey data, and sixteen times during the focus group session. Based on participant and respondent statements, the major theme of leadership insufficiencies was identified and defined using the analysis as the managerial functions used to influence and guide personnel, agencies, organizations, or a community through emergency planning, prevention, mitigation, response, and recovery. Theme development support includes participant and respondent statements, and according to the data, leaders in the public administrative community are not doing enough to address challenges posed by single points of failure appropriately.

This disposition is a recurring sentiment throughout the data. Coding and categorization of the data include statements that identify causes of single points of failure, such as low administrative commitment, unrealistic expectations, administrative oblivion, subjective decision-making, prevalence of dominant influence, leaders exhibiting random and enigmatic perspectives, overreactions to situations, using a crisis management approach, acting in a mode of self-preservation, fear of reprisal, and commonly managing through emotions rather than facts. Counterarguments and alternative interpretations of the data include that some respondents and participants believe leaders are addressing single points of failure fully and appropriately.

The data shows that influences from politics also cause leadership insufficiencies because many leaders are appointed using political processes without selecting individuals with appropriate training, education, or experience. When the selection process is based solely on political affiliations, and emergency managers and agency administrators are not competent or

qualified, the ability to lead effectively during an incident or event is significantly reduced.

According to a respondent:

Leadership is not actively engaged in regular plan reviews and relies on reading the plan during an occurrence. They are not well practiced in this single point of failure, which is pervasive in our community, where we rely increasingly on technology. Artificial Intelligence will exacerbate this issue as practitioners become more dependent on it.

According to another respondent, there is a significant lack of crisis leadership training and opportunities that foster needed leadership education.

Communication Restrictions

Communication was a significant topic during data gathering related to the single point of failure occurrence. This topic was triangulated in the data and presented eight times in the document analysis, twenty-two times during the interviews, four times in the survey data, and four times during the focus group session. Based on participant and respondent statements, the major theme of communication restrictions was identified and defined using the analysis as restrictions in the sharing of information during an incident or event using verbal, written, or visual messages through alerts, warnings, or directives that ensure people are informed to take appropriate actions. Theme development support includes participant and respondent statements, and according to the data, emergency managers must provide adequate, timely information to stakeholders; however, due to harmful exposure regarding the perception of effective management, compartmentalization of information occurs during emergency management operations. Communication restrictions are also caused by a failure to conduct training, education, and exercise for personnel responsible for information sharing. Participant and respondent comments did not entirely blame communication technology for shortfalls but rather

the administration of information sharing that fails to advocate for appropriate stakeholders to help them ask the right questions to mitigate incidents and events.

Coding and categorization of the data include statements that identify causes of single points of failure, such as accidentally or intentionally siloing information, common communication system errors, fear of information sharing, frequent communication staffing assignment changes, and attempting to professionally benefit from the timeliness of sharing information, such as for political favor. Counterarguments and alternative interpretations of the data include that some respondents and participants believe failure with communications is only due to poorly exercised and validated plans. When processes and procedures are well documented, communications are effective. Respondents and participants also explained that communications are continually improved when lessons learned are reviewed following incidents and events and changes to the processes and procedures. According to a respondent:

Communication and Coordination have always been a struggle. Whether it be territorial conflicts, unwillingness, or the lack of staff to fulfill these needed roles, a breaking point in any emergency management is usually the lack of well-coordinated operations because of the lack of communication.

The data shows that communication and coordination have always been an emergency management challenge, whether due to jurisdictional conflicts, unwillingness to share information or the lack of personnel to fulfill key roles; there is a point during the management of an incident or event where the lack of well-coordinated operation is linked to a lack of communication. According to a respondent:

I feel our processes and procedures are well documented. We exercise these processes often throughout the year. Lessons learned are reviewed afterward, and changes are made

to the processes and procedures. However, in the 'heat of the battle' (i.e., an event), we tend to revert to our old practices, which may conflict with our established, well-thought-out procedures.

Personnel Challenges

Personnel was a significant topic during the data gathering as related to a single point of failure occurrence. This topic was triangulated in the data and presented three times in the document analysis, forty-one times during the interviews, five times during the survey, and six times during the focus group session. Based on participant and respondent statements, the major theme of personnel challenges was identified and defined using analysis as challenges related to the people who work for public safety and service agencies and organizations that prepare for, respond to, and recover from disaster incidents and events. Theme development support includes participant and respondent statements. According to the data, emergency management professionals often possess a traditional mission-driven mindset. Agencies frequently cause personnel challenges because they violate behavior expectations, established industry standards, and agency-individual agreements. These agreement failures are predictable when over-reliance on specific dependable individuals occurs or incident stress levels are ignored.

Coding and categorization of the data include statements that identify causes of single points of failure, such as problematic individual perceptions, inadequate available information, miscommunication, lack of follow-up, reliance upon political affiliations, and a lack of real-world and day-to-day emergency management experience. Counterarguments and alternative interpretations of the data include that respondents and participants believed effective coordination occurs across emergency management segments and that the personnel executing incident and event objectives are the most qualified and effective of any profession. The data

shows that when personnel assigned to emergency management programs are well-compensated and offered frequent training opportunities, personnel challenges improve. According to participants, if personnel are not trained or familiar with required duties, frustration results, time for those involved is wasted, and a traumatizing professional impact on personnel can occur, causing them to refuse to support future disaster-related work. According to a respondent:

We have to compensate and train the assigned person who is not familiar with their duties, which results in frustration, wasting time for everyone involved, and a traumatizing impact on that person, who then wants nothing to do with working a disaster.

Managing Incidents and Events Errors

Operational management, as related to a single point of failure occurrence, was a significant topic during data gathering. This topic was triangulated in the data and presented nine times in the document analysis, twenty-one times during the interviews, four times in the survey data, and nine times during the focus group session. Based on participant and respondent statements, the major theme of managing incidents and events errors was identified and defined using the analysis as errors in the management process of responding to and resolving community impacts during disaster incidents or planned events that disrupt public services or reduce service quality. Theme development support includes participant and respondent statements, and according to the data, impacts from a single point of failure are often resolved as each situation occurs; however, the additional time required to complete tasks and objectives or to gain the necessary operational approval would be improved if a single point of failure analysis and resulting plans were provided in advance.

Coding and categorization of the data include statements that identify causes of single points of failure, such as human error, personality-driven operations, results from a lack of real emergency management experience, challenges presented by incapable leadership, incident management confusion, political influences on the incident, and the capacity for a true and accurate understanding of the incident or event. Counterarguments and alternative interpretations of the data include the fact that few respondents and participants believed planning methodologies are well-studied and that strict resource accountability is occurring; therefore, incident and event errors are generally an anomaly. The data shows that during emergency management operations, participants and respondents have witnessed a lack of organizational management during operations where a lack of communication and failure to follow procedures outlined in operational plans are responsible for managing incidents and events errors.

According to participants, because everything impacts everything else, managing incidents and events, errors result from every aspect of the complexity of emergency management operations, which depends on action in a manner that produces branch and sequel actions. Branch operations and actions deviating from the established plan or procedure may be unique situations for which no plan can specifically account; therefore, sequel operations require following a precise order of operations and depend upon personnel executing a plan as it was envisioned.

Technology and Equipment Mistakes

Technology and equipment were significant topics during data gathering as related to a single point of failure occurrence. This topic was triangulated in the data, and although it was not presented as a major theme in the focus group session, it was presented three times in the document analysis, four times during the interviews, and five times in the survey data. Based on

participant and respondent statements, the major theme of technology and equipment mistakes was identified and defined using the analysis as mistakes among tools, hardware, software, and resources used for disaster preparedness and response to resolve impacts caused by disaster incidents and planned events. Theme development support includes participant and respondent statements, and according to the data, over-reliance on technology and equipment exposes emergency management programs to failures, especially if backup or redundant systems are not established. According to the data, too much emphasis has been placed on the use of wireless networks for communication, and plans and practitioners do not account for the complete failure of those systems. Participants and respondents provided that contemporary emergency managers believe backup systems are in place and will prevent complete failures from occurring; because of the misperception regarding technology and equipment, the respondents believe that although cloud-based technology has dramatically improved exposures, it is imperative to develop alternate technology, and equipment options for every facet of public safety operations.

Coding and categorization of the data include statements that identify causes of single points of failure, such as establishing fixed technological responsibility, applying an incident management approach to technology and equipment planning, the necessity for backup systems, how technology can cause a cascading crisis, where improper strategy and tactics are the basis for inputting information incorrectly, that just-in-time logistics is often the answer for the lack of appropriate emergency equipment, and how emergency management programs have a lack of contingency planning. Counterarguments and alternative interpretations of the data include that some respondents and participants believed technology and equipment use is appropriate, effective, and reliable. The data shows that the increased use of virtual platforms to coordinate responses to incidents and events, compared to in-person meetings, has cultivated opportunities

for numerous unqualified and intrusive personnel to participate in decision-making. Participants believe that quick and decisive meetings to establish objectives and put a plan into place have stopped occurring. Now, personnel unfamiliar with the incident management processes are interjecting flawed directions. According to a participant, there is an over-reliance on technology, and if one component fails without a backup or redundant system, overall communication immediately becomes hindered.

After-Action Process Flaws

The after-action process as an emergency management instrument was a significant topic during data gathering, as related to a single point of failure occurrence. This topic was triangulated in the data, and although it was not present as a major theme in the interviews, it was presented twice in the document analysis, three times in the survey data, and five times during the focus group session. Based on participant and respondent statements, the major theme of after-action process flaws was identified and defined using the analysis as flaws in reviewing and reporting emergency management incidents and event actions to create lessons and improve responses to incidents, events, or exercises. Theme development support includes participant and respondent statements, and according to the data, after-action reviews are often conducted; however, improvement is not consistently executed, and further, the after-action report is rarely disturbed to operational personnel to review and implement improvement recommendations.

Coding and categorization of the data include statements that identify causes of single points of failure, such as lack of training and exercise following after-action findings, planning that does not reflect the reality of the operational environment, unrealistic planning expectations, the threat of legal action impacting the accuracy of after-action reviews, the deleting of reports completely, and that after-action reviews are often conducted for appearances of some

management expectation. Counterarguments and alternative interpretations of the data include that some respondents and participants have experienced after-action reviews performed after every event that fully reflect the incident and event activities and that improvement plans are in place that include every stakeholder for annually reviewing and updating operational plans. The data shows that emergency management teams desire the ability to address single points of failure by prioritizing clear communication with key stakeholders during the response phase. Effective communication is crucial for identifying potential failures early.

Participants and respondents also believe that when stakeholders are absent from the after-action process, or their responses to the process are unclear, it is critical to connecting with those stakeholders to understand the areas that require immediate attention. By focusing on operational gaps, emergency managers can better adapt tactics and strategies that allocate resources to mitigate the best risks associated with single points of failure. Interview question two discussed challenges experienced while managing incidents or events, and a participant stated:

I have participated in many after-action meetings, and communications is consistently one of the most, if not the most, critical areas for improvement. Being a practitioner in an all-hazards environment frequently necessitates communicating with law enforcement officers (LEO). I have noticed that LEOs are some of the notorious groups for compartmentalizing information. This siloing of information is very much by design, as you would not want to taint an investigation. However, in an all-hazards environment, being unable or unwilling to share critical information can and has significantly impacted a community's ability to respond to an incident or event effectively.

Planning Shortfalls

Emergency management planning, as related to a single point of failure occurrence, was a significant topic during data gathering. This topic was triangulated in the data, and although it was only presented once as a major theme in the survey data, it was presented three times in the document analysis, twenty-nine times during the interviews, and four times during the focus group session. Based on participant and respondent statements, the major theme of planning shortfalls was identified and defined using the analysis as gaps in coordinating and integrating emergency management documentation activities that outline how to protect people, property, and the environment by building, sustaining, and improving capabilities that mitigate against, prepare for, respond to, and recover from threats or actual disaster incidents or planned events. Theme development support includes participant and respondent statements, and according to the data, emergency management personnel must be familiar with the established processes and procedures to address exceptions quickly, including communicating those irregularities to their leadership. Emergency management plans may lack the essentials of emergency management operations, be locally inaccurate because plans are copied from other jurisdictions, and may be overly complicated and misinterpreted when activated. According to participants and respondents, ideally, established procedures are developed through stakeholder consensus, recognizing that failures are not abnormal and that emergency managers should not be surprised when failures do occur.

Coding and categorization of the data include statements that identify causes of single points of failure, such as plans that are underutilized, which creates reliance upon untested and unproven planning, or they are being created by an emergency management program that demonstrates a hyper-focus on accreditation-based planning and attempting to meet accreditation

standards that are continually changing rather than proven operational-based planning.

Counterarguments and alternative interpretations of the data include that some respondents and participants believe all planning is of some benefit to emergency management programs and that a plan that is not ideal is better than no plan at all. Respondents and participants explained how operational plans are adjusted as necessary to accomplish incident and event objectives and that any challenges being faced are addressed as soon as possible and resolved in a timely manner. Emergency managers should be ready with alternative courses of action that achieve incident and event objectives where accurate decision-making is the primary goal.

The data shows that some emergency management personnel may not have the comprehensive knowledge of established plans as expected, and if this deficiency is not identified, those responsible for mitigating or correcting plan deficiencies may lack the ability to create or update existing emergency plans. Participants and respondents explained how weak, untimely, and ill-prepared many emergency plans are in the context of managing incidents and events, and the hubris associated with emergency managers prevents the correction of this specific deficiency. According to a participant:

One phrase that sticks out, which I have heard more times than I can count, is, “Two is one, and one is none.” It is a playful way to say that things will fail, break, or won’t be compatible, so always have more than you think you’ll need. Further, no one person should have all the keys to the castle because no one can be available every hour of every day. In emergency management, you have to balance security with availability. You cannot leave your supplies open for all the world to pilfer, but you also cannot have everything under lock and key. There is only one key, and the person who has that key will be unavailable for an extended time. All that to say, exercise security, but make sure

there is a trustworthy backup, and that backup has a backup. Nothing is worse than being in the response phase of an incident and unable to access a computer because the person who has the literal key or the password to the system cannot be contacted and is not returning calls.

Research Question Responses

Narrative answers are supplied for each research question using the data collected and the themes previously developed from each instrument. Participant quotes are provided as appropriate to support the responses to the research questions.

Research Sub-Question One

Research sub-question one asked, “How do emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events?” The design of survey question five and focus group question five collected raw data to answer research sub-question one.

Document analysis as a data collection strategy answered sub-question one about how emergency managers apply Contingency Theory in the after-action process to address single-point-of-failure challenges experienced during incidents and events.

Interview question two asked, “Can you discuss individual or recurring challenges you have experienced while managing incidents or events?”

Interview question five asked, “What has your experience consisted of where a single point or points of failure clearly caused a challenge during an incident or event?”

Survey question five asked, “Thinking about your emergency management experiences, did the after-action process accurately or effectively capture incident or event challenges?” The participant was provided with the option to select from (1) Yes, the after-action process

accurately and effectively captured incident or event challenges; (2) No, the after-action process did not accurately and effectively capture incident or event challenges; (3) Other response.

Respondents were asked to provide comments on the after-action process.

Focus group question five asked, “In your experience, how does the after-action process capture incident or event challenges accurately or effectively, and why?”

Major Themes for Sub-Question One.

Table 3

Sub-Question One Themes that were Identified from the Document Analysis, Survey Question Five, and Focus Group Question Five

Research Instrument	Major Theme
Document Analysis	After-Action Process Flaws
Survey Question Five	After-Action Process Flaws
Focus Group Question Five	Leadership Insufficiency

The major themes that emerged from data analysis reflecting participants’ experiences and document analysis include the after-action flaws and leadership insufficiencies. Contingency theory points out that professionally acceptable management fluctuates based on situational variables critical to understanding the achieving administrative results, such as leadership style, decision-making, position-specific design, and organizational structure (Sunder M & Prashar, 2020). Survey Question Five discussed whether respondents believed the after-action process captures incidents and events accurately or effectively. According to a survey respondent:

No, the after-action process did not accurately or effectively capture the incident or event challenges. There is always a concern about naming names and being too specific in

After Actions, which often results in reports that are too generic and redundant. In this case, the after-action report highlighted the need for improved communication, but it lacked the specific details necessary for meaningful learning and improvement. Without these specifics, it becomes difficult to identify the precise areas that need attention and to develop targeted strategies for addressing them.

Several respondents discussed an exhaustive, incredibly comprehensive, and collaborative after-action process. In contrast, others described a tailored, restricted process that shielded certain failures for political reasons where any reflection upon single points of failure was ignored. According to the respondents, the after-action generally works because the overall details of the incident or event are captured, and failures, although not written, are discussed among emergency management sections, units, or groups that can help prepare for future incidents.

Many respondents described an unorganized approach to the after-action process, where emergency managers place little confidence in the after-action report or the corrective action process. Respondents explained that mission accomplishment depends on assigning personnel with mature, experienced perspectives to key positions. The respondents added that emergency managers focus on developing critical thinking skills and cultivating a bias for effective action as leaders create adaptive people who can improvise and overcome unknowable challenges that emergency managers must navigate to restore conditions to an acceptable state.

Focus group question five asked how well the after-action process captures incident or event challenges. A participant commented that legal concerns against agencies often restrict personnel discussion, or specific input is deleted entirely. The participants discussed how the after-action process should ideally reflect the organization's performance during activations; however, due to leadership insufficiencies, honest evaluations are meaningless. The participants

detailed that honest after-action assessments are not likely because they are often scripted, extraordinarily positive, and do not reflect incident reality, which questions their purpose.

Research Sub-Question Two

Research sub-question two asked, “How do emergency managers apply real-world insights to demonstrate learning organization aptitudes?” The design of interview questions two and five, survey questions six and seven, and focus group question six collected raw data to answer research sub-question two.

The document analysis as a data collection strategy answered sub-question two about how emergency managers apply real-world insights to demonstrate learning organization aptitudes.

Interview question three asked, “What emergency management focus areas are most challenging, and how do you specifically manage those tasks?”

Interview question seven asked, “Have you observed political influences determining the appointment of emergency managers, where less qualified are appointed above more qualified or capable individuals?”

Survey question one asked, “Considering the definition above, have you observed or experienced single points of failure in emergency management?” Please provide additional comments below.

Survey question three asked, “Please rate your experience regarding how your agency or organization managed single points of failure that caused challenges during an incident or event.” Participants also provided specific experience comments.

Focus group question two asked, “Considering the definition above, if your team has experienced a single point of failure in emergency management, how was it managed?”

Focus group question three asked, “Please discuss your personal experiences regarding how your agency managed a single point or point of failure that caused a challenge during an incident or event.”

Major Themes for Sub-Question Two.

Table 4

Sub-Question Two Themes that were Identified from the Document Analysis, Interview Question Three, Interview Question Seven, Survey Question One, Survey Question Three, Focus Group Question Two, and Focus Group Question Three

Research Instrument	Major Theme
Document Analysis	Planning Shortfalls
Interview Question Three	Planning Shortfalls
Interview Question Seven	Leadership Insufficiency
Survey Question One	Leadership Insufficiency
Survey Question Three	After-Action Process Flaws
Focus Group Question Two	Leadership Insufficiency
Focus Group Question Three	Leadership Insufficiency

The major themes that emerged using data analysis reflecting participants’ experiences and the document analysis include planning shortfalls, leadership insufficiency, and after-action process flaws. Leadership insufficiency’s influence on information sharing was revealed through interview question three, which discussed challenging emergency management focus areas. Leadership impacts communication and causes the restriction to sharing information among

incident and event personnel, a common topic among almost all participants, according to one participant:

Again, communications. The only way to lessen the potential impacts of a lack of communication is to build and foster relationships at the federal, state, and local government levels. However, not only inter- and intra-governmental relationships, but you must establish, build, and nurture relationships with the private sector and the non-profit/volunteer sector. You must develop and maintain relationships with organizations you may loathe with every fiber of your being. However, responding to a disaster takes the whole community to respond effectively.

Participants focused a great deal on planning shortfalls in each of the five mission areas for emergency management. Several participants discussed how planning documents have devolved into a copy-and-paste methodology. According to the participants, a long-time phenomenon in emergency management is many plans written by plan-writing contractors or public service personnel. Those plans are often borrowed documents from another county or state that are copied and pasted, where the previous location is redacted, and the new plan is misrepresented as a new, applicable plan. One participant explained that to expose these false plans, they search plans for the names of lakes, rivers, and other locations not in the new plan's jurisdiction. Unfortunately, according to the participants, other erroneous information exists in emergency management plans, such as a recommendation that peanuts are a good source of hydration. According to the participants, they will not trust any part of the plan if the simple details are grossly incorrect.

The participants added that planning determines the success of the programs executed by emergency managers, including the incident planning process. However, it also controls which

projects will be completed in a local mitigation strategy or how long-term recovery operations will be accomplished. Planning is the cornerstone of the incident management process, and if completed correctly, the incident should be a success; if planning fails in ongoing community endeavors, impacts compound existing long-term impacts.

Interview question seven asked about political influences determining the appointment of emergency managers, and all participants answered that less qualified individuals are being appointed above more qualified or capable individuals. As found in the data analysis, leadership insufficiencies are reported by participants and respondents as a direct negative effect of political influence. One participant stated:

In nearly every FEMA class I have taken, the example of the emergency manager being the dog catcher is raised. This example is pervasive throughout the vast majority of small and rural jurisdictions. Other examples include the responsibility of emergency management being a function of local law enforcement. In this case, it will be someone the police chief or sheriff likes or hates – either way, the position is given or forced on someone who may have no idea what emergency management is about.

Political influences and negative impacts on leadership have become increasingly involved in hiring at all levels of emergency managers, from the entry planner to the director, because a mayor, commissioner, sheriff, or fire chief gives a position to a best friend or campaign contributor without consideration for qualifications or experience. Participants explained that emergency management has become more professional in the last decade, increasing salaries and opportunities, especially following a public service career in the private sector. For interview question seven, political payback was a recurring reply among participants, where they stated that friends of politicians are being gifted a public service role otherwise unachievable due to a

lack of certification or experience. Many concluded that contemporary emergency management salaries have finally reached a competitive range, becoming lucrative enough to attract politically active individuals who do not seek the work of emergency managers, but desire supplementary opportunities afforded by positions highly spotlighted in the community during times of crisis.

Survey question one discussed single points of failure experiences. A respondent explained leadership insufficiency situations where they witnessed a local city manager failing to fulfill reporting duties because they did not have the technical skills or abilities to fulfill their role, costing a city millions of dollars in relief funds. Another respondent described where, on several occasions during natural disasters and human-made incidents, managers either failed to notify, request or intentionally did not request vital resources that subsequently immobilized emergency operations. Several respondents discussed how emergency managers create a single point of failure with a deliberate decision to thwart unity of command or operate outside of established objectives, strategies, or operational tactics, which, according to the respondents, is often behavior from political appointees with no appropriate background or experience in emergency response operations typical of police and fire agency personnel. A respondent described a tragic personnel challenge as a single point of failure:

The previous local emergency manager passed away suddenly. After their death, the interim emergency manager faced significant challenges as there were few written plans, policies, or procedures. There were no written passwords to social media accounts, grant websites, etc. The previous emergency manager created a single point of failure by conducting almost all business verbally with the absolute minimum in written documents.

Survey question three rates the experiences of how an agency or organization managed a single point of failure. Respondents described leadership insufficiency as often forcing personnel

to independently adjust procedures to ensure actions work, albeit inefficient and costly in both time and funding. Participants added that specific team members' experience helps bridge the failure gap. Even when after-action feedback identifies failures in established procedures and processes, no updates are made to ensure established procedures are updated and followed, which further frustrates emergency management teams. According to a respondent:

The emergency manager needs to know the laws and regulations of federal and state agencies. This incident involved multiple federal agencies jockeying to be the lead agency. As the county emergency manager, I conducted at least two all-agency briefings per day. I knew the laws and regulations of the federal agencies and presented them at the meeting, designating what agency would be the federal lead.

Other respondents added that when a single point of failure occurred during a flood, another authority internationally diverted staff from regularly assigned tasks to address other requests. This disruption identified weaknesses or blind spots in pre-disaster planning and assumptions because it created response inefficiencies and delays in completing or addressing other critical needs. Respondents continued that recommendations like the precious situation are sometimes ignored because they were not deemed necessary to those in charge.

Some respondents to survey question three explained that after-action meetings had presented an opportunity to address and discuss single points of failure following various incidents, which resulted in fewer subsequent mistakes during later incidents, creating new response options. When conducted authentically, organizations and management teams stress the importance of the after-action processes, areas identified for improvement can become the focus of training and exercise that improve overall incident and event policies and procedures. The respondents primarily held that after-action process flaws reduce quality improvements, such as

acknowledging single points of failure but failing to correct the issue or fostering a climate that lacks flexibility, supports poor leadership, or tolerates egocentric behaviors. After-action reports are not allowed to identify the real issues because interpersonal protection is the driving factor in the control of reporting. Respondents commented that the emergency manager ground troops are rarely those making the errors; instead, it is their superiors.

Focus group question two discussed how single points of failure are managed, and the participants explained that unrealistic planning, underutilized well-written plans, and untested plans cause single points of failure manifesting as human-caused communications problems, personnel, deployments, and incident command system use errors. The participants added that political influences are responsible for those and other single points of failure, such as when ego causes a purposeful limit, siloing, or withholding information entirely. Focus group question three asked about how effective agencies are at managing single points, and a participant stated leadership insufficiency is evidenced in situations such as emergency dispatch systems that lack redundancy because leaders do not observe the threat environment accurately. The participants explained how dominant influences prevail when the fear of reprisal atmosphere persists, controlling agencies limit critical information, or leaders lack emotional maturity, overreacting or purposely giving rise to political themes at the project management level, having some realized political benefit.

Research Sub-question Three

Research sub-question three asked, “How do Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans?” The design of survey question four, survey question ten, and focus group question one collected raw data to answer research sub-question three.

As a data collection strategy, document analysis answered sub-question three about how the Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans.

Survey question four asked, “How does your emergency management team specifically plan to address single points of failure, if experienced?” The respondents selected from the options (1) no existing plans, (2) some formal plans or processes have occurred, (3) comprehensive plans exist, and (4) other responses. Respondents also provided specific planning comments.

Survey question ten asked, “Select your current role in emergency management.” The respondents selected from the options (1) Agency Administrator, (2) Director, (3) Command or General Staff, (4) other supervisor type, (5) Unit level or Planning personnel, (6) Other agency, (7) Private sector support.

Focus group question one asked, “How does your emergency management team collectively plan for single points of failure?”

Major Themes for Sub-Question Three.

Table 5

Sub-Question Three Themes that were Identified from the Document Analysis, Survey Question Four, Survey Question Ten, and Focus Group Question One

Research Instrument	Major Theme
Document Analysis	After-Action Process Flaws
Survey Question Four	After-Action Process Flaws
Survey Question Ten	Leadership Insufficiency
Focus Group Question One	Leadership Insufficiency

The major themes that emerged using data analysis reflecting participants' experiences and the document analysis include after-action process flaws and leadership insufficiency. Survey question four discussed how teams specifically plan to address single points of failure, and respondents presented several positive experiences with the after-action processes, including regularly conducted following incidents and events, supplemental planning distribution, and annual emergency management stakeholder reviews and updates. Other respondents added that after every incident and event, an after-action and improvement plan is developed to identify strengths and areas of improvement; resulting strategies and goals are reviewed by the authority having jurisdiction for implementation and tracking completion. According to another respondent, a positive after-action experience because of a single point of failure, specifically planning included:

After seeing how a lack of planning led to negative outcomes in the spring of 2020, we recognized that our officers needed additional training in civil unrest tactics and that we needed to develop a plan to manage those types of incidents. After analyzing our deficiencies, we implemented a training program and wrote a plan approved by the command staff.

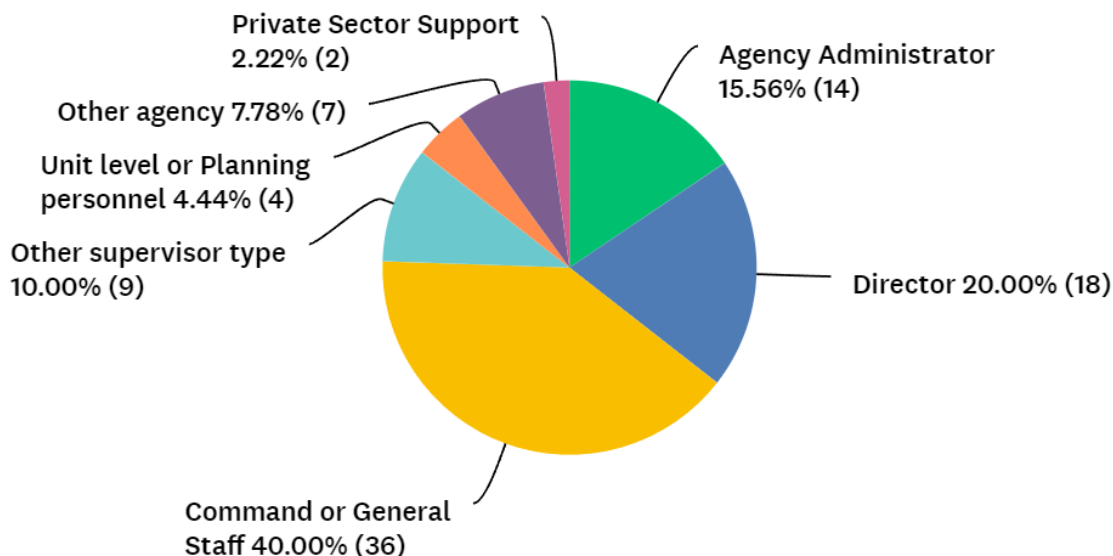
Conversely, after-action process flaws described by participants included those who have authored after-action reports found that most of the time, either no comments or those returned stated that everything was good. Other respondents commented that due to a leadership insufficiency, although noted in after-action reports, no leadership direction had been given to create a formal single point of failure plan. Survey question ten asked respondents to select their role. Of all one hundred and forty respondents, the highest number of respondents, over thirty-

seven percent, selected Command or General Staff. This detail is important because to perform in those roles, the individual likely has many years of experience, completed advanced position-specific training, and has typically participated in a local, state, or federal all-hazards incident management team credentialing process. The results of this question are additionally significant when compared with the highest-selected response option for survey question nine, years of public service, where over sixty-five percent of respondents have completed over twenty years of public service. This data explains that most respondents have achieved significant emergency management responsibility and completed over two decades of service.

Focus group question one asked how teams collectively plan for single points of failure, and participants commented that they did not believe their organizations were planning for or mitigating against single points of failure. Additionally, participants stated that most of their organization's plans are not exercised, rendering them unusable because teams have never read, practiced, or updated the plans. The participants described single point of failure planning as a leadership insufficiency because their municipal agencies do not espouse the value of updating comprehensive emergency management plans and fail to create participation that ensures the plan is accurate. Insufficient or poorly executed planning demonstrates a low administrative commitment by municipalities, creating at least one single-point failure: the inaccurate plan itself. The participants added that when a significant incident occurs, and a municipality has not planned effectively, the administrators typically begin executing a crisis management response; when failures inevitably begin, they start condemning emergency managers for failures.

Figure 3

Comparison between years of service and emergency management role



Note. This figure compares the years of public service with the emergency manager's current role.

Contingency Theory and Path-Goal Theory together explain situational leadership that through a leader's guidance, coaching, and direction, leaders help followers on the path toward a goal to reach that goal (Fiedler, 2008; Oc, 2018). Path-goal theory is a Contingency theory that forecasts how a leader's style interrelates with the follower's needs. The nature of emergency management plans that cause failures in the operational environment extends to group tasks structured among relationships between leadership styles and leader effectiveness. The Path-Goal Theory explores leader directive, participative, supportive, or achievement-oriented interactions along with follower characteristics, such as locus of control, task capability, and program structure preferences and situational factors, such as the leader's authority, the structure of a task, and the norms of a workgroup (Fiedler, 2008; Oc, 2018). The major themes from the

data related to sub-question three demonstrate that emergency management leaders are failing to provide after-action process guidance, coaching, and direction; leaders are not helping followers on the path toward the goal to produce quality plans and after-action reports to become more effective in addressing, among other things, emergency management single points of failure.

Research Sub-question Four

Research sub-question four asked, “How do emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management?” The design of interview question four, interview question six, survey question two, survey question eight, survey question nine, and focus group question four collected raw data to answer research sub-question four.

The document analysis as a data collection strategy answered sub-question four about how emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management.

Interview question four asked, “When challenges impact operations, how have you adjusted operations to ensure safe and effective outcomes for an incident or event?”

Interview question six asked, “How have personnel challenges impacted your operations, and how have you adjusted staffing responsibilities to ensure safe and effective outcomes for an incident or event?”

Survey question two asked, “If observed or experienced, what was your position or area of responsibility during the incident or event when single points of failure occurred?” The respondents choose from (1) Agency Administrator or Director, (2) Command or General Staff, (3) Other supervisor type, (4) Unit personnel, (5) Other agency, (6) Private Sector Support, (7) I have never experienced emergency management single points of failure.

Survey question eight asked, “Please provide additional comments to help others better understand single points of failure experiences.”

Survey question nine asked, “Please select your years of public service experience.” The respondents choose from (1) 1-5 years; (2) 5-10 years; (3) 10-20 years; (4) More than 20 years.

Focus group question four asked, “How does your position or area of responsibility during the incident or event determine if a single point of failure occurs or is allowed to occur, meaning does or should responsibility or authority dictate failure, such as an agency administrator or director versus the command or general staff versus support personnel?”

Major Themes for Sub-Question Four.

Table 6

Major Themes for Sub-Question Four that were Identified from the Document Analysis, Interview Question Four, Interview Question Six, Survey Question Two, Survey Question Eight, Survey Question Nine, and Focus Group Question Four

Research Instrument	Major Theme
Document Analysis	Communication Restrictions
Interview Question Four	Leadership Insufficiency
Interview Question Six	Personnel Challenges
Survey Question Two	Leadership Insufficiency
Survey Question Eight	After-Action Process Flaws
Survey Question Nine	Leadership Insufficiency
Focus Group Question Four	Leadership Insufficiency

The major themes that emerged using data analysis reflecting participants' experiences and the document analysis include communication restrictions, leadership insufficiency, personnel challenges, and after-action process flaws. Interview question four discussed operations challenges, and according to a participant:

I think it is critically important for the command and general staff, those in emergency support function roles, and the emergency managers themselves to identify when something is reaching critical capacity or a critical need from a life safety standpoint.

Other participants explained that leadership insufficiency nullifies situational awareness, including training emergency operations center staff but failing to secure approval from team members' home agencies to approve and support them in participating during an emergency activation. Participants also discussed that preventing poor decision-making includes assigning qualified and capable managers and recognizing when those managers are physically or mentally beyond their limits or scope of ability because they have exceeded their knowledge, skills, and abilities.

Interview question six discussed personnel challenges, and the participant commented that regardless of their level of responsibility, emergency managers cannot operationally or professionally afford to allow underperforming personnel to be responsible for incident or event tasks, programs, or objectives. Personnel challenges were the subject of many participants' comments. Participants have observed many personnel challenges because the activation stress can fuel or create conflict among personnel, some of which is attributed to immaturity, that people are just frustrated, or that certain personalities do not get along. The pressure of an emergency activation causes stress, and when personalities clash, the single point of failure is how the emergency management leaders deal with conflicts. Participants also explained that

public service ranks, such as the law enforcement or fire service or appointed position, should not be the sole basis for assigning emergency management roles; instead, training, certification, education, and experience in emergency and incident management disciplines should primarily determine personnel utilization.

Participants commented on ineffective training, particularly for new emergency management administrators, as a contributor to single points of failure, and according to a participant:

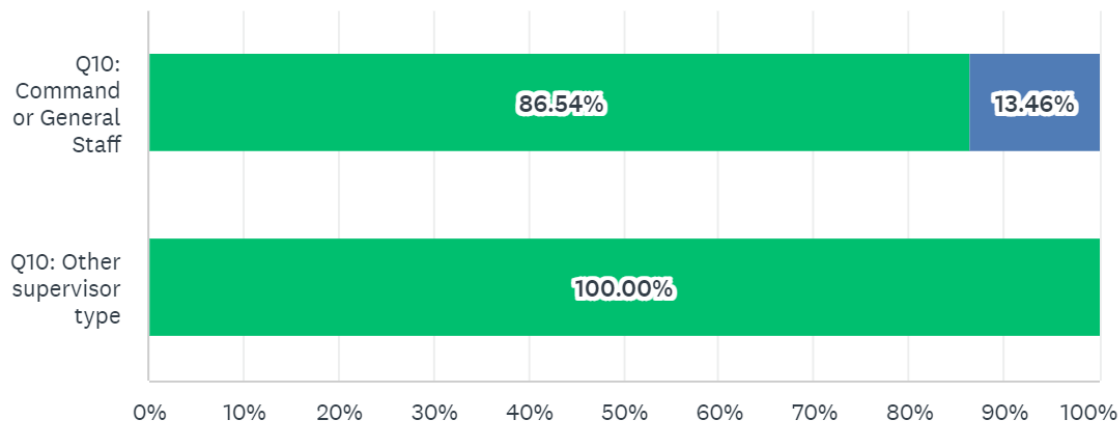
A new administration brings the nuanced challenges of adjusting to their management style. However, when that new leadership does not grasp the full breadth of a subordinate's job, it causes additional stress. I try to prioritize what is most important and with the most financial impact above lesser priorities. There are only so many hours in a day, and one can only operate at peak output for a limited time. Anything beyond that is unsustainable. At some point, when the risks are too significant to leave tasks unaccomplished, I should have been able to provide sufficient evidence to warrant asking for assistance. Prioritize what you can and whatever you cannot; delegate or let the administrative staff know that you need help.

Participants added that individuals gifted with positions of authority or leadership who do not have the requisite experience must heavily rely on subordinates for decisions and guidance, also called leading up the chain. This standard principle encompasses guiding or teaching new or inexperienced superiors. Although, according to the participants, this should not be the case, it occurs during active response and day-to-day organizational preparedness, incident response, recovery operations, ongoing mitigation, and protection activities.

Survey question two asked what position or area of responsibility respondents occupied during a single point of failure occurred, and most of the respondents selected they held a Command or General Staff role. The highest number of respondents selected Command or General Staff as their role during a single point of failure, and the second-highest number of respondents selected Other Supervisor types. Command and General staff positions include the Incident Commander (IC), Safety Officer (SOFR), Public Information Officer (PIO), Liaison Officer (LOFR), Finance Section Chief (FSC), Logistics Section Chief (LSC), Operations Section Chief (OSC), and Planning Section Chief (PSC). These roles make up the senior management areas of the standardized Incident Command System (ICS) designed for incident and event command and control, which is part of the National Incident Management System (NIMS), a comprehensive approach to incident management of all types and sizes of emergencies (U.S. Department of Homeland Security, 2019). The other supervisor-type role includes, among other things, incident and non-incident emergency management personnel positions of planners, grant managers, recovery specialists, mitigation managers, watch office supervisors, communications technicians, temporary reserve staff, and emergency operations center managers. When the data analysis considers the position respondents occupied during a single point of failure compared to respondents selecting they have or have not observed or experienced single points of failure in emergency management, the data reveals that one hundred percent of respondents working in the other supervisor-type role have experienced a single point of failure while in that role; over eighty-six percent of respondents working in a command and general staff role have experienced a single point of failure while in that role.

Figure 4

Comparison between position and single point of failure experiences



Note. This figure represents the emergency manager’s position compared to experiencing a single point of failure.

Survey question eight asked for comments to help others better understand single points of failure experiences and, according to respondents, both after-action process flaws and leadership insufficiency represent matters that can help better understand single points of failure. According to a respondent:

I have a sticky note hanging on my computer monitor that reads, “What do I know? Who else needs to know? Have I told them?” I see this sticky note every day, and it is a constant reminder not to become the single point of failure!

Other respondents commented that emergency management leaders and agency administrators must be competent, capable, educated, and act as if they care more about others than themselves to effectively lead personnel during an incident or event. The respondents continued that single points of failure will persist if leaders do not care or do not understand what they are doing incorrectly or even why. Additionally, leadership is open and willing to accept

shortcomings and listen to others who may have helpful suggestions and ideas that solve challenges posed by incidents and events. Respondents also explained that emergency management requires continuous training and exercise, and those programs completing one tabletop exercise annually should not expect to fully understand the demands of emergency management because growth and evolving professionally take time, especially when addressing complex single points of failure. Respondents added that familiarity with established plans, processes, and procedures is essential because they are typically developed with thought and consensus, quickly identify single points of failures, and report them along with the appropriate pre-established procedures, especially if the plans purposely consider single points of failure.

According to another respondent:

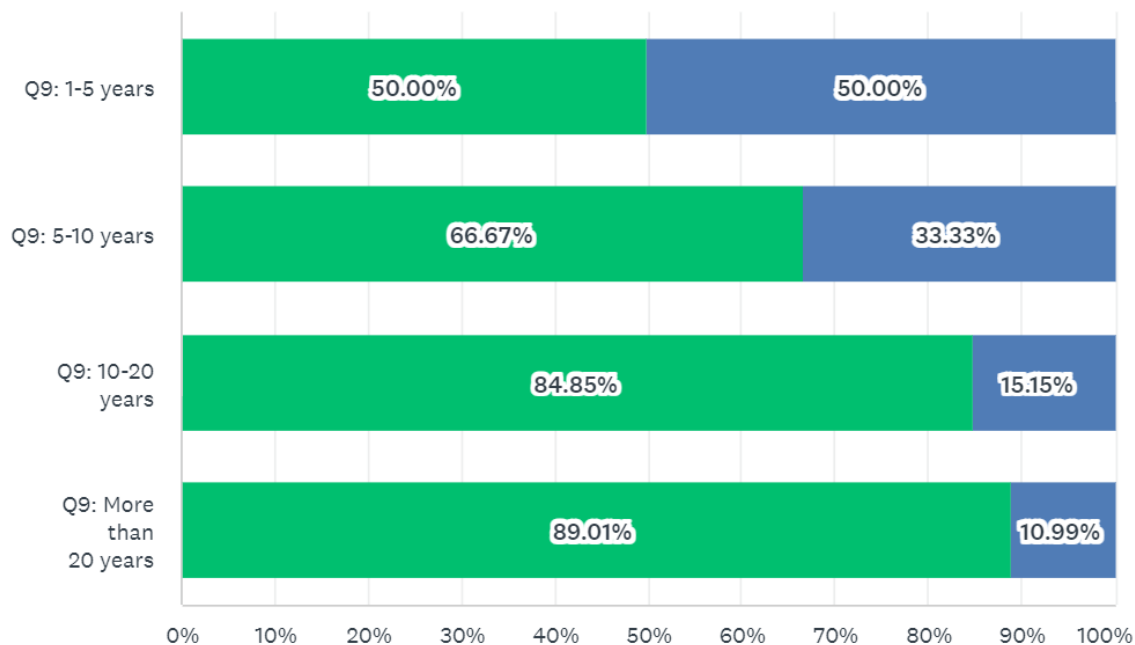
When facing a disaster or other emergency, setting objectives is crucial. Once those objectives are identified, develop a plan to achieve them. Think about what might happen before it does. Going through a disaster without a plan will create a cascading event, and you will never get ahead of the incident.

Survey question nine asked respondents to select years of public service experience, and the highest number of respondents, over eighty-nine percent, selected the option of a more than twenty-year career. In contrast, the following highest number of respondents, over eighty-four percent, selected the ten-to-twenty-year career option. When the data analysis contemplates the emergency manager's career length and whether participants have observed or experienced single points of failure in emergency management, logically, the data reveals that the longer an emergency manager's career is, the more likely they are to experience single points of failure. The data also reveals that of those reporting a five-to-ten-year career, half of the respondents have experienced a single point of failure. This finding may reveal that because half of newer

emergency managers have already experienced single points of failure, their exposure may exceed current 20-year colleagues.

Figure 5

Comparison between years of service and single point of failure experiences



Note. This figure compares the emergency manager's years of experience with single-point failure experiences.

Focus Group question four discussed how position or area of responsibility during a single point of failure influences the outcome. The participant commented that position and area of responsibility influence the outcome of a single point of failure, primarily when emergency managers act with self-preservation and the leaders fear reprisal. According to the participants, personnel sometimes demonstrate fear of decision-making and restrict information-sharing. They added that emergency managers fear the loss of their role because of their actions, even if valid. A secondary effect of emergency management's competitive nature is that some leaders feel

unsafe in a role, limiting achievements and incident success. Self-preservation limits information sharing, and fear of reprisal exacerbates single points of failure.

Central Research Question

The central research question asked: How does Contingency Theory explain the key factors that promote emergency management's single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure? The design of interview questions two, interview question five, survey question six, survey question seven, and focus group question six collected raw data to answer the central research question.

Document analysis as a data collection strategy answered the central research question for this research: How does Contingency Theory explain the key factors that promote emergency management's single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure?

Interview question two asked, "Can you discuss individual or recurring challenges you have experienced while managing incidents or events?"

Interview question five asked, "What has your experience consisted of where a single point or points of failure clearly caused a challenge during an incident or event?"

Survey question six asked, "Are emergency management leaders in your agency or organization doing enough to address challenges posed by single points of failure appropriately?" The participants were provided with an option to select from (1) Yes, (2) No, (3) Other responses, and asked to provide additional comments.

Survey question seven asked, “If single points of failure challenges have impacted your incidents or events, how did you adjust operations to ensure safe and effective outcomes for an incident or event?”

Focus group question six asked, “What do emergency management leaders need to do to address single points of failure more appropriately, and why?”

Major Themes for the Central Research Question.

Table 7

Major Themes for the Central Research Question that were Identified from the Document Analysis, Interview Question Two, Interview Question Five, Survey Question Six, Survey Question Seven, and Focus Group Question Six

Research Instrument	Major Theme
Document Analysis	Leadership Insufficiency
Interview Question Two	Leadership Insufficiency
Interview Question Five	Planning Shortfall
Survey Question Six	Leadership Insufficiency
Survey Question Seven	Leadership Insufficiency
Focus Group Question Six	Leadership Insufficiency

The first major themes that emerged using data analysis reflecting participants’ experiences and document analysis include leadership insufficiency and planning shortfalls. Contingency theory acknowledges that the best way to lead, organize, or make decisions varies depending on the situation. Contingency Theory explains how situational factors affect organizational strategies, and there is no single best way to manage because the appropriate

structure and style depend on situational context (Fiedler, 2008; Sunder M & Prashar, 2020).

Interview question two discussed challenges experienced while managing incidents or events, and a participant discussed how leadership insufficiencies where during a single point of failure involving communication restrictions, from the top level of an incident command organizational structure, specifically the command level staff, there is an issue sharing information or attempting to silo or gatekeep information towards the general staff and unit leader level.

Interview question five discussed a planning shortfall incident or event single point of failure experience, and according to a participant:

One phrase that sticks out, which I have heard more times than I can count, is, “Two is one, and one is none.” It is a playful way to say that things will fail, break, or won’t be compatible, so always have more than you think you’ll need. Further, no one person should have all the keys to the castle because no one can be available every hour of every day. In emergency management, you have to balance security with availability. You cannot leave your supplies open for all the world to pilfer, but you also cannot have everything under lock and key. There is only one key, and the person who has that key will be unavailable for an extended time. All that to say, exercise security, but make sure there is a trustworthy backup, and that backup has a backup. Nothing is worse than being in the response phase of an incident and unable to access a computer because the person who has the literal key or the password to the system cannot be contacted and is not returning calls.

Another participant explained a planning shortfall experience regarding continuity of operations planning because it was not taken seriously by public officials, or they failed to understand why they needed a continuity plan to be accurate to carry out the government mission essential

functions fully. They continued that trying to educate politically appointed department and division authorities, at least from a government perspective, is met with the attitude that continuity planning is another official's concern.

Survey question six asked if respondents believed that emergency management leaders are doing enough to address single points of failure appropriately, and respondents believe some attempts to address single points of failure. According to a respondent:

I have taken this issue on as the Deputy Chief, and I am leading a review of our Mutual Aid Association Standard Operating Guideline to ensure the emergency management agency has a role in future incidents, both within our organization and throughout the division. I have networked with the local emergency management director to find ways to better interface on the scene.

Other respondents commented that they are unaware if leaders are doing enough; however, they keep seeing the same unorganized approach, resulting in incident and event problems, a sign of leadership insufficiency. Some respondents believe they are, for the most part, trying; however, they have limited time and resources. Others said that for many emergency management organizations, there is a lack of true emergency activations, which leads to a lack of experience. One respondent explained that emergency management leadership insufficiency in their community is not doing enough to appropriately address challenges posed by single points of failure. Specifically, the after-action process is often a result of political repayment, failing to accurately capture the details and nuances of incident challenges due to concerns about naming personnel and being too specific. The respondent continued that restriction results in generic and redundant after-action reports, preventing emergency management professionals from gaining valuable insights and learning from past experiences. According to the respondent:

Without detailed and actionable feedback, it is challenging to develop effective strategies to address single points of failure. The lack of specificity in after-action reviews means that leaders are not fully aware of the precise areas that need improvement. To effectively tackle single points of failure, our leaders must prioritize transparent and detailed after-action reporting, encourage a culture of accountability, and implement targeted training and improvements based on specific feedback. This approach will help ensure that the organization learns from past mistakes and becomes more resilient and effective in managing future emergencies.

Survey question seven asked how operations were adjusted during a single point of failure, and a participant commented that emergency management must have the capability, knowledge, and experience to manage a single point of failure situation in a timely and effective manner, necessitating that political influences and process are not involved. Other participants added that they adjusted operations as best as possible, found workarounds, or conducted an ad-hoc scramble; some respondents explained that once identified, they were investigated immediately and able to manage the challenge as soon as possible and update the incident action plan to change operations. According to a respondent:

You must embrace risk and failure from the start. With that, you must be adaptable and realize that having a failure, because nothing ever works the first time out in most cases, is part of the path to success; it is called a disaster or crisis for a reason.

Respondents explained that when single points of failure have impacted incidents, focusing on improving soft skills and political shrewdness is essential. Communication is vital to building strong relationships that foster better coordination and trust, especially with stakeholders. If emergency managers better understand political dynamics and are diplomatically strategic, they

can navigate various interests to align with mission objectives. Leadership insufficiency reduces the ability to adapt strategies quickly and promotes a culture of continuous learning. When emergency managers become skilled at reassessing plans, reallocating resources, and implementing a more effective response, they mitigate risks and improve overall emergency management operations.

Focus group question six discussed what leaders must do to address single points of failure more appropriately. The participants believe leaders should seek funding opportunities that increase focus on addressing single points of failure by creating more leadership and interpersonal communications training. Participants also explained that to mitigate this issue, leaders should assign a dedicated team member to investigate agency and incident-specific single points of failure. An ongoing example was provided that when deploying special emergency management teams, public service leaders do not always send a qualified recovery specialist to create and collect appropriate documentation; leaders often blame teams for documentation gaps, eliminating future deployment opportunities, and examples of leadership insufficiency.

Summary

This chapter presents results from the data analysis, examining and explaining emergency management single points of failure. This data has facilitated the development of a grounded theory framework by explaining how emergency managers navigate single points of failure. Consequently, the data revealed that measures implemented to address these challenges are often broad and insufficient, leading to repeated trouble in future incidents. The data explained that emergency managers reported little confidence in the after-action and corrective improvement action processes and that accomplishing mission objectives depends more upon having the right people with the right perspectives in critical positions. According to those interviewed,

emergency managers strive to make incidents ideally operational through policy or procedure; however, they must accept that emergency management is often chaotic.

The data highlights the need to develop critical thinking skills that cultivate a bias for action, and emergency management leaders should learn to improvise, adapt, and overcome unknowable challenges and navigate to restore conditions to an acceptable state. Direct intervention has been required to correct improper courses of action, highlighting the need for better communication and understanding of emergency protocols among all parties involved. Repeated incidents underscore the importance of clear, decisive leadership and the ability to promptly recognize and act upon the severity of emergent situations. The data revealed a lack of clear communication and cohesiveness between incident personnel, especially when disseminating and communicating information properly to all involved agencies. Respondents and participants explained significant communication gaps, sometimes among the electronic platforms and sometimes among people.

The data concludes that in the emergency management industry when catastrophes happen, emergency managers mitigate the consequences of suffering using programs that employ people who work to the best of their abilities; delivery varies in the level of effectiveness. Emergency managers are also subject to leaders of all capacities; some extraordinary and some unteachable, and leaders who accept information, instruct, or mentor their program are more likely to survive all levels of a single point of failure. The data supports that leaders who become life learners and seek to master professional maturity in addition to applying experiences to truly become experts, increasing flexibility in the pursuit of more learning and newer, different perspectives. Emergency managers, wise enough to understand what can help them through

challenges using perspective, can be better prepared to mitigate the minor to unimaginable single points of failure to better deal with consequences and long-term impacts.

CHAPTER FIVE: CONCLUSION

Overview

This grounded theory research study examined and explained emergency management single points of failure to develop a framework describing how emergency management professionals manage incidents and events at each government level. A single point of failure is any specific moment during an emergency incident or planned event that was overlooked or performed inaccurately, causing an emergency management challenge. This research study explored emergency management's single points of failure to support intervention processes that may minimize or eliminate failure impacts. This chapter presents a summary of findings, additional discussion of the findings, the implications considering the relevant literature and theory, methodological and practical implications, study delimitations and limitations, and recommendations for future research. The data analysis results answered the research questions using document analysis, virtual interviews, an online survey, and an in-person focus group session.

Summary of Findings

Throughout the research study and data analysis, the researcher discovered some general ideas and norms about emergency management that were highly condensed among the responses. Emergency managers are highly educated, trained, and experienced people who manage countless incidents and events throughout every community. Each participant and respondent presented a professional disposition, adhering to the benchmarks and exceeding the minimum emergency management standards; they understand the acumen of the work. The response indicated that emergency managers continuously scrutinize themselves to improve the processes and profession and consistently raise the bar of success. The responses were non-

confrontational and maintained a transparent self-view, preserving honesty and humility and desiring the truth to improve the profession.

Research sub-question one asked, “How do emergency managers apply Contingency Theory in the after-action process to address single points of failure challenges experienced during incidents and events?” The answer is that after-action reports are well-intended; however, according to the data, they are superficial and generally fall far short of the universal approach to the improvement planning process. Additionally, leadership insufficiencies prevent an honest assessment of incident and event operations, further causing the after-action process to create worthless documents without material and beneficial findings that fully address essential matters such as, for example, correcting an unorganized approach to incidents and event management.

Research sub-question two asked, “How do emergency managers apply real-world insights to demonstrate learning organization aptitudes?” The answer to research sub-question two is that emergency managers are dynamic, educated, highly committed public servants who work within a range of municipality environments where planning shortfalls, political influences, leadership insufficiency, and after-action process flaws persist. These outstanding professionals succeed, although continually tolerating communication restrictions, political payback, personnel challenges, leadership insufficiency, the siloing of information, and the dominant influence of others.

Research sub-question three asked, “How do Contingency Theory and Path-Goal Theory explain failures in operational environment-emergency plans?” The answer to research sub-question three is that if the Contingency Theory suggests there is no single best way to lead because it depends on the situation, the Path-Goal Theory indicates that a leader’s behaviors

affect team productivity; the data is valid in identifying leadership insufficiency as causation for emergency management single points of failure.

Research sub-question four asked, “How do emergency managers promote or support operational flexibility and personnel problem-solving skills for disaster management?” The answer to research sub-question four is that extraordinary emergency managers work at every level of emergency management programs; however, they are frequently subject to leadership insufficiency, personnel challenges, after-action process flaws, poor decision-making, and ineffective training, they are actively promoting or supporting operational flexibility and personnel problem-solving skills because of the proficient and successful manner of managing incidents and events.

The Central Research question asked: How does Contingency Theory explain the key factors that promote emergency management’s single points of failure, and what critical challenges do emergency managers face in understanding and overcoming single points of failure? The answer to the central research question is that emergency management leadership decisions are highly situational, and failures exacerbated by leaders unable to meet the challenge of making difficult decisions are measured by other professionals as leadership insufficiency. Additionally, emergency management planning shortfalls are evidenced in the minor attempts to address single points of failure. Communication restrictions and managing response teams cause incident and event errors, further compounded by an unorganized incident management approach, enduring the results of the political repayment system, or failure to secure necessary funding opportunities.

Discussion

This study aimed to understand how Contingency Theory explains the key factors that promote emergency management's single points of failure, as well as the critical challenges emergency managers face in understanding and overcoming single points of failure. The following section presents the study findings concerning the empirical and theoretical literature reviewed in Chapter Two. The Theoretical literature was examined to understand the theoretical concepts and frameworks that drove the research question and guided which methods were most appropriate for data collection and analysis. Theoretical literature informed the findings of the emergency management single points of failure discussion and further discovered researcher subjectivity. The empirical literature of comparable studies aided this research in gathering and analyzing the data to test theories.

Theoretical Literature

Theoretical literature provided concepts and frameworks, including Malcolm Knowles's *Adult Learning Theory*, the *Decomposed Theory of Planned Behaviors*, the *Joint Cognitive Systems Theory*, the *Social Cognitive Theory*, the *Public Policy Group Theory*, the *Deterrence Theory* and *Early Deterrence Theory*, and the *Contingency Theory* (Buck et al., 2006; Changwon et al., 2018; Constantinescu & Moore, 2019; Durrance, 2022; Fiedler, 2008; Hird, 2018; McGlown, 2020; Puah et al., 2021; Tarhini et al., 2021; Wehde & Choi, 2021). These theoretical frameworks underpin this research study that single points of failure increase the risk to the community. While mitigation efforts are available, single points of failure are not entirely avoidable. The Contingency Theory provided an understanding for answering the central research question regarding emergency management leadership decisions being highly situational and that failures exacerbated by leaders are viewed as leadership insufficiency. The

Adult Learning Theory principles provide a basis for how adults learn essential concepts such as those included in the incident command system, a repeated topic among the participants and respondents. Emergency managers and leaders who do not fully understand incident command principles are a source of single points of failure.

For emergency management training, the Adult Learning Theory principles provide a basis for how adults learn, an essential concept for teaching the incident command system. Professional training in emergency managers offers a broad range of time requirements, and the Decomposed Theory of Planned Behaviors explains how adults believe they will participate in short micro-learning sessions and if they will remain favorable toward the training (O'Donovan, 2017; Puah et al., 2021; Quinlan, 2020). The data analysis explained that a single point of failure in training exists because some participants begin courses, regardless of length or delivery forum, with a positive attitude but may dismiss the training as necessary, failing to secure any critical concepts available in training.

The Joint Cognitive Systems Theory explains that people coordinate with each other, using technology, to perform work as a system jointly; emergency management personnel function among complex incident and event environments, creating co-agency to achieve an organized incident response (Changwon et al., 2018; Wehde & Choi, 2021). The data analysis explains that although effective incident management systems and programs are in place, and people can create co-agency to achieve goals and objectives, people choose to create communication restrictions or participate in personnel challenges that contribute to single points of failure. The Social Cognitive Theory explains how people learn and behave through interactions within an environment; the emergency management approach means to analyze and understand problems to provide appropriate solutions (Buck et al., 2006; Tarhini et al., 2021).

The data reveals that incident and event management errors are created by, among other things, leadership insufficiency, which reduces communications and information sharing to create single points of failure.

The Public Policy Group Theory views the results of interaction and compromise between interest groups as a group struggle where equilibrium is reached using the systems of informational input, feedback, and output to process decisions (Durrance, 2022; Hird, 2018; McGlown, 2020). The data analysis explains that complex circumstances are improved appropriately by decision-makers who think through the problems they face. If siloing of information and decisions occurs, demonstrating communications restrictions and planning shortfalls, the policy analysis process fails to solve public safety problems. Although based on criminology, the Deterrence Theory and Early Deterrence Theory aim to prevent crime by increasing the cost of committing it. The theory's goals for this research are appropriate because they seek to prevent individuals and society from committing errors now and in the future by applying the concept of a social contract. Additionally, the theories help understand critical technology system independence, as technology developed during the Cold War for civil defense personnel, the emergency manager of that time; training and education within the emergency management discipline capture best practices to prevent communication restrictions and personnel challenges, as well as technology and equipment mistakes (Hackerott et al., 2021).

Empirical Literature

Empirical literature includes research studies that gathered and analyzed data to test theories that are significant factors in understanding emergency management's single points of failure. This study confirms, corroborates, and aligns with prior studies by primarily explaining that emergency management failures are often a result of common themes, such as leadership

insufficiency, communication restrictions, personnel challenges, managing incidents and events errors, technology and equipment mistakes, after-action process flaws, and planning shortfalls. Participants provided lived experiences from local, state, federal, and private sector emergency management incidents and events. Emergency management professionals work within community preparedness, prevention, mitigation, response, and recovery frameworks, experiencing incident and event failures that cascade, triggering increased stress upon the emergency manager (Cutter, 2020).

This study extends previous research, findings similar to those of earlier studies on emergency management, and presents additional conclusions and interpretations for the subject. The empirical literature includes studies about emergency management failures resulting in grave consequences to the community with long-term societal implications due to leadership insufficiency, personnel challenges, or planning shortfalls while programs address crisis management as a primary aspect of emergency management (McConnell, 2011; Steen et al., 2023). Developing emergency manager training or exercise perspectives does not currently address isolating single moments when issues can cause failures to address them in advance to prevent them and decrease negative community impacts before, during, or after an incident or event (Mergel et al., 2020). Explanation and foundation from the literature provided substantial information regarding emergency managers' plans to address threats to communities, not single points or failure patterns in policy, management reaction to extreme events, or the learning environment (Haque et al., 2018). This study did not identify discrepancies with previous research using the same methodology samples.

As identified in the literature, emergency management programs ensure critical systems can adequately address hazards and create increased focus on the development of new,

immersing plans for managing risks; the empirical literature recognizes the need to expand or modify emergency response to better reflect the present risk while addressing ongoing communication restrictions, as well as managing incidents and events errors, technology and equipment mistakes, and after-action process flaws (Giang, 2020). Key results from this study directly align with previous research, including the specific relationships of leadership, politics, and personnel, as observed in this and other studies. A deliberate cognitive process for understanding others' behavior and corresponding information flow helps emergency managers make ethical decisions that resist personality-based policy applications such as political communication choices. As incident management integration continues to demonstrate generalities across various community stakeholder groups, reducing fluctuation in the research themes controls the precision in executing emergency management programs (Tarhini et al., 2021). This study's novel contribution to the field is that emergency managers have provided the basis for adding single points of failure to training, planning, exercise, and response discussions to help reduce the compounding impacts of incidents and events. This study extends the research by explaining the themes revealed from the data analysis; it sheds new light on how emergency managers perceive leadership actions for the theories informing the general topic of emergency management planning, management, and response.

Implications

This section presents the research study's theoretical, empirical, and practical implications and provides specific recommendations for policymakers, appointed officials, administrators, managers, supervisors, and planners stakeholder groups. Successful emergency management programs for emergency managers require, among other things, effective preparedness, planning, and response from an organizational perspective. Emergency

management leaders must create an environment that seeks knowledgeable and experienced personnel, regardless of personal or political influences, with training and exercise that present not only the core concepts of emergency management but the insights of single points of failure across those concepts. This study examined emergency managers' lived experiences, and the results determine the efficacy of emergency management programs that fail to prepare emergency managers for their role when facing single points of failure. These results provide emergency managers with information that can be used to change their worldviews and behaviors, allowing emergency management to single points of failure.

Theoretical Implications

Although a single all-encompassing theory is not widely attributed to emergency management literature, which is due to the nature of disaster variables and the differentiations in the order and sequence of each incident and event management system, Chaos Theory and Complex Adaptive System Theory prevail and integrate causative variables for contemporary emergency management segments (McEntire, 2005). The Chaos Theory and edge of chaos concept explain how unpredictable system behaviors are simultaneously deterministic and create failure conflicts (Postavaru et al., 2021). The theoretical implication of these research study findings contributes to Chaos Theory by explaining how the patterns of each major theme are part of emergency management systems sensitive to initially presented conditions and that small behavioral changes in each theme significantly impact the outcomes for incidents and events. The results of this study impact the broader theoretical understanding of the emergency management topic, supporting and extending the established theoretical frameworks for this traditional public administrative responsibility to understand how multiplex relationships and

emergency management organizations can logically affect system purposes functioning at the edge of chaos (Coetzee & Van Niekerk, 2018).

The Complex Adaptive System Theory explains how, although systems are made up of individual agents that may act independently, they are still interconnected through multiplex relationships (McEntire, 2005). The emergency management profession is a stakeholder-based network of many organizations often represented by single individuals who possess the authority to influence the function of cooperating organizational systems (Coetzee & Van Niekerk, 2018; Kapucu & Hu, 2014; Postavaru et al., 2021). The results of this research support the explanations provided by the Complex Adaptive System Theory and add that leadership insufficiencies, for example, are highly impactful to the systems reliant upon multiple perspectives, personnel influences, communications interconnectedness, and professional boundaries. Complex Adaptive System Theory and Chaos Theory concepts explain the behaviors of systems, and the implications of this research demonstrate the correlation between how systems and the major themes discovered for emergency management single points of failure.

Sociologists Glaser and Strauss were pioneers of the qualitative research methodology grounded theory, which uses inductive coding to generate theories from data; this method of inquiry involves generating codes, categories, and properties from qualitative data to interpret personal meaning in the context of social interaction (Denzin, 2008). Because doing grounded theory meant starting with a decidedly inductive approach, a comparative logic was adopted, emphasizing data interaction throughout the research process. This research applied a ground-up approach to coding that allowed the theory to emerge from the data, rather than starting with preconceived notions of what the codes should be, allowing the theme development to create a new grounded theory, Todd Smith's Theory of Emergency Management Single Points of Failure.

This new theory emerged using a systematic research method directly from data collection and analysis and is grounded in empirical observations. This new concept helps researchers who seek explanations for the emergency management single point of failure phenomenon while continually comparing and refining their findings as new data is gathered.

Empirical Implications

The observed implications of the data collection process revealed that emergency managers are committed, reliable, and professional and are willing to investigate all aspects of incidents and events transparently and responsibly. These professionals provided individual experiences and views of the subject matter regardless of the view from a given political lens. Empirical implications in the research suggest that motives not directly observed among the participants or respondents are to improve emergency management to resolve leadership insufficiencies, lift communication restrictions, mitigate personnel challenges, decrease errors while managing incidents and events, correct technology and equipment mistakes, eliminate after-action process flaws, and underpin planning shortfalls. As the observed data suggests, empirical implications can improve emergency management using research explanations and create more empirical inquiry by strengthening theoretical foundations.

Emergency management is a practical, operationally based set of systems that range in application from preparing for to recovering from an incident or event. The empirical implications for this research study relate to emergency management literature and explain how, among other things, leaders should seek to maintain a transparent environment and ensure honesty about how well-educated they and their teams are in emergency management matters. This research examined how plans, systems, and processes can be better assessed and how difficulties actively experienced can be resolved, guiding significant changes to meet better the

requirements of those in each emergency management role (Sylves, 2019). Leaders must be assessed for the ability to ensure teams adjust and adapt to the demands of incidents and events to prevent deficiencies caused by each of the research themes discovered.

This study's findings impact emergency management and its real-world application, demonstrating that many improvement opportunities exist based on the major themes, which cut across every segment of this vital public administrative function. Empirical implications for this evidence-based research study can be applied to improve strategies for incident and event preparedness, response, and recovery, and based on data analysis, the research explicitly informs future decision-making and policy development within emergency management practices. This research can be expanded by creating the framework and a system of dynamic processes for assessing the presence of a single point of failure. A new framework can provide future insights using those new parameters that reveal critical factors that could improve the accuracy and timeliness of emergency management service delivery.

Practical Implications

As emergency managers, the participants and respondents explained that they have either repeatedly inquired about correcting reoccurring failures or never considered that single points of failure are undermining their operations because they have not investigated individual problems, only the overarching challenges. The results can be used to inform or improve practices, policies, or decision-making in this relevant field for managing incidents and events instead of just theoretical understanding; it focuses on the tangible outcomes that can be achieved by implementing the research findings in practical public administrative settings. Practical implications of this research study apply to the real-world potential impacts of the research findings, including an important segment of emergency management such as the research theme

of leadership insufficiency, which is based on many of the respondents and participants' frustrations that political influence, negative emotions, operational overactions, subjective decision-making, and management paralysis due to fear of reprisal have caused a real-world single point of failure during incidents and events. Identifying the leadership traits and behaviors that cause the failures can serve to develop leadership training or policy development that can determine leader sustainment or removal based on the best interests of the community served.

The practical implications of the other themes, including communication restrictions, personnel challenges, managing incidents and events errors, technology and equipment mistakes, after-action process flaws, and planning shortfalls, present an equal opportunity to develop honest assessments and guidance. For communication restrictions, the practical implication is to ensure, through authority, that information is not accidentally or intentionally siloed, controlled, or used for personal advantage, which also directly correlates to decisions made within a political context. For personnel challenges, the practical implication includes actionable outcomes by developing training and education that create the necessary knowledge, skills, and abilities based on the specific threats and hazards identified in a local risk assessment to complete emergency management tasks. For managing incidents and events errors, the practical implication includes identifying areas subject to human error or personality-based decisions and ensuring emergency management personnel are trained in contemporary planning methodologies and matters of resilience.

The practical implications for technology and equipment mistakes include identifying single points of failure in personnel access assignments to critical systems, including substitution and restrictions for times when one assigned team member is unavailable, and conducting cascading system crisis analysis before system activations. The practical implication for after-

action process flaws includes assessing whether exercises, incidents, and events actively reflect organizational plans and policies, encouraging honest feedback from all personnel, and committing to improvement planning to prevent repeat failures. The practical implication of planning shortfalls includes training and exercising underutilized and untested plans, applying industry accreditation standards, and conducting reoccurring stakeholder planning familiarity discussions. Essentially, this study's results can be used in practice to improve policies, procedures, or interventions within emergency management as an industry and provide a focus on the actionable outcomes that have been tangibly derived from the research findings.

Delimitations and Limitations

The purposeful decisions the researcher made to define the boundaries, or delimitations, of the study included that all participants and respondents were adults, 18 or older, employed or retired from local, state, federal, or private sector professional emergency management positions; positions included directors, managers, supervisors, planners, and incident command staff. Participants and respondents were required to be emergency management employees of city, county, state, and federal agencies, higher learning centers, healthcare, transportation entities, private sector businesses, and non-profit organizations that are single jurisdictions, single agencies, multiple agencies, or multiple jurisdictions maintaining established emergency manager positions with stakeholder ascendancy. The rationale behind the decision to define the scope and focus of the study and set these delimitations was to ensure the data capture of real-world, accurate, and professional experiences in emergency management.

The defined group of participants and respondents is the most important source of lessons learned or ignored for emergency management program preparedness, planning, response, and recovery. This boundary demonstrates accessing the authors responsible for local, state, and

federal emergency management plans, policies, procedures, and after-action reviews throughout this public administrative discipline. This research has linked existing knowledge and literature to provide substantial data that explain participant and respondent experiences. Emergency management personnel gain experience in the day-to-day process of ensuring critical systems address hazards to reduce or eliminate impacts, and significant focus is concentrated on the development of plans, processes, and procedures for managing risks (Giang, 2020). The research aimed to understand participant and respondent experiences regarding single points of failure to provide a new theoretical foundation for how emergency managers can address this important real-world topic. This research improves the understanding of emergency management single points of failure to develop better interventions and processes to minimize or eliminate identified failure impacts. This research provides key takeaways, such as the need for creating appropriate public administrative strategies that help emergency managers understand and prevent failures and determine commonalities among single points of failure.

Limitations related to the validity and reliability of this study, specific to the research methodology that were out of the researchers' control but influenced the research findings, include using an online survey, which limits the richness of data collection compared to conducting additional interviews. This limitation presents a foundation for future research by increasing the number of interviews. Although the research process ensures participant and participant protection for anonymity, limitations within the research design that were outside the researcher's control included knowing the willingness and comfort level of all twenty-eight participants and one hundred and forty-one respondents to share incident and event experiences deemed agency failures. Limitations include the professional implications of participating in a

research study that could be construed as holding the emergency management program actions against others' failures.

Limitations include the fact that no singular national emergency management personnel roster exists, requiring distribution to smaller population lists using memberships and affiliations to emergency management groups, associations, and committees. Without a singular, accessible roster of personnel, the broad range of experienced, educated emergency managers is limited to those personnel accessible to the researcher's direct and indirect contacts. Because some participants and respondents work for the same local, state, or federal agencies and organizations, the experiences are simultaneously limited, similar, or considerably different experiences of the same exact circumstances. However, each participant and respondent provided their unique personal appraisal of the same incident or events. The research did not attempt to determine the accuracy or perceptions of personal experiences reported by the respondents or participants.

This research does not provide the process or content for developing a single point of failure plan, policy, or process that addresses community threats. However, this research has identified key factors that promote emergency management's single points of failure and the critical challenges emergency managers face in understanding and overcoming single points of failure that provide the basis for plans, policies, and processes. Limiting this research to identifying those key factors, or major themes, provides a basis for developing intervention processes that minimize or eliminate failure impacts. Limiting the research to the challenges and causes of a single point of failure illustrates specific topic areas for emergency management programs to create appropriate public administrative strategies and seek policy change that

improves reactive management for extreme events and encourages policy learning by public institutions (Haque et al., 2018).

Recommendations for Future Research

The findings, limitations, and delimitations placed on the study support recommendations and directions for future research. Understanding the demands upon emergency managers is an ongoing topic within the greater emergency management community and requires additional scrutiny of the education and training programs underpinning the profession. Research literature focuses on incident and event outcomes, such as the EF-Five tornado on May 22, 2011, in Joplin, Missouri, which exposed public alerts and warning misconceptions where the single point of failure was confusing and inconsistent emergency communication (Kuligowski, 2020). The literature focus has not been on how or why known insufficiencies, restrictions, challenges, errors, mistakes, and flaws are specific to leadership, communication, personnel, incident and event management, technology and equipment, after-action processes, and planning.

Recommendations include focusing future research literature on the specific, detailed single points of failure causing adverse outcomes that are actively occurring during incidents and events. Rather than persistently concentrating on already known or obvious statistical details, it is essential to correlate those occurrences directly to individual emergency management program subdivisions. Each topic discussed by the participants and respondents and the themes identified by the research have an active influence on the daily professional work of emergency managers. The first recommendation is that each theme should be individually studied, applying a focus group design using a diverse assembly of participants working or retired from emergency management programs but not working or retired from the same programs and unfamiliar with one another. Ensuring that focus group participants do not know one another and have not

previously worked in the same programs can reduce the challenges of groupthink. This psychological phenomenon occurs when a group of participants prioritizes harmony and agreement over thinking critically and derives ineffective results that discourage participants from providing true and authentic feedback or can even silence participants entirely (Luke & Goodrich, 2019). By conducting future research for each identified theme and avoiding groupthink, findings may further improve the emergency management professional workplace environment and ensure better service delivery to communities impacted by incidents and events.

The second recommendation for future study is to create a framework and standard for evaluating plans, policies, and procedures to determine if single points of failure exist and where they can cause challenges during incidents and events. Through the data, the participants of this study identified improvement areas, and additional studies are needed to determine the most effective curriculum and order of delivery. The third recommendation is to explore how pervasive political influence is when selecting senior leaders for emergency management and identify whether any negative implications are occurring from those political selections in the administration of emergency management programs. The research should specifically investigate whether it matters if individuals should be appointed to lead emergency management programs based solely on political relationships without minimum industry standards in emergency management qualifications, certifications, and experience. Generally, leader selection for most industries is based on meeting and exceeding the minimum training, education, and experience standards, and the research can determine if this is also occurring within the emergency management profession.

The after-action processes use analysis and reporting to identify sustainment actions, resolve emergency management challenges, and construct improvement planning audits (Bryant,

2013). The fourth recommendation from the study is to explore the after-action process and help reduce or eliminate pointless and meaningless after-action reports that intentionally remove honest assessments and personnel comments or redact the frankest real-world feedback altogether. Considering the study's delimitations, the fifth recommendation is to increase the population of participants to include international emergency managers and ensure coding data analysis for additional research involving multiple languages using in vivo coding. The sixth recommendation is derived from the limitations placed on the study; for future research, the number of respondents and participants should be increased by creating a national list of emergency management personnel willing to participate in research studies. Each recommendation for future research provides an opportunity to focus on the single point of failure areas already identified in the research and those that could further expand upon the study's limitations. Exploring new applications of the findings can also address new questions about emergency management and examine different contexts, additional population groups, or methodologies incorporating emerging technologies to understand emergency management single points of failure better.

Summary

This grounded theory study examined emergency management's single points of failure, detailed this critical topic, and provided an understanding of the experiences of public service professionals managing incidents and events at various government levels. Each participant and respondent shared incredible perspectives and many insightful professional experiences from their service with emergency management programs, obtained during innumerable complex community incidents and events. The Central Research question asked: How does Contingency Theory explain the key factors that promote emergency management's single points of failure,

and what critical challenges do emergency managers face in understanding and overcoming single points of failure? Following the in-depth thematic analysis of all collected data, the major themes emerged: leadership insufficiency, communication restrictions, personnel challenges, managing incidents and events errors, technology and equipment mistakes, after-action process flaws, and planning shortfalls. Those themes from the data analysis explained that addressing single points of failure in the highly situational emergency management profession requires qualified, capable leaders with decision-making capability and the professional acumen that consider all aspects of a given situation while remaining apolitical and ensuring the community is the priority. The theme additionally answers the four other research sub-questions in chapter four's results section.

To uphold a successful emergency management program, emergency managers require practical leadership that ensures community preparedness, planning, response, and recovery. It is incumbent upon emergency management leaders to create professional apolitical environments that attract knowledgeable, experienced personnel who can provide excellent counsel during incidents and events. Anecdotally, leaders must build diverse emergency manager teams with access to appropriate training and exercise for developing core emergency management concepts, support their specialized needs, and shield those emergency management professionals from negative personalities and political influences to provide the safest and most effective public service. Additionally, open communication is one of the cornerstones of highly effective emergency management; personnel must not use hidden information to manipulate others to remain the informed minority to win some deceptively perceived battle of information against an uninformed majority. In this qualitative research methodology, the meanings of emergency management interactions are further unraveled, and the new grounded theory that emerged from

this research, Todd Smith's Theory of Emergency Management Single Points of Failure, provides a basis for practitioners to add to empirical research to expand understanding. Emergency managers should continually evaluate every aspect of their emergency management program and remove any negative opportunities correlated to emergency management's single points of failure, which are causing complex challenges, as revealed in this research study.

REFERENCES

- Adler, R. H. (2022). Trustworthiness in qualitative research. *Journal of Human Lactation*, 38(4), 598–602. <https://doi.org/10.1177/08903344221116620>
- Ambrozik, C. (2019). Community stakeholder responses to countering violent extremism locally. *Studies in Conflict and Terrorism*, 42(12), 1044–1068. <https://doi.org/10.1080/1057610x.2018.1434858>
- Angrist, J. D., & Pischke, J.-S. (2010). The credibility revolution in empirical economics: How better research design is taking the con out of econometrics. *Journal of Economic Perspectives*, 24(2), 3–30. <https://doi.org/10.1257/jep.24.2.3>
- Barnett, D. J., Strauss-Riggs, K., Klimczak, V. L., Rosenblum, A. J., & Kirsch, T. D. (2020). An analysis of after-action reports from Texas hurricanes in 2005 and 2017. *Journal of Public Health Management and Practice*, 27(2), E71–E78. <https://doi.org/10.1097/phh.0000000000001120>
- Bhaduri, R. M. (2019). Leveraging culture and leadership in crisis management. *European Journal of Training and Development*, 43(5/6), 554–569. <https://doi.org/10.1108/ejtd-10-2018-0109>
- Blout, E., & Burkart, P. (2021). White supremacist terrorism in Charlottesville: Reconstructing ‘Unite the right.’ *Studies in Conflict and Terrorism*, 1–22. <https://doi.org/10.1080/1057610x.2020.1862850>
- Bradley, D. (2018). *Applying the THIRA to special events: A framework for capabilities-based planning adoption in local governments*. Homeland Security Affairs. <https://go.openathens.net/redirector/liberty.edu?url=https://www.proquest.com/scholarly-journals/applying-thira-special-events-framework/docview/2204832925/se-2>

- Brönnimann, A. (2021). How to phrase critical realist interview questions in applied social science research. *Journal of Critical Realism*, 21(1), 1–24.
<https://doi.org/10.1080/14767430.2021.1966719>
- Bryant, R. (2013). Identifying single points of failure in your organization. *Journal of Business Continuity & Emergency Planning*, 7(1), 26–32.
- Buck, D. A., Trainor, J. E., & Aguirre, B. E. (2006). A critical evaluation of the Incident Command System and NIMS. *Journal of Homeland Security and Emergency Management*, 3(3). <https://doi.org/10.2202/1547-7355.1252>
- Calloway, E. E., Nugent, N. B., Stern, K. L., Mueller, A., & Yarocho, A. L. (2022). Lessons learned from the 2019 Nebraska floods: Implications for emergency management, mass care, and food security. *International Journal of Environmental Research and Public Health*, 19(18), 11345. <https://doi.org/10.3390/ijerph191811345>
- Campbell, B. A., Di Lorenzo, F., & Tartari, V. (2021). Employer–employee matching and complementary assets: The role of cross-organization collaborations. *Academy of Management Journal*, 64(3), 799–823. <https://doi.org/10.5465/amj.2019.0207>
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: Complex or simple? Research case examples. *Journal of Research in Nursing*, 25(8), 652–661.
<https://doi.org/10.1177/1744987120927206>
- Caruson, K., & MacManus, S. A. (2006). Mandates and management challenges in the trenches: An intergovernmental perspective on homeland security. *Public Administration Review*, 66(4), 522–536. <https://doi.org/10.1111/j.1540-6210.2006.00613.x>

- Cavalieri d'Oro, E., & Malizia, A. (2023). Emergency management in the event of radiological dispersion in an urban environment. *Sensors*, 23(4), 2029.
<https://doi.org/10.3390/s23042029>
- Chang, Y., Chen, G., Wu, X., Ye, J., Chen, B., & Xu, L. (2018). Failure probability analysis for emergency disconnect of deepwater drilling riser using bayesian network. *Journal of Loss Prevention in the Process Industries*, 51, 42–53. <https://doi.org/10.1016/j.jlp.2017.11.005>
- Changwon, S., Sasangohara, F., Peresa, S., Nevilleb, T. J., Moona, J., & Mannana, M. (2018). Modeling an incident management team as a joint cognitive system. *Journal of Loss Prevention in the Process Industries*, 56, 231–241.
<https://doi.org/10.1016/j.jlp.2018.07.021>
- Chetwynd, E. (2022). Critical analysis of reliability and validity in literature reviews. *Journal of Human Lactation*, 38(3), 392–396. <https://doi.org/10.1177/08903344221100201>
- Cho, B., & Moon, M. (2019). The determinants of citizens' preference of policy instruments for environmental policy: Do social trust, government capacity, and state-society relations matter? *International Review of Public Administration*, 24(3), 205–224.
<https://doi.org/10.1080/12294659.2019.1643101>
- Choi, I. (2020). Does contracting achieve better performance for democratic-constitutional, procedural tasks? Evidence from the EEO discrimination complaint process. *The American Review of Public Administration*, 50(8), 825–837.
<https://doi.org/10.1177/0275074020919906>
- City of Jacksonville. (2021). *Jaxready - comprehensive emergency management plan*.
<https://www.jaxready.com/Preparedness/Plans/Comprehensive-Emergency-Management-Plan>

- Clovis, S. H., Jr. (2011). Reflections on 9/11: Looking for a homeland security game changer. *Homeland Security Affairs*, 7(2).
<https://go.openathens.net/redirector/liberty.edu?url=https://www.proquest.com/scholarly-journals/reflections-on-9-11-looking-homeland-security/docview/1266215518/se-2>
- Coetzee, C., & Van Niekerk, D. (2018). Should all disaster risks be reduced? A perspective from the systems concept of the edge of chaos. *Environmental Hazards*, 17(5), 470–481.
<https://doi.org/10.1080/17477891.2018.1463912>
- Commonwealth of Massachusetts. (2019). *Comprehensive emergency management plan (CEMP)*. <https://www.mass.gov/doc/cemp-base-plan-2019/download>
- Constantinescu, A. E., & Moore, N. B. (2019). Applying adult learning principles, technology, and agile methodology to a course redesign project. *The Journal for Quality and Participation*, 41(4), 26–29. www.proquest.com/scholarly-journals/applying-adult-learning-principles-technology/docview/2208630336/se-2
- Cooper, R. (2016). Decoding coding via The Coding Manual for Qualitative Researchers by Johnny Saldaña. *The Qualitative Report*, 14(4), 245–248. <https://doi.org/10.46743/2160-3715/2009.2856>
- Cunha, M., Clegg, S., Rego, A., Giustiniano, L., Abrantes, A., Miner, A. S., & Simpson, A. (2022). Myopia during emergency improvisation: Lessons from a catastrophic wildfire. *Management Decision*, 60(7), 2019–2041. <https://doi.org/10.1108/md-03-2021-0378>
- Cutter, S. L. (2018). Compound, cascading, or complex disasters: What's in a name? *Environment: Science and Policy for Sustainable Development*, 60(6), 16–25.
<https://doi.org/10.1080/00139157.2018.1517518>

- Cutter, S. L. (2020). Tipping Points in Policy and Practice. In U.S. Emergency Management in the 21st Century: *From Disaster to Catastrophe*, edited by Claire B. Rubin and Susan L. Cutter, 11–36. New York: Routledge.
- Cutter, S. L., Emrich, C. T., Gall, M., & Reeves, R. (2018). Flash flood risk and the paradox of urban development. *Natural Hazards Review*, 19(1).
[https://doi.org/10.1061/\(ASCE\)nh.1527-6996.0000268](https://doi.org/10.1061/(ASCE)nh.1527-6996.0000268)
- Cypress, B. (2018). Qualitative research methods. *Dimensions of Critical Care Nursing*, 37(6), 302–309. <https://doi.org/10.1097/dcc.0000000000000322>
- Danko, T. (2019). Student perceptions in homeland security and emergency management education: Experiential learning survey. *Journal of Experiential Education*, 42(4), 417–427. <https://doi.org/10.1177/1053825919873678>
- Davies, D. (2019). Graphic Katrina: Disaster capitalism, tourism gentrification and the affect economy in Josh Neufeld's. *a.d.: New Orleans after the deluge* (2009). *Journal of Graphic Novels and Comics*, 11(3), 325–340.
<https://doi.org/10.1080/21504857.2019.1575256>
- Davies, R., Vaughan, E., Fraser, G., Cook, R., Ciotti, M., & Suk, J. E. (2018). Enhancing reporting of after-action reviews of public health emergencies to strengthen preparedness: A literature review and methodology appraisal. *Disaster Medicine and Public Health Preparedness*, 13(3), 618–625. <https://doi.org/10.1017/dmp.2018.82>
- Day, A., Staniszewska, S., & Bullock, I. (2021). Planning for Chaos: Developing the concept of emergency preparedness through the experience of the paramedic. *Journal of Emergency Nursing*, 47(3), 487–502. <https://doi.org/10.1016/j.jen.2021.02.001>

- de Lange, R., & Adua, L. (2022). An independent assessment of potential social impacts of the newly initiated inland port in Salt Lake City, United States. *Impact Assessment and Project Appraisal*, 40(3), 228–242. <https://doi.org/10.1080/14615517.2022.2035636>
- de Lucas Ancillo, A., del Val Núñez, M., & Gavrilă, S. (2020). Workplace change within the COVID-19 context: A grounded theory approach. *Economic Research-Ekonomska Istraživanja*, 34(1), 2297–2316. <https://doi.org/10.1080/1331677x.2020.1862689>
- Denzin, N. K. (2008). *Studies in symbolic interaction (studies in symbolic interaction, 32)* (Illustrated ed.). Emerald Publishing Limited.
- Don Williams, B., & Nelson, J. P. (2020). Media, disaster response, Ebola: What local government needs to understand about media influence of response operations when the improbable becomes reality. *Journal of Homeland Security and Emergency Management*, 18(1), 67–91. <https://doi.org/10.1515/jhsem-2017-0074>
- Drisko, J. W. (2005). Writing up qualitative research. *Families in Society: The Journal of Contemporary Social Services*, 86(4), 589–593. <https://doi.org/10.1606/1044-3894.3465>
- Drupsteen, L., & Hasle, P. (2014). Why do organizations not learn from incidents? Bottlenecks, causes, and conditions for a failure to effectively learn. *Accident Analysis & Prevention*, 72, 351–358. <https://doi.org/10.1016/j.aap.2014.07.027>
- Durrance, C. (2022). Teaching public policy analysis: Lessons from the field. *The Journal of Economic Education*, 53(2), 143–149. <https://doi.org/10.1080/00220485.2022.2038327>
- Dwivedi, Y. K., Shareef, M., Mukerji, B., Rana, N. P., & Kapoor, K. (2017). Involvement in emergency supply chain for disaster management: A cognitive dissonance perspective. *International Journal of Production Research*, 56(21), 6758–6773. <https://doi.org/10.1080/00207543.2017.1378958>

- Dzigbede, K. D., Gehl, S., & Willoughby, K. (2020). Disaster resiliency of U.S. governments: Insights to strengthen local response and recovery from the COVID-19 pandemic. *Public Administration Review*, 80(4), 634–643. <https://doi.org/10.1111/puar.13249>
- Federal Emergency Management Agency. (2018). *1 October after-action report*.
file:///C:/Users/todds/Downloads/814668.PDF
- Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, 10(4), 86.
<https://doi.org/10.3390/soc10040086>
- Fiedler, F. E. (2008). The contingency model and the dynamics of the leadership process. In *Advances in experimental social psychology* (pp. 59–112). Elsevier.
[https://doi.org/10.1016/s0065-2601\(08\)60005-2](https://doi.org/10.1016/s0065-2601(08)60005-2)
- Florida Division of Emergency Management. (2024). *Florida Comprehensive Emergency Management Plan (CEMP)*. <https://www.floridadisaster.org/globalassets/2024-cemp.pdf>
- Ganin, A. A., Quach, P., Panwar, M., Collier, Z. A., Keisler, J. M., Marchese, D., & Linkov, I. (2017). Multicriteria decision framework for cybersecurity risk assessment and management. *Risk Analysis*, 40(1), 183–199. <https://doi.org/10.1111/risa.12891>
- Gatto, N. M., Campbell, U. B., Rubinstein, E., Jaksa, A., Mattox, P., Mo, J., & Reynolds, R. F. (2021). The structured process to identify fit-for-purpose data: A data feasibility assessment framework. *Clinical Pharmacology & Therapeutics*, 111(1), 122–134.
<https://doi.org/10.1002/cpt.2466>
- Geist, E. (2015). Political fallout: The failure of emergency management at Chernobyl. *Slavic Review*, 74(1), 104–126. <https://doi.org/10.5612/slavicreview.74.1.104>

- Giang, W. (2020). Pressure relief location—a hidden hazard. *Process Safety Progress*, 40(2).
<https://doi.org/10.1002/prs.12199>
- Giorgi, A. (1997). The theory, practice, and evaluation of the phenomenological method as a qualitative research procedure. *Journal of Phenomenological Psychology*, 28(2), 235–260. <https://doi.org/10.1163/156916297x00103>
- Gruber, M., Crispeels, T., & D’Este, P. (2023). Who am I? The influence of knowledge networks on Ph.D. students’ formation of a researcher role identity. *Minerva*.
<https://doi.org/10.1007/s11024-023-09492-1>
- Hackerott, C. S., Provencio, A. L., & Santos-Hernandez, J. M. (2021). Access and inclusion in emergency management online education: Challenges exposed by the COVID-19 pivot. *Journal of Homeland Security and Emergency Management*, 18(3), 317–334.
<https://doi.org/10.1515/jhsem-2020-0074>
- Halder, D., Pradhan, D., & Roy Chaudhuri, H. (2021). Forty-five years of celebrity credibility and endorsement literature: Review and learnings. *Journal of Business Research*, 125, 397–415. <https://doi.org/10.1016/j.jbusres.2020.12.031>
- Hamilton, J. B. (2019). Rigor in qualitative methods: An evaluation of strategies among underrepresented rural communities. *Qualitative Health Research*, 30(2), 196–204.
<https://doi.org/10.1177/1049732319860267>
- Haque, C., Choudhury, M.-U., & Sikder, M. (2018). Events and failures are our only means for making policy changes: Learning in disaster and emergency management policies in Manitoba, Canada. *Natural Hazards*, 98(1), 137–162. <https://doi.org/10.1007/s11069-018-3485-7>

- Harrison, S., & Johnson, P. (2019). Challenges in the adoption of crisis crowdsourcing and social media in Canadian emergency management. *Government Information Quarterly*, 36(3), 501–509. <https://doi.org/10.1016/j.giq.2019.04.002>
- Hays, D. G., & McKibben, W. (2021). Promoting rigorous research: Generalizability and qualitative research. *Journal of Counseling & Development*, 99(2), 178–188. <https://doi.org/10.1002/jcad.12365>
- Hendricks-Sturup, R. M., Zhang, F., & Lu, C. Y. (2022). A survey of research participants' privacy-related experiences and willingness to share real-world data with researchers. *Journal of Personalized Medicine*, 12(11), 1922. <https://doi.org/10.3390/jpm12111922>
- Hennink, M. M., Kaiser, B. N., & Weber, M. (2019). What influences saturation? Estimating sample sizes in focus group research. *Qualitative Health Research*, 29(10), 1483–1496. <https://doi.org/10.1177/1049732318821692>
- Hird, J. A. (Ed.). (2018). *Policy analysis in the United States*. Policy Press.
- Hoogeboom, M. G., & Wilderom, C. M. (2019). A complex adaptive systems approach to real-life team interaction patterns, task context, information sharing, and effectiveness. *Group & Organization Management*, 45(1), 3–42. <https://doi.org/10.1177/1059601119854927>
- Houston, J., Spialek, M. L., First, J., Stevens, J., & First, N. L. (2017). Individual perceptions of community resilience following the 2011 Joplin tornado. *Journal of Contingencies and Crisis Management*, 25(4), 354–363. <https://doi.org/10.1111/1468-5973.12171>
- Hu, Q., Sadiq, A.-A., & Kapucu, N. (2022). Multiplexity in conceptualizing network effectiveness in emergency management. *Journal of Homeland Security and Emergency Management*, 19(3), 257–279. <https://doi.org/10.1515/jhsem-2021-0089>

- Hu, Q., Yeo, J., & Kapucu, N. (2022). A systematic review of empirical emergency management network research: Formation and development, properties, and performance. *The American Review of Public Administration*, 52(4), 280–297.
<https://doi.org/10.1177/02750740221077348>
- Hu, X., Naim, K., Jia, S., & Zhengwei, Z. (2021). Disaster policy and emergency management reforms in China: From Wenchuan earthquake to Jiuzhaigou earthquake. *International Journal of Disaster Risk Reduction*, 52, 101964.
<https://doi.org/10.1016/j.ijdrr.2020.101964>
- Ingram, A. E., Hertelendy, A. J., Molloy, M. S., & Ciotto, G. R. (2021). State Preparedness for Crisis Standards of Care in the United States: Implications for Emergency Management. *Prehospital and Disaster Medicine*, 36(1), 1-3. <https://doi.org/10.1017/S1049023X20001405>
- Imperiale, A., & Vanclay, F. (2020). Top-down reconstruction and the failure to “build back better” resilient communities after disaster: Lessons from the 2009 L'Aquila Italy earthquake. *Disaster Prevention and Management: An International Journal*, 29(4), 541–555. <https://doi.org/10.1108/dpm-11-2019-0336>
- Iqbal, J., Asghar, A., & Asghar, M. (2022). Effect of despotic leadership on employee turnover intention: Mediating toxic workplace environment and cognitive distraction in academic institutions. *Behavioral Sciences*, 12(5), 125. <https://doi.org/10.3390/bs12050125>
- Ivanov, D., Blackhurst, J., & Das, A. (2021). Supply chain resilience and its interplay with digital technologies: Making innovations work in emergency situations. *International Journal of Physical Distribution & Logistics Management*, 51(2), 97–103.
<https://doi.org/10.1108/ijpdlm-03-2021-409>

- Jamieson, T., & Louis-Charles, H. M. (2022). Lobbying and emergency management in the United States: Issues, priorities, and implications. *Journal of Contingencies and Crisis Management*. <https://doi.org/10.1111/1468-5973.12439>
- Jensen, J., & Kirkpatrick, S. (2022). Local emergency management and comprehensive emergency management (CEM): A discussion prompted by interviews with chief resilience officers. *International Journal of Disaster Risk Reduction*, 79, 103136. <https://doi.org/10.1016/j.ijdrr.2022.103136>
- Jensen, J., & Waugh, W. L. (2014). The United States' experience with the Incident Command System: What we think we know and what we need to know more about. *Journal of Contingencies and Crisis Management*, 22(1), 5–17.
- Jensen, J., & Youngs, G. (2014). Explaining Implementation Behavior of the National Incident Management System (NIMS). *Disasters*, 39(2), 362–388. <https://doi.org/10.1111/disa.12103>
- Kågström, M., Faith-Ell, C., & Longueville, A. (2023). Exploring researcher's roles in collaborative spaces supporting learning in environmental assessment in Sweden. *Environmental Impact Assessment Review*, 99, 106990. <https://doi.org/10.1016/j.eiar.2022.106990>
- Kang, D., & Evans, J. (2020). Against method: Exploding the boundary between qualitative and quantitative studies of science. *Quantitative Science Studies*, 1(3), 930–944. https://doi.org/10.1162/qss_a_00056

- Kapucu, N., Augustin, M.-E., & Garayev, V. (2009). Interstate partnerships in emergency management: Emergency Management Assistance Compact in response to catastrophic disasters. *Public administration review.*, 69(2), 297–313. <https://doi.org/10.1111/j.1540-6210.2008.01975.x>
- Kapucu, N., & Hu, Q. (2014). Understanding multiplexity of collaborative emergency management networks. *The American Review of Public Administration*, 46(4), 399–417. <https://doi.org/10.1177/0275074014555645>
- Kato, T., Wang, J.-J., & Tsai, N.-Y. (2022). Elements of standard operating procedures and flexibility issues in emergency management: A Japan-Taiwan comparison. *International Journal of Disaster Risk Reduction*, 71, 102813. <https://doi.org/10.1016/j.ijdrr.2022.102813>
- King, G., Keohane, R. O., & Verba, S. (1994). *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton University Press, ISBN: 9780691034713.
- Klimek, P., Varga, J., Jovanovic, A. S., & Székely, Z. (2019). Quantitative resilience assessment in emergency response reveals how organizations trade efficiency for redundancy. *Safety Science*, 113, 404–414. <https://doi.org/10.1016/j.ssci.2018.12.017>
- Krlev, G. (2023). Calibrating for progress: What are the instrumental functions of theory in management research? *Journal of Management Studies*, 60(4), 963–990. <https://doi.org/10.1111/joms.12904>
- Kruger, J. (2019). Community lifeline framework for leveraging stabilization in response and recovery to major hurricanes. *Disaster Medicine and Public Health Preparedness*, 14(1), 7–9. <https://doi.org/10.1017/dmp.2019.119>

- Kuligowski, E. D. (2020). Field research to application: A study of human response to the 2011 Joplin tornado and its impact on alerts and warnings in the USA. *Natural Hazards*, 102(3), 1057–1076. <https://doi.org/10.1007/s11069-020-03945-6>
- Lemon, L., & Hayes, J. (2020). Enhancing trustworthiness of qualitative findings: Using Leximancer for qualitative data analysis triangulation. *The Qualitative Report*. <https://doi.org/10.46743/2160-3715/2020.4222>
- Lester, J., Cho, Y., & Lochmiller, C. R. (2020). Learning to do qualitative data analysis: A starting point. *Human Resource Development Review*, 19(1), 94–106. <https://doi.org/10.1177/1534484320903890>
- Luk, S. C. Y. (2009). The impact of leadership and stakeholders on the success/failure of e-Government Service: Using the case study of e-Stamping service in Hong Kong. *Government Information Quarterly*, 26, no. 4: 594–604.
- Luke, M., & Goodrich, K. M. (2019). Focus group research: An intentional strategy for applied group research? *The Journal for Specialists in Group Work*, 44(2), 77–81. <https://doi.org/10.1080/01933922.2019.1603741>
- Maher, C., Hadfield, M., Hutchings, M., & de Eyto, A. (2018). Ensuring rigor in qualitative data analysis. *International Journal of Qualitative Methods*, 17(1), 160940691878636. <https://doi.org/10.1177/1609406918786362>
- Malizia, A., Onorati, T., Diaz, P., Aedo, I., & Astorga-Paliza, F. (2010). SEMA4A: An ontology for emergency notification systems accessibility. *Expert Systems with Applications*, 37(4), 3380–3391. <https://doi.org/10.1016/j.eswa.2009.10.010>

- Mayer, B. (2019). A review of the literature on community resilience and disaster recovery. *Current Environmental Health Reports*, 6(3), 167–173. <https://doi.org/10.1007/s40572-019-00239-3>
- McConnell, A. (2011). Success? Failure? Something in-between? A framework for evaluating crisis management. *Policy and Society*, 30(2), 63–76. <https://doi.org/10.1016/j.polsoc.2011.03.002>
- McCreight, R., & Harrop, W. (2019). Uncovering the real recovery challenge: What emergency management must do. *Journal of Homeland Security and Emergency Management*, 16(3). <https://doi.org/10.1515/jhsem-2019-0024>
- McEntire, D. A. (2005). Emergency management theory: Issues, barriers, and recommendations for improvement. *Journal of Emergency Management*, 3(3), 44–54.
- McGlown, J. K. (2020). Healthcare's emerging reality post-COVID-19. *Healthcare Executive*, 35(4).
- McGuire, M., & Silvia, C. (2010). The effect of problem severity, managerial and organizational capacity, and agency structure on intergovernmental collaboration: Evidence from local emergency management. *Public Administration Review*, 70(2), 279–288. <https://doi.org/10.1111/j.1540-6210.2010.02134.x>
- Meier, K. J., Brudney, J. L., & Bohte, J. (2015). *Applied statistics for public and nonprofit administration* (9th ed.). Wadsworth, Inc. ISBN: 9781285737232.
- Meier, K. J., Compton, M., Polga-Hecimovich, J., Song, M., & Wimpy, C. (2019). Bureaucracy and the failure of politics: Challenges to democratic governance. *Administration & Society*, 51(10), 1576–1605. <https://doi.org/10.1177/0095399719874759>

- Mergel, I., Ganapati, S., & Whitford, A. B. (2020). Agile: A new way of governing. *Public Administration Review*, 81(1), 161–165. <https://doi.org/10.1111/puar.13202>
- Misra, S., Roberts, P., & Rhodes, M. (2020). The ecology of emergency management work in the digital age. *Perspectives on Public Management and Governance*, 3(4), 305–322. <https://doi.org/10.1093/ppmgov/gvaa007>
- Morckel, V. (2017). Why the Flint, Michigan, USA water crisis is an urban planning failure. *Cities*, 62, 23–27. <https://doi.org/10.1016/j.cities.2016.12.002>
- Morgan, H. (2022). Conducting a qualitative document analysis. *The Qualitative Report*. <https://doi.org/10.46743/2160-3715/2022.5044>
- Motulsky, S. L. (2021). Is member checking the gold standard of quality in qualitative research? *Qualitative Psychology*, 8(3), 389–406. <https://doi.org/10.1037/qup0000215>
- Music, L., Chevalier, C., & Kashefi, E. (2022). Dispelling myths on superposition attacks: Formal security model and attack analyses. *Designs, Codes, and Cryptography*, 90(4), 881–920. <https://doi.org/10.1007/s10623-022-01017-3>
- Nasir, N., Lestari, F., & Kadir, A. (2022). Android-based mobile panic button UI application design development in responding to emergency situations in Universitas Indonesia (UI). *International Journal of Emergency Services*, 11(3), 445–470. <https://doi.org/10.1108/ijes-07-2020-0041>
- Nassaji, H. (2020). Good qualitative research. *Language Teaching Research*, 24(4), 427–431. <https://doi.org/10.1177/1362168820941288>

- Norris, D. F., Mateczun, L., Joshi, A., & Finin, T. (2018). Cybersecurity at the grassroots: American local governments and the challenges of internet security. *Journal of Homeland Security and Emergency Management*, 15(3). <https://doi.org/10.1515/jhsem-2017-0048>
- O'Donovan, K. (2017). Policy failure and policy learning: Examining the conditions of learning after disaster. *Review of Policy Research*, 34(4), 537–558. <https://doi.org/10.1111/ropr.12239>
- O'Toole, Laurence J., and Robert K. Christensen (2013). *"American Intergovernmental Relations: Foundations, Perspectives, and Issues."*. Thousand Oaks: CQ Press.
- Oc, B. (2018). Contextual leadership: A systematic review of how contextual factors shape leadership and its outcomes. *The Leadership Quarterly*, 29(1), 218-235. <https://doi.org/10.1016/j.leaqua.2017.12.004>
- Parker, G. (2020). Best practices for after-action review: Turning lessons observed into lessons learned for preparedness policy. *Revue Scientifique et Technique de l'OIE*, 39(2), 579–590. <https://doi.org/10.20506/rst.39.2.3108>
- Pathak, A., Zhang, L., & Ganapati, N. (2020). Understanding multisector stakeholder value dynamics in Hurricane Michael: Toward collaborative decision-making in disaster contexts. *Natural Hazards Review*, 21(3). [https://doi.org/10.1061/\(ASCE\)nh.1527-6996.0000400](https://doi.org/10.1061/(ASCE)nh.1527-6996.0000400)
- Pelfrey, W. V. (2020). Emergency manager perceptions of the effectiveness and limitations of mass notification systems: A mixed method study. *Journal of Homeland Security and Emergency Management*, 18(1), 49–65. <https://doi.org/10.1515/jhsem-2019-0070>

- Petroski, K. (2011). Is post-positivism possible? *German Law Journal*, 12(2), 663–692.
<https://doi.org/10.1017/s2071832200017053>
- Poblet, M., García-Cuesta, E., & Casanovas, P. (2017). Crowdsourcing roles, methods, and tools for data-intensive disaster management. *Information Systems Frontiers*, 20(6), 1363–1379. <https://doi.org/10.1007/s10796-017-9734-6>
- Popplewell, K., Knothe, K.-D., Knothe, T., & Poler, R. (Eds.). (2019). *Enterprise interoperability VIII smart services and business impact of enterprise interoperability* (K. Popplewell, K.-D. Knothe, T. Knothe, & R. Poler, Eds.; Vol. 9 ed.). Springer.
https://doi.org/10.1007/978-3-030-13693-2_11
- Postavaru, O., Anton, S., & Toma, A. (2021). COVID-19 pandemic and chaos theory. *Mathematics and Computers in Simulation*, 181, 138–149.
<https://doi.org/10.1016/j.matcom.2020.09.029>
- Puah, S., Bin Mohmad Khalid, M., Looi, C., & Khor, E. (2021). Investigating working adults' intentions to participate in microlearning using the decomposed theory of planned behavior. *British Journal of Educational Technology*, 53(2), 367–390.
<https://doi.org/10.1111/bjet.13170>
- Quinlan, M. (2020). Five challenges to humanity: Learning from pattern/repeat failures in past disasters? *The Economic and Labour Relations Review*, 31(3), 444–466.
<https://doi.org/10.1177/1035304620944301>
- Radović, V. (2019). Emergency management/response. In (Ed.), *Climate Action* (pp. 391–404). Springer International Publishing. https://doi.org/10.1007/978-3-319-95885-9_66

- Rice, R., & Bloomfield, E. (2022). Commemorating disorder in after-action reports: Rhetorics of organizational trauma after the Las Vegas shooting. *Journal of International Crisis and Risk Communication Research*, 5(1), 87–112. <https://doi.org/10.30658/jicr.5.1.4>
- Ripley, S., Kaiser, L. H., Campbell, E., Shadwell, J., Johnson, D., & Neely, D. (2020). Engaging stakeholders in pre-event recovery planning: Using a recovery capital framework. *Australian Journal of Emergency Management*, 35(3), 25–31.
- Rivera, J. D., & Knox, C. (2022). Defining social equity in emergency management: A critical first step in the nexus. *Public Administration Review*. <https://doi.org/10.1111/puar.13574>
- Rose, J., Flak, L., & Sæbø, Ø. (2018). Stakeholder theory for the e-government context: Framing a value-oriented normative core. *Government Information Quarterly*, 35(3), 362–374. <https://doi.org/10.1016/j.giq.2018.06.005>
- Rose, J., & Johnson, C. W. (2020). Contextualizing reliability and validity in qualitative research: Toward more rigorous and trustworthy qualitative social science in leisure research. *Journal of Leisure Research*, 51(4), 432–451. <https://doi.org/10.1080/00222216.2020.1722042>
- Salkind, N. J. (2010). Discourse analysis. *Encyclopedia of research design*, 2455.
- Sawalha, I. (2021). Views on business continuity and disaster recovery. *International Journal of Emergency Services*, 10(3), 351–365. <https://doi.org/10.1108/ijes-12-2020-0074>
- Schachter, R. E., & Freeman, D. (2020). Bridging the public and private in the study of teaching: Revisiting the research argument. *Harvard Educational Review*, 90(1), 1–25. <https://doi.org/10.17763/1943-5045-90.1.1>

- Siedschlag, A., Lu, T., Jerković, A., & Kensinger, W. (2021). Opioid crisis response and resilience: Results and perspectives from a multi-agency tabletop exercise at the Pennsylvania emergency management agency. *Journal of Homeland Security and Emergency Management*, 18(3), 283–316. <https://doi.org/10.1515/jhsem-2020-0079>
- Silva, C., Magano, J., Matos, A., & Nogueira, T. (2021). Sustainable quality management systems in the current paradigm: The role of leadership. *Sustainability*, 13(4), 2056. <https://doi.org/10.3390/su13042056>
- Skjott Linneberg, M., & Korsgaard, S. (2019). Coding qualitative data: A synthesis guiding the novice. *Qualitative Research Journal*, 19(3), 259–270. <https://doi.org/10.1108/qrj-12-2018-0012>
- Son, C., Sasangohar, F., Neville, T., Peres, S., & Moon, J. (2020). Investigating resilience in emergency management: An integrative review of literature. *Applied Ergonomics*, 87, 103114. <https://doi.org/10.1016/j.apergo.2020.103114>
- Stancanelli, J. (2014). Conducting an online focus group. *The Qualitative Report*, 15(3), 761–765. <https://doi.org/10.46743/2160-3715/2010.1179>
- Steen, R., Haakonsen, G., & Patriarca, R. (2022). “Samhandling”: On the nuances of resilience through case study research in emergency response operations. *Journal of Contingencies and Crisis Management*, 30(3), 257–269. <https://doi.org/10.1111/1468-5973.12416>
- Steen, R., Haakonsen, G., & Steiro, T. (2023). Patterns of learning: A systemic analysis of emergency response operations in the north sea through the lens of resilience engineering. *Infrastructures*, 8(2), 16. <https://doi.org/10.3390/infrastructures8020016>

- Story, D. A., & Tait, A. R. (2019). Survey research. *Anesthesiology*, 130(2), 192–202.
<https://doi.org/10.1097/aln.0000000000002436>
- Summers, A., Fletcher, C. H., Spirandelli, D., McDonald, K., Over, J.-S., Anderson, T., Barbee, M., & Romine, B. M. (2018). Failure to protect beaches under slowly rising sea level. *Climatic Change*, 151(3-4), 427–443. <https://doi.org/10.1007/s10584-018-2327-7>
- Sunder M., V., & Prashar, A. (2020). Empirical examination of critical failure factors of continuous improvement deployments: Stage-wise results and a contingency theory perspective. *International Journal of Production Research*, 58(16), 4894–4915.
<https://doi.org/10.1080/00207543.2020.1727044>
- Sylvester, R. T. (2019). Federal emergency management comes of age: 1979–2001. In (Ed.), *Emergency Management* (pp. 113–165). Routledge.
<https://doi.org/10.4324/9780429425059-5>
- Szostek, D. (2021). Employee behaviors toward using and saving energy at work. The impact of personality traits. *Energies*, 14(12), 3404. <https://doi.org/10.3390/en14123404>
- Tarhini, A., Balozain, P., & Srour, F. (2021). Emergency management system design for accurate data: A cognitive analytics management approach. *Journal of Enterprise Information Management*, 34(2), 697–717. <https://doi.org/10.1108/jeim-11-2019-0366>
- Tomaszewski, Lesley Eleanor, Jill Zarestky, and Elsa Gonzalez. (n.d.). "Planning Qualitative Research: Design and Decision Making for New Researchers.". *International Journal of Qualitative Methods*, 19, (2020).
- Turner, D. (2010). Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*, 15(3), 754–760. <https://doi.org/10.46743/2160-3715/2010.1178>

- Tušer, I. (2019). The development of education in emergency management. In (Ed.), *Studies in systems, decision, and control* (pp. 169–175). Springer International Publishing.
https://doi.org/10.1007/978-3-030-30659-5_10
- Tyler, J., & Sadiq, A.-A. (2019). Business continuity and disaster recovery in the aftermath of hurricane Irma: Exploring whether community-level mitigation activities make a difference. *Natural Hazards Review*, 20(1). [https://doi.org/10.1061/\(ASCE\)nh.1527-6996.0000323](https://doi.org/10.1061/(ASCE)nh.1527-6996.0000323)
- U.S. Department of Homeland Security. (2018). *Continuity guidance circular*. Retrieved April 10, 2023, from https://www.fema.gov/sites/default/files/2020-07/Continuity-Guidance-Circular_031218.pdf
- U.S. Department of Homeland Security. (2019). *National Response Framework* [PDF]. Retrieved March 17, 2023, from https://www.fema.gov/sites/default/files/2020-04/NRF_FINALApproved_2011028.pdf
- U.S. Department of Homeland Security. (2022). *Integrated Public Alert and Warning System (IPAWS) strategic plan fiscal year 2022-2026*. Retrieved April 6, 2023, from https://www.fema.gov/sites/default/files/documents/fema_ipaws-strategic-plan-fy-2022-2026.pdf
- Verheul, M., & Dückers, M. (2019). Defining and operationalizing disaster preparedness in hospitals: A systematic literature review. *Prehospital and Disaster Medicine*, 35(1), 61–68. <https://doi.org/10.1017/s1049023x19005181>
- Waardenburg, M. (2020). Understanding the micro-foundations of government–civil society relations. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 32(3), 548–560. <https://doi.org/10.1007/s11266-020-00221-w>

- Wang, X., Sugumaran, V., Zhang, H., & Xu, Z. (2017). A capability assessment model for emergency management organizations. *Information Systems Frontiers*, 20(4), 653–667. <https://doi.org/10.1007/s10796-017-9786-7>
- Wang, Y., Li, J., Zhao, X., Feng, G., & Luo, X. (2020). Using mobile phone data for emergency management: A systematic literature review. *Information Systems Frontiers*, 22(6), 1539–1559. <https://doi.org/10.1007/s10796-020-10057-w>
- Wehde, W., & Choi, J. (2021). Public preferences for disaster federalism: Comparing public risk management preferences across levels of government and hazards. *Public Administration Review. The American Society for Public Administration.*, 1–14. <https://doi.org/10.1111/puar.13432>
- Wei, Y., Chen, W., Xie, T., & Peng, J. (2022). Cross-disciplinary curriculum integration spaces for emergency management engineering talent cultivation in higher education. *Computer Applications in Engineering Education*, 30(4), 1175–1189. <https://doi.org/10.1002/cae.22513>
- Williamson, B., Eynon, R., & Potter, J. (2020). Pandemic politics, pedagogies, and practices: Digital technologies and distance education during the coronavirus emergency. *Learning, Media and Technology*, 45(2), 107–114. <https://doi.org/10.1080/17439884.2020.1761641>
- Willison, C. E., Singer, P. M., Creary, M. S., Vaziri, S., Stott, J., & Greer, S. L. (2021). How do you solve a problem like Maria? The politics of disaster response in Puerto Rico, Florida, and Texas. *World Medical and Health Policy*, 14(3), 490–506. <https://doi.org/10.1002/wmh3.476>

- Wolf-Fordham, S. (2020). Integrating government silos: emergency management and public health department collaboration for emergency planning and response. *The American Review of Public Administration*, 50(6-7), 560–567.
<https://doi.org/10.1177/0275074020943706>
- Wood, L., Sebar, B., & Vecchio, N. (2020). Application of rigor and credibility in qualitative document analysis: Lessons learned from a case study. *The Qualitative Report*.
<https://doi.org/10.46743/2160-3715/2020.4240>
- Youngblood, S. A., & Youngblood, N. E. (2018). Usability, content, and connections: How county-level Alabama emergency management agencies communicate with their online public. *Government Information Quarterly*, 35(1), 50–60.
<https://doi.org/10.1016/j.giq.2017.12.001>
- Zebrowski, C. (2019). Emergent emergency response: Speed, event suppression, and the chronopolitics of resilience. *Security Dialogue*, 50(2), 148–164.
<https://doi.org/10.1177/0967010618817422>
- Zhang, X., Li, X., & Liu, X. (2021). Research on the design of disaster prevention plan for a 22km ultra-long highway tunnel with multiple intersections. *E3S Web of Conferences*, 293, 02039. <https://doi.org/10.1051/e3sconf/202129302039>
- Zhao, Y., & Tian, S. (2021). Hazard identification and early warning system based on stochastic forest algorithm in an underground coal mine. *Journal of Intelligent & Fuzzy Systems*, 41(1), 1193–1202. <https://doi.org/10.3233/jifs-210105>

Appendix A: IRB Approval

Date: 9-18-2024

IRB #: IRB-FY23-24-1156
Title: Local Emergency Management Single Points of Failure
Creation Date: 1-8-2024
End Date:
Status: Approved
Principal Investigator: Todd Smith
Review Board: Research Ethics Office
Sponsor:

Study History

Submission Type	Initial	Review Type	Limited	Decision	Exempt - Limited IRB
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Key Study Contacts

Member	Todd Smith	Role	Principal Investigator	Contact	tsmith820@liberty.edu
Member	Todd Smith	Role	Primary Contact	Contact	tsmith820@liberty.edu
Member	Gabriel Telleria	Role	Co-Principal Investigator	Contact	gmtelleria@liberty.edu

Appendix B: Participant Criterion

All participants must meet each of the following inclusion requirements:

1. Participants and respondents were 18 or older.
2. Participants and respondents were employed or retired from local, state, federal, or private sector professional emergency management positions, including directors, managers, supervisors, planners, and incident command staff.
3. Participant and respondent emergency management employers were defined broadly to include, among others, city, county, state, and federal agencies, higher learning centers, healthcare, transportation entities, private sector businesses, and non-profit organizations that are single jurisdictions, single agencies, multiple agencies, or multiple jurisdictions maintaining established emergency manager positions with stakeholder ascendancy.

Appendix C: Recruitment Letter

Dear Emergency Manager:

As a graduate student at the Helms School of Government at Liberty University, I am conducting research as part of the requirements for a Doctor of Philosophy, Public Administration degree. The purpose of my research is to answer the central research question regarding what role emergency managers play in managing single points of failure. Additionally, the research aims to determine what information is provided by after-action reports to address single points of failure challenges experienced in disasters and emergencies, how emergency managers apply real-world insights to demonstrate learning organization aptitudes, where emergency plans may be causing failures in the operational environment, and how emergency managers ensure operational flexibility and personnel problem-solving skills for the disaster environment. I am writing to invite eligible participants to join my study.

Participants must be 18 or older and employed or retired from a local, state, or federal professional emergency management position. The positions included directors, managers, supervisors, planners, and incident command staff. Participants, if willing, will be asked to do an audio-video recorded virtual interview and may be asked to participate in an audio-recorded focus group. It should take approximately 30-45 minutes for an interview and one hour to participate in the focus group. Participants will also be asked to review their transcripts. Names and other identifying information will be requested for this study, but the information will remain confidential.

I also request that you complete a short, voluntary, anonymous survey at the SurveyMonkey link: [REDACTED]. Participation in the survey can be discontinued at any time. Access to the data collected is strictly restricted to the researcher; no identifiers are collected at any time, and the data can ONLY be used in this research study. Participation will be anonymous, and no personal identifying information will be collected. A consent document is provided as the first page of the survey and will be given to you before the interview and the focus group session. The consent document contains additional information about my research. Because participation is anonymous, you do not need to sign and return the consent document unless you prefer.

To participate, please reply directly to this email or call [REDACTED] with your preferred time for an interview.

Sincerely,

Todd A. Smith
Doctoral Candidate
[REDACTED]

Appendix D: Consent Form for Interviews and the Focus Group

Consent

Title of the Project: Emergency Management Single Points of Failure

Principal Investigator: Todd A. Smith, Doctoral Candidate, Helms School of Government, Liberty University

Invitation to be part of a Research Study

You are invited to participate in a research study. To participate, you must be at least 18 years of age and currently employed or retired from a State, Local, or Federal professional emergency management position. The positions included directors, managers, supervisors, planners, and incident command staff. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of this grounded theory study is to understand better how emergency management's single points of failure are addressed by public service professionals managing at government levels. A single point of failure can be any moment where a process, action, or detail was either overlooked or executed incorrectly and caused emergency management challenges.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. Participate in an in-person or virtual audio-recorded interview that will take no more than 30-45 minutes and will be audio recorded.
2. If requested, participate in an audio-recorded focus group with nine to ten other emergency management professionals that will take no longer than one hour.
3. Review transcripts for accuracy.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include providing a better understanding of emergency management single points of failure so that intervention processes can be developed that may minimize or eliminate identified failure impacts. Additionally, this exploratory research can create appropriate strategies that assist emergency managers in understanding and preventing other potential failures and further determining single points of failure commonalities among new independent variables.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses to the interviews and focus groups will be kept confidential by replacing names with pseudonyms.
- Interviews will be conducted in a location where others will not easily overhear the conversation.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other members of the focus group may share what was discussed with persons outside of the group.
- Data will be stored on a password-locked computer and in a locked file cabinet. After five years, all electronic records will be deleted, and all hardcopy records will be shredded.
- Recordings will be stored on a password and locked computer until participants have reviewed and confirmed the accuracy of the transcripts and then deleted/erased. Only the researcher will have access to these recordings.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you, apart from focus group data, will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Todd Smith. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [REDACTED]. You may also contact the researcher's faculty sponsor, Dr. Gabriel Telleria, at [REDACTED].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

By signing this document, you agree to be in this study. Make sure you understand what the study is about before you sign. You can print or save a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

Please provide an electronic signature using DocuSign, and the document will be automatically returned to the researcher.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to audio-record me as part of my participation in this study.

Printed Subject Name

Signature & Date

Appendix E: Consent Form for the Survey

Consent

Title of the Project: Emergency Management Single Points of Failure

Principal Investigator: Todd A. Smith, Doctoral Candidate, Helms School of Government, Liberty University

Invitation to be part of a Research Study

You are invited to participate in a research study. To participate, you must be at least 18 years of age and currently employed or retired from a State, Local, or Federal professional emergency management position. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of this grounded theory study is to understand better how emergency management's single points of failure are addressed by public service professionals managing at government levels. A single point of failure can be any moment where a process, action, or detail was either overlooked or executed incorrectly and caused emergency management challenges.

What will happen if you take part in this study?

If you agree to be in this study, I ask that you complete an online, anonymous survey that will take no more than twenty minutes.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include providing a better understanding of emergency management single points of failure so that intervention processes can be developed that may minimize or eliminate identified failure impacts. Additionally, this exploratory research can create appropriate strategies that assist emergency managers in understanding and preventing other potential failures and further determining single points of failure commonalities among new independent variables.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

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The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses to the interviews and focus groups will be kept confidential by replacing names with pseudonyms.
- Interviews will be conducted in a location where others will not easily overhear the conversation.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other members of the focus group may share what was discussed with persons outside of the group.
- Data will be stored on a password-locked computer and in a locked file cabinet. After five years, all electronic records will be deleted, and all hardcopy records will be shredded.
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Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you, apart from focus group data, will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw.

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Your Consent

By signing this document, you agree to be in this study. Make sure you understand what the study is about before you sign. You can print or save a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

Please provide an electronic signature using DocuSign, and the document will be automatically returned to the researcher.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to audio-record me as part of my participation in this study.

Printed Subject Name

Signature & Date

Appendix F: Document Analysis Results

Emergency management decisions are frequently based on official statements, directives, policies, procedures, legislative requirements, local ordinances, geographic maps, official minutes, personal correspondence, after-action reports, photographs, marketing material, media narratives, and electronic channel information. This research study used publicly available information, including local ordinances, state statutes, and electronic emergency management document sources, in its data collection strategy. Emergency management programs create overarching plans, policies, and processes, such as comprehensive plans to achieve the mission areas for preparedness goals. Local and state ordinances explain that emergency management programs use the continuous preparedness cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action to ensure communities are ready for incidents and events (U.S. Department of Homeland Security, 2019).

Figure 6

The Continuous Preparedness Cycle



Note. The continuous preparedness cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action, by U.S. Department of Homeland Security, 2019.

According to the analysis, training and exercising emergency plans are the cornerstones of preparedness, focusing on readiness to respond to all-hazard incidents and events. Although many plans exist in emergency management, the overarching plan for an emergency management program is the Comprehensive Emergency Management Plan (CEMP), which establishes the policies and concept of operations for directing and controlling an incident or event from initial monitoring through post-disaster recovery. The publicly available CEMPs and related annexes from multiple municipalities, counties, and states were reviewed in this document analysis. The analysis revealed that none of the plans explicitly reviewed included sections or references for addressing single points of failure in advance or when they occur.

Most of the plans address governance and decision-making structures in areas where challenges such as political difficulties or miscoordination could occur. The challenges revealed in most of the plans include potential multi-agency coordination failures, which could lead to delays or inadequate response efforts. This detail could be attributed to the failure of leadership, political influence, daily siloing of information, or communication shortfalls. Challenges involving multiple jurisdictions begin with any one agency failing to meet expectations set forth by the plan; for example, common planning assumptions include that emergencies and disasters occur with or without warning and that all emergencies and disasters are local; however, local governments usually require state assistance. States rely upon municipalities to initiate actions that save lives and protect property unless the municipalities cannot or do not respond successfully, and the state must immediately intercede, delaying the initial response (Florida Division of Emergency Management, 2024).

Other plan findings include leadership transitions, where plans mention potential changes in elected and appointed officials that could disrupt continuity in emergency response

procedures, highlighting the risk of political instability or shifting impacts to emergency management teams. These and other points emphasize how factors, while not directly labeled as single points of failure, exist in plans and could affect the efficiency of emergency operations if mismanaged. Other municipalities' plans include assumptions that while emergency managers participate in the day-to-day roles of the program, the same staff fulfill roles within the emergency operations center during incidents and events until they are unavailable or unable to fulfill those critical roles (Commonwealth of Massachusetts, 2019). Plan assumptions state that regardless of day-to-day position in a particular municipality organization or agency, all employees work during disasters or emergencies.

The single point of failure is requiring unfamiliar and untrained employees to participate in emergency operations, causing potential harm to the employee or others (City of Jacksonville, 2021). Other current emergency plans are over five years old and state similar assumptions; emergency functions performed by organizations and individuals will parallel regular day-to-day roles to the extent possible. The same material resources are redirected to perform tasks in an incident or event, and personnel will be reassigned until the single point of failure is revealed, where resources are not in service or personnel are suddenly unavailable (Commonwealth of Massachusetts, 2019). As the plans were reviewed, the common theme was that planning assumptions have unknowingly inserted single points of failure into many emergency management documents.

Appendix G: Abridged Interview Transcripts

EM1

At the time of the study, participant EM1 had retired from a significant public safety organization as a senior executive staff member after twenty-eight years, and then, for the last two years and six months, was working for a municipality agency, where both positions have been integrated into all aspects of emergency management responsibilities. Participant EM1 also has professional experience with urban search and rescue, deploying to complex natural disasters. Participant EM1 indicated that challenges impacting large organizations are the same for smaller organizations. Individual or recurring difficulties they experienced while managing incidents or events included ensuring relationships are established before an emergency as a preventative detail, specifically knowing who is responsible for critical roles, responsibilities, and lines of authority. Significant single points of failure included the inability to protect roads due to lack of proper equipment, failed generator operations due to connection issues, pumps that lack ancillary equipment, and other critical infrastructure tasks.

The emergency management focus areas most challenging for participant EM1 included delegation, span of control, and ensuring the right personnel are given the correct assignment. This public safety service topic also has political influences during incidents and events, such as minor road flooding, which may not be causing a life safety problem but suddenly becomes a political issue. When challenges impact operations, participant EM1 finds that because many emergency management personnel do not work on incidents and events daily, they reach critical capacity quickly. Participant EM1's experiences where a single point of failure caused a challenge was during an incident or event centered on complacency. Participant EM1 emphasized that personnel must take training and exercises more seriously, ensure that after-

action reports are honest and transparent, and continually develop good habits. Participant EM1 explained observations of personnel challenges impacting operations, and the key is to recognize when managers are beyond their scope of ability. Overwhelmed and possibly overworked personnel can outpace requisite knowledge, skills, and abilities during an incident or event.

Participant EM1 has observed political influences in determining the appointment of emergency managers. However, fortunately, the emergency managers they worked with were capable professionals. Participant EM1 acknowledged that no consistent qualifying test, assessment, or criteria are concentrated around the actual capability of emergency management personnel. Participant EM1 stated that a contemporary challenge is that although new emergency managers possess significantly more formal academic credentials and certifications, they often lack real-world public safety, crisis management, or operational experience. Participant EM1 expressed that emergency management is about managing other people and solving supervisory problems; even the most brilliant new emergency managers, who have never supervised others, can cause significant conflict.

EM2

At the time of the study, participant EM2 had recently retired from a significant public safety organization after thirty-six years of serving as a senior officer and an emergency manager. EM2 has conducted many complex emergency management exercises and was responsible for dozens of natural and man-made disaster response operations. Participant EM2 described wildfires, evacuation, and sheltering as individual and recurring challenges experienced while managing incidents or events. Although EM2 did not place an indictment on volunteer organizations, they frequently experienced shortfalls with sheltering services due to organizational constraints, even when official agreements were in place specifically for those

operations. The emergency management focus areas participant EM2 described as most challenging when activating the Emergency Operations Center, having to develop a hybrid EOC organizational blend of the Incident Command System (ICS) within the Emergency Support Functions (ESF) because the ICS structure, terminology, and documentation requirements can be a complicated process for personnel that do not function in emergency management daily. That ongoing challenge brought a more recent change in EM2's former organization, whereas now the EOC designation has been changed to Emergency Coordination Center.

Participant EM2 explained operational challenges, including that although they regularly scheduled training for essential personnel and staffing obligations were agreed upon when the emergency operations center was activated, agencies would send untrained and unfamiliar personnel who did not know their assigned roles. This challenge required just-in-time training during incidents and events, frustrating operations, and diminishing consistency. Participant EM2 provided specific experiences where a communication single point of failure caused a challenge when the community would not heed evacuation orders during wildfires or travel warnings during winter storms. EM2 stated that residents would either get trapped by ensuing and unpredictable wildfires or be stuck on unpassable roadways in the winter, making sheltering with evacuations more challenging.

Additionally, participant EM2 described a real and significant lack of accurate and executable planning contingencies or plan-to-plan integration within Continuity of Operations Plans (COOP) and continuity of government plans (COG). Personnel challenges that cause operational impacts Participant EM2 discussed focused on the excessive personnel turnover in emergency management. EM2 talked about retention issues that cause the back-fill staffing of experienced personnel, who are constantly taken away from emergency responsibilities and

reassigned to retraining personnel who require education in the most elementary emergency management concepts. Participant EM2 has not observed political influences in appointing emergency managers; however, the removal process was complicated in terms of removing poor-performing individuals who had become a real burden.

EM3

During the time of this study, participant EM3 explained that over the last three years, they predominantly filled incident command structure positions at the unit level, such as situation and supply unit leader, during hurricane activations and locally planned events. Participant EM3 has significant stakeholder communication experience, explicitly using FEMA's community lifeline model, which, along with mass communication, represents individual or recurring challenges while managing incidents or events. According to participant EM3, the community lifeline process is never smooth, and further, getting partnering agencies and organizations to communicate is difficult, especially working in a large municipality where there are many agencies, such as the port, airports, military installations, and utility authorities with water, sewer, and electricity. Communication failures experienced by EM3 include not only failing to know what exactly to say but to deliver the message because often personnel do not know how to use the technology systems for mass communication such as the Integrated Public Alert & Warning System (IPAWS), the Emergency Alert System (EAS), or the Wireless Emergency Alerts (WEA). Participant EM3 discussed after-action reports as a challenging emergency management focus area, whereas when after-actions are written, a lot goes into their construction; however, many of the statements appearing in the reports have been made up and are not truly representative of incident facts.

Additionally, EM3 stated that when problems exist, no resolutions or communication occur, and then suddenly discussed at the after-action, and following the after-action, no additional communications arise, and the problem being discussed is not fixed. Participant EM3 finds that incident teams do not always know how to resolve challenges at the failure moment; therefore, they do not make the necessary changes and wait until the after-action to report the problem as a new issue. Regarding challenges impacting operations for an incident or event, participant EM3 stated that regardless of strategic recommendations, at the end of operational periods and during the hot wash on a given day, when significant issues were presented other emergency managers would not acknowledge them, and often administrators received the information as challenging their leadership. A single point of failure experienced by participant EM3 included a challenge where personnel were sent home at the end of their shift during tropical storm force winds, a decision made to save taxpayer dollars but placed personnel in severe danger. The second failure involved a localized hazmat incident involving a train where confusing public notifications for evacuation operations were sent in the middle of the night. The issue was about how a well-intended community evacuation notification was executed poorly. Residents received multiple confusing notifications meant to protect the public; however, this caused them not to trust or comply with notifications, which has a negative future public safety impact.

Participant EM3 explained that personnel challenges sometimes evolve when they do not get along; they can try to force it, and they still don't get along, including past problems, some even decades old. Although it is unrealistic to believe everyone always gets along with everyone else, public service demands collaboration and maturity to accept new ideas and fix problems. When personalities start to flare, options include those individuals leaving temporarily or

altogether, being reassigned to another unit, asking for another mission, taking on another responsibility, or breaking people up into day shift versus night shift. Participant EM3 has directly observed political influences determining the appointment of emergency managers, where less qualified are appointed above more qualified or capable individuals with highly jurisdictional agencies with a long history of political motivation, not only for roles that you would expect to be political, like the locally elected sheriff but there are many other appointed roles. EM3 has also observed that even in roles not appointed by an elected official but lower positions that are very political. When a problem directly relates to a particular person further down the lines of authority, it becomes a matter of whether an appointed person believes or decides the problem is a priority, depending upon the political side the requestor is part of, whether they are on the right side of history.

EM4

Participant EM4 worked for eleven years in communications and then joined a public safety emergency management agency about twelve years ago. Participant EM4 has significant operational field experience with urban search and rescue teams and swift water rescue team deployments. Communication was provided as a recurring challenge experienced by participant EM4 while managing incidents or events. EM4 discussed that regardless of how well-trained or experienced agency personnel are or how many after-actions have detailed communication errors, this topic is always an issue at every exercise and incident, regardless of how serious the commitments are to avoid a communication gap. Participant EM4 describes this topic as, for whatever reason, an anomaly, and they believe that communication issues can be a technological gap; however, the primary and root causes are often personal issues or human error. EM4 believes the emergency management community may be oversimplifying communications,

justifying the gaps because of the frequency of communication difficulties, and blaming communication issues only as radio problems.

A broader view of communication considers radio issues, public notification errors, failure to understand new technology systems, cultural communication implications, or individual or person-to-person discrepancies. The most challenging focus area that participant EM4 provided is where difficult personalities take the lead role, and incident personnel do not have the same objective view of what is in the overall best interest in managing the incident. Participant EM4 finds that tactical limitations, such as operating equipment, are not traditionally an issue; moreover, personnel conflicts cause challenges and impact operations due to stress and the emergency environment. Participant EM4's experience where a single point of failure caused a challenge involved the early stages of the response to COVID-19, where failures were not a single person's fault; it was politics at that time. During that incident, EM4 was given objectives they were to accomplish; however, following the delivery of the objectives, they would drastically change, which occurred daily. According to EM4, whether the objective changes were statistical or data-driven, supply-chain issues, demand-driven, or merely political was unclear.

EM4 believed that political influence was the single point of failure at the time. The mission kept changing solely because their political leadership had the authority to change the target, and politicians were never required to explain why. Participant EM4 described personnel challenges impacting their operations, including the necessity to work with challenging personalities because that individual may be very good at a particular discipline, such as incident logistics. EM4 provides that public service leaders need to understand better the balance between the physical space people require to conduct operations and the philosophical space necessary to perform a mental role. Participant EM4 finds that political influences determining the

appointment of emergency managers, where less qualified people are appointed above more qualified or capable individuals, are subjective, depending on who is being asked. EM4 stated that politics are fully embedded in emergency management, however fortunate or unfortunate that may be. Publicly appointed officials, by nature, are political, regardless of whether they have credentials or experience. EM4 further correlated political appointments to a single point of failure where agencies or organizations often rely on one appointed person, placing all expectations on a single person for all programmatic authority without redundancy or transparency.

EM5

Participant EM5 has been in emergency management for sixteen years and is currently employed by a homeland security entity conducting cybersecurity and infrastructure security efforts. Graduate education led EM5 to emergency management, which they use today to ensure agency resources, knowledge, skills, and abilities to identify improvement opportunities for enhancing, refining, and starting conversations in the all-hazard spectrum of what could happen to infrastructure. Participant EM5 discussed communication challenges experienced while managing incidents or events from a human factor position. EM5 explained that emergency management appears to be suffering professionally from a revolving door of personnel, which causes a decreased understanding of complex matters, such as critical infrastructure. A diminished sense of complex emergency management matters results in a failure to properly ask who, what, when, where, and why for effective information gathering. EM5 further stated that emergency management communication requires effective informational gathering that includes determining who the best person is to answer a question and what to do with the information before passing it along to others so they can also answer questions with the new information.

Challenging focus areas participant EM5 discussed included that when addressing the preparedness activities of protection, prevention, and mitigation, it is often difficult to motivate concern for protecting resources that are not under direct threat or dangerous. The challenges that EM5 described included an interpersonal relations situation that impacted operations, where incident personnel began engaging in inappropriate behaviors, which caused significant distraction from the incident objectives. This issue was resolved by demobilizing the involved individuals; however, overall operational effectiveness was diminished until the behavior was addressed. Participant EM5 reported a single point of failure, where operational equipment was provided in a just-in-time environment, and each component was dependent upon other subsequent equipment deliveries to achieve objectives. Each part of the process represented a single point of failure, and field personnel had to continually seek and verify ordering resource delivery status with the authority having jurisdiction to conduct the operation effectively.

Experiences that participant EM5 discussed included personnel challenges that impacted operations, where senior leaders made assumptions that personnel advising them were not misrepresenting their expertise; unfortunately, in the situation described by EM5, the under-experienced resource personnel provided leaders with strategic and tactical recommendations that overwhelmed and otherwise overstressed the entire incident. EM5 finds that some emergency managers do not know their limitations due to inexperience or lack of training and fail to recognize the gravity of the situation. Participant EM5 described that they are not in a politically charged environment in their current role, which allows them to remain neutral and safely observe political situations and circumstances as they unfold. EM5 has observed political influences determining the appointment of less qualified emergency managers where those not best suited for a position prevailed. Those choices created mistrust, automatically placing the

entire emergency management team in a professionally challenging position and predisposing them to conflict.

EM6

Participant EM6 has a thirty-one-year background with local and federal governments conducting operations, making personnel decisions, ensuring long-term recovery, and managing a county emergency operations center, including responding to COVID-19 and seven other nationally declared disasters. A recurring challenge participant EM6 regularly experiences while managing incidents or events is based upon the national Incident Command System (ICS) and communications. EM6 described that the ICS structure and ineffective Public Information Officer (PIO) efforts create public sentiment that too much or not enough is being done to the local community. Often, a failure to effectively communicate why the response is being conducted in a particular manner or freelance messages that do not match strategic goals and objectives are being delivered to the public. EM6 provides that a PIO needs to provide digestible information and prevent communities being impacted from having to translate or guess what is happening. The rigid ICS structure makes communication difficult compared to the Emergency Support Function (ESF) model, where the structure is more of a cooperative unified command structure.

Participant EM6 provided that the ICS structure is also a challenging emergency management focus area, specifically when strong agency personalities are present. EM6 explained that operational challenges adjustments involve engaging other county agencies early to ensure they understand what the objectives aim to achieve, specifically county parks and recreation responsible for Point of Distribution (POD) for emergency supplies. Unfortunately, due to recurring agency administrator changes, they had to convince the new administrator of the

importance of those operations. Then, during each POD operation, they had to reorient the staff responsible by repeatedly explaining the entire operation. Participant EM6 describes a single point of failure experience consisting of senior officials insisting on occupying incident roles without being thoroughly informed of the operations or not being adequately trained or vetted for a role.

The single point of failure is because the senior officials did not recognize what they did not know, or they applied previous unrelated experiences to the current incident. EM6 explained that the officials used a wildfire response mentality to hurricane response. Regarding personnel challenges, EM6 discussed how personalities often bring undesired effects where preconceived notions of how operations should be conducted may conflict with preexisting emergency plans. This issue has manifested combative circumstances, making the entire operation ineffective. Participant EM6 discussed political influences they observed where outsider personnel were not locally known but highly qualified, and often, unfortunately, those individuals do not secure roles in emergency management because of local political preferences.

EM7

Participant EM7's experience began twenty-eight years ago with a law enforcement agency; it evolved to include coordination with other public safety partners, including, among other things, functions of an emergency operations center and a local incident management team program. EM7 explained that they currently participate in all emergency management aspects for protection, preparedness, response, mitigation, and recovery, with the most significant focus on preparedness and response. Participant EM7 described individual challenges they experience, including the fact that organizations responsible for emergency management activities assign those responsibilities as collateral duty. Professional emergency managers often learn through

ancillary positive and negative exposure and develop varied habits to conduct public service.

EM7 provides that, in general, emergency management needs to professionalize better by investing in the training and education of political officials to ensure a more diversely prepared team is not solely determined by individual personality control.

The most challenging emergency management area for Participant EM7 is recovery. Often, when activations or deployments end, they submit appropriate documentation to the agency finance staff, and the activated team will typically return to primary responsibilities, which are correlated to the theme of emergency management agencies assigning these duties collaterally. EM7 explained that collateral responsibility does not create a reliable or consistent understanding of the complex nature of disaster recovery. Regarding operational challenges, EM7 is most comfortable with tactical efforts. However, lessons have been learned when ensuring appropriate staffing because a lack of competent, qualified personnel creates seriously adverse outcomes, such as when supervisors must complete subordinate tasks and subsequently miss critical responsibilities. When stressful situations deplete resources rapidly, adequate or overstaffing better ensures contingency planning to provide ongoing tactical operations. A single point of failure experienced by participant EM7 involved a hurricane incident management team's deployment where resources were not getting activated appropriately or in a timely fashion. This occurred because critical roles were not adequately staffed for defined responsibilities, and a prioritization cascading crisis evolved within the disaster, which developed due to a lack of individual bandwidth.

Participant EM7 described the background of personnel challenges that impacted operations, which involved staffing incident teams across the agency from essential employee work units. This posture forced field supervisors to fill command and general staff roles within

the command post; however, the assumption that field personnel can fill command roles ties back to the challenges of relying upon collateral duties because assigned staff do not necessarily understand the command role or have a desire to participate in the responsibilities of the position. Participant EM7 explained that their observations regarding political influences determining the appointment of less qualified individuals are based on the understanding that elected officials are redefining the phrase qualified. Many individuals may quantify at the executive level by not being the chief executive. This reality is determined differently due to the broad spectrum of qualifications and certifications and additional external influence from county to county, city to city, and organization to organization.

EM8

Participant EM8 has an extensive forty-two-year public safety service background, including developing an emergency management program that evolved from the civil defense era. EM8's portfolio includes all aspects of emergency management, serving on special public service committees, in senior administrative positions, and for specialized incident response teams. EM8 discussed financial restraints as recurring challenges they have experienced in emergency management, explicitly positioning an agency or organization to recover disaster-related expenses and secure funding from grant sources. EM8 provided that although mandates expect resilient cities, building up either capacity or ability to prevent the exact impacts from repeatedly occurring is a costly process. The effectiveness of recovery increases the capabilities of resilience to prevent future effects. Participant EM8 explained that securing grants is a challenging emergency management focus area because many local programs are not fully funded and rely significantly upon recurring or new grant funding. EM8 explained that often emergency management leaders are selected because they espouse a great deal of incident

management experience, which represents a low percentage of actual time and energy for an emergency manager; conversely, securing funding and conducting recovery of disaster expenses and damage is the most time-consuming activity and, according to EM8, most emergency managers are unprepared to manage effectively.

EM8 explained that finance is the topic fewer emergency managers focus on because experts do not often reveal the details of the financial picture to others in public service. Participant EM8 further explained that public administration planning and preparedness require significant funding resources, and too often, it is treated as a formality. EM8 provided a challenge that impacts operations based on implementing the incident management approach for emergency management. EM8 discussed that although NIMS has been implemented at all government levels, it still creates confusion and delay at the local level of government. Participant EM8 also discussed a single point of failure experience during Florida's 1998 wildfire season when a perception of an effective statewide disaster management system was in place; however, local governments were not completing responsibilities as expected, such as declaring local states of emergency and the integration of state assets did not have the statewide logistical support necessary. EM8 described significant integration and coordination challenges that still occur decades later.

Personnel challenges that have impacted EM8's operations occurred when assigned personnel demonstrated competent professional behavior during non-disaster activities and, unfortunately, could not perform effectively during an incident or event. EM8 provides that when managing people, especially in an austere environment, it is imperative to have a true and accurate account of assigned personnel abilities, both positives and negatives, and then blend those attributes into an influential team leader. Regarding political influences determining the

appointment of emergency managers, EM8 expresses that the nature of a republic is that electing people to office also elects the friends and colleagues of those elected to office, both qualified and unqualified. Considering the political nature of government, the salvation of many communities is that competent personnel occupy subordinate positions that ensure the community remains safe.

EM9

Participant EM9's emergency manager experience represents eighteen years, including undergraduate and graduate-level studies in emergency management, a state-level leadership emergency management role, and higher learning center emergency management experience. EM9 has helped manage sixty-six disasters, of which thirty-seven were federally declared. Participant EM9 discussed turnover in emergency management as a recurring challenge they experience, especially with new professionals bringing grandiose ideas and having no concept of the resources required to institute those ideas. The focus area most challenging, according to EM9, is teaching the fundamentals of emergency management to individuals indirectly connected to disaster management. EM9 further explained that a common misconception is that emergency managers are first responders.

Participant EM9 provided that to reduce challenges that impact operations, organizations should capitalize upon institutional knowledge of those leaving the field of emergency management through attrition by developing position checklists based on those experiences to streamline and simplify processes. Participant EM9 experienced redundancy shortfalls as a single point or point of failure, and to ensure redundancy, EM9 established measures such as backup and separate email accounts and provided the same positions checklist from the institutional knowledge in printed form. Participant EM9 discussed personnel challenges that impacted

operations due to personnel turnover, and a lack of a standardized process prevented additional emergency response team resources from knowing their task. EM9 added that the challenge now is that some emergency management people do not want to be inconvenienced; regardless of whether the blame is placed on a generational change, the ego of titles and authority, or the long-term effects of the COVID-19 Pandemic, some emergency managers are not fully engaged and supporting the overall operation. Participant EM9 observed political influences determining the appointment of emergency managers, which created a hostile work environment, resulting in staff absences, teams feeling unwelcome, and appointments of people capitalizing on the optics of disasters.

EM10

Participant EM10 has served in a senior public safety role for fifteen years and is responsible for an extensive emergency management recovery program, including over three hundred million in public assistance disaster recovery for nine presidentially declared disasters. EM10 also serves on a Hazardous Materials Team, an Urban Search and Rescue Team (USAR), a state All Hazards Incident Management Team (AHIMT/IMT), and a County Incident Management Team. Participant EM10 has served in almost every command and general staff position outlined in the National Incident Management System for more than one hundred local and state activations, which include deployments throughout the southeastern United States for hurricanes, tornadoes, floods, and wildfires. Participant EM10 discussed communications as a recurring challenge experienced while managing emergencies from the field and from an Emergency Operations Center (EOC), which provides a unique perspective on how to respond to and recover from different disasters affecting rural communities up to densely populated urban cities.

EM10 explained that after-action meetings continuously identify communications as a critical area for improvement. EM10 described that activities in an all-hazards environment frequently necessitate communicating with other agencies, and for example, law enforcement officers (LEO) as a group often compartmentalize information. The siloing of information is very much by design, especially for an investigation; however, in an all-hazards environment, being unable or unwilling to share critical information can and has significantly impacted a community's ability to respond to an incident or event effectively. Participant EM10 stated that communication is also the primary, most challenging focus area of emergency management and frequently experiences the impact of a lack of communication, which impacts communities most when agencies do not build and foster relationships at the federal, state, and local government levels. EM10 added that inter- and intra-governmental relationships are often prioritized; however, agencies often fail to establish, build, and nurture relationships with the private, non-profit, and volunteer sectors. EM10 explained that responding to a disaster requires a whole community approach to be effective, which includes developing and maintaining relationships with all partner organizations.

Participant EM10 explained that the technological aspects of communications can create challenges that impact operations; an example is the hardware used to communicate between agencies, from the general public to emergency responders, and within the 911 system, which is specifically evident in rural communities. During a specific challenge, it was discovered during a local disaster that the municipal government was receiving all emergency calls through one of two cellular phones, an approach sustainable for everyday operational needs; however, a catastrophic communication failure occurred during a community-wide disaster. EM10 added that because the local cellular carrier was not a nationwide company, it was only offered within

the state, and the carrier monopolized the contract to provide 911 services to all counties within the state. In this socioeconomically challenged community spectrum, the state did not have sufficient capital to replace the current carrier or switch carriers and burden the costs of changing the infrastructure through which the 911 calls were routed. This issue was further compounded by system limitations that prevented the 911 call rollover, causing unanswered 911 calls for service.

Participant EM10 discussed a single point of failure experience regarding a common operational phase in public service, “Two is one, and one is none.” EM10 added that this phrase means equipment will fail, break, or not be compatible, so agencies must always have more than they think is needed in case front-line equipment fails. According to EM10, failure occurs when access is intentionally limited to backup resources because agencies fail to balance security with availability. The situation specifically involved supplies that needed to be secured. However, there was only one key for everything that was locked up, and further, the person who possessed that key could not be contacted and was not returning calls; that unavailability occurred for an extended time, halting the response phase of an incident. Participant EM10 discussed personnel challenges that impact operations because new politicians and political appointees introduce nuanced challenges with ineffective management styles that cannot fully grasp the full breadth of a subordinate’s roles, causing unnecessary personnel stress. EM10 added that unskilled or inexperienced political appointees often fail at prioritizing, causing personnel to operate at peak output, which is unsustainable.

Participant EM10 has unquestionably observed political influences determining the appointment of emergency managers, specifically where the emergency manager role is given to a senior official’s friend without any consideration for qualifications because the senior official

and the newly appointed emergency manager had no idea what emergency management requires. EM10 added that the State of Florida is trying to combat this issue. Legislation in Florida Statute Chapter 252 was recently passed, outlining that new emergency managers must have specific minimum training requirements as of July 1, 2024, to be considered for the director role for an emergency management program and those already in the role by June 30, 2026. EM10 does not believe this legislation will necessarily stop politically appointing underqualified or incompetent individuals from becoming emergency managers; however, it will lessen the likelihood that the friend of the mayor, commissioner, sheriff, or fire chief is pathetically unqualified to do the job.

EM11

Participant EM11 was introduced to the emergency management profession twenty years ago due to a disaster, a common theme for other emergency managers, according to EM11. A Small Business Administration (SBA) external affairs position to manage resources and support across the whole community spectrum for disasters was secured by EM11. Since that initial role, EM11 has managed many local, state, and federal disasters, working for multiple government organizations. The recurring challenge EM11 experiences involves incident leadership failure in understanding key responsibilities while managing incidents or events. Leaders get stuck in inactivity, according to EM11, and they sometimes need a catalyst to act on critical responsibility based on their authority and assignment and start directing before their stalled command compounds the consequences of the disaster. EM11 explained that the emergency management focus area of humanitarian relief is the most challenging, meaning the response is stabilizing the incident to save lives and property, and recovery is rebuilding the community; however, if there is no relief, the displaced or significantly impacted survivors may live, but they have no place to

go. EM11 added that local and state leaders might not fully realize who the stakeholders are and how important it is to bring appropriate stakeholders and programs to the conversation.

Participant EM11 explained that leadership not updating objectives to meet the actual incident needs often requires operational adjustments. EM11 advocates that the operational and planning processes baked into incident management and the national incident management systems must include living objectives that are not stagnant. Participant EM11 provided that a single point of failure that caused a challenge was during the 2018 hurricane season, specifically Hurricane Irma, where they observed every agency, contractor, FEMA, the executive branch, and state agencies were providing all of their resources to this one major flooding event. This collective overabundance of resource assignments at the national level hampered the immediate future response and relief capabilities. The single point of failure was that no consequence planning occurred to ensure future and near-future catastrophic incidents could be effectively managed, and that created a struggle that evolved from a culture of the current leadership that had not trained or possessed any personal experience. EM11 discussed personnel challenges that impacted operations, including violations of behavior expectations, requiring immediate demobilization. Participant EM11 has observed political influences determining the appointment of emergency managers, where less qualified are appointed above more qualified or capable individuals across the spectrum at the local, state, and federal levels. EM11 added that when emergency managers are appointed out of political motivation, not necessarily because they are qualified for the role, it is often because the appointed official needs someone they trust to protect the official against political consequences regardless of whether the program is effective, or the community is safe.

EM12

Participant EM12 began their emergency manager career working for a large organization following September 11, 2001. EM12 discussed their twenty-three years of experience began when President George Bush completely rearranged his cabinet and started putting different agencies together under the Department of Homeland Security; EM12 became highly experienced using the new Incident Command System (ICS) that shortly followed aimed to help communities manage large-scale disasters in the homeland in a more effective way. EM12 provided that ensuring internal and external stakeholders fully understand the different emergency management roles is a recurring challenge being experienced while managing incidents or events. EM12 added that although in emergency management, many personnel may speak the same professional language and have a general idea of the necessary practices. However, although everyone is working on the same incident, individual perceptions of the sequence of activities can often be very subjective.

Regarding emergency management focus areas, EM12 finds that because emergency management programs typically choose to use the Incident Command System's (ICS) Incident Management Team (IMT) structure, the Emergency Support Functions (ESF) structure, or a hybrid of the two, that creates a challenging environment when sharing emergency operations center resources while working on multi-agency incidents or events. EM12 added that because each agency has nuanced ways of managing incidents, a crosswalk of program highlights helps the transient personnel understand how others manage incidents. Participant EM12 discussed that program competence is a challenge that impacts operations. As more emergency management programs are added to agencies and organizations, they technically have the authority to manage incidents and events; however, they may lack the professional capacity to achieve objectives.

Participant EM12 shared that a single point of failure experience that caused a challenge was due to understaffing. EM12 added that when programs do not provide enough personnel to properly conduct incident or event operations, the people running that program become the single point of failure; critical program activities stop when unavailable. EM12 provided that creating training and certification depth is crucial for experience opportunities to reduce the single point of failure like EM12 has experienced. Participant EM12 discussed personnel challenges that impacted operations, where emergency management professionals often have two personalities: their normal personality and then you have their personality under extreme circumstances. Those personality differences have caused EM12 to make adjustments to continue to achieve objectives. EM12 has observed political influences determining the appointment of emergency managers because, as described by EM12, there is a human aspect, typically based on a single person's decision, and a fair decision may or may not be achieved.

EM13

Participant EM13 started ten years ago as an intern for a county emergency management program and was quickly hired full-time as an emergency coordinator; some responsibilities included health and medical coordination, EOC manager, operations, and logistics. EM13 later moved to another emergency management planner role, where the main focus was planning and procedures, including operational plans, hazard-specific plans, and continuity of operations planning program, to secure certification with the Emergency Management Accreditation Program (EMAP). EM13 now works in the private sector, conducting emergency management planning and preparedness for different clients throughout the United States.

EM13 discussed laziness as a recurring challenge experienced while managing incidents or events. EM13 explained that often, in an emergency operations center (EOC), personnel are

prone to calling other personnel in the EOC, even those they can physically see, and become reluctant to go and talk to others physically face to face, which, according to EM13, is the primary purpose of bringing people together in the EOC. EM13 added that face-to-face communication is often more effective and efficient because the conversation can be more detailed, and conversational inference can help the receiver learn details from the sender of the more significant situation that may not be spoken. Participant EM13 provided the emergency management focus area of mitigation and recovery are most challenging because emergency managers who have not been required to fully understand these areas do not necessarily comprehend and know what they are, such as public-private partnerships and building relationships with the whole community. EM13 discussed incident finances and politics as challenges that frequently impact operations, and they adjusted operations by providing just-in-time finance training and education to upper leadership and management.

Participant EM13 discussed continuity of operations planning (COOP) as a single point of failure, where personnel did not take the process seriously and did not necessarily understand the essential functions and principles of the mission. EM13 explained that the department heads require constant education about why the COOP process is critical, especially from the government perspective, and how many single points of failure exist in the essential operations of emergency systems. Participant EM13 explained that personality conflicts represent routine personnel challenges that have impacted their operations, and efforts were necessary to identify the strengths and weaknesses of the team members to reassign them to other tasks. EM13 added that capitalizing on everyone's strengths is important for successful operations during EOC activations for disaster and non-disaster operations. Participant EM13 has observed political influences determining the appointment of emergency managers, where less qualified people are

appointed above more qualified or capable individuals. EM13 explains that emergency management suffers from incessant communication silos and manipulating resource prioritization, and those are two disadvantages that allow emergency management to be a very political environment. Participant EM13 often finds the emergency management community is a microcosm prioritizing who you know over what you know, which is a politically driven organizational culture.

EM14

Participant EM14 has been a disaster manager for a central teaching hospital system for seventeen years, with seven years before that as a courthouse emergency manager, paramedic, graduate nurse, and volunteer firefighter. EM14 has deployed to natural and human-caused disasters in several incident command positions, serving many local communities. EM14 explained that staffing attrition is a recurring challenge experienced while managing incidents or events because essential staffing changes are frequent in the teaching hospital environment, causing constant training, education, and exercise in hospital incident command response for all sorts of disasters. EM13 added that when real-world incidents occur, they must rely on existing hospital professionals, stressing the importance of participating in disaster education within already exhaustive training expectations. Participant EM14 provided that staff readiness is the most challenging emergency management focus area because of managing a geographically dispersed staff, especially regarding the conduct of exercises or drills required for nontraditional hospital facilities.

Participant EM14 discussed cascading events during incidents as significant challenges that impact operations; recently, an unrelated incident caused the closure of a portion of their facility, impacting skilled procedures, and subsequently caused the cancellation of major medical

operations, which affected those most in need in the community. EM14's experience where a single point of failure caused a challenge was due to inadequate infant security in a hospital setting; a person was able to access newborns by impersonating nursing staff, then by identifying a baby, they could tell the parents was being taken to the lab and kidnapped the infant. EM14 added that years later when this crime was discovered, devastating impacts were caused to the families involved. This example is still an issue today when securing facilities during a disaster because necessary emergency personnel are often given access to areas that would otherwise not be accessible, requiring a heightened security posture during disasters balanced against incident management personnel access.

Participant EM14 provided that before the COVID-19 pandemic, hospital environments were heavily staffed; however, once COVID-19 occurred, most hospital practitioners became physically, mentally, and spiritually broken, losing their caring capacity. In the hospital emergency management setting, incidents and events still occurred during COVID-19, and for EM14, the limited and overworked staff caused ongoing personnel challenges that impacted ancillary operations. The ongoing personnel changes decreased hospital readiness and required new emergency management to think critically about those new challenges, which increased the number of less prepared essential staff. Participant EM14 also observed political influences that determine the appointment of emergency managers. Subsequently, in the hospital emergency response system, where some nonprofit hospital systems are community safety nets, hospital emergency management can suddenly become less of a priority for politically affiliated emergency managers; when external priorities drive political appointees, the emergency manager program loses access to resource options.

EM15

Participant EM15 has worked in public information and emergency management for thirteen years, including on-scene survivor support at significant multi-response incidents, multiple complex incident activations, the COVID-19 pandemic, and severe weather incidents. EM15 explained that internal communication is a continuous individual and recurring challenge that is experienced while managing incidents and events. EM15 added that although well-established plans, processes, procedures, and rules exist, particularly during complex incidents, internal communication deteriorates rapidly, and failure to follow established processes results in a convoluted outcome. Participant EM15 identified that personality-based motivations and information control are critical factors in whether incident personnel communicate. EM15 explained that technology failures are not always to blame because communications redundancies are often in place. Still, the choice for those holding information will be to tell one person and not another selectively.

Participant EM15 provided that the most challenging focus area of emergency management is emergency management itself; there is a constant umbrella effect, where everything that does not fit into another public service function is then given to emergency management teams to resolve. EM15 added that emergency management has many existing responsibilities, and projects are frequently added that have no specific emergency management nexus; therefore, the scope is constructed and manipulated to fit into emergency management, causing a mission creep effect on other critical activities. Participant EM15 explained that professionally unskilled administrators with poor decision-making abilities often make unnecessary, risky, uninformed decisions; because they have been politically gifted with their authority, they cause unnecessary challenges for competent emergency management staff.

Participant EM15's experience where a single point of failure caused a challenge during an unusual incident and the most qualified Subject Matter Expert (SME), who possessed all necessary expertise to advise on that specific incident properly, went on vacation, and the EOC personnel did not have critical information without that expert.

According to EM15, the program involved was ineffective at cross-training personnel to avoid this type of single point of failure. Participant EM15 described how unmotivated, poorly performing staff members cause personal challenges for other highly motivated individuals. Even when trained appropriately, lazy personnel avoid work; EM15 explained that other high-performing team members frequently become frustrated and disheartened. Participant EM15 has observed political influences determining the appointment of emergency managers, adding that this issue occurs at all levels of government where less qualified people are appointed over those who are more qualified and can better serve our community. EM15 added how frustrating it is that political influence plays a large part in many emergency management efforts. However, luckily, figureheads are sometimes generally irrelevant, while other appointees genuinely desire to make a positive difference in their community.

EM16

Participant EM16 has worked in emergency management at local and state levels for eighteen years, initially entering public service with a public safety agency. EM16 has been activated in an EOC as an emergency management planner and logistical specialist and has participated in several disaster deployments as a liaison officer and state logistics specialist. Most recently, EM16 has conducted recovery operations, addressed unmet needs, and assisted with training and exercises. Participant EM16 discussed communications as a recurring challenge, not from a technological perspective but from interpersonal relationships. EM16 has not observed

communication gaps based on malicious intent but merely forgetting to talk to others or miscommunicating with each other. EM16 added that personnel often think other individuals are fully informed about what is occurring, but during follow-up conversations, they find that initial, vital discussions never happened.

The emergency management focus area EM16 finds most challenging is filling the disaster recovery role with experienced personnel who fully understand individual assistance and FEMA's public assistance process. EM16 added that FEMA guidelines are perishable and constantly revised, and training is not occurring fast enough to keep personnel updated on required policies. Participant EM16 provided that staffing challenges often impact operations, which was significantly exacerbated during the response to the COVID-19 pandemic; a state governor hurriedly enacted an unfunded mandate requiring staffing of public safety personnel in schools to fulfill a new safety program, stressing already depleted resources. Participant EM16 described an IMT team experience where a single point of failure caused a challenge during an incident that involved deploying out of state to a small community and then being moved because of additional incoming severe weather. The team was directed to redeploy for the additional severe weather; however, the redeployment location was in the path of the weather, and other local elected officials restricted access to towns that could have been places of safe refuge.

Additionally, EM16 explained a situation where a new, inexperienced emergency manager required just-in-time training on the most basic emergency management principles, reducing program effectiveness. Participant EM16 also explained that mandated staffing has caused personnel challenges that impacted operations, specifically during significant, complex incidents such as the COVID-19 response. EM16 added that culturally, the traditional mission-

driven mindset in today's emergency management community is different, more of a work-life balance environment, and managers require new personnel strategies to achieve necessary staffing. Participant EM16 observed political influences determining the appointment of emergency managers, where less qualified are appointed above more qualified or capable individuals. EM16 added that, fortunately, some states have executed legislation that defines minimum standards for emergency managers to offset challenges and failures brought on by political influence.

EM17

Participant EM17 has worked in emergency management for twenty years, specializing in individual and public disaster recovery assistance. EM17 has an extensive background in nationally declared disasters and coordinating significant special events. Participant EM17 reported inconsistencies with the implementation of recovery policy for FEMA and state emergency management. EM17 added that one of the most considerable recovery challenges is FEMA's constant policy changes from disaster to disaster and within disasters, and that policies are dependent upon the personality of FEMA assigned to manage the disaster at the local level. EM17 explained that a challenging emergency management focus area is when there is an inadequate administrative understanding of incident management teams. EM17 added that in emergency management, it is a reoccurring theme that new emergency management administrators do not have the requisite experience of the teams they lead and that lack of training and education in the field, especially regarding incident management teams (IMTs), creates panicky, alarmist, and ineffective decision-making.

EM17 provided that tension and overaction to challenges impact and sometimes overwhelm operations, and addressing those challenges relative to implications, whether it will

impact the objectives, or if the challenge needs to be solved immediately. EM17 added that during incidents, even significant challenges that do not ultimately affect the objectives, meaning that it is not required to change the entire incident action plan, usually can be handled easily.

Participant EM17 shared an experience where declaration policies for a local state of emergency represented a single point of failure experience, specifically where poorly written municipal code and correlating labor contracts differ in the definition of a local state of emergency. EM17 added that FEMA independently interprets policy, statutes, ordinances, and labor contracts as they are written, where organizations implement actions in the spirit of each document and not verbatim.

EM17 described that using cross-trained, specialty public service field personnel for EOC staffing represents a personnel challenge that impacts operations. EM17 added that when rostering a team for an EOC activation, a day and night shift is typically created using highly motivated field personnel who have additionally been trained in emergency management, specifically the ICS process. EM17 explained that because specialized agency personnel are usually trained in multiple disciplines, such as for an Urban Search and Rescue (USAR) team for firefighters or a Special Weapons and Tactics (SWAT) team for police officers, although activated for the EOC, those personnel must respond when called for the specialized teams. Participant EM17 has observed political influences determining the appointment of emergency managers, where less qualified people are appointed above more qualified or capable individuals. EM17 explained that political appointments are traditionally payback favors among elected officials, and qualifications are irrelevant. EM17 added that this reality involves disgraceful, ruthless political influences that put the community at risk and frustrate permanently employed personnel, forcing them to lead up, rendering the political appointee irrelevant and further representing fraud, waste, and abuse.

EM18

Participant EM18 has a diverse fifteen-year local, regional, private sector, and state emergency management professional and education background, having conducted many private sector activations and conducted training, planning, and exercises. EM18 discussed communication as an individual and recurring challenge experienced while managing incidents and events. EM18 added that over many years of completing after-action documentation, communication breakdown is always the number one issue reported, and even with many reports and improvement planning recommendations, communications underlying root causes are not resolved. Participant EM18 provided how interpersonal relations, specifically personalities, politics, and egos, are a challenging emergency management focus area and often cause the focus on objectives to divert from the core values of public service.

EM18 discussed inexperienced leadership as a challenge that impacts operations where managers do not fully understand the emergency management business, specifically contingency planning, where there is a constant necessity to switch the plan or develop an entirely new way of navigating through well-known issues. Participant EM18 provided an experience where a single point of failure causes a challenge when agencies introduce a new incident technology platform for resource tracking and executing operational missions. EM18 added that in one particular incident, EOC personnel could not log in, did not know how to utilize the system properly once logged in, or input mission information incorrectly, which caused resources not to be requested or routed incorrectly. Participant EM18 explained that the incident management team's mental health and personnel challenges have also impacted operations. EM18 added that measures have and should always be taken to monitor fatigue and frustration levels as the incident prolongs to ensure personnel function at their best. Participant EM18 has observed

political influences determining the appointment of emergency managers in every segment of emergency management, local, state, and federal. EM18 added that in today's emergency management environment, where professionalization and increased salaries have made the field more enticing, it is becoming impossible to avoid politics.

EM19

Participant EM19 has an extensive public service career, spanning thirty-three years, at local, state, and federal levels of emergency manager. EM19 explained that the first emergency management position was not based on academic or professional experience in emergency management but on an effective professional transition from prior military service. Participant EM19 discussed the lack of deliberate rapid planning, which causes individual and recurring challenges in managing incidents or events. EM19 continued that although planning methodologies are well-studied and training for planning programs is readily available, a genuinely effective planning structure that creates an executable plan is not commonplace for emergency management planning. Participant EM19 discussed recovery as the emergency management focus area, which is the most challenging because it requires a professional's lifetime career to perfect a competent disaster recovery understanding. EM19 added that the extent of bureaucracy and twisted policy is driving most emergency managers away from specializing in recovery, and they are looking for someone, anyone else, to take on that responsibility.

Participant EM19 provided that the organizational structure used in emergency management is response-focused, which mirrors police and fire agency structures, and that structure sets an unrealistic expectation that causes challenges impacting operations. EM19 explained that just by the nature of the police and fire agencies responding to an incident, the

incident immediately begins stabilization due to the specific nature of the resources being present at the emergency; comparatively, in emergency management, the strategies and tactics may and do fail to achieve the objectives fully. EM19 continued that solutions in emergency management are not one hundred percent; they are more like fifty percent if the emergency managers are fortunate, and as the solutions are applied, the incident may or may not improve. EM19 concluded that emergency managers must improve the application of embracing risk, adaptability, and communicating and accepting generally successful improvements. Participant EM19 discussed that a series of failure points often occur during incidents, causing all or some of the response or recovery to collapse. EM19 added that each issue independently represents a single point of failure. However, failures in emergency management are investigated in a series, where those single points only represent an overall collapse, and most often, the appetite is only to understand the outcome based on a chain of events. EM19 continued that a significant single point of failure is the emergency management community's inability to communicate clearly, and uninformed interactions lead to failure points because of a wrong word, wrong phrase, or complete omission; that series leads to failures, and a common theme in emergency management blamed is personality differences.

Participant EM19 discussed personnel challenges that have impacted operations, involving the ability of the senior administrator to perform based on the degree of stress placed upon them during an incident. EM19 encourages emergency managers to know the strengths and weaknesses of the senior staff, which is imperative, and subsequently predicting if or when they could fail to perform is paramount. EM19 explained that not all emergency management personnel are equally capable, and the capacity of those senior or subordinates of a given position and underperforming creates broad personnel challenges or failures. Participant EM19

has observed political influences determining the appointment of emergency managers, and the purely political appointee leading emergency management with no background will make mistakes, which will eventually catch up to the elected official, and the ensuing public scrutiny is often relentless.

EM20

Participant EM20 has conducted public safety and emergency management activities for over twenty years, including planned events, significant disaster activations, and locally isolated incidents. EM20 has administered large emergency management logistical response programs for local and state agencies. Participant EM20 discussed personnel as individual and recurring challenges experienced while managing incidents and events, specifically a lack of follow-through, drive to achieve a greater understanding of emergency management, and a poor work ethic to perform. EM20 finds that logistics is the most challenging emergency management focus area because the disaster landscape will look different each time, and available resources are never consistent, especially at the state and local levels. Participant EM20 described how ineffective plans challenge and impact operations; readjusting to the plan's inadequacies requires a team that uses new information and adjusts the plan further.

EM20 discussed experiences where an overreliance on individual emergency management specialists, such as a single technological point of contact, caused a single point of failure during an incident. EM10 added that many single points of failure occur when only one person, not multiple people, understands how to operate a unique system, online notification interface, or communication equipment. Participant EM20 explained that the lack of a cohesive team causes personnel challenges that have impacted operations, and due to qualifications, adjustments may not be appropriate when the team is not functioning ideally. EM20 has

observed political influences determining the appointment of emergency managers at the local, state, and federal levels. EM20 added that political payback is a contemporary emergency management theme, and there is always hope that those appointed can subdue their egos and treat those who surround them well because those individuals are likely more educated in the field of emergency management.

EM21

Participant EM21 has provided local, state, and federal agencies with emergency management technical specialist efforts for over twenty-three years, assisting these large multi-state county programs, military installations, and public safety partners to make more informed decisions. EM21 provided that creating and executing contingencies is an individual and recurring challenge experienced while managing incidents or events. EM21 added that programs with well-established situation units demonstrate a better ability to predict the need for contingencies; for example, during wildfires, the situation unit conducts fire behavior analysis to correctly map out how the fire could break out from containment. EM21 offered a second challenge for agencies that work with several different emergency management programs; they experience a variety of EOC and incident management structures, such as ICS, ESF, and hybrid system structures. For technical specialists, remembering which facility a partner stakeholder uses can make it very challenging to determine which person explicitly needs the information.

Participant EM21 explained that mitigation is the most complex emergency management focus area, primarily because of the financial impact of making effective changes. EM21 added that when mitigation is not made an economic priority, public administrators take mitigation shortcuts, such as for beach renourishment, where snow fences are placed inside beach dunes. Then vegetation is planted on the top of the dunes, compared to the proper way to build dunes

from the ground up, like a snow drift. Participant EM21 discussed shortages in technical specialists to deploy to EOCs, which are challenges that impact operations; the value in face-to-face communications is irreplaceable during incidents and events; therefore, EM21 must choose where to deploy resources based on likely impacts with limited information. Participant EM21 provided a single point of failure, where emergency managers failed to recognize that operations would not work; specifically, containment lines were needed to secure the incident, and secondary boundaries were necessary, which were not established early enough to be effective.

Additionally, EM21 discussed that if operations are not working and the emergency managers do not have situational awareness, additional dependent activities for expanding events do not occur, such as establishing incident management teams. Participant EM21 described that managing abrasive personalities is a personnel challenge that impacts operations, and overcoming challenging behaviors requires constantly reminding activated personnel to remain mission-focused. Participant EM21 has observed political influences determining the appointment of emergency managers, where less qualified are appointed above more qualified or capable individuals. EM21 added that emergency managers lacking qualifications, capacity, certification, and actual experience result in decreased functionality and the dismantling of meaningful relationships.

EM22

Participant EM22 is an executive and advanced emergency management academic graduate with over thirty years of local, state, and federal disaster management and activation experience. EM22 has also chaired a Local Emergency Planning Committee (LEPC) and serves both regionally and nationally on emergency management associations. Participant EM22 discussed decision-making as a recurring challenge experienced while managing incidents or

events. Participant EM22 added that the capability of making a decision is individually dependent and relevant to agency empowerment, and personnel are more impactful when empowered to make decisions because detailed analysis is not always possible, and decisions need to be made immediately. EM22 added that understanding each other's capabilities and limitations means an accurate and comprehensive understanding of what others professionally bring to the operation. Participant EM22 explained that managing the expectations of elected officials or agency administrators is their most challenging focus area because these public servants typically do not have real emergency management experience. EM22 added that the challenge of mitigation efforts is also tied directly to explaining and managing the expectations.

Participant EM22 provided a challenge that impacts operations, where emergency managers do not always understand the difference between solving incident issues using operational objectives compared to management objectives, such as setting up overall incident elements for Command and Control (C2) or a Joint Information Center (JIC). Participant EM22 described overreliance on a single person as a reoccurring experience causing a single point of failure challenge. EM22 added that entire emergency management organizations have stopped functioning entirely because one key person who is being over-relied upon is the sole decision maker, knows the program best, has all the proverbial keys, and knows all the agency passwords; when that key member takes a vacation, the program staff has no idea what to do without their guidance. Participant EM22 described how assigning personnel based on public safety rank or position rather than actual emergency management and incident management experience has caused personnel challenges and impacts on operations.

EM22 added that rank and position based on public safety disciplines, such as a firefighter or police officer promoted or appointed to the rank of captain or chief, does not

guarantee familiarity with any of the nuances of emergency management. Because an agency uses rank and position to define responsibility and authority, emergency management is often forced to use inexperienced personnel solely because of achieved rank or position. Participant EM22 explained that although some local, state, and federal organizations focus on capability rather than political relationships, they have observed political influences determining the appointment of emergency managers, where less qualified are appointed above more qualified or capable individuals. EM22 added that contemporary emergency management needs to return to a meritocracy, where emergency managers have gained the requisite knowledge and experience of the many facets of emergency management and are better suited to determine the expectations of elected officials yet skilled enough to manage those egos of all other participating entities.

EM23

Participant EM23 has worked in emergency management and special events for twenty-four years, managing response resources and filling incident management command and general staff roles. EM23 has participated in an extensive list of training and post-graduate education. Participant EM23 discussed that inadequate information is a recurring challenge experienced while managing incidents or events. EM23 added that adequate and accurate information is critical to the success of incident management; when details are missing, command and control functions are at a significant disadvantage, and further, when restricted communication is deliberate or personality-based, the distribution of inadequate information additionally compounds this challenge. Participant EM23 explained that the incident management planning process is the most challenging focus area because operational needs are based on everyone asking the right questions and determining which missing details will impact the objectives. EM23 added that when political dynamics are also present in the incident, the

incident climate becomes even more challenging, and planning receives greater scrutiny, becoming even more difficult.

Participant EM23 explained that decision-making and information flow are challenges that impact operations, which include ensuring that correct decision-makers and responsible parties participate in the plan development and execution. EM23 added that identifying major stakeholders that should participate in incident operations is usually straightforward; however, the process is to ensure objectives are being met directly by those decision-makers and for the most favorable outcomes. Participant EM23 described a single point of failure experience involving communication where situations down-range had devolved; however, reports to decision-makers were misrepresented and not provided because too many assumptions were being made at the incident site, causing a delay in assigning additional resources.

EM23 explained that personnel challenges that have impacted operations include negative attitudes, inaccurate personal views of the situation, general disagreement, and dismissing other's perspectives. EM23 added that these issues require a renewed focus on policies, rules, regulations, remaining personnel, and maintaining professionalism. Participant EM23 has observed political influences determining the appointment of emergency managers, and the walls created against those without political influence sustain a limited mindset that everybody is not welcome to participate in leadership roles regardless of how much training, certification, education, and experience they may possess.

EM24

Participant EM24 has an extensive local and state emergency management background spanning thirty-four years, which includes managing the response and recovery from tornadoes, hurricanes, and major flood events. EM24 discussed resource allocation and resource

management as individual and recurring challenges experienced while managing incidents and events. EM24 added that resource accountability is a challenge, whereas resources requested and then ordered by municipalities or counties are manageable; however, once those resources are managed at the state level, it is significantly more difficult to ensure those resources arrive at the intended location during a disaster with limited communication. EM24 explained that resource challenges are related to emergency manager complacency and a general reluctance to adopt new technology for disaster management.

Participant EM24 provided that planning complacency is emergency management's most challenging focus area because of today's copy-and-paste methodology; sometimes, plans are borrowed from other agencies, which creates a plan that lacks local application, inaccurate plans, a plan that is never read, or a plan impossible to execute effectively. Participant EM24 stated that communication among emergency management professionals is a challenge that is regularly experienced, and this is because the team concept is not consistent across the emergency management community. Independent hierarchical organizations prevent cross-entity communications and direct coordination during inter-agency response and recovery. Participant EM24 explained that activation expectations in statewide mutual aid and state-to-state activations represent a single point of failure because no activation restraint is required, expected, or encouraged when sending resources.

Participant EM24 provided that many of the newest emergency management workforces do not possess the same historical behavior for managing disasters as tenured personnel. EM24 added that today's latest emergency manager seeks remote work, values work-life balance, and a thirty-two-hour work week. EM24 explained that disaster activations require long hours, overnight work, and multiple-day assignments, and working eight-hour days does not provide

enough of the emergency management expert's time to address all community needs. Participant EM24 has observed political influences in determining the appointment of emergency managers and in all aspects of emergency management, specifically when positions are given to political associates so resources can be re-directed for political advantage.

EM25

Participant EM25 is an emergency management professional with eight years of experience in public assistance, recovery, mitigation planning, public education, and emergency operations. EM25 has been deployed for local, state, and national natural disasters and human-caused technological incidents. Participant EM25 explained that territorial conflicts among response agencies are recurring challenges experienced while managing incidents or events, creating coordination difficulty in the approach to disasters and information sharing. EM25 added that this top-down issue includes command-level staff sometimes having issues with sharing, siloing, or gatekeeping information and then deflecting responsibility for incident shortcomings directly related to those communication behaviors.

Participant EM25 provided information on the endemic emergency management challenges, personnel as a focus area, precisely when the influences of political authorities with high personal self-gain view incidents through the political lens and place self-interests before accomplishing goals and logical objectives. Participant EM25 provided ineffective politically driven decision-making, which is a challenge that impacts operations where direct incident decisions are considered first in a financial context and secondarily for community needs. Participant EM25 discussed the lack of reliable, redundant communications as a single point of failure that caused a challenge during the deployment of an incident management team into an austere environment. Participant EM25 discussed that when political personnel are assigned

positions of authority or leadership and do not have the requisite experience, this creates challenges that impact operations because the subordinate personnel are then required to complete their responsibilities and those for positions being occupied by unqualified personnel. Participant EM25 has observed political influences determining the appointment of emergency managers, specifically where the necessary aptitudes for emergency management were absent because objective criteria such as credentials, certifications, and experience were not the primary consideration.

EM26

Participant EM26 has been an emergency manager for over fifteen years and currently works in public safety leadership with extensive experience in command and general staff roles and conducting preparedness, planning, mitigation, operations, and logistics efforts. Participant EM26 discussed personality differences as a recurring challenge experienced while managing incidents or events, specifically political affiliations, policy misunderstandings, and interpersonal communication restrictions. Participant EM26 explained that mitigation and recovery are challenging emergency management focus areas because these topics are not as immediately rewarding or publicly attractive to political officials as, for example, disaster response. EM26 added that municipalities often pursue mitigation efforts following a disaster as a component of recovery rather than logically before the incident when mitigation reduces the impact of a disaster before the actual disaster.

Participant EM26 discussed how poor critical thinking causes challenges that impact operations, whereas, in the operation section of most incidents, there are acute adjustments that can be made that do not affect objectives. EM26 continued that most adjustments are merely part of the response process. However, emergency managers need to know the difference as to when

the adjustment will affect the objectives; incident command should be included so that they do not subsequently have to make panic decisions without reasonable time to understand what occurred. Participant EM26 provided a single point of failure experience where incident personnel retained and controlled information to ensure they were fully included in every conversation, even though these personnel possessed no expertise in the topics being maintained and controlled.

EM26 described this as gatekeeper syndrome, where information silos and political isolation are utilized by incident personnel to ensure relevance and create essentiality. Participant EM26 provided an example of personnel challenges that have impacted operations, where lack of qualified staffing, the understaffing of incidents, and too many cross-training personnel filling vital positions require a specialty team role, leaving the emergency management position unstaffed. Participant EM26 has observed political influences determining the appointment of unqualified emergency managers, and EM26 believes this trend is because political officials do not fully understand the complexity of emergency management. They are being informed by political affiliates who do not possess enough background and experience to explain it.

EM27

Participant EM27 has over twenty years of public safety leadership experience, serving in several emergency management and state law enforcement positions. EM27 is currently responsible for a safety management system with an extensive transportation facility and that authority's emergency operations control center, which includes the emergency dispatchers and customer service team. Participant EM27 discussed the lack of resources and practical emergency management training as individual and recurring challenges experienced while managing incidents or events. EM27 advises that securing and receiving necessary resources is

an ongoing challenge. Participant EM27 added that although after-action meetings, hot washes, and improvement planning occur following an activation, few or none of the best practices or improvement concepts are implemented without training.

Participant EM27 explained that the FEMA public assistance financial disaster recovery process is the most challenging emergency management focus area, and they manage that task by seeking other experienced professionals to assist in the reimbursement process. Participant EM27 provided that communications impact operations based on previous after-action experiences as a recurring preidentified challenge. To improve the overall communications environment and adjust operational impacts, they created a no-fault learning environment using hot wash sessions conducted within three days of the incident. They also complete after-action reports within five days to identify and correct common operational issues. Participant EM27 explained that ground-level communication barriers and failure to establish a unified command have been interconnected, and this single point of failure has caused challenges during incidents and events.

EM27 added that in their organization, many other public service agencies are involved in incidents and events, and there is an ongoing lack of establishing a single unified command structure, compounded that each agency establishes its own incident objectives, representing a shortfall in unified command training, understanding, and education. Participant EM27 stated that regarding personnel, access restrictions to trained resources are a challenge that impacts operations, and they adjusted staffing responsibilities by adding an administrative assistant. Participant EM27 has frequently observed political influences determining the appointment of emergency managers, where significantly less qualified are appointed above more qualified or capable individuals. EM27 added that, unfortunately, when emergencies develop, inexperienced

appointees are often not professionally mature enough to consent to counsel from those more qualified.

EM28

Participant EM28 has served in local government for fifteen years and has developed a comprehensive portfolio in emergency management and information technology, including managing their county activation and response to the COVID-19 pandemic. EM28 has an extensive background in understanding tropical systems and other severe weather events, as well as all-hazards preparedness, and has public relations and communications education. Participant EM28 discussed a general lack of emergency management knowledge among activated personnel as a recurring challenge experienced while managing incidents or events. EM28 explained that although many government personnel are not primarily employed for emergency management responsibilities, they will historically commit to learning essential aspects of emergency management to ensure they are prepared when called upon. EM28 added that, unfortunately, the population's disposition is not being carried forward as a current practice, requiring more just-in-time training to occur amidst emergency operations.

Participant EM28 identified that response and recovery are the most challenging focus areas; response is complicated because temporarily assigned personnel lack the requisite skillsets to perform in emergency management roles, and recovery because government organizations do not fully commit the resources necessary to ensure adequate public assistance recovery is accomplished. Participant EM28 explained that decreasing agency participation in comprehensive, advanced planning challenges impacts operations, meaning agencies' specific details are not included in emergency plans, requiring unexpected mid-operational adjustment. Participant EM28 provided that administrative inexperience caused a single point of failure

during a recent hurricane activation. That inexperience caused a challenge because the authority misinterpreted information and gave improper directions based on inexperienced interpretations. Participant EM28 discussed how political personnel's assignments to roles based on a high public safety rank or title, not experience, cause challenges that impact operations. To improve this circumstance, EM28 spends significant incident time conducting rudimentary training. Participant EM28 has observed political influences determining the appointment of emergency managers, adding that although recently passed state statutes set minimum standards for emergency managers, fiscally constrained communities will still not attract highly talented, accomplished emergency management professionals.

Appendix H: Abridged Focus Group Transcripts

Focus Group Question One

How does your emergency management team collectively plan for single points of failure?

Participants collectively did not believe their organizations were planning for or mitigating against single points of failure. One participant provided a single point of failure planning example where their municipality designated librarians as the staffing for the points of distribution for emergency supplies, and nowhere in the plan did they take into account that over half of the librarians either rode the bus or a bicycle to work. Public transportation is characteristically disrupted when disasters occur, eliminating most planned staff working at the distribution points. The participants added that most of their organization's plans are not exercised, rendering them useless because the team intended to use them but never practiced them. Participants described the planning process as very often just words on paper that are never exercised.

The participants also explained they had observed decreased funding commitments, which further demonstrated an administrative oblivion that particular challenges will never happen and, somehow, teams will suddenly overcome the problems created by poor planning at the height of an incident. The participants discussed that planning absolutes, such as straightforward matters like at what wind speed bridges will close, should not be subjective. Participants added that plans are only as effective as their resistance to political perception and subjectivity. According to the participants, municipalities do not insulate plans well and prevent single points of failure from evolving when subjective decision-making overcomes the plan. The

participants added that to reduce subjectivity, the plan composers need to weigh in subjectivity and establish mitigating factors to reduce unnecessary plan alterations.

The participants discussed accreditation planning as a single point of failure because administrative leaders decided to participate in accreditation programs for emergency management. However, they did not provide the financial requirements, and staffing demands that accompany an effective accreditation program. The participants added that completing accreditation requires a complete overhaul of planning documents regardless of how many times or years a program has been certified because accreditation standards are continually changing to reflect the emergency management community. The participants discussed that municipalities must have a Comprehensive Emergency Management Plan (CEMP) that helps manage disasters and emergencies. The participants added that some of the municipality agencies do not believe there is real value in updating the CEMP plan and do not participate in ensuring the plan is accurate, setting the municipality up for at least one single point of failure, which is an inaccurate plan. Then, suddenly, a significant incident occurred in that municipality, and the elected officials saw these inevitable failures happening and began to assess blame. Emergency management is responsible for the CEMP and, therefore, for the failures, regardless of the organizational culture preventing a proper preparedness environment.

Focus Group Question Two

If your team has experienced a single point of failure in emergency management, how was it managed?

The focus group participants discussed unrealistic planning, and they continued to experience well-written plans being underutilized and untested plans being heavily relied upon. The participants discussed another single point of failure experiences that all involved human-

caused communications problems, where ego, silos, and information exclusion caused real issues. Participants provided another reoccurring single point of failure experience where the focus of a search and rescue deployment has departed from emergency response that helps locate and rescue survivors to an extreme focus on documenting damages and conducting damage assessments that ensure the necessary financial damage threshold is captured for public assistance reimbursement. The participants discussed that the incident command system is cumbersome, and there is a generalized lack of awareness. The participants added that information provided in developing incident action plans is not always adequate because it is purposefully limited, accidentally or intentionally siloed, or withheld entirely.

The participants discussed new incidents agencies have not experienced previously, such as the emergency management response to the COVID-19 Pandemic. The participants added that little was known about responding during that time, and the team had to remain flexible. The participants added that many exceptional professionals worked tirelessly for the community, conducting testing and vaccinations, and were able to work through every challenge except one: politics. The participants explained that each day during that operation, the objectives would change based on the administration's desire, which created what was described as a moving target, making the response unnecessarily more complicated than necessary.

Focus Group Question Three

Please discuss your personal experiences regarding how your agency managed a single point of failure that caused a challenge during an incident or event.

The participants discussed personal experiences and how agencies single points of failure. Specifically, the participants discussed a deployment experience where a significant tornado destroyed a small community, eliminating the 911 communication system. A lack of

redundancy in the system caused 911 calls to be forwarded to another county, which they were not expecting or knew what resources were available to dispatch. The system also forwarded 911 calls to a number with a busy signal or voicemail not set up, so it disconnected callers. Another participant discussed having been assigned points of distribution during a hurricane activation, and they were advised that librarians were assigned the responsibility of working the points of distribution, which included working in the austere environment and giving out food and water to survivors. Although the library staff were willing, this was not the best use of that stuff because the municipality needed the librarians to open the libraries as soon as possible.

The participants discussed that some agencies unnecessarily limit access to critical information and use the semblance of a sensitive over-classification; even though it is open source, there is no connection to a specific threat. The participants discussed the emotional maturity of those in administrative roles and that during several recent incident activations, there have been daily themes, such as the political theme of the day, the operational theme of the day, the national theme of the day, and trying to plan tactics and strategies anticipating the perspective theme of the day is extraordinarily challenging. The participants described a recovery single point of failure where their municipality has policy and collective bargaining inconsistencies compounded by FEMA Public Assistance rule changes.

In contrast, employee benefits are reimbursable under particular circumstances, and when the municipality does not ensure municipal code policies reflect FEMA recovery guidance, additional funds are unnecessarily expended, or the work completed by emergency management personnel is squandered. The participants discussed that a common day-to-day single point of failure consequence is revealed in the lack of proper program management. Municipal emergency management agencies often institute programs to ensure that spending public funds is

effective; however, the program is intentionally created, and the program devolves the first time something unique requires immediate action or must be instituted immediately. The participants observed that their emergency management agencies failed at project management because they overreacted and changed the program when a new action was necessary, meaning a crisis management approach caused the program to lose focus because something was unforeseen in the program development.

Focus Group Question Four

How does your position or area of responsibility during the incident or event determine if a single point of failure occurs or is allowed to occur, meaning does or should responsibility or authority dictate failure, such as an agency administrator or director versus the command or general staff versus support personnel?

The participants discussed that position and assignment contribute to single points of failure. Specifically, the participants added that personnel given a leadership role, temporarily or permanently, often demonstrate decision-making and information-sharing fear, including the fear of losing their role in an agency or an organization. They continued that position achievements support incidents and events; however, due to the competitive nature of emergency management positions, leaders do not always feel safe in a role. Leaders may not express high incident achievement because they act in self-preservation and naturally limit their freedom to share information, sometimes in fear of reprisal where they should not share information, or they share inaccurate information. The participants discussed that position is correlated to single points of failure, specifically with the disaster recovery process. The participants added that FEMA assigns staff to municipalities to help them work through the public assistance recovery process. After building a relationship with that FEMA staff member, suddenly and inevitably, FEMA will

re-assign that person, and the municipality is forced to waste countless hours readdressing the same topics with a different set of FEMA employees that impose new attitudes and perceptions for project dispositions that have already been decided upon. The single point of failure is the loss of continuity in FEMA staff assignments, which wastes municipality time investments, and the newly assigned person having position and authority over recovery projects has a new interpretation of guidelines, exacerbating that failure.

Focus Group Question Five

In your experience, how does the after-action process capture incident or event challenges accurately or effectively, and why?

The participants discussed that the after-action report meetings they participated in did not aim to create an honest and truthful assessment of the incident or event. They explained that often before the after-action even begins, administrative agents instruct that specific agencies' failures will not be included and personnel will not discuss those agencies unfavorably. One participant addressed that legal action against their agency restricted what personnel could discuss during the after-action session and deleted it entirely once it was completed. The participants discussed how after-actions are also intentionally restricted because, in many organizations, the after-action is, and should be, a reflection of the organization's performance during activations. If the after-action reflects poor performance, the future, or at least the organization's leadership, is in jeopardy. The participants continued that they believe that action reports are meaningless and question if they are needed when everything stated in the after-action is scripted, overly optimistic, and does not reflect most incidents' reality, and performance improvement plans are rarely part of the process. The participants added that after-action reports

are written but are not typically made available for review later or before another incident or event occurs.

Focus Group Question Six

What do emergency management leaders need to do to address single points of failure more appropriately, and why?

The participants discussed that leaders should focus more on addressing single points of failure. The participants explained that leaders could secure general funds or even grant funds to address single-point-of-failure matters, such as leadership training and interpersonal communications training; participants also discussed that leaders need to dedicate the correct team members to ensure single points of failure are eliminated or reduced. An example provided by the participant group included that when deploying special teams to help other communities, public service leaders do not always send a qualified recovery specialist to create and collect appropriate documentation. However, when the proper documentation is not made or collected, the leader blames the team, resulting in the loss of personnel and future opportunities to participate. Inevitably, the deployed personnel will stop focusing on the mission and turn complete attention to documentation.

The participants also discussed that leaders must manage their emotions during activations and ensure they do not create single points of failure by increasing stressors due to controllable issues such as sleep deprivation. The participants added that some administrators are unwilling to allow another equally qualified professional to work in their role for fear of mission out on any part of the activation. Participants discussed that emergency management leaders often change staffing assignments for those working on emergency management incidents and events within their operational prerogative. When those changes are made, to avoid a single point

of failure from cascading throughout the incident, those leaders must merely communicate the change. The participants explained that leaders in emergency management need to ensure effective communication by eliminating silos, increasing responsible sharing of information, and preventing political posturing because emergency management's purpose is to serve the community, and the current communications are not effective.

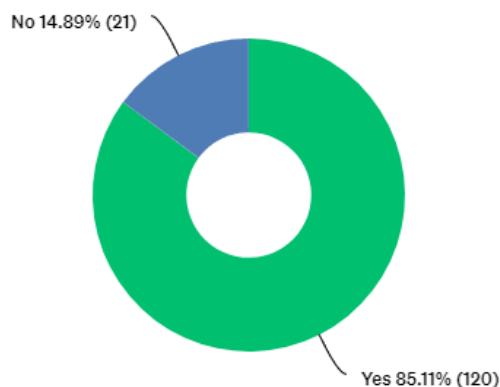
Appendix I: Abridged Survey Response Transcripts

Survey Question One

Considering the definition above, have you observed or experienced single points of failure in emergency management?

Figure 7

Question one regarding single point of failure experiences



Note. Most respondents have observed or experienced emergency management single points of failure.

According to the survey data, most respondents have experienced single points of failure in emergency management, whereas 85.11 percent have and 14.89 percent have not. Survey respondents submitted one hundred and two unique comments regarding their single point of failure experiences, citing various topics and circumstances that further their contribution to the research.

Respondents commented that emergency management leadership is a significant single point of failure. Respondents described a major hurricane where elected officials used political influence on direct resources outside their jurisdiction, causing response delays. Respondents also explained how leadership fails to deliver consistent public service, which creates confusion

and delays for emergency management personnel and the public. A respondent described how a key emergency management leader created a single point of failure when they refused to write down any plans, resource lists, or important contacts because they believed written plans were unnecessary and became immediately obsolete; unfortunately, that coordinator suddenly died following a wildland fire response.

The respondent's emergency management program was left in dismay by the loss; however, the significance of the single point of failure was immediately realized because the deceased coordinator typically led line-of-duty deaths, meaning unfamiliar personnel worked to create written plans, resource lists, and contact information. A lack of (crisis) leadership training and opportunities fostered much-needed education. A respondent described an emergency manager from a large municipality who was a very knowledgeable, essential leader in emergency management; upon retirement, their replacement was not as knowledgeable or experienced, so to remain effective, the municipality was forced to place the former manager on retainer for incident guidance. The respondent added that the failure was not due to relying on the former emergency manager but to the fact that the municipality did not establish a contingency plan to ensure a suitable replacement was trained and mentored before retirement.

A respondent described a flooding disaster where an emergency manager failed to report necessary minimum financial threshold values to the state, which rendered the municipality unable to qualify for millions of available dollars in FEMA public assistance and other disaster relief opportunities; this case highlights the importance of leadership personnel possessing technical skills and abilities to fulfill their role. A respondent explained that emergency managers are not and should never be considered first responders, meaning they have observed a single point of failure develop when emergency managers are required to abandon their role of

coordination and distribution of resources, which better supports the Incident Commander. A respondent explained the failure of elected officials to complete the FEMA basic online incident management training to ensure they understand the functions of the local EOC and emergency management's decision-making processes.

A respondent explained that when emergency managers do not channel their efforts appropriately, they interfere in the actions of scene personnel to the point that it causes incident chaos, reinforcing that emergency managers need to refrain from overstepping the role of the incident commanders. A specific respondent's experience was based on emergency management responsibilities while working for a public safety agency, where they stated the single greatest point of failure was a lack of planning and preparedness. This issue was most evident during the response to the COVID-19 pandemic and the civil unrest that followed the death of George Floyd; a lack of proactive measures left front-line supervisors to develop and implement their own plans shift by shift, leading to a lack of consistent service, and creating confusion among the officers and the public. The respondent continued that although civil unrest spread across the United States, their leadership did not develop any plans or policies, forcing the front-line supervisors to create them ad-hoc.

A respondent explained that, on several occasions, emergency management leaders missed a single-point action, such as failing to notify appropriately, failing to request effectively, or intentionally not requesting resources that would have directly improved incident operations. A respondent described the single point of failure for their comprehensive emergency management program that successfully cooperates with dozens of stakeholder organizations, follows best practices, shares information effectively, and conducts ongoing training to ensure the emergency management team is ready; however, and unfortunately, according to the

respondent, a recent development is their emergency management leadership roles have become increasingly political rather than based upon education and experience. The respondent added that the recent increase in single points of failure incidents resulted from micro-management from the new political emergency manager county administration, which does not fully understand their role.

A respondent reported that before a hurricane's landfall, local leaders waited too long to give directions to establish public safety standby crews, delaying response, and did not implement storm preparation activating generators until landfall, causing power outages in critical facilities. A respondent explained that the emergency manager created a single point of failure within an emergency management agency by only conducting work verbally, with minimum documentation. The emergency manager suddenly died, and following that death, the new interim emergency manager faced significant challenges because few written plans, policies, or procedures existed, and no written log for passwords to computers, social media accounts, or grant access websites was ever created. Another respondent explained how a municipality, the population center of a particular county, has a significant misunderstanding that if a disaster occurs, the county emergency management will provide all necessary command structure personnel and equipment.

A respondent explained that the single point of failure in their local jurisdiction is the lack of comprehensive emergency management planning, which is causing multiple agencies to take control of the same incident, many of whom have no basic knowledge or understanding of incident command system concepts. These circumstances are causing chaos and confusion in large-scale, low-frequency, high-consequence multi-agency incidents and events. A respondent described a single point of failure involving the incident management concept of unified

command where an inexperienced, politically appointed emergency manager with authority made incident scene decisions and gave orders contrary to the incident objectives, strategies, or operational tactics; these decisions caused a significant incident deterioration. Another respondent stated that their emergency management program's single point of failure exists because the leader refuses to engage public safety officials to create network opportunities and conduct equipment or facilities testing. A respondent offers a single point of failure, currently causing challenges due to emergency management programs' cognitive bias to overestimate knowledge or ability due to a lack of experience, which creates administrative liability while managing incidents and events.

Many respondents commented on single points of failure in communication, planning, and preparedness, specifically during the 2020 response to the COVID-19 pandemic, blaming the deficiency of forward-thinking leaders at all levels of government who lack the foresight to create proactive measures. Additional communication single points of failure were explained by respondents, specifically, where inexperienced personnel are working with mass notification systems and making choices whether to either send or refrain from sending emergency messages, contemplating the timing of messages until it finally becomes too late, or creating misinformation. Communication has been the most consistent single point of failure in several respondents' careers as emergency managers. A single point of failure in communications interoperability when working outside of assigned jurisdictions was described by a respondent, specifically where fatalities and critical injuries occurred due to new radio equipment that only transmitted unreadable messages in mutual aid areas. The respondent added that the new radios were only tested locally and not in remote regions of outlying, neighboring communities.

A respondent described a single point of failure as not having enough personnel permanently assigned to achieve the objectives set by the emergency management program administrator, and another respondent described a lack of communication between incident command sections regarding mission requests circumventing established processes without going through proper channels. Overall, the respondents describe emergency management communication and coordination as a real struggle due to territorial conflicts, unwillingness to cooperate, or the lack of qualified staff to fulfill incident roles. Respondents discussed that a single point of failure, or breaking point in the management of any emergency, is frequently a lack of well-coordinated operation because of the lack of communication. According to respondents, some communication issues persist because the command and general staff quickly outgrown their assigned space and separated into other areas, diminishing inter-personnel communication.

Respondents stated that a single point of failure was due to the lack of a formal staffing plan at the onset of an incident. This shortfall caused a delay in the completion of the incident action plan (IAP), which caused multiple changes to occur after the IAP was published. A respondent added that communication failure begins with plans not being exercised and validated, and when incident stressors increase, people revert to obsolete practices and actions that conflict with current procedures. A respondent described a severe flooding incident where a critical single point of failure was observed in the emergency management response where a newly formed emergency management leader did not fully grasp the severity of the situation. That emergency management leader's misunderstanding led to a refusal to initiate the necessary emergency protective actions and a delayed response that exacerbated the flooding's impact, resulting in increased property damage and prolonged rescue efforts.

A respondent commented on a lack of communications interoperability when functioning out of assigned jurisdictions, such as for newly issued radios with incompatible connecting equipment. The timeliness and completeness of information a respondent provides are a single point of failure, often coupled with a failure to adhere to NIMS principles concerning command and control and the establishment of ESFs. A respondent added that a lack of transparent security information had been an ongoing single point of failure for emergency management agencies because law enforcement entities are required to protect information and intelligence to keep the community safe; however, those measures are often taken to the extreme, preventing other emergency management personnel from activating protective and mitigation measures. A respondent explained that communication breakdowns lead to single points of failure, specifically regarding social media messaging and mass notification systems, such as not sending communication, sending communication too late, or sending misinformation. A respondent noted another communication and warning single point of failure, whereas a community relied on residents to visually monitor streamflow and immediately communicate the observed hazard to county officials; however, although a flash flood warning was issued by the National Weather Service (NWS), the timing of the warning did not provide the monitoring team enough time to respond and access the monitoring location because roads had already become impassable due to runoff and debris flow.

Multiple respondents provided that personnel issues represent a recurring single point of failure, such as individuals coordinating significant components of an emergency management program concerning passwords, documentation, or even the key to a building. Many respondents discussed that single-person gatekeepers always fail when that person is not immediately available during an emergency, and the entire organizational response can fail. Personnel apathy,

especially among senior officials, was reported by respondents as a single point of failure as well. When emergency managers are not cross-trained in all aspects of disaster response and recovery, there is a lack of knowledge, reinforcing apathy. A respondent also added that incidents and events are negatively impacted when the proverbial gatekeeper cannot be present, a sole vendor cannot provide emergency equipment and materials, or when a specific individual is the only employee who can approve emergency measures is suddenly unavailable. Another respondent explained that emergency managers' leaders are the single failure point because they fail to include appropriate stakeholders in the preparedness cycle. Then, during an incident, the emergency managers quickly become overwhelmed trying to control too many responsibilities.

The respondents described managing incidents as a single point of failure issue that causes operational challenges, such as when cooperating agencies create independent IAPs, which creates confusion among public safety partners. A respondent described a failure that persisted because their agency would not apply best practices and lessons learned, which was compounded by inexperience with the use of incident command system processes. A situation was also described where, following a significant wildfire that quickly transitioned to a flooding disaster, no severe weather stations or forward observation sites were established close to nearby towns and communities due to funding decisions and resource allocation; when floodwaters inundated the area, no early adequate warning existed causing a delay in communications, response, security, and further contingency planning. A respondent described a hurricane response failure where emergency managers did not consider the devastation of the local farming community because of a pervasive nature to adhere to the same deployment plan regardless of specific local conditions. The respondent continued that resources were unnecessarily searching homes and opening shelters, and those residents most in need were overlooked; this issue was

only resolved when a representative from the local agriculture community was finally allowed to explain what the community needed most, which was largely ignored.

A situation was described that occurred during the mobilization of one team and the demobilization of another team; a single point of failure occurred during the transition because neither team was maintaining no situational awareness, and a significant wildland fire suddenly increased which destroyed 350 structures and killed two residents because the response defaulted to local resources. A similar wildland fire single point of failure incident was described by a respondent where post-fire risks to watersheds were ignored, and no weather or streamflow observation sites were established close to the nearest community, as runoff quickly accumulated into normally dry areas and eventually through the town, inundating low water crossings for motorists, producing a flash flooding. A respondent described a single point of failure in emergency operations plans that rely on a single partner agency for staffing. The respondent explained that emergency management programs rely too heavily upon volunteers and non-profit organizations for disaster shelter staff; however, those entities often cannot provide the necessary shelter staff.

Another respondent explained that because everything impacts everything, emergency managers do not always recognize that everything done and everything not done impacts operations; every aspect of complex operations depends on things happening in a way that produces branch and sequel actions. The respondent continued that branch operations and actions deviate from the established plan or procedure, the one-offs and unique situations for which no plan can account; sequel operations follow a precise order of operations and depend on individuals executing a plan as conceived. The respondent concluded that the single point of failure is the individual emergency manager because they each decide to conduct operations

based on personal perspectives, understandings, and interpretations of plans and the planning process and not the overall intent.

The respondents commented on technology and equipment as a single point of failure topic, such as the inability to conduct road clearing because of the lack of fuel, generator failures because of the lack of proper cables, and electrical failures because the proper connections were not installed. Respondents stated there is an overreliance on technology and equipment because if one element, component, or platform fails to perform, typically in government, there are no backup or redundant systems. The respondents discuss the increased use of virtual platforms to coordinate responses to incidents rather than in person, which has caused an increase of unqualified and unnecessarily curious personnel managing emergency management teams.

One respondent added that historically, quick and decisive meetings establish objectives and an executable plan: in the current emergency management environment, personnel unfamiliar with incident management processes interrupt with personal, irrelevant dialogue, delaying purpose and effective incident management. Another respondent added that there is too much emphasis on using the Internet and cellular networks for emergency management communication. No dependable backup system exists because plans and practitioners do not expect partial or complete failure of network systems. Respondents added that a single point of failure is that alternate communication technology and equipment are not actively pursued for every facet of public safety operations.

Another respondent described a technological single point of failure where a software program that tracked all residents who required assistance with evacuation during a disaster, and unfortunately, the emergency manager placed this responsibility on another local leader who was not trained to use the program, which caused incident personnel to revert to handwritten lists of

evacuees, resulting in a delayed evacuation. A respondent explained that emergency managers make assumptions about technology and equipment where critical infrastructure generators cannot sustain facility demands. Specifically, a single point of failure occurred in a public safety facility that had an emergency dispatch center powered by a computer system that was not being maintained and found during a major incident to be incapable of running a critical 911 system; additionally, the computer system battery racks were not designed to sustained uninterrupted power to critical systems.

The respondent continued that the entire county fire and rescue dispatch system failed, which also caused the routing programs in the mobile dispatch terminals in fire apparatus and ambulances, all of which was noted in the after-action review that the automatic transfer switch at the EOC generator was the single point of failure. Another respondent described a security single point of failure where generators were set up at wastewater pump stations in 2017 during the response to Hurricane Irma; however, a lack of security permitted residents to steal the generators. A respondent provided that during a significant incident involving an explosion in a residential area, the emergency management team responded to assist; however, they were untrained and unable to assist in the needs of the incident for public information, victim services, resource allocation, coordinating reunification, or community recovery.

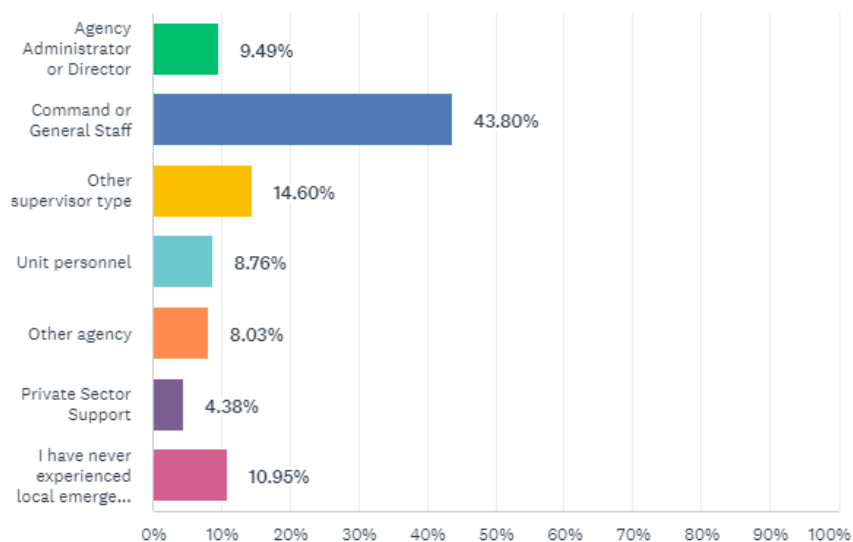
Survey Question Two

If observed or experienced, what was your position or area of responsibility during the incident or event when single points of failure occurred?

Most respondents, 43.80 percent, selected the command and general staff roles, with the other supervisor type being the second most preferred option, 14.60 percent.

Figure 8

Question two regarding position or area of responsibility



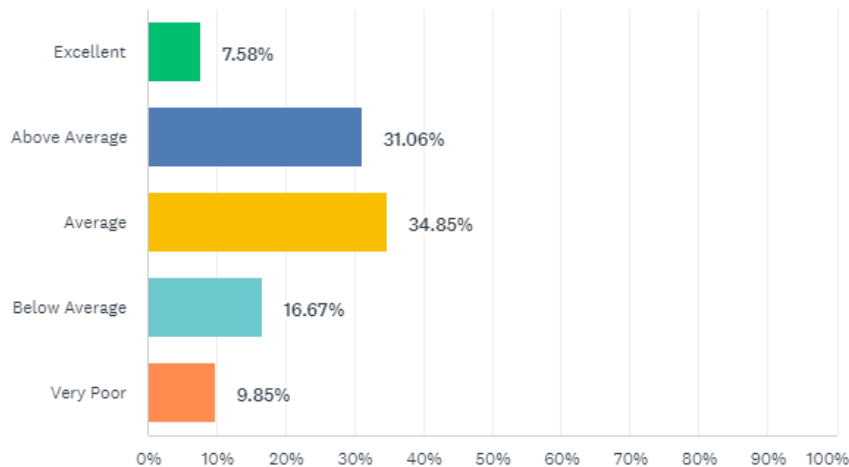
Note. Survey respondents' position or area of responsibility during the incident or event when single points of failure occurred; most respondents were in a command and general staff position when a single point of failure in emergency management occurred, and no comments were collected on question two.

Survey Question Three

Please rate your experience regarding how your agency or organization managed single points of failure that caused challenges during an incident or event.

Figure 9

Question three regarding agency or organization performance



Note. Respondents rated how their agency or organization managed single points of failure; most survey respondents rated their experience as average regarding how single points of failure were managed that caused challenges during an incident or event.

Respondents rated their emergency management agencies as only performing average in managing single points of failure. Respondents provided ninety-eight comments, and overall, they found that the after-action report process is essential due to emergency management cultural influences; it does present the best opportunity to address and discuss single points of failure. Some respondents stated that after-action meetings following previous incidents reduce future incident mistakes by creating mental tools and a missed opportunity when not conducted following an incident or event. A respondent explained that when organizations and emergency management teams conduct after-action reviews, they identify areas of improvement, future training, and exercises that can use those lessons to improve our operations further. Several respondents described that while the single points of failure were acknowledged during the after-action review process, there was no undertaking to correct issues, causing the same problems to

repeat themselves with no resolution; the respondents believe that while single points of failure are identified, organizations do not fully acknowledge catastrophic probabilities without injuries or even fatalities.

Several respondents commented that emergency management leadership contributes to single points of failure. Respondents explained that poor leaders demonstrate behaviors that single point of failure situations create increased significance or importance opportunities for those in leadership roles. Other respondents added that after-action reports explain how, based on poor experiences, emergency plans are developed to eliminate the reliance upon any other level of government, and when a single point of failure occurs, they adjust procedures to accomplish objectives, however inefficient or costly. Several respondents provided that frequently, after-action reports establish process and procedural failures, and gaps leading to failure are identified. However, no real improvements are completed to ensure updated procedures are followed during the next incident or event, further frustrating emergency management teams. A respondent added that recommendations are often ignored because emergency management leaders do not prioritize them and because leaders do not engage elected or appointed officials in any negative discussions.

One respondent provided a specific situation detailed in an after-action meeting during a severe flooding incident where the primary objective was to ensure effective communication and coordination with a newly established local law enforcement emergency management; however, because efforts were treated as political maneuvering, the severity of the incident was largely ignored, a single point of failure, until the situation became perilous. Respondents noted that the after-action process has been unproductive historically and only recently has improved due to frequent networking opportunities and more partial EOC activations. A respondent explained

that at the federal level, a leadership-focused after-action would help to reduce single points of failure because many internal plans, policies, procedures, and protocols have been designed in a vacuum that neglects real-world considerations and authorities. The respondent continued that although every incident begins and ends locally, sometimes federal agencies forget their role in the emergency management community, resulting in confusion and frustration when supporting local agencies and personnel. A respondent also explained that agencies performing poorly experience more single points of failure than successes despite favorable appearances in public-facing media. Respondents added that it is often noted in after-action reports that recovering from a lack of action or poor decision-making constantly challenges incident management due to a lack of flexibility, poor leadership, egos, lack of forward-thinking, and transparency weaknesses.

Communication was reported by the respondents as a common after-action topic, such as conflicts among the same government agencies for comprehensive emergency communication interruptions, because, despite redundancy, incidents and events still experience significant lapses in communications. A respondent added that in contemporary emergency management programs, a lack of technological and human-based communication has become an assumed single point of failure at all levels of government, possibly groupthink. A respondent noted that online emergency management programs offer valuable communications tools until, as indicated in many after-action reports; however, most EOC staff reports from cooperating agencies and are unfamiliar with the platform nuances, requiring an abundance of just-in-time training. Additionally, respondents reported they had been criticized for following after-action improvement plan suggestions by including exercise injects that leaders believed never occurred, such as a complete internet failure.

Several respondents offered additional after-action comments correlating directly to emergency management personnel. The comments ranged from complimenting the highly skilled staff that adapt and overcome obstacles during incidents to those respondents that must avoid emergency management personnel altogether to achieve objectives. Staffing shortages and personality conflicts have been noted in after-action reports as single points of failure, explicitly stating frustration, lack of training, fatigue, and inability to focus on assigned tasks. A respondent added that mapping behaviors, discovering causation, and identifying problematic methods help ensure loop closure and develop hard-wired preventative measures and monitoring.

Respondents described after-action comments focused on managing incidents. However, corrective incident actions were implemented, and sometimes organizations continue to conduct operations in the same manner as those where single points of failure occurred, even expecting different results. Respondents added that although positive after-action reports include how well the emergency management managed an incident, limited resources and inadequate information persisted. Respondents also discussed that emergency management drills and exercises test the resilience of strategies, tactics, and plans to identify better potential single points of failure to improve response and overcome any lack of intelligence or situational awareness. A respondent explained that single points of failure during an incident or event do not always clearly undermine the entire effort, such as needing larger command space, which was discussed in one after-action report, ensuring a larger space was secured for subsequent incidents, which was ultimately about creating a formal and adequate staffing plan to streamline staffing needs when more space was finally made available.

A respondent discussed that agencies had noted in after-action reports that certain agencies had not immediately embraced the federally mandated ICS system or taken time to

understand the role of emergency management for disasters; this caused a single point of failure when the first request for resources was missed by those agencies unfamiliar with both the ICS and EOC process. The respondent commented that the cooperating agencies performed well in all emergency management responsibilities in one after-action report. The emergency management staff failed; conversely, the cooperating agencies supposedly failed. The emergency management staff performed well, denoting that perspective is critical in understanding the after-action process. A respondent explained, as noted in after-action reports, that agencies eventually figure out complex operations; there is always a single point of failure due to the complexity and magnitude of events, which links to understanding what occurred across all challenges with a cascading nature for a common operating picture.

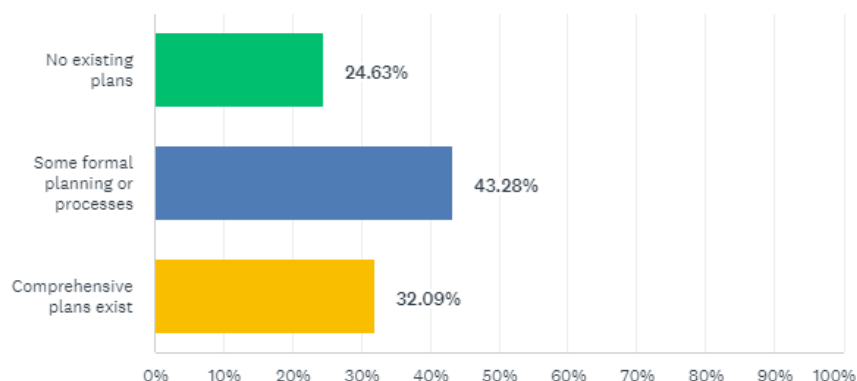
Respondents also provided that technology and equipment failures are noted in after-action reports, specifically when inexperienced municipality administrators make equipment and technology procurement choices that are not appropriate for incidents and events. An example provided was operational equipment and how individual personnel challenges obstruct performance; a single point of failure exists in addressing all the inanimate solutions. The respondents concluded that when people are directly or indirectly involved, the organization is reluctant to address issues; however, change is continuous for equipment.

Survey Question Four

How does your emergency management team specifically plan to address single points of failure, if experienced?

Figure 10

Emergency management team plans for single points of failure



Note: Most respondents selected that some formal plans, planning, or processes exist for single points of failure.

Respondents provided eighty-four unique comments regarding their experience with emergency management planning for single points of failure, and teams report they have only developed some formal planning or processes that have explicitly occurred to address single points of failure. Most of the additional comments by respondents focused on the after-action process, specifically identifying planning and how a comprehensive plan review, not specifically for single points of failure, is performed after events and sent directly to internal and external stakeholders for review and updating. However, few to no comments are ever provided to help improve the plan. Respondents continued that following incidents and events, when the after-action report is completed, and specific areas of improvement are detailed in the improvement plan, often it is up to partnering agencies to determine implementation and ensure completion.

A respondent added that a complete lack of planning led to adverse outcomes during the local, state, and national response to the COVID-19 Pandemic in the spring of 2020. During the after-action process, the respondent found that agencies fully understood the need for additional

planning and training to address simple, preventable incident failures. Unfortunately, the attempts to conduct plan reviews were ignored. Other respondents continued that topic, where they believe the after-action review is not being conducted to discern where failures occur but solely for appearances. A respondent stated that they had experienced a single point of failure, reported it during an after-action review, and specifically planned to address the issue leading to the failure. Still, no planning has been conducted despite beginning that conversation with other emergency management personnel. Several respondents added that, unlike the after-action process, they are unaware of formal, specific written plans, protocols, or doctrines deliberately created to address single points of failure.

Another respondent stated that lessons learned do help, specifically for their agency when planning changes replaced investigative incident commanders with experienced incident management teams for rapidly expanding incidents that are quickly beyond the capabilities of the initial response. For some respondents, single points of failure have been addressed on a case-by-case basis, usually during an after-action review for an incident. Still, no specific planning has occurred for this issue. Another respondent explained that their agency has relied upon some contingency planning for severe weather service interruptions, emergency evacuation annexes, emergency dispatch backup plans, and a fire and rescue continuity of operations plan; however, those plans were merely pieces of other external plans which do not include any single point of failure elements, but now a plan needs to be developed. Another respondent stated that although written plans exist, unfortunately, little attention is ever given to the plans for execution. A respondent explained they adjust operations if single points of failure are identified, except it is difficult to locate appropriate plans while maintaining situational awareness of the more significant incident.

Several respondents described situations involving emergency management personnel and explained single points of failure experiences and the planning process. A respondent described an incident line of duty fatality as a single point of failure that prompted the agency to contract with external subject matter experts, not only to lead emergency management but also to create comprehensive plans, ensure plan familiarity for emergency management staff, create an extensive resource library, establish emergency contacts across multiple sectors, and hosted a wide range of training for all stakeholders and staff. Another respondent offered that they needed to begin a new agency staffing standard that each incident staff member is designated a backup team member through a contractor, tested during tabletops and frequently reviewed to eliminate a single point of failure. A respondent added that participating in local emergency planning is a measure that maintains relationships with all agencies to combat failures better, conducts an ongoing review of operational procedures, and repeats training sessions for the same topic, which is reidentified as a single point of failure. Another respondent added that role-playing and testing plans for simulated incidents and events have allowed their organization to identify and provide action items in emergency plans to address single points of failure. The respondent continued that single points of failure will be discussed in the future after events to take corrective actions, develop ongoing training, and continue to ensure key staff fully understand their role and responsibilities.

To ensure personnel are fully prepared for a given position, a respondent described a comprehensive program that mirrors an apprentice-journeyman-master system, which allows individuals to develop foundational knowledge, skills, and abilities. The respondent continued that emergency managers should not expect new team members to manage complex incidents immediately; however, following initial training, new personnel can contribute positively, given

the opportunity to develop specializations that more fully contribute to organizational success. A respondent also provided contingencies to ensure incident objectives are safely accomplished, including a comprehensive training plan to address staffing attrition due to retirements, resignations, or leaving the organization for other stakeholder agencies. Several respondents discussed that they use improvement planning and training to ensure that staff is aware of the processes in place, how to execute them, and how to adjust when operations are inadequate; when single points of failure occur, an investigative approach is used to gather facts, determine a solution, and create training that reevaluates a situation thoroughly.

The respondents commented on emergency management leadership and that, in general, most contemporary emergency managers they encounter have never considered single points of failure as a root cause of incident and event challenges. At the same time, other leaders merely do not believe this topic is a problem. Respondents added that some senior leaders in emergency management generally make no provision to connect with those working in field operations for incidents and events and, therefore, have limited perspectives about actual issues. This lack of connection has created a gap for field personnel who do not know what single points of failure plans exist, whether deficiencies have been identified, or if improvement plans are being created to mitigate or correct single points of failure deficiencies.

A respondent provided an inditement in that their emergency management and emergency preparedness leaders do not want to discuss the topic of single points of failure because they are the weakest, slowest, and most ill-prepared to plan or manage any incident or event, comparatively speaking, since before the events of September 11, 2001, the hubris associated with their emergency preparedness leadership demonstrate their public safety organization is woefully unable to manage any incidents. Other respondents commented that

emergency management teams know that although formal and informal players need to be involved in emergency management, title, and influence bias bring results, and if necessary, the personnel that accomplishes the mission must capitulate to the leaders; that is what must be done to provide the best public service.

Further respondent comments discussed that some teams developing emergency operations plans for their emergency management agency do not have emergency incident response background for any specific discipline. They believe those teams resort to cutting and pasting documents simply by going through the motions that a plan exists, regardless of whether it is specifically for a single point of failure or other topics. Another respondent added that the emergency management personnel they work with are very good at using the after-action process for all activations, which is then shared with a broad network of public safety officials for planning purposes; however, no single point of failure plans is explicitly being created.

A respondent commented that the personnel in their emergency management agency demonstrate immaturity, lack insight and follow-through, and that the organization maintains an assumptive tenant that anyone can fill any role; that large nationwide organization has many responses and often fails to bring personnel that possesses the requisite localized knowledge that immediately improves incident team functionality. Several respondents described that team meetings intend to create plans, but indolence limits plan completion and that unless a higher authority prioritizes that continuity planning will exist, it rarely happens because planning is described as a drain on staffing, training, and other resources. Although there was no specific mention of single points of failure planning, a respondent provided that their agency has conducted comprehensive emergency planning and conducts regular, inclusive briefings where

everyone can address issues. The respondent explained that every agency has direct, unfettered access to the lead emergency management official if critical issues arise.

Managing incidents was a topic among the respondents' comments, and some traditional emergency management plans were mentioned, such as the comprehensive emergency management plan or the continuity of operations plan, and how these plans relate directly to incident command and emergency support functions. The respondents continued that having official plans or policies is a position; however, when trained personnel familiar with the plans are unavailable to manage incidents using the plans directly, there are issues for those in leadership roles. A respondent explained that their emergency management team addresses single points of failure by prioritizing clear communication with key stakeholders during the initial response phase; effective communication is crucial for identifying potential failures early, and when stakeholders are absent, or their responses are not clear, it is essential to recognize these as critical areas requiring immediate attention. Another respondent added that although their agency is aware of single points of failure, they wrote that memory dictates actions during incidents and events, which resort to backup plans that follow past practices. They continued that even though the agency has identified the areas requiring correcting or updating, which are well documented, when operations begin, everyone becomes emotional. Even the experienced emergency managers lead the team using outdated, not updated procedures. A respondent added that they are currently developing plans and processes to formalize succession plans to eliminate single points of failure in managing incidents and events.

The respondents' comments discussed technology and equipment, including the fact that contingency plans must include using paper forms for resource requests and incident action plans, especially if the incident software programs become inaccessible. Another respondent

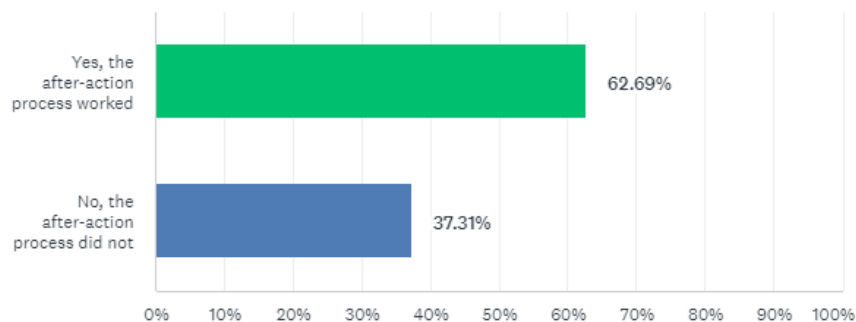
commented that in small, rural communities, plans had been created to establish direct network lines for warning and communication for observational equipment. However, more must be completed, and technologically designed obsolescence technology is challenging to overcome. Regarding communications, a respondent commented that their staff addresses a single point of failure issues by ensuring open communication exists among all entities.

Survey Question Five

Thinking about your emergency management experiences, did the after-action process accurately or effectively capture incident or event challenges?

Figure 11

Question five regarding emergency management plans



Note. Respondents about the effectiveness of the after-action process: Most respondents stated that the after-action process captures challenges.

Most respondents, 62.69 percent, believe the after-action process accurately and effectively captured incident or event challenges, and 37.31 percent do not think it works well. Of the eighty-six unique comments, although more respondents selected that the after-action process accurately captured challenges, the respondents provided an equal number of adverse to positive comments. The negative comments included that, in the respondents' experiences, honest, transparent after-action processes are not regularly completed; when completed, the

summary report is disturbingly skewed to prevent any failures from making organizations appear unprepared or disorganized. Other respondents noted that after-action reports rarely produce helpful information and typically do not mention specific failures due to political oversight where certain comments are explicitly prohibited from their inclusion; when reports accurately reflect substandard outcomes, the reports of any points of failure are dismissed or ignored.

Respondents also explained that action reports tend to be opportunities for taking credit for incident successes or placing blame for failures rather than identifying improvement action items. A respondent added that ineffective after-action processes are due to being too narrowly focused on individual roles and attrition, where personnel are not in positions long enough to enact change, causing future emergency managers to repeat single points of failure. Respondents continued that whether it is due to time restraints or that it is a known formality, the after-action review process rarely performs a deep enough dive into the particular details of the overall failure event, much less a single point of failure root cause analysis, possibly due to organizational liability or the intent is to provide a venue for mutual agency admiration where serious endeavors to point out shortcomings, find alternated courses of action, or to make accurate corrections is foreign.

Interestingly, a respondent explained that the problem with after-action reports is two-fold: emergency managers only create winnable exercises that never create failures, and once the after-action is completed, it is never revisited. Respondents added that stakeholders, especially external partners, do not feel comfortable sharing authentic, candid feedback during the after-action process, diminishing participation because, again, political influence where any harmful content is edited from the final report, creating generic or redundant findings. Respondents explained that only when careful consideration is placed on developing an after-action meeting

or comment collection process that fully protects emergency managers from answering incident questions will there be a willingness to provide honest, unbiased feedback towards minimalizing problems.

Positive after-action review comments included experiences where organizations require personnel, including command staff, to provide both positive and negative incident and event specifics. The respondents added experiences where challenges and causation were accurately captured, encouraging personnel to give recommendations and participate in improvement. Additional respondents reported positive experiences where honest, transparent after-action processes fully acknowledged all incident aspects, were well documented, and all follow-up was provided with responsible parties detailed to address inadequacies and prevent future challenges. Another respondent offered experiences where the after-action reviews were open, thorough, and supportive in each focus area and assisted in the growth of all agencies, resulting in enhanced operational controls, improved planning, and the necessary assurances that single points of failure points were accurately addressed. Respondents offered anonymous surveys as a best practice experience for conducting after-action reviews; this improves the safety of the response process and gains more thorough, beneficial, honest, and transparent comments that can better diminish ego and politics.

Another respondent described their experiences in which the after-action process produced a lengthy list of improvement actions necessary to make future incidents safer and more effective; the actions were assigned, tracked, and accounted for in frequent meetings; as actions were completed, the improvements were immediate; the results produced a more vital, more robust agency than previously existed. A respondent emphasized how critical the after-action and improvement process is for the positive output of any incident, event, or exercise, and

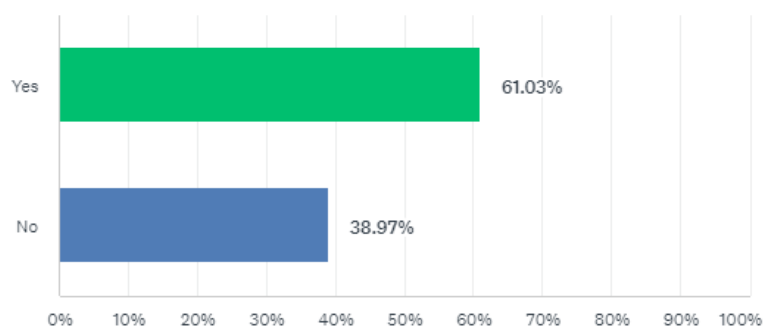
failing to apply after-action principles appropriately is detrimental to any emergency management organization for the long- and short-term to avoid lessons repeated instead of lessons learned.

Survey Question Six

Are emergency management leaders in your agency or organization doing enough to address challenges posed by single points of failure appropriately?

Figure 12

Question six regarding leadership efforts



Note. Respondents regarding leadership efforts in addressing single points of failure; most respondents believe emergency management leaders are addressing single points of failure.

Most respondents, 61.03 percent, believe that emergency management leaders are doing enough to address challenges posed by single points of failure appropriately; however, over 38.97 percent do not. Although respondents reported that their leaders are doing enough, more of the eighty comments provided were negative, fifty-nine, rather than positive comments at twenty-one. The negative comments included that respondents did not want to give comments about leaders, that the same problems keep occurring, that leaders are mostly trying, or, for many organizations, that a lack of actual emergency operations activations creates a lack of experience.

A respondent added that leaders are not doing enough at their consolidated county level. Still, at the agency level, they address the single points of failure without lacking county support. One respondent described single points of failure as a moving target and said leaders need to improve at building resistance and resiliency components. When leaders implement procedural measures, interest diminishes when incidents require time or attention.

Respondents described leadership that is not actively engaged in regular review of plans and resorts to reading plans during incidents and leaders that are not practiced or prepared for a single point of failure, a pervasive matter in some communities, especially those heavily reliant on technology. Respondents believe artificial intelligence will exacerbate leader failures as practitioners become more dependent on technology. A respondent provided that emergency management leaders in their community are not doing enough to address challenges posed by single points of failure appropriately, and the after-action process fails to capture the specific details and nuances of incident challenges due to concerns about naming names and being too specific. The respondents continued that generic, redundant after-action reports prevent leaders from gaining valuable insights and learning from past experiences without detailed, actionable feedback, further challenging developing effective strategies to address single points of failure. The lack of specificity in after-action reviews means that leaders are unaware of particular improvement areas.

Consequently, the measures implemented to address these challenges are either broad or insufficient, causing repeated issues in future incidents and events. A respondent explained that to confront single points of failure effectively, leaders must choose to learn from past mistakes to become more resilient and effective in managing emergencies and start encouraging a culture of accountability, prioritizing detailed, transparent after-action reporting, and implementing

targeted improvement training that is based on specific personnel responses. The respondent described their reactive leader as having no effective means to effectively identify the single point of failure or conduct any root cause analysis when faced with it. Respondents added that leaders are not ensuring plans are current and routinely include various exercise levels to ensure personnel understand roles and responsibilities. If staffing shortages occur, limit competing priorities for those limited resources.

Several respondents described that, unfortunately, leaders are not allowing all personnel to access applicable single point of failure documents to learn better, the leaders are too focused on status and control rather than genuinely addressing issues, or the fear of losing budgetary funding diverts honest conversations. Respondents continued that leaders are not too distracted with the desire to participate in day-to-day incident commander duties of emergency scenes rather than focusing on making emergency management programs better, which, according to the responses, is a lack of knowledge to address problem areas or necessary improvements are being made, nor do they know of solutions in the works. A respondent explained that, unlike other professions, emergency management has no consistent leadership qualification criteria or job description that identifies education, training, experience, personal fitness, currency, professional skills, technical competence, or minimum certifications. Other respondents offered that leaders tend to wait until incidents occur and then implement ad-hoc corrective action as needed, which changes from one politically appointed leader to the next, a continuous variation of competency, knowledge, and experience.

Respondents provide positive comments regarding leaders addressing single points of failure when they occur. Now that the topic of single points of failure has been brought to their attention, they will approach leaders requesting a review of emergency management plans to

identify and address issues with single points of failure. Another respondent offered that leaders are highly motivated to protect lives and property and conduct regular communications and training opportunities to create designed redundancies to reduce single points of failure occurrences. Respondents added that leaders always identify and address single points of failure through policy and training to implement best practices continuously. Other respondents explained that they try to relay the importance of mitigating single-point-of-failure situations through planning. In contrast, others added that although single points of failure are addressed immediately, there is always time-consuming work to be completed. A respondent provided that single points of failure in emergency management are new and modern concepts, and very little documentation exists. A respondent described their senior staff that has recently begun meeting weekly to confer, brainstorm, and share new knowledge with a focus on outcomes rather than processes that create new essential tasks, delegating when possible and requiring tracking of all results.

Survey Question Seven

If single points of failure challenges have impacted your incidents or events, how did you adjust operations to ensure safe and effective outcomes for an incident or event?

The respondents provided one hundred unique responses regarding how they adjusted operations when single points of failure impacted their operations. Twenty-eight respondents described that no exceptionally organized adjustments were made, including an ad-hoc scramble to adapt and overcome failure or simple just-in-time workarounds. Respondents added that although after-action reports explained previously experienced issues, no additional strategies were developed to adjust operations when necessary. Another respondent described that hardworking people handle the single points of failure in whatever manner appears correct as

they arise, or an attempt is made to circumvent the failure. A specific yet simple operational adjustment provided by a respondent involved a significant fire incident where a demolition contractor began freelancing and causing hazardous conditions, so the emergency managers added an agency site supervisor with a radio and mobile phone to act as a direct line for the command staff to keep the contractor on task and the site safe. Respondents also described that additional personnel were added to an incident as necessary to shore up weaknesses, causing single points of failure. Another respondent commented that they had to circumvent the chain of command to ensure that the proper people had the appropriate information.

In some cases, when no formal plan is in place, a respondent explained that straightforward discussion has been necessary to adjust operations due to a lack of administrative confidence or doubts, apprehension, or trust problems in leadership decision-making. They continued that steps should be taken when a reactive emergency management command staff makes inadequate or inexperienced decisions that cannot solve a single point of failure. Another respondent added that operations are often adjusted according to incident experience and no formal planning, where the team takes a pause and regroups to recognize the challenge and adapt to that problem, hoping that it will not get worse and lead to prolonged and expanded issues.

Several respondents discussed experiences where adjustments were made in the emergency management leadership and incident personnel due to diminished capability, knowledge, and expertise to handle single points of failure situations promptly and effectively. Another respondent explained how emergency managers should continually strive to identify and staff an interagency team that can address the organization's needs before the failure occurs, maintaining a planning disposition that provides redundancies and objective-focused resourcing that identifies expert level within each role. Respondents have ensured that managers were

experienced, which allowed effective operational adjustments to accomplish objectives because the personnel were trustworthy and professional, provided excellent communication, and maintained incident transparency regarding the single point of failure. Another respondent increased just-in-time training, follow-up education, and a long-term disaster exercises program for the involved community partners before the next disaster struck. Other respondents added comments about training and exercises to ensure the failure did not happen again, increasing communication options, and providing clear statements and scalable response benchmarks when single points of failure have impacted incidents.

From other respondents, focusing on soft skills and political knowledge helped a respondent adjust operations, including improving direct communication with stakeholders to build stronger relationships, allowing better coordination and trust. Respondents continued, as emergency managers, they have learned to navigate various interests that align with incident objectives and ensured they consider political dynamics and diplomatic strategies for adapted strategies to promote a culture of continuous learning quickly, then ensure plans and resources adjust for an effective response that mitigates risks and improves operations. Respondents commented that it is often imperative to revisit incident planning and adjust objectives to promptly accomplish the requirements of incidents and events to resolve a single point of failure. A respondent added that failures are immediately investigated, and changes are updated in the incident action plan; slowing down activities if appropriate also helps, giving more time to discuss strategies and follow new goals established for an operational period.

Prioritization and evaluation have been vital measures to ensure the single point of failure is validated as critical to the operation and to avoid creating additional weaknesses. One respondent specifically stated a single point of failure plan was written to address this and

provide a blueprint to follow during incident operations. Another respondent explained that emergency managers must embrace risks and failures from the incident onset, adapting to a specific failure as a standard element in incident success, meaning that incidents are called disasters or crises for a reason. Respondents also discussed technology and equipment adjustments to when single points of failure challenges impacted incidents or events, such as creating continuity networks and alternate locations using checklists and backup meeting technology providers for collaboration and communication between sections and incident leadership.

Survey Question Eight

Please provide additional comments to help others better understand single points of failure experiences.

Respondents were asked to provide any additional comments that could help others better understand single points of failure experiences. The respondents provided forty-eight unique comments to help better understand single points of failure. Most comments addressed planning and incident management, such as remaining familiar with established emergency management processes and procedures to more quickly identify exceptions, report those occurrences to incident personnel, and not ignore failures when they occur in hopes of avoiding scrutiny. Logically, eliminating single points of failure increases incident or event success and building appropriate redundant layers of readiness with alternative courses of action that support decision-making. Understanding people and how human factors can impact incidents can help better plan for unusual outcomes, such as backing up documentation that reduces the chance of losing recovery funds.

A comment was provided that single points of failure occurrences indicate a need to return to basic planning activities, ensuring that plans are front of mind. Comments also included that when a single point of failure occurs, a lack of understanding about what needs to be accomplished may be thwarted by an unwillingness to request the necessary resources to stop it. Also, plans fail, and incident managers may quickly become overwhelmed and default to others who can handle the problem; however, they may lack that capacity, primarily if a known single point of failure has not been addressed through policy or procedures that avoid a cascading event.

The comments also focused on personnel and training; emergency managers should be cautious when assigning and overspecializing personnel requirements, which can create a single point of failure. If each emergency manager is highly specialized, they may not be familiar with other roles; therefore, some respondents' emergency management roles are sufficiently generic, and personnel are cross-trained in basic mission requirements to prevent overburdening the system or individuals. Comments detail that knowing the emergency management team's strengths and weaknesses allows leaders to be more flexible, adapt, and overcome single points of failure challenges.

Leadership comments provided that to avoid becoming the single point of failure, emergency managers must continually ask questions about what is known, who else needs to know, and whether others have been told. Another leadership comment detailed that emergency manager characteristics should include competence, capability, caring more for others than themselves, and higher learning education to effectively prevent or lead during a single point of failure incident. Additionally, leadership should be open and willing to accept shortcomings and

listen to people who may have suggestions or ideas on fixing a single point of failure. Comments also included communications.

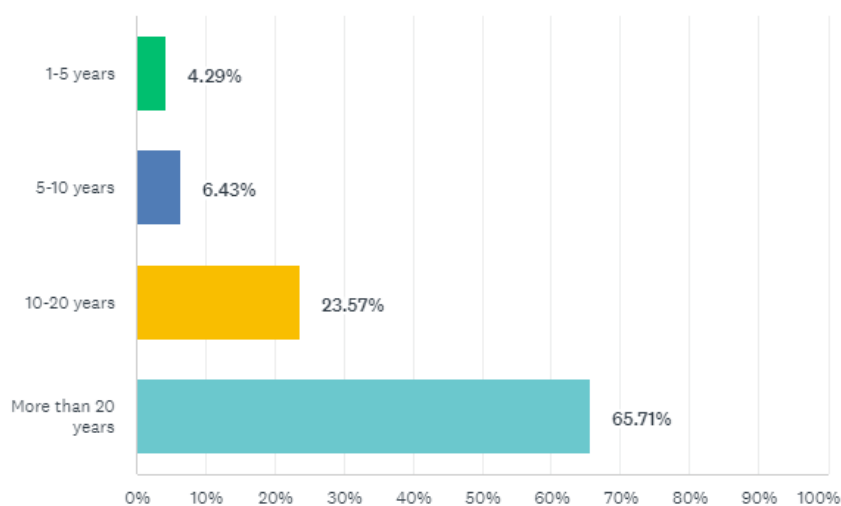
Survey Question Nine

Please select your years of public service experience.

The majority of respondents, 65.71 percent, have more than twenty years of service experience, and the fewest, 4.29 percent, have one to five years of service experience.

Figure 13

Question nine regarding years of public service experience



Note: The majority of respondents have completed twenty years or more in public service.

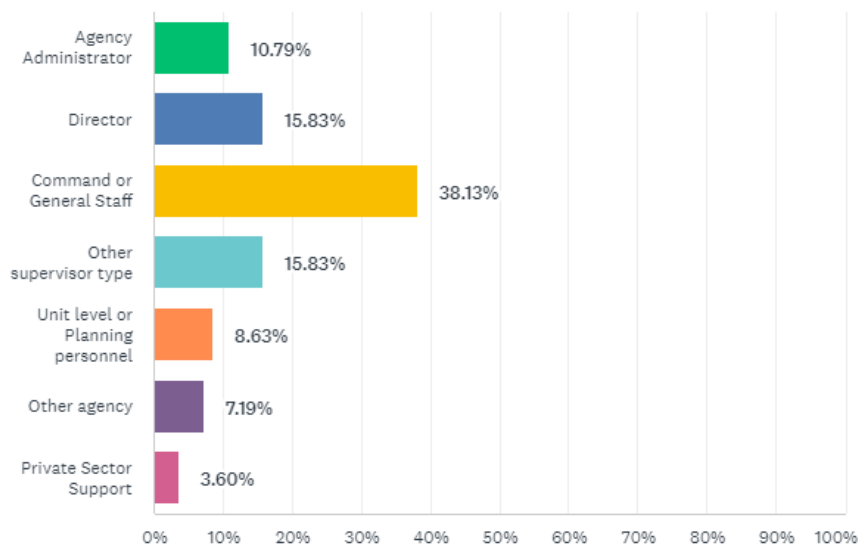
Survey Question Ten

Select your current role in emergency management.

Most respondents, 38.13 percent, worked in command and general staff roles at the time of the survey, and the fewest respondents, 3.60 percent, worked in private sector support.

Figure 14

Question ten regarding current roles in emergency management



Note: Most respondents reported the command and general staff role in emergency management.