THESIS

AN INVESTIGATION OF UNITED STATES FEDERAL POLICY ATTEMPTS TO REDUCE

AMERICAN INDIAN AND ALASKA NATIVE DISASTER VULNERABILITY

Submitted by

Lucy Carter

Department of Sociology

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Master's Committee:

    Advisor: Lori Peek

    N. Prabha Unnithan
    Craig Trumbo

ABSTRACT

AN INVESTIGATION OF UNITED STATES FEDERAL POLICY ATTEMPTS TO REDUCE

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United States disaster preparedness policy and American Indian Alaska Native policy
both have a long and complex history. The intersection between these two policy arenas,
however, has only emerged as a distinct area of concern over the past several decades, especially
as related to preparing tribal areas for extreme events. This thesis aims to answer the following
questions, in order to contribute to this important area of scholarship and practice: *What policy
actions have been taken by the Federal Government to address American Indian and Alaska
Native disaster vulnerability?* and *To what extent have American Indian and Alaska Native tribes
engaged with the Federal Emergency Management Agency for the production of tribal
mitigation plans under the Robert T. Stafford Act?*

In order to answer these questions, the thesis uses a mixed methodological approach
harnessing document analysis, secondary descriptive statistical analysis, and GIS visualization
techniques. It begins with a document analysis of historically relevant American Indian policy
(1823-1970) and federal disaster policy (1950-2002). Further, it explores the convergence
between these two arenas in the form of contemporary federal American Indian Alaska Native
disaster policy (2002-2015). The Federal Emergency Management Agency (FEMA) has emerged
as the primary federal institution focusing on American Indian Alaska Native (AIAN) disaster
policy, both as the manifestation of executive and legislative orders and acts and through the

production of comprehensive institutional tribal policies. Programs under the authority of FEMA such as their tribal mitigation planning program and Hazard Mitigation Grant Program are the key mechanisms through which tribes may receive assistance (both technical and financial) for mitigating their self-identified hazards, risks, and vulnerabilities. Many of the mitigation project funding grants require a tribe to have a current disaster mitigation plan in effect to apply for funding.

This research reveals that there are historical and contemporary policy issues related to AIAN sovereignty, consultation, and cooperation that have yet to be resolved within the Federal Government. Additionally ongoing issues of cost-sharing for smaller tribes contradicting principles of sovereignty in the face of disaster and a lack of policy attention on tribal security issues are areas of concern within current policy that have yet to be rectified by either FEMA or its superseding department, the Department of Homeland Security (DHS). Many of these policy challenges are driven by a nebulous operationalization and definition of the term "vulnerability" by federal agencies, which has resulted in a limited lens of analysis that largely ignores factors of social vulnerability for AIAN populations and tribal areas.

The thesis also analyzes one of these key federal programs in more depth through a descriptive statistical and geographic analysis of FEMA's tribal mitigation planning program. The results are a summary comparison between non-publically available tribal mitigation planning data and historical tribal disaster declarations in order to gain a more specific understanding of tribes, States, and regions that are particularly at risk from disasters. This section addresses sub-questions including: *To what extent have tribes formally engaged with FEMA at any stage of the disaster mitigation planning process? How many tribes have a FEMA*

approved disaster plan in effect as of September 30, 2015? and *How does this planning process vary by region and hazards exposure?*

The analysis was conducted on the mitigation plan status of all 566 federally recognized tribes. The analysis shows that as of September 30, 2015, only 192 tribes (33.92%) have formally engaged with FEMA at any stage of the disaster mitigation planning process. Out of these 192 tribes, 117 (20.67% of all tribes) have a FEMA approved disaster plan in effect. A regional comparison of the 10 different FEMA tribal showed a great deal of variance in engagement rates. Region 10, which encompasses Alaska, Idaho, Oregon, and Washington, is home to the most tribes (270) of all the regions, yet only 24 tribes (8.89%) had FEMA approved disaster plans in effect. Conversely, region 1, which encompasses Connecticut, Maine, Massachusetts, and Rhode Island, and is home to 9 tribes, had 6 (66.67%) FEMA approved disaster plans in effect.

The thesis also analyzes FEMA's record of past disaster declarations to provide additional descriptive context regarding past disaster experiences for tribal regions. The analysis shows that between 1976 and 2015, there were 196 disaster declarations made by 71 distinct federally recognized tribes. Of these, 94 of the declarations (47.96%) were made by tribes from FEMA region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming). There was also variability in terms of how many disasters tribes have experienced, with some tribes having declared up to 14 different disasters since 1976. Additionally, the analysis revealed that nearly half (35 of 71) of the tribes that have made disaster declarations in the past did not have a FEMA approved disaster plan in effect.

The importance of visualization in disaster planning has been recognized and embraced by FEMA through their development of rudimentary maps that include a range of information on

disaster statistics for the United States. The importance of mapping software has also being acknowledged by tribes with current estimates suggesting that 45% of tribes are using some form of Geospatial Information Systems (GIS) to manage land under tribal jurisdiction. As part of the contribution of this thesis, an Interactive Tribal Disaster Mitigation Map was created using GIS and building upon grounded visualization theory. The map acts as a potential tool for increased openness and collaboration between tribes and the Federal Government for future participatory disaster planning.

This thesis concludes with a summary of the findings and a discussion of the implications of the research. One major takeaway message is that if significant attention is not dedicated to encouraging more participation in FEMA's voluntary mitigation planning program, a sizeable proportion of the 1.1 million individuals living on AIAN areas remain at risk to future catastrophic disasters. While tribes may not be unique in their low levels of participation in mitigation planning compared to the nation as a whole, their status as a population that is particularly socially vulnerable means this is an undeniably important area of focus. New, experimental methods of data sharing and visualization provide the capacity for federal institutions such as FEMA to better understand and address AIAN disaster vulnerability through policy and action.

ACKNOWLEDGEMENTS

DEDICATION

I dedicate this thesis to my wonderful family, my friends, my professors, and the many others who have supported me along the way. Above all, I dedicate this thesis to Scott Kaiser, who is a testament to the fact that graduate school is best tackled as a team. I could not have done this without him.

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LIST OF ACRONYMS

AIAN...AMERICAN INDIAN AND/ OR ALASKAN NATIVE

BIA...BUREAU OF INDIAN AFFAIRS

DHS...DEPARTMENT OF HOMELAND SECURITY

FEMA...FEDERAL EMERGENCY MANAGEMENT AGENCY

GIS...GEOGRAPHIC INFORMATION SYSTEMS

HMGP...HAZARD MITIGATION GRANT PROGRAM

NCAI...NATIONAL CONGRESS OF AMERICAN INDIANS

OTSA..OKLAHOMA TRIBAL STATISTICAL AREA

PA..PUBLIC ASSISTANCE

PDM...PRE-DISASTER MITIGATION

SDAISA.........................STATE-DESIGNATED AMERICAN INDIAN STATISTICAL AREA

CHAPTER 1
INTRODUCTION

This thesis explores the historical and contemporary action taken by the Federal

Government to address American Indian and Alaska Native (AIAN) disaster vulnerability

through policy. United States federal disaster policy and AIAN policy both have an extensive

history. However, the intersection between these two areas—AIAN disaster policy—has only

emerged as a distinct policy arena in the late 20th and early 21st century. As such, this research

will take an exploratory approach to analyzing the formulation of this policy arena and identify

what major issues and events have guided the historical journey to contemporary policy. In

addition to an analysis of policy, this thesis will investigate the contemporary tribal mitigation

planning program enacted by the Federal Emergency Management Agency (FEMA). A focused

analysis on a central federal program tasked with disaster preparedness, response, and recovery

offers insight into a particular policy aimed at reducing tribal vulnerability. Additionally, an

investigation into which tribes currently have a FEMA approved mitigation plan in effect assists

in identifying tribes, areas, and regions that may be unprepared for disasters in the future. This

thesis will be focusing on federal attempts at reducing disaster vulnerability particularly in

federally recognized tribal areas due to the heightened levels of risk associated with the

population residing there and the fact that tribes have primary jurisdiction over these areas.

American Indian and Alaska Native Areas

According to the 2010 Census, approximately 22% of all individuals identifying as

"American Indian Alone or in Combination with Another Race" live within AIAN designated

land areas. The majority of AIAN individuals thus obviously live outside of these areas.

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Individuals who do live on reservations and within designated AIAN areas, however, live in a context marred by poverty and lower life expectancy rates.

Although reported health outcomes for the total AIAN population in the United States warrants individual attention and suggests that this is a highly socially and medically vulnerable population, this thesis will focus specifically on individuals residing within AIAN areas and reservations. This comprises a diverse population encapsulating additional residents who do not identify as AIAN. As these areas are under the jurisdiction and sovereignty of a tribe, however, it is important to focus on these areas due to the high reported levels of social vulnerability of residents regardless of their racial identification.

In 2008, the overall percentage of AIAN identified individuals living below the poverty line was 28.3%, which is more than twice the national average (United States Census Bureau, 2016). The situation for individuals living in AIAN areas is even more extreme, however, with reports of 38% to 63% of individuals living on a reservation falling below the poverty line (National Center for Education Statistics, 2006).

Population Demographics of American Indian Alaska Natives Living in the United States

As of June 2015 there are 567 federally recognized tribes in the United States, 228 of which are located in Alaska (Bureau of Indian Affairs, 2015). According to the United States Census Bureau in 2010, there were approximately 5.2 million individuals who identified racially as AIAN either alone or in combination with additional racial categories. The total population of AIAN alone or in combination individuals living in the United States represents approximately 2% of the total national population (308,745,538 individuals as of 2010). Geographically, the AIAN population is particularly concentrated in the Southwest region with 40.7% of the total AIAN population in the United States residing there (Norris et al. 2012: 5).

Of all people that lived in AIAN areas, 1.1 million identified as AIAN alone or in combination with another race (see Figure 1.1 and Figure 1.2 for population distributions).
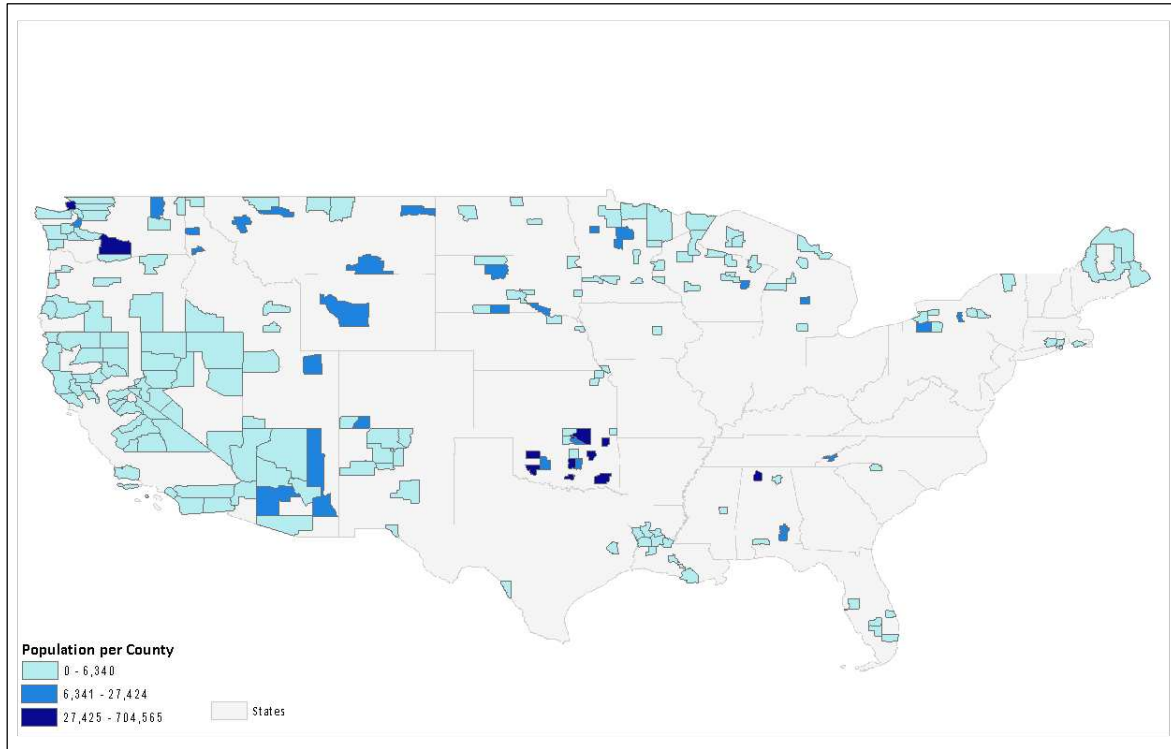
Figure 1.1: Population Distribution of Individuals Living in AIAN Areas by County in the United States Mainland[1]

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[1] Data derived from 2010 United States Census AIAN Population Figures (highlighted areas depict counties containing one or more AIAN area).
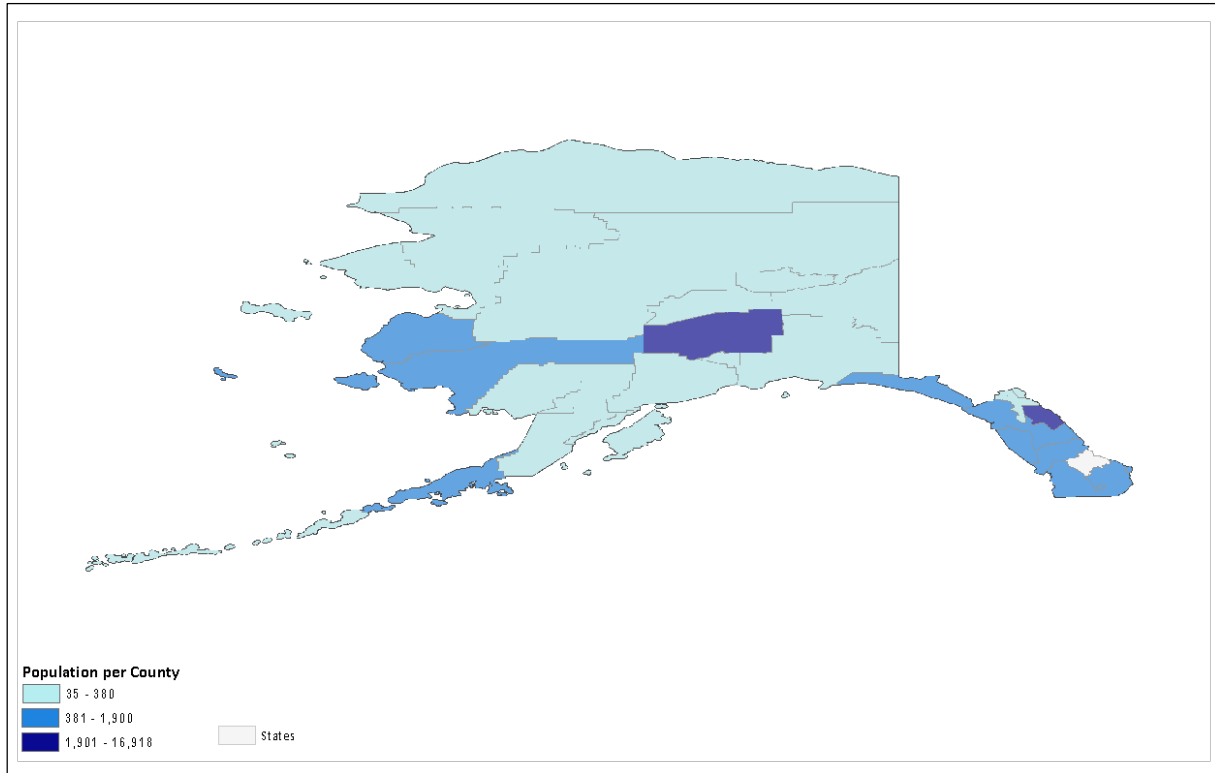
Figure 1.2: Population Distribution of Individuals Living in AIAN Areas by County in the State of Alaska[2]

Sex and Age Demographic Information- AIAN Area Inhabitants Compared to Total United States Population

In terms of sex demographics, the population of individuals living within AIAN areas deviates slightly from the total population of the United States. According to the Census the population of individuals living in AIAN areas consists of 51.65% of individuals identifying as male and 48.45% who identify as female. This is compared to a national average which shows that 49.1% of the United States population identifies as male compared to 50.9% who identify as female (see Figure 1.3).

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[2] Data derived from 2010 United States Census AIAN Population Figures (highlighted areas depict counties containing one or more AIAN area).
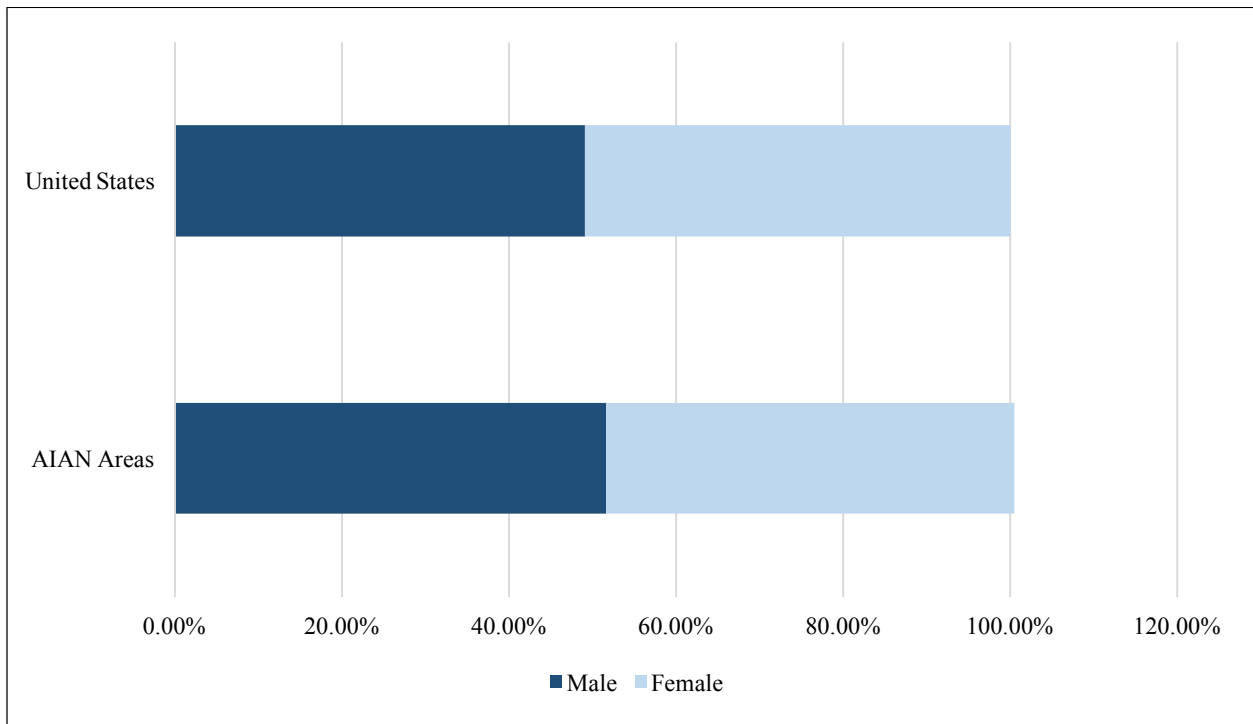
Figure 1.3: 2010 Census Population Sex Distribution- AIAN and United States Total Population[3]

In terms of age distribution, median age of an individual living in an AIAN area is 28.9 years of age compared to the median age of the total United States population of 37.2 years. According to the United States Census, a lower median age can indicate a less stable birthrate and a lower life expectancy compared to the national median.

Geographic Information

Excluding Hawaiian Home Lands, there are approximately 630 areas classified as AIAN areas comprised of areas that the United States Census is able to provide legal and statistical data on.[4] The Census designates several different American Indian lands and Alaska Native villages.

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[3] Data derived from the 2010 Census AIAN and General Population tables.
[4] Some federal tribes hold multiple different AIAN land areas in the form of multiple reservations or off-trust land which accounts for there being more than 567 areas.

On a federal level, the government recognizes four different types of AIAN areas: federal reservation and off-reservation trust land which are the primary holdings of federally recognized tribes; Oklahoma tribal statistical areas (OTSAs)[5]; and Alaska Native Village Statistical Area (ANVSAs)[6]. For tribes that are recognized by the State but not the Federal Government, AIAN land is designated as either a State reservation or a State-designated American Indian statistical area (SDAISA).

At present, AIAN areas comprise approximately 764,000 square miles of the United States (see Figures 1.4 and 1.5 below). Focusing on AIAN in terms of disaster preparedness and mitigation is crucial due to the sheer size of land that may otherwise be left vulnerable. According to the National Congress of American Indians (NCAI), there is an additional vulnerability in regards to national security based on the location of AIAN governed land. According to NCAI, there are more than 25 AIAN land areas that are adjacent to borders or can be directly accessed by a boat from the border (NCAI, 2012: 2). These areas encompass more than 260 miles of international borders. The potential threat to homeland security due to a lack of preparedness is also worthy of further consideration.

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[5] OTSAs replace the "tribal jurisdiction statistical areas" (TJSAs) of the 1990 census. An OTSA encompasses an area that is defined by the boundary of the tribe's former reservation in Oklahoma that had legally established boundaries but was dissolved preceding the establishment of Oklahoma as a state in 1907. (http://factfinder.census.gov/help/en/oklahoma_tribal_statistical_area_otsa.htm)

[6] ANVSAs were federally recognized by the United States due to a special relationship with the Alaskan and Federal government outlined in The 1971 Alaska Native Claims Settlement Act.
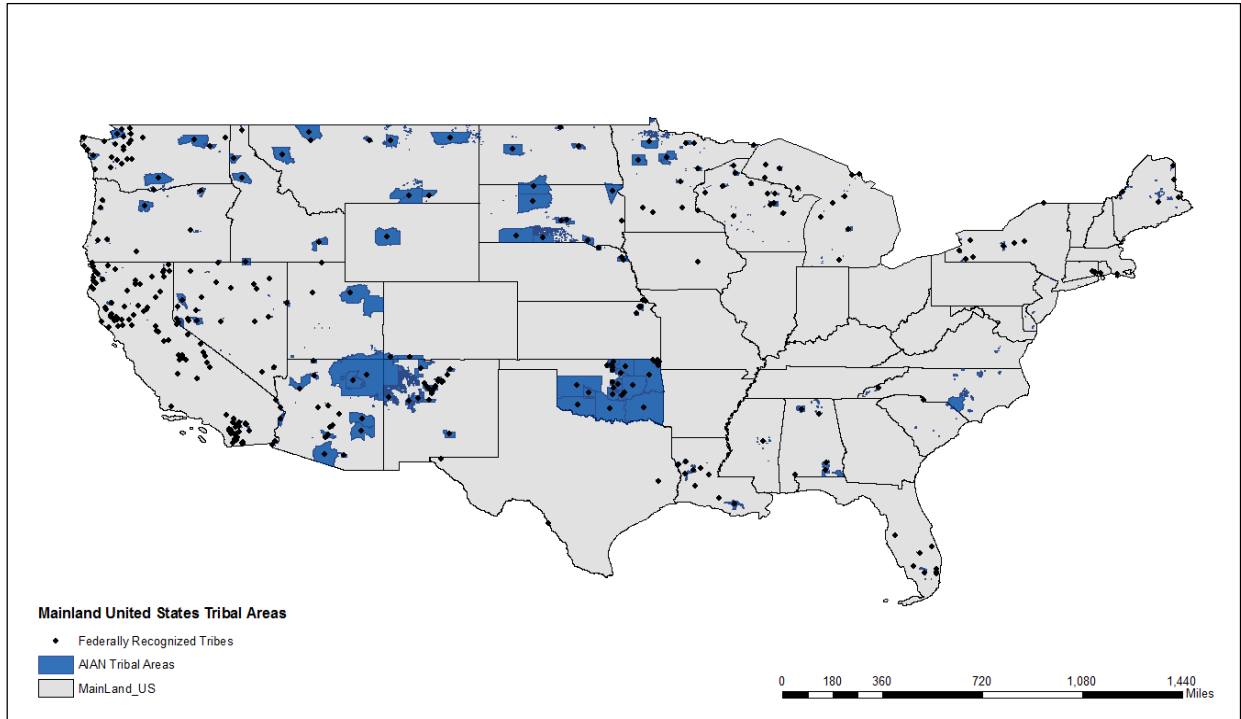
Figure 1.4: Visualization of 2010 United States Census American Indian Tribal Designated Areas in the Continental United States
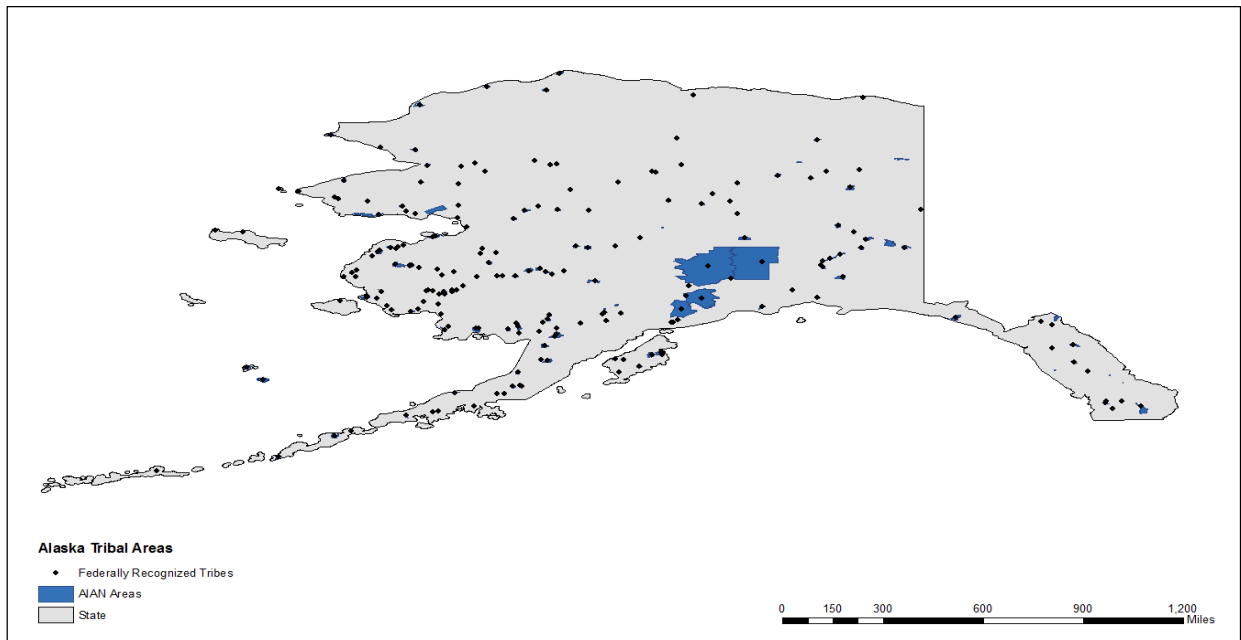
Figure 1.5: Visualization of 2010 United States Census American Indian Tribal Designated Areas in the State of Alaska

Disasters and Social Vulnerability

Every year in the United States, disasters, whether catastrophes on a national scale such as Hurricane Katrina in 2005 or more localized events like the 2013 Northern Colorado floods, devastate communities by causing death, injury, destruction, and disruption. In additional to the physical and emotional toll disasters take on communities and individuals, the total cost of disasters is continuously increasing. Nationwide, taxpayers pay billions of dollars annually for disaster relief funding[7] (Lindsay et al. 2016: 3).

The lasting damage inflicted by disasters is all the more tragic when considering that many disasters are not only predictable, but also are preventable with the foresight of adequate planning and preparedness. In addition to increased potential to save lives and prevent injuries, adequate disaster planning has been shown to save, on average, $4 per every dollar spent on preparedness and mitigation efforts (National Institute of Building Science Multi-Hazard Mitigation Council 2005).

The Social Vulnerability Paradigm

A social vulnerability paradigm represents a common approach for identifying groups that may be more at risk than others in the event of a disaster. This paradigm indicates a departure from a traditional, dominant usage of "vulnerability" in disaster studies which typically encompasses a physical understanding of risk aligned with scientific, technological solutions for mitigating and responding to disaster (Thomas et al., 2013:4). From the social vulnerability perspective, political, social, and economic systems, and the actors within these realms, are seen as capable of "modifying" a disaster and its effects as opposed to being a central contributor to the scale of disasters. The human component in a disaster has historically being treated as a

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[7] Between 2002-2011 spend-out rates were estimated to be around $4.2 billion a year.

secondary concern in the face of environmental forces (p. 5). A social vulnerability paradigm attempts to rectify this by placing social forces as an essential component along with the physical environment and built systems (Mileti, 1999). From this perspective, risk is seen as socially produced as opposed to presumed to be inherent to a particular hazard type. Social scientists thus view disaster events as important to study because these events "result from a disconnect between human systems, the built environment, and the physical world, and tend to clearly reveal the social problems that make response and recovery difficult at the individual and family levels" (Thomas et al., 2013: 12).

For the purposes of this thesis, the term social vulnerability will be used in reference to the socioeconomic and demographic factors that may disproportionately affect the vulnerability of a group or community. According to contemporary research on the social distribution of risk and vulnerability "some groups in society are more prone than others to damage, loss and suffering in the context of differing hazards. Key characteristics [may include] class, caste, ethnicity, gender, age or seniority" (Blaikie et al. 1994: 9). It would be unrealistic to treat these categories completely in isolation of each other, as the intersection of age and sex for example, may result in the amplification or accumulation of vulnerability for some groups (Fothergill and Peek, 2015).

A higher level of vulnerability of ethnic minorities has been addressed in disaster literature over the past several decades (Fothergill et al. 1999). "The social and economic marginalization of certain racial and ethnic groups … has rendered these populations more vulnerable at all stages of disaster" (Morrow 1999; Cutter et al. 2003). Higher percentages of African Americans; Native Americans; and those of Asian, Pacific Islander, or Hispanic origin are often correlated with higher vulnerability rates (Cutter et al. 2003; Elliot and Pais 2006). In

this thesis I will explore the unique position of American Indians and Alaska Natives (AIAN)[8] as a potentially vulnerable population. This group has received little attention heretofore in the social vulnerability literature, but is a group worthy of further study.

There may be a multitude of cultural, physical, and demographic factors that intersect and contribute to the heightened vulnerability for an ethnic group. Said differently, ethnic minority groups are in no way "inherently vulnerable" as a result of their ethnic group status; instead it is the intersection of these other historical, economic, and social characteristics that tend to render minorities more vulnerable in disasters (Browne and Peek 2014). For instance, ethnic minorities and immigrants may experience language barriers resulting in difficulty understanding disaster instructions and heightening levels of vulnerability during a disaster (Thomas et al. 2013: 124). Indeed, a 2006 study of a rural Navajo reservation found that 24.5% of inhabitants reported their capacity to speak English as "less than well" (Ogonwele, 2006).

Social isolation is another factor cited as increasing vulnerability to disaster, especially among the elderly and racial and ethnic minority groups (Klinenberg, 2003). Isolation may occur due to racial stratification, or for cultural reasons such as living on a geographically isolated tribal reservation. Physical isolation may result in delayed emergency response in the event of an emergency. This risk is particularly pronounced in Alaska, with nearly half (42%) of the AIAN population living in an area not accessible by a road (Goldsmith, 2008).

One of the most significant factors that contributes to vulnerability among American Indian Alaska Native populations is economic stratification. The median household income of

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[8] The United States Office of Management and Budget define American Indian Alaska Native (AIAN) as "a person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment."

single-race American Indian and Alaska Native households was estimated to be around $37,227 in 2014 (United States Census Bureau, 2014) This is significantly lower than the national median income of $53,657 (United States Census Bureau, 2014). In addition to a lower median income per household, AIAN public health research estimated in 2006 that urban AIAN populations were twice as likely as the urban United States population to be poor or unemployed and to lack a college degree (Castor et al. 2006: 1478). The AIAN adult labor force participation rate was estimated in 2014 as approximately 61.6% – the lowest of all racial and ethnic groups in the United States Unemployment rates for AIAN exceed 11%, which is almost double the reported national rate of 6.2% (Bureau of Labor Statistics, 2014).

The high poverty rates among AIAN is of particular concern because poverty is one of the main factors that renders groups vulnerable in disaster (Fothergill and Peek 2004). Often times, government resources may be tied up following disasters and those who depend on government aid may be left with no support network (Tobin-Gurley, Peek, and Loomis 2011). Costs of repairs to homes may spiral out of control or the wait for insurance payouts may be lengthy. In the meantime, finding adequate shelter to preserve health and safety in the wake of a disaster becomes significantly more precarious due to escalating demand (Peacock et al. 1997).

Poverty and living conditions exacerbates many negative health outcomes among AIAN adults and children, who are at a significantly higher risk for potentially debilitating diseases. For example, AIAN individuals are at a 600% higher risk of contracting tuberculosis than the national average (Reilley et al. 2014). Additionally, AIAN individuals are 510% more likely to suffer from alcoholism and 189% more likely to develop diabetes than the national average (Landen et al. 2014). In terms of health and safety, AIAN individuals experience a 229% higher risk for being in a vehicular accident and 152% higher risk of being injured (Murphy et al. 2014).

While the stereotypical "explosion" of random acts of violence and crime that is commonly reported by the media following a disaster may be mostly mythological (Fisher, 2008; Prelog, 2014), the stress brought on by a major disaster is not. Stress and fear following a disaster can have significant psychological effects on those who experience them and may lead to higher levels of violent assaults particularly in the family home (Thomas et al. 2013: 318). In regards to violence and crime, the rate of aggravated assault for AIAN is approximately double the national average (600.2 per 100,000 as compared to 323.6 per 100,000) (Rennison, 2001: 11). On an annual basis, 10% of all AIAN individuals aged 12 and over become victims of violent crimes (Bureau of Justice Statistics, 2004). In terms of self-inflicted violence, AIAN individuals commit suicide at a 62% higher rate than the national average. AIAN youth have the highest rate of suicide among all racial groups in the United States, with suicide being the second highest cause of death for AIAN individuals aged 15-24 (Substance Abuse and Mental Health Services Administration, 2003).

Particularly in the wake of disaster, adequate shelter can become a key component for survival while inadequate shelter may result in a heightened risk of injury or death in the event of a disaster. According to an AIAN news source *Indian Country Today,* "there are 90,000 homeless or under-housed Indian families," and "30% of Indian housing is overcrowded and less than 50% of it is connected to a public sewer" (Fogarty, 2004: 1). At 54%, AIAN individuals report lower levels of home ownership compared to a national average of 65% (United States Census Bureau, 2010). According to a 2003 report, approximately 40% of housing on reservations does not meet requirements to qualify as sufficient shelter. Despite this, the waitlist for housing is long, sometimes spanning over three years (United States Commission on Civil Rights, 2003). Crowding becomes an inevitable challenge, particularly on reservations. Indeed,

AIAN individuals residing in remote rural areas suffer from crowding issues at five times the rate of the national average (28.9% compared to 6%) (Fuller-Thomson et al. 2000).

The remoteness of some reservations creates a difficulty in being able to provide basic utilities for AIAN households. In 2008, 20.7% of reservation households lacked plumbing, compared to 1% of the total United States population (United States Census Bureau, 2008). Additionally, in 2000, 14% of residents on reservations did not have access to electricity (United States Census Bureau, 2008).

American Indian and Alaska Native Disaster Exposure

According to FEMA, there have been approximately 196 disaster declarations since the year 1976 that have either been made directly by a tribe or have been made in conjunction with an additional State or local government (FEMA, 2015a). While these have varied significantly in terms of magnitude and cost, there is no sign that the rate of disasters occurring in the United States is slowing down. The United States Government Accountability Office (GAO) reports that there is a correlation between a warming planet and increased flood frequency, and due to this, the capacity for tribes to be able to request disaster declarations is increasingly important for future security (GAO, 2009: 12).

A 2009 report by the GAO that focused on Alaska Native villages found that "the Federal Emergency Management Agency has several disaster preparedness and recovery programs, but villages often fail to qualify for them due to the fact they may lack approved disaster mitigation plans or have not being declared federal disaster areas" (GAO, 2009: 1) As federal assistance is one of the most significant resources available to AIAN areas recovering from disaster, the reported lack of accessibility has potential negative ramifications for the health and safety of

residents if their tribe or village cannot acquire the funding needed for adequate preparation for or repair from disasters.

GAO's 2009 report found that climate change has resulted in growing damages and losses from natural disasters due to erosion, rising sea levels, and more frequent rainstorms and flooding. Alaska, where many AIAN persons reside, has been particularly hard hit by these climatic changes. A 2008 case study of the Alaskan village of Kivalina illustrated how extensive erosion and destructive flooding over a forty-year period has forced 400 some villagers to relocate (Shearer, 2011: 19). A study of this village concluded that it was not only the health and safety of residents at risk due to the impact of climate change, but the disasters were having negative ramifications on their cultural practices and diet (Brubaker, 2011: 10).

The increase of natural disasters attributed to climate change are not only increasing in Alaskan coastal areas. A 2013 report on the Pyramid Lake Paiute tribe in Nevada provides another case study for AIAN vulnerability to increasing climate change induced disaster. Longer drought cycles are made worse by pre-existing conditions of economic and food vulnerability (Gautum et al. 2013: 79). The threat of the drying up of Pyramid Lake has the potential to damage cultural practices and the physical health of the population that is dependent on the lake. With disasters affecting AIAN areas at an increasing rate and a well-documented threat of cultural, physical, and economic harm being caused, attention must be given to the manner in which federal policy governs disaster assistance for tribes if resiliency against future disaster-induced destruction is to be ensured.

Indigenous Disaster Policy

A statement by Atina Gangmei at the Consultations for the World Conference on Disaster Risk Reduction exemplifies the global recognition of indigenous vulnerability: "[there are] 370

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million people worldwide who consider themselves indigenous. Indigenous Peoples live in 90 countries, occupying around 24% of the earth's surface and managing 80% of the world's biodiversity. At the same time, despite being 5% of the total global population, we are 15% of the world's poorest and the number has not changed much since the inception of Millennium Development Goals in 2000" (2014: 1). Gangmei argues on behalf of the Indigenous Peoples Major Group (IPMG) that one of the main concerns facing indigenous people at present is a lack of consultation and participation in national policies for disaster preparedness. This call represents an increasing global and national emphasis on the importance of consultation with indigenous tribes and people to create the most effective channels for disaster preparedness.

In a United States context, this struggle illustrates the last 150 years of tribal policy in regards to American Indian and Alaska Native tribes' attempts at gaining sovereignty and recognition by the United States Federal Government. Furthermore, a projected increase in climate-change related disasters is making disaster policy a significant concern for tribes going forward in the future as some tribes are already starting to experience increases in environmental disasters (Daffron, 2013; Brown et. al, 2013; GAO, 2009). Streamlining disaster declaration and response policy is, however, bound to the policy and definitional concern of tribal sovereignty.

Historically the policy arena of indigenous disaster preparedness has been heavily influenced by a rich institutional history typified through slow, incremental change and populated by a range of different institutions with a plethora of normative values and desires (Midgley and Livermore, 2009: 190). In the past this arena was defined through negotiations and policy action in the three branches of government and between the Federal Government and tribal leadership. This relationship, which was particularly tense at certain historical moments, is

illustrated by sovereignty being a particular point of interest in the development of a cohesive Native American disaster policy at the Federal level.

Today there is a new set of emerging issues in the policy arena between American Indian Alaskan Native tribes and the Federal Emergency Management Agency (FEMA), as well as between different regional tribal organizations and between tribes and State government. Although the fight for tribal sovereignty remains important, focus has shifted to issues of how to balance sovereignty in the face of cost of disaster mitigation and bureaucratic obligations (GAO, 2009).

In this thesis I will be analyzing Federal policy attempts to reduce American Indian Alaska Native disaster vulnerability through a historical policy analysis. Chapter Two discusses the policy document analysis, descriptive statistical, and Geospatial Information Systems (GIS) analysis methods I utilized to explore this research topic. Chapter Three provides a discussion of my policy document analysis covering the years of 1823-2015. This analysis identifies the key issues, events, legislation and legal decisions that have led to the formation of AIAN disaster policy as a distinct policy arena and discusses the ongoing issues that require further attention by the United States Federal Government. Chapter Four summarizes the findings of my descriptive statistical analysis of two data sources from FEMA, tribal mitigation planning data and historical tribal disaster declaration data. The analysis provides insight on to what level FEMA policy action pertaining to AIAN disaster vulnerability have been engaged with by tribes. This thesis will conclude with Chapter Five which provides a summary of the findings of my research and the implications for Federal AIAN disaster policy. Additionally, the conclusion will explore an experimental interactive map of tribal disaster mitigation planning and discuss limitations and recommendations for future directions of research in this policy arena.

CHAPTER 2
METHODS

I approached this research from an outsider position by conducting research on a group that I do not share an identity, language, and experiential base with (Dwyer and Buckle, 2009: 58). I am a middle-class, female, international graduate student without any cultural heritage associated with American Indians or Alaska Natives. My interest in disasters and indigenous populations, however, was informed by my own experiences and background.

While I was engaged in undergraduate studies in New Zealand, my hometown of Christchurch was struck by a magnitude 7.1 earthquake on February 22, 2011 (Kenney, 2015: 9). Significant portions of the east and central city were decimated and a slow rebuild process has tempered public optimism for Christchurch's future. After completing my degree, I returned to Christchurch for a job as a project coordinator for the tribal rūnanga/government of the Māori iwi/tribe that I am a member of, Ngāi Tahu (TRoNT) who are an indigenous people of New Zealand. In this capacity I was able to work on a variety of post-disaster recovery projects that addressed local Ngāi Tahu residents who had remained in Christchurch after the earthquake. What was particularly interesting to me was that the people of Ngāi Tahu, who are identified as a vulnerable group in New Zealand society due to demographic factors (King et al. 2012), were able to harness their deep community ties in order to efficiently provide assistance to tribal members following the disaster. Indeed, the Māori community-led response to the earthquakes in Canterbury was the impetus for the creation of a Māori Recovery Network[9] which "constituted a

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[9] For a brief summary of the network and its stakeholders please visit: http://ngaitahu.iwi.nz/wp-content/uploads/2013/06/Maori-Recovery-Network.pdf.

culturally and contextually relevant disaster management system that was based on Māori values and operationalized to support community resilience" (Kenney, 2015: 13).

My knowledge of indigenous disaster preparedness and mitigation emerged primarily from the community perspective as I worked closely with tribal members in my professional position. During my time in the United States as a Fulbright Scholar studying in graduate school, I wished to continue with my academic focus on indigenous disaster preparedness but shift my analysis to the United States. I also took the opportunity to explore indigenous disaster issues within the context of the United States federal system, a distinctly different political system from New Zealand that I knew little about before this research.

Research Design

This thesis was designed to analyze United States federal policy regarding tribal disaster preparedness and mitigation. Ultimately, the goal is to increase understanding of policy-based and institutional approaches to vulnerability reduction and to analyze current levels of participation in Federal disaster preparedness and mitigation planning activities among tribes. The unit of analysis for the work is tribal disaster plans and documents. This allowed me to more systematically approach the study of Federal Government policy and programs concerning AIAN disaster preparedness and response. As my research analyzes this information at the national and regional aggregate scales (which encompasses 567 federal tribes), a broad, emergent approach to investigating the development and context of this research topic area was preferable.

Research Questions

The overarching framework that informs this work is intentionally emergent and exploratory, while also grounded in the social vulnerability and policy analysis literatures that informed the thesis. Question 1 was designed to guide a comprehensive policy analysis on AIAN

disaster preparedness. Question 2 was created to investigate data provided on a current FEMA

AIAN disaster mitigation and preparedness program and contains sub-questions that

operationalize formal engagement with FEMA.

1)   What policy actions have been taken by the Federal Government to address American Indian and Alaska Native disaster vulnerability?

2)   To what extent have American Indian and Alaska Native tribes engaged with FEMA for the production of tribal mitigation plans under the Robert T. Stafford Act?

a)   To what extent have tribes formally engaged with FEMA at any stage of the disaster mitigation planning process?

b)   How many tribes have a FEMA approved disaster plan in effect as of September 30, 2015?

c)   How does this vary by region and hazards exposure?

To investigate AIAN disaster preparedness and mitigation there were two potential

approaches my research could have taken: a "bottom- up" approach and a "top-down" approach.

Although to many, a "bottom-up" approach would have perhaps been desirable, I also foresaw

many barriers. For instance, that approach would have involved contacting tribes directly and

requesting information regarding their individual disaster preparedness and planning activities.

As there are 566 federally recognized tribes, it would have been impractical to expect a

significant enough response to be able to build a complete national dataset to analyze my policy

arena in the space of a few months. Moreover, many have raised legitimate ethical concerns with

engaging a vulnerable population and indeed working with an operational definition of

vulnerability, such as AIAN individuals. As Ravitch and Carl (2016: 349) state "There is a fine

line between understanding the special interest, situations, and needs of groups and projecting

need or deficit onto certain groups in ways that re-inscribe deficit orientations." Researchers of

historically marginalized groups must remain a thoughtful and careful to resist essentializing or stereotyping (Valencia, 2010).

After much consideration, I recognized that the timing and scope of my thesis would not provide me with sufficient time in which I would attempt build genuine relationships that would allow to me speak to issues of extreme importance on behalf of and with this particular population group. As a result, I decided that a "top-down" approach would likely be more practical and ethical in the context of this research.

Document and Policy Analysis

In order to conduct the policy analysis component of my research I engaged with a document analysis methodology. Prior's work *Using Documents in Social Research* notes that "given the role and significance that written documents play in most human societies, it is strange to note just how little attention has been paid to it by social researchers." (Prior 2003: 4). Prior further notes that documents form an area of research in their own right, arguing that they are situated, collective products and that the researcher should keep in mind the dynamic involved in the relationship between production, consumption, and content (Prior, 2003: 26). As Ravitch and Carl (2016: 171) argue, "documents are often an important source of context and history that can help us, as researchers, understand the complexities of what we study better…" As my research on Federal AIAN disaster policy was conducted by joining two separate policy topic fields, it was imperative that an exploratory approach to analyzing the context and history of my topic area was taken in order to articulate a more concrete understanding of how current policy was formulated.

Databases and Search Terms

To begin this research process—which was launched as part of my policy analysis graduate seminar at Colorado State University—I first identified a list of databases and resources to conduct my search for relevant documents. These included relatively broad search tools such as Google and Google Scholar for the initial research and more specific databases such as the Government Publishing Office and the Government Accountability Office for specific hearings, bills, and federal reports. A significant portion of the resources I found, however, came from searching for references that were cited within documents that I had reviewed. This was especially true in regards to the academic and legal articles I discovered.

Regardless of the database I was searching, I consistently used a variety of search terms such as American Indian Disaster Policy, Native American Disaster Policy, American Indian Disaster Law, FEMA Policy, American Indian Natural Disaster, Tribal Disaster Preparedness, Tribal Disaster Planning, Tribal Disaster Mitigation, FEMA Tribal Consultation, Federal Tribal Disaster Policy, and Indigenous Disaster Policy. I used these terms independently and also in combination with one another.

After conducting searches of each of the databases using the above primary search terms, I was able to gather approximately 114 distinct sources. Some of these documents focused on health outcomes and social vulnerability and were repurposed to inform my introductory literature review section on social vulnerability to disaster. Others were explicitly policy oriented and thus were reserved for review for the policy analysis chapter in this thesis (see Chapter Three).

I began this document review process by reading all the documents as printed physical copies first without any form of coding or thematic organization. As a foreign researcher, United

States Federal Government documents are fairly new to me and as such, I wanted to take the time to absorb the style and language used before beginning to conceptually organize and code them.

On my second read through I made annotations in the physical copies and organized the materials based roughly based on their sources such as "government document," "tribal document," and "other scholarly or policy document." The "other scholarly or policy document" category consisted of documents I considered important for understanding the context of AIAN disaster policy such as law review articles, academic journal articles, and news sources. Whilst not distinct policy documents, they were important to include within the document analysis process to gauge perceived success and failures of policies. Using this classification system, I narrowed the initial 114 sources down to the 66 documents that addressed both disaster policy and AIAN policy and thus were deemed suitable for the policy analysis chapter of this thesis. I further refined the organization of the 66 selected documents into 16 document types: (1) Academic Article, (2) Act, (3) AIAN Policy, (4) Bill, (5) Departmental Policy, (6) Disaster Declaration, (7) Disaster Report, (8) Executive Order, (9) Executive Statement, (10) Federal Report, (11) Hearing, (12) Legal Decision, (13) Legal Review, (14) News Article, (15) Policy Analysis, and (16) Tribal Document. The 66 policy documents that I analyzed for this thesis were primarily in PDF form and Microsoft Word document form. If PDF's were not available to download from the website, I copy and pasted the document directly into a Word document with no changes made to the original content.

I used NVivo Qualitative Data Analysis Software (QDAS) to analyze those 66 documents. After completing online training modules, I chose to use NVivo QDAS primarily due to its capacity for organizing and managing my documents which aligns with Bazeley's

(2007: 3) perspective that NVivo functions as a way to "manage ideas" and to provide relatively

fast access to thematically organized and coded theoretical knowledge and the related documents

"while at the same time retaining ready access to the context from which the data has come."

Comfortable with the amount of data I had collected so far and my categorization of the

documents, I decided to run a search query and generate a word cloud as a starting point to

conceptualize my data into themes (see Figure 2.1).
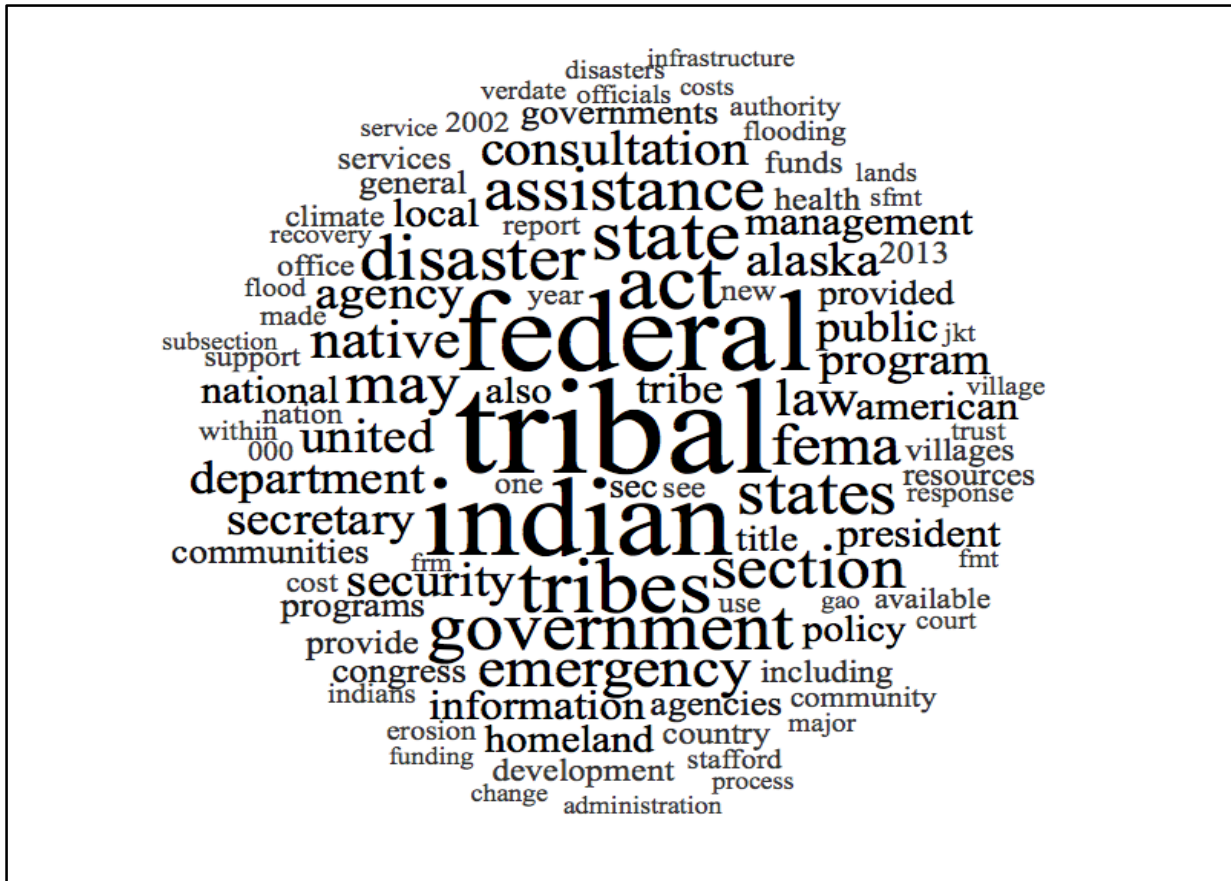
Figure 2.1: Word Cloud of Most Frequent Words Used in Selected Documents

I conducted another read through of the documents using the above word cloud as a

guide which featured specific mentions of different institutions such as "tribal," "Congress,"

"President," "court," and "government." After annotating the documents for government

institutions, I refined these into four distinct categories that reflect the different branches of

government including "executive," "legislative," "judicial," and a final category that incorporated different American Indian and Alaska Native organizations and governments under the umbrella of "tribal." This provided a conceptual framework for my analysis as I was able to trace the interactions between different institutions and the resulting changes and creation of the federal policies being analyzed.

Coding Scheme

Codes are words or phrases that "symbolically assign a summative, salient, essence-capturing and/or evocative attribute… Just as a title represents and captures a book or film or poem's primary essence, so does a code represent and capture a datum's primary content and essence" (Saldaña, 2013: 3). Codes function "as a way of patterning, classifying and later reorganizing each datum into emergent categories for further analysis" (Saldaña, 2011: 95).

I began with an iterative open-coding process whereby the researcher "seeks to generate as many codes as possible, at least initially, without considering possible relevance to established concepts in one's discipline or to a primary theoretical focus" (Emerson 2011: 182). My initial open-coding was narrowed through a more focused coding scheme whereby I then coded my material thematically "to develop categories without distracted attention at this time to their properties and dimensions (Saldaña, 2013: 213) in reference to important events or issues that led to or influenced policy change.

Axial coding is the transitional cycle between the initial and theoretical coding process (Saldana, 2013: 218). It is performed to reduce the number of initial thematic codes whereby "the code is sharpened to achieve its best fit" (Glasser, 1978: 62). After going through the documents and block coding sections for particular themes such as "sovereignty" or "security risk," I then created codes that incorporated similar traits (or subcategories) to build my final

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thematic codes. The next round of coding followed a theoretical approach, "placing the coded

data in a more general or abstract framework that stems from… theory developed inductively"

(Maxwell, 2013: 108). This process was emergent in nature as some codes such as

"vulnerability" and "security risk" were manifest concepts that I deemed important in my first

cursory read through of the documents. Other codes such as "sovereignty" and "consultation"

emerged through repeated interactions with the documents. See Table 2.1 for a final list of

thematic codes and sub-codes used in the analysis.

Table 2.1: Final Thematic and Associated Sub-Codes

Final Thematic Code	Subcategories
Sovereignty	Autonomy, Special-Trust Relationship, Dependent Nation
Vulnerability	Social Vulnerability, Physical Vulnerability, Financial Vulnerability, Cultural Vulnerability
Preparedness	Disaster Preparedness, Planning Process
Cooperation	Inter-house Co-operation, Tribal-Federal Co-operation, Tribal-Tribal Co-operation
Consultation	Tribal Consultation, FEMA Consultation, Executive Consultation
Mitigation	Hazard Mitigation, Mitigation Planning
Security Risk	Terrorism, Border Security, Reservation Resources
Cost	FEMA Obligations, Tribal Obligations, Financial Assistance
Regulation	Program, Law, Act, Order, Mandate
Rights	Declaration, Authority, Land Rights, Cultural Rights

The final step in my document analysis process consisted of organizing the materials

based on the date of the primary documents (such as a legal decision, an act, or a hearing) or the

affairs, events, or actions described in secondary documents. Initially I coded based on ten year

increments and in doing so built a timeline for the documents and the associated events. I then

refined the materials further by creating temporal classifications guided by the terminology used

in the documents such as "termination policy era" (commonly used in documents referring to the

early to mid-20th century era where the Federal Government enacted termination policies) and "centralization of disaster policy era" (reflective of overarching federal policy trends in the mid-20th century towards centralization of government as a whole). This approach allowed me to integrate time periods within the institutional policy action described in the documents. This process provided the organizational framework for Chapter Three of the thesis.

Ultimately, the document analysis process I undertook provided a historical conceptual framework for how policy emerged and helped to identify the main themes and issues that the AIAN tribes identified as significant areas concern. It also directed me to the next stage of my investigation by highlighting FEMA's tribal disaster mitigation planning as an appropriate case to analyze through a combination of descriptive statistical analyses and GIS mapping.

Descriptive Statistical Analysis

In order to understand how federal policies have functioned, I decided to focus on a particular policy initiative of the Federal Emergency Management Agency (FEMA). This policy response emerged as a result of the 2000 Disaster Mitigation Act (DMA), under which tribal governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance and FEMA grants to implement mitigation projects (Public Law 106-390). In order to receive financial assistance for pre and post-disaster mitigation work as a sovereign entity, therefore, tribes must have a FEMA-approved mitigation plan. Due to the importance placed on having these plans, a record of which tribes have and have not produced mitigation plans is kept by FEMA. FEMA is the institution acting as the "keepers" of mitigation plan data which is not publically available. Despite this however, I was able to obtain the information directly from the organization.

The data used in Chapter Four of this thesis includes a combination of secondary data that I obtained directly from the National Mitigation Planning Program at FEMA. I was able to gain access to this data through the follow process. First, I contacted the Region 8 tribal liaison in Denver, Colorado, by email. I asked if information was available on whether tribes had disaster plans in effect or not. My email was forwarded to the Region 8 mitigation tribal specialist who was able to provide me a spreadsheet of data on plan status for the region he worked in. He did not, however, have access to national data for the other nine FEMA regions. After a series of additional emails, I was advised to contact someone within the National Mitigation Planning Program in Washington, DC, who ultimately did provide me with FEMA's exhaustive national data on tribal disaster mitigation plans current as of September 30, 2015.[10]

The data provided by FEMA contained the following categories of information: (1) FEMA Region, (2) State, (3) Name of the Federally Recognized Tribe, (4) Title of the Disaster Mitigation Plan, (5) Current Status, (6) Approval Date of the Plan (if applicable), (7) Expiration Date of the Plan (if applicable), and (8) Last Updated (if applicable). I used the entire dataset for my analysis, as my goal was to describe national and regional disaster planning efforts among American Indian and Alaska Native tribes. FEMA's dataset encompasses the entire population for the policy arena, including all 566 federally recognized tribes as of September 2015.

To calculate the national-level figures on tribes that have engaged with FEMA at some point in the disaster preparedness phase, each recorded instance of action by tribes, whether it be a record of an approved plan, an expired plan, or plan in progress, counts as an instance of "engagement" with FEMA. A tribe with no data pertaining to any form of plan status is counted as an instance of "no engagement."

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[10] This FEMA database is refreshed every time there is a change to the status of a disaster plan.

The indication of whether a tribe has a FEMA approved disaster mitigation plan in effect was a result of my calculation of every tribe that FEMA designated as "approved." Although FEMA subsumes tribes with the plan status "approval pending adoption" under an umbrella category of "approved," I decided to treat these as distinct categories because they have not been officially adopted by tribes and cannot be described by my criteria as a disaster mitigation plan "currently in effect."

Chapter Four also draws on an additional data set, FEMA's data on tribal disaster declarations. FEMA's data on tribal disaster declarations is available to the public in the form of graphic visualizations or as a raw data set that can be downloaded.[11] While this dataset includes all disaster declarations made directly on behalf of tribes as sovereign entities following the passage of the Sandy Recovery Act of 2013, the majority of disaster declarations that are considered "tribal" occurred before this act. This was due to the fact that prior to the Act passing in 2013, tribes could not make a direct request for a disaster declaration as a governing entity; they could only request a disaster as a sub-grantee. The raw data available from FEMA records (1) the disaster declaration number, (2) the year in which the disaster occurred, (3) the FEMA region, (4) the State, (5) the AIAN area, (6) the disaster type, (7) the incident type, (8) the date when the incident began, and (9) the date when the declaration was considered closed.

GIS Data Visualization

Geographic Information Systems (GIS) encompass powerful mapping and analysis tools designed to examine an enormous range of physical, geographic, and social concerns. GIS "are, in one understanding, digital technologies for storing, managing, analyzing, and representing

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[11] Information is available to download from: https://www.fema.gov/data-visualization-disaster-declarations-tribal-nations

geographic information. Typically, such a system consists of data models, structures for representing geographic entities and their characteristics in digital form; data structures for storing these data themselves… software for query, retrieval, analysis, and mapping; and the hardware used to support these functions" (Elwood and Cope, 2009: 3). At the same time, GIS can be considered as a "collection of practices for producing and negotiating geographic knowledge through the representation and analysis of spatial data" (Elwood and Cope, 2009: 3).

GIS has a long history as a fundamental tool in the field of disaster management and research. GIS was historically used as a means of mapping vulnerabilities such as "the potential for loss of property or life due to natural or manmade disasters" (Cutter, 1997: 6). Over time, thanks to the capacity to combine GIS data with past disaster outcomes and census data, social vulnerability is increasingly a concern of GIS disaster research (Cutter 2006; Cutter and Finch 2008). The relatively open nature of the tool has been praised for providing opportunities for collaboration, flexibility, and rapid response in the wake of a disaster. In the days following the 9/11 attacks in New York City, for instance, "GIS proved its worth as an irreplaceable emergency management tool... Maps of Ground Zero provided pictures that helped rescue crews, firefighters, and workers removing debris and city officials making critical decisions… It was a collaborative effort to obtain information that had not previously been shared across agencies and was used to create the graphic representations that supported rescue and clean-up efforts" (Kapucu, 2006: 220).

In addition to being a key analytical tool in the field of hazard mitigation, AIAN tribes are increasingly adopting GIS technology as a tool for planning and projects including "community development and planning, transportation and network analyses, public safety planning, cultural and historic preservation" (Wascalus, 2014: 1). The use of GIS by tribal

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entities is increasingly widespread, as the President of the National Tribal Information Support Center (TGISC) observes: "up to 45% of the 566 federally recognized tribes use the technology for some purpose" (Wascalus, 2014: 2).

GIS in Mixed Methods Research

The integration of qualitative data into GIS mapping is one of several approaches that emerged from critiques in the mid-1990s casting GIS as rooted in positivist epistemologies and most suited for quantitative techniques associated with spatial science (Lake, 1993; Pickles, 1995). The capacity for integrating different forms of data for analysis has certainly been embraced recently by qualitative and mixed methods researchers and hence "many researchers have taken on GIS in new ways, working to incorporate multiple data and forms of knowledge, extend its representational capabilities to incorporate non-cartographical information, support quantitative and qualitative forms of analysis, and illustrate that multiple epistemologies may be part of GIS-based research" (Cope and Elwood, 2009: 1). While the data traditionally analyzed by GIS for disaster research has been primarily quantitatively based such as population figures, technical geographic data, and disaster "counts," features such as hyperlinking and image embedding allow for the integration of more qualitative information such as photos, stories, videos, interviews, audio recordings, and oral histories.

GIS is often used for data storage and management. The additional power behind the software is primarily through its capacity for visualization, making data immediately accessible to a wider audience (Pavlovskaya, 2009: 22). Some researchers also highlight the epistemological and ontological capacity of the program noting that GIS-based maps are transformed from a vehicle for delivering knowledge into an interactive knowledge production practice and thus serving as a potentially important medium for researchers to overcome

disciplinary divisions due to the prevalence and general knowledge of maps as explanatory tools (MacEachren et al, 2004).

Grounded Visualization

Grounded visualization as a process is inspired by attributes of two analytical methods: grounded theory and visualization. Grounded theory builds meaning through "multiple iterations of data collection, coding, categorization, comparison, and analysis to construct knowledge that is thoroughly grounded" (Knigge and Cope, 2009: 96). While grounded theory is primarily used in qualitative research, "the goal is actually a simultaneous commitment by the researcher to creativity and a systematic approach... Grounded theorists are, therefore, more concerned with the reflexive process that creates a 'flow of data' toward emerging theories than with whether the data are numerical or text and images" (Knigge, 2006: 2025).Visualization generally includes a broad array of methods "that are used to visually explore and represent qualitative and quantitative data (usually "official" data)" (Knigge and Cope, 2009: 96). Grounded visualization involves an "iterative reflexive engagement with different forms of data, enabling critical exploration of tensions and mis-matches in different interpretations of them, to build stronger explanations" (Knigge and Cope, 2009: 96) By combining these two methods the researcher is able to experiment with the concept of scale-sensitivity which can be extremely helpful in the conceptualization and meaning-making of a research process. The scale of analysis can instantly change at the click of a button, preserving the capacity for large-scale macro conclusion and still allowing for micro-analysis. As Knigge and Cope (2006: 2028) explain, this entails "simultaneous attention paid to both the particular and the general, the concrete and the abstract, and the small and large scale."

Prior to embarking on this thesis research, I had no experience with GIS analysis. I knew that I wanted to use all possible tools available to thoroughly explore my topic of interest, and therefore decided to use the grounded visualization approach to build meaning through multiple interactions with the data.

In order to analyze my data and construct national and regional level maps, I used ArcGIS software to combine the data sets from my statistical analysis with data from the Census Bureau on AIAN geographic information and population demographics for each of the 566 tribes.[12] In order to build maps, however, I needed to also obtain "shapefiles" which provide a base layer map upon which visualizations are constructed. The files are generally publicly available cartographic boundary files[13] that can be downloaded from an online cache. For the purposes of my research I utilized a standard United States "Nation" file that included the mainland of the United States and Alaska, a "State" shapefile that delineated the United States by States, a "County" shape file that separated States into counties, and an "AIAN Areas" shapefile that overlays areas of the United States under tribal jurisdiction. I constructed each of the maps within this thesis using version 10.3 of the ESRI software ArcGIS Maps unless otherwise noted in the image caption.

Semantic Data Integration

An unanticipated issue I encountered at several points throughout my GIS visualization process was semantic data integration which is the "process of linking individual fields between multiple datasets. It involves making assumptions about equivalence between two terms that

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[12] Geographic information was obtained from https://www.census.gov/geo/maps-data/data/gazetteer2013.html
Population tables were retrieved from http://www.census.gov/population/www/cen2010/cph-t/cph-t-6.html
[13] Cartographic boundary shapefiles were obtained from https://www.census.gov/geo/maps-data/data/tiger-cart-boundary.html

might be alike but are not necessarily equivalent" (Schuurman, 2009: 47). This issue remains a common challenge for researchers due to the fact that there are few well-established methods of supplying information on non-spatial attributes between different organizations (Bishr, 1997). An example of this issue that emerged in my data analysis was that the data I obtained from FEMA was looking at federally recognized tribes while the data obtained from the Census Bureau was looking at tribes from a more geographical perspective of "AIAN areas." As a result there was much data included in these tables that was for tribes that were only a State recognized authority and more than 130 entries out of 566 tribes were unable to be matched to the Census' AIAN Areas on an initial attempt at joining the data.

The only option for making these categories somewhat comparable while still retaining the fidelity of the information was to go through the different AIAN areas and federally recognized tribes to attempt to link them. The Seminole Tribe of Florida, for example, appears as a single entry in FEMA's plan status dataset. However, they have six different reservations under their jurisdiction at varying coordinates across Florida, including Big Cypress, Brighton Reservation, Fort Pierce Reservation, Hollywood Reservation, Immokalee Reservation, and Tampa Reservation. An important question emerged from this particular case regarding the best way to illustrate the data: should there be multiple data points for each reservation of a tribe or just a single point for the headquarters of a tribe? In the end, I decided to display a single point for each federally recognized tribe instead of representing each AIAN area as I felt this best reflected my unit of analysis of "tribal plans."[14] This brought the number of data points to exactly 566 which allowed for more effective comparisons between data sets.

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[14] Going through each of the files and trying to make them as semantically close as possible was a laborious task. Yet, it provided an important means for articulating the epistemological conceptualization of this project. The

A second example of semantic data integration issues informing the wider conceptual and theoretical considerations of my research was related to how to join the various layers of data on my maps. The function of "joining layers" is a necessary process of relating different layers of data so that they can be cohesively organized. What is needed for this process is a common attribute field that exists across multiple data layers and acts as a translation "thread" linking them all together. Such as my issue with federally recognized tribes and AIAN areas not being semantically similar enough, I lacked a coherent thread that could be used as a join.

One approach to addressing this issue is to use a common attribute such as the Federal Information Processing Standard (FIPS) code. My base layers had five-digit county FIPS codes that combine a two-digit designation of the state and a three-digit county code. The data I retrieved from FEMA did not have a county FIPS code for the location of tribes, however. With help from a faculty member in my department, I was able to take the geographic coordinates of the headquarters of each tribe and use a keyboard command in the statistical software STATA to generate the county name that is closest to the tribal coordinates. We were then able to convert the names of the county into a five-digit FIPS code that was semantically identical to the FIPs code in the base layer file.

I include these two examples as they represent two similar issues that I resolved by very different means. One of these entailed a laborious process that involved analyzing single cases and making a judgment call on using one style of representation or the other due to the lack of capacity for straightforward semantic data integration. The choice between displaying federal tribes and AIAN areas ultimately helped to define the conceptual parameters of my project. In

considerations associated with semantic data integration help to build theory and knowledge by requiring you to refine definitions and units of analysis throughout the process.

the second example I was able to use an efficient statistical program to create a common attribute that was able to provide cohesive semantic integration to join layers and in doing so, allowed me to progress to the analysis stage of my research.

Mapping and Design

While the previous section detailed two examples of how a seemingly straightforward process of inputting data and displaying the results on a map actually takes significantly more deliberation and experimentation, this section discusses the means through which decisions on the design elements of the maps involves a different type of complex and iterative process. The final maps included in Chapter Four of my thesis that detail the regional data for plan status went through approximately nine different iterations, while the process for constructing each of these versions took anywhere between two and eight hours to complete. As I was new to the software, progress made on mapping was initially slow and it took me a few initial meetings with staff at the GIS Centroid at Colorado State University before I was able to perform even basic analysis and design in the program. As an example, ArcGIS Map has a "clipping tool" which can be used to "clip" certain areas of the map for display (ESRI, 2009). This was essential for generating the ten regional maps. The first time I attempted to use this tool, despite consulting online sources, it took me approximately an hour and a half to figure out how to make the tool work. After I figured out how to use this, clipping of a region of the map took no more than 30 seconds.

In addition to learning the basic tools, my experimentation with the symbology and display functions of the maps led me to important considerations related to how the plan statuses of tribes should be displayed. I also had to make decisions regarding the size of the symbols, the color schemes, and whether the data displays would be represented as coordinate points or at a county level. The help I received from the GIS Centroid staff was indispensable in guiding my

GIS analysis. Whenever I approached them with a question regarding the "best way" to represent a data category, they would inevitably respond with some variation of "that depends on exactly what you are trying to say with your map. What question is your map trying to answer?" These questions were useful throughout every stage of my research process and helped to re-inform and transform the design of my visualizations and theories.

Proof of Concept Interactive Map

With the help of the GIS Centroid staff I formed a "proof of concept interactive map" in an attempt to delve into the capacity for grounded visualization. To do this I used the online website "ArcGIS Online." ArcGIS Online is a simplified version of ArcGIS Map which allows the user to produce maps that can be accessed at any time via the website link and can be edited by anyone with the account information for the map created. In addition, the use of cloud storage website Google Drive allowed for the availability of the data set displayed to be edited by anyone with a shared invitation to the data.

While the map was built around the mitigation planning data provided by FEMA, the design of ArcGIS Online allowed me to include significantly more data fields and layers. For the purposes of this map (which is in many ways a theoretical skeleton to build upon in the future), I included additional fields such as tribal demographic information, disaster declarations, types of disasters experienced, links to PDFs for tribal plans (if available), and the capacity for users to geo-tag photos, videos, and audio recordings of disasters and recovery as they unfold. In short, this proof of concept was a first attempt for me to bring together multiple units of analysis and data sources that would offer a more dynamic and robust representation of potential "vulnerability hotspots" and preparedness actions among AIAN tribal areas.

POLICY DOCUMENT ANALYSIS

The focus of this chapter is the formulation of policies by the United States Federal

Government to address to social vulnerability of American Indians and Alaska Natives (AIAN)

in the context of disasters. To do that, it is important to discuss the history and background of

legislation and policy decisions as related to AIAN sovereignty and other issues. These policy

issues serve as the cornerstone on which disaster policy has been built upon from the mid-19th

century through the present day.

The first section of this chapter describes the theoretical perspective for my analysis of

the formulation of AIAN disaster policy and discusses the emergent issue of AIAN sovereignty

which has substantially influenced the direction of policy decisions. The second section offers a

historical policy analysis of the effect of Federal legislation, Executive Orders, and residual

Supreme Court decisions in defining policy for Native American disaster preparedness. This

second section is divided into three parts and is organized chronologically: *Part I: American*

Indians and United States Policy (1823-1970), *Part II: Legislative History of AIAN Disaster*

Policy (1950-2002), and *Part III: Contemporary AIAN Disaster Policy (2002-2015).*

Theoretical Perspective

An institutional policy perspective argues that organizations and their policy actions "are

substantially influenced by the broader institutional settings in which they operate, and [are]

shaped by the institutional legacies that reflect that reflect the culture, history and polity of the

particular country or region" (Doh and Guay, 1997: 49). Institutions can best be understood "by

the histories of negotiations that lead to shared typifications or generalized expectations and

interpretations of behavior" (Barley and Tolbert, 1997: 94). In the United States, key institutions include "the political, legal, and social institutions at the supranational, national, and subnational levels" (Doh and Guya, 1997: 49).

The institutional approach to analyzing policy "considers the processes by which structures, including schemes, rules, norms, and routines, become established as authoritative guidelines for social behavior" (Scott, 2005: 461). The institutional approach is defined as a normative-driven approach, taking into account a vast range of values and beliefs concerning the best method for improving public welfare (Midgley and Livermore, 2009: 181). This approach for analyzing the AIAN disaster policy arena involves an investigation of intentions and actions of the different parties involved and highlights a policy process marked by incremental and iterative change based on compromise between different parties. The AIAN policy arena is typified neither by a commitment to radical transformation of society, nor is it reflective of a conservative inertia and minimization of regulations. The policy formulation process can best be understood as a more middle of the road approach "tempered by a historical preference for empiricism and pragmatism" (Midgley and Livermore, 2009: 190). At first glance, this policy arena appears fairly uniform with a strong focus on the importance of government and regulation for robust disaster planning. However, the policy space is often marked by the tension over which institutions have primary jurisdiction within the AIAN disaster planning policy arena.

AIAN disaster policy does not happen in a social vacuum and as such, representation of this policy space is often complicated. It is thus important to consider "the presence of side effects from other policies that interact with the program being evaluated, the problem is how to weigh outside factors relative to the operation of the program being evaluated" (Theodoulou and Kofinis, 2004: 199). Indeed, policy decisions must be placed in a broader context, taking into

account cognitive and cultural explanations of social and organizational phenomena (Powell and DiMaggio, 1991: 11).

Sovereignty as a Guiding Policy Issue

American Indian and Alaska Native sovereignty is depicted by some scholars as resulting from the domination of small culturally diverse tribes, the ad hoc nature of treaties being drawn up with individual tribes after wars, and the acquisition of colonial claims and settlements of different European nations on United States soil (Willard, 1994: 3). AIAN sovereignty is an idea founded on an idea of "native nationalism" which rejects Eurocentric colonial cultural values. Alfred (2002: 16) defines this as "An uneven process of re-establishing systems that promote goals and reinforce the values of indigenous cultures against ongoing efforts by the Canadian and United States governments to maintain the systems of dominance imposed on Native Americans."

Sovereignty has been a fundamental policy issue for AIAN people across a plethora of policy arenas. Essential to the concept of tribal sovereignty is the ability to govern and to protect and enhance the health, safety, and welfare of tribal citizens within tribal territory (Leemon, 2014). As such, it has been argued elsewhere that in order to achieve these goals, it is imperative for tribal governments to retain the power to determine their own governance structures and enforce laws through police departments and tribal courts if they wish to do so (NCAI, 2015; Adams, 2012; Canby, 2004) The idea that self-government is essential if tribal communities are to continue to protect their unique cultures and identities is shared by many major AIAN Civil Rights organizations such as the National Congress of American Indians (NCAI) and the American Indian Movement (AIM).

The formation of the NCAI, in particular, marks an important point in Native American sovereignty and policy development. Even today, the organization remains a powerful force in advising, consulting, and lobbying for Native American social and political concerns. Founded in 1994 in response to the emerging threat of termination and assimilation policies enforced against Native American tribes by the Federal Government, the organization stressed the contradiction of the "Special Trust Relationship" detailing the Federal Government's moral responsibility to respect tribal rights as a sovereign nation (NCAI, 2015).

A fundamental document clarifying the importance of AIAN sovereignty was the 1954 Declaration of Indian Rights by the NCAI. The declaration was prepared following the "Emergency Conference of American Indians on Legislation" in 1954 which was attended by delegates representing more than 183,000 AIAN individuals. In this document, the NCAI argued that AIAN tribes should be informed of, and consulted about, federal policies that affect their rights, a policy position still held today by the organization (Routel and Holth, 2013: 435). According to the Declaration of Indian Rights, "If the Federal Government will continue to deal with our tribal officials as it did with our ancestors on a basis of full equality; if it will deal with us an individuals as it does with other Americans, governing only by consent, we will be able to take our rightful place in our communities, to discharge our full responsibilities as citizens, yet remain faithful to the Indian way of life" (NCAI, 1954: 1).

In 1994, Public Law 103–454 (the Federally Recognized Indian Tribe List Act) formally established three ways for tribes to become federally recognized: (1) an Act of Congress, (2) a decision of a United States court, or (3) a Presidential Executive Order. Regardless of which of these three approaches is pursued, the administrative process for tribes applying for federal recognition can take decades for applications to be reviewed and decided upon (Toensign, 2014).

In the context of Alaska, the State with the most federally recognized tribes, federal recognition of Alaska Native Villages was established through a separate Act of Congress to Public Law 103-454. The Alaska Native Claims Settlement Act was signed into law in 1971 which recognized Alaska Natives as distinct people by the Federal Government due to the difference in historic interactions with the United States government as compared to American Indian tribes.

The three different approaches tribes can use to gain federal recognition is reflective of the sometimes contradictory and often ambiguous policies put forth by the different branches of government in regards to AIAN disaster policy. The difference in approaches and supremacy of a particular legislative, executive, or judicial decision has had significant consequences in Tribal and Federal Government relationships starting at the judicial level with three foundational Supreme Court decisions, as described in the next section of this thesis.

Historical Analysis of AIAN Disaster Policy Formulation

The following section of this chapter provides an overview of the historical development of AIAN disaster legislation. Figure 3.1 shows a policy timeline of key events and legislation that contributed to the formulation of contemporary AIAN disaster policy. Disaster-specific policy decisions are in bold.
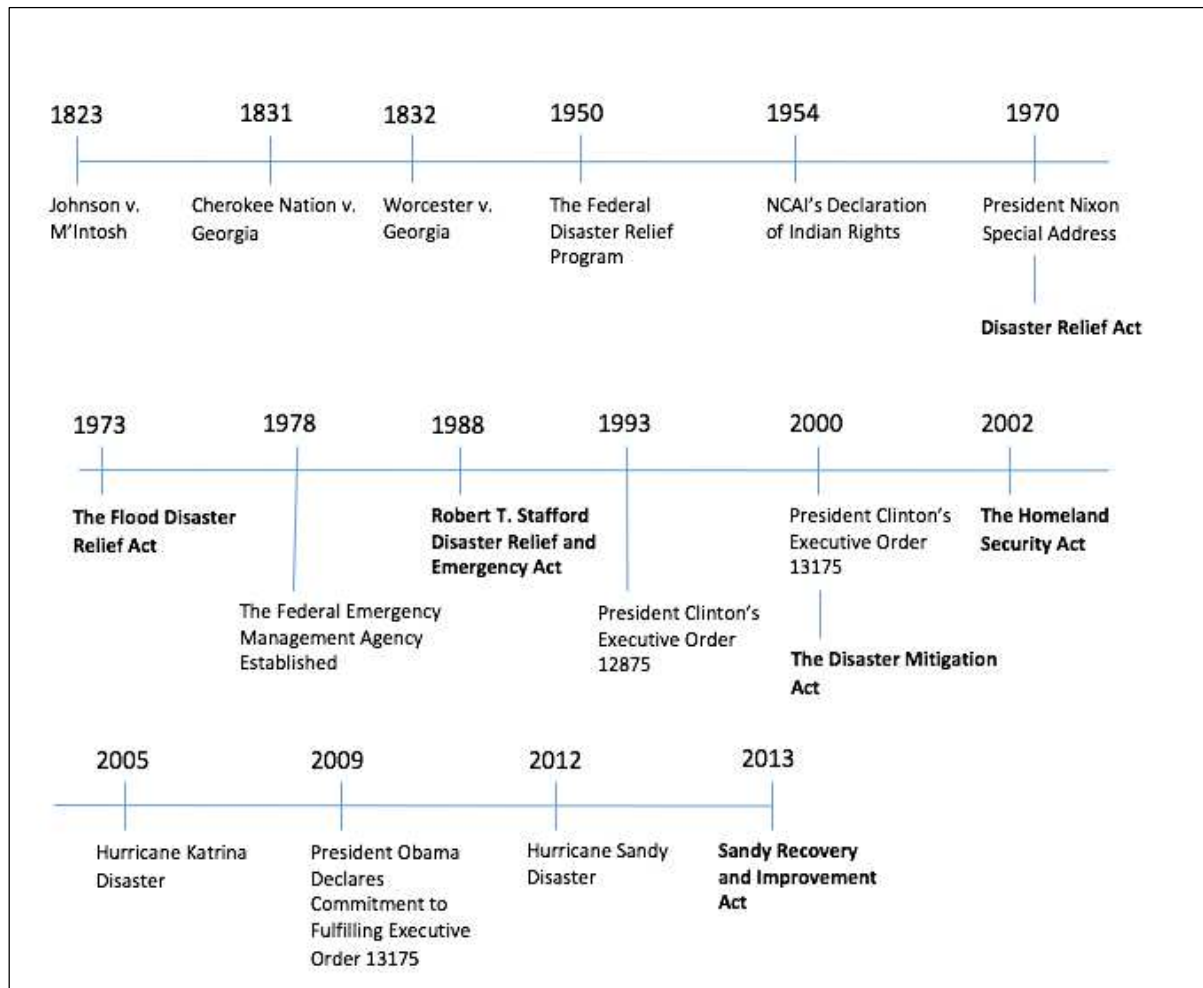
Figure 3.1: Timeline of Key Events and Legislation (1823-2013)

Part I. American Indians and United States Policy (1823-1970)

"American Indian Policy" and "United Sates Federal Disaster Policy" started out as distinct policy arenas. This was because there was no official disaster policy prior to 1950, while laws pertaining to AIAN sovereignty stretch back to the formative years of the nation. The beginnings of both policy arenas must be explored, however, to help establish the relationship between the Federal Government and Indian tribes that informed the creation and interpretation of disaster policy in the latter half of the 20th century.

Indian Jurisprudence- The Marshall Trilogy

The Marshall Trilogy refers to three Supreme Court decisions in the 19th century presided over by Chief Justice John Marshall. These three foundational cases legally defined the relationship between the Indian Nation and the Federal Government: *Johnson v. McIntosh,* *Worcester v. Georgia,* and *Cherokee Nation v. Georgia.*

A key decision, as established in *Johnson v. McIntosh (1823)* was that tribes had no power to sell lands to anyone without Federal Government approval. This decision was in accordance with the 1790 Indian Trade and Intercourse Act.

In *Cherokee Nation v. Georgia (1831),* the Supreme Court decided that Indians were neither citizens of the United States nor of foreign nations. Instead, tribes were uniquely categorized as "domestic dependent nations" whose relationship to the Federal Government "resembles that of a ward to his guardian" (*Cherokee Nation v. Georgia*, 1831, 30 U.S. 1,2.). This ruling set a legal precedent for the special "Trust Relationship" in which the United States has a duty to provide certain benefits and services for AIAN tribes and tribal members (The Oyez Project, retrieved September 30th). The ruling in *Cherokee Nation v. Georgia* regarding the special Trust Relationship became a cornerstone for sovereignty disputes as well as a fundamental concept in federal Indian law. Pevar (2009) argues that "virtually every law enacted by Congress during the past 40 years involving Indians and tribes has cited to, and found its support in, the Federal Government's trust obligations." He further notes that these rulings represent promises from the United States and create a unique bond which imposes "moral obligations of the highest responsibility and trust" (p. 1).

In the third Supreme Court case of the Marshall trilogy, *Worcester v. Georgia (1832),* it was decided that States have no authority over persons and actions within Indian Country, and

that State laws did not extend to AIAN areas. *Worcester v. Georgia (1832),* determined that "Indian Nations had always been considered as distinct, independent political communities, retaining their original natural rights, as the undisputed possessors of the soil" (*Worcester v. Georgia*, 1832, 31 (6 Pet.) 515, 561). Further, the ruling clarified that Indian tribes were under the protection of the Federal Government and that Congress—not the individual States—had overriding power regarding AIAN tribes.

The recognition of Indian tribes as independent nations by the Supreme Court was only temporary, however. This recognition ended with the passage of the 1871 Indian Appropriations Act which declared that "hereafter no Indian nation or tribe within the territory of the United States shall be acknowledged or recognized as an independent nation, tribe, or power with whom the United States may contract by treaty" (25 U.S.C. § 71.). This Act was one of several laws and policies that produced a legislative framework for the Indian Assimilation and Termination policies of the late 19th to mid-20th Century.

Assimilation and Allotment Era (1879-1940)

The Indian Assimilation era was reflective of wider United States policies to assimilate minorities into White American culture. A particular tool utilized by the Federal Government to increase cultural assimilation was education. The first American Indian Boarding school (the Carlisle Indian Industrial School) was established by Richard Henry Pratt in 1879. The boarding schools were designed to "assimilate, Christianize and civilize American Indian children. In these schools, pupils were forced to give up native languages and cultural practices (Canby, 2004: 55). This school became a model for other boarding Indian boarding schools established through the Federal Government's Bureau of Indian Affairs (BIA) (Wilkinson and Biggs, 1977: 139-184). Later twentieth century investigation revealed documented cases of abuse occurring

within these schools (Smith, 2007: 2). In 1887 Congress passed the United States Allotment Act (also known as the Dawes Act). Under this Act tribal lands were no longer under the control of tribal governments; instead, the land was under the control of individual land owners. Among the various goals of the Act were the aims to (1) break up tribes as a social unit, (2) encourage individual initiatives, (3) further the progress of native farmers and (4) open the remainder of land to white settlers for profit (Carlson, 1982: 79). The allotment process led the loss of two-thirds of land under American Indian jurisdiction. By 1940, the beginning of the Termination era, tries possessed only 2.3% of the country's landmass (O'Brien, 1985: 50)

Indian Termination Policy (1940-1968)

The government's termination policy was enacted unofficially through assimilation policy attempts between the late 19th and early 20th century. While the Indian Termination policy era represents only a small timeframe within American Indian policy history, the detrimental effects of the Federal Government's attempts at assimilating the AIAN population are still felt today (NCAI, 2015: 6). This policy position worked in active opposition to the legal framework and treaties that had set the precedent for the "Special Trust Relationship" between tribes and the Federal Government in the 19th century.

The Indian Termination policy era is considered by some to have begun "unofficially" in 1940 with the passing of the Kansas Act. This Act was considered "trial" legislation granting State jurisdiction over most criminal offenses committed by or against Indians on Indian reservations. If successful, it was to be implemented elsewhere (Francis et al., 2011: 954). Public Law 280, passed in 1953, extended State jurisdiction over criminal and civil matters for tribes in California, Minnesota, Nebraska, Oregon, and Wisconsin. This law contravened the Supreme

Court decisions that had rejected States' jurisdiction on AIAN affairs by transferring significant legal authority to State governments (Robbins, 1999: 248).

In 1953, Congress adopted an official policy of "termination." Through the passing of Public Law 280 the government was aiming to "as rapidly as possible make Indians within the territorial limits of the United States subject to the same laws and entitled to the same privileges and responsibilities as are applicable to other citizens of the United States" (House Concurrent Resolution 108). Between 1953 and 1968, Congress terminated federal recognition and assistance to more than 100 tribes, removed approximately 2,500,000 acres of tribal land from protected status, and revoked tribal affiliation for more than 11,000 AIAN individuals (Wilkins, 2006: 25). Legislatively, there was no single Act that terminated federal recognition of tribes, instead, individual Acts were passed for the termination of each tribe.[15]

Throughout this era, Indian and non-Indian interest groups in coalition with terminated and soon-to-be terminated tribes lobbied Congress to end the policy due to the disastrous effects it was having politically, socially, and economically. Due to this active political pressure and a more favorable political climate supporting social programs, the governmental policy of termination was eventually replaced with a policy built on civil rights and self-determination. "Policies emerged [in the 1960s and 1970s] favoring tribal control over their destinies. Under the self-determination and self-governance acts, tribal governments managed many federal programs serving Indian people" (NCAI, 2015: 15).

In 1970 President Nixon delivered a special message to the Congress on Indian Affairs, publically denouncing the Federal Government's previous policy on Indian Termination and

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[15] For some general examples of this legislation, see the Menominee Termination Act, the Klamath Termination Act, and the Alabama-Coushatta Tribe of Texas Termination Act, all passed in 1954.

reifying the legality of past agreements and court findings. He stated that "the special relationship between the Indian tribes and the Federal Government which arises from these agreements continues to carry immense moral and legal force. To terminate this relationship would be no more appropriate than to terminate the citizenship rights of any other American" (Nixon, 1970: 1).

Due to Nixon's special message and the creation of Acts encouraging self-determination after 1968, this is generally accepted as signifying the end of Indian Termination policy. Termination policy was not officially rejected by Congress, however, until 1988 in a symbolic gesture declaring that "the Congress hereby rejects HCR 108 of the 83rd Congress and any policy of unilateral termination of federal relations with any Indian nation" (Wilkins, 2006: 35). While the executive position on sovereignty remained clear for the latter half of the 20th century, legislation significantly muddied the water for disaster policy for tribes.

Part II. Legislative History of Federal Disaster Policy (1950-2002)

The period of 1950 to 2002 was marked by a tension between legislative definition and executive aims. The alternative directions of AIAN disaster policy by the executive, judicial, and legislative branch of government resulted in some significant policy issues due to ambiguity and confusion (Steinfeld, 2012: 4). This is partially due to the time frame following a disaster as being urgent and somewhat limited. Indeed, large-scale disaster events in the wider arena of United States disaster policy "provide a small window in which there is significant activity in the policy window before disaster policy inevitably retreats out of the public eye until the next big focusing event" (Birkland, 2006: 21). As such, AIAN policy issues were often subsumed by the overarching desire for rapidly produced legislation to assist areas affected by disaster.

Federal Disaster Policy (1950-1970)

Congressional funding for disaster emergency management and relief prior to 1950 was awarded on an incident-by-incident basis with few records existing regarding assistance for disaster recovery. Bipartisan concern over the inefficiency and inconsistencies of passing an individual law every time a community was affected by disaster prompted Congress to enact the Federal Disaster Relief Program in 1950. A critical statement in the Federal Disaster Relief Program (Public Law 81-875) established the policy of the nation's disaster response and recovery efforts. Under this Act federal disaster assistance would "supplement the efforts and available resources of the State and local governments." In other words, the Act asserted that the Federal Government would not function as the first-line provider of emergency assistance and disaster response and recovery. It would support State and local governments—not supplant them (FEMA Training Manual, Unit 3-2). To further underscore this philosophy, the Act required that federal assistance be supplied when, and only when, State and local governments had committed "a reasonable amount of the funds" (Baca, 2008: 1) to the response efforts. The Federal Disaster Relief Program of 1950 only authorized the Federal Government to assist local and State Governments in disaster response efforts, leaving an ambiguity in the relationship between tribal governments and the Federal Government in the event of a disaster.

Centralization of Disaster Policy (1973-1988)

The passing of the Disaster Relief Program reversed the legislative policy direction encouraging State jurisdiction and instead attempted to centralize disaster relief and management. A key component of this Act was the establishment of presidential declarations to better handle the array of disasters occurring across the United States annually. President Nixon commented on the signing of the Act that the roles of State and local governments in disaster

recovery would be increased and that "Combined with the Flood Disaster Protection Act that was signed into law on December 31, 1973, this new disaster relief law truly brings the New Federalism to our disaster preparedness and assistance activities" (Nixon, 1974: 1).

On March 31, 1978, Jimmy Carter created the Federal Emergency Management Agency (FEMA) by Executive Order and transferred all statutory authority related to disaster directly to the newly created agency. Previously, these activities had been spread across a variety of federal agencies. Executive Orders 12148 and 12127 consolidated authority to FEMA as the single federal agency responsible for human-made and natural disaster management.

Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988

In 1988, the Disaster Relief Program was amended and became the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 in response to a comprehensive study and review from Congress on their disaster programs (Baca, 2008: 3). This Act, as amended, remains the major legislation under which FEMA operates today. With the codification of disaster management in the United States becoming increasingly robust and the issue of local, State, and Federal Government authority receiving legislative definition, the issue of tribal sovereignty within this governmental structure became increasingly nebulous (Adams, 2012: 128).

The overarching aim of the Stafford Act is to provide federal guidance and support for disaster relief efforts, under which States are the primary beneficiaries. The Act reads as follows: "because disasters often disrupt the normal functioning of governments and communities... special measures, designed to assist the affected States in expediting and rendering aid, assistance and emergency services… are necessary" (Steinfeld, 2012: 3). The legislation created a new policy whereby the President is authorized to grant funds to States for disaster preparation

and relief, rather than funding efforts to local governments. Pre-disaster hazard mitigation funds are awarded as a result of recommendations to the President from State governors.

Under the definitions within the Stafford Act (42 U.S.C. section 5133(d)(1)(a), specific wording became extremely problematic because it contradicted the special trust relationship between tribes and the Federal Government. The Act effectively re-classifies tribes as "local governments" and thus in practice, subservient to State authority. In the legislation, "local government" includes "an Indian tribe or authorized tribal organization, or Alaska Native village or organization" (42 U.S.C. section 5122(7)(b). From a legal perspective, this wording clearly contravenes the legal precedent set in the Marshall trilogy in exactly how authority is determined between the Federal Government, State governments, and tribal governments. In order to be eligible for "an increased Federal share for hazard mitigation measures… a State, local, or tribal government shall develop… a mitigation plan that outlines processes for identifying natural hazards, risks, and vulnerabilities" (42 U.S.C. section 5165).

While tribes have long received assistance under Stafford Act declarations, working through the State government for all assistance has been viewed as an affront to tribal sovereignty (Leemon, 2014: 590). Under the Act, tribes are theoretically at the mercy of State governments where States may at times be reluctant to request a disaster declaration on behalf of a tribe when the damage was localized on tribal property (Steinfeld, 2012: 3). As a fairly recent example, the "communication breakdown" implicit within this policy was made clear for the Cheyenne River Sioux tribe. Their attempt to declare a disaster due to the threat of spring thaw and subsequent flooding was delayed by seven months due to bureaucratic issues, putting individuals at severe risk during the waiting period (Steinfeld, 2012: 3). Other challenges to administering disaster relief involved language barriers and the physical isolation of some tribal

lands and the congruent nature of FEMA land classification with Indian country. All of these factors created challenges for emergency management following disaster events in tribal areas (Lindsay et al. 2015).

Executive Orders on AIAN Policy (1993-2000)

Each President from Nixon to Obama has reaffirmed that the Federal Government has a duty to consult with Indian tribes to achieve the substantive goals of the trust responsibility (Routel and Holth, 2013: 444). The involvement of the executive branch in improving federal to tribal relations and policy was jump-started, however, in 1993 with President Clinton's Executive Order 12875 "Enhancing the Intergovernmental Partnership." This Executive Order aimed at cutting through some of the bureaucratic red-tape, reducing the amount of unfunded mandates, and instituting a process for all tribal officials to be able to provide input on the creation and amending of any federal policies (Routel and Holth, 2013). Clinton also instituted a new process for tribal consultation that would later be followed by President Obama through inviting tribal leaders to a tribal summit to determine primary issues of concern directly from leaders. Ironically, there is no indication that Clinton's consultation policy in Executive Order 12875 was developed in consultation with Indian tribes; instead, it was presented as a "fait accompli" at the April 29, 1994 summit of tribal leaders (Haskew, 2000: 33).

At the April 1994 summit, President Clinton invited leaders from all federally recognized tribes (547 at the time) to discuss issues facing tribal communities with the desire to "consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments prior to taking actions that affect federally recognized tribal governments" (Clinton, 1994: 47). This was the first summit of its kind whereby a President invited leaders from all federally recognized tribes to consult on Indian Policy. Insights and consultation at the April summit contributed to

the formulation of 1998 Executive Order 13084 four year later. This was annulled in 2000 and replaced with the identically titled 13175 "Consultation and Coordination with Indian Tribal Governments" (Haskew, 2000). Surprisingly, in a climate where Congress had repeatedly legislated against tribal sovereignty, there was little criticism of this particular Executive Order. While President Clinton's 2000 Executive Order did not create any significant ideological concerns, criticism did occur on the practicality of instituting the order at an agency level due to a lack of specificity (Leemon, 2014: 598).

The fundamental principles of Executive Order 13175 were to reiterate tribe's special designation as "domestic dependent nations" who exercise inherent sovereign powers over their members and territories. According to the order, the Federal Government shall grant AIAN tribal governments the "maximum administrative discretion possible" (Clinton, 2000, Executive Order No. 13175). However, no specific attempts were made by the executive branch to solidify this as a policy. Under George W. Bush's leadership, the spirit of the policy was upheld but there as a noticeable lack of executive attempts to put the order into action across administrative departments and agencies.

The Disaster Mitigation Act of 2000

In addition to a renewed commitment to increasing consolation with AIAN tribes, the year 2000 marked the passing of the Disaster Mitigation Act which amended the 1988 Robert T. Stafford Disaster Relief and Emergency Assistance Act with a new set of requirements for disaster mitigation. Under the legislation, which is still in effect as of spring 2016, "State, local, and tribal governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance and FEMA grants to implement mitigation projects" (Public Law 106-390). While section 322(e) stipulates governmental

authorities as "State, local, and tribal governments," immediately following in section b, "local and tribal governments" are given the same requirements for mitigation planning: "(1) describe actions to mitigate hazards, risks, and vulnerabilities identified under the plan; and (2) establish a strategy to implement those actions." States, however, have additional stipulations whereby they must "provide for technical assistance to local and tribal governments for mitigation planning." Despite the initial separation of the different forms of government into three distinct categories, the language of the Act places tribal governments at the same level as local governments while elevating the position of State governments above these. According to FEMA, the tribal mitigation planning process focuses on the production of comprehensive mitigation plans that include strategies for breaking the cycle of disaster damage, reconstruction, and repeated damage (FEMA, 2015b: 1)

There is an additional hierarchal tension in the stipulations for federal assistance for disaster planning. According to section 322(d)(2) "With respect to any mitigation plan, a State, local, or tribal government may use an amount of Federal contributions under section 404 not to exceed 7 percent of the amount of such contributions available to the government as of a date determined by the government." If at the time of a major disaster a State has in effect an approved disaster mitigation plan "the President may increase to 20 percent, with respect to the major disaster, the maximum percentage specified in the last sentence of section 404(a)" (322(e)(1)). Tribal governments are not offered any room to increase their claim of funding above that of a local government for mitigation purposes, even in the event of a major disaster.

The period of 1950-2002 was marked by a tension between the legislative and executive branches of government. Through a trend towards centralization of government, the status of tribes was consistently reified as equal and somewhat indistinguishable from "local

governments" particularly in the Stafford Act and the Disaster Mitigation Act. While President

Clinton's 1993 and 2000 Executive Orders made headway in terms of improving the relationship

between the Federal Government and tribes, these orders did not result in concrete action to

ensure their fulfillment. The tension between both the Federal Government and tribal

governments and between the legislative and executive branches further solidified Native

American "mistrust and uncertainty in jurisdictional and regulatory authority" (Steinfeld, 2012:

4).

Part III: Contemporary AIAN Disaster Policy (2002-2015)

Through a combination of steady official support from the executive arm of government

and the increasing centralization of disaster policy as a federal concern, the boundaries between

"American Indian policy" and "Federal disaster policy" become increasingly blurred. The

executive support for AIAN sovereignty and consultation stood in stark contrast to stipulations

within the disaster legislation." In the early 21st century, 1a series of major disasters (9/11,

Hurricane Katrina and Hurricane Sandy) led to new policy opportunities that changed the

direction of legislation and cemented AIAN Disaster policy as a distinct policy arena.

Homeland Security Act of 2002

The Homeland Security Act of 2002 was passed in response to the perceived threat of

terrorism following the 9/11 attacks (Baca, 2008: 3). Under this legislation, the Department of

Homeland Security was formed. This bureaucratic behemoth absorbed a multitude of

government agencies, including FEMA, in a massive consolidation of many agencies with

responsibilities devoted to combatting terrorism (Baca, 2008: 3). FEMA's loss of status as an

independent, cabinet-level agency, implied a shift in focus "away from natural disasters and

towards the development of antiterrorism capabilities" (Schneider, 2005: 516). An infamous

memo circulated on September 15, 2003 by FEMA's then director Michael D. Brown said that the reorganization would "fundamentally sever FEMA from its core functions, shatter agency morale and break longstanding, effective, and tested relationships with States and first responder stakeholders" (Grunweld and Glasser, 2005: 1)

Many of these doomsday predictions regarding the future of FEMA became reality in the aftermath of Hurricane Katrina. An internal report revealed that federal funding to States for all-hazard disaster preparedness needs was not awarded unless the local agencies made the purposes for funding "terrorism prevention" (The Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006). This indicated another step-back for tribes wishing engage in hazard mitigation planning by adding additional caveats further complicating the funding assistance process.

Like prior policy statements, the Homeland Security Act offers problematic language for tribal sovereignty, defining tribal governments as effectively local governments subservient to States in the structure of these statutes, "just as a county, city or town would be subject to State control and supervision, so would a tribe" (Butts, 2004: 385-386). The Homeland Security Act also offers its own unique set of challenges for Native American preparedness in the face of natural disasters and the threat of terrorism. Senator Daniel Inouye argued in the hearing on S. 578 Tribal Government Amendments to the Homeland Security Act of 2000 that under current legislation, tribes are without adequate protection in regards to illegal border crossing (Committee on Government Affairs, 2003: 4). This is worrisome due to the fact that, as discussed in the introduction to this thesis, tribal governments are seen primarily as instruments of law enforcement and emergency managers for more than 50 million acres of land, some of it adjacent to the Canadian and Mexican borders. This represents a huge undertaking for tribes who

may only have limited funds to support monitoring of these areas. Senator Inouye also drew attention to the infrastructure within or connected to tribal lands such as: "...dams, hydroelectric facilities, nuclear power generating plants. Many of them are located in or near tribal lands. Oil and gas pipelines, energy resources, transportation corridors or railroads, and highway systems, communication towers, proximity of Indian lands to military reservations, installations and population centers. These factors must be considered and considered seriously" (Committee on Government Affairs, 2003: 4).

Executive Commitment and New Legislation (2009-2013)

In 2009, President Obama declared a renewed commitment to fulfilling Executive Orders 12875 and 13175 (as issued by President Clinton) (FEMA, 2014c: 2). This action was reflective of the Obama administration's recognition of the "continuing issues of sovereignty and tribal consultation policy for federal agencies and a commitment to resolving them" (DHS, 2014). The consultation process has continued with the White House specifically citing emergency planning as a priority field for increasing tribal communication and consultation (The White House, 2010).

In a move clearly in favor of the White House's stance on increasing tribal sovereignty, two bills were introduced to the Senate in 2009 and 2011 by representatives Frank Pollone (D-NJ) and Nick Rahall (D-WV), respectively (H.R. 1593 111th Cong, and H.R. 1697, 111th Cong.). Pallone's bill died in committee but acknowledged that "despite the government-to-government relationship between Indian tribes and the United States, the United States has failed to include and consult with Indian tribes with regard to homeland security prevention, protection, and response activities planning" (H.R. 1697, 111th Cong. 2009). Rahall stated in his 2011 bill that the legal status of tribes as sovereign entities "has been a priority for Indian Country for over

a decade and upon enactment will treat Indian tribes as the sovereign governments that they are."

Rahall's bill continued: "As sovereign nations, Indian tribes should have a direct line to the

Federal Government to expedite aid and assistance during an emergency or major disaster."

Rahall's bill, like Pallone's, was killed in committee. However, Rahall's consultation

with tribal leaders in a Native American Transportation, Infrastructure, and Economic

Development Roundtable was well-received by Native American media and indicated an

opening up of the consultation process in line with the Presidential mandate (Rahall, 2011).

Pallone's bill was also praised by Indian legal experts due to the explicit language giving tribes

funding for the prevention and response to terror threats. As Adams (2012: 143) observed:

"[H.R. 1697] would have made an extraordinary leap for American Indian rights and

sovereignty, providing tribes and DHS with a comprehensive system that would have compelled

the Federal Government to cooperate as equals with tribal entities and to fund them accordingly"

(Adams, 2012: 143).

Federal Emergency Management Agency Tribal Policy (2010-2015)

FEMA operates under two internal policies addressing consultation with the AIAN tribal

communities and on tribal emergency and disaster matters. The first is the overarching "FEMA

Tribal Policy" which establishes parameters and policy protocol for the government-to-

government relationship between FEMA and federally recognized tribes across the United

States. The FEMA Tribal Policy is aspirational in its aims to "enhance [FEMA's] relationship

with the Nation's American Indian and Alaska Native Tribal communities to ensure we work

together to build, sustain, and improve capacity to prepare for, protect against, respond to,

recover from, and mitigate against, all hazards" (FEMA, 2010a: 1). The second is the "FEMA

Tribal Consultation Policy" which establishes a process to guide FEMA officials regarding how

to engage Indian tribes and tribal officials in "regular and meaningful consultation on actions that have tribal implications" (2014b: 1). Both of these policies have most recently been updated as of April 22, 2015. These documents were informed by a thorough, iterative consultation with AIAN tribal leaders (Department of Homeland Security Tribal Policy, 2014; FEMA Tribal Policy, 2010; FEMA Tribal Consultation Policy, 2014).

A second area of FEMA policy that was amended in 2010 was mitigation planning requirements. FEMA mandates that tribes prepare disaster mitigation plans in compliance with the requirement that "Indian Tribal governments must review and revise their plans to reflect changes in development, progress in local litigation efforts, and changes in priorities and resubmit it for approval within 5 years in order to continue to be eligible for non-emergency Stafford Act assistance and FEMA mitigation grant funding" (FEMA, 2014b: 8).

44 CFR 201.7 included an important definitional change from the 2000 Disaster Mitigation Act through the terminology used in regards to tribes as grantees or sub-grantees for mitigation funds. FEMA's 2010 Tribal Hazard Mitigation Planning Guide states "A grantee is an entity such as a State, territory, or Indian Tribal government to which a grant is awarded and that is accountable for the funds provided. A sub-grantee is an entity, such as a community, local, or Indian Tribal government; State-recognized tribe; or a private nonprofit (PNP) organization to which a sub-grant is awarded and that is accountable to the grantee for use of the funds provided" (FEMA, 2010b: 2). This definition clearly makes the distinction between local governments and tribal governments in regards to the differentiation in how they may apply for assistance. Hazard Mitigation Grant Program (HMGP) planning and project grants would now be available for tribes as grantees as well as sub-grantees. The key purpose of HMGP is to "ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and

property from future disasters is not lost during the reconstruction process following a disaster"

(FEMA, 2015b: 4) and funding is available for both planning and for mitigation projects

enhancing the safety of AIAN tribal communities. Tribes are eligible for at least a 75% federal

contribution for funding while having to account for a 25% non-federal or tribal contribution

(FEMA, 2015b: 27). A tribal mitigation plan is required in order to receive funding for HMGP

planning and project grants if a tribe is applying as a grantee. However, if a tribe is applying for

a planning grant as a sub-grantee they do not require a mitigation plan.

Additionally, tribes are able to qualify for funds for non-emergency Public Assistance

(PA) which involves activities such as "repairs to infrastructure" and "repairs to publically

owned buildings." As with the HMGP, a tribal mitigation plan is required for tribes to receive

funds as a grantee but not for tribes listed as sub-grantees. The cost-share for tribes applying for

PA is the same 75/25 split as for HMGP funding. FEMA requires tribes prepare disaster

mitigation plans in compliance with the mandate that "Indian Tribal governments must review

and revise their plans to reflect changes in development, progress in local litigation efforts, and

changes in priorities and resubmit it for approval within 5 years in order to continue to be

eligible for non-emergency Stafford Act assistance and FEMA mitigation grant funding"

(FEMA, 2014b: 8). The Pre-Disaster Mitigation (PDM) grants were "designed to assist States,

territories, federally-recognized tribes, and local communities to implement a sustained pre-

disaster natural hazard mitigation program to reduce overall risk to the population and structures

from future hazard events" (FEMA, 2015b: 4). As the grants were designed for the production of

mitigation plans, funding is available to tribes who are either grantees or sub-grantees without

pre-existing plans. To obtain a PDM project grant on the other hand, tribes applying as both

grantees and sub-grantees require mitigation plans. Cost sharing for PDM projects is on a 90/10

Federal Government and tribal government split (FEMA, 2015b: 27).

As Table 3.2 shows, while tribes may apply for funding as grantees, the authorization of

funding is through "Presidential Disaster Declaration." Until 2013, tribes were still unable to

directly request a tribal disaster declaration from the President and lacked a direct line to the

Federal Government.

Table 3.2: Tribal Mitigation Plan Requirements for Federal Assistance [16]

Program	Enabling Legislation	Funding Authorization	Tribal Mitigation Plan Requirements	
			Grantee Status	Subgrantee Status
Public Assistance (PA) emergency measures	Stafford Act	Presidential Disaster Declaration	No Plan Required	No Plan Required
Public Assistance (PA) e.g., repairs to damaged infrastructure and publically owned buildings	Stafford Act	Presidential Disaster Declaration	Plan Required	No Plan Required
Hazard Mitigation Grant Program (HMPG) Planning Grant	Stafford Act	Presidential Disaster Declaration	Plan Required	No Plan Required
HMGP Project Grant	Stafford Act	Presidential Disaster Declaration	Plan Required	Plan Required
Pre-Disaster Mitigation (PDM) Planning Grant	Stafford Act	Annual Appropriation	No Plan Required	No Plan Required
PDM Project Grant	Stafford Act	Annual Appropriation	Plan Required	Plan Required

Sandy Recovery and Improvement Act of 2013

Pallone and Rahall's 2009 and 2011 bills may have died in committee, but they left an

important legislative legacy. A third bill, H.R. 112-46, drawing upon both of the prior bills, was

incorporated into the Sandy Recovery Improvement Act of 2013 (Public Law No. 113-2, 127)

which is an amendment to the Stafford Act. After a contentious debate driven by Republican

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[16] Table adapted from information shown on page 3 of FEMA's Tribal Multi-Hazard Mitigation Planning Guide.

opposition, the Act passed. It directed a $50.5 billion package to aid States affected by Hurricane Sandy in recovering and rebuilding (Adams, 2013: 377).

This Act incorporated a crucial provision as previously demonstrated in the 2010 44 CFR 201.7 amendments altering the Stafford Act's definition of American Indian tribes by removing them from the "local government" definition and addressing them as separate government entities (Browne et. al, 2015: 3). Of additional importance within this amendment is that Congress added a section to the Stafford Act that authorizes tribal leaders (executive officials) to request that the President declare a major disaster instead of going through States (Adams, 2013: 380). Representative Nick Rahall's statement in his 2011 bill that tribes needed "a direct line to the Federal Government" was thus fulfilled in the 2013 amendment. This simple change in language finally allowed for the autonomy for tribes to declare request disaster declarations as opposed to having to rely on a State authority to request a declaration on their behalf. The wording of the amendment does still offer provisions for tribes who wish to continue going through States as sub-grantees to request disaster declarations (Public Law 113-2, 127 Stat. 48, 2013). The amendments to the Stafford Act were met with acclaim as a positive step forward for AIAN disaster preparedness.

Ongoing Policy and Practice Challenges

The new changes to FEMA policy represent a positive step forward for mitigation action and institutional recognition. Yet challenges remain. While the 75/25 and 90/10 cost shares for HMGP, PA, and PDM programs may seem very equitable, current policy may require smaller tribes to weigh the balance between sovereignty and cost. According to FEMA's policy on HMGP assistance, "the Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee determines how the non-Federal

share (up to 25%) is split with the sub-grantees (eligible applicants)" (FEMA, 2015b: 27). For example, if a one million dollar bridge was washed out, the Federal Government, through FEMA funds, would cover $750,000 of the reconstruction cost but the tribe may still have to pay their cost share of $250,000. While cost may not be an issue for larger tribes that often have their own dedicated emergency management team, a small village or tribe would be unlikely to be able to garner the resources to pay their required share, whether 10% for pre-disaster mitigation or 25% for reconstruction mitigation purposes following a declared disaster.

The disaster declaration process provides the possibility for autonomy for tribes that are economically independent enough to afford to manage their own disaster preparedness, response and mitigation planning efforts. Tribes that are less economically well-off may still have to rely on assistance from State and local governments to declare on their behalf due to the cost sharing requirements for federal disaster assistance. As the Government Accountability Office (GAO) suggests in their 2003 report, "Small and remote [tribes] often fail to qualify for assistance under these programs—largely because of agency requirements that the expected costs of the project not exceed its benefits. Even villages that do meet the cost/benefit criteria may still not receive assistance if they cannot meet the cost-share requirement for the project" (GAO, 2003: 3).

Similar to most institutional approaches, the development of AIAN disaster policy has entailed compromise between the Federal Government and tribal governments, and between the executive, judicial, and legislative branches. Certainly the new policies of consultation and more streamlined disaster declaration process present a new direction for policy and new sets of problems to be addressed. As Adams (2014) discusses in her evaluation of FEMA consultation policy in the wake of the Sandy Recovery Act, the legislative changes to the Stafford Act provide an important step in the right direction for protecting sovereignty. However, the changes

bring up a slew of new questions that need to be answered either in the field or legislatively (Adams, 2014: 606). Overall, the recent policy changes have been cast in a favorable light by Native American media, Indian political and legal experts, and by organizations such as NCAI.

There are, however, still significant gaps and vulnerabilities in the Homeland Security Act that could become problematic in the future if amendments similar to the Stafford Act amendments are not given serious consideration. This is especially true in terms of threats from technological hazards and terrorist threats. According to a recent FEMA report, "The Stafford Act specifically requires mitigation planning for natural hazards, but not for man-made hazards. However, FEMA supports Indian Tribal governments that choose to consider technological and manmade hazards in their mitigation plans" (FEMA, 2010b: 10).

Throughout the last two centuries the Federal Government's commitment to reducing AIAN vulnerability to disasters and the approaches to reduce that vulnerability have varied significantly. AIAN disaster policy has only emerged as a cohesive arena in fairly recent history and as such, there are still many issues that the AIAN community has argued still need to be addressed. The current state of sovereignty as demonstrated in FEMA tribal policy represents a compromise for a people who are socially and economically vulnerable and there are still significant issues in spite of the Federal Government's attempts at reducing disaster vulnerability.

AIAN Disaster Vulnerability

The definitions and operationalization of the term "vulnerability" by FEMA presents an interesting contradiction within different official documentation on training and in mitigation planning documents. FEMA's training module 2.5 defines vulnerability in a broad sense, "as the susceptibility of people, property, industry, resources, ecosystems, or historical buildings and

artefacts to the negative impact of a disaster" (FEMA, 2006). This is a broad definition that

certainly helps encapsulate a breadth of issues, the human social element of this definition is

somewhat secondary to the physical and industrial factors. The primacy of physical and non-

human elements in hazard identification and mitigation is reiterated in FEMA's 2010 planning

guide for tribal mitigation where sections on identifying vulnerabilities for tribes only feature

four forms of vulnerability: vulnerable structures, land development, resources, or cultural sites

(FEMA, 2010b: 27-40). The language used, similar to the training module, is focused on the

vulnerability of physical and technological structures with no mention of social forms of

vulnerability. At present, Federal policy attempts to reduce AIAN disaster vulnerability have

been more holistic and often incorporate cultural, political and social attributes. The explicit

language used with FEMA's mitigation planning guidance is still extremely narrow in adhering

to traditional views on vulnerability. What is broadly recognized as important in aspirational

policy guidance documents has yet to translate into concrete measures by FEMA as the primary

institution to target this policy arena.

     This chapter has focused on providing a summary and an analysis AIAN disaster policy

as both an area of targeted concern for the Federal Government and a distinct policy arena in

itself. Because this chapter has primarily focused on the formulation of AIAN disaster policies,

there has been little discussion of how AIAN tribal entities have specifically engaged

contemporary disaster policies formed in consultation with the Federal Government. The next

chapter of this thesis (Chapter Four), will explore a specific example in the form of tribal

engagement with FEMA's mitigation planning process through a descriptive statistical analysis.

CHAPTER 4
A DESCRIPTIVE AND GEOSPATIAL ANALYSIS OF FEMA TRIBAL MITIGATION
PLANNING DATA AND DISASTER DECLARATIONS

As Chapter Three of my thesis showed, disaster mitigation is one of the primary means

through which FEMA, the primary federal institution focused on tribal disaster policy, targets

tribal vulnerability. FEMA's tribal disaster mitigation planning program is designed for assisting

tribes in identifying the natural hazards, risks, and vulnerabilities of AIAN areas (Public Law

106-390 (322)(a)). This is through the assistance of training, technical information ad funding

grants through FEMA's HGMP, PDM and PA programs. An analysis of FEMA's mitigation

planning process thus represents an additional way to gain insight into how FEMA, addresses

tribal vulnerability. This data also allows for an analysis of tribal engagement for planning

among the tribes. The tribal mitigation planning process focuses on the production of

comprehensive mitigation plans that include strategies for "breaking the cycle of disaster

damage, reconstruction, and repeated damage" (FEMA, 2015b: 1). Additionally, Public Law

106-390 stipulates that "As a condition of receipt of an increased Federal share for hazard

mitigation measures under subsection (e), a State, local, or tribal government shall develop and

submit for approval to the President a mitigation plan that outlines processes for identifying the

natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government"

(Section 322 (e)). Tribes that do not have a tribal mitigation plan in effect and are not

participants in a multi-jurisdictional mitigation plan with local governments are thus unable to

apply for federal assistance for pre and post disaster mitigation purposes.

In order to analyze tribal mitigation plans across the United States, I utilized a

combination of secondary data obtained directly from the Tribal Liaison office and the National

Mitigation Planning Program at FEMA. As described in Chapter Two my contact at FEMA provided me with the agency's exhaustive national data set on tribal disaster mitigation plans as of September 30, 2015.[17]As per FEMA's tribal policy, and in this dataset, the United States is divided into ten different regions, each with a dedicated Tribal Liaison Officer. Tribal boundaries do not always fit neatly into FEMA's regional designations, so a tribe is considered residing in the State where its leadership or primary administrative office is geographically located. The ten regions and the States encompassed are detailed in Figure 4.1 and summarized in Table 4.1 below.
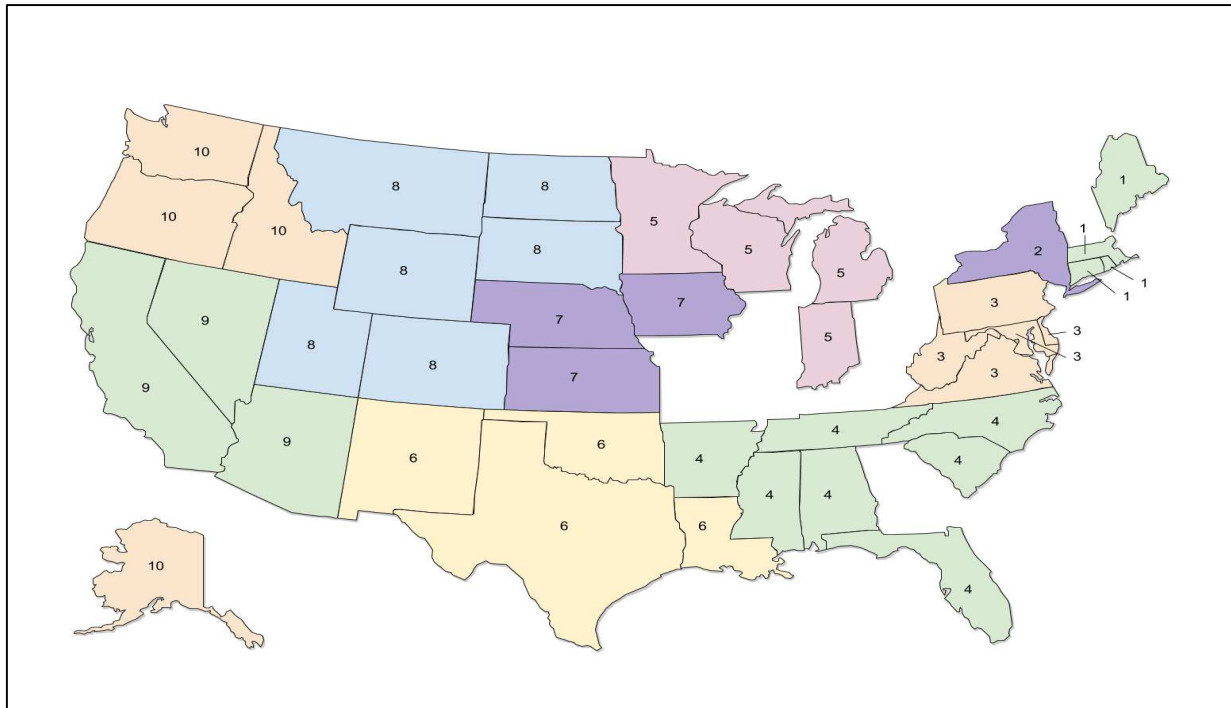
Figure 4.1: The Ten FEMA Tribal Regions of the United States

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[17] This FEMA database is refreshed on a quarterly basis every year.

Table 4.1: States within the Ten FEMA Tribal Regions of the United States[18]

Region	States
Region 1	Connecticut, Massachusetts, Maine, Rhode Island
Region 2	New York
Region 3	District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, West Virginia
Region 4	Alabama, Arkansas, Florida, Mississippi, North Carolina, South Carolina
Region 5	Indiana, Michigan, Minnesota, Wisconsin
Region 6	Louisiana, New Mexico, Oklahoma, Texas
Region 7	Iowa, Kansas, Nebraska
Region 8	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
Region 9	Arizona, California, Hawaii, Nevada
Region 10	Alaska, Idaho, Oregon, Washington
No Region	Georgia, Hawaii, Illinois, Kentucky, Missouri, New Jersey, Ohio,

Not all 50 States are accounted for in FEMA's national dataset. This is due to the fact that some States – including Hawaii, New Jersey, Missouri, Illinois, and Georgia – contain no federally recognized American Indian or Alaska Native tribal entities. Those five States are thus excluded from this analysis.

The data provided by FEMA is descriptive, quantitative, and organized into the following categories: (1) Region, (2) State, (3) Name of the Federally Recognized Tribe, (4) Title of the Disaster Mitigation Plan, (5) Current Status, (6) Approval Date of the Plan (if applicable), (7) Expiration Date of the Plan (if applicable), and (8) Last Updated (if applicable). I included the entire dataset in my analysis, in order to describe the national and regional disaster preparedness efforts among American Indian and Alaska Native (AIAN) tribes. FEMA's dataset encompasses

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[18] Information obtained from FEMA's website at https://www.fema.gov/contact-fema-tribal-liaisons.

all 566 federally recognized tribes (as of September 2015) and covers the totality of United States government policy evaluation for indigenous populations.

In order to evaluate the national-level data on tribes that have engaged with FEMA at some point in the disaster preparedness phase, each recorded instance of action by tribes, whether it be a record of an approved plan, an expired plan, or plan in progress, counts as an instance of "engagement" with FEMA. A tribe with no data pertaining to any form of plan status is counted as an instance of "no engagement." Dichotomizing the data provides a clear binary evaluation of whether or not each tribe engaged in a key element of interest.

In the dataset, the indication of whether a tribe has a FEMA approved disaster mitigation plan in effect was a result of a calculation of every tribe that FEMA designated as "approved." Although FEMA subsumed tribes with the plan status "approval pending adoption" under an umbrella category of simply "approved," I decided to treat these as distinct categories for analysis. The separation criteria is based on the fact that the plans have not officially been adopted by tribes and cannot be described by my criteria as a disaster mitigation plan "currently in effect." In order to present this data in a way that illustrates regional trends for disaster preparedness, the proportion of tribes in each State with either an indication of formal engagement with FEMA or having formally engaged with FEMA and having a current "Approved" status as designated by FEMA were calculated as two separate variables. The proportions of prepared tribes for each State were then calculated as a regional proportion across both variables (see Table 4.2 below for the different categories and operational definitions).

Table 4.2: Tribal Mitigation Plan Variables and Definitions

Categories	Operational Definition
Approved	FEMA has reviewed the plan and found that it meets requirements and the plan has been formally adopted by the tribe's governing body.
Approved Pending Adoption	FEMA has reviewed the plan and found that it meets requirements, but will not formally approve it until formally adopted by the tribe's governing body.
Plan In Process	FEMA has received a mitigation plan from the tribe to review.
Expired	The last mitigation plan that was approved by FEMA and adopted by the tribe's governing body has expired.
No Plan Status	There is no record of tribal engagement with FEMA in the mitigation planning process.

National Tribal Disaster Mitigation Plan Status

My first research questions ask: *To what extent have tribes formally engaged with FEMA at any stage of disaster mitigation planning? How many tribes have a FEMA approved disaster plan in effect as of September 30, 2015?* The data show that overall, only 150 out of 566 federally recognized tribes (26.5%) in the United States are currently engaged with FEMA formally in the disaster planning process. Out of these 150 tribes, 117 (20.67%) have a FEMA approved disaster plan in effect. Additionally, 42 tribes (7.42%) have engaged with FEMA in the past but their latest plans have expired with no indication that they are currently in the process of producing a new disaster mitigation plan. This leaves 374 tribes (66%) with no record of formal engagement with FEMA.

Table 4.3: 2015 FEMA AIAN Tribal Mitigation Plan Statuses- National Level

| Plan Status	Total Number of Tribes
Plan Approved or Approved Pending Adoption	**127**
Approved	117
Approved Pending Adoption	10
Plan in Process	**23**
Expired Plan	**42**
No Recorded Plan Status	**374**

Regional Level Data

Regional data illustrates wide variation in terms of levels of formal engagement with FEMA and regarding how many tribes have approved disaster plans in effect. In terms of tribes formally engaged with FEMA (either with or without a disaster plan in effect), region 4 has seven tribes and the highest overall percentage of tribes with 71.4% of tribes reporting official engagement with FEMA. This is followed by region 1, with 66.7% of tribes in the region having formally engaged with FEMA. The two regions with the lowest reported formal engagement with FEMA are region 2, with 16.7% of tribes having a record of formal engagement with FEMA and region 10 with 18.9% of tribes reporting formal engagement with FEMA. The relatively low figures represented by these two regions are interesting due to the fact region 2 has the fewest tribes out of all the regions (six tribes) and region 10 has the most (270 tribes).

In terms of how many tribes have engaged with FEMA and have a disaster plan in effect, the regions with the highest and lowest levels follow a similar pattern (see Table 4.4). Region 1 leads with 66.7% of tribes (six tribes) with a disaster plan in effect followed by region 4 with 57.1% of tribes (four tribes). The two regions with the lowest reported formal engagement with FEMA are region 2, reporting 16.7% of tribes (one tribe) having a disaster plan currently in effect and region 10 with only 8.9% of tribes (24 tribes) with a current FEMA approved disaster plan in effect. Again, the results for region 10 are skewed somewhat by the inclusion of Alaska, which contains 228 of the 566 federally recognized AIAN tribes in the United States. Only 18 of these 228 tribes in Alaska have formally engaged with FEMA; of those 3 have an approved disaster plan in effect. Thus, even though Washington, Oregon, and Idaho have relatively high levels of formal engagement and approved disaster plans, as described in the subsequent section, the lack of activity in Alaska moves the percentage downward.

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Table 4.4: 2015 Regional Comparison of Tribes Regarding Disaster Planning Status

FEMA Region	Total Number of Tribes in the Region	Tribes with No FEMA Engagement and No Disaster Plan in Effect	Tribes Engaged with FEMA with No Disaster Plan in Effect	Tribes Engaged with FEMA with Approved Disaster Plan in Effect
Region 1	9	3 (33.3%)	0 (0.00%)	6 (66.7%)
Region 2	6	5 (83.3%)	0 (0.00%)	1 (16.7)
Region 4	7	2 (28.6%)	1 (14.3%)	4 (57.1%)
Region 5	29	17 (58.6%)	6 (20.7%)	7 (24.1%)
Region 6	66	26 (39.4%)	11 (16.7%)	29 (43.9%)
Region 7	9	4 (44.4%)	1 (11.1%)	4 (44.4%)
Region 8	28	14 (50.0%)	2 (7.14%)	12 (42.9%)
Region 9	142	84 (59.2%)	28 (19.7%)	30 (21.1%)
Region 10	270	219 (81.1%)	27 (10%)	24 (8.9%)
Total	**566**	**374 (66%)**	**76 (13.42%)**	**117 (20.67%)**
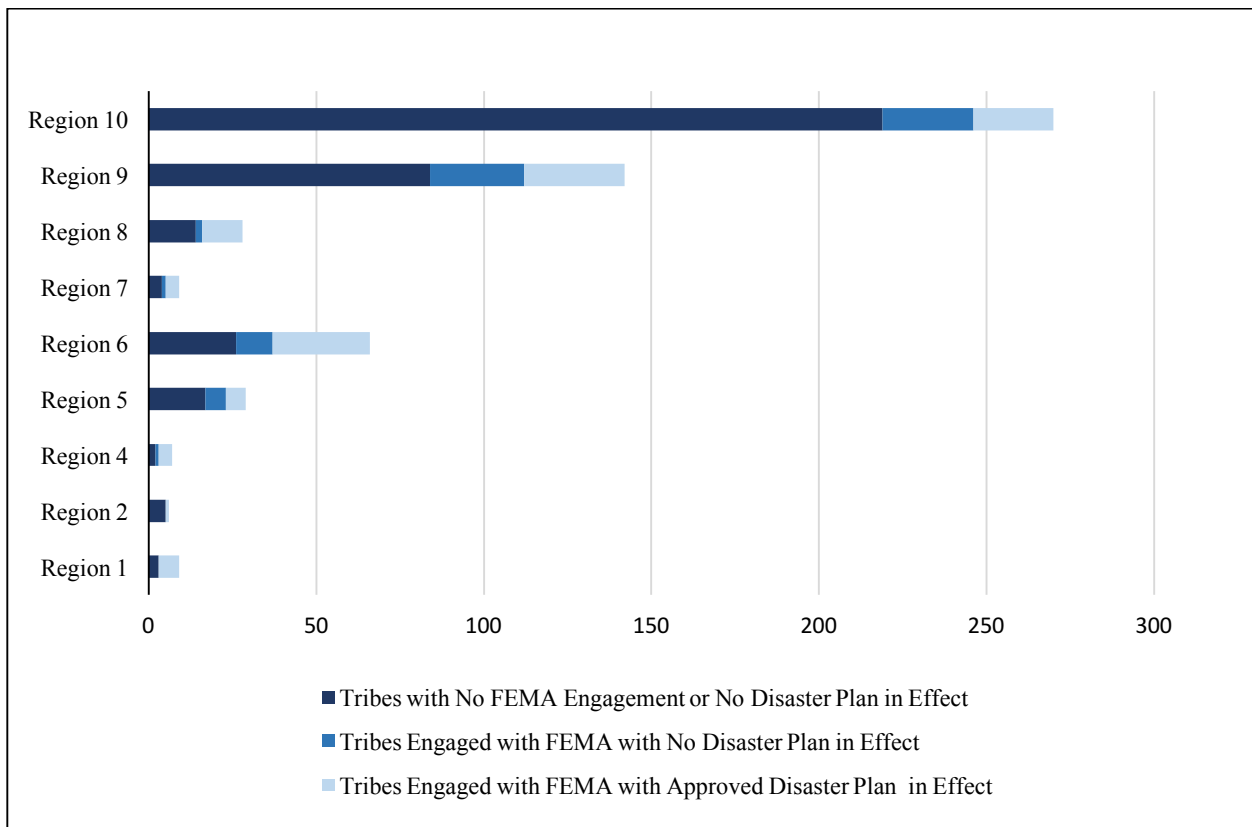
Figure 4.2: 2015 Regional Comparison of Tribes Regarding Disaster Planning

FEMA Tribal Disaster Declarations

FEMA publically disseminates graphic summaries of disaster declaration data by State and by tribal authority. Additionally, data is available on the types of disasters that are most frequent in a given area, such as severe storms or flooding, for example. For illustrative purposes, Figure 4.2 offers a visualization of the total number of federal disaster declarations, by State, and a summary of the types of disasters that have occurred between 1953 and 2014 in the United States.
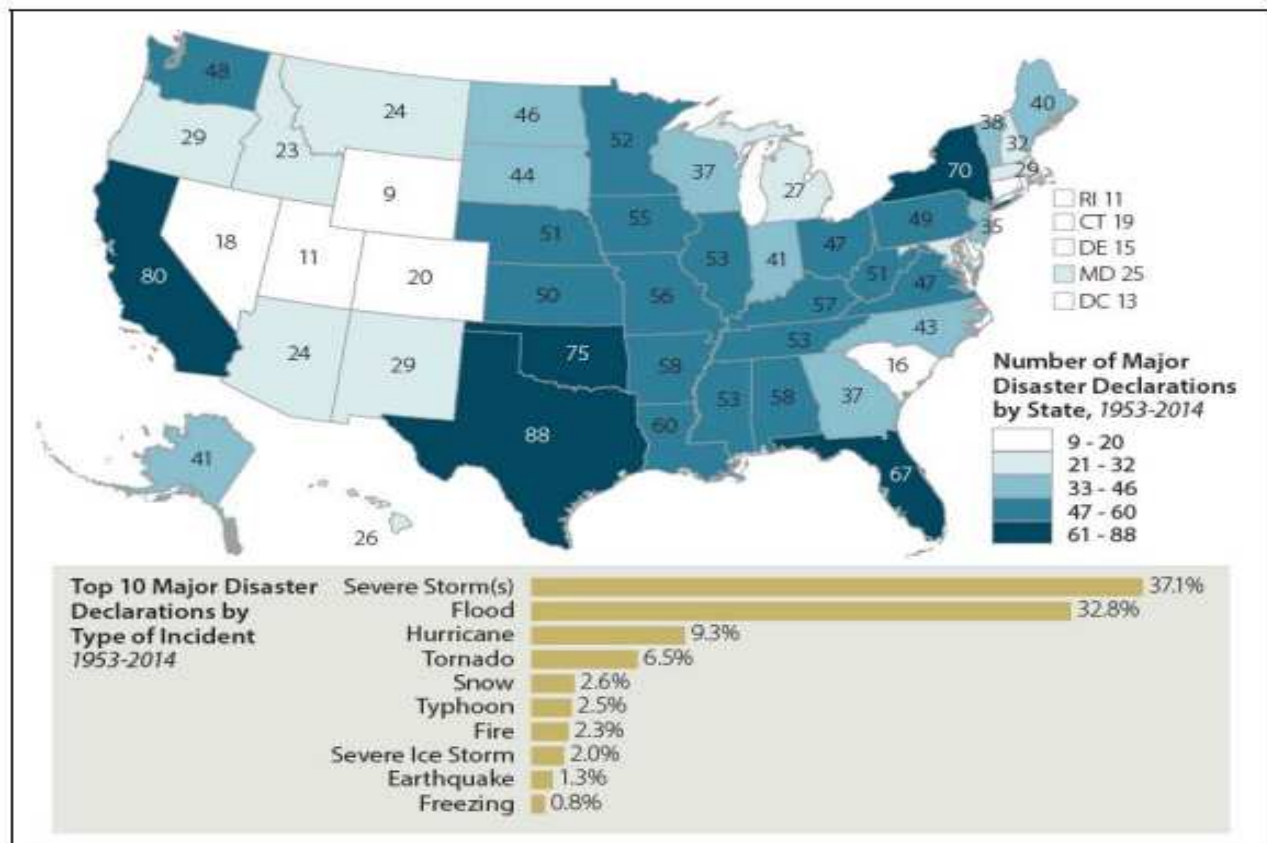
Figure 4.3: Major Disaster Declarations by State and Type (1953-2014)[19]

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[19] Graphic obtained from the Congressional Research Service Report on Stafford Act Declarations: 1953-2014, available at: https://www.fas.org/sgp/crs/homesec/R42702.pdf.

I also used FEMA's data on tribal disaster declarations for my analyses. This dataset includes all disaster declarations made directly on behalf of tribes as sovereign entities following the passage of the Sandy Recovery Act of 2013. Before this act, tribes did not have the jurisdiction to request a disaster declaration as a sovereign entity. Instead, the governor for the State the tribe was located needed to request the declaration on behalf of tribes. All tribal declarations made prior to 2013 refer to disaster declarations with tribes as a sub-grantee, not as a stand-alone grantee. FEMA's data on tribal disaster declarations is available to the public in the form of graphic visualizations or as a raw data set that can be downloaded. The time frame for this disaster data is 1976 to 2015; therefore it contains a combination of data before and after the passing of the Sandy Recovery Act.

According to the data (last updated December 15, 2015), the most common type of tribal disaster declarations are for severe storms, with 110 of the 196 tribal disaster declaration incident types since 1976 categorized as such. Flooding is the second most common disaster with 48 flooding related disaster declarations. Additionally, tribes declared disasters for 21 wildfire disasters, 6 instances of extreme snow, 4 hurricanes, 4 mud/landslides, and several additional single instance events as shown in Table 4.5.

Table 4.5: FEMA Tribal Disaster Declarations by Type: (1976-2015)[20]

Disaster Type	Number of Events	% of Total Disasters
Severe Storm	110	56.12%
Flooding	48	24.49%
Fire	21	10.71%
Snow	6	3.06%
Hurricane	4	3.33%
Mud/Landslide	4	2.04%
Tornado	1	0.51%
Freezing	1	0.51%
Severe Power Outage	1	0.51%
Total	**196**	**100%**

Figures 4.4 and 4.5 summarize the frequency of tribal disaster declarations for the continental United States and Alaska. Due to the fact that multiple tribes may exist in a single county, (and thus several tribes may have been under the jurisdiction of a local government in the event of a disaster), a single disaster declaration or disaster event may have been declared that was experienced by multiple AIAN areas. For example, a 2010 disaster declaration (DD-1887) was created for a severe winter storm that affected three different tribes in South Dakota; the Cheyenne River Sioux Tribe, Standing Rock Sioux Tribe, and the Sisseton-Wahpeton Oyate of the Lake Traverse Reservation. As the unit of analysis for this research is at the tribal plan level and not at the disaster incident level, for the purposes of analysis each disaster instance experienced by a federally recognized tribe counts as a separate tribal disaster declaration.

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[20] Information obtained from raw data available from: https://www.fema.gov/data-visualization-disaster-declarations-tribal-nations.
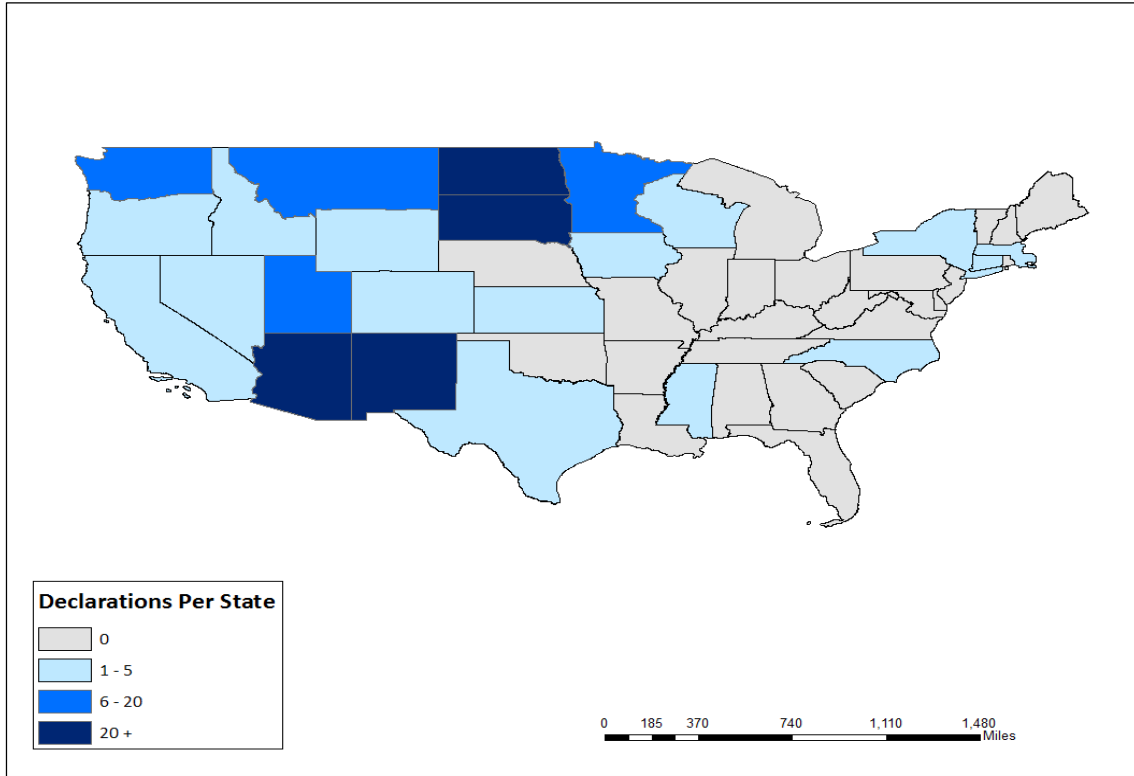
Figure 4.4: Tribal Disaster Declarations in the Continental United States (1976-2015)
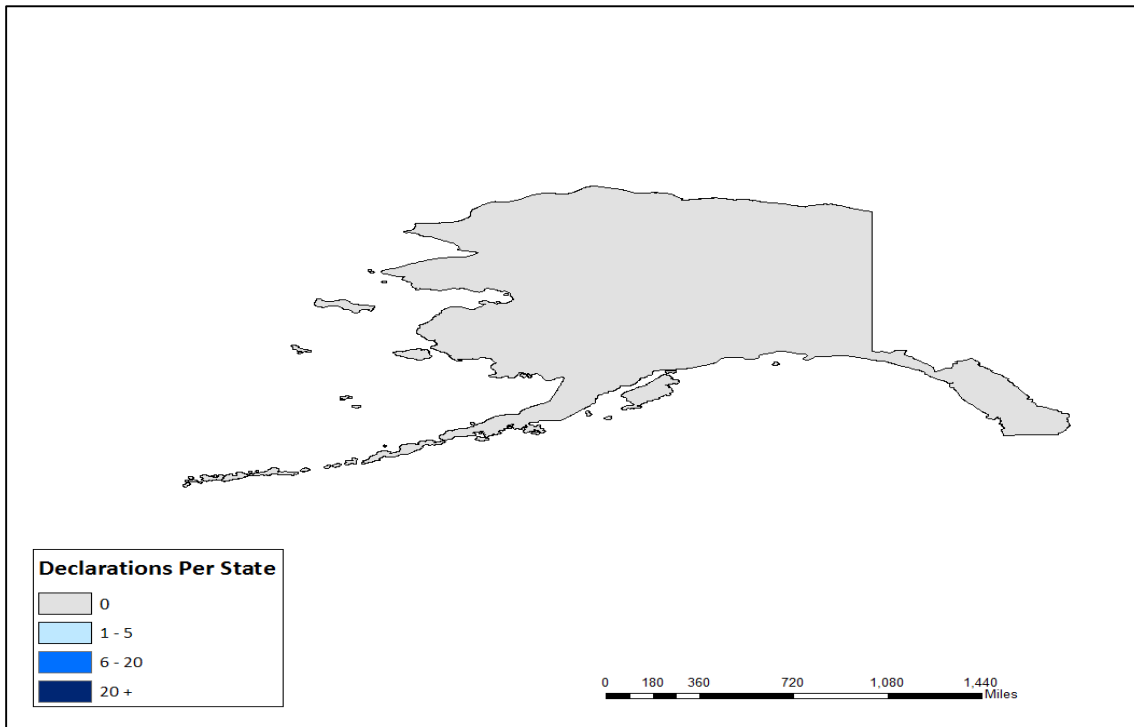
Figure 4.5: Tribal Disaster Declarations in Alaska (1976-2015)

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Regional Analysis of FEMA Engagement and Tribal Disaster Declarations Patterns

The following section analyzes the 10 FEMA tribal regions in regards to plan status and disaster declarations to analyze *how does this planning process vary by region and hazards exposure?* For tables concerning tribal engagement with FEMA for each region, States are listed in descending order, with States with the most tribes in the region listed at the top (see Table 4.6 for an example). The tables summarizing disaster declaration information for each region consist of the name of the federally recognized tribe, how many disaster declarations have been made by each tribe, the year of each of the disaster declarations that have been made, the tribe's current plan status (if applicable), and the date of approval for the tribes most recently approved plan (if applicable). Additionally, the tables summarize a regional total for each region showing the number of tribes in the region who have made disaster declarations, and the total number of tribal disaster declarations that have been made in the region (see Table 4.7 for an example). The data is accompanied by GIS maps illustrating tribal location and engagement with FEMA in the disaster mitigation planning process (see Figure 4.6 for an example).

Region 1

Region 1 of FEMA's ten tribal regions encompasses the States of Connecticut, Maine, Massachusetts, and Rhode Island (see Figure 4.6). There are a total of nine tribes in the region, hailing from all four of the States constituting the region. Approximately 12,000 individuals lived in these tribal areas in 2010 according to the Census Bureau. Six of the nine tribes in the region have formally engaged with FEMA and currently have a disaster plan in effect (see Table 4.6).
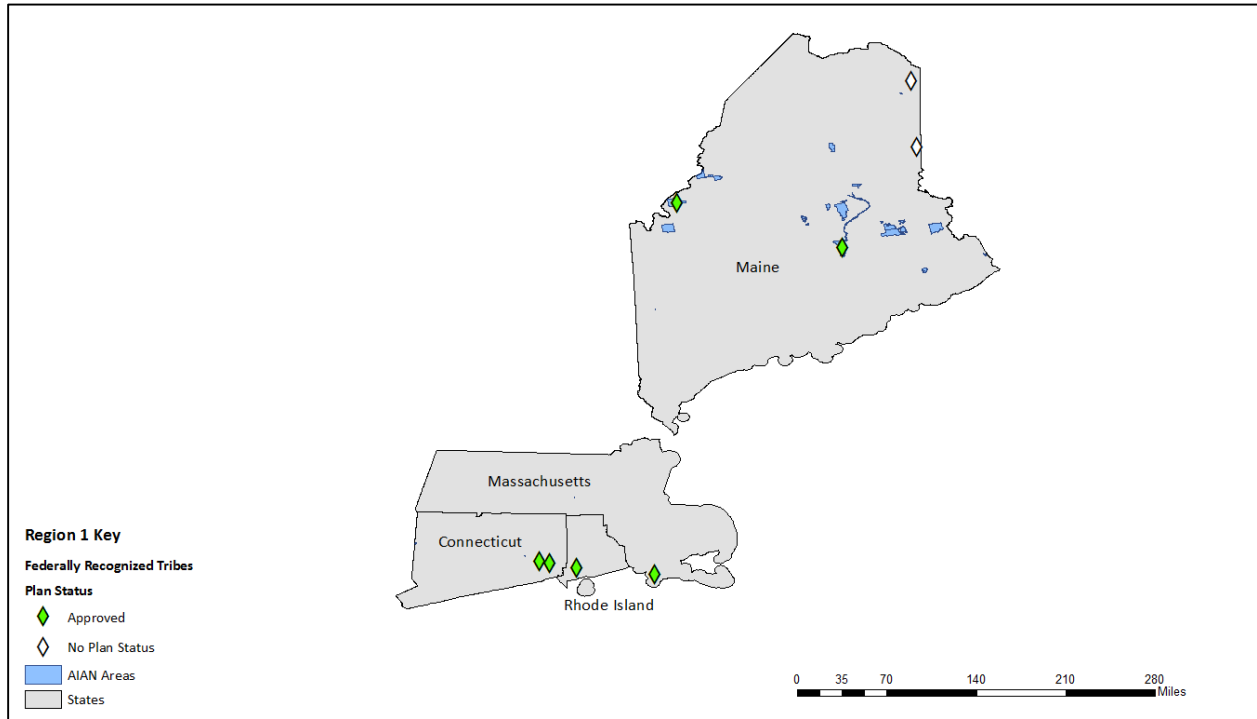
Figure 4.6: FEMA Region 1 Map

Table 4.6: FEMA Region 1 Tribal Engagement

Region 1	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Maine	4	2 (100%)	2 (50%)
Connecticut	2	2 (100%)	2 (100%)
Massachusetts	2	1 (50%)	1 (50%)
Rhode Island	1	1 (100%)	1 (100%)
Region	**9**	**6 (66.67%)**	**6 (66.67%)**

These tribes are located in areas with a history of severe weather storms and flooding.

FEMA reports that four tribal disaster declarations have been made in the region since 2011, all

of which affected Connecticut AIAN areas. These disasters consisted of two severe storms, a

severe snow storm, and a hurricane. In Connecticut, the tribes that were affected by this disaster

both had disaster plans in effect, as of 2011. At present, there are no tribes that have made

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disaster declarations that do not have a FEMA approved disaster mitigation plan in effect (see Table 4.7 below).

Table 4.7: FEMA Region 1 Disaster Declaration Information

Region 1	Federally Recognized Tribe	Disaster Declaration/s	Year of Disaster Declarations	Current Plan Status	Incident Type/s
Connecticut	Mashantucket Pequot Indian Tribe	4	2011, 2012, 2013, 2013	Approved	2 Severe Storms, 1 Snow, 1 Hurricane
Region	**1**	**4**			

Region 2

Region 2 of FEMA's ten tribal regions encompasses only the State of New York and includes six tribes (see Figure 4.7). Approximately 25,000 lived in these tribal areas in 2010 according to the Census Bureau. Only one of the six tribes in the region have formally engaged with FEMA and this tribe currently has a disaster plan in effect (see Table 4.7).
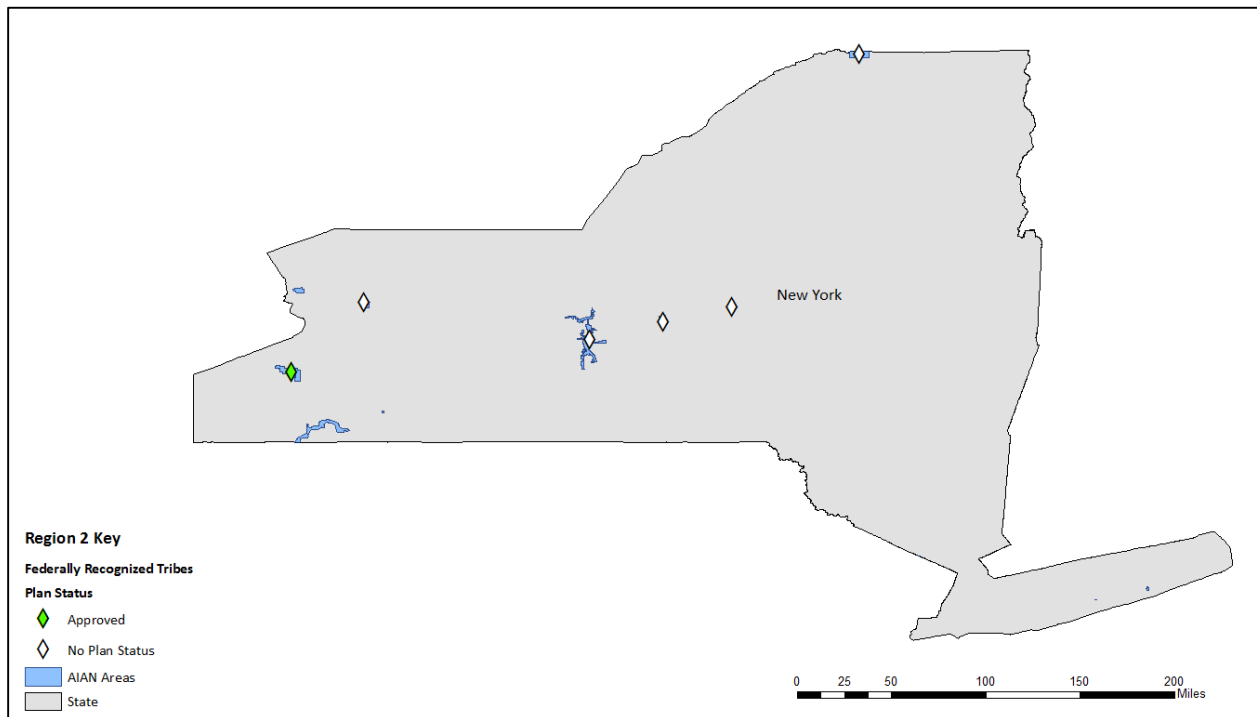
Figure 4.7: FEMA Region 2 Map

Table 4.8: FEMA Region 2 Tribal Engagement

Region 2	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
New York	6	1 (16.67%)	1 (16.67%)
Region	**6**	**1 (16.67%**	**1 (16.67%)**

The tribes in Region 2 are located in areas with a history of severe storms and flooding.

FEMA reports that only one tribal disaster declaration has been made in the region, in 2003,

which consisted of a severe power outage by the Oneida Nation of New York. While the tribe

has made a disaster declaration in the past, they do not currently have a FEMA approved disaster

plan currently in effect, nor have they formally engaged with FEMA in the mitigation planning

process (see Table 4.9).

Table 4.9: FEMA Region 2 Disaster Declaration Information

Region 2	Federally Recognized Tribe	Disaster Declaration/s	Year of Disaster Declarations	Current Plan Status	Incident Type/s
New York	Oneida Nation of New York	1	2003	No Plan Status	1 Severe Power Outage
Region	**1**	**1**			

Region 3

Region 3 encompasses the District of Columbia and five States including Delaware,

Maryland, Pennsylvania, Virginia, and West Virginia (see Figure 4.8). Although region 3 is

acknowledged as a separate and distinct region by FEMA, there is no tribal liaison assigned to

the region due to the fact there are no federally recognized tribes in the area. The tribes that

reside in the region have been granted State Designated Tribal Area status for the purposes of the

2010 Census. They are part of a tribal confederation and are therefore not eligible for sovereign

tribal status by the Federal Government. None of the federal tribes in this region have engaged

with FEMA or have a disaster plan currently in effect (see Table 4.8).
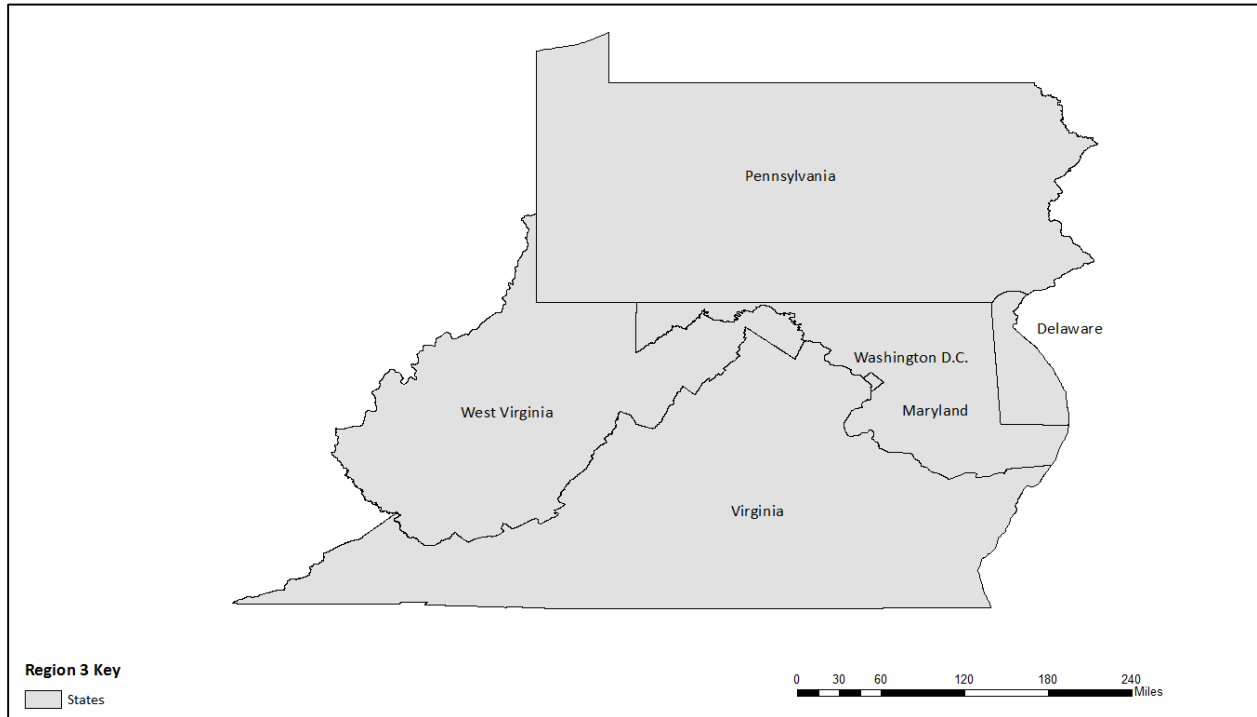
Figure 4.8: FEMA Region 3 Map

Table 4.10: FEMA Region 3 Tribal Engagement

Region 3	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Delaware	0	0 (0%)	0 (0%)
Maryland	0	0 (0%)	0 (0%)
Pennsylvania	0	0 (0%)	0 (0%)
Virginia	0	0 (0%)	0 (0%)
Washington D.C.	0	0 (0%)	0 (0%)
West Virginia	0	0 (0%)	0 (0%)
Region	**0**	**0 (0%)**	**0 (0%)**

According to FEMA's tribal disaster declaration data, the region is mostly prone to severe storms, flooding, hurricanes and snow. To date, no tribes have declared any major disasters.

Region 4

Region 4 of FEMA's ten tribal regions encompasses the States of Arkansas, Alabama, Florida, Mississippi, North Carolina, South Carolina, and Tennessee (see Figure 4.9). Arkansas and Tennessee have no reported federal tribes in their States, and there are seven tribes spread across the remaining States Approximately 234,000 people lived in these tribal areas in 2010 according to the Census Bureau. My analysis shows that five of the seven tribes in the region have formally engaged with FEMA and four tribes currently have a disaster plan in effect (see Table 4.9).
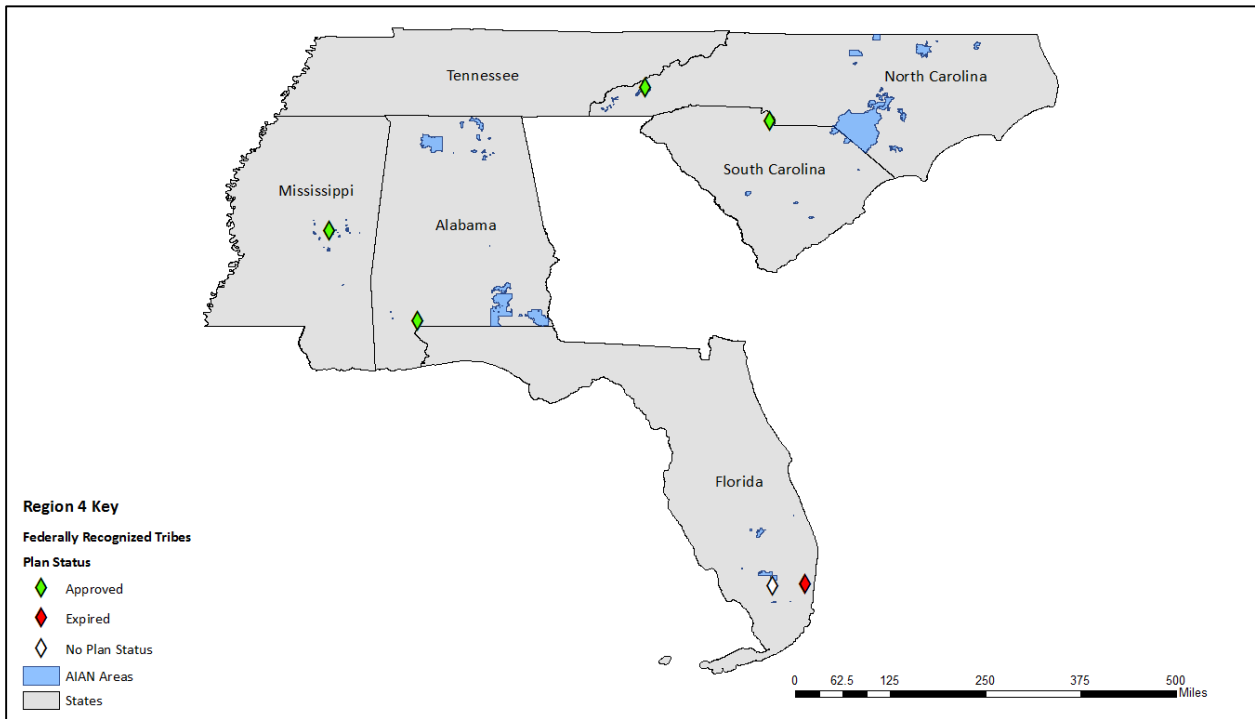

Figure 4.9: FEMA Region 4 Map

Table 4.11: FEMA Region 4 Tribal Engagement

Region 4	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Alabama	1	1 (100%)	1 (100%)
Arkansas	0	0 (0%)	0 (0%)
Florida	2	1 (50%)	0 (0%)
Mississippi	1	1 (100%)	1 (100%)
North Carolina	2	1 (100%)	1 (50%)
South Carolina	1	1 (100%)	1 (100%)
Tennessee	0	0 (0%)	0 (0%)
Region	**7**	**5 (71.42%)**	**4 (57.14%)**

These tribes are located in areas with a history of hurricanes, flooding, severe storms, and mud/landslides. FEMA reports that six disaster declarations have been made, three hurricane related in Mississippi and North Carolina and one mud/landslide, one flood, and one severe ice storm in North Carolina. Of the six disasters that have been declared, all of the tribes had a current plan in effect (see table 4.12 below).

Table 4.12: FEMA Region 4 Disaster Declaration Information

Region 4	Federally Recognized Tribe	Disaster Declaration/s	Year of Disaster Declarations	Current Plan Status	Incident Type/s
North Carolina	Eastern Band of Cherokee Indians	5	2003, 2003, 2010, 2013, 2013	Approved	2 Hurricanes, 1 Flood, 1 Mud/landslide, 1 Severe Ice Storm
Mississippi	Mississippi Band of Choctaw Indians	1	2012	Approved	1 Hurricane
Region	**2**	**6**			

Region 5

Region 5 of FEMA's ten tribal regions encompasses the States of Indiana, Michigan, Minnesota, and Wisconsin (see Figure 4.10). The 29 tribes of the region are located in Michigan, Minnesota, and Wisconsin. Approximately 141,000 individuals lived in these tribal areas in 2010

according to the Census Bureau. Twelve of the twenty-nine tribes in the region have formally

engaged with FEMA and six of these twelve tribes have a current disaster plan in effect (see

table 4.13 below).
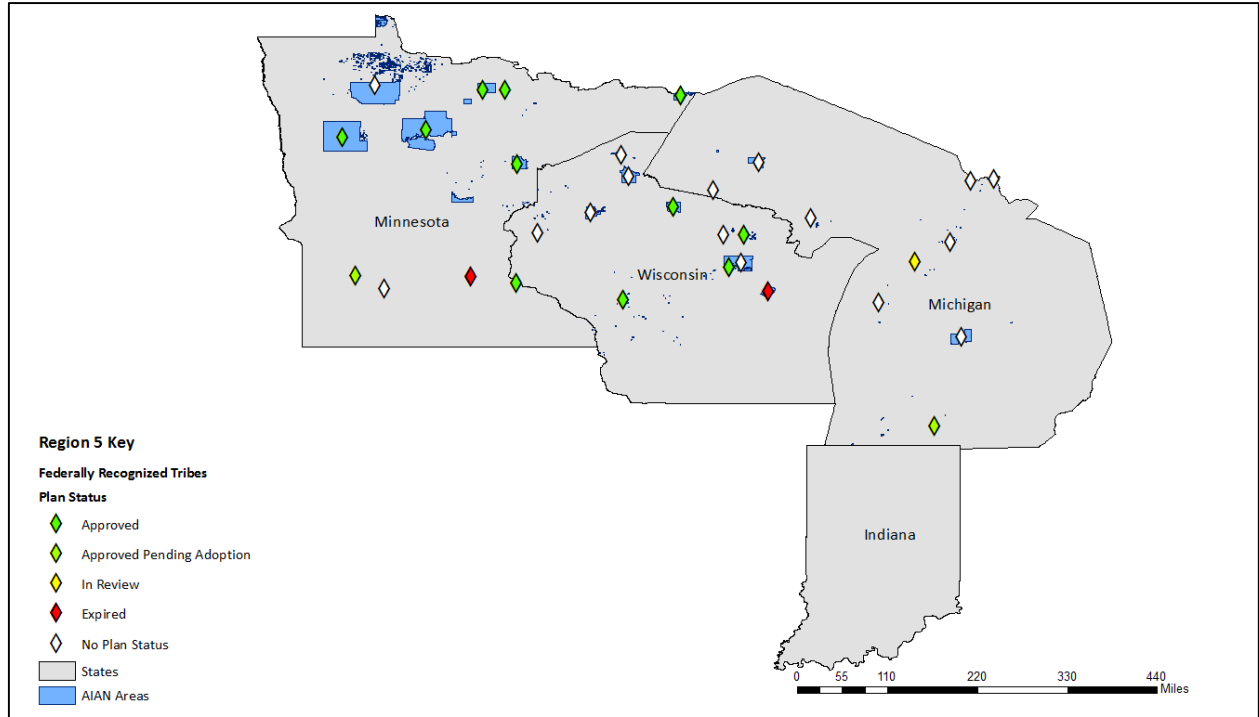
Figure 4.10: FEMA Region 5 Map

Table 4.13: FEMA Region 5 Tribal Engagement

Region 5	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Michigan	12	3 (25%)	2 (8.33%)
Minnesota	6	4 (66.67%)	2 (33.33%)
Wisconsin	11	5 (45.46%)	3 (27.28%)
Indiana	0	0 (0%)	0 (0%)
Region	**29**	**12 (41.38%)**	**7 (20.69%)**

These tribes are located in areas with a history of severe storms and flooding. FEMA

reports that 18 disaster declarations have been made by five federal tribes in the region since

2000. A severe storm in Wisconsin in 2012, and 12 flooding and seven severe storm related

disasters were declared in tribal areas Minnesota between 2000 and 2014. Two tribes in the region have made a disaster declaration in the past yet do not currently have a FEMA approved disaster mitigation plan in effect. The remaining eight disaster declarations occurred in tribal areas where there are currently disaster mitigation plans in effect (see table 4.14 below).

Table 4.14: FEMA Region 5 Disaster Declaration Information

Region 5	Federally Recognized Tribe	Disaster Declaration/s	Year of Disaster Declaration/s	Current Plan Status	Incident Type/s
Minnesota	Minnesota Chippewa Tribe	7	2000, 2001, 2001, 2009, 2011, 2012 2014	Approved Pending Adoption	6 Severe Storms, 3 Floods
Minnesota	Prairie Island Indian Community in the State of Minnesota	3	2001, 2010, 2014	Approved	3 Floods
Minnesota	Red Lake Band of Chippewa Indians	4	2001, 2009, 2011, 2014	No Plan Status	3 Floods, 1 Severe Storm
Minnesota	Upper Sioux Community	3	2001, 2010, 2010	Approved	3 Floods
Wisconsin	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin	1	2012	No Plan Status	1 Severe Storm
Region	**5**	**20**			

Region 6

Region 6 of FEMA's ten tribal regions encompasses the States of Louisiana, New Mexico, Oklahoma, and Texas (See Figure 4.11). These four States are home to 66 tribes where approximately 3.5 million individuals live according to the Census Bureau. Forty of the sixty-six tribes in the region have formally engaged with FEMA and twenty-nine of these forty tribes have a current disaster plan in effect (see Table 4.15).
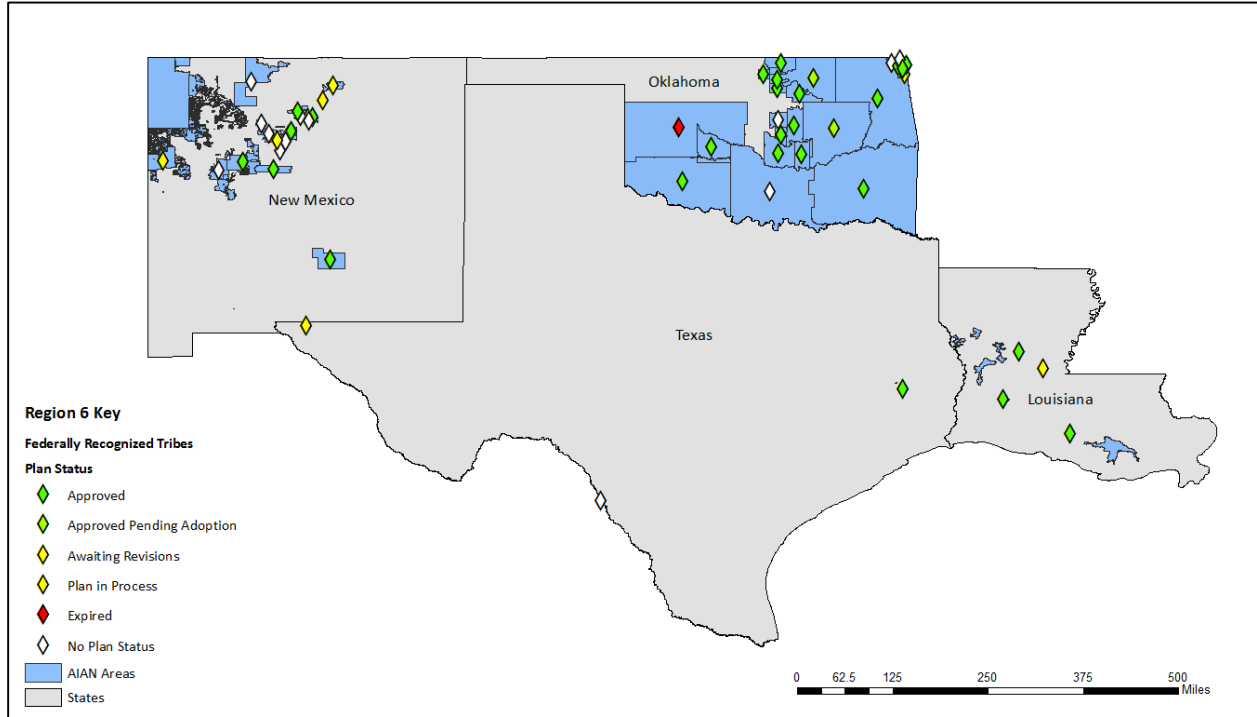
Figure 4.11: FEMA Region 6 Map

Table 4.15: FEMA Region 6 Tribal Engagement

Region 6	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Louisiana	4	3(75%)	3 (75%)
New Mexico	21	12 (57.14%)	7 (33.33%)
Oklahoma	38	23 (60.5%)	18 (47.37%)
Texas	3	2 (66.67%)	1 (33.33%)
Region	**66**	**40 (60.60%)**	**29 (43.39%)**

These tribes are located in areas with a history of flooding, severe storms, and occasionally fires. FEMA reports that 30 disaster declarations have been made in the region since 1998; 20 were related to severe storms, seven associated with flooding, and three were a consequence of wildfires. Eighteen of these were declared by tribes in New Mexico while two were declared by tribes in Texas. There are 15 tribes in the region that have made a disaster

declaration in the past; six of whom currently have a FEMA approved disaster mitigation plan in effect (see Table 4.16).

Table 4.16: FEMA Region 6 Disaster Declaration Information

Region 6	Federally Recognized Tribe	Disaster Declaration/s	Year of Disaster Declaration/s	Current Plan Status	Incident Type/s
New Mexico	Pueblo of Cochiti	3	2011, 2011, 2013	Approved	1 Severe Storm, 1 Flood, 1 Fire
New Mexico	Pueblo of Isleta	1	2013	Approved	1 Flood
New Mexico	Kewa Pueblo	1	2013	Approved	1 Severe Storm
New Mexico	Pueblo of Sandia	2	2013, 2013	Approved	1 Flood
New Mexico	Pueblo of Santa Clara	7	2011, 2011, 2011, 2012, 2013, 2013, 2014	Approved	4 Severe Storms, 2 Floods, 1 Fire
New Mexico	Mescalaro Apache Tribe	3	1999, 2011, 2012	Plan in Progress	2 Severe Storms, 1 Flood
New Mexico	Pueblo of Picuris	1	2011	Plan in Progress	1 Severe Storm
New Mexico	Pueblo of Pojoaque	1	2011	Plan in Progress	1 Severe Storm
New Mexico	Pueblo of Santa Ana	1	2011	Plan in Progress	1 Severe Storm
New Mexico	Pueblo of Taos	1	2011	Plan in Progress	1 Severe Storm
New Mexico	Pueblo of Acoma	4	2010, 2011, 2011, 2014	No Plan Status	3 Severe Storms, 1 Flood
New Mexico	Pueblo of Jemez	1	2011	No Plan Status	1 Fire
New Mexico	Pueblo of San Felipe	2	2011, 2013	No Plan Status	3 Severe Storms
Texas	Alabama-Coushatta Tribe of Texas	1	1998	Approved	1 Severe Storm
Texas	Ysleta del Sur Pueblo	1	1998	Plan in Progress	1 Severe Storm
Region	**15**	**30**			

Region 7

Region 7 of FEMA's ten tribal regions encompasses the States of Iowa, Kansas, and Nebraska (see Figure 4.12). Approximately 15,000 individuals lived in nine federally recognized tribal areas in 2010 according to the Census Bureau. Five of the nine tribes in the region have formally engaged with FEMA and four of these five tribes have a FEMA approved disaster mitigation plan in effect (see Table 4.17).
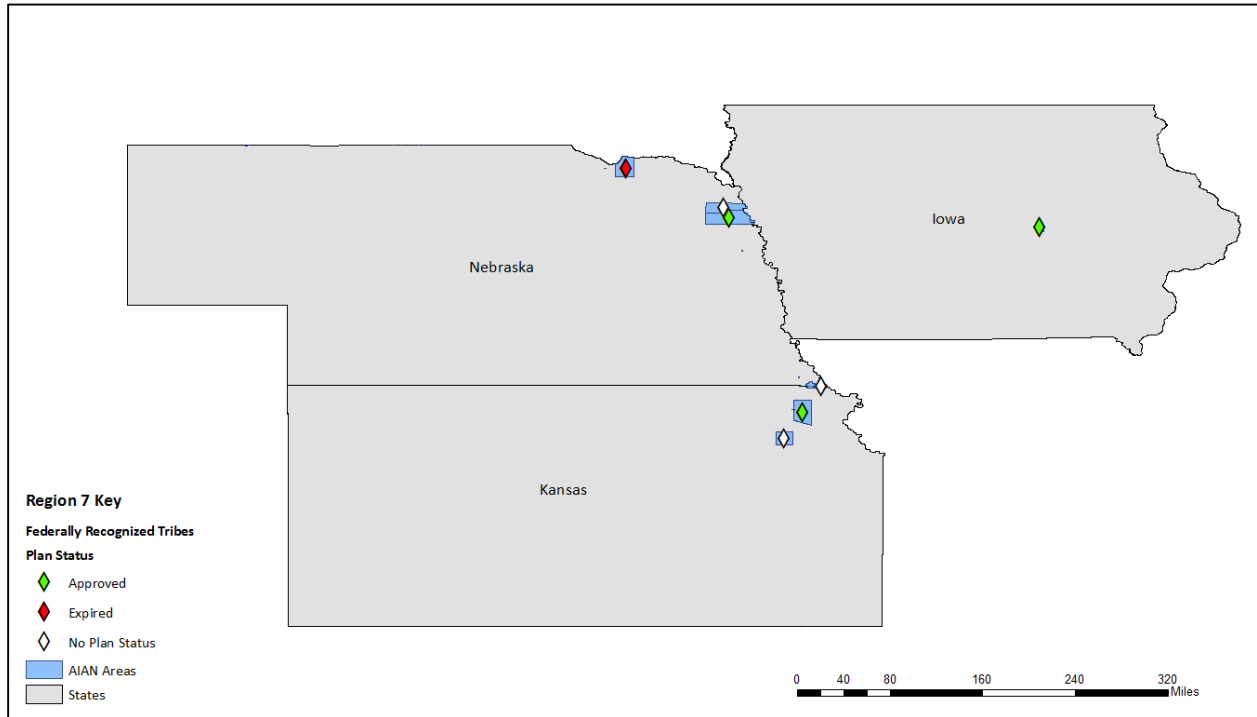
Figure 4.12: FEMA Region 7 Map

Table 4.17: FEMA Region 7 Tribal Engagement

Region 7	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Iowa	1	1 (100%)	1 (100%)
Kansas	4	1 (25%)	1 (25%)
Nebraska	4	3 (75%)	2 (50%)
Region	**9**	**5 (55.56%)**	**4 (44.44%)**

These tribes are located in areas with a history of tornados, severe storms, and flooding. FEMA reports that only two disaster declarations have been made in 2011 and 2014, both in response to flooding. The two tribes who have made a disaster declaration in the past both have current FEMA approved disaster plans in effect (see Table 4.18 below).

Table 4.18: FEMA Region 7 Disaster Declaration Information

Region 7	Federally Recognized Tribe	Disaster Declaration/s	Year of Disaster Declaration/s	Current Plan Status	Incident Type/s
Iowa	Sac & Fox Tribe of the Mississippi in Iowa	1	2014	Approved	1 Flood
Nebraska	Omaha Tribe of Nebraska	1	2011	Approved	1 Flood
Region	**2**	**2**			

Region 8

Region 8 of FEMA's ten tribal regions encompasses the States of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming (see Figure 4.13). Approximately 201,000 individuals lived in the 28 tribal areas in this region in 2010 according to the Census Bureau. Of the tribes in the region, 14 have formally engaged with FEMA and 12 of these 14 tribes have a current disaster plan in effect (see Table 4.19).
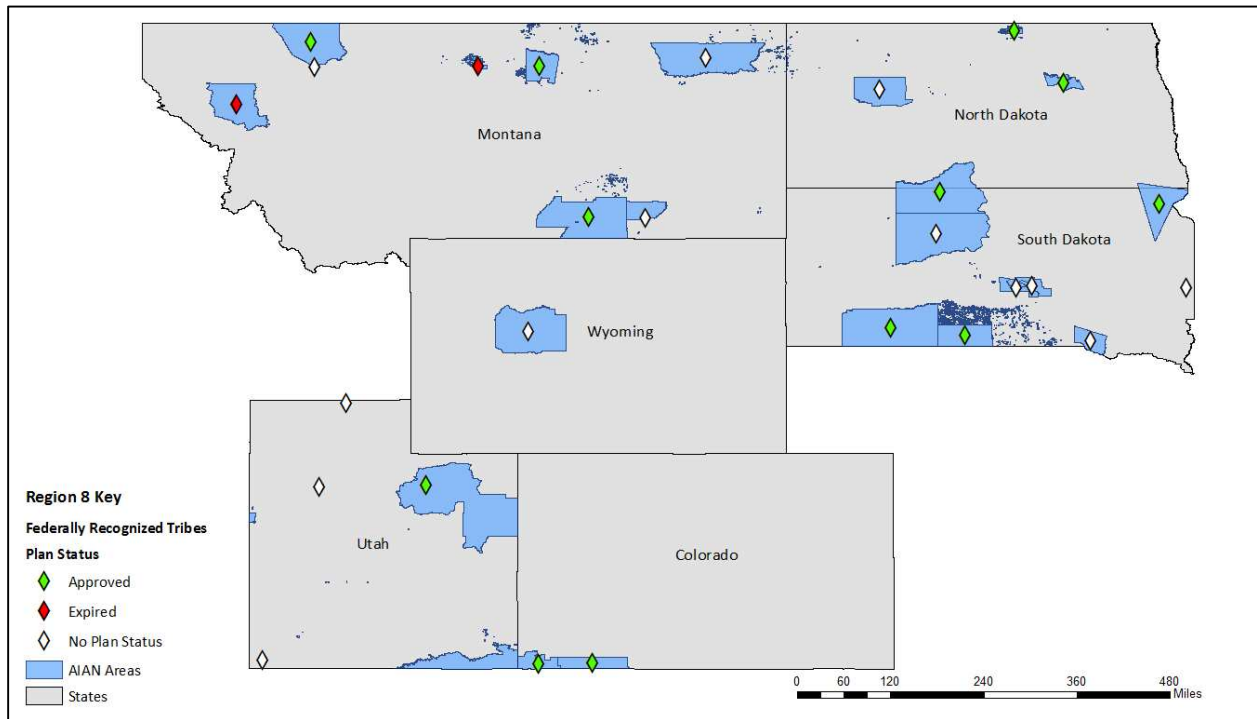
Figure 4.13: FEMA Region 8 Map

Table 4.19: FEMA Region 8 Tribal Engagement

Region 8	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Colorado	2	2 (100%)	2 (100%)
Montana	7	4 (57.14%)	2 (28.57%)
North Dakota	4	3 (75%)	3 (75%)
South Dakota	8	3 (37.5%)	3 (37.5%)
Utah	5	2 (40%)	2 (40%)
Wyoming	2	0 (0%)	0 (0%)
Region	**28**	**14**	**12**

These tribes are located in areas with a history of flooding, severe storms, and occasionally wildfires. FEMA reports that 94 disaster declarations have been made by 23 federal tribes in the region with the first occurring in 1999. Between 1999 and 2015 54 disaster declarations have been made in response to severe storms in Utah, Montana, North Dakota, South Dakota, and Wyoming. An additional 23 disasters were declared in response to flooding events that affected tribes located in Utah, North Dakota, and Wyoming. Nine disaster declarations were made in response to fires in Colorado, Montana, and Utah. Six declarations were made in response to snow, one tornado, and one freezing event. There are 12 tribes in the region who have made a disaster declaration in the past who do not currently have a FEMA approved disaster mitigation plan in effect (see Table 4.20).

Table 4.20: FEMA Region 8 Disaster Declaration Information

| Region 8	Federally Recognized Tribe	Disaster Declaration/s	Years of Disaster Declaration/s	Current Plan Status	Incident Type/s
Colorado	Ute Mountain Tribe of the Ute Mountain Reservation	1	2002	Approved	1 Fire
Colorado	Southern Ute Indian Tribe of the Southern Ute Reservation	1	2002	Approved	1 Fire
Montana	Fort Belknap Indian Community of the Fort Belknap Reservation	4	2000, 2011, 2013, 2014	Approved	2 Severe Storms, 1 Flood, 1 Fire

Montana	Crow Tribe of Montana	3	2000	Approved	2 Severe Storms, 1 Fire
Montana	Chippewa Cree Indians of the Rocky Boy Reservation	4	2000, 2010, 2011, 2013	Expired 9/16/2015	2 Severe Storms, 1 Flood, 1 Fire,
Montana	Confederated Salish and Kootenai Tribes of the Flathead Reservation	1	2000	Expired 3/23/2011	1 Fire
Montana	Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation	2	2011, 2013	No Plan Status	1 Severe Storms, 1 Flood,
Montana	Blackfeet Tribe of the Blackfeet Indian Reservation	3	2000, 2002, 2011	No Plan Status	2 Severe Storm, 1 Fire
Montana	Northern Cheyenne Tribe of Northern Cheyenne Indian Reservation	3	2000, 2011, 2012	No Plan Status	2 Severe Storms, 1 Fire
North Dakota	Spirit Lake Tribe	7	2004, 2009, 2010, 2010, 2011, 2013, 2013	Approved	4 Flood, 3 Severe Storm
North Dakota	Standing Rock Sioux Tribe	14	1998, 2004, 2005, 2008, 2009, 2009, 2010, 2010, 2010, 2011, 2011, 2013, 2014, 2014	Approved	7 Severe Storms, 6 Flood, 1 Snow
North Dakota	Turtle Mountain Band of Chippewa Indians	9	1999, 2000, 2001, 2004, 2005, 2006, 2009, 2011, 2013	Approved	6 Severe Storms, 3 Flood
North Dakota	Three Affiliated Tribes of the Fort Berthold Reservation	7	1999, 2000, 2002, 2004, 2005, 2005, 2011	No Plan Status	3 Severe Storms, 2 Floods, 2 Snow
South Dakota	Oglala Sioux Tribe	7	1999, 2007, 2008, 2010, 2013, 2013, 2013	Approved	5 Severe Storms, 1 Snow, 1 Tornado
South Dakota	Rosebud Sioux Tribe	3	2004, 2008, 2010	Approved	2 Severe Storms, 1 Snow
South Dakota	Cheyenne River Sioux Tribe of the Cheyenne River Reservation	6	2008, 2008, 2009, 2010, 2010, 2013	No Plan Status	5 Severe Storms, 1 Snow
South Dakota	Crow Creek Sioux Tribe of the Crow Creek Reservation	2	2007, 2008	No Plan Status	2 Severe Storms
South Dakota	Flandreau Santee Sioux Tribe	1	2010	No Plan Status	Severe Storm
South Dakota	Lower Brule Sioux Tribe of the Lower Brule Reservation	1	2008	No Plan Status	Severe Storm

			2005, 2005, 2006, 2006, 2010, 2010, 2010, 2013, 2013,		
Utah	Navajo Nation, Arizona, New Mexico & Utah	10	2013	Approved	7 Severe Storm, 2 Flood, 1 Freezing
Utah	Ute Indian Tribe of the Uintah & Ouray Reservation	3	2005, 2007, 2011	Approved	2 Flood, 1 Fire
Wyoming	Arapaho Tribe of the Wind River Reservation	1	4007	No Plan Status	1 Severe Storm
Wyoming	Shoshone Tribe of the Wind River Reservation, Wyoming	1	1923	No Plan Status	1 Flood
Region	**23**	**94**			

Region 9

Region 9 of FEMA's ten tribal regions includes the States of Arizona, California, and Nevada (see Figure 4.14). Approximately 320,000 individuals lived in the 142 tribal areas in this region 2010 according to the Census Bureau. Of those 142 tribes, 58 have formally engaged with FEMA; 30 of these 58 tribes have a current disaster plan in effect (see Table 4.21).
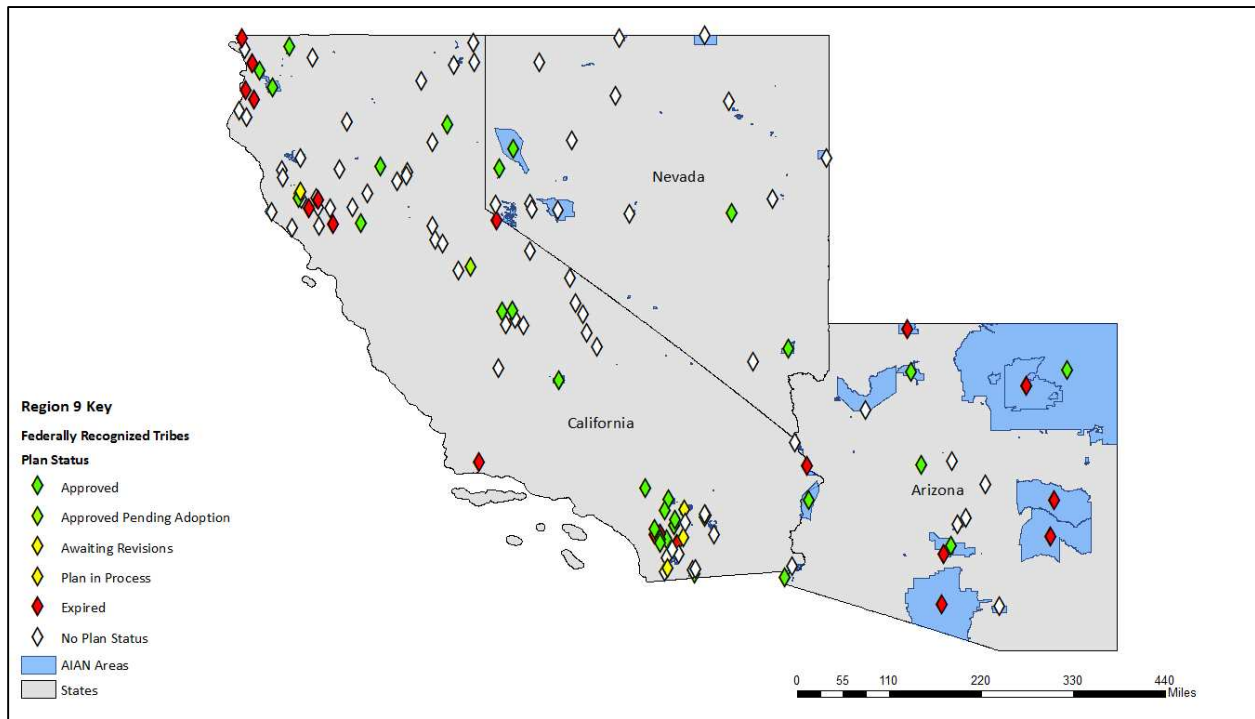
Fig. 4.14: FEMA Region 9 Map

Table 4.21: FEMA Region 9 Tribal Engagement

Region 9	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Arizona	18	11 (61.11%)	5 (27.78%)
California	107	42 (39.26%)	21 (19.62%)
Nevada	17	5 (29.41%)	4 (23.53%)
Region	**142**	**58 (40.85%)**	**30 (21.13%)**

These tribes are located in areas with a history of severe fires, flooding, and earthquakes. FEMA reports that 29 disaster declarations have been made in the region since 1990. 20 disaster declarations have been made in response to severe storms by tribes from Arizona and Nevada. Six disaster declarations have been made by tribes in California and Arizona affected by wildfires. Three flooding related disaster declarations were made by tribes from all three States in the region. There are 14 tribes who have made disaster declarations in the region, five of which do not currently have a FEMA approved disaster mitigation plan in effect (see Table 4.22 below).

Table 4.22: FEMA Region 9 Disaster Declaration Information

Region 9	Federally Recognized Tribe	Disaster Declaration/s	Years of Disaster Declaration/s	Current Plan Status	Incident Type/s
Arizona	Gila River Indian Community of the Gila River Indian Reservation	5	1990, 2000, 2005, 2006, 2010	Approved	4 Severe Storms, 1 Flood
Arizona	Havasupai Tribe of the Havasupai Reservation	2	2005, 2010	Approved	2 Severe Storms
Arizona	Hopi Tribe of Arizona	6	2005, 2005, 2006, 2010, 2010, 2010	Expired 7/30/2015	6 Severe Storms
Arizona	San Carlos Apache Tribe of the San Carlos Reservation	3	2005, 2006, 2010	Expired 3/2/2014	3 Severe Storms
Arizona	Tohono O'odham Nation of Arizona	2	2006, 2010	Expired 5/13/2015	2 Severe Storms
Arizona	White Mountain Apache Tribe	3	2002, 2003, 2010	Expired 7/27/2015	2 Fire, 1 Severe Storm
California	Campo Band of Diegueno Mission Indians of the Campo Indian Reservation	1	2012	Approved	1 Fire
California	Hoopa Valley Tribe	1	2008	Approved	1 Fire
California	Karuk Tribe	1	2013	Approved	1 Fire
California	Yurok Tribe of the Yurok Reservation	1	2008	Approved	1 Fire
California	Soboba Band of Luiseno Indians	1	2015	Approved	1 Flood
Nevada	Moapa Band of Paiute Indians of the Moapa River Indian Reservation	1	2014	Approved	1 Flood
Nevada	Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation	1	2006	Approved	1 Severe Storm
Nevada	Washoe Tribe of Nevada & California	1	2006	Expired 6/3/2014	1 Severe Storm
Region	**14**	**29**			

Region 10

Region 10 of FEMA's ten tribal regions encompasses the States of Alaska, Idaho, Oregon, and Washington (see Figures 4.15 and 4.16). Approximately 371,000 individuals lived in the 270 tribal areas in this region in 2010 according to the Census Bureau. Of the tribes in

region 10, 51 have formally engaged with FEMA. Of these 51 tribes, 24 currently have a FEMA

approved disaster mitigation plan in effect (see Table 4.23).
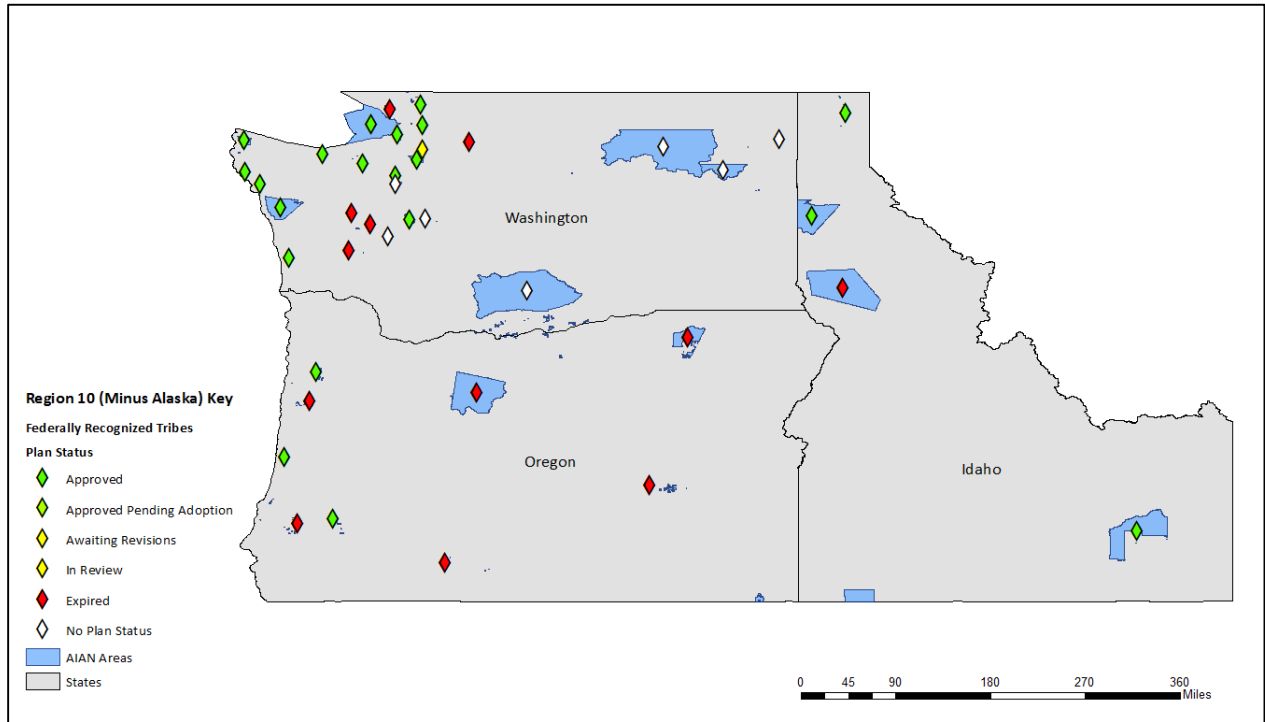
Figure 4.15: FEMA Region 10 Map (Without Alaska)
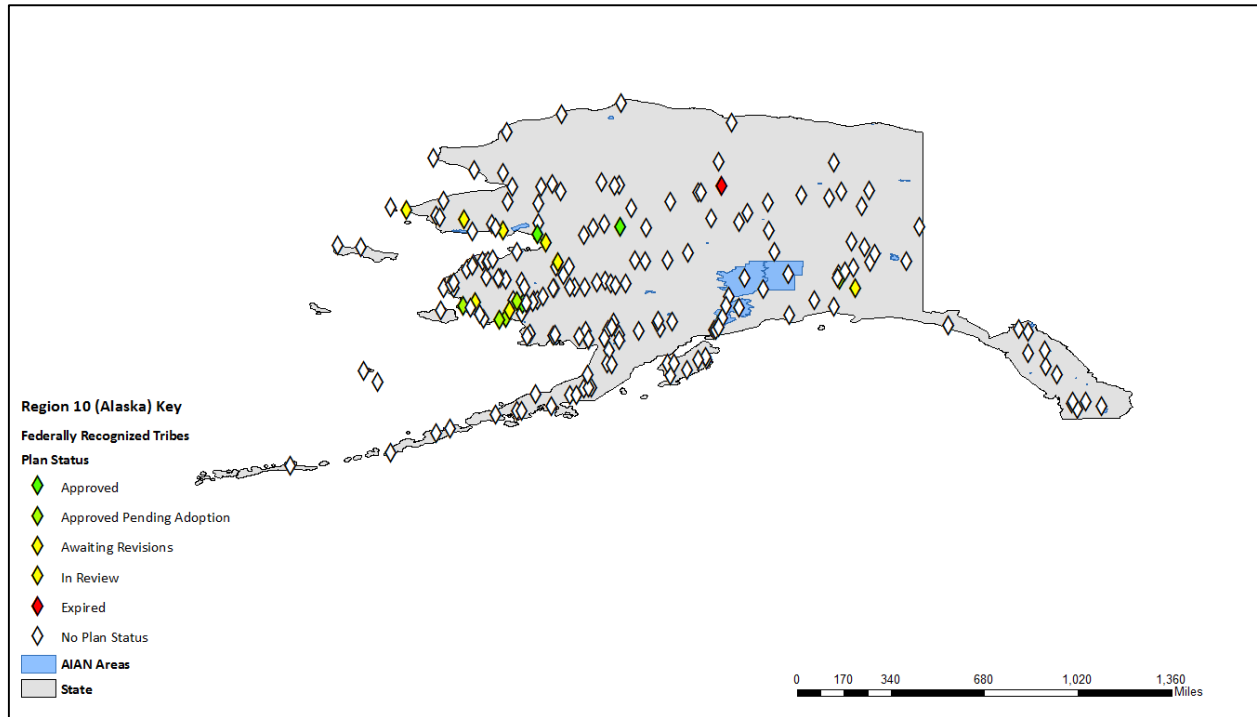
Figure 4.16: FEMA Region 10 Map (Alaska)

Table 4.23: FEMA Region 10 Tribal Engagement

Region 10	Number of Tribes	Tribes Engaged with FEMA	Tribes with Approved Disaster Plans in Effect and % of Total Tribes
Alaska	228	18 (7.89%)	3 (1.31%)
Idaho	4	4 (100%)	3 (75%)
Oregon	9	9 (100%)	3 (33.33%)
Washington	29	20 (68.97%)	15 (51.72%)
Region	**270**	**51 (18.89%)**	**24 (8.89%)**

These tribes are located in areas with a history of severe storms, floods, wildfires, and mud/landslides. FEMA reports that 15 disaster declarations have been made in the region from 2000-2015. Five tribal disaster declarations have been made in response to severe storms in Oregon and Washington, three in regards to mud/landslides in Washington, three following wildfires in Washington and Idaho, and two after flooding in Idaho. Four of the nine tribes in the

region who have made a disaster declaration in the past also have a current FEMA approved disaster plan in effect (see Table 4.24 below).

Table 4.24: Region 10 Disaster Declaration Information

Region 10	Federally Recognized Tribe	Disaster Declaration/s	Years of Disaster Declaration/s	Current Plan Status	Plan Approval Date
Idaho	Shoshone-Bannock Tribes of the Fort Hall Reservation	1	2000	Approved	1 Fire
Idaho	Nez Perce Tribe	2	2005, 2011	Expired 8/20/2014	2 Floods
Oregon	Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians	1	2007	Approved	1 Severe Storm
Oregon	Confederated Tribes of the Grand Ronde Community	1		Approved	1 Severe Storm
Oregon	Confederated Tribes of Siletz Indians of Oregon	2	2007, 2007	Expired 11/9/2014	2 Severe Storms
Washington	Confederated Tribes of the Colville Reservation	3	2012, 2014, 2014	No Plan Status	2 Fires, 1 Severe Storm
Washington	Tulalip Tribes of Washington	1	2014	Approved	Mud/landslide
Washington	Stillaguamish Tribe of Indians of Washington	1	2014	Plan in Progress	Mud/landslide
Washington	Sauk-Suiattle Indian Tribe	1	2014	Expired 3/11/2008	Mud/landslide
Region		**9**	**13**		

This chapter offered a descriptive analysis of FEMA's available data on tribal disaster mitigation plan status, formal engagement with FEMA, and historical disaster declarations. The data shows a great deal of variance in terms of not just the number of tribes across the regions, but importantly, in terms of levels of engagement with FEMA. Overall, participation rates are fairly low, with 150 (26.5%) out of 566 tribes reporting current engagement with FEMA. In terms of specifically what tribes have approved disaster plans currently in effect, the data follows a similar trend, revealing that only 117 out of 566, (or 20.6%), of all United States federally recognized tribes have a FEMA approved disaster plan currently in effect. Additionally, 42 tribes out of 565 (7.42%) have expired disaster plans and no recorded instance that the tribes are in the

process of updating them. On a regional level, the overall participation rate varies greatly, as shown in Table 4.25.

Table 4.25: Summary of Regional Engagement with FEMA

Region	Number of Tribes	Tribes Engaged with FEMA (overall % engagement rate)	Tribes with Approved Disaster Plans in Effect (overall % participation rate)
Region 1	9	6 (66.67%)	6 (66.67%)
Region 2	6	1 (16.67%	1 (16.67%)
Region 3	0	0 (0%)	0 (0%)
Region 4	7	5 (71.42%)	4 (57.14%)
Region 5	29	12 (41.38%)	7 (24.13%)
Region 6	66	40 (60.60%)	29 (43.39%)
Region 7	9	5 (55.56%)	4 (44.44%)
Region 8	28	14 (50%)	12 (42.86%)
Region 9	142	58 (40.85%)	30 (21.13%)
Region 10	270	51 (18.89%)	24 (8.89%)
Total	**566**	**192 (33.92%)**	**117 (20.67%)**

It is also important to look at the State level to gain a more nuanced perspective regarding participation in FEMA's mitigation planning program (see Table 4.26 for a summary). Of the nine States with 10 or more tribes, Alaska has the lowest proportion of tribes with approved disaster plans currently in effect with only three tribes (1.31%) out of 228. Michigan follows, with two tribes (8.33%) out of 12 total tribes. The State of Washington has the highest proportion of tribes with approved disaster plans currently in effect with 15 out of 29 total tribes (51.72%). This trend is true also for general tribal engagement rates with 18 tribes in Alaska (7.89%) and 20 tribes in Washington (68.97%) retaining the respective lowest and highest rates of engagement. Of the nine States with 10 or more tribes, Washington is the most engaged in the disaster mitigation process; however, the fact that barely half of the tribes in the State have approved disaster plans in effect indicates there is still room for improvement, even amongst the

more "prepared States." This is an issue that I consider in more depth in the final chapter of the thesis.

Table 4.26: Summary of Tribal Engagement in States with 10 or More Tribes

State	Number of Tribes	Tribes Engaged with FEMA (overall % engagement rate)	Tribes with Approved Disaster Plans in Effect (overall % participation rate)
Alaska	228	18 (7.89%)	3 (1.31%)
Michigan	12	3 (25%)	2 (8.33%)
Nevada	17	5 (29.41%)	4 (23.53%)
California	107	42 (39.26%)	21 (19.62%)
Wisconsin	11	5 (45.46%)	3 (27.28%)
New Mexico	21	12 (57.14%)	7 (33.33%)
Oklahoma	38	23 (60.5%)	18 (47.37%)
Arizona	18	11 (61.11%)	5 (27.78%)
Washington	29	20 (68.97%)	15 (51.72%)

Disaster Declaration Information

Analyzing the FEMA mitigation planning data in combination with the historic record of tribal disaster declarations offers more depth and dimension for assessing disaster vulnerability. Out of the 566 federally recognized tribes, 71 tribes have declared a disaster either alone or in combination with another tribe or local government (see Table 4.27). These 71 tribes have declared 196 disasters between 1976-2015, with many tribes having made multiple disaster declarations in the past. Out of the 71 tribes that have made a disaster declaration in the 10 FEMA regions, 36 (50.70%) have FEMA approved disaster plans currently in effect. Out of the eighteen tribes who have made disaster declarations and currently have either expired plans or plans in process (25.35%), 10 tribes have plans that have expired (14%), and eight tribes have plans currently in progress (11.27%). The remaining 17 tribes (23.94%) have no plan status and therefore, have not formally engaged with FEMA's mitigation planning program despite having declared disasters in the past.

Table 4.27: Regional Summary for Tribes who have Made Disaster Declarations

Region	Number of Disaster Declarations	Number of Tribes Who Have Made Disaster Declarations	Tribes with No Plan Status	Tribes with Expired Plans or Plans in Process (% Overall)	Tribes with Approved Disaster Plans in Effect
Region 1	4	1	0 (0%)	(0%)	1 (100%)
Region 2	1	1	1 (100%)	0 (0%)	0 (0%)
Region 3	0	0	0 (0%)	0 (0%)	0 (0%)
Region 4	6	2	0 (0%)	0 (0%)	2 (100%)
Region 5	20	5	2 (40%)	1 (20%)	2 (24.13%)
Region 6	30	15	3 (20%)	6 (40%)	6 (43.39%)
Region 7	2	2	0 (0%)	0 (0%)	2 (100%)
Region 8	94	23	10 (43.48%)	2 (8.70%)	11 (47.83%)
Region 9	29	14	0 (0%)	5 (35.71%)	9 (64.29%)
Region 10	13	9	1 (12.5%)	4 (50%)	3 (37.5%)
Total	**196**	**71**	**17 (23.94%)**	**18 (25.35%)**	**36 (50.70%)**

Focusing in on tribes with disaster declarations indicates that the national proportion of tribes who have made a disaster declaration and have a current FEMA approved disaster plan in effect is higher than it is for the overall national proportion of tribes with disaster plans in effect (as summarized in Table 4.25 above). Even within this more focused group, however, 35 of the 71 tribes who have made a tribal disaster declaration in the past do not currently have a FEMA approved disaster plan in effect. This represents almost half (49.29%) of all tribes that fit this category. Even with a history of disaster engagement, 23.94% of tribes who have made a disaster declaration in the past do not have any formal engagement with FEMA in the mitigation planning process.

Of the three regions with a history of disaster declarations from more than 10 tribes, region 9 represents the highest engagement with FEMA's disaster mitigation planning program. A total of 29 disaster declarations were made (representing 14.8% of all tribal disaster

declarations) by 17 tribes. All 17 tribes have engaged with FEMA and 64.29% of tribes have a FEMA approved disaster mitigation plan currently in effect.

On a regional scale, region 8 emerges as the region with the most disaster declarations made by tribes. This region accounts for 94 out of 196 total tribal declarations (47.96% of all disaster declarations). Additionally, they have the lowest engagement in FEMA's mitigation planning program: 10 of the 23 tribes in the region that have made disaster declarations have no engagement with FEMA at any stage of disaster planning (43.48% of tribes).

A summary of the incident type associated with the tribal disaster declaration provides useful data regarding what types of disasters different States and areas are most prone to. For example, it is unsurprising that tribes from regions 8 and 9 predominantly make disaster declarations in relation to severe storms due the geographical closeness of these areas. Their regional levels of engagement with FEMA differ, however. Additionally, the most disaster declarations made for hurricanes were in region 4 with three hurricanes experienced. Region 8 emerges as a particularly vulnerable region with more than 94 disaster declarations having been made; this represents almost half of all tribal disaster declarations with six different disaster types represented.

The incorporation of the disaster declaration information is useful as it provides another historical context through which tribes have had dealings with the Federal Government in some capacity of disaster relief. We may also use this data to identify particularly vulnerable tribal disaster "hotspots" that have experienced disasters yet do not have any engagement with FEMA in creating mitigation plans. Two specific examples are the Cheyenne River Tribe Sioux Tribe of the Cheyenne River Reservation in South Dakota and Three Affiliated Tribes of the Fort Berthold Reservation in North Dakota. Both of these tribes are located in FEMA region 8, the

region with the most disaster declarations of any region. Four of these disasters were in the last five years, yet they have not participated formally at any stage of FEMA's disaster mitigation planning process.

Table 4.28: Disaster Declaration Incident Types

Region	Number of Disaster Declarations	Incident Types
Region 1	4	2 Severe Storms, 1 Hurricane, 1 Snow
Region 2	1	1 Severe Power Outage
Region 3	0	0
Region 4	6	3 Hurricanes, 1 Flood, 1 Mud/landslide, 1 Severe Ice Storm
Region 5	20	12 Floods, 8 Severe Storms
Region 6	30	20 Severe Storms, 7 Floods, 3 Fires
Region 7	2	2 Floods
Region 8	94	54 Severe Storms, 23 Floods, 9 Fires, 6 Snow, 1 Tornado, 1 Freezing
Region 9	29	20 Severe Storms, 6 Fires, 3 Floods
Region 10	13	5 Severe Storms, 3 Mud/landslides, 3 Fires, 2 Floods
Total	**196**	**196**

The final chapter of this thesis will contextualize these descriptive findings on FEMA's disaster mitigation planning program in combination with findings from my policy analysis to give insight into how the Federal Government's policies have attempted to reduce disaster vulnerability for tribes in the United States. It will conclude with a proof of concept GIS solution to address some of the concerns borne from my findings and discuss some limitations and future directions of research in the AIAN disaster policy arena.

CHAPTER 5
CONCLUSION

This thesis has offered an exploratory analysis of policy actions that have been taken by

the Federal Government to address American Indian and Alaska Native disaster vulnerability.

The analysis was conducted using a mixed-methods approach harnessing document analysis,

secondary descriptive statistical analysis, and GIS visualization techniques.

Policy Document Analysis Findings

This thesis sought to answer the following policy related question: *What policy actions*

have been taken by the Federal Government to address American Indian and Alaska Native

disaster vulnerability? The policy document analysis found that the two contributing policy

arenas of American Indian Policy (1823-1970) and Federal disaster policy (1950-2002) were

initially relatively distinct. A combination of executive commitment to increasing tribal

consultation and protecting sovereignty, and a series of large scale disaster focusing events

between 2001 and 2015 resulted in a convergence into a distinct policy arena of American Indian

Native American disaster policy.

As a consequence of centralization trends in the Federal Government, the Federal

Emergency Management Agency (FEMA) emerged as the primary federal institution focusing

on American Indian Alaska Native (AIAN) disaster policy in the early 21st century, both as the

manifestation of executive and legislative orders and acts and through their production of

comprehensive institutional tribal policies. Programs under the authority of FEMA such as their

tribal mitigation planning program, Hazard Mitigation Grant Program (HMGP), Public

Assistance (PA) grant programs, and Pre-Disaster Mitigation (PDM) grant programs are the key

mechanisms through which tribes may receive technical and financial assistance for disaster

mitigation (FEMA, 2010b; FEMA 2015b). Many of the mitigation project funding grants require a tribe to have a current disaster mitigation plan in effect to apply for funding (FEMA, 2010b: 7)

This analysis also revealed that there are historical and contemporary policy issues related to AIAN sovereignty, consultation, and cooperation that have yet to be resolved within the Federal Government (also see Adams, 2013: 376). Additionally ongoing issues of cost-sharing for smaller tribes contradicting sovereignty in the face of disaster (GAO, 2003: 3) and a lack of policy attention on tribal security issues (Committee on Governmental Affairs, 2003; Pollone, 2009, FEMA, 2010b: 10) are areas of concern within current policy that have yet to be rectified by either FEMA or its superseding department, the Department of Homeland Security (DHS).

In addition to operational limitations in current FEMA policies, there is a nebulous operationalization and definition of the term "vulnerability" by FEMA that lacks a sufficient focus on social vulnerability factors that may be experienced by tribes in the event of a disaster. For mitigation plans, tribes are only directed to assess risks and vulnerabilities on the basis of physical or structural hazards (FEMA, 2010b: 27-40). As the conclusion to the policy analysis chapter noted, there is an inconsistency in the way in which "vulnerability" is used by FEMA which is often characterized in temporally and geographically bounded ways, and does not always take into consideration complex and dynamic social factors. In order for the Federal Government to improve their attempts to address AIAN vulnerability, the technical uses and definitions of this term by FEMA must be revised to incorporate more social factors and to adhere to increased consultation, collaboration, and transparency within the tribal disaster policy arena.

The introduction to this thesis offered a review of the social vulnerability paradigm and some of the common measures that are used to identify "socially vulnerable" populations. As discussed in the conclusion of Chapter Three of this thesis, the definitions of vulnerability by FEMA are either so broad as to offer no real guidance (e.g., "the susceptibility of people, property, industry, resources, ecosystems, or historical buildings and artefacts to the negative impact of a disaster" (FEMA, 2006: 1)) or exceptionally targeted to vulnerable structures, land development, resources, or cultural sites (FEMA, 2010: 27-40). By not focusing more explicitly on the dynamic political, economic, social, and historical forces that have rendered AIAN people and tribal areas more at risk, there is little available guidance for tribes wishing to ensure that they are addressing a range of vulnerabilities (including those that are social in nature) through the mitigation process.

Cutter (1997), has stressed the importance of including social vulnerability into hazard assessments. The measures of social vulnerability used by Cutter and by other disaster researchers are still fairly rigid quantitative categories such as "number of people less than 18 years of age," "number of females," "number of racial minorities," and "mean house value," for instance (Cutter, 1997: 15-16). While the incorporation of these factors addresses a social component, the operationalization of these factors is still somewhat limiting in terms of understanding more dynamic and complex processes. For instance, why certain groups are or are not defined as vulnerable, how their relationship to the State is defined, how their voice and agency is accounted for in policy processes, and so forth.

Browne and Peek (2014) note in their article on disaster research ethics with vulnerable populations that "vulnerability is not innate, nor does it represent a static state. Instead it is dynamic and it may build in a cumulative manner when post-disaster needs are not met" (p. 94).

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Although Browne and Peek are specifically discussing the post-disaster period for disaster survivors, I believe a consideration of how we may "open up" our perception of vulnerability would be beneficial for federal and tribal entities.

Descriptive and Geospatial Analysis Findings

Due to the position of FEMA as an integral institution for AIAN disaster policy and the importance placed on mitigation as an indispensable tool for reducing vulnerabilities, Chapter 4 of my thesis offered an analysis of FEMA's current mitigation plan data. The data included all 566 federally recognized tribes as of September 30, 2015. My descriptive statistical analysis and GIS mapping of FEMA's planning dataset provides a broad overview regarding the levels of engagement and effectiveness of FEMA's mitigation planning program as a singular federal program specifically addressing AIAN disaster vulnerability. The analysis was designed to answer my other research questions: *To what extent have American Indian and Alaska Native tribes engaged with FEMA for the production of tribal mitigation plans under the Robert T. Stafford Act?* and, related, *To what extent have tribes formally engaged with FEMA at any stage of the disaster mitigation planning process? How many tribes have a FEMA approved disaster plan in effect as of September 30th 2015? How does this vary by region and hazards exposure?*

My analysis found that only 192 tribes (33.92%) have formally engaged with FEMA at any stage of the disaster mitigation planning process. Of these 192 tribes, 117 (20.67% of all tribes) have a FEMA approved disaster plan in effect. A regional comparison of the ten different FEMA tribal regions showed a great deal of variability in engagement rates. Region 10, which encompasses Alaska, Idaho, Oregon, and Washington, is home to the most tribes (270) of all the regions, yet only 24 tribes (8.89%) had FEMA approved disaster plans in effect. Conversely, region 1 is one of the smallest regions in terms of how many federally recognized tribes it

contains. Region 1 encompasses Connecticut, Maine, Massachusetts, and Rhode Island, and is home to nine tribes. Of the nine tribes however, six had (66.67%) FEMA approved disaster plans in effect.

While this analysis shows that some tribes are engaged in some capacity with mitigation planning, until they have a FEMA approved current plan in place, they are still ineligible for support from the Federal Government. This means that the vast majority of tribes in the United States would be declared ineligible were a major disaster to strike their tribal area tomorrow.

Most observers agree that disaster risk in the United States is growing. As such, this thesis also analyzed disaster declaration data from FEMA in order to offer more depth to the discussion regarding the risks that tribal areas have faced historically. This analysis revealed that 196 disasters have been declared on tribal areas since 1976. A total of 71 tribes have made a disaster declaration across the 10 FEMA regions. Of these 71 tribes, 35 (49.3%) do not have FEMA approved disaster plans currently in effect. An additional 17 tribes (23.94%) have no plan status and therefore, have not formally engaged with FEMA's mitigation planning program despite having declared disasters in the past.

Combining plan status data with disaster declaration data revealed that FEMA region 9 was the most "prepared" region with a history of disaster declarations. About 64 of the tribes in region 9 – which has a history of severe storms, fires, and floods – have a FEMA approved disaster mitigation plan currently in effect. All 17 tribes in region 9 have engaged in the disaster mitigation process at some level. Region 8 emerged as a vulnerability "hotspot" accounting for 47.96% of all 196 tribal disaster declarations made. Additionally, only 47.83% of the 23 tribes who have made declarations in the region have a FEMA approved plan currently in effect.

In summary, my analysis revealed that national and regional levels of engagement with FEMA in disaster mitigation planning, and the prevalence of FEMA approved disaster mitigation plans, were low. There was, however, much variability across the different regions in terms of number of tribes, levels of engagement, and number of disasters declared over the past four decades. The incorporation of disaster declaration information clearly showed that there are particular vulnerability "hotspot" regions that have made more disaster declarations than others and do not have current disaster mitigation plans in effect. Ultimately the low engagement rates and rising cost of disasters present a significant issue under FEMA's current mitigation requirements:

> If [a] plan is not adopted by the Indian Tribal government, they would not be eligible for project grants under the following FEMA mitigation grant programs: Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM)… In addition, an Indian Tribal government applying as a grantee would not be eligible for funding… in the event of a Presidential Disaster Declaration, for Public Assistance Categories C-G, (e.g., repairs to damaged infrastructure or publicly owned buildings) until the plan is approved (FEMA, 2010b: 78).

If significant attention is not given to trying to encourage more participation in FEMA's voluntary mitigation planning program, a sizeable proportion of the 1.1 million individuals living on AIAN areas remain at risk to future catastrophic disasters. There is a worrying statistic on the main page of FEMA's disaster mitigation website that states: "the number of disasters each year is increasing but only 50% of events trigger Federal assistance." While tribes may not be unique in their low levels of participation in mitigation planning compared to the nation as a whole, their status as a population that is particularly socially and economically vulnerable means this is an undeniably important area for continued focus and attention. Indeed, as Craig Fugate, the administrator of FEMA, stated on the organization's online blog:

> We need to have a better way of communicating risk and showing the vulnerability of communities. It's looking at addressing risk from the future – from land use planning to

codes to ways we can build in our environment that doesn't grow our risk and hopefully buy down future risk. It's ensuring we gain a better understanding of what has happened in past disasters, what those costs are, and what may be better solutions, conversely to building a system that only responds to a disaster after the fact and tries to rebuild (Fugate, 2015: 2).

Interactive Mapping as a Collaborative Tool

The importance of integrating multiple forms of data, providing a historical context for communities, and furthering the cause of pre-mitigation disaster planning are all important means to increase preparedness activities. Especially relevant to the project at hand is the visualization of data by FEMA as a tool to achieve positive preparedness outcomes. The integration of visualization into disaster analysis has been thus far embraced by FEMA as a positive step forward for increasing public knowledge and understanding of disaster risk. "Building visualization tools allows people to look at their past history, look at what kind of hazards they are vulnerable to, and look at the frequency of disaster declarations and the impacts. These are useful tools to give people context to what their past looks like when they are planning for future risk" (Fugate, 2015: 1). Fugate (2005: 1) additionally stresses the importance of "freeing the data" and underscores that FEMA "invites folks to experiment." My Interactive Tribal Disaster Mitigation Map, as presented below, was created with these guiding principles in mind.[21]

While FEMA's initial usage of data visualization presents an important step towards making disaster data more accessible to the general public and for disaster stakeholders, the data available is still not particularly "free." Difference in scale is limited to national, State and county levels and the data. Users are able to view the data provided by FEMA but they have no capacity to change the data to reflect their own disaster experiences or local contexts. In regards


[21] My proof of concept map can be found online at http://arcg.is/24OzsTK.

to the interactivity of my map, the format of ArcGIS Online provides the maximum capacity for online accessibility by anyone interested in the data. Any member of the public can access it to view the map with the website URL and there are no costs associated or special membership required. Additionally, for users wishing to edit the map there are no costs associated as long as the original creator of the map holds an ESRI account for which the login information may be shared.

The idea of using the openness of visualization to enhance collaboration is not a new idea in the realm of qualitative and mixed methods GIS mapping: "first, visual representations can act as the object of collaboration, thus as an entity to discuss, create, or manipulate. Second, visualization can provide support for dialogue (about information, plans, methods, strategies, or decisions). Third, visual representation can provide support for coordinated activity (thus for compiling information, carrying out plans, or executing decisions)" (MacEachren, 2004: 433). The use of this data by multiple entities may provide the potential for collaboration for tribes who may see tribes who are at risk of similar disasters or have similar geographic or demographic traits. In addition, the open, dynamic format of online mapping may extend the capacity of the planning process to collaboration with various stakeholders that FEMA identifies such as "other governmental agencies, tribal members, local residents, businesses, academia, and nonprofit groups" (FEMA, 2010: 1). Fugate (2015: 2) stresses the importance of visualization for emergency managers through the comparative properties of mapping software "if a community has been fortunate and hasn't had a lot of disaster activity, you can use a community that has similar characteristics and who has experienced disasters to see what it cost you. If you have a similar risk, but you may not have had that impact like other communities, we could see what the potential impacts are."

The creation of a GIS Online map allows for dynamic evaluation for both FEMA

researchers and tribes through the interactive nature of the map. Using scale-sensitivity to zoom

in and out of the map, national and regional comparisons are able to be made. In order to achieve

a more micro perspective however, a user needs to simply zoom in on a particular tribe and view

specific data pertaining to a tribe's history of disasters or mitigation progress by clicking on an

individual data point (see Figures 5.1 and 5.2). Through an adjustable lens of scale, analyses are

better able to demonstrate more fully the explorative, iterative and reflexive capacities of

grounded visualization theory building (Knigge and Cope, 2009: 112).
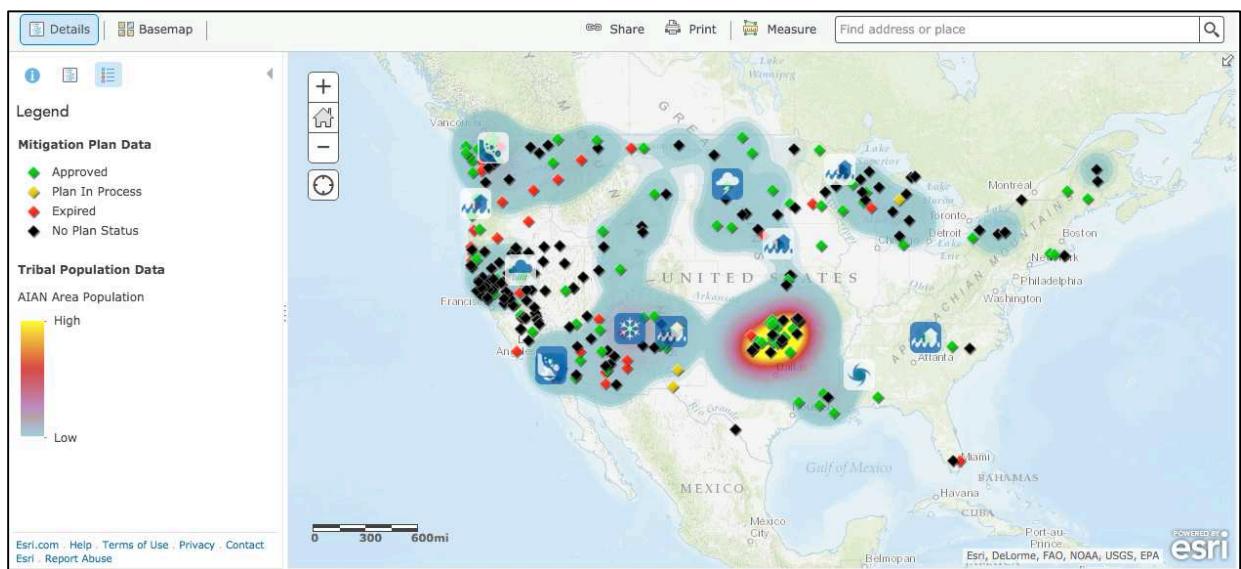
**Figure 5.1:** Macro United States Disaster Mitigation Map
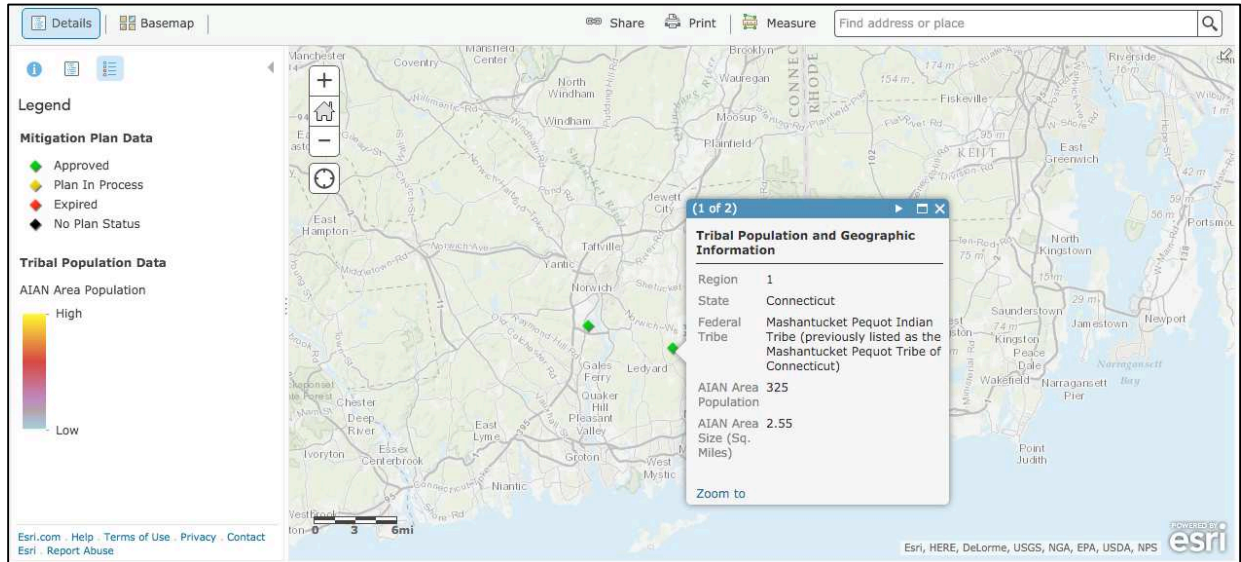
Figure 5.2: Micro Scale Tribal Disaster Map

In addition to allowing a user to adjust the viewing scale of information, different data fields may be selected for further analysis, such as plan mitigation data, population data, or disaster declaration data. Individual tribal information is displayed in the form of pop-up boxes which show data from a master Comma Separated Values (csv) file that has been uploaded to a map. The information included in the Mitigation Plan Information pop-up boxes draws from a csv file that includes region, State, federal tribe names, plan name (if applicable), plan status, plan PDF (if applicable), and approval and expiration dates of plans (if applicable). All data information must correspond to a latitude and longitude coordinate in order to plot the data. Any website link is able to be hyperlinked within the pop-up box provided it has been correctly formatted in the csv master file (see Figure 5.3 below).
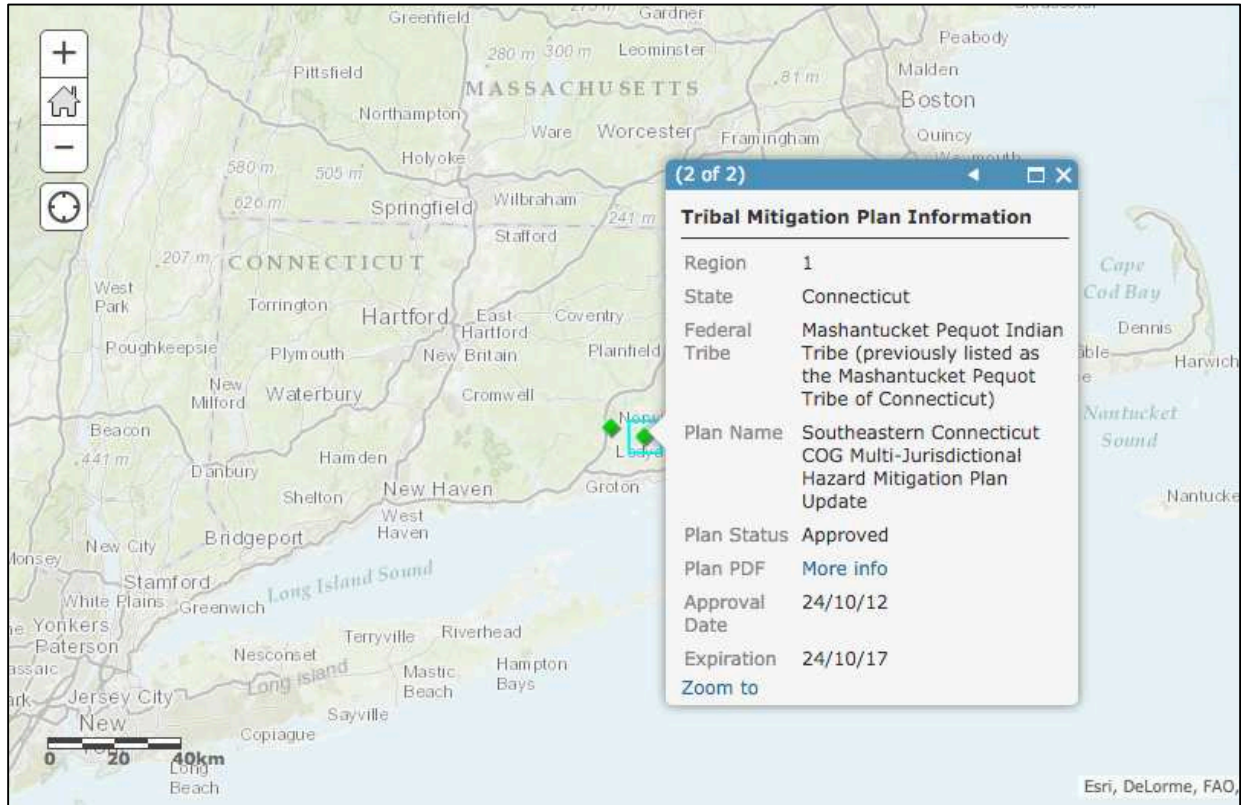
Figure 5.3: Tribal Mitigation Plan Information Pop-Up

Information included in a demographic pop-up box draws from a csv file that includes region, State, federal tribe names, AIAN Area population, and AIAN Area Size (in square miles) which were plotted using the latitude and longitude of each tribe. This is not an exhaustive list; any demographic data that a user considers relevant to social vulnerability or disaster mitigation can be added to the csv master file such as median ages, sex ratios, or average incomes (see Figure 5.4 below).
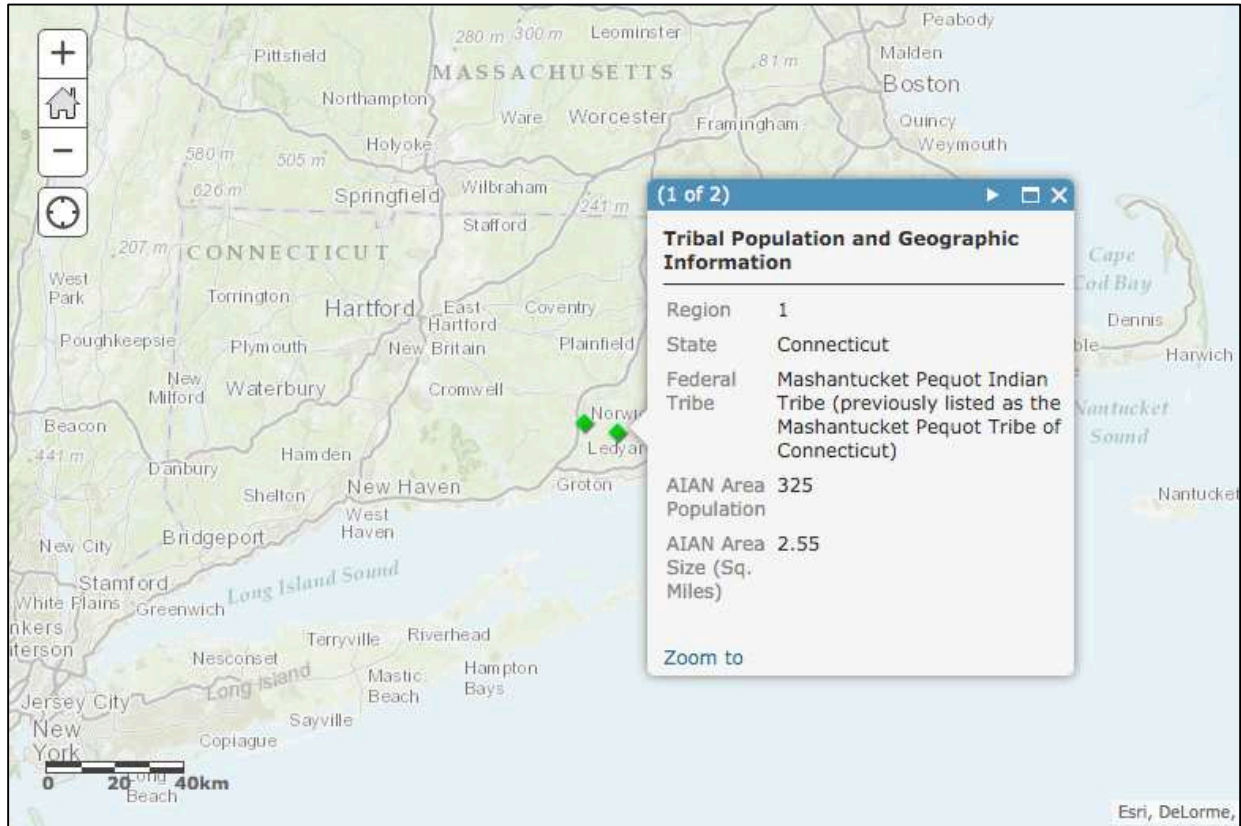
Figure 5.4: Population and Geographic Information Pop-Up

The final form of visualization I chose to include for my proof of concept map was

disaster declarations. I chose to depart from the csv "pop-up" form of information display and

utilize a different function that is more dynamic in GIS Online, map notes. Map notes allow you

to add features to a map free-hand by clicking on the point you want the map note to be recorded.

The box entry is html format and allows for the freedom to include a range of information types

including text, hyperlinks, and photos. Very little technical knowledge is needed to create these.

These map notes can be categorized by tribe, region, disaster event, or any other categorization

that seems appropriate and data can be added to and deleted from these notes at any time. In

terms of how these data points are displayed as symbols, a user is free to utilize any image file as

a symbol. I chose from GIS online's pre-existing range of disaster icons, using "white"

background icons for disaster declarations tribes were listed as sub-grantees and "blue" background icons for disaster declarations that were made solely by a tribe.
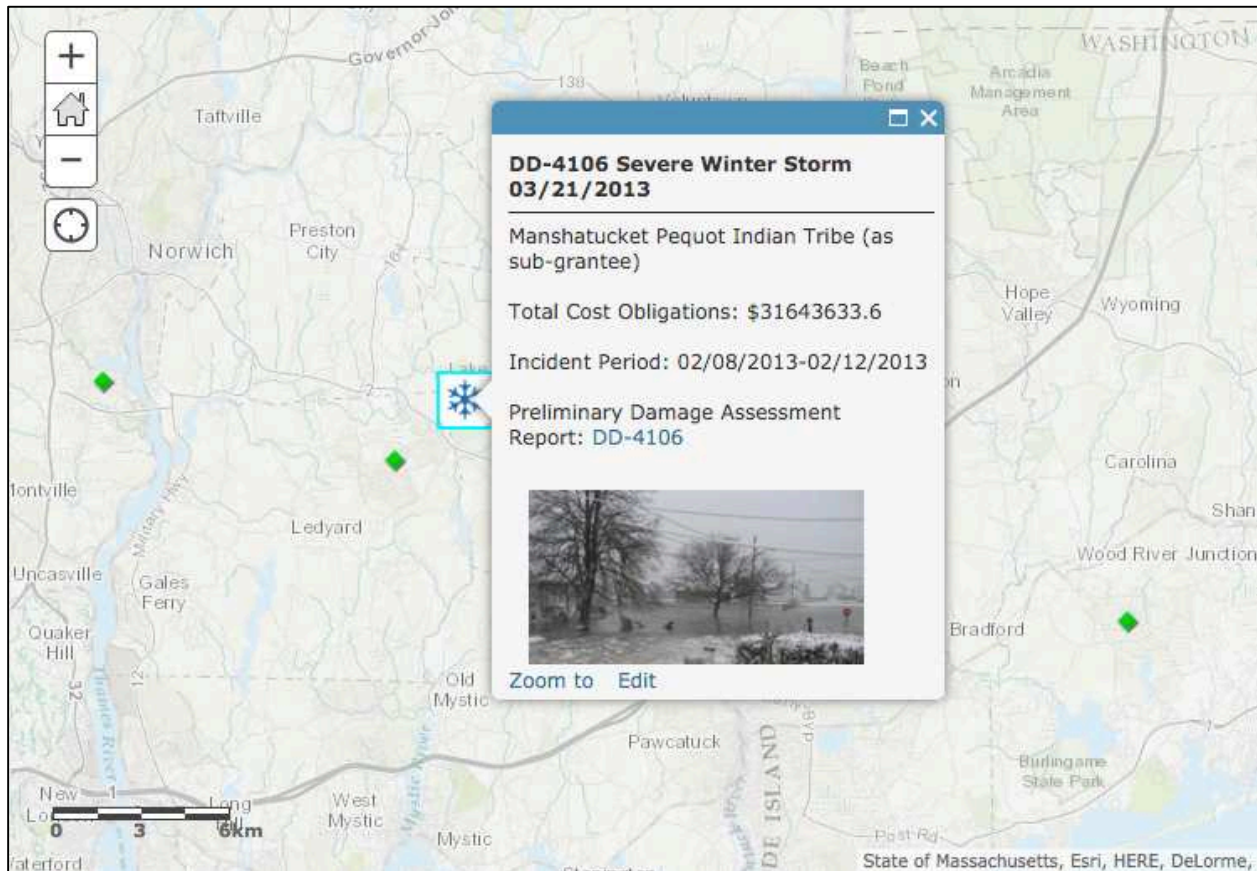
Figure 5.5: Disaster Declaration Map Note

Knigge and Cope (2009: 107) speak to official data sources such as the data obtained by FEMA as "produced institutionally with a specific purpose, making certain claims to 'truth' … [and] are imbued with the power of the institution that commissioned their collection as well as the institution's agenda or purpose and its' scale of relevance."   Additionally they suggest that most official data is publically and readily available for use by researchers but the sheer volume and technical specificity can overwhelm researchers and muddy critical questions concerning classifications, binaries, and representations (Knigge and Cope, 2009: 107). The process of

grounded visualization may help free the researcher of deterministic categorizations and create the opportunity for investigations into the discourse, power, and truth claims of institutions.

The analysis of official data provides insight into the specific institutional perspective. In order to open the context of data and to gain more understanding of complex issues such as vulnerability, visualization analysis should allow for more in depth inclusion of qualitative data from multiple sources through collaboration and interactivity. As Wascalus (2014) discussed in his news article, 45% of AIAN tribes are already using GIS in some form and FEMA already has a section of their website dedicated to data visualization. Interactive technology such as GIS, therefore, should be utilized to help bridge consultation and communication between the Federal Government and AIAN tribes to ensure disaster vulnerability is able to be addressed in a more open and dynamic method.

Limitations

This thesis was exploratory in nature, and delved into a policy arena that has only recently been conceptualized. It also utilized various methods to analyze tribal areas and their disaster histories and their planning processes. With this research, as with all research, there were some limitations to this approach.

First, the research itself was based entirely on secondary data – ranging from the review of policy documents to the analysis of quantitative and geospatial data from FEMA and other sources. I was not able to interview policy makers, for instance, to learn what sparked changes in language or the approaches to the bills I was analyzing. Nor was I able to interview or survey FEMA staff or tribal representatives to learn about the actual policy making or plan writing process. Unfortunately, collecting primary data of this sort was not feasible due in part to time constraints and FEMA's policy on interviewing employees and not including any identifiable

names or positions.[22] Additionally, no tribal liaisons from the ten separate FEMA regions responded to requests for an interview.

A limitation of the secondary data was that it did not allow me to trace historic patterns of FEMA engagement for tribes. The data from FEMA is only in reference to plan status, and approval and expiry dates of the current or most recent plans. The data thus offers only a snapshot into current levels of participation in mitigation planning. There is no historical context available in the data regarding tribal participation such as how many plans tribes have utilized, or when the first mitigation plan was produced by the tribe. While participation in this program provides broad-scale information for tribal engagement on a national and regional level, the data, as a standalone method of analysis, does not offer deeper insights regarding tribal vulnerability due to the narrowness of its scope. It would have been exceptionally interesting, for instance, to be able to analyze whether tribes had a disaster mitigation plan in effect at the time of declaring previous disaster declarations. The parameters of FEMA's dataset in its current form made this impossible for me to assess, however.

Although there are certainly limitations to this work, I have attempted to begin to address some of these issues through the generation of a proof of concept interactive map. The map draws upon my own conclusions regarding the perceived areas of potential improvement for federal policy attempts at reducing AIAN vulnerability drawing from my policy analysis and data visualization experiences.

Areas for Future Research

An area that presents a rich capacity for future research is borne from the limitation of available data on past disaster plans. Thomas Birkland, one of the leading scholars of United

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[22] These were the terms communicated to me by email from three separate employees in mid-January 2015.

States federal disaster policy, argues that disasters often become "focusing events." Events in the wider arena of United States disaster policy such as 9/11, Hurricane Katrina, and Superstorm Sandy resulted in significant changes to federal disaster policy. These events provide a small window in which there is significant policy activity before the ramifications of the event inevitably retreat out of the public eye and as the policy window closes (Birkland, 2006: 21).

An interesting area for future research would be to apply this theory of "focusing events" to a specific AIAN disaster context by obtaining records of the complete history of the production of disaster mitigation plans of tribes to compare with FEMA's record of tribal disaster declarations. This would provide the foundation for an analysis of whether disaster declarations have served as "focusing events" for tribes to become engaged in disaster mitigation planning.

As Bardach (2009: 69) notes: "in policy research, almost all likely sources of information, data, and ideas falls into two general types: documents and people." This research was significantly focused on the document attribute; however, there is certainly room for future research on the "people" attribute in the form of interviews. A potential area of future research in AIAN disaster planning would be to conduct interviews with FEMA staff in order to gain more insight regarding the agencies policies and programs targeting AIAN disaster vulnerability. Interviews would be especially useful in this regard, as they allow for "deep, rich, individualized, and contextualized data that are centrally important to…understand a fuller range of perspectives and experiences about a particular topic or phenomenon" (Ravitch and Carl, 2016: 146).

Moreover, it would be especially fruitful to conduct a series of case studies in actual tribal areas that have been affected by disaster. "Case-study research intensively investigates one or a small set of cases, focusing on many details…It examines both details of each case's internal

features as well as the surrounding situation" (Neuman, 2011: 42). Ideally, these case studies would include tribes that did and did not have plans in place before the disaster, then would trace how the disaster recovery process unfolded. Case-study research helps to develop "a causal argument about how general social forces shape and produce results in particular settings" (Walton, 1992: 122), and therefore would be an appropriate method for developing theory on causation for engagement (or lack thereof) with the mitigation planning process. Alaska, in particular, represents a highly important area for future research to understand what specific factors may be contributing to the low disaster mitigation plan adherence rate in the state.

Interviewing and/or surveying tribal leaders would be an appropriate method to understand more regarding tribal risk perception, perspectives on engagement with the Federal Government and disaster planning activities, and other areas would offer much depth to the present analysis. An area that has not received significant attention in the past is the cultural orientation of risk as explored by Bernstein (1999). Some tribes such as the Navajo Nation see disaster preparedness as a taboo due to the fact mentioning it is tempting fate (FEMA, 2010b: 13). It would be interesting to interview tribes on their cultural perceptions of risk to identify whether this could be considered a significant barrier to disaster planning for some tribes, surveys would be an appropriate initial step for investigation as they are a cost-effective tool for obtaining representative information about individuals' attitudes and beliefs (Ravitch and Carl, 2016: 172). Additionally, an initial general survey administered to the "complete target population" (2016: 131) would be a helpful tool for identifying key informants who have "great knowledge and/or influence…who can shed light on the inquiry issues" (p. 131) , in this case, tribal disaster issues. While "in a study of a disaster there will be officials and professionals whose job it is to deal with the disaster and the people who are affected by it. Orientation may

not seem necessary" (Weiss, 1994: 2), in the case of smaller tribes with less formal official positions, it may be surprising who the key informant on disasters may be. Rubin and Rubin (2005: 27) developed an approach of interviews called "responsive interviewing" where the researcher remains flexible throughout the project and seeks to discover how the interviewee "understands what they have seen, heard, or experienced [and] the meaning they attribute to it." Once key informants are recognized, utilizing a responsive interviewing approach would further the exploratory nature of this research while gaining a rich insight into the specific realities experienced by employees at FEMA and tribal leaders.

Ultimately, this thesis, like much research before it, perhaps raises more questions than answers. It does, however, represent an important first step in understanding and exploring disaster policy as geared toward AIAN tribal areas and individuals and in assessing current levels of disaster exposure and mitigation planning. As disasters in the United States continue to cost more each year, it is ever more important to understand how the most vulnerable populations prepare for, respond to, and recover from these events.

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