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Minnesota Public Assistance Program Utilization Frequency Among Jurisdiction Types

Heather Ann Winkleblack
Walden University

Walden University

College of Health Sciences and Public Policy

This is to certify that the doctoral dissertation by

Heather A. Winkleblack

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

Review Committee
Dr. Emmanuel Tetteh, Committee Chairperson,
Public Policy and Administration Faculty

Dr. Amin Asfari, Committee Member,
Public Policy and Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2024

Abstract

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MS, Walden University, 2014

Dissertation Submitted in Partial Fulfillment

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Abstract

Despite the 2014 creation of the Minnesota Public Assistance Program (MPAP), no

taxpayer program studies covering the 2014-2017 years have been conducted on how the

program was distributed for evaluating the communities impacted and determining if

there was a difference between years, threshold changes, and jurisdiction type. The

purpose of this study was to examine the use of the MPAP for the 2014-2017 years across

three different types of jurisdictions: tribal, urban, and rural to assess resource allocation.

The study's theoretical framework was based on Kingdon's multiple streams theory. A

quantitative quasi-experimental approach was used to examine under MPAP (a) how the

state disaster relief threshold differs among the three jurisdiction types, (b) how the state

disaster relief threshold across all jurisdiction types has changed over time, and (c) how

the state disaster relief threshold in each jurisdiction type has changed over time. The

study used MPAP archival data to consider the distribution of resources that the state

provides in the face of natural disasters and how the resources distributed to different

jurisdictions have changed over time. The hypotheses for jurisdiction type independent

variable and state disaster relief thresholds dependent variable were tested using analysis

of variance. The results revealed a statistically significant difference in the state disaster

relief threshold among jurisdiction types, significant differences in the state disaster relief

thresholds across all jurisdiction types from 2014 to 2017, and significant differences in

the state disaster relief threshold among rural counties. The study's positive social change

implication emphasizes the need for policymakers to consider disaster mitigation

recovery plans that incorporate information, sentiments, and values into decision making.

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Chapter 1: Introduction to the Study

Introduction

Natural disasters have drastically impacted society in areas such as the loss of human lives, disruption of daily lives by causing food shortages, and widespread damage to community infrastructures (Rosselló et al., 2020; Topluoglu et al., 2023). Other related factors of natural disasters include distraction to local economies, industries, and livelihoods, including environmental degradation by contaminating water sources, destroying sewage systems, and spreading disease (Nashwan et al., 2023; Shi, 2019). The inevitability of natural disasters makes disaster management policy a critical element of governance and leadership (Zohlnöfer et al., 2015). Effective disaster management policy is fundamental in mitigating, preparing, responding, and recovering from disasters (Cairney & Jones, 2016). A core principle of emergency management is that all disasters are local disasters because they start locally and recover locally (Cretney, 2016). However, additional assistance is often needed, as many areas lack resources to respond to or recover from a significant event (Horney et al., 2017).

The disaster recovery processes, which include repairing damages to public infrastructure and clean-up obligations, are expensive and time-consuming portions of disaster management (Horney et al., 2017). Minnesota is no different regarding recovery and disaster management; however, the Minnesota Public Assistance Program (MPAP) sets out to support local communities through cost -sharing for emergency measures, public infrastructure repairs, debris clean-up, and other public assistance activities (Horney et al., 2017). The MPAP is intended to closely mirror the Public Assistance

Program of the Federal Emergency Management Agency (FEMA); however, at the state

level, the categories of the allowed activities are similar (Horney et al., 2017).

In the first portion of this chapter, I discuss the program's background and how it

came to be, the problem statement, the multiple streams framework (MSF), the

framework components, research questions, and hypotheses. The final portion of this

chapter includes the nature of the study, definitions for clarification, assumptions of

research, scope, the study's delimitations, limitations, biases, and the significance of the

study.

Background of the Program

The MPAP, formed under Minnesota Chapter 12B, was created to assist local

governments with a cost-share program when no federal aid is available, or disaster

damages fall outside the federally approved timeframe (Public Disaster Assistance,

2017). When a federal disaster is declared, FEMA picks up 75% of eligible costs, as

outlined in FEMA's Public Assistance Program (FEMA, 2018). In Minnesota, the

contingency fund primarily covers the 25% cost share with the local government when a

disaster becomes a presidentially declared disaster. Many disasters did not reach the

federal threshold within Minnesota or were denied through FEMA, severely impacting

the jurisdictions and, in turn, the constituents financially (OLASM, 2012). The 2017-

2018 aggregate threshold for a federal disaster within Minnesota is approximately

$7,600,000, meaning that a natural disaster must have an almost eight-million-dollar

impact on local communities before the governor can ask for assistance from the federal

government (FEMA, 2018). Although it is not unheard of for a catastrophic natural event

within Minnesota, the millions of dollars needed to reach the threshold is a significant

burden for counties, cities of the first class, and tribal nations to meet when disaster

strikes and the level falls below the federal level or a federal disaster is denied according

to Public Disaster Assistance (Absent Federal Aid, Minn. Stat. § 12B.10, 2017).

     Before creating the MPAP and Disaster Assistance Contingency Account

(DACA), the Office of the Legislative Auditor of the State of Minnesota conducted an

evaluation published in March 2012 to highlight gaps in Minnesota's disaster recovery

(OLASM, 2012). This legislative report was titled *Evaluation Report: Helping

Communities Recover from Natural Disasters*, and it assessed more than a decade of

disaster recovery within Minnesota, including both federally declared and non-federally

declared disasters (OLASM, 2012). The legislative report was used to show the value of a

state program to elected officials to get on the decision agenda, and it was also used to

allow disaster funds to be appropriated without the legislature reconvening to accept the

request, saving time and money for taxpayers.

     In 2014, MPAP and DACA were created and defined to assist local governments,

such as counties or tribal nations, in public infrastructure recovery from a natural disaster

(HSEM, 2017). The MPAP focuses on addressing the economic burden of unpredictable

disasters at a county or tribal level through the state instead of federal or presidential

options. On the other hand, DACA is the avenue for reimbursement for local

governments through MPAP. DACA is statutorily required to be prefunded each year by

the legislature. Minnesota is prone to several natural disasters such as wind, tornadoes,

flood, fire, and ice storms, which means having a governmental instrument for some of

the burden to be lifted has been a benefit for the counties, cities of the first class, and tribal nations who have applied for the allowable 75% reimbursement. The 25% that the local government is not reimbursed still may be a burden to hard-hit jurisdictions; however, this is a manageable amount compared to funding the entire cost (OLASM, 2012).

This study was needed to address the gaps in local recovery with assistance from the state government when federal aid is not accessible, as well as examine the process of the policy from idea to fruition using the MSF to understand emergency management policy within Minnesota better. The framework focused on the policy's creation and rapid alterations between 2014 and 2017. The financial recovery problem has negatively impacted rural and tribal jurisdictions disproportionally, which was the starting point for this study (Wilson, 2009). Evaluating the policy regarding disaster recovery using MSF as a lens within Minnesota and the challenges and gaps found may benefit emergency management, local jurisdictions, academic endeavors, and taxpayers.

Problem Statement

Local disaster recovery policy and funding are becoming increasingly significant because large and small disasters continue to plague jurisdictions (Berke et al., 2014; Paton & Johnston, 2017). Cretney (2016) demonstrated that disaster recovery and resilience have become a more significant issue in recent years; however, the solutions to existing gaps in resilience and effective disaster recovery have yet to be resolved. Minnesota is one example of a state that has sought to adopt a proactive approach to addressing imbalances in federal disaster relief. Specifically, a portion of the recovery

problem for local jurisdictions within Minnesota was addressed when the MPAP and DACA were created. However, the effectiveness of Minnesota's program in addressing gaps in federal relief policy and serving local and tribal disaster relief needs is currently unknown. While previous research exists evaluating barriers between federal and community disaster relief policy, no known studies have specifically evaluated the effectiveness of such in Minnesota and its ability to promote greater equity between local and tribal jurisdictions (De Marchi et al., 2016; Lawrence et al., 2016; Olshansky & Johnson, 2014; Wilson et al., 2021).

Purpose of the Study

Local disaster recovery policy and funding are becoming an increasingly significant issue because large and small disasters continue to plague jurisdictions (Berke et al., 2014; Paton & Johnston, 2017). Cretney (2016) demonstrated that disaster recovery and resilience have become more significant in recent years. Still, the solution to existing gaps in resilience and effective disaster recovery has yet to be resolved. Minnesota is one example of a state that has sought to adopt a proactive approach to addressing imbalances in federal disaster relief. Specifically, a portion of the recovery problem for local jurisdictions within Minnesota was addressed when the MPAP and DACA were created. However, the effectiveness of Minnesota's program in addressing gaps in federal relief policy and serving local and tribal disaster relief needs is currently unknown. While previous research exists evaluating barriers between federal and community disaster relief policy, no known studies have specifically evaluated the effectiveness of such in

Minnesota and its ability to promote greater equity between local and tribal jurisdictions (De Marchi et al., 2016; Lawrence et al., 2016; Olshansky & Johnson, 2014).

Kingdon's (1995) multiple streams approach is a potentially efficacious theory for evaluating Minnesota's program and ability to overcome federal emergency relief policy limitations. This theory suggests that disaster relief planning and response encounters problems when multiple streams of momentum are not present in support of this effort. Information dissemination and interaction do not occur through multiple layers of policy development (Kingdon, 1995). Recent peer-reviewed evidence has supported this theory's validity in evaluating disaster relief policy (Cairney & Jones, 2016; Knaggård, 2015; Zohlnhöfer et al., 2015). However, a need exists to specifically evaluate Minnesota's program based on assumptions of the multiple streams approach to determine its potential local and tribal impact as well as its ability to supplement gaps in federal emergency relief policy (Horney et al., 2017). A study investigating the impact of the MPAP and DACA on local governments using a fiscal evaluation method via Kingdon's (1995) MSF may fill an important gap in the literature and contribute to more informed disaster response policy design and implementation. Because of the federal government's limitations in addressing local recovery issues, it is necessary to understand state-funded public infrastructure reimbursement programs. Using policy review and economic impact evaluation, I sought to help determine whether this policy benefits Minnesota's taxpayers.

Research Questions and Hypotheses

The following research questions guided this study:

Research Question 1

The first research question was, "Under MPAP, how does the state disaster relief threshold differ among jurisdiction types (urban, rural, and tribal)?" and the corresponding hypotheses were as follows:

$H_0 1$: There are no significant differences on the state disaster relief threshold among jurisdiction types (urban, rural, and tribal).

$H_a 1$: There are significant differences on the state disaster relief threshold among jurisdiction types (urban, rural, and tribal).

Research Question 2

The second research question was, "How have the state disaster relief threshold across all jurisdiction types changed over time (2014-2017)?" and the corresponding hypotheses were as follows:

$H_0 2$: There are no significant differences on the state disaster relief threshold across all jurisdiction types from 2014 to 2017.

$H_a 2$: There are significant differences on the state disaster relief threshold across all jurisdiction types from 2014 to 2017.

Research Question 3

The third research question was, "How have the state disaster relief threshold in each jurisdiction type (urban, rural, and tribal) changed over time (2014-2017)?" and the corresponding hypotheses were as follows:

$H_0 3_1$: There are no significant differences on the state disaster relief threshold among urban counties from 2014 to 2017.

H_a3_1: There are significant differences on the state disaster relief threshold among

urban counties from 2014 to 2017.

H_03_2: There are no significant differences on the state disaster relief threshold

among rural counties from 2014 to 2017.

H_a3_2: There are significant differences on the state disaster relief threshold among

rural counties from 2014 to 2017.

H_03_3: There are no significant differences on the state disaster relief threshold

among tribal counties from 2014 to 2017.

H_a3_3: There are significant differences on the state disaster relief threshold among

tribal counties from 2014 to 2017.

This chapter consists of four parts. The first part presents a descriptive analysis of

the sample. The second part presents the detailed data collection procedures that were

conducted. The third part presents the results of the data analysis. Lastly, a summary of

the key findings from the data analysis concludes the chapter.

Theoretical Framework

Kingdon's (1995) MSF was the theoretical framework used to guide this research.

The MSF evolved from research on comparative policy in the United States throughout

the latter part of the 20th century (Kingdon, 1995). This theory posits that agenda setting

is determined by three categories of independent variables (or streams): the problem

stream, policy stream, and political stream (Kingdon, 1995). The problem stream relates

to public perception of the problem; the policy stream is characterized by expert analysis

data and output pertaining to the nature of the problem and potential solutions; and the

political stream pertains to general environmental factors that shape the political

landscape (Kingdon, 1995). According to Kingdon, public policies form when conditions

associated with these three streams allow policy entrepreneurs to seize windows of

opportunity or policy windows. Policy windows are brief moments ripe for solutions

within the policy process. Policy windows usually develop in response to compelling

problems, crises, or political events. Policy windows link the problem, policy, and

political streams together for a fleeting moment to allow the government's decision-

making process to either move forward on the policy or not. Looking at the streams

individually will show how difficult it is to match a societal issue to a solution.

Problem Stream

The *problem stream* is where the issue or crisis begins. Kingdon (1995) was quick

to point out regarding the problem stream "that there is a difference between a condition

and a problem" (p. 109). MPAP was created to solve the problem of costly public

infrastructure recovery when federal aid is unavailable. It was originally a condition of

running a county government and was pushed to a problem when jurisdictions were

having difficulty meeting the budgetary requirements to fund fixing public infrastructure

at the pre-disaster level. It is best to note that conditions are like situations that are dealt

with but have not escalated to a full-blown crisis. Conditions are the precursor to

problems that may or may not reach the level of a problem to be solved. Values,

comparisons, and categories are what contribute to the process of an item changing from

a condition to a problem (Kingdon, 1995, p. 110). Governmental officials consider one

item a problem versus another due to the previously mentioned items, budget

considerations, and whether the solution they are receiving is prominent and positive

(Kingdon, 1995). Finding the right problem to solve is difficult at best, and internal and

external players have to work together to take advantage of windows of opportunity.

Political Stream

The political stream is the base of the three streams and considers public mood,

pressure to solve problems, election impacts, partisan distributions, and changes in

administration (Kingdon, 1995). How the public feels about a topic can influence the

political aspect of a problem or a solution because it is not tangible and can be interpreted

differently depending on how it is portrayed (Kingdon, 1995). Administrative policy

agendas also influence the political stream heavily, as there are often changes in the

balance of political parties, thus changing the opportunities of previously considered easy

proposals. Regarding MPAP, the political stream was not as large of an issue as it may

have been once it had bi-partisan support and the legislative auditor report backing up

what governmental officials had been saying for years. For the political stream to move

along, consensus-building through bargaining is necessary.

Policy Stream

The agenda is decided by two factors: the participants and the process. There are

two types of participants: the actors within the government and the actors outside of

government. Kingdon (1995) introduced the concept of a primeval soup when discussing

alternatives to immediately obvious agenda items, which included specialized actors from

specific areas of interest that use their influence to bring the agenda item to attention (pp.

117-118). The idea behind the primeval soup is that several versions of a proposed policy

float around freely until they are considered and are often not even aligned with an agenda at present (Kingdon, 1995, p. 118). The proposed solution floats around independently of a specific problem on the agenda. It may remain unattached from an agenda indefinitely if the streams do not align or policy actors do not take advantage of a window. Kingdon specified it is unnecessary for a problem to be developed before an alternative is available, and fragmented groups can have similar goals; however, until they join forces, the policy stream is less likely to align with the other two streams (Kingdon, 1995, p. 119). Kingdon asserted that the proposed policy concepts float around until participants look for them because a problem rises and is ready to be solved. Persuasion regarding the policy is required to move forward through consensus building, unlike the political stream, which uses bargaining to build consensus (Kingdon, 1995, p. 159).

The MSF shows the specialized communities and agenda processes that allow policies to be produced, reworded, and moved along for legislative consideration. Much of this process takes place in communities of specialists referred to as policy communities that work to identify ways to solve problems between one group or several groups. This is one way that it allowed the MPAP to be enacted in order to assist jurisdictions with the financial burden of natural disasters. Kingdon indicated that the longer an idea floats around, the more diminished the chances of its occurring, and one way that policy-making can be stronger is through policy entrepreneurs. Policy entrepreneurs may be in or out of government; however, they are willing to invest much of their own time and energy to successfully get their policy through (Kingdon, 1995).

According to Knaggård (2015), these public problems are constructed through focusing

events, which, for Minnesota, was millions of dollars of damages to rural jurisdictions

that did not meet the Federal threshold (Office of the Legislative Auditor State of

Minnesota, 2012). The legislative auditor's office is the instigator of the policy formation

process through the recommendations they outlined in an official governmental manner,

with the assistance of policy entrepreneurs and policy brokers. The Legislative Auditors

Report identified 11 interrelated problems via their recommendations that needed to be

addressed in order for the policy to fill the gaps that impacted Minnesotans.

Windows of Opportunity

The windows of opportunity, as previously discussed, are where the problem and

solution are joined through the coupling of the three streams. Garayev and Kapucu (2011)

reflected on emergency management policy networks, which are required for the

windows of opportunity to occur. The actors surrounding the results are responsible for

continuing the collaboration. Kingdon (1995) stated that the MSF instructs the process

regarding focused events that require policy intervention, agenda alterations, and how the

system needs to change accordingly to focus attention on the problem with the solution

offered as a policy change. Moe and Pathranarakul (2006) argued that public project

management is an aspect of governance and policy that cannot be ignored; coupled with

Kingdon's framework, evaluating such work is vital.

The multiple streams approach has been used in seminal research to analyze

policy. Birkland (1997), who advocated for the use of a multiple streams approach, stated

that all the layers of agenda setting are interrelated and not linear, which aligns with

Kingdon's philosophy of multiple sources of momentum in policy development and implementation. The multiple streams approach has been used to guide numerous seminal and recent empirical studies, supporting the theory's intuitive structure, high level of access and universal applicability to policy analysis, and adaptivity to other important constructs in policy development, such as problem brokers and the influence of formal political institutions (Cairney & Jones, 2016; Knaggård, 2015; Zohlnhöfer et al., 2015). Findings from this research have also illustrated how these windows of opportunity's remarkable sparsity do not match existing problems, solutions, and policies (Cairney & Jones, 2016). How these rare opportunities influence the effectiveness of policy seizures is an area that requires further exploration (Cairney & Jones, 2016; Knaggård, 2015). Examining the streams individually will reveal how difficult it is to match a societal issue to a solution (Zohlnhöfer et al., 2015). Therefore, the multiple streams approach was used in the current study to better understand how the problem stream, policy stream, and political stream are incorporated into Minnesota's disaster relief program and how these streams have interacted to create policy windows for agenda setting.

As applied to this research, the theory of multiple streams in determining Minnesota's disaster relief policy's impact on local rural and tribal jurisdictions should be supported, with the note that the state policy under review has had three successful alterations since its creation in 2014. The underlying logic for designing and conducting this study was to evaluate the general efficacy of Minnesota's disaster relief program, and the multiple streams served as a key indicator of its rural and tribal impact. By gathering data, the understanding of merit, worth, and utility of the MPAP was determined by using

Kingdon's (1995) framework to show the development, implementation, and modifications of the policy within an increasingly narrow window of opportunity after creation.

Multiple Stream Framework and Emergency Management Policy

The complicated world of agendas and policy and the professional world of emergency management is an area that needs to be joined regularly to meet the needs of communities. Recovery issues, especially policy options, need to be addressed prior to a disaster, which is how it would operate in an ideal world. Using the MSF process as a base, looking at recovery policy within the state of Minnesota and how MPAP and DACA have impacted jurisdictions allowed both to be evaluated for the betterment of both.

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Nature of the Study

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According to Parkhurst (2017), evidenced-based policy making is important because it reveals whether goals are being reached or is used to inform decisions and strategy selection. Conversely, Parkhurst pointed out that policy making can also show what is not working so that public resources may be used to reach the stated policy goals. The theoretical framework used helped to reveal how the policy went from an idea to policy and withstood three alterations within 3 years. The financial decisions made for state-level policy require sound goals and facts and must be backed up by evidence-based evaluation using scientific evidence (Parkhurst, 2017). This is currently not done for legislative-sponsored disaster policy within the state of Minnesota. It is, however, done for some policy efforts, such as crime reduction or transportation, which is why

examining the MPAP and the DACA through research and scientific methods may benefit the state of Minnesota.

According to Deyle and Smith (1998), planning mandates from state governments to local governments have been proven to allow for better recovery efforts. Deyle and Smith used a Florida case study to look at costal and natural disasters. Joint planning efforts are necessary because joint planning efforts are necessary because local and state governments cover most of the costs required to help communities fully recover. The level of engagement between local and state governments may impact this effort. Public policy literature shows that the MSF is a theory that has been tested on existing state-level agenda and policy decisions; however, it is more formally used towards federal or international agenda theory (Weible & Schlager, 2016). This is significant in regard to future policy and agenda endeavors regarding MSF and academic research applications for state-level emergency management. This research focused on the different and simultaneous policy paths that come together to create policy and revise existing policy and the lens of cost-benefit analysis of a well-utilized policy and contingency account.

I attempted to determine the effectiveness of the MPAP and DACA in regard to rural and tribal recovery impact versus urban areas. To date, the MPAP and DACA have been used by more than half of the county or tribal nations within Minnesota. Many of the supported jurisdictions have requested aid more than once, with one county using the program five times since its inception. The methodology used for this study was a quasi-experimental quantitative design to analyze the data from Minnesota Homeland Security and Emergency Management's (HSEM) application of this program. The data were

broken down for years 2014-2017 to allow for analyzing the changes to the policy

impacting use, how the Contingency Fund was distributed regarding urban, rural, and

tribal nations for each year; as well as how the frequency of use changed over the years

along with a breakdown frequency with each jurisdiction type.

Definitions

Definitions of terms utilized throughout this project are included in this section.

DACA: Minn. Stat. § 12.221 stated (2018) that DACA is there to provide 100% of

the nonfederal share for state agencies, local governments, and utility cooperatives for

federal (FEMA) disasters as well as reimbursement for eligible claims under Minn. Stat.

§ 12B, MPAP.

Legislative Auditor Report: This 2012 report, along with policy entrepreneurs,

was the catalyst that allowed the MPAP and DACA to be brought forward to the

Minnesota Legislature.

MPAP: The Minnesota Public Assistance Program was created in 2014 to mimic

FEMA's Public Assistance Program, which assists jurisdictions with public infrastructure

damages, debris clean-up, and emergency safety measures from natural disasters at a state

level versus a federal level. It is available to county and tribal jurisdictions if they reach

half their federal aid threshold, but a presidential declaration is not available (Minn. Stat.

§ 12B.10, 2018).

Rural: Rural refers to a population, housing, and territory not included within an

urban area. In the context of Minnesota and this paper, rural refers to every jurisdiction

outside of the metropolitan area. Specifically, this means St. Paul and Minneapolis and their surrounding suburbs and counties (Reynnells, 2016).

Tribal Nation: This consists of 11 federally recognized tribal nations within Minnesota, seven of which are Anishinaabe Reservations and four of which are Dakota Communities within the State of Minnesota. The Anishinaabe Reservations are Grand Portage, Bois Forte, Red Lake, White Earth, Leech Lake, Mille Lacs, and Fond du Lac. The Dakota Reservations are Shakopee Mdewakanton, Prairie Island, Lower Sioux, and Upper Sioux (Overview of Indian Tribes in Minnesota, 2018).

Urbanized areas/urban clusters: Urbanized areas include 50,000 or more people, and urban clusters are at least 2,500 but less than 50,000 people in an area (Reynnells, 2016).

Assumptions

There were two core assumptions regarding the variables for this study. The first assumption was that data from the Minnesota Management and Budget website were correct. The second assumption was that all things are as close to equal regarding the variables from the time the legislative report was created and MPAP was brought before the legislature and the 2017 storm season in Minnesota.

Scope and Delimitations

This evaluation was as thorough as the financial records, publicly available details, and Minnesota disaster data allowed.

Limitations

The data used for this study were all publicly available, and it was easy for the information to be checked against the work, which allowed for outside observations and matching conclusions. I work for the state agency that oversees the MPAP and DACA. I am neither directly involved in the program's financial transactions nor do I have any influence on the outcome of requests. Therefore, all attempts to remove bias throughout the project were implemented and checked regularly.

I am a liaison employed by Minnesota HSEM between several local jurisdictions (counties and tribal nations) and Minnesota HSEM for disaster assistance, grant management, training, planning efforts, emergency management program support, and many other responsibilities. Due to the vast number of relationships I have throughout the state with emergency management professionals and state agencies, I believed a study using publicly available data was best. Potential generalizability is in regard to results from the methodology chosen. By attempting to generalize the findings, the results are manageable and applicable to similar research studies.

Significance

Recovery and recovery policy are a contentious and time-consuming portion of disaster management. It is an often-overlooked aspect of an emergency management program, leaving the jurisdiction ripe for a more difficult recovery than necessary. Therefore, this research is valuable for more than just the State of Minnesota, as other jurisdictions nationwide also have issues surrounding recovery. The MPAP and attached Contingency Fund have yet to be evaluated regarding the use of the program. This

represents a large gap in knowledge, not only for the state of Minnesota but for

emergency management practitioners at large. This evaluation purposefully addressed the

alterations of the policy since inception, differences between rural, tribal nations, and

urban jurisdictions' use of the program; the policy's intent from the legislative auditor

report; and how this program has impacted emergency management within Minnesota. I

used Kingdon's (1995) MSF regarding policy windows in the evaluation of MPAP and

DACA to show the larger picture of emergency management policy in the stages of

occurrence through the policy process, highlighting the first policy that went into law in

2014 along with the alteration of the statute that has occurred in legislative sessions in

years 2014, 2015, and 2017.

Social Change Implications

The social change implications for this study include contributing to the limited

local recovery research regarding public infrastructure and state programs to assist all

communities within the state, including tribal and rural jurisdictions. This research may

benefit policy-makers within Minnesota as well as other states and emergency

management programs and may add to the recovery information currently available.

Minnesota's taxpayers fund the MPAP through DACA. As such, the effectiveness and

financial benefits of such a specific policy molded after a federal policy should be

studied, and the results should be shared in order to determine the benefits against the

cost. All levels of government may benefit from understanding how the policy was

passed through to being signed into law and how the end result has benefited the citizens

in storm-affected areas. The social implications of recovery research are important

because recovery is the largest part of disaster management in terms of time and resources, such as tax-payer money.

Summary

Recovery and recovery policy are a contentious and time-consuming portion of disaster management. It is an often-overlooked aspect of an emergency management program, leaving the jurisdiction ripe for a more difficult recovery than necessary. Therefore, this research is valuable for more than just the state of Minnesota, as other jurisdictions across the country also have issues surrounding recovery. The MPAP and attached Contingency Fund have yet to be evaluated regarding the use of the program. This represents a large gap in knowledge, not only for the state of Minnesota but for emergency management practitioners at large. This evaluation purposefully addressed the alterations of the policy since inception, differences between rural, tribal nations, and urban jurisdictions' use of the program, the policy's intent from the Legislative Auditor report, and how this program has impacted emergency management within Minnesota. I used Kingdon's (1995) MSF regarding policy windows in the evaluation of MPAP and DACA to show the larger picture of emergency management policy in the stages of occurrence through the policy process, highlighting the first policy that went into law in 2014 along with the alteration of the statute that has occurred in legislative sessions in years 2014, 2015, and 2017 as will be discussed further in the following chapter.

Chapter 2: Literature Review

Introduction

The purpose of this quasi-experimental quantitative research is to review the use of a disaster recovery state program over a 4-year period to see how it impacted the jurisdictions and resource distribution. The U.S. government has historically struggled to develop a systematic plan for helping communities recover after a disaster, oftentimes presenting local governments with logistical or bureaucratic barriers to applying for and receiving federal aid. This requires local governments and community organizations to carry a large portion of the financial and operational burdens of emergency recovery (Olshansky & Johnson, 2014). The lack of efficient and effective post-disaster aid disproportionately affects rural and tribal regions (Lawrence et al., 2016), as they are socially and physically marginalized and, therefore, less capable of integrating successfully with the local, regional, and federal recovery efforts. Moreover, disaster-aid programs are complicated to develop, as they operate within a complex community system to rebuild the physical, economic, and social environments (Horney et al., 2017; Olshansky & Johnson, 2014).

Many scholars have analyzed relief policies from federal and local governments. However, no known literature to date evaluates any aspect of the MPAP and DACA. Although Minnesota has developed these programs to address the gaps in federal emergency-aid policy, it has not yet been determined whether they are successful in equitably addressing the needs of local, tribal, and rural jurisdictions. Thus, the purpose of this quantitative, quasi-experimental study was to evaluate the jurisdictional

distribution of the MPAP and DACA resources using Kingdon's (1995) MSF, specifically analyzing the impact of rural and tribal recovery. First, the literature search strategy is established. The second section focuses on the study's theoretical framework, which is Kingdon's (1995) MSF. The third section includes a discussion of relevant literature, opening with a historical overview of disaster recovery in the United States. The fourth section explores policymaking processes, and the fifth section specifically discusses recovery planning. The sixth section discusses communication during disasters and the dissemination of information. The seventh section focuses on volunteer and community efforts post-disaster. The eighth section discusses collaboration between local and federal governments. The ninth section explores the topics of equity and vulnerability as related to rural and tribal communities. The tenth section discusses resilience. Finally, the conclusion summarizes major themes in literature and gaps in research and provides an explanation of how this study addresses a current gap in literature.

Literature Search Strategy

I used Academic OneFile, JSTOR, Google Scholar, EBSCOHost, and ProQuest to construct the literature review. Key search terms included *disaster*, *emergency*, *recovery*, *relief*, *aid*, *policy*, *federal*, *local*, *state*, *tribal*, *rural*, *public assistance*, *multiple streams approach*, *multiple streams framework*, *community*, *vulnerability*, and *resilience*. Using these terms both individually and combined, relevant studies were generated from the databases. In the literature review, I included literature that was deemed most relevant and applicable to the purpose of the study. Of the 76 sources included in the literature review, 71 sources (93.4%) were published between 2014 and 2018. Five sources (6.6%)

were peer-reviewed materials published before 2014, which provide a basis for

foundational concepts that framed the discussion for the review.

Theoretical Framework

Multiple Streams Theory

The MSF was first introduced by John Kingdon in his book *Agendas,*

Alternatives, and Public Policies, published in 1984 (Cairney & Jones, 2016). Kingdon

released a second edition of *Agendas, Alternatives, and Public Policies* in 1995,

providing the updated version of the MSF used in this study. This framework, sometimes

referred to as the multiple streams approach, provides a model that frames the complex

process of agenda-setting and policymaking. The term MSF will be used to maintain

integrity. The problem stream begins with a condition and escalates to a problem when a

community's concerns about the condition can be framed or defined, presenting a clearer

issue of what needs to be addressed (Kingdon, 1995). The policy stream entails the

activities of communities of specialists who work to provide a solution to the problem at

hand (Kingdon, 1995). Kingdon presented the notion of the policy primeval soup, a

concept that ideas float around communities, but only certain ideas are seized and acted

upon by policymakers. He also introduced the idea of policy entrepreneurs, or the actors

who propose solutions to problems and advocate for adopting certain policies and

suggestions. The third stream is politics, in which policymakers can turn a solution into

formal policy (Kingdon, 1995).

These three streams of momentum, though independent from each other, must

converge simultaneously during a window of opportunity to move forward. These policy

windows are brief, fleeting moments in which actors advocating for certain subjects or proposals have a heightened opportunity to move their proposals forward (Kingdon, 1995). Some policy windows include the awareness of a new problem, election periods, committee work, hearings, and development or changes in national mood (Kingdon, 1995; Knaggård, 2015). Major focusing events are also important in motivating policy change, as is the aggregation of such events in combination with an experience with a hazard or disaster (O'Donovan, 2017).

Policy Stream

The MSF continues to function as one of the primary models through which scholars of public policy frame and understand policy processes (Cairney & Jones, 2016). This is due to its universal applicability in political science and the theory's flexibility and low barrier to entry (Béland et al., 2018; Cairney & Jones, 2016). Though many scholars agree that the MSF is an effective approach to studying policy processes, actors and activities within the framework can overlap between the three streams, blurring the distinction between the streams of momentum and confusing roles (Béland et al., 2018). Therefore, since Kingdon's introduction of the MSF, public policy scholars have generated a wealth of additional research and literature on the framework, expanding on or altering their use of the model to enhance its specificity and relevance (Weible & Schlager, 2016). Some of these scholars include Paul Cairney, Nicole Herweg, Michael Howlett, Christian Huß, Asa Knaggård, Sina Leipold, Allan McConnell, Anthony Perl, Christopher Weible, George Winkel, Nicolaos Zahariadis, and Reimut Zohlnhöfer.

Problem Stream

Political scientist Åsa Knaggård (2015) built upon Kingdon's (1995) MSF, suggesting the role of the problem broker as an important development of the problem stream. Knaggård argued that, in previous literature, the problem stream received insufficient focus despite the importance of defining and framing problems so that policy entrepreneurs can act on a well-founded understanding of the issues to be addressed. Problem brokers present and frame conditions into public problems through knowledge, values, and emotions (Knaggård, 2015). Using existing literature, Knaggård discussed three main elements of framing problems. First, she noted that knowledge is key to framing, as it provides a credible, empirically-based presentation of the problem. She added that science is one of the most influential aspects of legitimizing and validating problem frames. Secondly, Knaggård suggested that including values in framing is important in motivating policymakers to care about the problem at hand. Finally, she mentioned incorporating emotional appeal into the framing. Ultimately, she warned against conflating the policy design process with problem development, as the two consist of very different activities (Knaggård, 2015).

Like Knaggård, Béland et al. (2018) suggested further distinguishing the roles of each stream, proposing a re-conceptualization of streams as distinct groups of actors who work alongside but independently of each other. Epistemic communities act within the problem stream to frame the problem, instrument constituencies articulate solutions in the policy stream, and advocacy coalitions advocate for their choice of problem definitions and solutions in the political stream (Béland et al., 2018). By clarifying the actors that

operate within each stream, the framework instills a stronger understanding of agency in the MSF. The authors also conducted a qualitative assessment of the MSF to explore how this framework has been used and its impact on scholarly literature. They combined representative studies with articles inspired by the MSF and compared the theoretical and empirical contributions of the framework. They identified two main characteristics of the MSF that have contributed to its widespread use: the universality of policymaking issues and the theory's flexibility. The authors found two main contributions that the MSF has made to theory and academia. The theory has helped develop evolutionary policy theories and empirical literature separately from each other (Béland et al., 2018). However, the authors criticized the superficiality of the MSF application in some scholarly literature and recommended that scholars study the theory in depth so that they can better understand the strengths and limitations of the theory and apply them to their research and literature in a more meaningful way (Béland et al., 2018).

Political Stream in Policymaking

Zahariadis (2016) and Zohlnhöfer et al. (2015) noted the framework's exclusion of institutions' powerfully influential role in policymaking. Therefore, Zohlnhöfer et al. suggested a method of sufficiently incorporating institutions into the framework so as to account for the leverage, authority, and power institutions hold in shaping policy decisions. Although aspects of the three distinct streams naturally overlap, muddling and conflating the streams creates problems for conceptualizing policy development (Zohlnhöfer et al., 2015). For example, conflating the agenda-setting and decision-making processes may impede the ability to identify the causal pathways that lead a

proposal to failure or success. This conflation could also make it difficult to discern

whether a policy change failed because it was vetoed during the decision-making process

or because it did not make it into the agenda to begin with. Blurring these roles within

policymaking processes also makes it difficult to track a bill's modifications, so it is

unclear to what extent the final bill actually reflects the original proposal (Zohlnhöfer et

al., 2015).

Windows of Opportunity Kingdon's Framework

Howlett et al. (2014) also considered Kingdon's (1995) framework overly

simplistic and not a practical reflection of "real-life" policy processes. Like the other

authors previously mentioned, Howlett et al. expanded the MSF, creating a five-stream

confluence model representative of more complex and nuanced features of public policy

creation. Other scholars suggested conceptualizing the three streams as discursive

patterns (Winkel & Leipold, 2016). They argued that understanding entrepreneurship as a

discursive agency further supports the MSF element of stream independence because one

can conceptualize policy discourses as interconnecting the streams (Winkel & Leipold,

2016). As academics continue to build upon his framework, it is clear that Kingdon made

an immense contribution to policy research, analysis, and conceptualization.

Public policy scholars continue to use MSF as a model for their research, as it

provides academics with concepts that can be applied to almost every policymaking

scenario (Weible & Schlager, 2016). As future research continues on Minnesota's

disaster relief programs, some scholars might use the aforementioned adaptations of the

MSF to take a more nuanced look at certain aspects of the policy. However, due to the

large gap in the literature on Minnesota's programs, it is best to begin with Kingdon's

(1995) original theory so as to provide an interpretation of the policy's strengths and

weaknesses using the broader, more flexible framework. Thus, this study used Kingdon's

MSF to evaluate the efficacy of Minnesota's disaster relief program.

Review of the Literature

The following literature review begins with the history of disaster aid policy in

the United States, followed by a discussion about developing such policy and planning

recovery efforts. I then discuss information dissemination and communication

techniques, followed by an analysis of volunteer efforts and a discussion of collaboration

between the public, the local government, and the federal government. Finally, I address

the topics of vulnerability to disasters and resilience in communities during emergency

relief efforts. This chapter concludes with a summary of existing literature, conclusions,

and gaps in research on disaster recovery efforts.

Historical Analysis

Disaster relief in Minnesota began with the efforts of social workers, most notably

following the disastrous Minnesota Fires of 1918 (Haase, 2017). This was one of the first

state disasters in which the aid process was notably recorded. The Red Cross deployed

social workers to assist with the disaster recovery efforts, and they – not actors within the

political sphere –spearheaded the relief efforts. Before 1950, local voluntary

organizations carried the burden of disaster aid and community recovery in Minnesota

and across the nation (Olshansky & Johnson, 2014). Aid from congress was provided on

a reactive, case-by-case emergency basis, and if the emergency event was not severe

enough to warrant federal aid, nongovernmental organizations and charities were forced to bear the burden (Jackman et al., 2017). With time, however, the federal government became more involved.

Between 1950 and the late 1970s, the federal government created a variety of agencies to address disaster relief. In 1979, FEMA was established, integrating the various existing agencies into a single, distinct federal disaster relief agency (Olshansky & Johnson, 2014). That same year, the National Governor's Association published a research-based report defining emergency management as coordinating various agencies to address disaster mitigation, preparedness, response, and recovery (Jackman et al., 2017). However, it was not until 2011 that the federal government created the National Disaster Recovery Framework (NDRF), which introduced a statement that explicitly described federal disaster recovery policy (Olshansky & Johnson, 2014). The NDRF suggested that for communities to recover successfully, the local communities themselves must lead and organize relief efforts. Though it is technically possible to receive federal aid in the case of a disaster, federal programs continue to introduce barriers for local communities to do so, preventing the development of a sustainable, predictable recovery process (Olshansky & Johnson, 2014). Additionally, the complex policy and recovery systems currently in place may compromise mitigation planning and increase vulnerability (Jackman et al., 2017). Unfortunately, the process of receiving federal assistance in times of emergency is still complex.

Policymaking Processes

Federal aid is often slow, presenting complicated restrictions and bureaucratic approval processes that impede effective and efficient community rebuilding initiatives (Olshansky & Johnson, 2014). As discussed in the previous section, the government at all levels is responsible for assisting in disaster mitigation, preparedness, response, and recovery. The preparedness phase involves developing a plan for emergency relief, such as a system for distributing resources and response personnel (Jackman et al., 2017). Encouraging preparedness through emergency planning is an important and emotionally-charged responsibility, and policymakers often face barriers to the effective development of emergency recovery plans, such as time pressures and competing demands (Henstra, 2010). Both federal and local governments face pressure from the public to make short-term, quick decisions post-disaster (Horney et al., 2017). However, the public still expects rational, evidence-based decisions, which can be difficult under an intense time constraint (Cairney & Kwiatkowski, 2017). Although producing evidence such as data, knowledge, and expertise are key elements of the policy cycle, focusing on rationality and empirical evidence is not sufficient when developing public policy (De Marchi et al., 2016). Unfortunately, evidence can be misused in political spheres, sometimes resulting in political bias throughout the policymaking process (Parkhurst, 2017), and focusing on existing knowledge in the policy stream can make it difficult to determine why certain problem frames receive more attention and priority than others (Knaggård, 2015). Instead, policymaking processes should incorporate knowledge, emotions, and values (Knaggård, 2015).

Incorporating knowledge, values, and emotions of both public and political actors helps contextualize the policymaking process. In fact, everything related to disaster response, relief, and recovery should be contextualized in terms of the unique political, social, and economic environment (Alesch et al., 2012). This environment includes population demographics, location, policy actors, and public opinion, contributing to a dynamic and ever-changing external environment (Alesch et al., 2012). In considering these components of a region's external context, it is important to recognize risks and dilemmas within the community and develop policy that protects the distinct critical functions of the community as a whole (Rivera & Kapucu, 2015).

Due to the critical pressure to make rapid decisions regarding post-disaster recovery, policy decisions regularly have questionable long-term sustainability. For example, Vahanvati and Mulligan (2017) researched project management approaches for -disaster reconstruction and, through their four case studies, determined that rushed plans to rebuild infrastructure resulted in infrastructure unsuitable over the long term. For example, some residents complained of safety hazards caused by the dilapidated and inoperable proposed waterless toilets and the incomplete reconstruction due to the premature withdrawal of two crucial reconstruction organizations (Vahanvati & Mulligan, 2017). However, it should be noted that the small sample size and the location severely limit the generalizability to post-disaster reconstruction in other locations around the world. Attempting to mitigate the effects of a disaster after it has occurred creates pressure on policymakers, potentially leading to hasty and unsustainable recovery initiatives. Due to the intense time pressure after an emergency, some suggest mitigating

pre-dis vulnerabilities could be a better approach to disaster aid and recovery (Horney et al., 2017; Oliver-Smith, 2016).

At the 2015 Annual Meeting of the Society for Applied Anthropology, an association promoting fair and just public policy development, panel participants noted that most disaster-relief resources are dedicated to recovery (Oliver-Smith, 2016). Though disaster-relief is a key part of emergency planning, panel members indicated that policies did not prioritize mitigating disaster risks or developing sustainable recovery programs (Oliver-Smith, 2016). Therefore, some scholars suggest that effective disaster policy focuses on, and perhaps prioritizes, predisaster vulnerabilities (Horney et al., 2017). Considering the MSF, these findings suggest that the problem stream consists of pre and post-disaster issues, and the policy stream should propose solutions that address both when developing disaster-aid policy. Regardless of the alterations policy scholars have made since the introduction of the MSF, this framework has proven to be a widely-accepted and appreciated model for policymaking analysis surrounding recovery and disaster management as a whole.

Recovery Planning

The time pressure that policy developers face after a disaster strike necessitates recovery planning so that solutions are developed before emergencies occur. This process includes data collection and analysis, contributions from multiple actors and stakeholders, quick and effective brainstorming, and venues or forums for collaboration between various actors (Olshansky & Johnson, 2014). Due to the complexity of this process, some scholars have attempted to evaluate existing recovery plans or create their own plans

from an academic perspective. Berke et al. (2014) evaluated disaster-aid planning in eight

southeastern states, consisting of 282 coastal counties and municipalities that were

considered high-risk of natural disasters due to their southern and coastal location. They

evaluated the recovery plans' effectiveness using six plan quality indicators based on

direction-setting and action-oriented principles. Their results indicated that less than one-

third of local jurisdictions had developed plans that matched their minimum quality

criteria (Berke et al., 2014). This indicates a lack of quality planning in the most

vulnerable jurisdictions in the United States, presenting a concern that less-vulnerable

states might have even weaker recovery plans. However, the six indicators used in their

evaluations are not universal measurements of plan quality; therefore, other public policy

researchers may question their analysis methods.

Many policy scholars have taken a quantitative approach to studying disaster-aid

policy to develop models and methods that optimize the distribution of humanitarian aid

during an emergency. For example, Alem et al. (2016) developed a network flow model

that policymakers could use to dispatch fleets and vehicles to supply humanitarian aid

while still operating within cost-effective guidelines. On the other hand, Vanajakumari et

al. (2016) suggested an integrated optimization model for staging area locations,

inventory assignments to those areas, and correct sizes and amounts of trucks to deploy

with efficient routing.

After researching the excessive provision of resources after the 2013 flood in

Acapulco, Rodríguez-Espíndola et al. (2018) developed a disaster preparedness system

that also optimized vehicle routes, stock prepositioning, the allocation of resources,

equitable distribution of goods, and the number of service-providers to provide the most effective aid while operating within financial limits. In a similar attempt to create an effective disaster preparedness system, Duhamel et al. (2016) proposed a population dynamic model to optimize resilience and recovery while operating within the logistical constraints of financial and human resources. Their research revealed the complicated process of minimizing costs while assisting the most civilians possible, including those in remote areas. Gralla et al. (2014) also considered communities in more remote locations. They proposed a method to maximize humanitarian aid considering five key factors: the amount of cargo delivered, the prioritization of aid by commodity type, the prioritization of aid by delivery location, the speed of delivery, and the operational cost. Whereas many statistically-based disaster recovery models emphasize minimizing operational cost, this model prioritized the aid of more vulnerable communities and the distribution of more critical and urgent relief supplies.

These examples represent only a handful of proposed models allowing policymakers to optimize disaster relief within cost-effective guidelines. Unfortunately, many scholars' quantitative research approaches are often utilitarian, focusing on minimizing the overall cost of recovery efforts and diminishing the general suffering of the community as a whole. While minimizing total deprivation cost under a given budget is undoubtedly utilitarian, it may result in unfair and inequitable solutions, neglecting quality aid for isolated communities (Gutjahr & Fischer, 2018). Therefore, human logistics models for relief, including the ones mentioned above, should prioritize equity

in their solutions to provide equitable levels of relief to all communities despite the convenience and cost of aid to such communities (Gutjahr & Fischer, 2018).

The mathematical recovery models cited above used imaginary and hypothetical scenarios, but most were not tested in an emergency. Therefore, the actual effectiveness of the proposed disaster recovery systems is yet to be determined. Despite various scholars' efforts to develop models that will optimize humanitarian aid during an emergency, attempts to forecast disasters and emergencies are inexact and are most effective if they account for great variations in timeline, location, severity, and social, natural, and environmental impacts (Berke et al., 2014). Therefore, if incorporated into recovery planning, mathematical models should incorporate the many unknown and variable factors in times of emergency. Though it is important to create recovery plans, the unpredictable nature of disasters complicates this process.

The urgency of post-disaster relief offers little time for the long, bureaucratic process of recovery plan development, which is unfortunate. Though scholars have proposed mathematical models to incorporate into relief plans, they often do not account for the unpredictable nature of recovery, and their true effectiveness is still unknown. Due to various unknown and constantly changing factors of post-disaster logistics, plans should be flexible and easily adaptable. Additionally, because various actors and collaborators (many of which are independently self-organized) are required for effective planning, communication is key to coordinating planning, actions, and solutions (Olshansky & Johnson, 2014).

Communication and Dissemination of Information

Many natural disaster scholars agree that effective communication of reliable information is key to disaster management (Freeman & Hancock, 2017; Ginige et al., 2014; Jackman et al., 2017; Mayhorn & McLaughlin, 2014; Olshansky & Johnson, 2014; Toya & Skidmore, 2015). In fact, an empirical analysis of cross-county panel data suggests that information and communication technologies have reduced fatalities in countries that provide effective disaster aid (Toya & Skidmore, 2015). Initiatives to provide a global disaster warning should involve international collaboration, especially regarding information and knowledge, so the public can correctly understand the warning before engaging in safety strategies (Mayhorn & McLaughlin, 2014).

The same is true for communicating disaster warnings and strategies across populations within the United States. Considering the various governmental and self-organizing actors, communication is crucial to enhancing efficient and effective information dissemination between actors in an effort to coordinate strategies and discuss actions to follow (Olshansky & Johnson, 2014). Planning actions must also consider the effects of a disaster on electricity, energy, and the logistics that contribute to communication networks. Communities should develop resilient, energy-effective communication systems that will continue to operate in the event of an emergency (Freeman & Hancock, 2017).

Though many might consider the Internet a widely-accepted method of communication, literature suggests that online media outlets have not yet been utilized to their full potential in crisis communication. In an analysis of the disaster recovery

materials and emergency information available through the Internet, few resources were accessible immediately after a disaster occurred. There were few sources of information discussing the financial issues of disaster recovery (Hendrickson et al., 2017). However, this research was conducted by and for Extension Programs, and the exact methods used to review online disaster recovery materials were not explicitly outlined. Nonetheless, their research suggested that sources of recovery information should appeal to the dynamic social contexts of certain populations effected, adjusting communication methods best to fit the preferred communication methods of the public (Hendrickson et al., 2017).

Not only is it important to consider the forums of communication, but it is also necessary to consider the media by which disaster and recovery information is presented. Hendrickson et al. (2017) revealed that video was an underused medium of providing information to the public despite it being an engaging and relatively entertaining form of communication. In his study of case histories of four well-known disasters in comparison to severe, but not as well-remembered disasters, Birkland (1997) determined that damage that was visible, concrete, and tangible to the public created more public outrage and was therefore more likely to influence political agendas and policy. Though the case studies were subjective, this further supports the notion that problems and focusing events should be defined and framed to policymaking actors in a visible, tangible, and emotionally appealing form to push certain subjects and solutions forward in an agenda.

Social Media Communications. Because recovery is a dynamic and turbulent process (Alesch et al., 2012), information on disaster recovery and emergency aid should

be approached in consideration of the social context (Hendrickson et al., 2017). Today's social context involves the use of social media as a growing platform for communication across time and space (Jackman et al., 2017). An increasing number of social media users are using these platforms to communicate during national disasters (Hong et al., 2018). Specifically, various scholars have focused their studies on Twitter interactions during times of emergency (Hong et al., 2018). Data, in the form of tweets, can be organized according to geotags, hashtags, and users to analyze activity, and the findings of the studies have been relatively consistent.

Twitter Activity. Previous literature on Twitter activity post-disaster revealed that communities affected by disasters demonstrate a significant change in patterns of online interaction (Kryvasheyeu et al., 2016; Lu & Brelsford, 2014). Not only do the topics and frequency of posts change, but a study of Twitter activity before, during, and after Hurricane Sandy revealed that per-capita Twitter activity corresponded strongly with per-capita economic damage suffered by the communities (Kryvasheyeu et al., 2016). This is encouraging, as microblog filtering research has shown that information spread via Twitter can increase overall situational awareness, helping individuals and communities receive timely, relevant information during an emergency (Olteanu et al., 2015). Existing literature indicates increased usage of social media communication during disasters.

However, there is consensus among scholars that there is a notable gap in research on government organizations' social media usage in times of emergency and that, as of now, social media forums are not yet an effective source of communication for

collaboration between distinct governmental agencies, local organizations, and the public (Hughes et al., 2014; McCormick, 2016). Research has revealed that emergency managers struggle to track and respond to public queries, often avoiding using social media as a platform for communication (Hughes et al., 2014). In a study of 67 government and emergency management organizations that posted on social media during Hurricane Harvey, government agencies focused on tweeting instructions before and during the hurricane. In contrast, informational tweets and suggestions for strategies were posted after the disaster (Liu et al., 2018). Additional existing literature reveals a disconnect between public and government social media use during crises. Specifically, research reveals different levels of perceived usefulness of social media outlets for crisis communication (Olsson & Eriksson, 2016) and different topics of discussion (Hong et al., 2018), creating a disjointed dialogue.

In their analysis of Twitter communication during snowstorms in Maryland, Hong et al. (2018) noted the difference in topics discussed on government and civilian Twitter accounts. Local governments tended to tweet about disaster response, whereas citizens discussed themes related to socioeconomic factors and traffic. Citizens were unclear about which government accounts they could communicate with via Twitter, suggesting that the government should increase its Twitter presence to promote communication with the public (Hong et al., 2018). All of the studies mentioned have been case studies. Therefore, the results are subjective, which compromises the generalizability of the conclusions drawn from the analyses of twitter communication. Though additional research needs to be done regarding the use of social media as a platform for information

dissemination and crisis communication, existing literature suggests that this forum.

However, a popular method of communication between members of the community is

not necessarily useful during disasters.

Volunteer and Community Efforts

Throughout the literature on natural disasters and emergency relief, many scholars

refer to the concept of community. As previously discussed in other sections, community

organizations have historically provided more rapid relief than federal organizations

(Haase, 2017; Olshansky & Johnson, 2014), and laypeople are often the first responders

immediately following unexpected disasters (Vallance & Carlton, 2015). In fact, in their

study of collectivism and natural disaster risk, Oishi and Komiya (2017) found that

nations at a higher risk for natural disasters were more collectivistic than nations with

lower natural disaster risk, suggesting strong social ties within the communities of these

nations.

However, the concept of community is hotly contested. Titz et al. (2018) warned

against oversimplifying the idea of community by conceptualizing it as a homogenous

group of people or a social network of individuals connected only by their spatial

existence. During disaster aid, the public and policymakers should consider communities

as dynamic and multidimensional and approach relief with cultural competence and

social awareness (Lawrence et al., 2016; Titz et al., 2018). It is also important to keep in

mind that while collaboration and community efforts are crucial to disaster recovery,

community is ultimately a social construct. Its meaning may be contested or differ

between individuals in the group (Sanders et al., 2015).

Though scholars suggest approaching the concept of community with caution, research does indicate that strong social ties are a key element of emergency relief and resilience, arguing that conceptualizing community is crucial in discussions of disaster recovery. Sadri et al. (2018) studied the speed of recovery after tornados hit Indiana in March 2012, causing extensive destruction. They discovered that social capital and personal networks expedited recovery, as those with strong personal networks received assistance from others and experienced a faster recovery (Sadri et al., 2018).

Additional research supports that friendship and relationship networks correspond with both disaster preparedness and disaster response networks (Kapucu & Hu, 2016). For instance, the 2010 and 2011 Christchurch earthquakes have generated various studies and discussions on public engagement and community-led disaster recovery. After the Christchurch earthquake of 2011, the self-organized grassroots organization Project Lyttleton conceptualized and enhanced community resilience while assisting in post-disaster recovery (Cretney, 2016). Interviews with members of the organization and the broader community indicated that support networks, participation opportunities, and collaboration between community members were important aspects of recovery (Cretney, 2016).

It is important to note that the results of the Indiana tornados and Christchurch earthquake case studies are subjective to those events. Nonetheless, research indicates that a disaster is not only a logistical issue but a social process that consists of restoring the social fabric and the conditions of the communities to their predisaster states (Kim & Oh, 2014). Not only do disasters cause physical destruction, but they disrupt community

members' relationship with the space to which they belong and with which they have come to identify (Kim & Oh, 2014). Disrupting this aspect of one's identity adds internal conflict to the external problems they are already facing. It is important to encourage the social repair process that frames disaster survivors as complex beings with agency, operating under their own recovery processes (Ajazi, 2015), to best encourage the recovery of the entire community. Therefore, disaster relief efforts should be sensitive to the complicated and emotional process of social recovery that accompanies the logistics of physical recovery.

Downsides of Volunteer Activity. Though volunteer efforts are imperative to successful disaster recovery, lacking a formal approach to providing humanitarian aid can complicate the process. For example, interviews conducted after Hurricane Sandy in 2013 revealed that the lack of a structured, well-established timeline impeded the allocation of relief items and donations, as the influx of donated goods clogged the relief supply chain (Nelan et al., 2018). Additionally, an exploratory study conducted in Australia indicated that the immediate influx of underqualified volunteers or individuals motivated to visit the affected region by sheer curiosity hampered the recovery process of rural areas, overwhelming communities in isolated regions (Sanders et al., 2015). This is especially problematic if the communities are grieving or are still in shock (Sanders et al., 2015). Again, the studies conducted by Nelan et al. (2018) and Sanders et al. (2015) were case studies, and the results are not necessarily externally valid. However, the authors agree that it is crucial to practice cultural and social awareness when planning disaster recovery initiatives as well as to communicate with organizations and agencies to provide

a systematic approach to disaster recovery. Overall, existing literature indicates that informal social networks are key to disaster relief efforts, but so are formal networks. Formal collaboration ties between organizations during disaster preparedness phases have been shown to correspond with collaborative behaviors during disaster response phases (Kapucu & Hu, 2016).

However, some research indicates that without governmental support, even community organizations can disintegrate. For example, New Zealand communities rapidly collaborated to volunteer after the Christchurch Earthquakes (Dionisio & Pawson, 2016). Unfortunately, community resilience ultimately diminished due to bureaucratic issues such as the delay in housing reconstruction, the complexity of insurance claims, and the lack of synergy between community and governmental initiatives (Dionisio & Pawson, 2016). In Japan, communities displayed resilience through campaigns after the 2011 earthquake and tsunami, using social media to provide volunteers with opportunities to assist in recovery efforts. Ultimately, central and regional governments in Japan created reconstruction plans but did not provide the public with opportunities for participation (Dionisio & Pawson, 2016). Unfortunately, this difficulty of collaboration between the public and the government is not unique to New Zealand or Japan. Though these case studies are specific to Japan and New Zealand, the findings support the reappearing theme in literature that collaboration is key but not always executed.

Overall, research has demonstrated that a lack of systematic approaches undermines the overall effectiveness of post-disaster relief. This further supports the notion that effective collaboration is key to establishing a systematic timeline and

logistical plan to provide disaster aid. This collaboration, however, must occur not only between local communities and organizations but between local and federal government agencies as well.

Collaboration Between Public and Government Agencies

Coordination between the public and agencies at different levels of government is crucial to the disaster recovery process, as it takes many actors to strategize and implement a unified recovery effort (Olshansky & Johnson, 2014). However, research indicates that if community participation is limited to hands-on work such as repairing infrastructure, providing temporary housing, clearing debris, and providing temporary housing, the relief process may stall (Vallance, 2015). Disaster recovery may be less effective if the public is not involved in more meaningful participation, such as decision-making and problem-framing (Thomalla et al., 2015; Vallance, 2015).

Unfortunately, collaboration between community and government actors is suggested to be easier than practiced (Vallance, 2015). Scholars who have researched the development of disaster policy have suggested creating predisaster plans and emergency recovery plans from the bottom-up by including ideas from the community in the official relief plans (Horney et al., 2017; Thomalla et al., 2015). This approach incorporates firsthand knowledge and experiences from the public into formal decision making (Horney et al., 2017; Thomalla et al., 2015). However, some research suggests a lack of public constituency, possibly due to the immediate costs of recovery planning versus the long-term, less tangible benefits that are not visible until a while after the emergency occurs (Berke et al., 2014; Henstra, 2010). Other literature indicates not a lack of public

constituency but rather inadequate communication directly from the local government to citizens and conflicting priorities between government officials and the public (Hong et al., 2018). This weakens the general public's knowledge of the emergency and prevents them from actively engaging in recovery.

In their case studies on the Christchurch earthquakes and Japan's 2011 tsunami, Dionisio and Pawson (2016) analyzed the culturally distinct ways in which community members in New Zealand and Japan organized recovery efforts. In both instances, community members gathered to volunteer, and participants were actively engaged in relief immediately post-disaster. However, their efforts ultimately clashed with government-led initiatives (Dionisio & Pawson, 2016). Though these examples draw on post disaster activity overseas, they demonstrate the general contentiousness of the recovery process and the need to streamline and coordinate recovery strategy at multiple levels before disasters occur.

Despite evidence of conflicting efforts between community and government organizations after emergencies, disaster recovery scholars generally encourage public participation in post-disaster decisions (Horney et al., 2017; Olshansky & Johnson, 2014; Thomalla et al., 2015; Vallance, 2015). After analyzing government-established organizations aimed at disaster recovery in nine countries, Olshansky and Johnson (2014) determined that collaboration between local organizations and the various levels of government is one of the main aspects of a successful recovery policy. Their findings suggest that the benefits of collaboration and public participation extend across social, geographical, and political contexts.

Regarding the policymaking process and the MSF, members of the public participate in the problem stream, as they can help identify, introduce, and frame problems (Kingdon, 1995; Thomalla et al., 2015). Cairney and Kwiatkowski (2017) analyzed empirical studies and literature from psychology and policy research to examine the dynamic policymaking process and create strategies for collaboration between the public and governments. They developed strategies that may facilitate effective collaboration between stakeholders and actors at different levels who are competing to influence agendas. The first suggestion was that instead of overwhelming actors in the policy stream with evidence, actors in the problem stream (in this case, community members) must synthesize information to successfully frame the problem at hand. Though the public is often searching for rational, evidence-based agendas, policymakers must be able to understand and conceptualize the problem. Because the human mind can only absorb and understand a limited amount of information at a time, those in the policy and political streams will better understand the problem if they are not bombarded with evidence (Cairney & Kwiatkowski, 2017).

Cairney and Kwiatkowski (2017), like Knaggård (2015), suggested that problem stream actors must frame problems strategically in order to influence actors in the policy stream. Cairney and Kwiatkowski also emphasized the importance of taking advantage of windows of opportunity. Time pressure and focusing events are important motivators in policy change and making emergency decisions (O'Donovan, 2017; Zhou et al., 2018). Thus, to successfully engage in the policymaking process, the public must pay attention to timing and exploit windows of opportunity. Though these suggestions sound effective

in theory, implementing them is more difficult (Olshansky & Johnson, 2014; Vallance, 2015). Though the NDRF emphasizes that local governments should lead recovery efforts, the slow, bureaucratic nature of federal programs compromises the effectiveness of locally led initiatives (Olshansky & Johnson, 2014). The NDRF provides guidelines to promote collaboration between stakeholders and governmental recovery managers at the local and federal levels. However, state and local funding recipients still complain of difficult gubernatorial obstacles to funding, thus compromising the success of recovery operations (Olshansky & Johnson, 2014).

Coordination between community organizations and government agencies is a key piece of humanitarian aid post-disaster (Olshansky & Johnson, 2014) but has historically proven difficult (Olshansky & Johnson, 2014; Vallance, 2015). Many scholars agree that the public should be involved in the formal aspects of disaster planning (Horney et al., 2017; Thomalla et al., 2015) and that they should frame and introduce problems to policymakers in a strategic manner (Cairney & Kwiatkowski, 2017; & Knaggård, 2015). However, there has been limited successful collaboration between community and government actors regarding disaster aid policy (Olshansky & Johnson, 2014). Unfortunately, state and federal governments have not only impeded public and local engagement in disaster recovery, but some communities face additional obstacles due to location and socioeconomic factors (Koch et al., 2017).

Vulnerability Factors in Rural and Tribal Nations

As established previously, social and cultural context is a key element contributing to disaster aid effectiveness (Koch et al., 2017; Thomalla et al., 2015).

When organizations assume that all communities and contexts share the same priorities and rationale regarding disaster recovery, relief efforts are often ineffective (Thomalla et al., 2015). The assumptions that all cultures prioritize recovery priorities undermine cultural clashes that appear when coordinating disaster relief efforts, consequently undermining the effectiveness of these operations. Thus, more research should be done to educate policymakers and disaster response personnel on the sociocultural complexities of certain communities so that policies can better address these aspects in disaster planning and recovery (Thomalla et al., 2015). Therefore, a better understanding of the dynamic context of a community would facilitate more effective disaster relief.

There are multiple aspects of a community that contribute to the sociocultural context. Some regions and certain racial and ethnic groups face context-specific issues that impede disaster aid (Koch et al., 2017). In a study of Milwaukee, Wisconsin's disaster preparedness, Koch et al. (2017) conducted interviews and conversations with participants from community organizations, healthcare institutions, disaster response agencies, and government organizations. Their results revealed that factors contributing to less efficient and effective disaster relief include isolated locations, limited education regarding disasters, limited disaster insurance, limited resources (including financial resources), and limited disaster insurance (Koch et al., 2017). Though these findings are only internally valid to Milwaukee, the aforementioned factors affect cities worldwide, generating vulnerability for various cultures and communities. However, the factors that made certain Milwaukee communities more susceptible to ineffective aid are ubiquitous across communities.

Socially marginalized communities are also vulnerable to less effective aid (Koch et al., 2017; Nguyen & Salvesen, 2014). This is because they are often less familiar with and less vested in predisaster planning. They often encounter a disproportionate number of issues when coordinating with local and federal recovery activities due to social differences, language barriers, and cultural misunderstandings. In addition to sociocultural factors, vulnerable communities face logistical issues such as resource constraints, physical isolation, and limited bureaucratic acculturation (Koch et al., 2017; Nguyen & Salvesen, 2014). Existing literature indicates that vulnerable communities do not receive emergency supplies with the same frequency as communities; therefore, there are fewer vulnerability factors (Gutjahr & Fischer, 2018), increasing their risk of less efficient aid after a disaster strike.

Tribal Communities. In terms of disaster relief, Tribal Nations and tribal communities are a particularly vulnerable population that faces a variety of barriers to receiving disaster aid (Lawrence et al., 2016; Luft, 2016). Tribal Nations are historically oppressed communities that rely heavily on outside communities for emergency relief but face several obstacles when trying to obtain it (Lawrence et al., 2016; Luft, 2016). Existing research also indicates that these communities are less prepared for disasters (Lawrence et al., 2016), furthering their vulnerability. For instance, Lawrence et al. (2016) administered a survey that assessed the emergency preparedness of 45 Tribal Nations in California. The vast majority of respondents reported that they were less than adequately prepared to deal with hazards, and from a list of 67 emergency resources, 71% were only available to tribes from outside their communities.

Although this study's sample was California tribes, the findings of this research revealed overall low disaster preparedness in Tribal Nation communities, exacerbating vulnerability factors and suggesting potential barriers to preparedness in tribal communities. Lawrence et al. revealed tribal nations' heavy reliance on outside on humanitarian aid from outside their communities. Although these communities rely heavily on neighboring communities for disaster aid, there are several sociocultural, logistical, and bureaucratic barriers to receiving this aid (Luft, 2016). Research indicates that context-specific obstacles such as sociocultural differences, isolated locations, limited disaster education, a lack of disaster insurance, and language barriers impede effective collaboration with actors in the disaster recovery process (Koch et al., 2017; Thomalla et al., 2015).

In addition to the previously discussed sociocultural factors that may impede effective disaster aid, tribal nations face logistical, bureaucratic, and institutional barriers to receiving effective and efficient relief in times of emergency (Luft, 2016). In her literature on the wildfire on the Northern Cheyenne reservation of Montana, Luft (2016) discussed the history of exploitation, expropriation, and colonialism that has left the Northern Cheyenne Tribe with high unemployment rates, severe housing shortages, and economic instability in general, which have overall impeded the effectiveness of recovery post-disaster. Although Luft studied tribes within a single state, the history of oppression, marginalization, and destabilization is shared by Tribal Nations as a population, which includes tribes and communities across the United States.

The economic instability faced by tribal communities adds a layer of additional vulnerability, as socioeconomic status has historically been the strongest determinant of social vulnerability (Cutter & Finch, 2018). Economically vulnerable communities are more likely to struggle with post-disaster rebuilding and development (Bondonio & Greenbaum, 2018). Bondonio and Greenbaum (2018) studied emergency declarations. They used dynamic propensity score matching to compare the economic aftermath that specific countries suffered with the economic trends of their counterparts. They found that although most communities can recover after natural disasters, counties with weaker economies receiving lower levels of relief struggle to recover. Due to the fragility of their economic systems, these findings suggest that tribal communities are particularly susceptible to ineffective humanitarian aid post-disaster. Tribal communities are not the only population that presents economic and development concerns in times of emergency, which adds to recovery difficulties.

Rural Communities. Research indicates rural regions are also particularly vulnerable to natural disasters and their negative effects (Koch et al., 2017; Sanders et al., 2015). This disproportionate hardship post-disaster is due to a lack of resources in rural areas, regular exposure to natural hazards, and more difficulty coping and adapting (Sanders et al., 2015). In addition, the isolated location of rural areas may create difficulties during the recovery process post-disaster, as community isolation is known to be one of the contributing factors to vulnerability (Koch et al., 2017). As previously discussed, vulnerable communities, such as tribal and rural communities, receive less emergency commodities (Gutjahr & Fischer, 2018). Rural communities also continue to

face additional challenges, such as unequal development patterns and, like tribal communities, power conflicts with the state government (Dandekar & Hibbard, 2016). Though scholars have attempted to create mathematical humanitarian aid models that account for remote locations, the dynamic social context of rural communities may be difficult to account for in logistical recovery planning.

It is important to recognize the risks and vulnerability factors that both rural and tribal communities face to create aid that is both effective and efficient in these distinct physical and social contexts. Veland et al. (2013) suggested improving collaboration with indigenous stakeholders instead of operating at a top-down level, potentially patronizing fashion and practicing cultural sensitivity when collaborating with the community. This collaborative approach could be useful during humanitarian aid operations with rural communities as well and would promote socially and culturally specific disaster planning.

As previously discussed, it is important to address the lack of understanding of how different populations' contexts and cultures contribute to vulnerability and risk factors (Thomalla et al., 2015). Government planners can mediate vulnerability and risk factors by contextualizing disaster planning and recovery operations within the community (Thomalla et al., 2015). The federal government should explicitly focus on incorporating equity considerations into recovery programs before implementation (Olshansky & Johnson, 2014) to contextualize relief efforts before clashes occur. Promoting a horizontal versus a top-down approach to disaster recovery decision making will better allow for cooperation across communities, organizations, governmental

agencies, and geographical boundaries (Thomalla et al., 2015). Community and government organizations should incorporate vulnerable communities in disaster planning activities and develop sustainable, long-term partnerships to facilitate effective emergency relief (Koch et al., 2017).

Resilience

Creating long-term alliances with marginalized communities is an important aspect of building community resilience that is consistently overlooked (Koch et al., 2017). Community resilience consists of various factors that contribute to overall tenacity and flexibility during emergencies and is prevalent in disaster recovery literature. Paton and Johnston (2017) identified the need to define and analyze the different aspects of resilience to develop the best emergency planning and recovery models that promote a clear concept of resilience in communities before and after disasters. However, after reviewing 80 relevant papers on community resilience in the context of disasters, Patel et al. (2017) found no consistent, common, agreed-upon definition of community resilience.

Regardless of the definition, scholars have taken various approaches to analyzing resilience. Koch et al. (2017) presented two approaches to studying the concept of community resilience: the psychosocial approach and the systems-based approach. The psychosocial approach considers the recovery process from the individual's mental health perspective, which helps analyze one's internal healing process after a disaster. The systems-based approach emphasizes the social-ecological networks that are helpful in studying the interactions of various organizations, institutions, governments, and policy actors.

In a qualitative study of community resilience in a small rural town in Australia, Madsen and O'Mullan (2016) took a systems-based approach to study how the community recovered from a series of floods. The participants identified social connectedness, optimism, and community learning as important resilience features (Madsen & O'Mullan, 2016). They also emphasized that a community develops and reinforces resilience over time (Madsen & O'Mullan, 2016). Because communities are complex and dynamic systems, resilience within communities is multi-faceted and reinforced by various factors.

Cretney (2016) also used a qualitative approach to identify variables contributing to a community's resilience. She specifically analyzed Project Lyttelton, a community organization dedicated to enhancing community resilience, which assisted in disaster-recovery after the 2011 Christchurch earthquake in New Zealand. After conducting qualitative interviews with community members and members of the organization, Cretney identified four major community resilience factors. The first was social support, an informal support system between community members, enhancing material and emotional recovery. The second was social participation, consisting of formal networks facilitating community engagement and participation. The third factor was social memory, which is the community's capacity to commemorate important events. The fourth resilience factor Cretney identified was social learning, the community's collective ability to learn from and recover from disasters and emergencies. Though both Cretney's and Madsen and O'Mullan's (2016) research were not conducted within the United

States, the social factors and concepts mentioned by participants are ubiquitous and may be cautiously generalized to other communities internationally.

Another key factor of community resilience is the ability to adapt during times of disaster (Francis & Bekera, 2014; Kim & Oh, 2014; Tierney, 2014). In their extensive review of the literature on system resilience, Francis and Bekera (2014) found three elements that contribute to the resilience capacity of a system. These include the capacity to adapt, withstand, and recover from major disruption, the ability to absorb disturbance and change, and the ability to use the resources at hand. Overall, they determined that resilience capacity consists of absorptive, adaptive, and restorative capacity (Francis & Bekera, 2014).

Like Francis and Bekera (2014), Kim and Oh (2014) and Tierney (2014) emphasized the importance of a community's adaptability in developing resilience. Kim and Oh agreed that flexibility, improvisation, and adaptability are crucial aspects of disaster response. Instead of following the conventional expectations and operating under the standard procedures post-disaster, communities must be able to improvise, as disasters and recovery efforts are erratic (Kim & Oh, 2014). Thus, to establish resilience, communities must be flexible, contextualizing and adapting recovery operations to their specific needs, which are sometimes unforeseeable. Adaptive resilience combines novel and preplanned activities. Because natural disasters are disruptive and often unpredictable, adhering to disaster planning while maintaining flexibility and adaptability (Tierney, 2014). Disaster recovery is complex and nonlinear, requiring groups to address various issues that appear alongside each other, sometimes in an illogical or unexpected

order (Olshansky & Johnson, 2014). Due to the uncertainty of natural disasters, however, it is important to have a plan in place at the local and community levels to build resilience. Thus, a predisaster recovery plan is the first step for community resilience (Horney et al., 2017). However, because of the vulnerability of specific communities, policymakers should take special note to contextualize disaster planning to such communities to promote equitable levels of community resilience in times of emergency.

Promoting Equity in Disaster Planning

As previously discussed, socioeconomically challenged and vulnerable communities have a diminished capacity to recover after a disaster, as they have a more difficult time accessing disaster-aid resources than do more privileged communities (Gutjahr & Fischer, 2018; Koch et al., 2017; Nguyen & Salvesen, 2014). In their historical analysis of the United States' disaster recovery policy, Olshansky and Johnson (2014) determined that federal, state, and local entities must work together to develop a method of deliberately incorporating equity considerations into disaster recovery policy and programs. Though some scholars have attempted to build humanitarian aid models with equitable solutions in mind, there is still a much-needed transformation in governance regarding disaster recovery and development to enhance inclusive, equitable solutions that are long-term sustainable and impact the targeted populations positively (Thomalla et al., 2015). Thomalla et al. (2015) suggested that developing a more educated and progressive discourse on culture and socioeconomic contributors to vulnerability and risk will encourage government agencies to incorporate these factors into policymaking.

Summary and Conclusions

Disaster recovery is a collaborative, nonlinear, complicated process with poorly defined endpoints (Olshansky & Johnson, 2014). Throughout history, the United States federal government has struggled to create a strategic and systematic post-disaster recovery plan, leaving community organizations and local and state governments to carry emergency aid's financial and logistical burdens (Olshansky & Johnson, 2014). Disaster planning is a heavy responsibility, and although policymakers face intense time pressure (Henstra, 2010), the public still expects rational, evidence-based decisions regarding the recovery process (Cairney & Kwiatkowski, 2017). In times of emergency, actors in the problem stream of the MSF must develop a problem frame using evidence, emotions, and values to appeal to policymakers' agendas (Knaggård, 2015). Sadly, community members involved in problem framing are often excluded from the decision-making process. Their participation in recovery efforts is limited to hands-on activities such as rebuilding infrastructure, removing debris, and administering first aid (Vallance, 2015). The limited opportunities for collaboration between community and government entities threaten synergy between recovery efforts and further exacerbate the logistical and bureaucratic barriers that communities face when applying for and receiving federal disaster aid (Olshansky & Johnson, 2014).

Certain communities are particularly vulnerable to the effects of a disaster because they face context-specific obstacles such as language barriers, physical isolation, limited disaster education and insurance, and cultural insensitivities (Koch et al., 2017). Literature has indicated that tribal nations and rural communities are particularly

vulnerable to receiving less effective aid after a disaster strikes (Lawrence et al., 2016;

Luft, 2016; Sanders et al., 2015). Because vulnerable communities receive

disproportionately fewer disaster recovery supplies (Gutjahr & Fischer, 2018), their

recovery may be inefficient or inadequate. Therefore, in order to create the most effective

and equitable disaster recovery policy, actors in the policy stream of the MSF must

contextualize their strategies to specific vulnerable communities, keeping in mind the risk

factors and potential threats to resilience (Rivera & Kapucu, 2015). In light of the current

disaster policy's inequity, scholars recommend horizontal disaster recovery policy

processes versus top-down decision making, facilitating more collaborative and mutually

beneficial solutions (Thomalla et al., 2015). Additionally, the federal government should

focus on providing communities with resources for recovery planning and encourage the

dissemination of information post-disaster (Olshansky & Johnson, 2014). Though some

local and state governments have implemented relatively new disaster recovery plans,

their adoption is recent, and there have yet to be any long-term studies of their

effectiveness (Horney et al., 2017).

Though the United States is one of the leading countries in natural disaster

research (Shen et al., 2018), there are still various gaps in the literature regarding

implementing natural disaster policy (Jackman et al., 2017). There is also a gap in the

literature regarding predisaster planning and management (Goldschmidt & Kumar, 2016).

In their lexical analysis of existing literature on humanitarian operations and managing

disasters, Goldschmidt and Kumar (2016) discovered that most extant literature discussed

the response phase of disaster management rather than mitigation, prevention, or

protection. They suggested three areas of future research that might enhance post-disaster operations and crisis management: integrating hazard events and elements at risk, investing in humanitarian development, and defining and measuring recovery success. In addition to a lack of research on disaster management before events occur, more research should be done on communication, collaboration, and communication during events. Little research has been done regarding disaster emergency managers' use of social media and crowdsourcing during crises or disasters to spread information or provide opportunities for communication with the public (McCormick, 2016). In general, more research should be conducted on the role of social media in governmental crisis communication and how this form of communication is perceived by citizens (Olsson & Eriksson, 2016). Though communication and collaboration with the community are important, public participation in the recovery process remains contentious. Existing literature on public participation often fails to distinguish between community participation in hands-on activities (e.g., debris removal, rebuilding, supply distribution, emergency first aid) and impactful public participation in decision-making and policy development processes (Vallance, 2015). Additional research should be done to better understand public involvement and participation during disasters (Vallance, 2015) to best collaborate with the community and engage them in the policy process.

However, some communities are more vulnerable, and collaboration can be difficult. Many relief workers lack the cultural awareness to help tribal nations best (Lawrence et al., 2016), suggesting a need for enhanced education on the sociocultural context of these communities. Additional research should address the social, cultural,

economic, and environmental factors contributing to a community's external context and potential vulnerability (Thomalla et al., 2015). A stronger understanding of the root causes of risks and vulnerability would help policymakers make empirically based decisions that can enhance disaster recovery operations in socially, culturally, and physically isolated communities. This suggests that providing actors in each stream of the policymaking process with research-based information on communities' contexts may produce more equitable and sustainable policy (Thomalla et al., 2015).

Due to the lack of a strategic, explicit, and coherent federal recovery policy, the U.S. government continues to engage in disaster recovery on a case-by-case basis (Olshansky & Johnson, 2014). The unpredictability and bureaucracy ingrained in receiving federal recovery funding undermine sustainable, long-term resilience (Olshansky & Johnson, 2014). Therefore, local government and community organizations serve a key role in disaster relief, especially in the immediate hours, days, and weeks following an emergency. This necessitates the analysis of state and local programs' effectiveness, including the success of Minnesota's policy. Much of the research conducted to evaluate current natural disaster policy has used statistical methods or qualitative indicators. Still, there is little disaster policy research that explicitly evaluates recovery programs using the MSF.

Due to the dynamic and ever-changing community needs during disaster response, Alesch et al. (2012) suggested contextualizing policy in terms of the three streams to determine which policy aspects need to be manipulated. The lack of coherent disaster recovery policy blurs the roles of various recovery actors (Thomalla et al., 2015),

further necessitating the use of the MSF to distinguish and balance roles in the three streams, which may result in more streamlined relief efforts. This study addressed the gaps in research on Minnesota's specific recovery policy, the vulnerability of tribal nations and rural communities, and natural disaster policy evaluation using the MSF.

Chapter 3 provides the methodological plan for the study. Given the problem and identified gap in existing literature, a quantitative, quasi-experimental study was conducted to evaluate how the MPAP and DACA have affected natural disaster policy in Minnesota, particularly concerning the equity and vulnerability of rural and tribal communities' recovery. Chapter 3 also describes the researcher's role, data collection, and analysis.

Chapter 3: Methodology

This quantitative, quasi-experimental study used archival data from the MPAP via several state of Minnesota online data sources to consider the distribution of resources that the state provides in the face of natural disasters as well as how the resources distributed to different jurisdictions have changed over time. The MPAP is designed to mirror the FEMA Public Assistance Program but on a more local (state) scale with a few modifications in the statute, and therefore provides relief in the form of financial support and resources to communities that experience negative effects of natural disasters. The program is designed to provide assistance to local governments via a cost-share program when no federal aid is available or the disaster damages fall outside the federally approved timeframe (Public Disaster Assistance, 2017). When a federal disaster is declared, FEMA picks up 75% of eligible costs, which are outlined in FEMA's Public Assistance Program (FEMA, 2018). In Minnesota, the contingency fund will then cover the 25% cost share with the local government when a disaster becomes a presidentially declared disaster. Many disasters did not reach the federal threshold within Minnesota or were denied through FEMA, which severely impacted the jurisdictions and, in turn, the constituents financially (OLASM, 2012).

For a community to be eligible for support from the federal government in the face of natural disasters within Minnesota, the aggregate threshold is almost 8 million dollars. Although it is not unheard of for a catastrophic natural event within Minnesota, the millions of dollars needed to reach the threshold is a large burden for jurisdictions to

meet when disaster strikes and the level falls below the federal level or a federal disaster is denied, according to Public Disaster Assistance.

In 2014, MPAP and DACA were created and defined to assist local governments, such as counties or tribal nations, in public infrastructure recovery from a natural disaster (HSEM, 2017). The MPAP focuses on addressing the economic burden due to unpredictable disasters at a county or tribal level through the state instead of federal or presidential options. This study was needed in order to address the gaps of local recovery with assistance from the state government when federal aid is not accessible, as well as examine the process of the policy from idea to fruition using the MSF to better understand emergency management policy within Minnesota. The framework focused on the policy's creation and rapid alterations between 2014 and 2017.

The federal government's history of disaster response and recovery at the community level has been characterized by a lack of a systematic approach and inequity in funding (Olshansky & Johnson, 2014). Therefore, communities have experienced problems with paying for disasters at the local level when no federal aid has been made available during the most expensive phases of emergency management (Olshansky & Johnson, 2014). Additionally, this problem has negatively impacted rural and tribal jurisdictions disproportionally (Lawrence et al., 2016). Using data from the MPAP database of state disaster relief thresholds by county, the following three research questions were addressed:

RQ1: Under MPAP, how do jurisdiction types (rural, tribal, and urban) differ in the frequency with which they reach the state disaster relief threshold?

RQ2: How have the frequencies with which jurisdictions overall reach state disaster relief thresholds changed over time?

RQ3: How have the frequencies with which each jurisdiction type (rural, tribal, and urban) reaches state disaster relief thresholds changed over time? It was hypothesized that state disaster relief thresholds would be highest for urban jurisdictions and lowest for tribal jurisdictions but that there would be a significant increase in relief threshold use over time, specifically for urban and rural areas, but not for tribal areas that are often neglected by state policies and government.

This chapter addresses the research design and its rationale, including a description of the target population and included sample. Then, the plan for data analysis is detailed, along with a discussion of potential threats to the validity of this study and a review of the ethnical procedures undertaken to ensure that the data are handled appropriately. The chapter concludes with a summary and an introduction to Chapter 4, which includes the analytic results of the study.

Research Design and Rationale

This study used a quantitative, quasi-experimental research design to understand the differences in resource distribution by the government within the state of Minnesota in response to natural disasters. This design is appropriate for use with publicly available data because potential differences in resource distribution by jurisdiction type and year are used to consider the mean financial assistance provided (Babbie, 2012). Mean dollar values of financial assistance were statistically compared using analyses of variance (ANOVA). The independent variables were jurisdiction type and year, and the dependent

variable in all analyses was the dollar amount of assistance provided by the MPAP. This design is appropriate for use with data that are numerical in nature. Both descriptive and inferential statistics were used and presented.

Methodology

Population

The target population for this study included all jurisdictions across the state of Minnesota, specifically suburban and urban counties and tribal lands. The target population included a total of 98 jurisdictions, 87 counties, and 11 tribal jurisdictions in Minnesota.

Sampling and Sampling Procedures

State disaster relief threshold values by county and year have been made publicly available in Minnesota. I was able to locate and download the data via the Minnesota State Homeland Security and Emergency Department's website. The sample for this study included all 87 counties within the state of Minnesota. No specific permissions were necessary to gain access. The reputability of the data was ensured by the fact that I downloaded the data directly from Minnesota's database for the years 2014-2017. The data was collected in 2017-2018.

Data Analysis Plan

Data for this study were stored and analyzed using the Statistical Program for the Social Sciences (SPSS) version 25. First, descriptive statistics were presented, including information on the number of each type of jurisdiction from which data were available and measures of central tendency of the dependent variable, which was the state disaster

relief threshold values. To address the first research question, examining whether there are differences in the frequency with which jurisdictions received state disaster relief threshold values by jurisdiction type, a two-way ANOVA was conducted. Jurisdiction type was entered as the three-group independent variable, and state disaster relief threshold was entered as the continuous dependent variable. This analysis allowed for an examination of the variation between and within these three groups (urban, suburban, and tribal jurisdictions) and provided an F-statistic that was interpreted to determine whether the values differ significantly between jurisdiction types. If the F-statistic was significant, then a Scheffe post hoc test was conducted, which considered the pairwise difference in mean values by jurisdiction type and provided information regarding which pair(s) of jurisdiction types have significantly different values.

To address the second research question, examining whether there are differences in state disaster relief threshold values by year, a repeated measure ANOVA was conducted for the years 2014 to 2017. In this analysis, the mean disaster relief threshold value for each year was entered into the analysis, regardless of jurisdiction type. This analysis provided an F-statistic that was interpreted to determine whether the mean values differ significantly between years. If the F-statistic was significant, then a Bonferroni post hoc test was conducted, which considered the pairwise differences between each pair of years and provided information regarding between which years the mean state disaster relief threshold value differed significantly.

To address the third research question, examining whether there are differences in the frequencies with which jurisdictions reached state disaster relief thresholds over time,

based on jurisdiction type, repeated measures ANOVA was conducted separately by

jurisdiction type along with Bonferroni post hoc tests to determine pairwise differences

again. The F-statistics resulting from these separate repeated measures ANOVA were

compared using chi-square analysis to determine whether they are statistically different

by jurisdiction type and year. The mean disaster relief threshold value was entered into

the analysis for each year by each jurisdiction type to analyze changes over time and by

jurisdiction type. I calculated the mean disaster relief threshold value based on

jurisdiction type using the data available for each jurisdiction. This analysis provided an

F-statistic that was interpreted to determine whether the mean values differ significantly

between years based on jurisdiction type and how these values differ between jurisdiction

types over time. If the F-statistic was significant, then a Bonferroni post hoc test was

conducted, which considered the pairwise differences between each pair of years for each

jurisdiction type and provided information regarding between which years the mean state

disaster relief threshold value differed significantly for the particular jurisdiction type.

Threats to Validity

In designing a study, it is important to acknowledge potential threats to the

validity of the data collected and the analyses conducted. Quantitative research must

consider the extent to which external validity may be compromised. External validity is

defined as the degree to which the results of the study are valid and relevant to a broader,

more general context. In the context of this study, which is considering state disaster

relief thresholds in the state of Minnesota, it must be recognized that the findings are

likely to generalize across this state but may not be relevant for other states or organizations that engage in disaster relief in the face of natural disasters.

Quantitative research must also consider internal validity. Internal validity refers to the question of how well a study's results represent what they were intended to represent. That is to say, internal validity is bound up in the alignment of study components. To ensure alignment, the purpose of the study was chosen to align directly with the purpose. In turn, the research questions that guided the study were chosen to serve its purpose, and the research methodology was chosen so as to be able to answer those research questions. In order to answer the research questions, careful choices of research design and methodology were made; each research question corresponded to specific null and alternative hypotheses, and by choosing appropriate measures for the variables expressed in these hypotheses and appropriate hypothesis testing, methodological internal validity was assured. This chapter serves as an in-depth documentation of the methodological choices so that a future researcher may determine how alignment was maintained. Given that the data utilized in this study were based on a state-maintained database, other threats to validity, such as respondent biases that might result from self-reports from individual participants, are not relevant to this study. However, the quality of the data depends on the quality of data collection, collection instruments, and researchers involved in collecting data for the state database. The data used is subject to change in the state's database, so only data available between the years 2017 and 2018 were used for clarity and replicability.

Ethical Procedures

The data used in this study are publicly available, and I work for the state agency

that oversees the MPAP and DACA. However, I am not directly involved in any financial

transactions of the program, nor do I have any influence on the outcome of requests.

Therefore, this project had no conflict of interest or risk of bias. I sought Institutional

Review Board (IRB) approval, which the university approved. Because no recruitment

took place in order to collect these data and no specific materials were utilized in the

collection of data, there are no ethical concerns that need to be addressed regarding

recruitment or materials. Data were not collected specifically for this study; the data used

are publicly available, so this study's results can be verified by others who wish to

replicate the analyses. No identifiable, anonymous, or confidential information is

associated with this study. I maintained the dataset on my personal, password-protected

computer, to which I only had access. However, there is little risk of a security or privacy

violation, given that the data are publicly available.

Time and Resource Constraints

As mentioned previously, the data collected for use in this study are publicly

available, which I have already located and downloaded. For this reason, there are no

identified constraints related to obtaining the data needed for this study. However, it is

important to note that data may be missing from the data source used in this study. I

documented instances of missing data and utilized data imputation as appropriate.

Because the data were already obtained and I had access to the software to be used for

analysis, there are no time constraints related to obtaining or analyzing the data for this study.

Summary

This chapter reviewed the methodology undertaken to address the study's research questions, which were focused on better understanding the lack of systematization and equity in funding disaster response and recovery efforts in the state of Minnesota. This quantitative, quasi-experimental study used a series of analyses of variance to understand mean differences in disaster relief thresholds across different jurisdiction types in the state between the years 2014 through 2017. Data from this study came from the MPAP database of state disaster relief use by county. Threats to the external and internal validity of this study were reviewed, as were the ethical procedures that were undertaken to ensure the safe storage of the data. Chapter 4 presents a detailed overview of the results from the statistical analyses conducted with these data.

Chapter 4: Results

Introduction

The purpose of this quantitative, quasi-experimental study was to evaluate how

the MPAP and DACA have impacted natural disaster policy within the state of

Minnesota and identify whether differences exist in the state disaster relief threshold use

by jurisdiction type. The independent variables were the jurisdiction type (urban, rural,

and tribal) and year (2014-2017), and the dependent variable was the state disaster relief

thresholds. The data used in this study were downloaded from the state of Minnesota's

public website. A series of ANOVA were conducted to address the following research

questions and test the hypotheses:

Research Question 1

The first research question was, "Under MPAP, how does the state disaster relief

threshold differ among jurisdiction types (urban, rural, and tribal)?" and the

corresponding hypotheses were as follows:

$H_0 1$: There are no significant differences on the state disaster relief threshold

among jurisdiction types (urban, rural, and tribal).

$H_a 1$: There are significant differences on the state disaster relief threshold among

jurisdiction types (urban, rural, and tribal).

Research Question 2

The second research question was, "How have the state disaster relief threshold

across all jurisdiction types changed over time (2014-2017)?" and the corresponding

hypotheses were as follows:

$H_0 2$: There are no significant differences on the state disaster relief threshold across all jurisdiction types from 2014 to 2017.

$H_a 2$: There are significant differences on the state disaster relief threshold across all jurisdiction types from 2014 to 2017.

Research Question 3

The third research question was, "How have the state disaster relief threshold in each jurisdiction type (urban, rural, and tribal) changed over time (2014-2017)?" and the corresponding hypotheses were as follows:

$H_0 3_1$: There are no significant differences on the state disaster relief threshold among urban counties from 2014 to 2017.

$H_a 3_1$: There are significant differences on the state disaster relief threshold among urban counties from 2014 to 2017.

$H_0 3_2$: There are no significant differences on the state disaster relief threshold among rural counties from 2014 to 2017.

$H_a 3_2$: There are significant differences on the state disaster relief threshold among rural counties from 2014 to 2017.

$H_0 3_3$: There are no significant differences on the state disaster relief threshold among tribal counties from 2014 to 2017.

$H_a 3_3$: There are significant differences on the state disaster relief threshold among tribal counties from 2014 to 2017.

This chapter consists of four parts. The first part presents a descriptive analysis of the sample. The second part presents the detailed data collection procedures that were

conducted. The third part presents the results of the data analysis. Lastly, a summary of the key findings from the data analysis concludes the chapter.

Data Collection

The data were collected for years 2014-2017 of the MPAP and statutorily attached Disaster Contingency Account. There were some discrepancies from the plan presented in Chapter 3, as some of the tribal nations are within multiple counties, so their exact financial impact is not fully known. I divided the information used as best as I could with the publicly available data. All data were exported to Microsoft Excel and then to the SPSS worksheet for data analysis.

Treatment Fidelity

The data came from the State of Minnesota's website. Therefore, it was assumed that the data were accurate. There was no way to check the validity and reliability of the data but to trust that what was reported was accurate. The data were downloaded cautiously so that no unnecessary changes in the data set were conducted. Any updates to data or website since 2018 will not be included as the data was pulled and run off of the data present at the time of writing.

Results

All hypotheses were tested using ANOVA. SPSS was used to conduct the ANOVA for each RQ. A significance level of 95% was used in the test to identify any significant differences in the dependent variable's means across the groupings of the independent variables. The summary of the results is discussed in the next subsections.

Research Question 1

The first research question was, "Under MPAP, how does the state disaster relief threshold differ among jurisdiction types (urban, rural, and tribal)?" and the corresponding hypotheses were as follows:

$H_0 1$: There are no significant differences on the state disaster relief threshold among jurisdiction types (urban, rural, and tribal).

$H_a 1$: There are significant differences on the state disaster relief threshold among jurisdiction types (urban, rural, and tribal).

In RQ1, the independent variable was the jurisdiction type, which has three categories: urban, rural, and tribal. The dependent variable was the state disaster relief threshold. A one-way ANOVA was conducted to test the hypotheses. Table 1 shows the output of the ANOVA analysis for RQ1. It can be seen that the significance value is $p < .05$ and, therefore, it can be concluded that there was a statistically significant difference in the state disaster relief threshold among jurisdiction types, $F(2, 95) = 34.47$, $p < .05$.

Table 1

ANOVA Test for RQ1

Model	Sum of squares	df	Mean square	F	Sig.
Regression	9.344×10^{12}	2	4.672×10^{12}	34.472	<.001
Residual	1.287×10^{13}	95	1.355×10^{11}		
Total	2.222×10^{13}	97			

It is known thus far that there are statistically significant differences among the jurisdiction types but not as to which jurisdiction types differed from each other. The Scheffe post hoc test was conducted to determine which groups significantly differed from each other (see Table 2). The results showed that the average state disaster relief threshold of urban counties ($M = 1,157,287.44$, $SD = 1,213,858.28$) was significantly higher compared to rural counties ($M = 104,463.47$, $SD = 118,718.66$). Also, the average state disaster relief threshold of urban counties was significantly higher compared to tribal counties ($M = 11,098$, $SD = 13,102.72$). However, the average state disaster relief threshold of rural counties was not significantly different compared to urban counties.

Table 2

Scheffe Post Hoc Test

		Mean difference	Std. error	Sig.
Urban	Rural	1052823.98*	129597.25	<.001
	Tribal	1146189.26*	165463.47	<.001
Rural	Urban	-1052823.98*	129597.25	<.001
	Tribal	93365.29	118564.88	0.734
Tribal	Urban	-1146189.26*	165463.47	<.001
	Rural	-93365.30	118564.88	0.734

* Significant at $p < .05$

Research Question 2

The second research question was, "How have the state disaster relief threshold across all jurisdiction types changed over time (2014-2017)?" and the corresponding hypotheses were as follows:

$H_0 2$: There are no significant differences on the state disaster relief threshold across all jurisdiction types from 2014 to 2017.

$H_a 2$: There are significant differences on the state disaster relief threshold across all jurisdiction types from 2014 to 2017.

In RQ2, the independent variable was the year, which has four categories (repeated measures): 2014, 2015, 2016, and 2017. The dependent variable was the state disaster relief threshold. A repeated measures one-way ANOVA was conducted to test the hypotheses. Table 3 shows the output of the repeated measures one-way ANOVA analysis for RQ2. The results showed a significant year effect, Wilk's Lambda = .86, $F(1, 97) = 15.56$, $p < .05$, = .14. Thus, there was a significant evidence to reject H2$_0$ and conclude that there were significant differences in the state disaster relief threshold across all jurisdiction types from 2014 to 2017.

Table 3

ANOVA Test for RQ2

Source	Sum of squares	df	Mean square	F	Sig.
Intercept	1.474×10^{13}	1	1.474×10^{13}	15.555	<.001
Error	9.195×10^{13}	97	9.479×10^{11}		

It is known thus far that year has a significant effect on the state disaster relief threshold over time, but it is necessary to know as to what years there were significant differences on the state disaster relief threshold. The Bonferroni post hoc test was conducted to determine which years significantly differed from each other (see Table 4). The results showed that the average state disaster relief threshold on all pairwise combinations of years were significantly different from each other. Specifically, later years have significantly higher average state disaster relief threshold compared to earlier years.

Table 4

Bonferroni Post Hoc Test

		Mean difference	Std. error	Sig.
2014	2015	-3268.656*	828.777	<.001
	2016	-3813.432*	966.906	<.001
	2017	-5992.536*	1519.424	<.001
2015	2014	3268.656*	828.777	<.001
	2016	-544.776*	138.129	<.001
	2017	-2723.880*	690.647	<.001
2016	2014	3813.432*	966.906	<.001
	2015	544.776*	138.129	<.001
	2017	-2179.104*	552.518	<.001
2017	2014	5992.536*	1519.424	<.001
	2015	2723.880*	690.647	<.001

| | 2016 | 2179.104* | 552.518 | <.001 |

* Significant at $p < .05$

Research Question 3

The third research question was, "How have the state disaster relief threshold in each jurisdiction type (urban, rural, and tribal) changed over time (2014-2017)?" and the corresponding hypotheses were as follows:

H_03_1: There are no significant differences on the state disaster relief threshold among urban counties from 2014 to 2017.

H_a3_1: There are significant differences on the state disaster relief threshold among urban counties from 2014 to 2017.

H_03_2: There are no significant differences on the state disaster relief threshold among rural counties from 2014 to 2017.

H_a3_2: There are significant differences on the state disaster relief threshold among rural counties from 2014 to 2017.

H_03_3: There are no significant differences on the state disaster relief threshold among tribal counties from 2014 to 2017.

H_a3_3: There are significant differences on the state disaster relief threshold among tribal counties from 2014 to 2017.

For RQ3, the independent variable was the jurisdiction type, which has three categories: urban, rural, and tribal. The dependent variable was the state disaster relief threshold. A repeated measures one-way ANOVA was conducted to test the sets of

hypotheses. Table 5 shows the output of the repeated measures one-way ANOVA

analysis for the first set of hypotheses of RQ3. The results showed a significant year

effect, Wilk's Lambda = .49, $F(1, 8) = 8.18$, $p < .05$, = .50. Thus, there was a significant

evidence to reject $H3_0$ and conclude that there were significant differences on the state

disaster relief threshold among urban counties from 2014 to 2017.

Table 5

ANOVA Test for RQ3 Hypothesis 3

Source	Sum of squares	df	Mean square	F	Sig.
Intercept	4.998×10^{13}	1	4.988×10^{13}	8.181	.021
Error	4.878×10^{13}	8	6.098×10^{12}		

The Bonferroni post hoc test was conducted to determine which years

significantly differed from each other (see Table 6). The results showed that the average

state disaster relief threshold on all pairwise combinations of years were not significantly

different from each other. This finding contradicted the ANOVA results, which showed

that the year has a significant effect on the average state disaster relief threshold among

urban counties over time.

Table 6

Bonferroni Post Hoc Test

		Mean difference	Std. error	Sig.
2014	2015	-19839.213	6936.333	0.127
	2016	-23145.749	8092.389	0.127
	2017	-36371.891	12716.61	0.127
2015	2014	19839.213	6936.333	0.127
	2016	-3306.536	1156.056	0.127
	2017	-16532.678	5780.278	0.127
2016	2014	23145.749	8092.389	0.127
	2015	3306.536	1156.056	0.127
	2017	-13226.142	4624.222	0.127
2017	2014	36371.891	12716.61	0.127
	2015	16532.678	5780.278	0.127

	2016	13226.142	4624.222	0.127

* Significant at $p < .05$

Table 7 shows the output of the repeated measures one-way ANOVA analysis for the second set of hypotheses of RQ3. The results showed a significant year effect, Wilk's Lambda = .56, $F(1, 77) = 60.39$, $p < .05$, = .44. Thus, there was significant evidence to reject H4$_0$ and conclude that there were significant differences on the state disaster relief threshold among rural counties from 2014 to 2017.

Table 7

ANOVA Test for RQ3 Hypothesis 4

Source	Sum of squares	df	Mean square	F	Sig.
Intercept	3.522×10^{13}	1	3.522×10^{13}	60.393	<.001
Error	4.491×10^{13}	77	5.833×10^{12}		

The Bonferroni post hoc test was conducted to determine which years significantly differed from each other (see Table 8). The results showed that the average state disaster relief thresholds on all pairwise combinations of years were significantly different from each other. Specifically, later years have significantly higher average state disaster relief thresholds compared to earlier years; however, they were all equally distributed.

Table 8

Bonferroni Post Hoc Test

		Mean difference	Std. error	Sig.
2014	2015	-1790.802*	230.438	<.001
	2016	-2089.269*	268.845	<.001
	2017	-3283.138*	422.47	<.001
2015	2014	1790.802*	230.438	<.001
	2016	-298.467*	38.406	<.001
	2017	-1492.335*	192.032	<.001
2016	2014	2089.269*	268.845	<.001
	2015	298.467*	38.406	<.001
	2017	-1193.868*	153.626	<.001
2017	2014	3283.138*	422.47	<.001
	2015	1492.335*	192.032	<.001
	2016	1193.868*	153.626	<.001

* Significant at $p < .05$

Table 9 shows the output of the repeated measures one-way ANOVA analysis for the third set of hypotheses of RQ3. The results showed a significant year effect, Wilk's Lambda = .56, $F(1, 10) = 7.89$, $p < .05$, = .44. Thus, there was a significant evidence to reject $H5_0$ and conclude that there were significant differences on the state disaster relief threshold among rural counties from 2014 to 2017.

Table 9

ANOVA Test for RQ3 Hypothesis 4

Source	Sum of squares	df	Mean square	F	Sig.
Intercept	5606867004	1	5606867004	7.892	.018
Error	7104721251	10	7104721.1		

The Bonferroni post hoc test was conducted to determine which years significantly differed from each other (see Table 10). The results showed that the average state disaster relief thresholds on all pairwise combinations of years were not significantly different from each other. This finding contradicted the ANOVA results, which showed that the year has a significant effect on the average state disaster relief threshold among tribal counties over time.

Table 10

Bonferroni Post Hoc Test

		Mean difference	Std. error	Sig.
2014	2015	-190.255	67.725	0.111
	2016	-221.964	79.012	0.111
	2017	-348.8	124.162	0.111
2015	2014	190.255	67.725	0.111
	2016	-31.709	11.287	0.111
	2017	-158.545	56.437	0.111
2016	2014	221.964	79.012	0.111
	2015	31.709	11.287	0.111
	2017	-126.836	45.15	0.111
2017	2014	348.8	124.162	0.111
	2015	158.545	56.437	0.111

| | 2016 | 126.836 | 45.15 | 0.111 |

* Significant at $p < .05$

Summary

The purpose of this quantitative, quasi-experimental study was to evaluate how the MPAP and DACA have impacted natural disaster policy within the state of Minnesota and identify whether differences exist in the state disaster relief threshold by jurisdiction type. The independent variables were the jurisdiction type (urban, rural, and tribal) and year (2014-2017), while the dependent variable was the state disaster relief threshold. A series of ANOVA were conducted to test the study hypotheses.

The ANOVA results for RQ1 showed there was a statistically significant difference in the state disaster relief threshold among jurisdiction types, $F(2, 95) = 34.47$, $p < .05$. Furthermore, the average state disaster relief threshold of urban counties ($M = 1,157,287.44$, $SD = 1,213,858.28$) was significantly higher compared to rural counties ($M = 104,463.47$, $SD = 118,718.66$). Also, the average state disaster relief threshold of urban counties was significantly higher compared to tribal counties ($M = 11,098$, $SD = 13,102.72$). The ANOVA results for RQ2 showed significant evidence to reject $H2_0$ and conclude that there were significant differences on the state disaster relief thresholds across all jurisdiction types from 2014 to 2017, Wilk's Lambda $= .86$, $F(1, 97) = 15.56$, $p < .05$, $= .14$. The results showed that the average state disaster relief thresholds on all pairwise combinations of years were significantly different from each other. The ANOVA results for RQ3 showed that there were significant differences on the state disaster relief threshold among rural counties, Wilk's Lambda $= .56$, $F(1, 77) = 60.39$, $p < .05$, $= .44$, and among tribal counties, Wilk's Lambda $= .56$, $F(1, 10) = 7.89$, $p < .05$, $= .44$ from 2014 – 2017. However, the results showed that all pairwise combinations of

years among urban countries were significantly different from each other but not among rural and tribal counties. Chapter 5 presents the conclusions of this study as well as recommendations for future research among urban counties, Wilk's Lambda = .49, $F(1, 8) = 8.18$, $p < .05$, = .5,

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative, quasi-experimental study was to evaluate how the MPAP and DACA have impacted natural disaster policy within the state of Minnesota. This study examined how disaster relief has affected 87 counties and 11 tribal jurisdictions. Kingdon's (1995) MSF guided this theory-based evaluation. The research focuses on MPAP, DACA, legislative auditor reports, tribal nations, urbanized areas, and state district rurality. The geographic scope is Minnesota, which has 98 jurisdictions. Minnesota's legislative-sponsored disaster policy lacks evidence-based review. This study examined the 4-year evolution of the MPAP and DACA policies. This study also examined these approaches' effectiveness in rural, tribal, and urban recovery efforts. This study aimed to improve policymaking processes by applying the MSF to state-level emergency management. Ultimately, a quasi-experimental quantitative approach was used to examine Minnesota HSEM data from 2014 to 2017.

The findings of this study revealed compelling evidence to support the existence of statistically significant variations in the state disaster relief threshold use across different jurisdiction types. In the context of county classification, urban counties exhibited a markedly elevated threshold compared to their rural and tribal counterparts due to the population density. Moreover, there were discernible disparities in the threshold for state disaster relief among various jurisdiction types during the period spanning from 2014 to 2017. Subsequent years exhibited a markedly elevated mean threshold for state disaster relief compared to preceding years, meaning every year, the

base threshold formula increases. Concerning dynamics within distinct categories of jurisdiction, discernible disparities were observed in the threshold for state disaster relief between urban and rural counties from 2014 to 2017. Nevertheless, no statistically significant disparities were observed among the various tribal counties during the corresponding timeframe.

This final chapter discusses the interpretation of findings by discussing the implications of the research questions and results, limitations of the study, recommendations, practitioner recommendations, implications, and the conclusion.

Interpretation of Findings

Research Question 1

The results of the investigation have substantiated the presence of significant disparities in the threshold for state disaster relief across various types of jurisdictions. The findings of this study indicate that urban counties exhibited a markedly elevated state disaster relief threshold compared to their rural and tribal counterparts. The obtained outcome is based on prior scholarly investigations in disaster policy, which have demonstrated discernible discrepancies in the allocation of resources and the execution of disaster response strategies between urban and rural regions.

For RQ1, the investigation revealed a statistically significant disparity in the state disaster relief threshold across various jurisdictional categories: urban, rural, and tribal. Urban counties exhibit a statistically significant increase in the state disaster relief threshold compared to their rural and tribal counterparts. This finding is congruent with the MSF, specifically in terms of the problem stream. Urban areas frequently encounter

distinct challenges related to disasters in contrast to rural and tribal areas, which is primarily attributable to their elevated population density, complex infrastructure, and multifaceted requirements (Partelow, 2021). The variance in problem perception potentially affected policymakers' decision-making process, leading them to allocate more disaster relief funds toward urban counties.

Research Question 2

The results effectively refuted the null hypothesis ($H_0 2$) and demonstrated the existence of statistically significant disparities in the state disaster relief threshold across all jurisdiction types during the period spanning from 2014 to 2017. The Bonferroni post hoc test highlighted that those subsequent years (2016 and 2017) exhibited statistically significant increases in the mean state disaster relief thresholds compared to preceding years (2014 and 2015). This observation posits the possibility of variations in disaster policy or resource allocation. This indicates elevated thresholds for the provision of assistance.

For RQ2, the results showed that from 2014 to 2017, the state disaster relief threshold increased significantly across all jurisdiction types. The problem stream and the policy stream, in particular, align with this conclusion and the multiple streams paradigm. According to Bronfman et al. (2019), natural catastrophes may have become more severe and frequent, raising public awareness. In order to successfully address the escalating issues, policy analysis and expert data may have suggested the necessity for greater disaster assistance levels. These elements may have helped a policy window emerge, raising the state disaster relief threshold.

Research Question 3

The empirical evidence yielded outcomes that exhibited a mixed pattern of support and refutation for the formulated hypotheses. The study's findings revealed notable disparities in the state disaster relief threshold across dimensions, particularly between urban and rural counties. However, it is worth noting that such disparities were not observed among tribal counties. Nevertheless, the Bonferroni post hoc analysis did not yield statistically significant disparities in the mean state disaster relief threshold across any pairwise comparisons among urban, rural, and tribal counties. The observed incongruity between the ANOVA outcomes and the subsequent post hoc analysis implies that although a potential year effect may exist, the disparities remain indeterminate.

For RQ3, the results revealed contradictory findings about changes in the state disaster relief threshold over time for different jurisdiction types (urban, rural, and tribal). According to the MSF, variables like problem perception and policy streams may impact state disaster relief threshold variations (Herweg et al., 2023). However, the absence of significant disparities between specific years within jurisdiction categories may point to other elements not considered by the theoretical framework. The contradictory findings might imply that the relationship between jurisdictional types and state disaster assistance threshold changes is more nuanced than the theoretical framework's initial predictions. It might be attributable to unexpected variables, data constraints, or other contextual elements not considered in the initial theoretical model.

Limitations of the Study

This investigation encompassed several limitations that could affect its outcomes' generalizability, trustworthiness, validity, and reliability. The utilization of publicly available data in this study served to improve transparency and facilitate external validation. Nevertheless, it is essential to acknowledge that the utilization of publicly accessible data may potentially impose certain constraints on the range of variables and the level of information that can be assessed. Moreover, the researcher's role as an intermediary between state agencies and local jurisdictions raises plausible concerns regarding bias, notwithstanding the conscientious measures undertaken to mitigate bias throughout the study. Furthermore, the present study utilized ANOVA as the statistical approach for hypothesis testing. ANOVA is a highly appropriate and robust method for examining and interpreting the collected data.

Nevertheless, it is essential to acknowledge the inherent limitations of ANOVA, as its application may not always yield comprehensive or exhaustive outcomes (Yu et al., 2022). Consequently, it is necessary to explore alternative statistical methodologies that possess the potential to offer additional insights or serve as a means of validating the obtained results. The selection of the significance level, specifically at the 95% confidence level, can influence the interpretation of the results (Schünemann et al., 2019). Employing alternative thresholds may lead to disparate conclusions. Furthermore, the quasi-experimental design's inherent limitations in controlling for confounding variables may compromise the study's internal validity (Kenny, 2019), diminishing the strength of any causal assertions. The presence of divergent outcomes between ANOVA and

subsequent post hoc tests concerning RQ3 elicits concerns regarding the dependability and uniformity of the findings, which may impede the ability to draw precise conclusions within different jurisdictional categories. Finally, the study's emphasis on Minnesota's distinctive disaster relief context may impose limitations on its generalizability to other regions or states characterized by distinct disaster management systems, policies, and challenges.

Recommendations

In order to enhance the reliability and uniformity of the results of RQ3, it is important to conduct an additional inquiry to identify potential factors that may account for the disparities observed between the ANOVA and post hoc tests. Moreover, conducting a similar study in other geographic locations or states that exhibit distinct disaster management systems, regulations, and problems will contribute to assessing the generalizability of the findings. To develop disaster mitigation and recovery plans that are contextually appropriate, policymakers should integrate knowledge, emotions, and values into the policymaking process. The effectiveness of disaster policy can be enhanced by prioritizing pre-disaster vulnerabilities in conjunction with post-disaster recovery efforts (Knaggård, 2015). Additionally, incorporating flexible and adaptable measures in recovery planning acknowledges the unpredictable nature of disasters.

According to Vahanvati and Mulligan (2017), researchers need to investigate mathematical models that consider many elements in emergencies. This approach is crucial to achieving fair and equal aid distribution, hence providing support to vulnerable people. The importance of effective communication cannot be overstated, and

policymakers should utilize a range of channels, such as online media and social platforms (Lahrenn & Bılgın, 2023), to distribute information to a wide array of audiences. Additional investigation into using government social media platforms during emergencies and developing strategies to foster greater cooperation between governmental entities and the general public is necessary to boost the effectiveness of disaster response efforts. Understanding how various types of communication elicit a response from the general population in emergencies will enhance the efficacy of disaster management measures.

Recommendations for Practice

The findings of this investigation indicate the possibilities of several types of constructive societal development. Policymakers can target and distribute aid more effectively by utilizing the research's individual-level insights on disaster relief thresholds for distinct jurisdiction types (Kashyap & Zagheni, 2023). The study uncovered significant differences in state disaster relief criteria among jurisdictions. These criteria may benefit families residing in urban, rural, and tribal areas. The findings could help government agencies and disaster response organizations improve their organizational strategies for disaster planning and resource allocation. Consistent with the study findings in RQ1, according to McConkey and Larson (2022), disaster mitigation and recovery plans may be more successful and adaptable if it is understood how year-to-year variations in disaster assistance criteria influence jurisdiction types (urban, rural, and tribal).

The disparities in state disaster aid thresholds among the jurisdiction types and across time are uncovered using ANOVA for hypothesis testing. However, the inconsistencies between the post hoc and ANOVA tests in RQ3 necessitate more research into the causes of the contradictory findings. Researchers should look into different statistical methods to supplement ANOVA and increase the study's depth and reliability. Furthermore, the RQ2 repeated measures design yields important data on variations in state disaster relief thresholds over time within jurisdiction types. By underlining the role of context-specific elements in catastrophe policymaking, the findings have theoretical implications. According to Knaggård (2015), incorporating knowledge, feelings, and values into policymaking can result in more specialized and efficient catastrophe mitigation and recovery programs. Also supporting the necessity for disaster policies that consider each region's distinctive political, social, and economic circumstances is the study's discovery of considerable variations in state disaster assistance thresholds among jurisdiction types.

Two aspects arose from the empirical implications. First, policymakers can use the data to create disaster relief policies prioritizing post-disaster recovery efforts and predisaster risks. This strategy, which has been supported by Vahanvati and Mulligan (2017), Rodríguez-Espíndola et al. (2018), and Duhamel et al. (2016), can improve the efficacy of disaster policy. Second, as stressed by Freeman and Hancock (2017), comprehension of the effects of good communication strategies can help disseminate information during crises and enhance disaster response plans. As Hughes et al. (2014) and Liu et al. (2018) indicated, additional studies on how government agencies use social

media during emergencies can improve communication between organizations and the general public.

Implications for Positive Social Change

Regarding societal transformative change implications, the findings of this study emphasize the need for catastrophe policymakers to consider context-specific disaster mitigation for recovery planning initiatives. Consistent with the study findings, policymakers can develop disaster mitigation and recovery plans incorporating information, sentiments, and values into decision making (Crosweller & Tschakert, 2021). Giving pre-disaster hazards similar weight to post-disaster recovery efforts may result in a more equitable and successful disaster policy (Zhang et al., 2021). Because disasters are unpredictable, this research provides data to support the need for adaptive approaches in recovery planning at the policy level. Policymakers should examine mathematical models that consider various emergency-related aspects to ensure equitable aid distribution and efficient support for vulnerable locations. This study also emphasizes the necessity of effective communication tactics, encouraging policymakers to use various platforms to disseminate information to various populations, such as social media and online media.

According to Knaggård (2015), policymakers should implement context-specific disaster mitigation and recovery plans and incorporate knowledge, emotions, and values into the process. This strategy may result in more effective disaster strategies and allow communities to help themselves recover, which is a positive for all involved. This is possible through consideration of each jurisdiction's distinct political, social, and

economic settings as well as the requirements and vulnerabilities of urban, rural, and tribal communities. Building on the findings of Duhamel et al. (2016), disaster policy should emphasize disaster vulnerabilities alongside post-disaster recovery efforts to make the proper social changes that benefit communities regardless of where they are located, enhance resilience, and push forward constructive solutions. Due to the unpredictable nature of disasters, policymakers must employ flexible and adaptive techniques in recovery planning to facilitate a more responsive and effective disaster response. By planning ahead, the entire community is afforded time to work together before an event, building a strong social network and social change.

According to Freeman and Hancock (2017), effective communication and information distribution strategies are essential for disaster management. According to Hughes et al. (2014), using a variety of channels, such as online media and social platforms, and comprehending how diverse communication formats resonate with the public during crises help to improve communication efforts, which in turn builds trust. To enhance communication between government organizations and the general public and to promote trust, openness, and cooperation in times of crisis, policymakers should fund studies on how the government uses social media and use the findings for the safety of jurisdictions. The validity and generalizability of findings will also be strengthened by further research and replication in various places. This would lead to a deeper comprehension of disaster policies and their effects on varied communities.

Conclusion

This quantitative, quasi-experimental study, which focused on 87 counties and 11 tribal authorities, evaluated the MPAP and DACA-affected Minnesota's natural disaster policies. According to the data, there are considerable differences between the thresholds for state disaster aid for various jurisdiction types, with metropolitan counties having higher thresholds than rural and tribal counties. Additionally, from 2014 to 2017, there were noticeable differences in the threshold for state disaster relief, with subsequent years showing higher thresholds than earlier years. The study highlights the significance of disaster policies tailored to unique contexts and the incorporation of information, emotions, and values into the formulation of policies. Policymakers should use flexible and adaptable recovery planning strategies to prioritize both pre-disaster vulnerabilities and post-disaster recovery initiatives. In order to improve disaster response operations, effective communication techniques, including the use of social media, are crucial. Additional research and replication in various geographic locations are recommended to improve the validity and generalizability of the results. These findings can help policymakers create more individualized and efficient disaster mitigation and recovery measures to aid communities in times of need.

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