

Utilizing the Calm Before the Storm: An exploration of disaster mitigation in Princeville, North Carolina

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ABSTRACT

Climate change increases flooding events globally, and affluent populations typically have more access to recovery resources than marginalized communities. Literature regarding the recovery of Princeville, North Carolina (NC) from flooding caused by Hurricane Floyd in 1999 and Hurricane Matthew in 2016 states disaster management fails to address residents' needs and concerns about future flood risks. Furthermore, current disaster anthropology literature emphasizes the need for disaster mitigation strategies that consider local context and knowledge. This research employs a political ecology lens to identify Princeville community members' concerns about future floods and any challenges or barriers that may impact the extent to which decision-makers consider local knowledge and context when developing and implementing mitigation strategies that address their concerns. To do so, I utilized participant observation and conducted 20 semi-structured interviews with community members, local officials, and state and federal management agency personnel. Results suggest there is a limited capacity to adapt to future disasters, not only at the community level but within state and federal emergency management institutions as well.

Utilizing the Calm Before the Storm: An exploration of disaster mitigation in Princeville, North
Carolina

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Chapter 1: Introduction

1.1 Statement of the Problem

Climate change increases the frequency and severity of storms, hurricanes, and other global disasters (Bin et al. 2007; Van Aalst 2006). Economically developed countries within the Global North, such as the United States (US), are assumed to have the resources to mitigate and recover from disasters with limited lasting impacts. However, this perspective overlooks marginalized communities within these countries that may not have access to the resources necessary to withstand a devastating disaster (Miller Hesed & Ostergren 2017). Historical, social, and political processes may influence vulnerability to environmental hazards (Barrios 2016; Maldonado 2016; Miller Hesed & Ostergren 2017). Socially and economically marginalized coastal communities typically suffer more losses in a disaster and have a harder time recovering from their losses when compared to more affluent communities (Greer 2020).

As researchers continue to explore the impacts of disasters on racially and socioeconomically marginalized communities within the US, we gain insight into how climate change has become inherently unjust. For example, Miller Hesed and Ostergren (2017) explain that relatively affluent communities emit higher levels of greenhouse gases, which contribute more to climate change than other communities. Nevertheless, marginalized communities remain more vulnerable to the long-lasting impacts of climate change. Additionally, research shows that environmental injustice is perpetuated more in communities that have dealt with other types of injustice and inequity such as racism and discrimination (Miller Hesed & Ostergren 2017). Research also shows that Black Americans have historically contributed less than other Americans to climate change, yet they are more likely to suffer at a disproportion rate due to a lack of access to resources and little-to-no decision-making power throughout disaster mitigation processes (Congressional Black Caucus Foundation, Inc. 2004; Miller Hesed & Ostergren 2017).

Decision-making bodies within state and federal government agencies tend to view culture and communities as static, unchanging entities, which may lead to disaster mitigation strategies that do not account for local context and knowledge. Even so, evidence suggests that policymakers, and in turn policies themselves, constantly influence and reshape culture and communities around the world (Maldonado 2016). Without the consideration of local context, knowledge, and concerns, disaster mitigation strategies will only perpetuate environmental

injustice. Moreover, vulnerable communities remain at risk for destructive disasters in the future. For this reason, throughout the entirety of this thesis, “ineffective disaster mitigation” will be used to encompass mitigation strategies that do not consider and address the concerns community members have about future environmental risks. Princeville, North Carolina (NC), is one such community facing long-lasting impacts from disasters and ineffective disaster mitigation strategies.

This thesis explores the disaster mitigation strategies in Princeville, the first town chartered by Black Americans in the US. Since its incorporation, Princeville has experienced many flood events. Even with assistance from state and federal agencies, such as North Carolina Emergency Management (NCEM) and Federal Emergency Management Agency (FEMA), the residents of the town continue to experience hazardous conditions with the constant threat of a devastating disaster. This leads many community members to rely on external, non-government agencies for assistance with recovery.

1.2 Overview of the Research

Data for this thesis were collected between May and December 2022. The goal of this research is to identify Princeville community members’ concerns about the future risk of flooding and any challenges or barriers that may impact the extent to which mitigation strategies consider and address these concerns. To achieve this goal, I developed three key research questions:

RQ1: What are the main concerns community members have about the future risks of flooding?

RQ2: Do community members trust that decision-making bodies—including Princeville’s Board of Commissioners and state and federal agencies—will consider these concerns when implementing post-disaster policies?

RQ3: What factors impact the extent to which local officials and state and federal agencies utilize local context and knowledge when implementing disaster mitigation policies?

To answer these questions, I utilized participant observation by attending Princeville’s Board of Commissioners meetings from May 2022 to December 2022, and Farmer’s Markets on the second and fourth weekends of the month from August 2022 to November 2022. In addition,

I conducted 20 semi-structured interviews with Princeville community members, local leaders, and state and federal agency personnel. I was introduced to the community via my thesis advisor, who established rapport with community members and local leaders during previous community engagement work in the area. Additional participants were selected with the use of snowball sampling, a non-probability sampling strategy (Bernard 2011). When possible, interviews were recorded and transcribed verbatim to maintain participants' true meaning and context (Bernard 2011). Transcriptions were then analyzed through an iterative process that used grounded theory to allow for the emergence of relevant themes (Bernard 2011).

Previous recovery literature for Princeville explicitly states that disaster mitigation thus far has not considered the concerns of those impacted by flood events (Princeville Recovery Plan 2018). Therefore, this research aims to encourage decision-makers to further identify challenges and barriers that negatively impact their ability to consider and address community members' concerns when developing new disaster mitigation strategies. The results from this thesis align with relevant literature that suggests that effective disaster mitigation must include strategies that not only address community members' concerns, but they must also provide the stability necessary for Princeville to grow economically and allow for more people to learn about the historical significance of the town.

1.3 Structure of Thesis

In Chapter 2, I present relevant literature from the field of disaster anthropology that informed the initial development of this thesis. This includes a brief overview of the field itself, as well as the theoretical frameworks that I utilize to examine the disaster mitigation strategies in Princeville. I introduce research that highlights the culture-disaster relationship, and I discuss key concepts in disaster anthropology such as resilience, vulnerability, and adaptive capacity. Additionally, I present environmental justice and political ecology frameworks frequently utilized to examine differential power relationships throughout disaster response, recovery, and mitigation.

In Chapter 3, I present background information on Princeville including the historical significance of the town's founding. I further discuss the impacts of Hurricane Floyd in 1999 and Hurricane Matthew in 2018. I also introduce typical disaster recovery and mitigation strategies

implemented by state and federal emergency management agencies in North Carolina. I close the chapter with an explanation of the state centric approach that was developed by the North Carolina Department of Public Safety (NCDPS) and the Federal Emergency Management Agency (FEMA) and implemented in Princeville throughout the data collection phase of this research.

In Chapter 4, I introduce the main research questions and associated goals that motivated this research. I discuss the sampling strategy and introduce the participants. I review the qualitative data collection and analysis methods that I used and provide context for the reasoning behind these methodological choices. In Chapter 5, I present the data associated with each research question and discuss the ways in which the results relate to the literature presented in Chapter 2.

Finally, Chapter 6 contains the conclusion of this thesis as well as any limitations for this research. I also introduce potential areas for future research in similar realms of disaster anthropology.

Chapter 2: Review of the Literature

2.1 Chapter Overview

In this thesis, I explore the disaster mitigation process in Princeville, North Carolina (NC) to identify community members' concerns about future flood risks and how current strategies address those concerns. Furthermore, I examine state, federal, and non-profit entities' roles in disaster recovery and mitigation processes. To understand disaster mitigation from an anthropological perspective, I discuss three key themes present in the current literature: (1) disaster anthropology, (2) culture and disaster, and (3) environmental justice and political ecology. Examining disaster through an anthropological lens provides policymakers with the information necessary to consider cultural practices and the well-being of impacted individuals throughout the mitigation process. Current literature provides case studies that explore the link between culture and disaster, which is necessary when attempting to understand the impacts disasters have on a community or culture. Anthropological investigation of recovery and mitigation processes provides insight into the practices that may perpetuate environmental injustices due to differential power relationships between policymakers and community members.

After situating the anthropological investigations of disasters and describing the link between culture and disaster, I emphasize the roles environmental justice and political ecology play in examining disaster mitigation strategies. In this section, I describe several injustices that are perpetuated throughout decision-making processes in marginalized communities. I explain the need for the co-production of knowledge, policies, and mitigation strategies to address the root causes of environmental injustice. This chapter aims to orient my current research through anthropological epistemologies and frameworks, to provide insight into the urgent nature of climate change research. Furthermore, I hope to emphasize the need for truly collaborative research between policymakers, community members, and other stakeholders to achieve effective and successful disaster mitigation that promotes the capacity to adapt and withstand the impact of future disasters.

2.2 Disaster Anthropology

Anthropology is broadly defined as the study of humankind, both past and present, and is divided into four subfields: biological, cultural, linguistic, and archaeology. This research utilizes frameworks present in environmental and disaster anthropology which are subdisciplines of cultural anthropology (McGee and Warms 2020). Anthropologists have unique ways of understanding disasters and lived experiences of individuals impacted by disasters through holistic approaches and methodologies, which I will discuss further in chapter 4. Environmental anthropologists are concerned with the human-environment relationship and how culture is shaped by the environment and vice versa. Furthermore, disaster anthropologists are concerned with the human-disaster relationship; specifically, how culture is affected by disasters, how humans intensify impacts brought on by disasters, the causes of specific disasters, etc. (Kopnina & Shoreman-Oiment 2017). This review sheds light on the ways in which disaster mitigation efforts may inadvertently exacerbate environmental justice concerns and perpetuate the unequal impacts of disasters.

Disasters are unique to each cultural and environmental context, making it difficult to define “disaster.” Numerous disaster anthropologists argue that disasters should not be considered “natural” because of the intricate nature of the human-environment relationship; rather, disasters are a result of the interaction between environmental hazards and human populations and development (Oliver-Smith 1999; Barrios 2016; Graef 2017). Disasters are characterized by external variability and internal complexity. External variability refers to objective phenomena (natural or technological) that cause disasters and produce various levels of impact, whereas internal complexity refers to the ways in which unique compounding processes or events intersect and affect the level of impact within social, environmental, cultural, political, physical, or technological domains (Oliver-Smith 2019, p. 30).

There is a lot to learn about societies and groups within the context of disasters because they bring about rapid social and environmental change. Crises and disasters allow policymakers, practitioners, and researchers to evaluate political and social structures and identify issues with current disaster risk-reduction strategies. Furthermore, researchers can explore cultural and societal structures through the lens of crisis and change, providing special opportunities for the development of social theory and applied methodological approaches (Faas & Barrios 2015, p.

290). For example, political ecology is utilized as a tool to understand disasters as impending historical processes brought on by differential power relationships between disparate groups of people within their unique environmental contexts.

Although environmental risk is produced by culture, researchers identified the numerous strategies implemented by traditional and indigenous groups to reduce the risk of disasters. This is a basic example of a cultural adaptation known as disaster risk reduction (DRR). Many traditional forms of DRR were undermined by colonial expansion and most modern attempts fail to address the root causes of disasters (Faas & Oliver-Smith 2016; Hope et al. 2019). While DRR is used in theoretical research, disaster anthropologists utilize it as a framework to develop policies that result in a decline in economic damages and losses of life by reducing vulnerability and achieving and maintaining resilience (Faas & Oliver-Smith 2016; Barrios 2016).

Vulnerability, Resilience, and Adaptive Capacity

Anthropologists utilize vulnerability, resilience, and adaptive capacity to understand the best mechanisms for coping and adapting to future environmental threats (Young 2010; Newman et al. 2014). Vulnerability, defined as the potential to experience harm, damage, or loss due to climate change (Turner 2006, p. 28; Mason & Riggs 2019, p. 10), is used as a tool for identifying a community's susceptibility to harm that arises with the absence of the capacity to adapt (Adger 2006). To develop successful disaster mitigation strategies, policymakers must understand the drivers of vulnerability in a particular community. For example, historical, political, spatial, and temporal factors regularly influence vulnerability (Ribot 2013; Mason & Riggs 2019). Nonetheless, it is not simply enough to understand this for one community; researchers and practitioners must understand the drivers of vulnerability for all surrounding communities to ensure that measures taken to lessen vulnerability in one place do not, inadvertently, promote vulnerability in another (Mason & Riggs 2019).

Although the term “resilience” has many different interpretations, the field of disaster anthropology views resilience as the ability of a community to withstand the shock of a disaster or flood event and bounce back to a “new normal” in a reasonable amount of time (Barrios 2016; Princeville Recovery Plan 2018). An emphasis is placed on the ability to establish a “new normal” because returning to the original state may only perpetuate environmental inequities. The common misinterpretation of this term by policymakers allows infrastructure to hinder the

ability to achieve resilience within marginalized communities (Barrios 2016). It is important that researchers clearly define resilience because misuses of this term disregard the fact that marginalized communities are already resilient in other ways. Moreover, communities that are under constant environmental threat continue to return and rebuild despite the challenges brought on by climate change impacts (Barrios 2016).

Adaptive capacity refers to the ability to prepare for, respond to, or minimize the destructiveness of climate change impacts and is often a measure of vulnerability; meaning that a community with greater adaptive capacity is theorized to have a lower vulnerability (Young 2010; Newman et al. 2014; Miller Hesed & Ostergren 2017). It is in this same way that I define *successful* disaster mitigation: mitigation strategies are only successful if they promote adaptive capacity and lessen the community's vulnerability, without increasing the vulnerability of any nearby communities. This includes the ability to anticipate, respond to, and recover from disasters while simultaneously taking advantage of new opportunities for growth (Cinner et al. 2018).

Adaptive capacity is often discussed in terms of communities that are impacted by environmental hazards or disasters; however, it is also important to discuss the adaptive capacity of the institutions aiding in disaster mitigation strategies. For the purposes of this discussion, institutions encompass all state, federal, and non-profit organizations that attempt to assist communities in reducing their vulnerability, recovering from a disaster, or building the capacity to adapt to future storms. O'Riordan and Jordan (1999) state that while institutions have the means to hold society together, there is a fundamental gap in the interpretations and resolutions of climate change between impacted communities and the institutions themselves. In an attempt to mitigate disasters in the long run, institutions may increase a community's short-term vulnerability to environmental hazards (Adger 2000). Nonetheless, institutions are an important aspect of governing the human-environment relationship in the face of climate change (Brown et al. 2010).

It is important to understand that adaptive capacity requires a willingness to transform current responses to disaster within both the affected communities, and the institutions that assist in recovery and mitigation efforts. However, this goal is achieved through much more than standard disaster mitigation strategies. Cinner et al. (2018) discuss five key domains through

which adaptive capacity could be established: assets that people can utilize in times of need, flexibility to adjust and change current mitigation strategies, the capacity for collective action, knowledge to respond to climate change, and the agency to decide to change or not (p. 2–3). People tend to adapt more easily in times of stress and disaster when they have assets they can utilize in times of need. The assets required to achieve adaptive capacity can take the form of financial, technological, or service resources (Brooks et al. 2005). Service assets refer to public resources such as hospitals, and for the purposes of this review, the institutions that assist in disaster recovery and mitigation. Flexibility is established through a continuous review of current mitigation strategies with frequent adjustments when needed (Ciner et al. 2018). Establishing flexibility in the face of the ever-changing impacts of climate change will allow for more opportunities to build and improve the adaptive capacity of communities and institutions. Learning requires access to information, therefore, gaining the level of knowledge necessary to respond to disasters and build adaptive capacity, requires institutions at the local, state, and federal levels to provide supporting processes that enable community members to recognize change, identify the causes of environmental change, and assess different levels of responses (Cinner et al. 2018). Lastly, agency refers to the power and freedom to mobilize all components of adaptive capacity to actively shape future outcomes. This is achieved through the inclusion of local knowledge, context, skills, and management throughout mitigation efforts. In this realm institutions can empower communities through participatory processes, the co-production of disaster policy, and the removal of barriers that hinder people’s ability to exercise agency (Cinner et al. 2018). The five domains discussed by Cinner et al. (2018) provide insight into the ways in which institutional adaptive capacity influences and shapes the adaptive capacity of communities themselves.

Oriangi et al. (2021) explore perceptions of resilience to climate-induced disaster in the Mbale municipality of Uganda. In this area, climate change has led to an increase in the frequency and severity of droughts, which lead to a need to enhance resilience. The authors utilize the Community Based Resilience Analysis Approach to analyze components of resilience that are perceived as important and the extent to which these components have been achieved. The community members identified access to education, healthcare, employment, and peace and security as the most important aspects of resilience. Urban areas within developing countries are likely to suffer the worst from the impacts of climate change due to the prominent level of

poverty, the inadequate socio-economic infrastructure, and the limited-service programs available. For example, the respondents who lived in marginalized parts of the municipality reported a decreased level of resilience, whereas other residents from more affluent areas reported an increased level of resilience. To achieve an equal level of resilience in municipalities like Mbale, practitioners and policymakers must close the gap between local knowledge and global frameworks. The Community Based Resilience Analysis approach allowed researchers to understand the most and least achieved resilience components, which aids in identifying and prioritizing sectors that have not achieved enhanced resilience. This also provides practitioners and policymakers with insight into the different perceptions held by community members of different ages and genders (Oriangi et al. 2021).

Barrios (2014) uses a case study of two post-Hurricane Mitch housing reconstruction sites in Southern Honduras—Limón de la Cerca and Marcelino Champagnat—to demonstrate the need for resilience-cultivating relationships. In this article, Barrios explains that anthropologists should reframe the way they think of communities. Current research depicts communities as fixed, unchanging entities when they are, in fact, the exact opposite. Communities are shaped and reshaped by their relationships with government and non-government agencies and the environment (Barrios 2014; Maldonado 2016). Therefore, collaboration is one of the keys to successfully improving resilience. The need for collaboration between state and local officials is further emphasized when Barrios (2016) asks an important question regarding resilience in post-disaster literature: rebuilding back to what? Communities that are vulnerable to increasing flood risks and coastal hazards are often politically and economically disadvantaged, so rebuilding the community to post-disaster times would mean returning to the same disadvantaged state they were in before the disaster occurred. The article also explains that difficulties in the recovery process are not caused by a lack of resilience on the part of community members, but rather by post-disaster decision-making processes that do not rely on the useful insight of community members (Barrios 2016).

The literature presented above was chosen to depict how useful it is to examine disasters and their impacts through an anthropological lens.

2.3 Culture and Disaster

Humans interact with nature in a variety of unique ways. For instance, subsistence strategies are developed through a set of socially constructed and meaningful behaviors (hunting, fishing, trading, building homes, etc.). Furthermore, human interactions with nature contain deep-rooted and persistent histories that diversely influence the culture-disaster relationship. Before colonization and globalization, the unique knowledge and interactions each group had with their environment allowed for some level of adaptation to hazards. Physical disturbances were perceived as a part of their existence and experience rather than as disastrous events (Hoffman 2017). Therefore, researchers must understand each disaster through the context of the community or culture that is impacted.

Humans inhabit four distinct types of environments; basal terrain, modified, built, and culture. The basal terrain refers to the physical environment in which people live, however, people rarely live in a place without altering it in some way. Nevertheless, alterations to the modified environment can often increase vulnerability to environmental hazards. Many disasters are primarily caused by the built environment, or the structures erected by humans. The built environment encourages people and communities to relocate or expand (Hoffman 2017). Hoffman (2017) argues that the core of each disaster is culture, the fourth environment in which humans inhabit. Culture dictates how the physical environment is utilized, modified, and built upon, which supports the claim that all disasters are caused by humans. As discussed above, without the presence of humans, environmental phenomena are just naturally occurring events with no disastrous impacts. However, it is important to note that disasters tend to manifest in areas with historically produced patterns of vulnerability—the core element of disasters—and conditions the behaviors of individuals and organizations (Hoffman 2017). In this sense, disasters are made through miscalculations, misperceptions, lack of foresight, etc. Even though disasters occur through a pattern of events and processes within specific cultural contexts, a disaster in one place can impact, or even trigger a different disaster, in another place (Faas & Oliver-Smith 2016). The same is said for adaptations to disasters; an adaptive measure in one area can increase the vulnerability of another area.

Disaster anthropologists identified key factors to consider when conducting research following a disaster. First, one must consider the differential impacts of a disaster: was the disaster in question small-, medium-, or large-scale? What are the demographic characteristics of

the impacted community (race, gender, socio-economic status (SES))? Which impacts are being felt most by survivors—financial, physical, mental, or emotional (Cajilig 2017; Barrios & Batres 2019)? Second, the perceptions individuals have of the environment, risks, and disasters dictate how the environment is used and decisions are made (Hoffman 2017). Lastly, it is important to consider how sense of place and place attachment influence the way people perceive disasters related to their environment (Stedman 2003; Greer 2020).

Perception of Risk

Individual cultural groups have unique perceptions of the human-environment relationship. For example, Western societies tend to form finite distinctions between the areas, or structures, in which they live and the natural environment in a way that indigenous or traditional societies typically do not (Hoffman 2017). In addition, the same can be said about people's perceptions of risk and disasters; local risk perception and interpretation are influential aspects of disaster risk reduction (Faas & Oliver-Smith 2016). Disaster anthropologists emphasize that risk and danger are not the same. Danger refers to a hazard that continuously exists in a particular environmental setting, whereas risk acts as a calculation that affects the extent to which people or communities acknowledge and address existing dangers. Hoffman (2017) likens this phenomenon to a water faucet: people choose whether to open the faucet all the way, which would consist of acknowledging all or most of the dangers around them; they can open the faucet a small amount by only acknowledging some of the dangers around them and ignoring others; or people can keep the faucet completely closed by not acknowledging any existing hazards. The calculation and perception of risks are linked to the social, cultural, and political norms of the community. For example, Eriksen and Simon (2017) explain that socio-historical and political factors may influence the lived experiences and perceptions of individuals and communities, further shaping their perceptions of risks and hazards. This perception then influences the way individuals and communities prepare for and respond to disasters, which directly affects levels of vulnerability.

Decision-making and planning are linked to people's perceptions of climate risks. Lazrus (2015) utilizes the Cultural Theory of Risk (CTR) as a framework to understand why people in Tuvalu—a low-lying Pacific Island nation—are concerned about specific risks as well as how they believe risks should be addressed. CTR prioritizes the role of culture in disaster risk

perception by identifying how people believe society should function and how society and nature should interact, then identifying threats to those held beliefs. Lazrus (2015) argues that adaptive decisions that address community risk concerns, worldviews, knowledge, and experiences are likely to be more successful when compared to efforts that falsely claim community engagement but do not include local context and knowledge (52).

Worldviews emerge as distinct cultural priorities and preferences, which influence the diverse ways people perceive risk (Lazrus 2015, p. 53). Lazrus (2015) describes four idealized worldviews about how societies should function and interact with nature: the individualist, the fatalist, the hierarchist, and the egalitarian. The individualist worldview is characterized by weak social bonds and a minimal social structure. This worldview perceives nature as benign and able to adjust and adapt to human alterations. The fatalist worldview has weak social bonds and a stratified society governed by a set of rules. Unlike the individualist, however, the fatalist acknowledges the unpredictable nature of the environment. The hierarchist worldview has strong social bonds that are governed by numerous rules. This worldview characterizes nature as manageable and able to handle *some* human-induced changes. Additionally, this worldview expects scientists and practitioners to identify the point at which the environment can no longer handle anthropogenic alterations and plan accordingly. Lastly, the egalitarian worldview consists of strong social ties between people with internally agreed-upon rules. The egalitarian characterizes the nature-culture relationship as fragile, meaning the environmental balance can be easily tipped (Lazrus 2015, p. 54).

Determining the worldview of affected communities will allow researchers to gain a deeper understanding of the way environmental risks are perceived in specific cultural contexts. Community perceptions, observations, and priorities are not sufficient solutions to climate change impacts on their own, but they are necessary when implementing adaptive strategies for marginalized communities. Identifying and analyzing people's perceptions of environmental risks can also shed light on systemic vulnerabilities that leave particular groups of people disproportionately affected by the impacts of climate change (Lazrus 2015). Lazrus (2015) explains that the ways in which people perceive risk influence the adaptive actions they take to address the issue.

Oriangi et al. (2021) conduct a unique study that compares different sectors' status of marginalization and perceptions of resilience in Mbale Uganda. The authors place an emphasis on identifying different perceptions of risk among gender categories, as well as age groups. The findings support the claim that marginalized communities' perceptions and knowledge should contribute to the development of policies, and the different perceptions among different people within the communities should be considered (Oriangi et al 2021). Doing so may allow for improved responses to environmental hazards and disasters and may allow for the development of mitigation strategies that promote equity and sustainability, especially in marginalized communities.

Sense of Place and Place Attachment

Current research in the field of disaster anthropology shows that people may not want to move away from risk-prone areas despite being able to do so; recent literature identifies sense of place and place attachment as two contributing factors to this trend (Stedman 2003; Greer 2020; Swapan & Sadeque 2020). Place attachment is defined as the subjective bonds people develop with the particular places that they deem important or meaningful (Greer 2020, p. 307). Meaning can be derived from social, spiritual, ecological, or cultural values. Sense of place is a seemingly rhetorical feeling that people gain when a large portion of their emotional real estate and self-identity is tied to an area or community (Phillips 2012; Grace-McCaskey et al. 2021; Adkins et al. 2021). Both concepts influence a person's decision to migrate to an area of lower risk or stay in an environmentally threatened place (Greer 2020). Disasters are place-based phenomena that alter the physical and social landscape, which in turn, challenges how people understand where they live and their bonds with their environment. The physical environment can play a role in the development of sense of place and place attachment, which makes understanding these concepts crucial to successful disaster mitigation that supports community members.

The place, or object of attachment, encompasses both physical and social characteristics that influence the development of place attachment (Greer 2020). The physical characteristics are tangible components that make the place practically desirable such as jobs, transportation, resource access, etc. Social characteristics include the people who live in the area and the social networks people develop and share within the community. Developing relationships with fellow community members has a positive relationship with the development of place attachment (Greer

2020). Additionally, an individual's perception of place is affected by their individual experiences in that place. For example, Greer (2020) states that lower-income individuals may have a stronger attachment to place because of the social ties formed through shared coping strategies to economic stressors. The same can be said regarding coping strategies developed by a marginalized community threatened by environmental hazards and disasters (Swapan & Sadeque 2020). Marginalized communities typically suffer the most losses in a disaster because they do not have access to the resources needed to recover. High levels of place attachment may lead people to underestimate the potential for damage and harm caused by disasters and influence peoples' decisions to return to an area after being temporarily displaced. Furthermore, individuals with elevated levels of place attachment tend to suffer increased distress after a disaster. This may affect one's proclivity to resist change and push to restore the place to the way it was before the disaster (Greer 2020).

3.4 Environmental Justice and Political Ecology

Environmental justice refers to “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to development, implementation, and enforcement of environmental laws, regulations, and policies” (EPA 2023, para. 1). This includes equitable protection from environmental and health hazards, as well as equal access to decision-making processes regarding the environment in which people live and work (EPA 2023). However, even though the Environmental Protection Agency (EPA) established an environmental justice department, impacts brought on by disasters are still exacerbated in areas with existing vulnerabilities, such as poverty, poor infrastructure, and limited access to resources. Furthermore, equity is defined by the US Congress and House Committee on Homeland Security as “recognizing and responding to different needs to ensure everyone can recover with dignity” (US House of Representatives 2021, p. 1). Hoffman (2017) labels inequity in the disaster recovery and mitigation sectors as unequal shares of safety, where less culturally valued segments of the population experience disproportionate impacts from disasters. Less culturally valued segments of the population could be groups based on gender, class, or ethnicity, and are made more vulnerable by their “place in the environment, economics, politics, social structure, ethos, and prejudice” (Hoffman 2017, p. 196). Similarly, Emrich et al. (2021) label social vulnerability—a set of pre-existing social conditions at the individual or

community levels that hinder disaster preparedness, recovery, and management efforts (p. 3)—as a factor that influences the pace and progression of post-disaster recovery processes.

Miller Hesed and Ostergren (2017) explain that climate change is not equally contributed to by all communities, not all groups of people are equally exposed to the impacts of climate change, and not all community members are equally empowered to contribute to post-disaster decision-making processes. This supports the idea that climate change is inherently unjust. For example, relatively affluent communities emit higher amounts of greenhouse gases, which, in turn, contribute to climate change more than others; however, marginalized communities remain more vulnerable to the long-lasting effects of climate change.

Environmental injustices, or “the disproportionate exposure of certain populations to environmental hazards” (Maantay 2002; p. 161), are perpetuated more in communities that have dealt with other types of inequalities in the past, such as racism and discrimination. Research shows that Black Americans have historically contributed less than other Americans to climate change and continue to do so. For instance, Black households emit twenty percent less carbon dioxide than White households, yet they are more likely to suffer from environmental threats at a disproportionate rate due to a lack of resources and little-to-no decision-making power when it comes to disaster mitigation (Congressional Black Caucus Foundation, Inc. 2004; Barrios 2016; Miller Hesed & Ostergren 2017). One of the key factors contributing to environmental injustice is the lack of inclusion of community members in decision-making. Excluding community members from decision-making processes will only perpetuate environmental injustices and communities will remain at risk for destructive environmental events in the future (Miller Hesed & Ostergren 2017; Maldonado 2016).

Miller Hesed and Ostergren (2017) introduced an environmental justice workshop to communities on the coast of Maryland. Their goal was to create space for multidisciplinary discussions on justice and adaptation that led to recommendations for increasing justice in this area. They engaged community members in hopes of increasing shared knowledge and trust in researchers and practitioners. Like Maldonado (2016) and Oriangi et al. (2021), Miller Hesed and Ostergren (2017) argue that community members should be included as equal stakeholders with equal decision-making power.

Through an exploration of post-disaster contexts in New South Wales, Australia, Matthews et al. (2020) found that marginalized groups are disproportionately impacted by extensive flooding events and are at a greater risk of displacement and poor mental health. The authors aim to establish the ways, if any, social capital provides benefits to marginalized groups in post-disaster contexts. Matthews et al. (2020) utilize a cross-sectional survey to quantify the associations between various flood impacts, individual social capital, and psychological distress. The authors discuss exposure to a flood event harms the mental health of the entire community, but those with more social capital are not as severely impacted. Aboriginal and financially disadvantaged respondents reported lower levels of social capital than the general community respondents, yet informal social connectedness and belonging were crucial factors for all participants and were associated with risk reduction (Matthews et al. 2020).

Furthermore, anthropologists Reinke and Eldridge (2020) explore the role of bureaucratic violence in perpetuating environmental injustices in post-disaster contexts. Bureaucratic violence is a form of everyday violence in which lengthy bureaucratic processes and “red tape” perpetuate environmental inequities (Reinke and Eldridge 2020). For instance, the temporality of bureaucratic violence in times of crisis is a form of bureaucratic violence that exacerbates suffering. The authors utilize ethnographic methodologies to explore the perception of hurricane recovery in Cumberland County, NC, an area along the Cape Fear River that was impacted by Hurricane Matthew in 2016 and Hurricane Florence in 2018. This case study identifies the ways in which bureaucratic decisions may impact disaster survivors. Moreover, bureaucracies, such as local, state, and federal disaster recovery and mitigation agencies, are interactive socio-cultural entities that influence and shape the everyday realities of community members. When decisions are made without including local perceptions, new knowledge is produced, and power is shifted away from the impacted individuals (Reinke and Eldridge 2020).

Unfortunately, broader institutions, such as the Federal Emergency Management Agency (FEMA), often shape recovery processes. According to Reinke and Eldridge (2020), FEMA representatives are often not well-versed in the needs of local people, and, all too often, survivors are left with unwieldy and time-consuming paperwork that they do not understand. Any money received by survivors for repairs, clothing, food, shelter, etc. must be tracked carefully with receipts. If proper steps are not followed by the survivors, then they may have difficulty

receiving funds in the future (Reinke and Eldridge 2020). Emrich et al. (2021) state that agencies may not account for social vulnerabilities, which perpetuates inequity in disaster recovery, response, and mitigation processes. Thomas (2022) provides further evidence of this claim through their comparison of flood-mitigation strategies implemented in marginalized and wealthy communities. For example, small towns along the Atlantic and Gulf coasts of Florida—whose population is 90% White Americans despite the White population of Florida only being 53%—have received 10% of the \$58 million that has been allocated to the entire state for elevations (Thomas 2022). When emergency management agencies prioritize wealthy, predominantly white communities, environmental justice concerns grow within marginalized communities. Disaster recovery and mitigation strategies that do not account for social vulnerabilities reduce the pace and progression of recovery and mitigation efforts, which leaves little room for long-term disaster mitigation strategies that consider community members' concerns and the future trends of climate hazards (Reinke and Eldridge 2020; Emrich et al. 2021).

Political Ecology

Political ecology is a common theoretical framework implemented by disaster anthropologists to identify inequities related to the impact, response, and recovery of a disaster (Barrios 2016). Peluso and Watts (2001) explain that political ecological research focuses on differential power relationships to provide “tools for thinking about conflicts and struggles engendered by the forms of access to, and control over, resources” (p. 24-25). Political ecology has shaped the understanding of disasters as historical processes that involve co-constitutive interactions and relationships between people and the material environment in which they live. This theoretical framework aligns the goals of disaster anthropology with the core tenants of cultural anthropology by placing a focus on core interpretations of cultural interactions with disasters (Faas & Barrios 2015).

Maldonado (2016) acknowledges how historical processes, differential power relationships, and disasters shape and reshape culture. For instance, policymakers and media outlets reshape culture in similar ways; with the development of catchphrases that become “new truths” that overshadow and overlook the survivors of a disaster and its underlying causes. This is an important aspect of political ecology because catchphrases and headlines act as imposed

boundaries and definitions that create or perpetuate harmful power relationships. This can also act as a barrier to achieving equity. Throughout the case studies presented by Maldonado (2016), one theme remains present, victim blaming. Victim-blaming not only places the burden and responsibility of the disaster on the victims but also deprives survivors of agency and social cohesion. Maldonado utilizes political ecology to argue for a better understanding of culture as fluid and ever-changing. Similarly to Oliver-Smith (1999; 2019) as well as other sources, she acknowledges the ways in which culture is influenced by differential power relationships and long-lasting historical processes.

In 2017, Miller Hesed and Ostergren assessed the vulnerability of three Black communities along the coast of Maryland. This evaluation required the identification of each community's sensitivity and risk of exposure to disaster impacts, as well as an analysis of their adaptive capacity. Many of the environmental justice issues in these communities were not properly addressed because of the different perspectives held by community members, decision-makers, and other stakeholder groups regarding the timeframe of recovery, vulnerability, environmental conservation, and knowledge. Policymakers often have different goals for disaster mitigation than those of community members. This creates obstacles to participation, such as a lack of financial resources, historic prejudices, and little-to-no access to decision-making processes, which exacerbates issues related to environmental injustice. If true collaboration with community members is prioritized, there will be more successful disaster mitigation strategies put in place (Miller Hesed & Ostergren 2017).

Co-Production of Knowledge and Disaster-Risk Management Strategies

The literature presented above suggests the importance of considering local knowledge and context within the realm of policy and strategy development. However, researchers must strive for the co-production of disaster-risk management strategies and related knowledge. Co-production is broadly defined as different people deliberately working together to achieve a common goal (Bremer and Meisch 2017). Environmental justice frameworks expand on this simple definition, stating that co-production is the “process by which established hierarchical, power relationships between experts and lay communities, and service providers and users, are broken down, so that citizens, experts, and decision-makers are more equal partners in co-producing programming and policy” (Hope et al. 2019, p. 1159). Some researchers advise that

current attempts to co-produce disaster-related knowledge focus too much on the individual and less on the systemic, structural changes that need to take place to promote equity in decision-making and address the root causes of poverty, climate change, and vulnerability (Hope et al. 2019; Maldonado 2016).

Hope et al. (2019) argue that power, wealth, energy, and information drive unequal access to the resources necessary to mitigate environmental hazards and disasters. Because of the rapid social change associated with disasters, the recovery and mitigation processes provide unique opportunities to address the root causes of climate change inequity. It is in this way that state, federal, and non-governmental agencies incite social change and perpetuate environmental injustices that are felt by so many marginalized communities.

In this chapter, I presented a variety of literature to demonstrate the importance of exploring disaster mitigation through the lens of anthropology. Anthropologists can define key terms and concepts holistically while considering culture and community. However, scientists and practitioners cannot tackle extreme climate threats on their own. The case studies described above demonstrate the need for collaborative mitigation strategies that consider local context and knowledge. Furthermore, successful disaster mitigation requires the co-production of knowledge and policies, including all community members, resource users, and stakeholders. Disaster research cannot and should not be done in an academic vacuum. Disasters influence culture and vice versa; therefore, disaster-related policy influences culture and how communities interact with their surrounding environment. In the next chapter, I discuss the role of the above concepts within the context of Princeville: the first town chartered by Black Americans in the US.

Chapter 3: Background of Flood Events and Associated Disaster Mitigation Strategies

3.1 Chapter Overview

To understand the current concerns and dilemmas regarding the recovery of Princeville, North Carolina (NC), it is important to comprehend the historical processes that influence the town's current vulnerability, resiliency, and hazard mitigation strategies. This chapter illustrates how the location of Princeville and its historical context have led to increased vulnerability to the impacts of flood events. Furthermore, I describe the role that state and federal institutions have in the disaster recovery and mitigation processes at the national level. Lastly, I explain the steps that local, state, and federal decision-makers have implemented in Princeville to mitigate future disasters. Data for this chapter were provided by several government websites and planning documents created to promote recovery and resilience in Princeville.

3.2 Location



Figure 3.1. Location of Princeville (star) in the Tar-Pamlico watershed

(Map provided by John E. Sabin III)

A floodplain is a flat, or nearly flat, parcel of land that experiences flooding due to its proximity to a lake, river, or stream (Alvarez 2010). Princeville, NC is situated in a floodplain along the Tar River in Edgecombe County (*Figure 3.1*). While floodplains often provide many

environmental benefits, in this context, an unmanaged floodplain has led to continuous environmental risks for the residents of Princeville. When a human settlement is established inside a floodplain, it prompts the development of flood management strategies such as levees and dikes (Opperman et al. 2017). I will discuss this further in sections 3.5 and 3.6 of this chapter.

3.3 Historical Context

During the Civil War, Union Troops occupied a small area of land along the southern part of the Tar River in Edgecombe County, NC. Many enslaved people moved to the area in search of freedom and federal protection. After the war ended, in 1865, and enslaved peoples were freed, Black Americans began to settle in swampy lands across the Tar River, just south of the nearby town of Tarboro. Those who settled in the area began to erect structures and named the area Freedom Hill, after the area of land where Union soldiers announced the Emancipation Proclamation (Mobley 1986). The deed to the land, however, belonged to two white farmers. It is thought that they chose not to evict the new residents because of the presence of Union soldiers and the location of the land. The floodplain in which Freedom Hill was established affected the utility and subsequent value of the land. This worked in the favor of the new residents because the land was inexpensive and easy to obtain; many newly liberated Black Americans were able to become landowners in a time of racial violence (Mobley 1986).

The proximity of Freedom Hill to Tarboro—approximately 1 mile—was mutually beneficial for the residents of both towns; Freedom Hill residents could work and earn money close to home, while Tarboro residents profited from various forms of labor provided by the residents of Freedom Hill. Tarboro residents were also pleased with the “social distance” they maintained from the Black residents in Freedom Hill (Mobley 1986). While the Civil War was over, racial tensions were still very high. Shortly after the founding of Freedom Hill, residents experienced political and economic growth by becoming legal landowners, establishing small businesses, and gaining further employment in Tarboro. In 1885, citizens of Freedom Hill petitioned for incorporation of the town for multiple reasons; legal incorporation of the town would offer protection from white hostility and racial discrimination, residents would gain the ability to elect town officials and contribute to local politics—something previously denied to

Black Americans, and Black residents would have the freedom to succeed without white interference (Mobley 1986, 350).

Freedom Hill was incorporated as Princeville in 1885, making history as the first town chartered by Black Americans in the United States (US) (Mobley 1986). Residents chose the name “Princeville” to honor Turner Prince, one of the town’s most influential citizens who was one of the first to purchase land and construct a dwelling (Naylor et al. 2020). This incorporation allowed Princeville to be governed by the same provisions as Tarboro, including the number and structure of governing bodies: one Mayor, five Commissioners, a Clerk, a Treasurer, and a Constable (Mobley 1986). Although Princeville was growing economically and politically, the proximity to the Tar River continued to be an environmental threat.

Princeville residents were continuously impacted by flood events in 1887, 1919, 1924, 1928, 1940, and 1958 (Naylor et al. 2020). Every time the area was impacted by a flood event, residents would clean up and rebuild, which continues to be a source of pride for Princeville residents today (Naylor et al. 2020; Grace-McCaskey et al. 2021). The US Army Corps of Engineers (USACE) began developing a dike in 1967 in an attempt to protect the town from a 500-year flood event, which is determined to have a 0.2% chance of impacting any given area, annually (USACE 2015a, 1; Naylor et al. 2020; FEMA 2023). The Federal Emergency Management Agency (FEMA) categorizes flood events based on the National Flood Insurance



*Figure 3.2. Original levee with US 64 road alignments
(Appendix B, USACE 2015a, 1)*

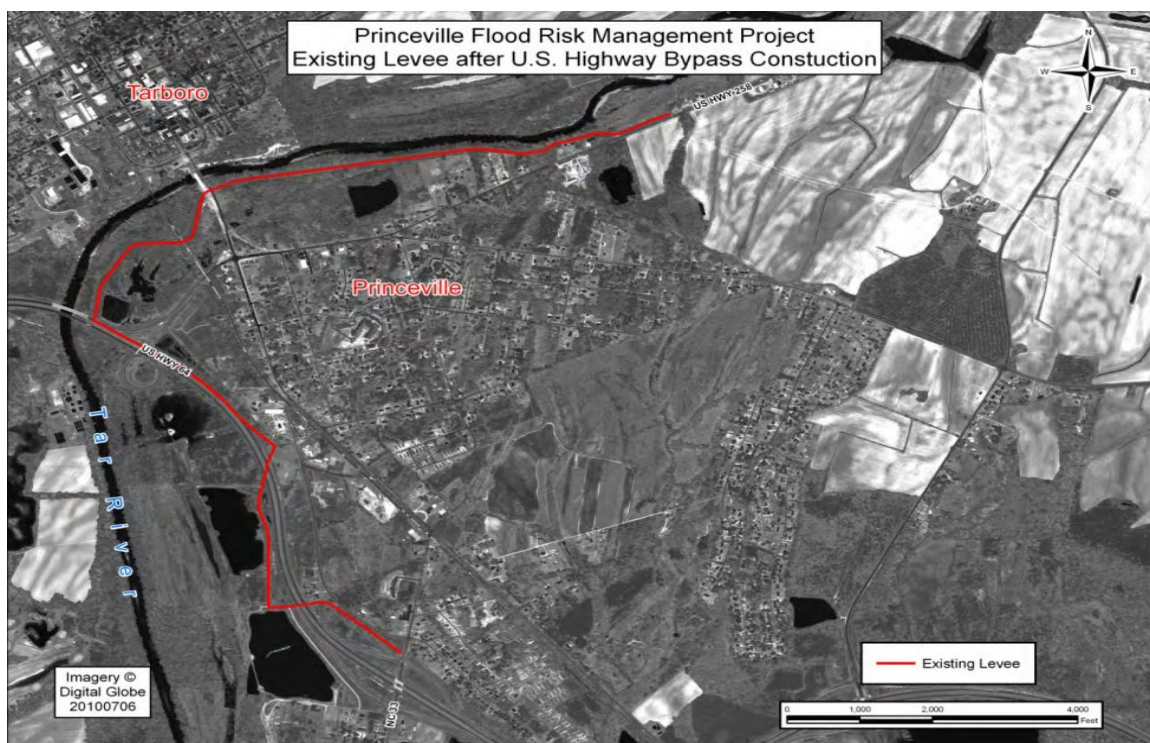
Program (NFIP) Terminology Index (FEMA 2023). The original construction of the dike and levee structure in 1967 (*Figure 3.2*) consisted of a levee system, divided into two segments that ran parallel to the Tar River, and a segment of US Highway 64 (USACE 2015a, p. 1) This separated the town from the river and provided protection from smaller flood events. Because of the assurance the US ACE and local leaders provided, residents believed this would solve the problems associated with flooding and more people would move to Princeville (Phillips et al. 2012). However, in 1999, a series of small storms, coupled with category 4 Hurricane Floyd, would prove the dike to be ineffective against high floodwaters (Phillips 2012; USACE 2015a, p. 3).

3.4 History of Storm-related Flood Events

On September 16, 1999, Hurricane Floyd made landfall over eastern North Carolina (ENC). The hurricane along with five previous rain events caused the Tar River to crest over 43 ft, breaking the levee and flooding Princeville (USACE 2015a). The flood waters entered the town beyond the southern segment of the levee, however, as flooding increased, water continued to breach the northern section of the levee as well. Fortunately, no lives were lost, but Hurricane Floyd destroyed over 1,000 residential and business structures in the town. The town remained underwater for approximately two weeks (Yoon 2009; Phillips 2012; USACE 2015a; Grace-McCaskey et al. 2021). Several public figures including Jesse Jackson, Prince, and former President Bill Clinton made public appeals to bring awareness to Princeville in the wake of Hurricane Floyd. President Clinton issued Executive Order 13146 to “repair and rebuild Princeville, and to the extent practical, protect Princeville from future floods” (USACE 2015a, 3). Furthermore, officials concluded that the levee should be rebuilt and extended at both ends (*Figure 3.3*).

FEMA responded to the flood by offering a total acquisition, or buyout, of all residential and business structures within the 100-year floodplain. A 100-year flood, or base flood, is defined as a flood that has a 1% chance of impacting this area annually (FEMA 2023). Acquisition of all residential structures would mean the displacement and relocation of all residents. Princeville’s Board of Commissioners voted to decline the acquisition proposal, as they felt that leaving the area would mean giving up the legacy their ancestors worked so hard to establish (Phillips 2012; Grace-McCaskey et al. 2021). Some commissioners also believed that

residents did not have the financial means to start a new life somewhere else and that the town's tax base would be negatively impacted by the outflow of citizens. With the denial of the acquisition, USACE offered to rebuild the levee (Grace-McCaskey et al. 2021). According to residents, they believed that the levee would protect them from storms for the next 100 years since they were told by officials that the levee was built to withstand a 100-year flood event (Grace-McCaskey et al. 2021). However, some residents believed this provided a false sense of security to those who chose to return to the area (Naylor et al. 2020; Grace-McCaskey et al. 2021).



*Figure 3.3 Levee system post Hurricane Floyd
(Appendix F, USACE 2015b, 3)*

Just seventeen years later, on October 8, 2016, Hurricane Matthew again brought extensive rain to eastern NC, causing the Tar River to crest over 36 ft. The rising water went around the levee and flooded the town, leaving more than 80% of Princeville under water (Naylor et al. 2020; Adkins et al. 2021; Grace-McCaskey et al. 2021). FEMA offered acquisitions, but this time, individuals were able to accept or deny the offer as they deemed fit.

Some property owners impacted by both hurricanes accepted the buyouts and relocated elsewhere. Between 2016 and 2018, the population of Princeville declined by about 10%. While some residents did accept the acquisition, for many, the decision to stay in the area despite flooding still outweighed the decision to relocate (Adkins et al. 2021; Grace-McCaskey et al. 2021). However, the recovery and mitigation processes in Princeville are slow-moving, to say the least; Hurricane Matthew impacted Princeville over 6 years ago, yet community members are still displaced or living in damaged houses.

3.5 Disaster Recovery and Mitigation

This thesis focuses on the hazard mitigation strategies employed in Princeville, NC, however, it is important to broadly understand the procedures and strategies implemented by state and federal agencies in the US for recovery and mitigation following a disaster. FEMA is responsible for responding to federal disasters, while each state has its own branch of emergency management. For instance, North Carolina Emergency Management (NCEM) is responsible for handling disasters at the state level in NC. All of the information presented in the following section was pulled directly from the official website for FEMA.

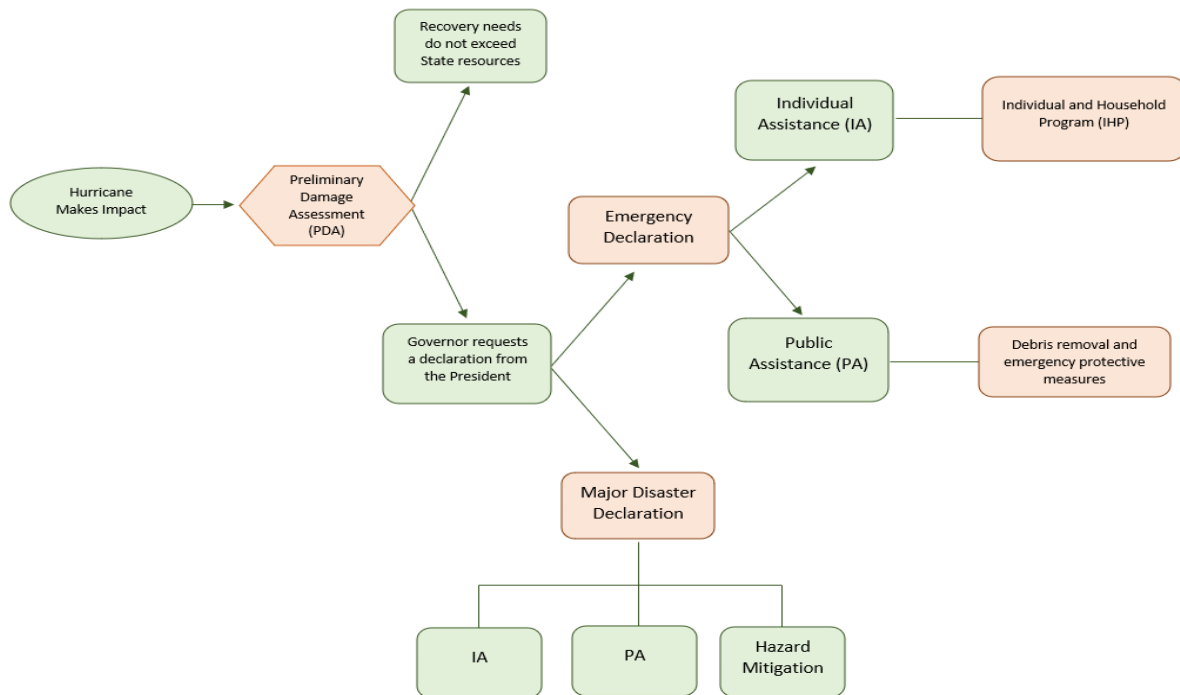
When a disaster impacts a community, the county and state governments are responsible for funding recovery and mitigation efforts unless the damages exceed the resources available to the state. Directly following a disaster, the state is responsible for contacting the FEMA Regional Office for their area to request a joint, state and federal, Preliminary Damage Assessment (PDA). In large-scale disasters, this is done using the flyover method and the development of flood maps. The PDA team, comprised of local leaders and state and federal government personnel, assesses the extent of the damage, the impact the disaster has on individuals and public facilities, and the types of federal assistance that may be needed. The governor is responsible for including this information in a declaration request for federal assistance, to show that the extent of the damage exceeds the capabilities of the state due to a lack of resources.

Even though the governor may submit a declaration request to the president through the proper FEMA Regional Office, they are still responsible for taking the proper steps laid out in the state's emergency plan. In doing so, the governor must provide the FEMA Regional Office with a description of the state and local government efforts and resources available for use during recovery efforts, a description of other federal agency efforts and resources utilized, and a

description of the type and extent of additional resources needed to alleviate the impact of the disaster. This information is collected during the PDA and included in any requests for federal assistance (FEMA 2023).

If the disaster is severe enough to require federal assistance, the president may issue one of two declarations: emergency declarations and major disaster declarations (see Figure 3.4). The president can declare an emergency declaration any time they think federal assistance is needed for an area to recover from a disaster. This declaration aims to supplement the recovery efforts made by state and local governments to ensure the protection of lives, property, public health, and safety. While the emergency declaration is designed to lessen the threat of a disaster in any part of the US, the total funds of each declaration must not exceed \$5 million (FEMA 2023). To meet the requirements for an emergency declaration, the governor must submit a request to the president within thirty days of the disaster and the situation must surpass the capabilities of the local and state governments. Under an emergency declaration, Public Assistance (PA) and Individual Assistance (IA) are provided to aid in recovery and mitigation efforts.

Figure 3.4: Steps taken to recover after a hurricane



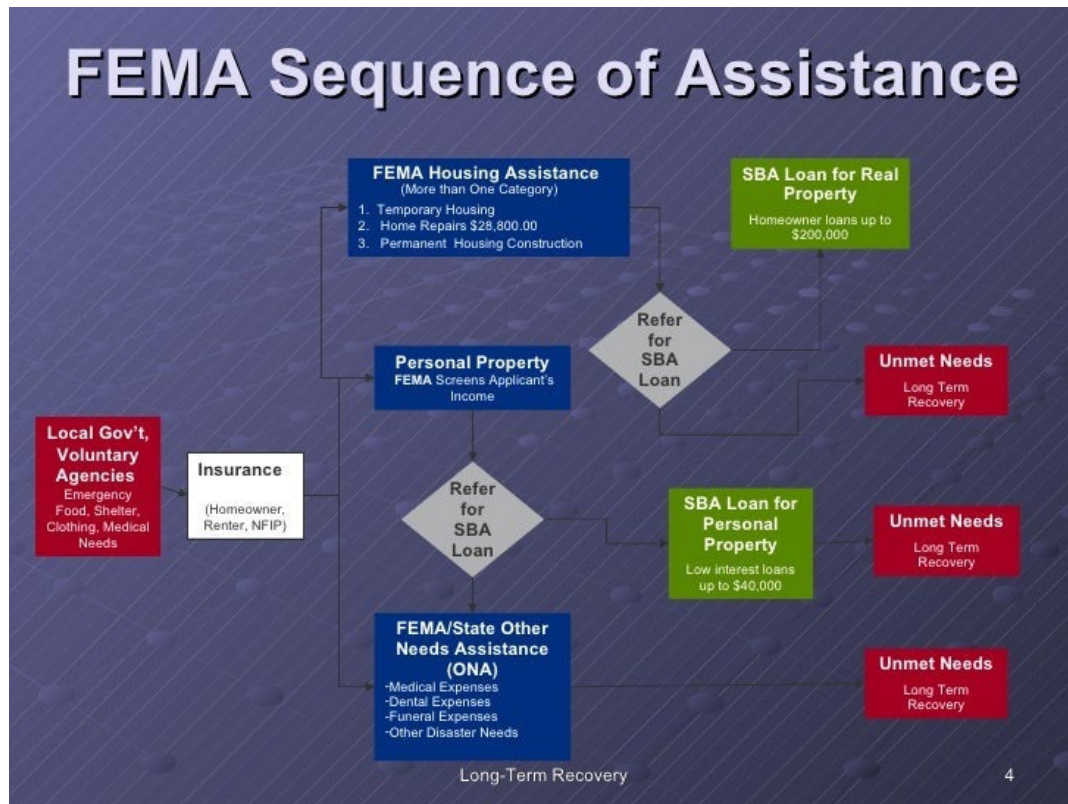
For more information on the programs available through a Major Disaster Declaration, see Table 3.1 below

PA programs provide additional funds to “state, tribal, or territorial governments...so communities can respond to and recover from major disasters or emergencies” (FEMA 2023). In an emergency declaration, PA provides the resources to remove debris and take emergency protective measures, however, the cost is split between federal agencies which are responsible for 75% of the total costs, and non-federal agencies which supply the remaining 25%. The only form of IA available under an emergency declaration is known as the Individuals and Household Program (IHP), which is typically completely funded by federal agencies (FEMA 2023).

According to FEMA, “the president can declare a major disaster for any natural event, including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought, or, regardless of cause, fire, flood, or explosion, that the president determines has caused damage of such severity that it is beyond the combined capabilities of state and local governments to respond” (FEMA 2023, para 15). Like an emergency declaration, this type of declaration requires the governor to submit a request to the president within thirty days of the disaster. This request must show that the impact of the disaster is beyond the capabilities and resources of the state. Furthermore, it must also include the following: confirmation that the governor has taken the appropriate action described in the state emergency plan, an estimate of the amount and severity of damage to public and private sectors, a description of the efforts taken by state and local governments to mitigate the disaster, estimates of the type and amount of assistance needed, and a certification by the governor that the state or local governments will comply with all applicable cost-sharing requirements (FEMA 2023).

The assistance provided by federal agencies is dependent on the type of assistance requested by the governor. Unlike an emergency declaration, a major disaster declaration includes Hazard Mitigation Assistance which assists in any actions taken to prevent or reduce long-term risk to life and property from environmental hazards (see table 1). IA programs are a bit more extensive than that of an emergency declaration, consisting of the IHP, crisis counseling, disaster case management, disaster unemployment assistance, disaster legal services, and disaster supplemental nutrition assistance program (FEMA 2023). The process of IA is outlined in Figure 3.5. FEMA assesses the needs of each impacted individual to see what resources are required to provide housing assistance, replace personal property, and assist in other areas of need such as

medical or dental expenses. If further assistance is needed outside of the scope of financial resources that FEMA can provide, the individual is referred to the Small Business Administration (SBA) to apply for a loan. Any unmet needs are then addressed via the long-term recovery division of emergency management.



*Figure 3.5 Sequence of assistance through FEMA's IA program
(FEMA 2023)*

FEMA is responsible for evaluating declaration requests and sending recommendations to the president about how to proceed. Six factors are assessed when considering the amount and type of IA provided to any given area. These include: the state fiscal capacity and resource availability, the number of uninsured homes and personal property lost or impacted, a profile of special populations that may need special or long-term care that is difficult to maintain during a disaster, the amount of impact to the local infrastructure, the number of casualties, and any disaster-related unemployment patterns (FEMA 2023).

The PA program under a major disaster declaration is described as “assistance to State, Tribal, and local governments and certain private nonprofit organizations for emergency work and the repair or replacement of disaster-damaged facilities, which may include the following categories: (A) debris removal, (B) emergency protective measures, (C) roads and bridges, (D) water control facilities, (E) buildings and equipment, (F) utilities, and (G) parks, recreational, and other facilities” (FEMA 2023).

Table 3.1: Types of Assistance When a Major Disaster Declaration is Declared		
Individual Assistance	Public Assistance	Hazard Mitigation
IHP	A- Debris removal	Assistance for actions taken to prevent or reduce long-term risk to life and property from environmental hazards.
Crisis Counseling	B- Emergency Protective Measures	
Disaster case management	C- Roads and bridges	
Disaster unemployment assistance	D- Water control facilities	
Disaster Legal Services	E- Buildings and equipment	
Disaster supplemental nutrition assistance program	F- Utilities	
	G- Parks, recreational, and other facilities	

(FEMA 2023)

Table 3.2 presents the factors FEMA considers when providing different forms of assistance to impacted areas. The six factors considered for IA are straightforward and need no explanation, however, the factors that FEMA personnel consider when providing PA to a community are more in-depth. PA considerations begin with analysis of the estimated cost of the requested assistance. To gain a measure of per capita impact, FEMA measures the estimated cost of federal and non-federal PA against the affected population. Per capita amounts are used by FEMA as an indicator that the disaster is so severe that it warrants federal support. It is important to note that this figure changes annually based on the Consumer Price Index created by the US Bureau of Labor Statistics (BLS) (FEMA 2023). FEMA then considers the localized impacts; specifically, they evaluate the impact of a disaster at the state and local government levels to see if any extraordinary circumstances warrant federal involvement, even if the statewide, per capita quota, is not met.

The next consideration is insurance coverage in force. In other words, FEMA estimates the amount of active insurance coverage that is required by law at the time of the disaster and then reduces their assistance by that amount. Hazard mitigation is considered to encourage steps to mitigate future damage brought on by disasters. This consideration is extremely important when discussing communities or towns that do not meet the estimated cost assistance per capita consideration (FEMA 2023). FEMA considers the history of disaster impacts within twelve months, to get a better sense of the overall assistance needed in a particular area. Lastly, FEMA considers any additional federal programs that may aid the affected area. There may be different agencies that can meet different needs created by disaster impacts.

Table 3.2: Factors FEMA considers for assistance	
Individual Assistance	Public Assistance
State fiscal capacity and resource availability	Estimated cost of assistance
Uninsured home and personal property losses impacted	Localized impacts
Disaster impacted population profile special populations	Insurance coverage in force
Impact to community infrastructure	Hazard mitigation
Casualties	Recent multiple disasters
Disaster-related unemployment	Other Federal agency assistance programs

(FEMA 2023)

3.6 Recovery and Mitigation in Princeville

The recovery and mitigation strategies outlined in the previous section are similar to the strategies implemented in Princeville, NC. However, the development and implementation of the state centric pilot program established by FEMA HMGP is new and relatively unique to Princeville. Throughout the course of the data collection phase of this research, North Carolina Emergency Management (NCEM) and FEMA developed and introduced the state centric approach to disaster mitigation in Princeville. According to the North Carolina Department of Public Safety (NCDPS), this program allows the state to provide funds to finance contract work for mitigation purposes and complete all grants that have been previously awarded. This program was designed to remove the financial burden from counties and smaller municipalities when

attempting to initiate mitigation efforts such as elevations (ncdps.gov, accessed on 05/01/2023). This program also attempts to hire local contractors to decrease the costs of materials and ensure that funds are redistributed throughout the applicant's community. Financial responsibility, as well as the coordination of labor, materials, and project management, lies with the state.

Additionally, Princeville has been the recipient of many grants to mitigate the impacts of future disasters. In 2018, Princeville, along with twenty-nine other communities affected by Hurricane Matthew, received the Community Development Block Grant-Disaster Relief (CDBG-DR) in the form of \$625,000. The CDBG-DR program was initiated by the US Department of Housing and Urban Development (HUD) and administered in part by the NC Commerce Rural Economic Development Division (NC Department of Commerce 2022). This grant attempts to promote affordable housing and infrastructure development that addresses the needs of the overall Princeville community. Because the funds are utilized to promote disaster mitigation on the broader community level, they are categorized as Public Assistance (FEMA 2023; NC Department of commerce 2022).

Furthermore, to maintain Princeville's original historical significance and ensure the community's safety, the state funded the annexation of 53-acres of land outside of the 100-year floodplain. While the town plans to relocate essential services and construct affordable housing, the original location of Princeville will continue to hold historically significant structures such as the town hall, senior center, museum, Princeville Elementary School, and Mt. Zion Primitive Baptist Church (Grace-McCaskey et al. 2021). An additional 88 acres were acquired by the town to further develop ancillary facilities and mitigate the destructive nature of future disasters (Grace-McCaskey et al. 2021).

This chapter briefly outlined the historical processes that led to an increase in Princeville's vulnerability to disasters as well as the recovery and mitigation efforts implemented to ensure the future safety of Princeville citizens. This highlights the complex nature of recovery and mitigation efforts in this area while explaining the steps community members and local leaders have taken to protect themselves from future harm.

Chapter 4: Research Design and Methodology

4.1 Chapter Overview

Data for this thesis were collected using a variety of qualitative methods between May 2022 and December 2022. I utilized participant observation to gather contextual information and gain rapport with potential participants. Semi-structured interviews were conducted with community members and local leaders of the town of Princeville in Edgecombe County, North Carolina (NC). Additionally, I interviewed state and federal agency personnel who have worked with the local leaders in Princeville during the recovery and disaster mitigation processes. This chapter explains the study site, specifically the demographic and economic characteristics of the area. I discuss the sampling strategy and the research design beginning with an explanation of the research questions and associated goals. Lastly, I describe the qualitative methods I used for data collection and analysis.

4.2 Study Site

Princeville was selected as the study site for this research because residents have been impacted by two major flood events that continue to have long-lasting impacts—Hurricane Floyd in 1999 and Hurricane Matthew in 2016. Previous disaster recovery strategies have not allowed for economic or social growth within the town; however, disasters bring about rapid social and environmental change which provides opportunities to explore recovery and mitigation strategies (Barrios & Faas 2016). Furthermore, the town's historical significance contributes to residents' sense of place and place attachment, which influences their decisions to return to the area after a major flood event (Grace-McCaskey et al. 2021).

All demographic and economic data of the town come from United States census data published in 2021 (US Census Bureau 2021). The population of Princeville is 1,648 individuals, 93% of which are Black Americans. Fifty-two percent of residents are between the ages of 18 and 64. Of the current population, 59% are women. Nearly 20% of citizens currently live below the poverty line, which is about 10% higher than in surrounding areas (US Census Bureau 2021). Fifty one percent of homeowners are women, 4% are men, and 43% are owned by non-family or married couples. Of the 859 residential structures in the town, 31% remain vacant and 48% are

mobile homes; both statistics are more than double the average percentages of the rest of North Carolina (US Census Bureau 2021).

Table 4.1
Princeville Demographic Information

	Number	Percentage
Race and Ethnicity		
Black	1,534	93.1
White	4	1.6
Multiracial	4	0.2
Hispanic	84	5.1
Age		
0-9	248	15.1
10-19	259	15.7
20-29	213	13.9
30-39	143	8.7
40-49	116	7
50-59	261	15.8
60-69	250	15.2
70-79	102	6.2
80+	56	3.4
Sex		
Female	967	58.7
Male	681	41.3
Persons Below the Poverty Line	326	19.8
Population by Household Type		
Married couple	498	30.3
Male householder	73	4.5
Female householder	839	51.5
Non-family	232	14.1
Number of Occupied Houses	589	68.6
Number of Vacant Houses	270	31.4
Type of Residential Structure		
Single unit	337	39.2
Multi-unit	112	13
Mobile home	410	47.7
Boat, RV, van, etc.	0	0

Note. For more detailed demographic information see US Census Bureau 2021

4.3 Sampling Strategy and Description of the Sample

This research required the recruitment of community participants who have previously been impacted by flood events. Additionally, this research required the recruitment of local, state, and federal agency personnel who work closely with residents throughout the disaster recovery and mitigation processes. To access all these groups, I utilized snowball sampling.

Snowball sampling is a non-probability, convenience sampling strategy where a few participants are asked to identify others who might be interested in participating in the research project (Kalton & Anderson 1986; Thompson 2002, p. 183; Woodley & Lockard 2016, p. 322). Convenience sampling allows researchers to access a subset of a population who may otherwise be inaccessible (Heckathorn 2011; Woodley and Lockard 2016). This type of sampling strategy is also favorable when research requires a lot of data from a few participants (Bernard 2011). Furthermore, I found that many community members who have similar concerns regarding disaster mitigation are in contact and have some form of social relationships. This was beneficial when attempting to establish rapport with residents who have been impacted by flooding. At the end of each interview, I asked the participant if they knew of anyone else who would be willing to participate in this research. In some cases, I would emphasize that the participant could verify with the potential participant that they would be interested in being interviewed before I was provided with any contact information. New participants expressed that they were able to gain insight into the interview process because previous participants shared their experiences when asking for permission to provide me with their contact information. It is in this way that snowball sampling created a level of trust between me and the participants.

Snowball sampling is often critiqued by social science researchers for possible selection bias, a lack of diversity of subjects, and validity (Woodley & Lockard 2016, p. 322-324). The lack of a diverse sample size is a common critique because, oftentimes, the people who are willing to discuss their experiences in a research setting share similar social circumstances. While this method does not allow for a very diverse sample size, Woodley and Lockard (2016, p. 324) emphasize that snowball sampling allows scholars to utilize social networks to conduct research within marginalized communities without further marginalizing them. Snowball sampling relies on already existing social networks, which means that any Princeville community member who wants to participate in this research can do so, on their own terms.

The total sample size for this research was 20 individuals ($n=20$). I interviewed 8 community members who have been impacted by flood events brought on by Hurricanes Floyd and Matthew. The sample for semi-structured interviews with community members consisted of 5 women and 3 men, 7 of whom were Black, and one woman who was White. This is consistent with demographic information from the area. Additionally, I formally interviewed 12 government and nongovernment agency personnel: 3 were local Princeville leaders, 4 were state-level agency personnel, 4 were federal-level agency personnel, and 1 person worked for a conservation nonprofit agency that continues to work closely with the town. The federal-level agency personnel were associated with various departments within the Federal Emergency Management Agency (FEMA). The state-level agencies included North Carolina Emergency Management (NCEM) and the North Carolina Office of Recovery and Resiliency (NCORR).

This thesis research is part of a larger National Science Foundation (NSF) grant funded through the Coastlines and People program. Because of the nature of that project, IRB approval was acquired (UMCIRB 21-001363) (see Appendix D), which stated that we were not required to obtain signatures from participants. Rather, all participants received a letter of informed consent (see Appendix A). Additionally, at the beginning of each interview, I explained to the participant that their names and any identifying information would be kept confidential, they were allowed to pause or stop the interview at any moment, and they did not have to answer certain questions if they did not want to.

4.4 Research Design

The overall goal of this research is to identify the role of current disaster mitigation strategies in addressing the concerns community members have about the future risks of flooding, specifically in Princeville, NC. To do so, I developed three main research questions:

- (1) What are the main concerns community members have about the future risks of flooding?
- (2) Do community members trust that decision-making bodies—including Princeville’s Board of Commissioners and state and federal agencies—will consider these concerns when developing and implementing post-disaster policies?
- (3) What factors impact the extent to which local officials and state and federal agencies utilize local context and knowledge when developing and implementing disaster mitigation policies?

The objectives of this research complement the main research questions. First, I sought to understand previous disaster mitigation strategies and the continued mitigation policies currently being developed. It is also essential to understand the ways in which flood events have impacted residents, and how they continue to be impacted. Finally, I explored the role of state, federal, and non-profit entities throughout the recovery and mitigation processes.

I utilize an exploratory, nonexperimental, descriptive research design to gather enough information to characterize current disaster-related phenomena in Princeville. I designed the research in this way because I did not have the ability to manipulate any independent or dependent variables as is possible in a more formal, experimental research design (Cook & Cook 2008; Reio Jr. 2016). Instead, I chose to examine the relationship between residents' flood-risk concerns and measures taken by government and non-government agencies to address those concerns. I aim to maximize the benefit that my research can provide to residents and policymakers while minimizing the extractive, and sometimes harmful, nature of academic research within marginalized communities. To do so, I utilized qualitative sampling and data collection methods that allowed participants to share their stories and experiences in their own words and on their own terms.

4.5 Data Collection

I collected qualitative data using three main qualitative methods: participant observation, semi-structured interviews, and free lists. This section describes the methods in detail, including the justification for the use of each method, how each method was utilized, and the type of information each method provided to this research.

Participant Observation

Participant observation requires a researcher to take part in the activities, rituals, interactions and events of a group of people to gain insight into different aspects of their life, routines, and culture (DeWalt and DeWalt 2010, p. 13). Researchers can participate in the common and uncommon activities of the participants. Participant observation is beneficial in providing context to cultural phenomena, such as responses to hurricane impacts on the individual and governmental levels. This method requires the use of the information gained from participation and observation through recording and analysis (DeWalt and DeWalt 2010).

I utilized participant observation to better understand the internal structure of the decision-making process by attending meetings held by Princeville's Board of Commissioners and taking detailed field notes, which included observed steps of the decision-making process and the ways in which community members and commissioners interact with one another. Meetings are held on the third Monday of every month. I attended meetings between May 2022 and December 2022; however, certain circumstances hindered my ability to attend every meeting in person. When this was the case, I watched the meetings on a platform where they were streamed live to the public. Of the 8 meetings I attended, 6 were in person and 2 were online. This initial phase of participant observation aided in establishing rapport with local leaders and community members who would later participate in the interview process. This method also aided in my ability to develop meaningful research questions for residents and local leaders. Additionally, I gained insight into the decision-making process in Princeville.

I attended the Farmer's Market held on the second and fourth Saturday of every month, beginning in July of 2022 and ending in November of 2022. This allowed me to gain rapport with active community members who had a vested interest in the prosperity of the town and its residents. I collected jot field notes as I walked around and spoke with community members and vendors at the market, and I further expanded on those at the end of every week. I had the opportunity to hold two informal interviews while attending the market. In this case, I was able to ask them every question present in the interview guide, however, we were not in a place where recording was feasible. Therefore, I had to take detailed notes regarding their experiences and concerns about flooding and disaster mitigation. This individual also introduced me to his wife, who was able to fill in the gaps and add to the story of their experiences during and after Hurricanes Floyd and Matthew. This interview provided much-needed context to previous flood events. Because of the nature of these conversations, I am considering them as one interview.

Semi-Structured Interviews

I conducted 20 semi-structured interviews that followed a lenient interview guide with open-ended and close-ended questions (see Appendices B and C) to facilitate reliable discussion and build rapport with the participants of this study (Bernard 2011). A lenient interview guide allows the participant to guide the conversation around what they find to be relevant while

keeping the topic on track and ensuring all necessary questions are asked. All of the interviews were recorded and transcribed except one, which could not be recorded due to technical difficulties. During that one interview, I took detailed notes. All interviews that were conducted with community members were in-person interviews, held at convenient areas around Princeville and the nearby town of Tarboro, NC. These included participants' place of residence, employment, the town hall, etc. All local officials were also interviewed in person at their place of business. State and federal personnel were interviewed virtually through Microsoft Teams.

I developed two different interview guides for each group of participants. Interview Guide 1 (IG1) was developed for interviews with residents (Appendix B). Interview Guide 2 (IG2) was developed for interviews conducted with agency personnel (Appendix C). The local leaders were or still are Princeville residents, and in this case, I asked them questions 1-4 from the guide created for community members. I wanted to ensure that I was documenting and understanding their perspective and experiences with hurricanes as well.

IG1 consists of 15 questions. Questions 1 and 2 asked about community members' previous experiences with Hurricanes Floyd and Matthew to gain insight into the ways they have been impacted. Question 3 was developed to identify any long-lasting impacts that community members are still dealing with from hurricanes and flooding. Questions 4-7 were designed to distinguish concerns community members have about the risk of and preparation for future floods. Questions 8-10 determined the residents' perceptions of the efficiency of disaster recovery and mitigation. Questions 11 and 12 established if residents had trust in decision-makers to consider and address their concerns when implementing new disaster mitigation policies. While community members may not have an in-depth understanding of the recovery and mitigation processes, I still felt that with question 13 it was important to ask if they have noticed any challenges or barriers that may make addressing their concerns difficult. Question 14 was designed to identify any new informants that would be willing to participate. Lastly, question 15 was created to ensure that all necessary areas of the topic were covered during the interview process.

IG2 consists of 12 questions, with additional prompts. Questions 1-5 were designed to ascertain information about the participant's role in disaster recovery and mitigation planning.

The goal of questions 6-8 was to determine the extent to which community members' concerns are identified and addressed throughout the recovery and mitigation processes. Question 9 asked participants to identify any challenges and barriers that make it difficult to address community members' concerns in current disaster mitigation strategies. Question 10 served as a place for me to address the questions from IG1 that needed to be asked if the participant was also a community member. Lastly, questions 11 and 12 served the same purpose as questions 14 and 15 from IG1, respectively.

Each interview question was designed to aid in answering a specific research question (Table 4.2). It is important to note that questions 9 and 10 provided data for more than one research question, so they are listed in two categories. The interview questions from IG2 that were not listed provided contextual information regarding previous recovery and mitigation strategies in Princeville and the specific role of each participant in these processes.

<i>Table 4.2</i> Linking interview questions to research questions	IG1	IG2
RQ1: What are the main concerns that community members have about the future risk of flooding?	Questions 1-10	Question 10
RQ2: Do community members trust that decision-making bodies—including the Princeville's Board of Commissioners and state and federal agencies—will consider these concerns when developing and implementing post-disaster policies?	Questions 9-12	
RQ3: What factors impact the extent to which local officials and state and federal agencies utilize local context and knowledge when developing and implementing disaster mitigation policies?	Question 13	Questions 6-9

Free Lists

All informants were asked to participate in a free listing activity in which they list everything that comes to mind when they think of Princeville. This activity was documented in my field notebook and when possible, the activity was recorded. In some cases, the participant felt more comfortable completing this activity without a recording device present. Free list data were collected to identify any varying perceptions held among community members and agency personnel about Princeville. I utilize this free list data to situate perceptions of Princeville throughout the presentation and discussion of results in Chapter 5, and to enhance the understanding of data collected through other methodologies, such as interviews and participant observation (Pilkington et al. 2017).

4.6 Qualitative Data Analysis

Participant Observation

Detailed field notes were collected during participant observation at the Farmers' Markets and Princeville's Board of Commissioners meetings. Analysis through grounded theory allowed me to collect, examine, and understand empirical data about how the decision-making process in Princeville works (Bernard 2011). I coded the field notes using an inductive approach, in which I developed categories for emergent themes during the coding process (Bernard 2011). The initial data identified through field notes collected at Princeville's Board of Commissioners meetings directly informed the questions that I developed for government and nongovernment agency personnel (see IG2 in appendix). To answer RQ3, I needed to develop an understanding of the process of disaster recovery and mitigation, specifically in Princeville, and participant observation provided the necessary context to achieve this goal. Field notes collected during participant observation at Princeville's Board of Commissioners meetings and the Farmers' Markets allowed for the convergent triangulation of the data sets. In other words, collecting these data through different methods allowed me to check to see if the themes present in the field notes were consistent with the themes present in the interview data (Nightingale 2020, p. 478).

Semi-structured Interviews

Prior to any interview, I asked each participant if they would consent to be recorded. Every participant consented; however, technical difficulties prevented recording one interview. In this instance, I took very detailed notes of their answers to each interview question that I later transcribed for analysis. One participant and I were not able to have a face-to-face or virtual conversation. In this instance, I sent her a list of questions that she answered and returned to me. Every other interview was recorded and transcribed verbatim. Initial transcriptions were performed by transcription software, and then I listened to each interview multiple times to correct mistakes in the form of misspelled words, incorrect words, etc. Interviews conducted with community members were initially analyzed separately from those conducted with government and nongovernment agency personnel. This was done to ensure that I could identify themes that aided in answering RQ1 and RQ2, which directly relate to community members' experiences and perceptions. The questions in IG1 that related to RQ3 (see Table 4.1), were then analyzed using the themes that arose during the analysis of interviews with government and nongovernment agency personnel.

I used an iterative process wherein grounded theory was utilized to inductively and deductively code data into meaningful themes. While some themes were predetermined from data collected during participant observation, I also allowed themes to develop throughout the coding and analysis processes (Bernard 2011). NVivo 12 was used during all stages of analysis. During the first stage of analysis, I conducted a preliminary word frequency query which helped to identify key themes throughout the interviews. This query identified one thousand of the most frequently used words throughout all interviews, which provided a sense of which themes were regularly discussed by participants. During the second stage of analysis, key themes were divided into broader themes that directly related to each research question. Once the themes were identified, each interview was further analyzed to identify any instances of co-occurrence or reoccurrence of themes. The results from this analysis are presented and discussed in the following chapter.

Free Lists

All free list data were transferred to two Excel spreadsheets; one was for data collected from community member participants and one was for responses recorded from government and nongovernment agency personnel. Local leaders' responses were included in the analysis of community members' free list data because they are also community members. I felt that including the responses of local leaders would impact the validity of the data collected regarding agency personnel's perceptions of Princeville. Each spreadsheet was analyzed the same way but independently of each other; they were uploaded to NVivo 12, where I conducted a word frequency analysis that identified the 20 most often listed words. I then utilized the word cloud tool to depict the results of the word frequency analysis in a graphic format. With this tool, there is an option to depict every word as they were written or to include all possible uses of the same stem word. I chose to utilize the stem word feature because it combined words that had the same meaning but were written differently (i.e. "historical" and "historic"). Both word clouds are presented and discussed in the following chapter.

The research design and methodology discussed in this chapter were utilized to conduct an in-depth examination of the disaster mitigation strategies in Princeville, and to elucidate the concerns community members have about the future risks of floods. Further, these methods allowed me to identify challenges and barriers that impact the extent to which community members' context and knowledge are utilized by decision-makers throughout the development and implementation of disaster mitigation strategies. The next chapter presents these data in detail and discusses the connection with the literature outlined in Chapter 2.

Chapter 5: Results and Discussion

5.1 Chapter Overview

This chapter begins with the presentation of free list data to situate perceptions of Princeville held by community members, local leaders, and state and federal agency personnel prior to the presentation and discussion of the results for each research question. This is done to further enhance the understanding of data collected using other methodologies such as participant observation and interviews (Pilkington et al. 2017). I subsequently present the themes that emerged in relation to each research question. Data collected using participant observation were utilized to substantiate claims made throughout the presentation of results (Pilkington et al. 2017).

The data were analyzed to answer three main research questions, however, the use of grounded theory allowed themes to emerge throughout the analysis process. This type of open coding also identified key themes that were present throughout and across participants' responses (Bernard 2011). Data are organized and presented based on the research question that they answer. In this chapter, each section is headed by the research question discussed. After the results are presented for each research question, I will discuss the ways in which the results tie back to relevant literature. The results for each research question are presented and discussed individually, however, throughout the stages of analysis, themes emerged that linked RQ1 and RQ3. This is discussed in further detail at the end of this chapter.

Data were collected via in-depth interviews with 8 Princeville community members, 3 local officials, 5 state-level agency personnel, 3 federal-level agency personnel, and 1 person from a conservation non-profit. Interviews were recorded, when possible, and transcribed verbatim, to maintain the context and meaning behind the participants' answers. Additionally, all quotes are presented verbatim, except for identifying information.

During the analysis process, each participant was assigned a random number between one and twenty. Community member participants are represented by numbers 1 through 8 and all other participants are represented by numbers 9 through 20. Each quote is followed by a date and a number, this indicates when the interview was conducted, and which participant provided the quote. For example, [6/24 #1] indicates that the interview occurred on June 24th, 2022, and

Participant 1 provided the quote. To maintain anonymity, I replaced any identifying information with [...]. Because of the conversational nature of the interview, there were occasions when a participant would begin discussing something that did not have relevance to my initial question. While these discussions were still transcribed to maintain context, they were not presented in the following discussion. This is represented by “...” in the middle or at the end of a quote. If additional context is needed for a quote, I added that in brackets. For example, if the participant mentioned someone they refer to as “he” I added [participant’s brother].

5.2 Presentation of Free List Data

This thesis seeks to identify the challenges and barriers that impact the extent to which community members’ context and knowledge are utilized by decision-makers throughout the development and implementation of disaster mitigation strategies in Princeville. Throughout participant observation and interviews for this research, I believed that a key challenge may lie in the different perceptions that community members have about Princeville compared to those of agency personnel. Current disaster anthropology literature explores the impact that perceptions of marginalized community members have on the preparation for, response to, and recovery from disasters (Lazrus 2015; Eriksen & Simon 2017; Oriangi et al. 2021). However, there is limited research on the ways in which the perceptions held by agency personnel shape the disaster mitigation strategies employed within marginalized communities. I utilize this free list data to situate perceptions of Princeville throughout the presentation and discussion of results, and to enhance the understanding of data collected through other methodologies, such as interviews and participant observation (Pilkington et al. 2017).

Free list data were collected from all participants to gain insight into the perceptions community members, local officials, and state and federal agency personnel have about Princeville. While further research is needed to make conclusive points about the impacts of different perspectives, data reveal key differences and similarities in the way Princeville is perceived by community members and agency personnel. These data are presented via two word clouds. To ensure that all perspectives are emphasized, I present the free list data collected from community members separately from those collected from officials. The responses collected from local officials are included in the word cloud for community members because they are also members of the Princeville Community. The responses gathered from community members were

also greater in number than those collected from agency personnel, so a true comparison at this stage is beyond the scope of this research. However, these results can and should be utilized in future research to expand on the impact that the perspectives held by agency personnel have on the outcome of disaster mitigation strategies. Because perceptions of individuals often shape the strategies taken to reduce the impacts of disasters, the results suggest that the perceptions of agency personnel should be assessed (Faas & Barrios 2015).

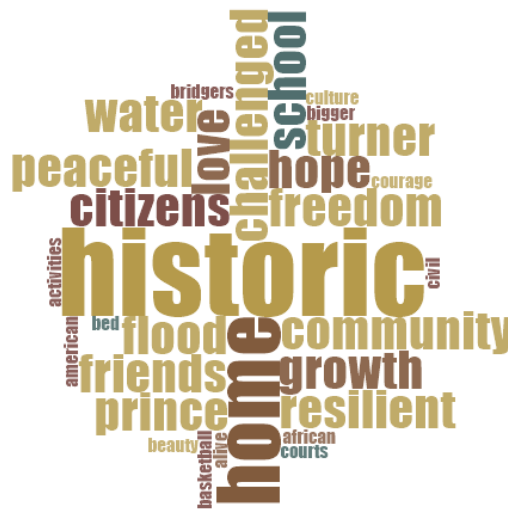


Figure 5.1 Word cloud from community member responses

This word cloud (Figure 5.1) suggests that the historic nature of Princeville's founding is a key component of community members' and local officials' perspectives of Princeville. This supports the claim made by Eriksen and Simon (2017) that socio-historical and political factors may influence the lived experiences and perceptions of individuals and communities. These socio-historical and political factors that influence community members' perceptions of Princeville directly relate to the sense of place and place attachment that is discussed in Chapter 2. This is evident by the presence of "home" as the second most used word to describe Princeville.

Furthermore, there is a link between the historic nature of Princeville's founding and the levels of trust community members have that state and federal agency personnel will consider

their concerns when developing disaster mitigation strategies. As emphasized in Section 5.3.1, differential levels of trust between community members and decision-makers are shaped by previous experiences with flood events. These results support the idea that the historic challenges that Princeville community members have faced impact their current perceptions of disaster mitigation strategies implemented by agency personnel. Additionally, the concerns community members have about future flooding risks, presented in section 5.3, are also shaped by their perceptions of Princeville. Table 5.1 shows the frequency of the 20 most used words to describe Princeville identified by community members and local decision-makers.

<i>Table 5.1</i> Free List Word Count: Community Members			
Word	Count	Weighted Percentage (%)	Similar Words
Historic	4	3.88	History, Historic, Historical
Home	3	2.91	
Challenged	2	1.94	Challenged, Challenging
Citizens	2	1.94	
Community	2	1.94	
Flood	2	1.94	Flood, Flooding
Freedom	2	1.94	
Friends	2	1.94	
Growth	2	1.94	
Hope	2	1.94	
Love	2	1.94	
Peaceful	2	1.94	Peaceful, Peacefulness
Prince	2	1.94	
Resilient	2	1.94	
School	2	1.94	
Turner	2	1.94	
Water	2	1.94	
Activities	1	0.97	
African	1	0.97	
Alive	1	0.97	

While there were equal numbers of participants for both free list exercises, the responses provided by agency personnel were less diverse (Figure 5.2). The most used words here are “history” and “unique” with equal responses for “community,” “proud,” and “challenged.” The words “challenged” and “unique” suggest that decision-makers are aware of the unique challenges associated with the flooding in Princeville, however, the discussion of the lack of

access to financial resources in Section 5.4.3 indicates that current disaster mitigation strategies do not support the unique challenges facing Princeville community members.

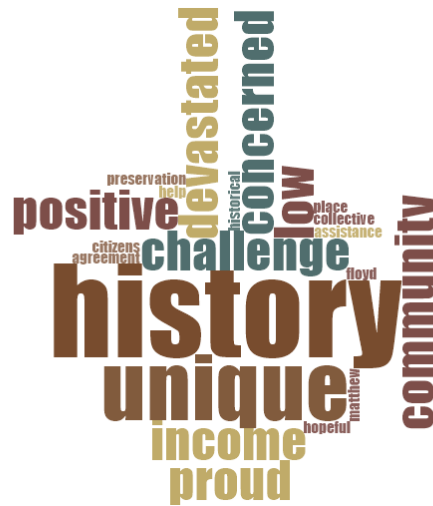


Figure 5.2 Word cloud from decision-makers responses

A key similarity between the two word clouds is the importance of Princeville's history throughout discussions of the town. This suggests that the historical significance of Princeville should shape disaster mitigation strategies implemented by all participants. However, the lack of equity emphasized in Section 5.4.3 implies that this is not the case. Table 5.2 shows the frequency of the 20 most used words to describe Princeville provided by state and federal decision-makers.

While these word clouds provide crucial insight into the perspectives held by community members and government personnel, more research is needed to make claims about these results. Nonetheless, these results provide key insights into the ways in which the perspectives of agency personnel diverge and converge with those of Princeville community members.

<i>Table 5.2 Free List Word Count: Decision-makers' Responses</i>			
Word	Count	Weighted Percentage (%)	Similar Words
History	5	11.9	History, Historical
Unique	3	7.14	
Challenge	2	4.76	Challenged, Challenging
Community	2	4.76	
Concerned	2	4.76	
Devastated	2	4.76	Devastated, Devastation
Income	2	4.76	
Low	2	4.76	
Positive	2	4.76	
Proud	2	4.76	
Agreement	1	2.38	
Assistance	1	2.38	
Citizens	1	2.38	
Floyd	1	2.38	
Help	1	2.38	
Hopeful	1	2.38	
Matthew	1	2.38	
Place	1	2.38	
Preservation	1	2.38	
Progress	1	2.38	

5.3 Concerns About Future Floods

***RQ1:** What are the main concerns that community members have about the future risk of flooding?*

I asked community members to discuss any concerns they may have about the future risks of flooding in Princeville. The conversational nature of the semi-structured interviews allowed participants to discuss items that they found to be important (Bernard 2011). While the responses varied, three main themes emerged: flood insurance costs, time of recovery, and preparation. Most participants listed multiple concerns about future floods, however, a majority of the responses were linked to preparation. Figure 5.1 depicts the three main themes and subthemes that emerged during the data analysis process. Because this question seeks to explore the concerns of community members, this section will only include quotes from community member participants. However, local leaders are also members of the community, therefore, when applicable, I included their quotes.

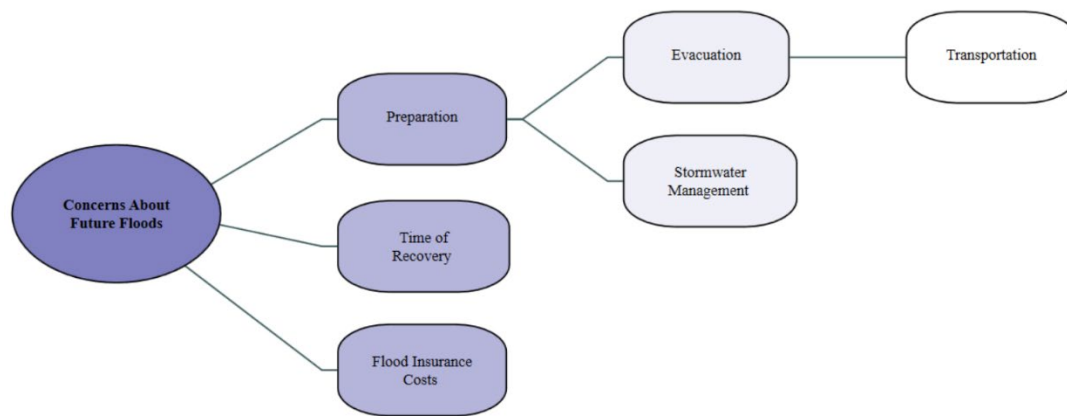


Fig. 5.3 Concerns community members have about the future risks of flooding

Flood Insurance Costs

Initial data collection through participant observation revealed that homeowner's insurance does not cover any damages or losses that result from a flood event. Homeowners must obtain additional flood insurance to receive any financial support from their insurance agencies in the event of a flood. This was a topic discussed by many participants throughout the interview process as a major concern regarding the future risks of flooding. I learned that flood insurance for a homeowner whose house is located within the 100-year floodplain is difficult to obtain and expensive to maintain. I utilized a few online tools to estimate the average annual cost of flood insurance for a resident of Princeville. The typical flood insurance cost for NC is about \$836 per year, which is about \$70 a month. In Princeville, the average cost of flood insurance is \$1,803 a year, or \$150 a month. Homeowner's insurance is customarily required as a condition of an individual's mortgage and typically costs \$2,768 a year or \$231 a month. So, on average, Princeville residents who obtain flood insurance will pay close to \$400 a month to secure financial support following a flood event or any other damage to their home (Kasperowicz 2023). Of the 719 households in Princeville, 15% of them make less than \$10,000 a year. Meaning 15% of homeowners would have to use about half of their monthly income to maintain flood insurance if they wanted to ensure financial support after a disaster (<https://datausa.io/profile/geo/princeville-nc/#housing> accessed 05/08/2023).

One participant described their concern about the rising costs of flood insurance in Princeville, ultimately disclosing that they chose not to obtain flood insurance even after having

been impacted by both hurricanes. Not only were they concerned about being able to afford the cost of insuring their home, but they also noted that insurance companies themselves are unwilling to insure houses located within the 100-year floodplain.

Yeah, I don't have insurance on my home. That was one of the first things that I tried to do because my dad had dropped the flood insurance sometime between 2001 and 2010. After all, it was so high. There was like programs that were assisting folks. There was grants that after Floyd, so it wasn't like too expensive. But once that stopped, your flood insurance by itself was \$400-500, not including your homeowner's insurance. So after he passed and everything was handled and the house got put into my name, I went to go see about getting house insurance and everyone just kind of laughed at me because it still got damaged from Matthew. I'm in a floodplain, I'm in 100-year floodplain. And everyone's just like, no. Even if I had the money to be able to pay for it, I don't know if I could get insurance at this point until everything is back to standard or upgraded, that's documented damage from Matthew. [6/24 #1]

Another participant, who was told flood insurance was not mandatory before Hurricane Floyd, was required to obtain flood insurance to receive a loan from the Small Business Administration (SBA) after Floyd.

At that time, I didn't have flood insurance either because of the fact when we got the house that we had, that was one of the things that I asked about. "Flood insurance? Oh, no, you don't need flood insurance." So, I didn't have it. I had fire insurance on the house, but no flood insurance. And because of not having flood insurance, of course, you couldn't get any help from that insurance. [9/23 #5]

On the second home, yes I did. I purchased flood insurance, which was ridiculous, but I felt compelled to have it. One thing with the SBA loan, it was mandatory that you have flood insurance. [9/23 #5]

During the interview process, I became aware that residents are knowledgeable about the benefits of acquiring flood insurance. However, the cost and difficulty of obtaining insurance can act as deterrents. This forces residents to rely on state, federal, or non-profit funding to recover

from a flood event. The following quote is from a participant that sought help from a religious non-profit agency because her insurance would not cover damage from the flood.

And the people--I got insurance. I paid insurance 20 some years. And the insurance company said, "we can't help you [...] Because they got no flood insurance. So what we going to do? We got nothing for you." Nobody got nothing. [10/26 #6]

The data presented above emphasizes the concerns community members have about the cost and difficulties of establishing and maintaining flood insurance in Princeville.

Time of Recovery

The time of recovery was a theme discussed by many participants when asked about their previous experiences with floods. This is important to include because many Princeville residents' concerns about future flooding are shaped by the experiences they had with prior flood events. This theme includes the time that flood victims were displaced from their homes, the timeframe for repairs to existing homes, and the time it has taken to implement disaster mitigation strategies, such as repairing and extending the dike and elevating houses.

For example, one participant discussed the time they were displaced following Hurricane Floyd. I include this series of quotes to depict the impact that prolonged displacement can have on a flood victim, but also to portray a sense of what community members in Princeville went through immediately following the hurricane.

We couldn't go back over there. I know at least three or four weeks because the water had to dilate down and it had covered the roof of the house. [9/15 #4]

Yes, we started at the Braswell Center. Yes, we did. And it got so that it won't sanitary no longer. So that's when I felt like I was homeless. But I had a mom in Rocky Mount, so she let us go. But still, in a way, I was homeless. Yeah. Because my home was gone. All of my material, everything that I had... [9/15 #4]

The Braswell Center is a community center located in Tarboro, NC that acted as a temporary shelter for flood victims following Hurricane Floyd. I spoke to a few participants who lived in shelters like this one. Following Hurricane Matthew, the shelter for flood victims was established

inside Tarboro High School, however, this was insufficient for the timeframe of the recovery. This participant was forced to relocate to a different shelter because the high school started classes before they had a permanent place to live.

We was in the shelter for a while. I think it was going on two months when we got out of there. And they had to move the shelter over there from Tarboro High. At the time, it was in the gym, in Tarboro High gym at the time. Then they ended up moving us [to a new shelter] when school started...[10/13 #7]

Another participant shared their experience following a flood event, stating that they were forced to stay in an insufficiently sized place for weeks without running water.

Because my daughter were working in Nashville, she couldn't get home. I took all them and the kids and I went to my other my oldest daughter house. And 17 of us lived there. Ended up there for two weeks. 17. One bathroom, no water. We lived there for about three weeks. [10/26 #6]

As this quote indicates, the recovery resources provided to community members in the form of shelters and temporary housing are insufficient with the lengthy timeframe of recovery.

Some flood victims had the opportunity to apply for temporary housing in the form of FEMA trailers, however, this did not shorten the length of time they were displaced.

And when they was giving out those FEMA trailers, fortunately, I got one.

And only thing I had to do, he [the participant's employer] provided the land to put it on. So I was living out in the country again, maybe about 15, 20 miles from Tarboro, where I work at. And that was the thing too, because we had to relocate out there and you don't have anything, washer, dry, everything is gone. And so only thing we had was the laundry mat. So I had to go with, thank God for we had a vehicle that was a blessing, yeah. And, um we had to transfer different stuff. And I had my job, had the children and my husband, like I said, he was working at the hospital and we survived.

I stayed over a year because they had to build my second house... [9/15 #4]

This participant stated that they had to utilize their own financial resources to wash their clothes at a laundromat because they did not have access to a washer and dryer while staying in the

FEMA trailer. This is evidence of the financial burden community members bare in the aftermath of a disaster.

The timeframe of recovery is also a concern for participants who are living in houses that have damage that has not been repaired after Hurricane Matthew. When asked about the ways residents continue to be impacted by previous flood events, one participant explained:

I still have mold issues. I don't have an HVAC system here. Half the electrical in the house doesn't work. So I have been sick. I have had major allergy issues since being here, and I'm making small changes as I can. The home is paid for, but because I'm in a floodplain, I can't mortgage it to get a large sum of money, to fix the kitchen, to fix the floors, to fix the electrical. [6/24 #1]

In this instance, the long-lasting impacts of the hurricanes impact the health and safety of community members, which is further exacerbated by the lengthy time of recovery.

Residents who made the decision to stay in Princeville following Hurricane Matthew were able to apply for a 9.2 ft elevation to their homes. However, to date, only one home has been elevated. One participant shared their frustration with the elevation process, stating that the number of eligible houses continues to decrease while the timeframe continues to increase. In the following quote, “mitigation” refers to all houses that were eligible for acquisition, repair, or elevation.

I can't recall the figure, but I know it was like 100 houses were offered for mitigation in 2016. Out of those hundred houses that was offered for mitigation, if I'm not mistaken, less than 20 have been mitigated. Less than 20.

Of those that were mitigated, majority of the was—majority of them was the ones that was in the buyout. Now, let me see. I think it was 22 in the buyout that actually signed up. Well, that was offered to buyout. 75 was in the raise. [10/14 #8]

The Hazard Mitigation Grant Program (HMGP), discussed in Chapter 3, provided funds to Edgecombe County to determine which houses, of the 75 houses mentioned above, were eligible for elevation (FEMA 2023). Through participant observation at Princeville’s Board of Commissioners meetings, I learned that 64 houses were still eligible for elevation, as of October 2022. When I shared that with this participant, they continued to discuss their frustration with the lengthy elevation process.

*See what I'm saying? This is like, six years later, down in the 60s.
So out of that 60, how many will be mitigated? [10/14 #8]*

As this quote indicates, even those community members who have received confirmation that they will obtain the necessary resources for mitigation are impacted by the lengthy timeframe of recovery.

The great length of time it has taken state and federal agencies to complete other disaster mitigation strategies presented in Chapter 3 continues to be a source of concern for many residents. For instance, many participants mentioned the construction and repairs needed to make the dike and levee system functional again.

*So I think the government is not doing it justice. It's like the Army Corps engineers, they have been promising to raise the dike. I know it's a tough situation, but there's a lot of things that they have to do to get things right. But you've been promising six years that you were going to do this and each year, each month they come to the meeting and they say the same thing over and over again.
[10/14 #8]*

I would say the Army Corps of Engineers not moving faster on the levee. And that's simply because there was, like a 20-year-long study done between '99 and 2016. And those results came out, I believe, in August of 2016, and then Matthew hit in October. And now we are six years out from Matthew. We're coming right up on six years, and there's still nothing physically has been done that I'm aware of to the actual levee. [6/24 #1]

These two quotes emphasize how the lengthy timeframe of recovery may increase the vulnerability of Princeville to future disasters.

The data presented above suggest that the lengthy timeframe of recovery is a major concern for community members when discussing the future risks of flood events. It is important to note that most of the data in this section did not come from the interview question that asked specifically about future concerns'; rather, this theme emerged through analysis of responses to the questions about previous experiences with flood events in Princeville. It was difficult for some participants to conceptualize their concerns regarding future floods because they are still dealing with the impacts of Hurricane Matthew, which, at the time of these interviews, occurred six years prior.

Preparation

The town's preparation for another hurricane was the main theme that emerged in response to interview questions related to RQ1. This theme is further divided into three subthemes: evacuation, transportation, and stormwater management. During the interviews, participants discussed their struggles to evacuate during Hurricanes Floyd and Matthew.

So when we agreed to leave, on one end of our road, there was a tree down across the road, so we couldn't go that way. So we had to go out on 122 to hit 258. And by the time we got on the road 122, headed to 258, the water was already there.

It was already there, and we were trying to, you know, get through. And the car I was, it stalled in the water, so we had to leave our car and stuff there. So it was a kind of bad situation. [9/2 #2]

I've heard a lot of stories about people having to rush out because of the late evacuation notice and things of that nature. [10/14 #8]

Both quotes indicate that the lack of preparation to construct efficient evacuation notices affected the impact they experienced by flood events.

Discussions regarding successful evacuations emerged during conversations about previous flood events, but participants also discussed the town's evacuation plan for flood events when asked specifically about their concerns regarding future flood events. One participant mentioned their concern about the evacuation plan for the part of Princeville in which they live.

The evacuation plan is one, especially back here because it's only one way in and one way out. I've heard about that they are supposed to be building, adding more onto as a second way out but not quite sure. I'm not quite sure when they're going to start on that. But yeah, as far as like back here, that's my biggest concern.

It's like a whole bunch of roads but connecting one main road, I feel like it should have more than one to one entrance. That way people will be able to evacuate quickly. [10/13 #7]

Furthermore, another participant stated that they were mostly concerned about being unable to evacuate and having a similar experience to the one they had during Hurricane Floyd.

Not really a worry, but my concern is that I just want to make sure that I don't get stuck like I did in '99. I want to be on high grounds if it happened. I don't want to get stuck in flood water no more.

That's my only concern. I don't want to be stuck in flood water, no more. [9/2 #2]

Additionally, one participant suggested that evacuations should be ordered sooner rather than later to ensure the safety of all community members.

That definitely helps with letting people know what's going on, evacuating sooner than later... So again, communication, information, keeping people informed, and then when in doubt, removed sooner. [6/24 #1]

Responses from participants regarding attempts to evacuate during previous flood events provide context as to why participants are concerned about proper evacuation routes in the town's preparation for future storms. The following quote is from a participant who was notified about the incoming floodwaters by one of their friends during Hurricane Floyd.

She was down there helping to put the sandbags up to it just in case it rose up that it wouldn't affect us. But what did it do? It went over those sandbags. So I got a call, I was in the bed and I got a call from one of my friends, and she said, she said, "what are you doing?" I said, "I was asleep." She said "Princeville is flooded." And she said, "you need to get out of there as fast as you can." And I said, "well, nobody called us. Nobody told us that any of this was happening." ... And I said so, "Are you sure?" She said "yeah." So, um, I called the sheriff's department and I asked them if Princeville was flooding and what should we do. She said "yes, it is. There's no way out." She said, "you need to get on top of your roof." So I had a Ford Explorer. When I got to, we went out the back door. [9/26 #5]

Another participant discussed evacuation routes as a pillar of emergency management and preparedness.

That's definitely emergency management preparedness, having routes designed out, knowing, okay, if this coming this way, you're going this way. [6/24 #1]

Another concern discussed during the interviews related to the ability of people to evacuate if they do not have access to personal transportation. This theme emerged when participants were discussing their concerns regarding evacuation in the face of a hurricane. Therefore, it is related to the key theme of evacuation, but I thought it was important to discuss

this separately. One participant described their father's experience with trying to evacuate during a hurricane with no transportation.

Also, like, transportation. There's folks that live here that do not drive. My dad was one of them. And so evacuation, someone had to come pick him up. I can't tell you who picked him up, because he didn't call me at that time.

And there are a lot of people like that and there's a lot of seniors that don't have transportation. So at 03:00 A.m., which I hope never happens, if we get a call that we have to leave, there are folks who can't. And so we don't have not just in Princeville, but in Tarboro, we don't really have a public transportation system, so it's not like they can line the buses up to come get everybody for like a public transit. I think that's a really big deal. [6/24 #1]

As this quote indicates, community members without access to transportation are at an increased risk of the impacts of flood events due to their inability to evacuate on their own terms.

Lastly, stormwater management is a concern that multiple community members and local leaders have regarding preparations for future storms. The presentation of the following data will include quotes from local leaders as well as community members. Local leaders are also Princeville community members, so occasionally, there was overlap between themes discussed by community participants and those discussed by local leaders. Stormwater management was one such theme. Participants numbered 1-8 represent community members, while 9-11 represent local leaders.

One participant described their concerns with storm drains that are filled with debris.

That's another concern. The storm drains. I know we do what we can. We do what we can with the areas that we all take care of as far as town wise. But it's like a lot of the people, a lot of the private land, they don't take care of the storm drain and they just let it put pine straw the ditches and end up in the storm drains. [10/13 #7]

An interesting point made by this participant was the fact that some storm drains are located on private property and may require the community members themselves to clean them. To gather more information on this subject, I asked the participant if people knew they had storm drains on their properties that needed to be maintained and his response was as follows:

I think a lot of them, um... it could be a mix. It could be some that know but don't care. But then it could be others. They could be new

to the area and the ditches could be already filled up and they probably be unaware that a drain is even there. Yeah, it's quite a few yards over here like that. I know it's quite a few areas that we uncover as far as within the community. And we had no idea a drain was there.

Especially when it comes on to clearing out like buried drains or even finding them. You need somebody that know the area. [10/13 #7]

As suggested by this quote, there is a link between the preparation to withstand future disasters and ineffective communication regarding storm water management on private properties within Princeville.

The concern for stormwater management, specifically clogged storm drains, first emerged during a preliminary conversation with a local leader in Princeville. I was able to discuss this further with them during the interview process. The point made by Participant 7 is further emphasized by the following quote:

You come by my residence. There's a canal right there. The water backed all the way up to my storage building almost at least about twelve inches high. Got all the way in my building and flooded out some things. I had to get my neighbor to help me clean the ditch and storm drain. I shouldn't have to do that as a citizen, take the initiative to do that myself. [8/26 # 10]

This local leader continued to emphasize the need to prioritize some state and federal funding provided through Public Assistance (discussed in Chapter 3) toward stormwater management to ensure the safety of Princeville residents.

We have enough money ... and have been channeled down from the federal and state to be able to utilize some of that money where it needed. If [the county manager] gave the mayor the feedback to say, "these are some key components that you need to do", he said, "make sure you get all your ditches clean. Make sure your storm drains is free of debris." If I or you and I go out there and we take pictures, you can see what we have that will cause a tremendous backup. [8/26 # 10]

Furthermore, stormwater management was discussed by one participant when talking about the overall preparation of the town during hurricane season.

Well we're in the middle of hurricane season right now, or just starting, and with moving forward, especially in August, September, October, people being prepared is keeping that communication, watching the river, paying attention to what's going on, and then also the town doing the stormwater adjustments. [6/24 #1]

In this instance, this participant also discussed the need to constantly monitor the water levels of the Tar River as a means of preparation.

As stated above, concerns were identified by directly asking participants about their concerns, but also during the analysis of data about experiences with previous flood events. When initially asked about their concerns, some respondents seemed hesitant, however, the reoccurrence of topics throughout discussions regarding previous flood events allowed themes to emerge concerning future flood events.

5.3.1 Discussion: Linking Concerns to Cycles of Vulnerability and Bureaucratic Violence

The themes that emerged throughout the analysis phase for RQ1 relate directly to the prolonged vulnerability of Princeville community members. With the increase in frequency and severity of flood events in Princeville, the high cost of flood insurance, the lengthy time of recovery, and limited preparation to withstand future flood events perpetuate the vulnerability of community members to future disasters. The themes presented above align with the literature discussing cycles of vulnerability, adaptive capacity, and bureaucratic violence. As discussed in Chapter 2, vulnerability is utilized as a tool for identifying a community's susceptibility to harm that arises from the absence of capacity to adapt to future disaster risks (Adger 2006). The concerns discussed by community members provide a guide for decision-makers to transform their current disaster mitigation strategies to address community member concerns and, in turn, lessen the community's vulnerability to future flood risks.

The high cost of flood insurance deters homeowners from obtaining and maintaining any type of flood coverage. Unfortunately, this reduces the level of financial support that flood victims receive following a disaster. Uninsured community members can apply for financial

assistance from state and federal agencies or seek help from non-government agencies to provide financial support to repair or rebuild their homes, and in some cases relocate to a different town. The options available to community members for financial assistance following a disaster are highlighted in Chapter 3, throughout the discussion of Individual Assistance (IA). However, regardless of the route an individual decides to take, funding and other types of assistance continue to take an immense amount of time to receive. A lack of financial support due to the high costs of flood insurance impacts the already lengthy time of recovery.

Historical, temporal, political, social, and spatial factors regularly influence cycles of vulnerability (Ribot 2013; Mason & Riggs 2019). The lengthy, slow-paced time of recovery perpetuates Princeville's vulnerability and acts as a type of bureaucratic violence. The results presented above support the claim made by Reinke and Eldridge (2020) that the temporality of bureaucratic violence exacerbates the suffering that Princeville community members feel following a disaster. The lengthy and time-consuming processes outlined in Chapter 3 add further evidence of the ways in which the recovery process is impacting the vulnerability of Princeville to future disasters. I place further emphasis on how the temporal bureaucratic violence in Princeville shapes perceptions of post-disaster times (Reinke & Eldridge 2020). When developing IG1, my advisor stated that, for Princeville residents, this is not "post-disaster." She went on to emphasize that many people do not consider this time to be "post-disaster" because they are still dealing with long-lasting impacts and the slow-paced recovery process following Hurricane Matthew in 2016. The data that were later collected via interviews and participant observation supported the idea that flood victims have yet to view the recovery process as the "post-disaster" phase. It is in this way that the slow-paced recovery process in Princeville is constantly shaping and reshaping the everyday realities of Princeville community members. This also shifts the power away from impacted community members and leaves little room for long-term disaster mitigation that considers and addresses community members' concerns about future risks of flooding.

The themes that relate to RQ1 draw attention to the limited adaptive capacity of Princeville. True adaptive capacity requires strategies to prepare for, respond to, and recover from a disaster while simultaneously taking advantage of opportunities for growth (Cinner et al. 2018). These elements of adaptive capacity are used as a measure of vulnerability. Therefore, the

town's preparation for future floods, including stormwater management and evacuation routes, are necessary elements of successful disaster preparation that reduce vulnerability. The slow-paced time of recovery also perpetuates cycles of vulnerability and lessens the adaptive capacity of the town.

While many Princeville community members have always maintained a level of resilience necessary to return to the area and rebuild or reestablish residency following a disaster, the overall resilience of the town is called into question. As Barrios (2014) discusses, resilience requires much more than rebuilding the town to its pre-disaster state. Rather, resilience calls for the development of disaster mitigation strategies that address the inequities that led to the increased vulnerability of Princeville community members. For example, the racial tension throughout the southern US that led to the establishment of Princeville within a floodplain cannot be overlooked when prioritizing potential mitigation strategies.

While each theme emerged through the analysis phase independently, it is important to discuss the ways in which they are interconnected (see Figure 5.4). High flood insurance costs limit the amount of funding community members receive and require them to seek funding from government and non-government agencies. This directly prolongs the recovery time, which increases vulnerability and lessens the adaptive capacity of the town. Seven years following

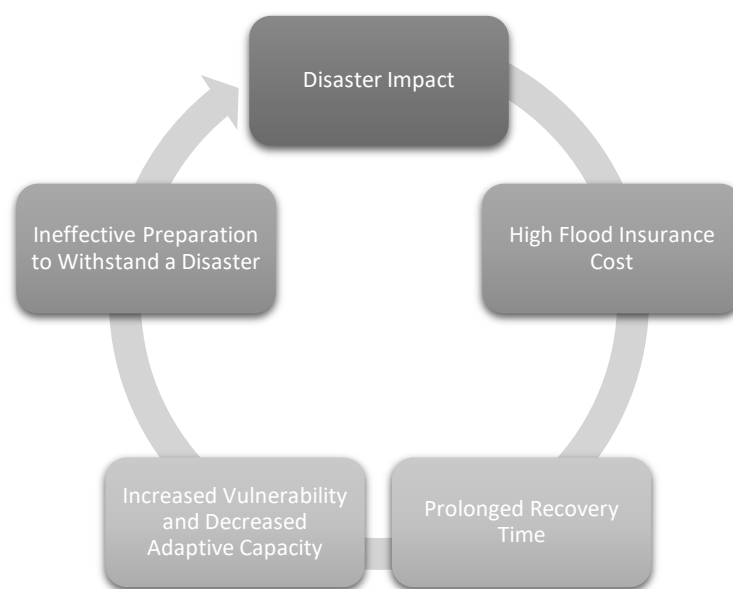


Figure 5.4 Depiction of the interconnection between community members' concerns and the reproduction of disasters

Hurricane Matthew, there are still residents waiting to receive recovery and mitigation funds, which has left community members even more vulnerable to hurricanes and other flood events.

Because of this, community members are concerned about the town's preparation to withstand and recover from future disasters. Princeville will be further devastated by their impacts without effective preparation to withstand disasters.

There is a lot to learn about societies and groups within the context of disasters (Faas & Barrios 2015). To develop successful disaster mitigation policies, decision-makers must understand the drivers of vulnerability in Princeville. By sharing their concerns, community members shed light on the factors that perpetuate vulnerability and lessen the adaptive capacity of Princeville to future disasters. This research aims to identify and share the concerns of community members so policymakers and practitioners can further explore disaster mitigation strategies that are conducive to recovery, resilience, and adaptation.

5.4 Trust in Decision-makers

RQ2: *Do community members trust that decision-making bodies—including Princeville's Board of Commissioners and state and federal agencies—will consider community members' concerns when implementing post-disaster policies?*

Each community member participant has dealt with the impacts of a flood event in one way or another. Some participants, as discussed above, are still dealing with the impacts of Hurricane Matthew. For example, some residents are dealing with damage to their homes, and some are waiting for a form of mitigation from state and federal agencies. This allowed for a discussion of the level of trust that community members have in decision-makers to consider the concerns discussed in Section 5.2 when implementing new disaster mitigation strategies. I was initially concerned that specific questions about trust in local government would exasperate participants because Princeville is a close-knit town, and local leaders are also members of the community. Therefore, I initially used this question to explore participants' trust in decision-makers as one entity rather than separating them into local, state, and federal levels.

One participant was very eager to share that they do trust decision-makers' ability to make informed decisions that considered community members' concerns.

I do. Because I feel like they're making decisions. I feel like they know what they're doing. They know what they're talking about. Then also, if it's any questions that I do have, if I'm able to, I can always ask questions, find out more, learn more. [10/13 #7]

They added that they also feel comfortable approaching the decision-makers to ask questions regarding the recovery and mitigation processes.

However, as interviews progressed, I realized that other community members did not have the same level of trust for state and federal decision-makers that they had for local decision-makers. Because of this, I decided to break up the questions to reflect trust in the local government and trust in the state and federal government. For example, when asked if they had trust in local decision-makers to consider their concerns, this participant stated:

I hope so. I hope I can, you know, I hope they take more of our how do I put it? More of our desires, opinions, whatever to heart. I guess I'm saying that correct. Basically listen to us more. Basically what I'm saying. Listen. [9/2 #2]

At the time of this interview, the response seemed to answer the initial question, however, the analysis process showed that this participant may have uncertainties about their ability to trust local decision-makers. The use of the word “hope” highlights this uncertainty. They further emphasize their desire for local leaders to consider their concerns moving forward, which indicates that they may feel this is currently lacking.

Another participant disclosed that they could certainly trust local decision-makers to consider their concerns when implementing new disaster policies.

I think so... I do believe that our commissioners are going to do what's needed for the town of Princeville to the best of their abilities. And even when there are things like the Army Corps of Engineers, I can't remember if it was the May meeting or the April meeting. There was an update from [USACE], and [local leader] was just like, hounding. I mean, if somebody from the outside saw, they'd be like, “Man, that woman's being rude.” But someone from the inside is like, “this has been coming for three years. You've given us the same updates for two years.” That's what I told [local leader], I said. “It's the same update. I've read them all. I've read them all. It's the same thing month after month after month with no changes.” And so I do believe that they will advocate in the right

ways, even if it does take time. And I don't blame that time on them, and I don't hold them as accountable as I do the state and the federal. [6/24 #1]

This participant has trust in local decision-makers because they have witnessed local decision makers advocating for Princeville.

Another participant stated that they had trust in local decision-makers because of the difference in response between Hurricanes Floyd and Matthew.

Yes, I do. Because when they finally got—I didn't have any problem. I got my FEMA number and got all my stuff and it was good. I didn't have any problems. And in Matthews it was a whole lot better than it was in Floyd, I guess, because this stuff did happen. But with Matthew it was better. [9/14 #4]

This participant stated that their experience following Hurricane Matthew were more positive than what they experienced in Floyd, which increased the trust they have in local decision makers. They felt that the response from local leaders was more productive and occurred more quickly that they witnessed during Hurricane Floyd.

A third participant described their trust in local decision-makers by stating:

I do believe this is the best administration that Princeville had since Turner Prince and all those guys. I believe Princeville is on the way up. [10/14 #8]

This quote indicates that local decision-makers are doing more to consider the concerns of community members, and that is increasing the level of trust between the local leaders and some community members.

However, some participants did not share the same positive sentiment. For example, when asked if they trust local decision-makers in this context, one participant flat-out said “no.” When asked to elaborate on this response they described previous experiences they had working with local decision-makers in the past:

I have a heart for it [the town of Princeville] and been on many boards. Actually, I was on the [...] board and I got a phone call and it said, “because you don't live here in Princeville, anymore. You got to get off the board.” But when I went to the meeting because they said, “come to the meeting because we have a little

something for you”, I went to the meeting, and that's not what they said in the meeting. In the meeting, they said my term had expired.
[9/26 #5]

This participant's negative experiences with local leaders shaped the level of trust they have in decision-makers to consider their concerns in the future. Similarly, when asked about their trust in local decision-makers, another participant stated:

No. What would I trust them for? I used to be a [local leader].
[10/26 #6]

These responses suggest that community members who are aware of the inner workings of the decision-making process do not, in fact, trust that local decision-makers will consider their concerns when implementing new disaster mitigation strategies. However, I believe further investigation is needed to draw conclusions about the overall levels of mistrust in local decision-makers.

The responses regarding trust in state and federal decision-makers were more conclusive. One participant gave a detailed explanation of why they do not have trust in state and federal decision-makers.

I don't. I definitely don't. Because and—the reasoning why is not, even though I'm bitter, I'm bitter about the whole house. That's just the honest truth. There are people, senior citizens in this community who had been through the HMGP program, which was the start, the Hazard Mitigation Grant Program, which was the first program, and then Rebuild started. And it ended up taking advocacy from the mayor and the commissioners to get their house raised and built so they could move back in. So no, I don't trust the federal and state government to do what they're saying they're going to do because they've had six years and there are so many people who are still living in a home with a leaky roof and mold or not a home at all. There's examples of where people, they took that FEMA, the initial FEMA money, and they had their home demolished and the site cleaned up and now FEMA goes, “well, you didn't use that money right, and you can't do this and this is not what it cost”, and they don't even have a home. At least I could sit in my moldy home. There's people who can't and those folks still don't have their homes.

And so, no, I don't trust that FEMA and the state, and even at this point, the Army Corps of Engineers is going to do what they say they're going to do because it's been so long. [6/24 #1]

This participant is referring to Individual Assistance and Public Assistance programs that are discussed in Chapter 3. The experiences they have had with state and federal agencies throughout recovery and mitigation processes highlight the reasons why they do not trust that state and federal decision-makers will consider their concerns moving forward.

The responses to this research question also revealed how recovery and mitigation agencies at the various levels (i.e., local, state, federal) may impact one another's efforts. For example, one participant said that state and federal decision-makers have all the funding and the power, therefore the hands of local decision-makers are tied, to a certain extent.

Because majority of the rebuild stuff is almost out of their hands. See what I'm saying? The state got all the money. They going to disperse it. They going to do the elevating and all that, but it's out of their [the local decision-makers] hand now. There's some people who doesn't understand that and who may cause the tension between them. [10/14 #8]

This participant indicates that local decision-makers do not have much power to influence the outcome of recovery and mitigation strategies. They state that many of the current mitigation strategies are not influenced by local decision-makers, rather the state and federal government are responsible.

The results presented above suggest that there are different levels of trust held by community members for local decision-makers and state and federal decision-makers. The differential levels of trust are affected by previous experiences that community members had throughout disaster recovery and mitigation processes. Those who trust that local decision-makers will consider their concerns when developing and implementing disaster mitigation strategies are those who have witnessed local leaders advocating for community members. On the other hand, those who lack trust in local decision-makers do so because of negative experiences with local leaders. Furthermore, community members who expressed a lack of trust in state and federal entities attribute this to a lack of action from the state and federal agencies that are assisting in recovery and mitigation efforts.

These results also highlight the complexities of disaster recovery and mitigation processes in Princeville. Additionally, results provide evidence that community members may not know where to place their frustrations and lack of trust. While further investigation is needed

regarding levels of trust in decision-makers, these data can act as a starting point for future researchers to explore this topic in more depth.

5.4.1 Discussion: Linking Trust to Perceptions of Risk

Participant observation during Princeville's Board of Commissioners meetings led me to develop interview questions regarding community members' trust in decision-makers to address their concerns when implementing new disaster mitigation strategies. Understanding levels of trust held by community members not only provides more context for their concerns presented in Section 5.2 but also identifies the internal complexity by which disasters are characterized in Princeville (Oliver-Smith 2019). Internal complexity refers to the ways in which social, environmental, political, and technological processes work cooperatively to influence the extent of disaster impacts. For example, the socially constructed realities of the impacted community members may influence the way they prepare for, respond to, and mitigate future disasters (Oliver-Smith 2019). Exploring levels of trust between community members and decision-makers provides further insight into those realities. Furthermore, exploring issues of trust between community members and decision-makers allows for the investigation of cultural and societal structures through a lens of crisis and change (Faas & Barrios 2015). Disasters expose instances where social structures and institutions may compete with a community's agency to mobilize components of disaster mitigation to shape future outcomes (Faas & Barrios 2015; Cinner et al. 2018). The above results suggest that the levels of trust that community members have for decision-makers are shaped by previous experiences throughout disaster recovery and mitigation processes. Therefore, exploring issues related to trust may expose the components of disaster recovery and mitigation that negatively impact community members.

I find that the evidence of mistrust presented above is a key flaw in disaster-risk reduction strategies of decision-makers in Princeville. Without establishing trust and rapport with community members, environmental injustice is perpetuated by limiting areas where the co-production of knowledge can occur through successful disaster mitigation. For the co-production of disaster mitigation strategies to occur, community members and decision-makers must deliberately work together to achieve a common goal (Bremer and Meisch 2017). If trust is diminished, it is possible that community members will no longer feel empowered to participate

in the decision-making processes in Princeville, eliminating areas for collaboration and inclusion.

Understanding trust can also provide insight into the worldviews of affected Princeville community members, which in turn provides context regarding their perceptions of risk. The results presented above suggest that levels of trust are influenced by previous experiences throughout disaster recovery and mitigation stages. Therefore, I suggest that trust is used as a measure of community members' perceptions of risk. Lazrus (2015) emphasizes that understanding the ways in which community members perceive risk is necessary to develop successful disaster mitigation strategies in marginalized communities. Differential levels of trust also highlight the systemic vulnerabilities that leave Princeville residents disproportionately affected by disasters. For example, disaster mitigation that does not consider or address community members' concerns will perpetuate mistrust, further excluding Princeville community members from the decision-making processes and limiting areas for the co-production of successful mitigation strategies.

5.5 Challenges and Barriers to Inclusive Disaster Mitigation

RQ3: *What factors impact the extent to which local officials and state and federal agencies utilize local context and knowledge when implementing disaster mitigation policies?*

I asked all participants—community members and agency personnel—to identify any challenges or barriers that may impact the extent to which decision-makers utilize local context and knowledge when implementing new disaster mitigation strategies. Disaster anthropology literature describes how local context and knowledge can aid in the development of effective disaster mitigation strategies that reduce vulnerability and increase adaptive capacity (Maldonado 2016; Miller Hesed & Ostergren 2017; Lazrus 2015). Additionally, research suggests that recovery and mitigation strategies that exclude local context and knowledge may be less successful at addressing the concerns of the local community and building the capacity to adapt to future disasters (Lazrus 2015; Maldonado 2016). Because of this, throughout the

following sections, I refer to mitigation strategies in Princeville that do not consider local context and knowledge as ineffective disaster mitigation strategies.

The data relating to this research question are presented in a slightly different format than the above results. This section is divided into factors identified by community members and factors identified by agency personnel. The section following the presentation of the data discusses areas where the responses of all participants converge or diverge.

5.5.1 Factors Identified by Community Members

Through a detailed, iterative analysis of all responses from community members regarding the challenges and barriers that they believe may hinder effective disaster recovery and mitigation that addresses their concerns, three main themes emerged. Participants identified ineffective communication, limited funding, and environmental injustice as potential factors that impact the extent to which their local context, knowledge, and concerns are considered throughout the mitigation process in Princeville (see *Figure 5.5*). [OBJ]

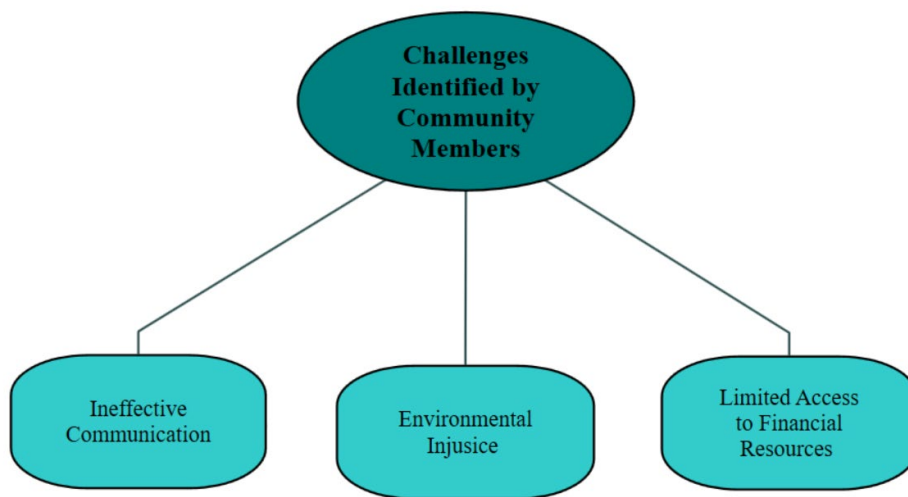


Figure 5.5 Challenges Identified by Community Members

Ineffective Communication

Throughout participant observation and the analysis of interview data, it became clear that participants consider ineffective communication to be a factor that impacts the extent to which decision-makers consider their knowledge and concerns throughout the mitigation process. It is important to note that the realm in which community members identified ineffective communication varied. For example, one participant expressed a desire to have more open communication between local government and community members. They state that the communication gap between these two entities could be adding to the frustration community members feel towards the recovery and mitigation efforts of decision-makers.

And so I think there is some major communication gaps between the town entity, meaning elected officials, appointed officials and actual citizens. And you can see that, you did see that to some extent at the town hall meeting and some of that is completely external too...

*But I do think that there could be a closing of a communication gap between the commissioners and the citizens that would make the citizens feel more heard and important and like they matter. So there isn't so much frustration because we expect that from NCORR, we expect that from Rebuild. But when you feel that way from your own elected officials, it gets a little bit more personal.
[6/24 #1]*

It is important to note that this participant expressed that they expect to have ineffective communication from the state-level agencies aiding the town in recovery and mitigation efforts, which adds to the understanding of the perceptions community members may hold towards state-level management agencies. They further indicated that due to the ineffective communication they identified between local leaders and citizens, they would not be aware of the disaster mitigation strategies for the town if they did not begin attending Princeville's Board of Commissioners meetings for a different purpose.

So I had no idea. If I hadn't started going to the town hall because I [...], I would have never known all these other things that were going on. I wouldn't be able to talk to you about the floodgates or the rain gardens or any of these things with us because I was there and I was listening and being a part of but otherwise, even now, if I

don't listen to the Town Hall, I might hear about it at work. But externally, there's not a whole lot of communication going on. Like a network throughout town with that. And so I think there's more that could be done. [6/24 #1]

This participant concludes by stating that local leaders can do more to ensure effective communication to disseminate disaster-related information throughout the community.

Furthermore, another participant discussed the ineffective communication they witnessed during a Board of Commissioners meeting when the USACE attended to provide updates on mitigation strategies involving the dike and levee system. When asked to elaborate on their concerns regarding the timeframe of recovery, this participant stated:

Yeah, so they came last Monday. Last Monday. And Virtual. And the Councilman pretty much told em, "Hey, you all keep saying the same thing over and over again. We need to hear something different." I just don't understand why. [10/14 #8]

Another participant expressed a very similar sentiment regarding the communication from the USACE

You've given us the same updates for two years. That's what I told [local leader], I said. It's the same update. I've read them all. I've read them all. It's the same thing month after month after month with no changes. [6/24 #1]

While only two participants discussed ineffective communication as a possible challenge or barrier during their interviews, participant observation revealed instances where the state and federal agencies did not communicate effectively with community members or local leaders. For example, North Carolina Emergency Management (NCEM) hosted an event for the community members whose homes were eligible for elevation. This was to ensure that those community members who were eligible for elevation were still interested in pursuing that option after six years and to inform community members of what to expect moving forward. If NCEM was missing any necessary information or paperwork from the homeowners, this was the time for them to gather that as well. This event was held on 08/16/2022 at the Edgecombe County building in Tarboro, NC. At the Board of Commissioners meeting held on 08/15/2022, Princeville's Town Manager announced the event would be held from 9 am to 1 pm and then

resume from 4 pm to 7 pm. At the meeting where this was announced, there was tension between local leaders. Some were advocating on behalf of their constituents, stating that they were not given enough notice of the event to be able to take off work, plan childcare, or arrange transportation. It was mentioned that each eligible household received a phone call informing them of the event, but this did not seem to satisfy the concerns of some commissioners.

I attended the community information event from 9:45 am to 1 pm. I observed how many community members attended the event and took notes when relevant. Since I attended the event after it started, I asked the NCEM employees how many community members attended the event so far, and they stated that five or six people stopped by before I got there. The first hour I was there, two community members showed up, however, one had to leave because they did not bring the necessary paperwork. To gain more information about communication with community members, I asked the NCEM employees how eligible people were notified. They expressed that they informed the local leaders, and it was up to them to notify community members. I highlight this event to provide further evidence of ineffective communication between local leaders and community members, state agency personnel and local leaders, and state agency personnel and community members.

Limited Access to Financial Resources

Interviews revealed that community members also identified the lack of access to financial resources as a factor that may impact the extent to which their local knowledge and concerns are considered and addressed throughout development and implementation of mitigation strategies. One participant emphasized that not only does the town need more funding, but they also need to establish the capacity to apply for grants that provide funding to the town.

Funding is a major one. And then not just funding, but the capacity to get the funding. When you're talking about a small town, there might be eight employees and a couple of them are part-time. That includes Public Works, might be up to ten with the Public Works Department. We're looking for like a grant writer to help with that funding. So with the town wise, I definitely think funding is a major factor because you can take plans and studies even that takes funding. That's a big one. [6/24 #1]

This quote highlights the ways in which the town's limited access to financial resources may impact their ability to secure additional resources throughout recovery and mitigation processes.

The lack of access to financial resources was introduced as a concern during interviews with community members when asked to express their knowledge and perspectives on different federal attempts to mitigate future disasters, such as the USACE's plan to repair the dike and levee system. This participant stated that USACE spent 17 years following Hurricane Floyd conducting studies on the dike and developing a plan for its repair, only to say that they required more funding to implement the new construction plans. However, Hurricane Matthew flooded Princeville before financial resources were secured and construction began.

Army Corps Engineer came up and said, "hey, we're going to do something to this dike to stop it from flooding so it won't flood the next time." When they went through all of this process and they would have a meeting in 2000, 2001, 2008, 2010 they were doing all this stuff, and then in 2016, they came back and said, "we got it. We fixed it. Only thing we need is some money. Here's the plan right here. All we needed is some money" and what, maybe a few months later after that Matthew came, and then they said, "okay, here's the plan. Plan ain't no good. Go back to the drawing board."
[10/14 #8]

In this instance, a lack of access to financial resources directly affected the way Princeville was able to respond to and withstand the impact of Hurricane Matthew.

Participants who received funding from state or federal government agencies discussed the issues that arose during the recovery process related to that funding. One participant stated that they did receive funding from FEMA's IHP program (discussed in Chapter 3) to cover initial living expenses following Hurricane Matthew, however, they could not receive any additional funding until that money was utilized completely.

And the federal government, FEMA give you a certain amount of money and you got to take that money. And they told us to use that money until you use all that money up that's when they'll come in and buy the stuff. But long as I got that money we had to pay it on everything. So we did that before they got the frame up. By the time they framed the house up. I was broke. And I went, "oh, my God. What I do now?" [10/26 #6]

This perspective shows that funding opportunities may provide enough financial support for residents immediately following a disaster, but they do not provide enough assistance to ensure financial stability to impacted individuals throughout the entire recovery process. Additionally,

participants introduced the difficulties they experienced when obtaining financial assistance for recovery.

So FEMA has said that they were going to give everybody \$10,000, I think it was to try to help them get back on their feet. I mean, I went to every meeting that they had because I'm still at all and I like to know for myself and not what somebody tells me. So I went to every meeting that they had to try to see what I could do to get back home because, you know, born and raised. [9/26 #5]

When asked if they ever received the \$10,000 discussed by FEMA at the town meetings following the disaster, this participant stated that they never did. Instead, they relied on a loan from SBA, which they had to pay back. This brought forth some concern from this participant regarding the process they went through for the initial financial support offered by FEMA.

In going to the different people that they have working for the town with the flood victims and giving all of my personal information, everything to them. And then it was said, well, this is coming to the 2016 flood, that everybody got this money. Okay. And it kind of has me to wonder if the money was sent in my name, but I didn't receive it...

And if push comes to shove, how am I to say that I got it, you know? But I do know that I had got a loan, an SBA loan. And with the SBA loan, this is when I ended up purchasing another house to live. [9/26 #5]

Community members identified the duplication of benefits (DOB) as an aspect of their access to financial resources. While tracking the use of state and federal funds throughout the mitigation process is necessary to maintain order, interviews reveal that DOB may inadvertently hinder a flood victim's ability to recover following a disaster. Based on interviews with community members, local officials, and state and federal agency personnel, DOB policies seem to ignore the current financial status of impacted community members. DOB acts as further evidence of how Princeville's limited access to financial resources impacts community members throughout the development and implementation of disaster mitigation strategies. This reveals that community members recognize DOB as a potential factor that impacts the extent to which they are considered and acknowledged throughout disaster mitigation in Princeville.

If government agencies suspect that a community member has received multiple sources of funding throughout their recovery process, they require the individual to pay the duplicated number of benefits back to the agencies. This duplication can take the form of thousands of dollars and is very common among Princeville residents. One participant whose parent passed away after Hurricane Matthew discussed the issues they had with the duplication of benefits and shared other examples they have witnessed throughout the recovery process.

An example of that is I have never received funding from FEMA me, myself. But my property has. So I became responsible for almost a \$6,000 duplication of benefits where I'd never received anything, my dad did for temporary housing. And I was like, "but how is that my responsibility? That wasn't me." So a lot of people are dealing with things like that, the duplication of benefits. Not in necessarily that way. It might have been, I used it on food, I use it to fix this. Or everybody has their own examples of why they have duplication of benefits. And basically mine came down to I could not prove what my dad did with everything, with all the money. I had about \$3,000 worth of receipts that I could find, and then I was responsible for the rest of it to even get the process moving forward through Rebuild to keep, whether house replacement or renovations, et cetera.[6/24 #1]

This participant could not afford to repay any benefits that may have been duplicated during the recovery process, so they sought financial support from non-profit and religious organizations.

And so I was able to work with Legal Aid, and they helped with Catholic Charities to get that funding, because at the time, I didn't have another 6000 plus dollars. I'd already paid about \$8,000 of back taxes. [6/24 #1]

This perspective also highlights the difficulties Princeville community members face when attempting to gain access to the financial resources necessary to completely recover from a disaster and reduce one's vulnerability to future impacts.

Additionally, some participants discussed their inability to receive financial support from government agencies because they were told they made too much money to qualify for assistance.

When Bill Clinton came here—so when President Clinton came, he told all of us to go to social services and apply for food stamps.

Well, when I went to social services, I wasn't going to go. But my sister-in-law that I was living with, she said, "you need to go because President Clinton said everybody should get some." Well, when I got there, of course, this is what I was told. "You are an educator, you're going to get a check, so therefore you are denied." And like I say, I was already to the point that I've never been a beggar, I've always been a hard worker.

See and then when I went there and she said what she did, that put me in another state of mind, back into a shelter or whatever. Why in the world would you say that to me? When Bill Clinton said everybody and I knew, as an educator, people think that you make a lot of money, but you don't. [9/26 #5]

This scenario occurred with multiple participants throughout different stages of the recovery process. For instance, another participant who started the process to receive financial support from NCORR's ReBuild NC program was told that they no longer qualified for the funding because they made too much money.

And all of a sudden it's, "well now you can feed yourself, you can fix your house, and you're no longer eligible for our program." It doesn't matter that you've signed legal documents. It doesn't matter that we've jerked you around for the last three years. It doesn't matter. We cannot help you. And so then I started back at square one again, which in those three years, if I had just started doing the renovations myself, I might have a new kitchen by now, I might have an HVAC system by now. But when you started that program with Rebuild, you could not do change it, fix things to your house. If I had an electrical outlet go out and I wanted to fix it, I had to submit to them to be able to fix my own electrical outlet for them to approve it.[06/24 #1]

In this case, the participant worked closely with numerous state-level agents for years to establish financial support and receive funding to repair damages to their home caused by Hurricane Matthew. Throughout the three years, they were told that any changes or repairs to their home could only be completed by the agency themselves. Three years after establishing a connection with this agency, but prior to receiving any funding for repairs, the participant was able to find a job. However, this increase in personal income led the state-level agency to

withdraw the participant from the program, leaving them to repair their home using their own financial resources.

The quotes provided by community members in relation to their access to financial resources, highlight the ways in which this acts as a barrier to the inclusion of their knowledge, contexts, and concerns. Additionally, participants highlight how Princeville's resources do not allow for their equal inclusion throughout the development and implementation of disaster mitigation strategies.

Lack of Equity

Lack of equity emerged as a theme in relation to RQ3 throughout discussions with community members about concerns for future flood risks, trust in decision-makers, and challenges that impact the extent to which their concerns are considered and addressed by decision-makers. Claims made by participants regarding environmental injustice are further supported by participant observation at Princeville's Board of Commissioners meetings and discussions with residents at Farmer's Markets in the town. There is additional support for this claim throughout Princeville recovery literature and the previous studies discussed in further detail in Section 5.4.2.

Lack of equity emerged as a factor that may impact the extent to which decision-makers consider Princeville community members' context and knowledge when developing and implementing disaster mitigation strategies. Participants discussed the ways in which race and the town's economic circumstances have led to challenges in the development of disaster mitigation that addresses their concerns. One participant raised the question of equity in the level of response to disasters and the timeframe of recovery in Princeville, questioning if the same things would be happening in a different community.

I know it's a lot of red tape, but would this be this much red tape if we was in another community? If it was another community, I would like to know that personally. [10/14 # 8]

To elaborate on this, I prompted the participant to discuss the factors they believe contribute to this inequity in disaster response. They replied by stating:

That's the question. I don't think they would allow that to happen because somebody would have spoke up. Somebody would have spoke up, whether it's been somebody at the local level, state level, or the federal level.

So right now we don't have anybody to step up with that and help us out with that. [10/14 # 8]

Another participant responded to this discussion in a similar way. They question the equity of disaster response in Princeville compared to more affluent, predominantly white communities along coastal NC.

And with Princeville being a predominantly black community and a marginalized community in rural eastern North Carolina, I think there's been a lot of things that haven't been done--or that have been done that have made the process harder when it shouldn't have been. Like if we were like Buckhead or Nags Head or somewhere like that with a higher predominantly white population with millionaires living there, I can't say for sure, but I bet the museum would be fixed. I really believe that. [6/24 #1]

One participant who relocated to Tarboro after Hurricane Matthew discussed the devastation in Florida caused by Hurricane Ian.

Look what just happened in Florida. The people devastated, and that was a wealthy city. Them people had money. But it don't matter. When you put the garbage on the side of the street everybody, it all looks like trash.[10/26 #6]

I followed this statement by asking if they believed the affluence, or lack thereof, of a community has an effect on the response from state and federal agencies.

In Princeville where I came from, I would say it would. [10/26 #6]

This point echoes that of other community members who perceive the current environmental injustices throughout disaster mitigation strategies as remnants of past racial injustices that have impacted their access to financial resources. For example, Participant 1 raised questions about environmental justice because Princeville is a marginalized community with a vulnerable

population. They emphasized that they perceived this as a trend in many marginalized communities, not just Princeville.

Yeah, but at 30, 32, 33, you start making all these correlations of this isn't just happening here. It's happening in a lot of rural, minority led or demographics areas. And it's almost by design. So you have some of your most vulnerable populations in these areas that are experiencing these flooding events over and over and over; and not just black people, not just white people, young, old, vulnerable can mean so many different things with income. [6/24 #1]

When asked to explain how they felt about the way state and federal agencies responded to previous flooding events, this participant called into question the true motive of the federal funding agencies.

I think FEMA has punished Princeville for not taking the buyout in Floyd. That is a pretty direct, hard statement, but I have seen them fight stuff that should have never been fought. [6/24 #1]

I asked the participant to illustrate what they meant by that statement, and they explained that accepting the buyout would have been easier for state and federal emergency management agencies, and they would not be working with the town to recover from Hurricane Matthew and mitigate future disasters.

Other officials might not agree with me on that because, again, you have to keep it politically correct. But I think there's been a lot of things that because Princeville didn't take the buyout, because that would have been easier. Matthew would have never happened. It might have flooded over here, but if the whole town had been bought out, then you wouldn't be dealing with the renovations of homes and raising the senior center and everything. It makes it a whole lot more complicated. [6/24 #1]

The data reveal that community members feel there is a growing level of inequity in the time of recovery, level of response, and access to resources. Some believe the amount of state

and federal assistance would be higher and would occur more quickly if they were a different community.

Community members identified ineffective communication, the lack of access to financial resources, and environmental injustice as potential factors that impact the extent to which decision-makers utilize local knowledge, context, and concerns when developing and implementing new disaster mitigation strategies. The ways in which these results relate to relevant anthropological literature are discussed in section 5.4.2.

5.4.2 Discussion: Barriers Identified by Community Members that Impact the Utilization of Local Context and Knowledge

Disasters and disaster mitigation strategies constantly shape and reshape culture, therefore, the perspectives provided by community members should be considered throughout this discussion of disaster mitigation in Princeville, NC (Maldonado 2016). Open coding with the use of grounded theory allowed for three key themes to emerge during data analysis. I presented these results separately to maintain the true meaning of the participants' responses and provide context to the claims they make regarding access to financial resources, ineffective communication, and environmental justice. However, throughout this discussion, I will be relating the lack of access to financial resources and ineffective communication as components of the environmental injustice experienced by Princeville community members. The results presented here support the claim that Black communities are likely to suffer from environmental threats at a disproportionate rate due to a lack of resources and little-to-no decision-making power (Congressional Black Caucus Foundation, Inc. 2004; Barrios 2016; Miller Hesed & Ostergren 2017). For Princeville residents, ineffective communication from decision-makers may impact the extent to which they feel empowered to participate in decision-making processes, further impacting the extent to which their local knowledge and context is utilized by decision-makers. Additionally, restricted access to financial resources perpetuates environmental injustice.

Environmental justice frameworks call for the meaningful inclusion of all impacted individuals in the disaster recovery and mitigation processes, regardless of race, ethnicity, or skin color (EPA 2020). A level of this meaningful involvement lies with the dissemination of information related to disaster recovery and mitigation throughout the local community by means

of effective communication. The results suggest that ineffective communication acts as a barrier to achieving environmental justice and the true co-production of disaster mitigation strategies (Hope et al. 2019). Furthermore, ineffective communication may inadvertently perpetuate the concerns held by community members in relation to the future risks of flooding, identified in section 5.2.

Moreover, ineffective communication from local, state, and federal agencies could impact the extent to which decision-makers utilize local knowledge and context when developing disaster mitigation strategies. For example, if a communication gap exists between community members and decision-makers, like the instance discussed by Participant 1, then decision-makers are not receiving insight into the local knowledge and context held by Princeville community members. If effective communication is not established, then the co-production of knowledge through the development and implementation of disaster mitigation strategies cannot truly occur (Hope et al. 2019).

Climate change is inherently unjust due to the unequal impact experienced by vulnerable or marginalized communities (Miller Hesed & Ostergren 2017). Environmental justice frameworks call for an equitable response to disasters, meaning that the response for a more vulnerable community should reflect their needs and concerns (EPA 2020; Maldonado 2016). Limited access to financial resources emerged as a recurring theme throughout the data analysis. This supports the claim that limited access to financial resources through lengthy bureaucratic processes, like the events discussed above, perpetuates environmental inequities. Reinke and Eldridge (2020) discuss aspects of bureaucratic violence, which is directly linked to environmental injustice. Similarly, Princeville residents are left with time-consuming paperwork that they do not understand, and financial support from state and federal agencies must be carefully tracked and monitored by the survivors to ensure there is no duplication of benefits (Reinke and Eldridge 2020). The current process of evaluating DOB in Princeville provides evidence of the ways in which environmental injustice may impact community members and, in turn, the extent to which decision-makers consider local context and knowledge. If Princeville is to be held to the same DOB standards as other communities, then access to resources to limit DOB is required. Without this, equity in the decision-making process cannot be achieved.

The data discussed in relation to RQ3 indicate that a lack of access to financial resources

may also perpetuate differential power relationships between community members and the institutions aiding in the recovery and mitigation in Princeville. This, in turn, limits the extent to which local knowledge and context is utilized by decision-makers throughout the development and implementation of disaster mitigation strategies. Discussions with community members about DOB and access to financial resources indicate that the burdens of disaster recovery fall on community members. Princeville community members have a responsibility to apply for financial assistance immediately following a hurricane, they are responsible for tracking the way money is utilized, and they must maintain the documentation of that funding when most people do not even have access to their homes.

Furthermore, Maldonado (2016) explains that differential power relationships that lead to victim-blaming strips agency from the affected individuals. The responses provided by the community member participants demonstrate that the lack of access to financial resources has limited the agency they feel they have in the recovery and mitigation processes. I find that this also acts as a barrier to the inclusion of community member perspectives because agency embodies the spirit of control over a situation to make informed decisions based on one's own circumstances (Cinner et al. 2018). Princeville's lack of access to financial resources, therefore, hinders decision-makers' ability to implement disaster mitigation strategies that utilize the perspectives of community members.

Disaster anthropology literature suggests that the exclusion of community members' context and knowledge throughout disaster mitigation processes is a key factor that contributes to the continuation of environmental injustice (Miller Hesed & Ostergren 2017; Maldonado 2016). Accordingly, I suggest the fact that all responses provided by community members that relate to the perpetuation of environmental injustice provides insight into the true challenges and barriers that impact the extent to which local knowledge and context is utilized by decision-makers throughout mitigation strategies.

Lastly, it is important to note that the data suggest that ineffective communication and a lack of access to financial resources exist concurrently in Princeville, and each factor must be considered independently, but also together. The inclusion of local context and knowledge can aid in the co-production of disaster mitigation that addresses the concerns outlined in Section 5.2 (Hope et al. 2019).

5.4.3 Challenges and Barriers Identified by Decision-makers

To collect the necessary data to answer RQ3, I specifically asked local, state, and federal officials to identify any challenges or barriers that impact the extent to which they address the concerns of Princeville community members when implementing disaster recovery and mitigation strategies. The responses varied, but through an iterative analysis using grounded theory, four key themes emerged: access to financial resources, ineffective communication, a lack of equity, and limited capacity (see *Figure 5.6*). All results are discussed separately to maintain the context and meaning behind the responses; however, I discuss the ways in which they are interconnected in Section 5.4.4.

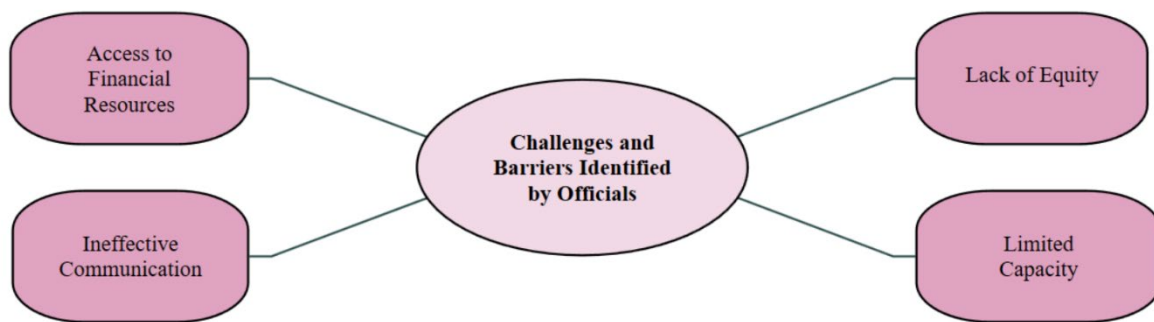


Figure 5.6 Challenges and barriers identified by decision-makers

Access to Financial Resources

Access to financial resources emerged as a theme throughout responses from local officials, state and federal agency personnel, and non-profit personnel as a potential factor that may impact the extent to which local context and knowledge are utilized by decision-makers. However, the context of this discussion varied depending on who I interviewed. For example, some participants discussed the average income level in Princeville, while others discussed the bureaucracy associated with grant funding on the state and federal levels. Results are discussed in the same theme because they are all related to the access, or lack thereof, to financial assistance following a disaster, specifically in Princeville.

One participant stated that the average income for Princeville community members is low, therefore, those community members who make a little more than the average income may not qualify to receive financial support following a hurricane or other flood event.

So one of the challenges that I saw was the income barrier. Now, first of all, the income median in Princeville is \$37, maybe \$33,000. I believe in my opinion, everybody in Princeville could use a helping hand. I think the reason that that was such a challenge for me is because almost everything that a low-income economy does is based on the income. You cannot look at a person that makes \$37,000 a year and say that here is someone who makes \$60,000 and that person is better off. You have to do the percentage of it to get a true reading. Or you can't look into a—most of the time people live according to their income. And if I make \$60,000 a year and my lifestyle is \$60,000 a year, I'm probably struggling just like the 37,000 a year.

You see what I'm saying? And a struggle is a struggle is a struggle. I may not be able to get my roof replaced because it has a leak in one of the rooms. Even making \$60,000 a year because I got a lifestyle that I did not intend that leak to spring in my roof. [10/17 #11]

This participant expressed that this type of policy places some community members at a disadvantage and could affect their ability to recover from the impacts of a disaster.

Other participants spoke about the challenges within state and federal agencies to access financial resources that they can then provide to the town. This participant noted that the exclusionary nature of state and federal funding agencies may act as a barrier to the development and implementation of disaster mitigation that utilizes the local knowledge and context of community members.

Well, I mean, it's very difficult because state government by nature is siloed off. Right. This agency gets those funds and my agency gets these funds and your agency has those funds. And if we can come together and collaborate, it makes these kinds of conversations much easier. But that is difficult inherently. [7/1 #15]

This quote further elaborates on the ways in which challenges on the institutional level impact the extent to which local knowledge and context is utilized, and community members' concerns are addressed.

Additionally, one participant noted a mitigation strategy discussed in Chapter 3 known as the state centric approach to hazard mitigation. Participant 13 describes the issues associated with the state centric approach in its previous form, describing how this approach used to require local communities and counties to cover the initial cost of the mitigation construction, and the state would reimburse the funds back to the communities. However, as is shown by the quote, this placed an undue burden on local communities.

The big issue with the state centric is that, the way the program was always run prior to me coming on board a couple of years ago, is that the state would get the grant, the state holds the money. We issue a grant agreement down to the community and say, "okay, you go fix these homes they're approved. You pay the money, and then come back to the state and we'll give you a reimbursement" and we'll reimburse them dollar for dollar. But two issues come out of that. First off is that communities have to add that to their budget, which isn't in their budget. So if you look at a more, whether you want to call it a low-income community or a small community that doesn't have a great tax base for them to pay out the money. To be able to do these projects is going to take them a long time. [11/10 #13]

As this participant states, under the previous state centric approach, Princeville leaders must provide the initial funds to implement disaster mitigation strategies, however, the town's tax base and economic circumstances do not allow for this to happen in a timely manner. Chapter 3 of this thesis explains that NCEM has since redeveloped the state centric approach to reduce the financial burden on the local communities and decrease the amount of time needed to implement disaster strategies, such as house elevations. However, this newly developed program has not been in place in Princeville long enough to assess its effectiveness.

Furthermore, accessing financial resources through grants and other paperwork takes time and resources that the town may not have. Grants are a key source of funding for community members on an individual level, the local government for public assistance, and state and federal agencies for disaster recovery and hazard mitigation programs. However, each grant

program discussed in Chapter 3, such as the CDBG-DR and HMGP, is associated with unique regulations that hinder access to these resources and impact the extent to which decision-makers can utilize local context and knowledge throughout mitigation processes. For example, one participant described the impact that state and federal regulations have on their access to financial resources. They express the burden that federal regulations can impose on local leaders when trying to access financial resources following a disaster.

But a lot of the time it is the federal regulations, the reading the Federal Register, understanding those regulations that a lot of legislative leaders don't. [7/1 #15]

This participant emphasizes that the regulations in place are so complex and convoluted that even state and federal legislators find them difficult to understand. Additionally, this calls into question the accessibility of this information on a local level.

Further, a participant that works in emergency management expressed the impact that grant funding has on the timeframe of recovery. They emphasize that a lengthy recovery process could impact the ways in which funds can be used.

So now after you take the time going back and forth for us to get them a grant, which may take 18 to 24 months after the event happens, now you've got people waiting four and five and six years to get the help that we got the money for, but the community can't do it. Then the second issue is that the communities, again, since they're having to pay small amounts of dollars, they do one house at a time. The problem with that is that of course I get this house done, then I'd start another contracting process to do the next house. And contracting takes time, so I've added more time for contracting, and I have cost escalation, because again, I might have gotten a grant in 2014. Here it is, 2020, and I'm just not getting to the work. I've got escalation, I don't have enough money to do the work. [11/10 #13]

As this quote illustrates, in the years it often takes for a grant to get approved and the funds received by the community, costs of labor and materials may rise, leaving the town with less than enough money to complete the project the grant was designed to assist with.

Another concern mentioned by agency personnel related to financial resources was the duplication of benefits (DOB). This concern also emerged throughout discussions with community member participants (results are presented in Section 5.4.1). If a community member

has DOB then they are ineligible for repairs until the duplicated money is repaid. During an interview with a local leader and their assistant, DOB was discussed as a barrier that impacts community members' ability to recover from a disaster.

I don't know what the amount was, but they would help folks that had a duplication of benefits. If it was low enough, they'd pay that off so they could get the other assistance that was needed through, like, Rebuild or NCORR, which is a big deal, like \$67,000. And you get those DOBs from whether receiving temporary housing assistance or maybe FEMA gave you \$7,000 right after Matthew to get like a jump start. And then you either didn't do the work or you can't prove you did the work or you spent the money because you needed to pay something else. You get that. You get that DOB. So they break it down. FEMA breaks down the recovery process of the money. If you've already received money for something, but then you can't prove it that you did this. In some cases, people, it was like their houses were gone. Clearly the work was done, but I don't know where the payroll if you're getting I can't explain that part.[5/31 #1]

This quote emphasizes the burden DOB requirements places on community members to maintain organized receipts and documentation of how the money was utilized following a disaster.

Another participant echoed this point:

So when they're going through their eligibility process at the onset of the flooding or onset of whatever flooding episode normally the process is that the survivors are granted a certain amount of funds for sustainability or seed money, whatever you want to call it for replacement. For if they have to be relocated from their home, then they're given an X amount of dollars and they are expected to do X, Y and Z with those dollars. So for whatever reasons, if they don't do it and they can't prove it through receipts, then it's called a duplication of benefits. So when they finally get to the dollar amount, if it's acquisition, elevation, or reconstruction, if you are not able to provide those receipts, then they have to back those funds out of whatever that final dollar amount is, which sometimes left citizens in a more compromised situation than at the onset. Because if they started off with \$50,000 and they were granted 25 at the onset let's say it this way. If they were granted 25,000 at the onset. And now you're here at the end of your case, and we're giving you \$75,000 to repair your homes and repair your home, and your home amount is \$150,000, then that really leaves them at

a deficit, which puts them in much more of a crises than at the onset of this disaster, one would say. [5/31 # 9]

As this participant indicates, current policies related to DOB could leave some Princeville community members in a worse position than they were in immediately following the hurricane.

This local leader continues on to question what can be done to prevent this type of financial crisis for residents of Princeville moving forward.

So that's a duplication of benefits, and there's nothing that they can do about that other than to say this is what it is. But let's see. Can we do some supplementary resources, such as the Catholic Charity, such as the Methodist People? Maybe we can join these organizations to bridge that gap where the unmet need is so that we can try to make you whole again, if that makes sense. Okay. [5/31 # 9]

The participant suggests that bridging the gap between different funding sources may limit the burden and increase community members' access to financial resources.

One state-level participant echoed this sentiment by expressing how difficult DOBs can be for community members to deal with following a disaster.

Oh yes, and it can be pretty tough on somebody if FEMA comes back and wants the records and they see it was misspent or it comes out that they've done the duplication because they will go after their money to get it back, garnishing wages or doing whatever. [8/2 #12]

This quote sheds light on the continued burden current financial policies, specifically DOB has on Princeville community members. Requiring an impacted flood victim to maintain documentation of how funds were spent poses a core problem in relation to the period of recovery. The concerns highlighted in section 5.2 show that community members are displaced from their damaged homes and expected to reside in shelters or other shared spaces with numerous family members. Community members do not have the means to maintain this level of documentation, yet they are expected to in order to reduce the possibility of DOB.

Another state-level participant stated that DOB is a direct consequence of the slow-paced recovery process experienced in Princeville. When asked to discuss the problems associated with DOBs, they stated that this occurs because community members “program shop” to search for the quickest form of assistance they can find.

And program shopping. So, for example, I mentioned that we have three different state agencies that are managing three separate pots of money to do buyouts and elevations. One state agency is taking too long. They're going to go to another state agency when there's an application process and the same house, the same owner, whether working through their local government or independently applying for this funding, they just want the money to be bought out so they can get out. Right. But program shopping occurs because we should be able to know across three state agencies, somebody's always going to move faster. State money always moves faster than federal money. It's by nature, right? They have less regulations they have to conform to. They have many regulations, of course, but OSBM and Gold Relief will always move much more quickly for those reasons. So if I'm a homeowner, I live in poverty or close to poverty, and I want out because I've been flooded four times in the last 15 years, I'm elderly and get me out of here kind of thing, but I don't want to leave all that. Imagine I'm going to apply to every program. [7/1 #15]

The quotes presented above highlight the added difficulty that DOB and other financial policies place on Princeville community members following the impact of a disaster.

The results presented above express the ways in which local leaders, state and federal agency personnel, and non-profit organizations perceive Princeville's limited financial resources impact the extent to which they are effectively able to address the concerns of Princeville community members when implementing disaster recovery and mitigation strategies. The issues associated with access to financial resources on state and federal levels may also impact how much decision-makers can consider local context and knowledge throughout the mitigation processes in Princeville. If the legislative leaders of local government and state and federal agencies are not able to understand the policy changes in place throughout the different funding channels described in Chapter 3, then policies and protocols should be developed in a more accessible way. Access to financial resources on all levels of government may hinder the ability of decision-makers to consider and utilize local knowledge and context when developing and implementing disaster mitigation strategies.

Ineffective Communication

Similar to the challenges and barriers identified by community members, ineffective communication was also identified by agency personnel as a factor that may impact the extent to which they are able to utilize local knowledge and context throughout disaster mitigation

processes. Officials discussed ineffective communication on multiple levels across the disaster recovery and mitigation sectors. For example, some described ineffective communication between community members and local leaders, while others indicated there was ineffective communication and collaboration between the different emergency management agencies.

One state-level participant stated that effective communication can only occur if the agency personnel themselves are willing to listen to the affected community members and consider their concerns throughout the recovery and mitigation processes.

It's always going to be again, every disaster is unique and the effects on every disaster to an individual is unique. So that is one of the largest being able to listen and understand what the true needs are. And the needs themselves evolve. At first, it may be sheltering, secondly, it may be transitionally from some type of shelter to permanent housing. Also at the same time, what about their job, what about their transportation, what about their health needs? So there's multiple facets always. So, you know, it takes a tremendous amount to work with the individual.[11/1 #20]

This participant posed questions about the diverse needs of community members after a disaster. This highlights the potential ways that disaster mitigation strategies could be more effective if local context and knowledge were taken into consideration.

A non-profit employee working closely with Princeville expressed their concern with agencies that move forward with programming without including community members in the decision-making process. This has long-reaching consequences because the trust community members have in management organizations and non-profits is diminished.

I think it is so much easier, and it's a mistake nonprofits have made in the past to just go forward without including kind of the listening and the information and information collection, because it does take time and you do have to evaluate those communication and access barriers. I think also with Princeville, and we've talked about that historically there has been a lack of trust from people outside the community coming in. So I think that's why this work has been intentionally slow and we've really worked to develop meaningful relationships with community members so that they kind of cosign on us and really help allow us access to people to feel comfortable sharing their experiences and stories. That's valuable. [6/29 # 14]

This participant emphasized that agencies must be willing to slow down their own processes to ensure the inclusion of all community member perspectives, build trust within the community, and provide assistance geared toward addressing community members' concerns.

Ineffective communication is further discussed by a local leader in Princeville who disclosed their concern regarding the policies put in place and adjusted by state and federal funding agencies. This participant states that changes in state-level policies that a community member needs to follow to secure financial assistance, such as those associated with ReBuild NC (discussed in Chapter3), could impact the period of recovery individuals. The policies discussed directly relate to an individual's eligibility to receive funds, therefore, every time a policy is changed, their eligibility may change.

I think it's revamping policy and procedure based upon individual circumstances that occur within the organization. I think it's a combination of all of those. But at the end of the day, it's still unfavorable. It's unfavorable for this community. Throughout all of those processes, whatever it looked like, everything that you've mentioned, I've heard happened with NC Rebuild. They've changed their policy several times. And so if people were if you go from steps one through seven or eight go through one through eight and you in four, and then, lo and behold, they change the policy and procedure, then you stay in that. Four for another year as they continue to revamp the language and the policies supposedly to these people favor. But it doesn't appear with time that it's to their favor. And so it's things like that that has happened that has been very detrimental for our citizens. So it's a combination of all of those things that you've mentioned you could.[5/31 #9]

This quote reveals that policies regarding access to funding are constantly changing and shifting their requirements, with little communication of those changes to local officials or the impacted community members themselves. This indicates that ineffective communication may also impact Princeville community members' access to financial resources.

Another participant, who applied to receive financial support from state-level agencies, described their personal experience dealing with numerous policy changes. As they stated,

ineffective communication regarding these changes may impact the level of support a community member receives following a disaster.

And like [Participant 9] said, you might get to four, and then you sit there, and depending on what the guidelines change, you might not even go back to one or sit at four. You may not be in the program anymore. And so there's key differences, and there is documentation from that organization that you can pull and see, like, what's changed, how it's changed, and somebody within that should be able to tell you why too. [5/31 #1]

Ineffective communication regarding the changes in policies for funding agencies hinders the ability of community members to involve themselves in mitigation efforts, in turn, limiting the extent to which their context and knowledge are utilized by decision-makers.

Furthermore, effective communication is called into question by Participant 9 when asked to elaborate on the ways in which community members are notified about the policy changes.

Now we have this new complete process with the policy and procedure or the step procedural process and we'll get that information but it's overwhelming because you get this 80 page document. Okay, how does that work for citizens?[5/31 #9]

This point is echoed by a state-level participant who affirms that the many grant programs available to Princeville residents and the ongoing projects associated with the dike and levee construction may confuse residents and build a barrier to effective communication. Participant 14 works primarily with community members who want to accept a buyout and relocate to a different community, however, the ongoing processes and ineffective communication in Princeville hinder community members' ability to make an informed decision regarding which mitigation strategy they want to accept.

I think because Princeville has so much going on, it's hard to have a straightforward conversation with them [Princeville community members]. For my program, we have to execute a cooperative agreement with the community, with the local government. And I think if I remember correctly, it was like the day or the day before

that agreement was executed was the day that the Army Corps announced that they were going to be investing like \$38 million or something in the Princeville levee. And a lot of people immediately say, like, "okay, well, if they're going to improve the levee, if the levee is going to save Princeville, then why are we also doing buyouts?" Like, those two things seem to be competing. And there's also, I think, just like, not that it's general citizen's responsibility to have technical expertise in these processes, but they're difficult processes. They're complex, they're bureaucratic, they're they take a really long time. And so I think that there's like a lack of understanding from like a layman's perspective on what some of these things mean, because that \$40 million wasn't necessarily like a check that was being deposited into Princeville's account to do the levee, like the next day or whatever.[7/1 #14]

They further express that the many projects and lack of communication with community members and other agencies may impede decision-makers' ability to implement long-lasting disaster mitigation strategies that reduce vulnerability to future disasters.

I think because there's so many different competing projects, it's really hard to sort of move forward with, like, a unified vision. And I think that one of the really cool things that Princeville has done is try as much as possible to unify that vision through some of the different planning projects that they've done and whatnot. But sometimes, I don't know, sometimes things happen that just are kind of out of nowhere, you know what I mean? From my understanding, the levy was something that was pretty continuously, like the state and delegation in Washington and stuff like that. Were requesting exemptions to cost benefit requirements that Army Corps has to allow improvements to the levy to be made. And that request was something that was done, like, year over year over year over year. And one year they decided to consider it and to push it forward on an exempt status or whatever. And so it's like, it's hard to do long term plans, I feel like, without understanding fully what is on the table. [7/1 #14]

This participant discusses the ways in which ineffective communication limits decision-makers' ability to construct a unified vision for Princeville that includes the local context and knowledge of community members.

Other participants express the difficulty associated with effective communication and collaboration between state and federal agencies. One participant described the ways in which ineffective communication adds to the timeframe of recovery.

The challenge is sometimes the information may be for Mitigation and it came to us, or it may be that the request went to another agency and then there's a gap in us receiving that information. And then the challenge is sometimes is the request is something that is beyond our capability and then we have to do some research to try to find a solution for them. And it may be we have to engage with two or three different agencies to help answer the questions.
[10/26 #19]

This participant expressed that many state-level organizations are equipped to receive concerns and questions from impacted community members, however, those concerns and questions may be passed on to an agency or department that does not have the tools to address those concerns. This acts as a barrier between community members and agency personnel, which also impacts the extent to which their context and knowledge are considered throughout the development of mitigation policies.

To further support this point, another participant discussed the lack of cohesion and collaboration between federal funders as a barrier to effective communication.

Yes, the lack of cohesion between the various federal funders. We all want to do the same thing. Some of the projects involve scopes of work that are very specific. Like for example, buy out this house, buy out that house, elevate that house, place roads over there. And it is not as difficult to notice who all has money for roads. That's why we have a very good collaborative engagement with the I call it the Princeville Funders meeting. Right. But I just mentioned however, there is a lot of other money. There are three state agencies that manage buyouts and elevations. How well do they collaborate? Right?[7/1 #15]

They emphasize the lack of technological support that would allow all state-level agencies to identify which agency's funds are aiding which communities or individuals.

But right now we don't have one system that shows us, say, GIS going to a map that shows us at this point, to my knowledge,

anyway, whose money is where? To the point a lat[itude] long[itude] or an address. We understand there's difficulties with redacting personal information, but all of those things can be overcome. It takes cohesion at the top of government, state government. [7/1 #15]

This participant indicated that bridging the communication gaps within funding and management agencies may address the concerns regarding ineffective communication as a barrier to the utilization of local context and knowledge.

The results presented above support the claim that ineffective communication acts as a barrier to the application of Princeville community members' context and knowledge throughout disaster mitigation strategies. This ineffective communication occurs between management agencies and community members, as well as between the agencies themselves.

Lack of Equity

Participant observation initially revealed concerns amongst community members and local leaders regarding the inequities in the disaster mitigation processes between marginalized communities like Princeville and more affluent communities in eastern NC. This theme continued to emerge throughout discussions with participants regarding any challenges and barriers that may impact the extent to which community members' concerns are utilized in the development and implementation of disaster mitigation strategies.

For example, Participant 15 introduced concerns regarding equity in Princeville during conversations about DOB. They state that Princeville residents may not have access to the same resources, information, or education as other more affluent communities that allow for informed decisions throughout the recovery process.

Who is tracking that on the other side? Who is helping take care of the needs that I have as an elderly person on my own? Let's assume that when we talk about equity, I have the equivalent on average in the state of North Carolina. Let's say I have a 7th grade education. I don't have a computer. I have a cell phone, but I've got a plan that I can afford every month. Who is helping me understand the process? What happens to have my deed taken over by the state, what I have to go through, who I can communicate with? It's a lot.[7/1 #15]

As discussed in previous sections, a lack of information also impacts the extent to which community members feel empowered to participate in decision-making processes. This directly affects the extent to which decision-makers consider and utilize local context and knowledge when developing and implementing disaster mitigation strategies. This may also impact community members' ability to receive financial assistance and their ability to communicate with agency personnel.

This participant continues to describe the ways in which the federal government can assist community members more effectively to ensure they do not end up in a worse position than they were immediately following the hurricane. In this discussion, they stated:

The federal government can do more to alleviate the burdens because it is misunderstood often.... The federal government could do a great deal more to assist. I mean, for example, we had a waiver related to duplication of benefits for two programs. Not but that's where I'm going to refer you to someone else. The duplication of benefits waiver means that it's okay if there's a duplication of benefit. So what does that mean exactly? Is there some funding that's being put aside? Are we spending the two pots of money on one project for the same scope of work? [7/1 #15]

They call into question the ability of funding agencies to provide equitable responses to disasters without first creating a cohesive and equitable framework throughout all programs.

How are we tracking duplication of benefit across programs?...

So there you have an equity issue already. If we can't track what's going on, then how are we going to create equitable frameworks across programs?[7/1 #15]

This quote also highlights the connection between ineffective communication and a lack of equity throughout the recovery and mitigation processes. It is suggested that ineffective communication and a lack of equity work together to impact the extent to which local knowledge and context are utilized when developing and implementing disaster mitigation strategies.

Lack of equitable disaster response is also identified by a local leader as a barrier to successful disaster mitigation strategies. When asked if they believed the timeframe for recovery and mitigation is longer in Princeville than other communities, they stated:

Absolutely it does. And I know partly why. It's because it's a black community. And I do know that I told one reporter one time, the reporter said to me, "why do you think it's so long, taking so long for Army Corps Engineer to come in and do what they need to do?" I said, "just pretend that we're Nags Head and I promise you we wouldn't have had to wait six years to get some things started and we're still waiting for the Army Corps of Engineer."...

And of course it goes without saying what's important to someone is what they're going to work on. We know history, have shown it over and over again and we are aware of it. It's no secret to us as a black people that we for some reason are going to be at the bottom of the totem pole, that we're not going to get the best, that we are going to always be considered as second to none by others, not by us. [10/17 #11]

This quote indicates that local leaders are aware that the historical circumstances that led to the development of Princeville within a floodplain, such as racial tensions throughout southern states following the Civil War, may lead to current inequities throughout disaster recovery and mitigation efforts. They state that, because it is a predominantly Black community, Princeville and the needs of community members are not prioritized by state and federal decision-makers. They suggest that they believe the timeframe for recovery would decrease if Princeville was more important to state and federal decision-makers. This point emphasizes the role that local context and knowledge can play throughout mitigation strategies.

When asked to elaborate on what they meant by the above statement, this participant expressed that the time it has taken for Princeville to recover is related to the perceptions state and federal decision-makers have about Princeville. They emphasize that progress in recovery and mitigation efforts can be attributed to the work of local leaders, rather than relying solely on financial assistance from funding agencies.

We're going to always be thought of as they've been without it this long. What's the rush now? We're going to always be the ones that are going to have to wait on it. I love history and I look at things historically and to see how far the meter has moved, it moves very slow in the black community. It bumps a little bit and at some points all eyes are on Princeville and then the next point all eyes are shut on Princeville. We are being blessed. I would never say that there are not some good things happening but it's not happening because we are standing still. We mean Princeville are standing still saying we're going to wait for you to get us this. We have to beat the bushes. We have to make the phone calls, we have

to send the emails. We have to say hey, we're still here, we're here, we're here. We have to do those things. When I'm sure that then there are other people who don't necessarily have to. But I believe we can break the history barrier as long we keep saying. [10/17 #11]

This quote directly suggests that inequity and the exclusion of local context and knowledge may be impacting the timeframe of recovery and the ability of decision-makers to utilize the perspectives of community members.

Lastly, a participant discussed the lack of equity of recovery and mitigation efforts for children and elderly Princeville residents.

Health and also the children and the senior citizens. Every disaster, like I said before, disasters are unique and they affect different populations and different aspects of that population. I think the Princeville and I think the health side is probably one area. We focus on infrastructure, we focus on so many different aspects of rebuilding and resiliency. But are we really holistic in that? [11/1 #20]

As this quote demonstrates, Participant 20 questioned whether mitigation efforts can truly be equitable and holistic if they do not consider all components of the affected community, including local knowledge and context.

The lack of equitable response to disaster recovery and mitigation efforts in Princeville act as a barrier that impacts the extent to which decision-makers utilize local knowledge and context when developing and implementing new disaster mitigation strategies. The quotes presented above indicate that the lack of equity may be intentional at worst and avoidable at best. These data suggest that a lack of equity persists because of the exclusion of community members' perspectives, which in turn, limits the utilization of their context and knowledge throughout mitigation efforts.

Lack of Capacity

The final theme to emerge as a potential factor that impacts the extent to which decision-makers utilize local context and knowledge is a lack of capacity to do so. The limited capacity of Princeville to adapt to future environmental hazards via financial limitations, time restraints, and

planning capacity does not allow for the inclusion of community members' context and knowledge on the local level. This also impacts the extent to which local leaders themselves are included in decision-making processes. Additionally, the capacity of state and federal agencies to respond to and mitigate disaster in Princeville is also called into question.

The topic of capacity was introduced by a participant who works for a conservation non-profit whose goal is to establish disaster mitigation strategies in Princeville through the development of green space and other measures. They began a discussion about capacity when asked if there was any additional information they wanted to add before concluding the interview.

We have not talked about capacity, so in rural communities particularly, we're seeing a huge capacity issue. So I think there is no lack of individuals and communities who are excited about the types of projects we're doing and who are ready and willing for them to come to their community. But I think having those, again, it goes back to on the ground partnerships. It's extremely difficult when you've got a staff of two or three who are already completely strapped for time to get their attention, to be respectful of their time. I think especially with conservation, it's always been treated as though, we'll deal with that after we get the buildings back online. We'll deal with that after we get the levee rebuilt. And I think what's been really wonderful in Princeville is they really see conservation in concert with their holistic recovery plan, and they do prioritize us and make time for that collaboration, but that's not what we're going to see in every community. And I think that's going to continue to be a barrier, and [this organization] is looking at ways to address that. For instance, providing capacity building through the [...] service program.

So I think it's really going to be a challenge over the next ten years for nonprofits, municipalities and private partners to think creatively about how we address these capacity challenges. [6/29 #14]

This participant discussed capacity at the local level in Princeville, stating that even though community members and local leaders are excited about recovery and mitigation efforts, they may not have the capacity to start those projects on their own. Furthermore, this participant emphasized the role all decision-makers can play in addressing issues with capacity at the local level.

The lack of capacity at the local level is further discussed by another, state-level participant who shared very similar thoughts about the capacity of the local government to mitigate future disasters.

All right, so when we talk about capacity, we're talking about, first of all, and primarily local governments having two or three people on staff that are trying to manage a town that may be growing or maybe dying or losing its tax base. And we expect them to manage. On average, any program is going to have anywhere between 70 and 115 files they have to collect. If it is a federal grant, they can't do that. Who understands what the information? Who agrees on the information? Right? I may think that compliance involves X, Y, and Z, and somebody else may say, she's nuts, that's too much or too little. That's not in compliance, or she's overthinking it. So there's that think about it... So they don't have time to deal with federal grants.[7/1 #15]

This quote indicates that Princeville's local government may not have the staffing capacity to manage state and federal grants. Participant 15 continued to discuss the issues related to capacity on the local level and draw a connection between limited capacity at the local level and inequity in the mitigation processes.

Think about capacity. Again, Princeville doesn't have an engineer on staff, so who offers their engineering services? Because you have to do things like benefit cost analyses to get FEMA money. So Princeville is by nature at an extreme disadvantage, as are many other local governments. [7/1 #15]

As this quote suggests, Princeville's lack of access to resources, such as an engineer to assist in cost-benefit analyses and other requirements for federal grants, impacts their capacity to lessen the impacts brought on by disasters.

I prompted the participant to discuss the ways in which capacity is lacking at the state level, and they expressed that the limited capacity at the state level is further impacted by the systemic processes in place throughout the recovery and mitigation sectors.

Right. So think about this one for a moment. We talk about state government and lack of capacity. I can tell you that in Montana they have three people working for the equivalent of North Carolina Emergency Management. They have three people working there. So when this Yellowstone River flood occurred, right, I mean, they've got something like 1200 properties that are

affected by this river flood. They've got three people hired. And I mean, they should. Montana doesn't often experience this kind of thing. So they have three people on staff. There are approximately 70 people. That's 70 people on staff at NCEM managing disaster recovery money, PA Public Assistance, Individual Assistance, and the Hazard Mitigation Grant Program. So what is the capacity? Is it knowledge? Is it ability? Is it access to technology? They got all the access they need. The state of North Carolina does a great job with that. I know that there are improvements being made, and I know that people are starting to understand what their role is. But there is systemic historical issues with what is— my job as a brand manager, working for the state and administering and implementing federal funds appropriately that has been an issue for years. [7/1 #15]

This quote indicates that the lack of capacity to utilize local context and knowledge throughout disaster mitigation processes does not lie in the access to resources, such as personnel. Rather, this indicates that the lack of capacity may be related to the ability to organize and appropriate the resources that are available to state-level management agencies, such as NCEM.

While the capacity for local, state, and federal organizations to implement disaster mitigation strategies is only discussed by two participants throughout the interview process, this perspective is important to include for the purpose of further discussion. The quotes presented in this section provide context for decision-makers and allows for an examination of areas where limited capacity is mentioned. Furthermore, this subtheme is linked to other challenges and barriers identified by local leaders and state and federal agency personnel. For instance, a lack of access to financial resources may indicate a lack of capacity at the local level to obtain grants for mitigation purposes. Additionally, a lack of capacity to appropriate available resources, such as personnel who can effectively communicate with community members, may lead to ineffective communication. In this way a lack of capacity to adapt at the local, state, and federal levels impacts the extent to which local context and knowledge is utilized by decision-makers throughout the development and implementation of disaster mitigation strategies.

5.4.4 Discussion: Linking Emergent Themes to Adaptive Capacity

In this section, I discuss the challenges and barriers that local leaders and state and federal agency personnel identified that impact the extent to which decision-makers utilize local

context and knowledge throughout disaster mitigation processes. Local leaders and state and federal agency personnel inherently have more knowledge of all processes related to disaster recovery and mitigation in Princeville because of the nature of their professional work. The themes that emerged through open coding with the use grounded theory are very similar to those that emerged throughout the analysis of interviews with community members, however, key differences in the context of the responses remain. I further discuss the themes of ineffective communication, limited access to financial resources, and a lack of equity as they relate to RQ3 and relevant literature. Additionally, I draw connections between these three themes and the final theme discussed in the previous section, a lack of capacity.

Ineffective communication, as discussed by local, state, and federal level agency personnel, takes many forms. This could occur between community members and local leaders, local leaders and state and federal agency personnel, and community members and state and federal agency personnel. The literature in Chapter 2 highlights the benefits that the inclusion of local knowledge and context can provide when developing and implementing disaster mitigation strategies, however, ineffective communication acts as a barrier to this (Maldonado 2016; Barrios 2016; Miller Hesed & Ostergren 2017). Miller Hesed and Ostergren (2017) emphasize the value of multidisciplinary, multilevel discussions regarding disaster mitigation strategies. Ineffective communication limits opportunities for decision-makers and community members in Princeville to disseminate knowledge, develop trust between community members and decision-makers, and work together towards a common goal (Hope et al. 2019). This further impacts the extent to which local knowledge and context is utilized by decision-makers.

O’Riordan and Jordan (2019) discuss the ways in which ineffective communication between community members and state and federal agency personnel impacts the extent to which local knowledge and context is utilized by decision-makers. The results for RQ3 suggest that ineffective communication creates a gap between ideal disaster mitigation strategies of impacted Princeville community members and decision-makers, as highlighted by the concerns presented in section 5.2.

Adger (2000) states that an attempt to mitigate disasters in the long run may increase a community’s short-term vulnerability to environmental hazards. This is evident in Princeville through discussions of the ways in which ineffective communication between community

members and state and federal agency personnel, and local leaders and state and federal agency personnel, has exacerbated the impacts of disasters via a lack of access to resources and the prolonged timeframe of recovery. Ineffective communication with community members limits their ability to participate in disaster mitigation strategies. Additionally, local leaders can only disseminate information to community members if they are first informed by state and federal agency personnel. I propose that ineffective communication is evident in the limited capacity of emergency management agencies to adapt disaster recovery and mitigation strategies to include the perspectives of community members.

Local, state, and federal decision-makers acknowledged the lack of access to financial resources as a factor that impacts the extent to which local knowledge and context is utilized throughout disaster mitigation strategies. Participant 15 discussed the ways in which funds are “siloe off” between different organizations in a way that hinders cooperation and communication between the agencies themselves. This further impacts the level of communication between agencies and Princeville community members and limits the degree that local knowledge and context is utilized. As I discuss in Section 5.4.2, this lack of access to financial resources perpetuates differential power relationships between Princeville community members and the institutions that attempt to aid in disaster recovery and mitigation (Barrios 2016). A lack of access to financial resources also adds to the inequities present in Princeville. The quotes presented in the previous section highlight the ways in which regulations and policies implemented by state and federal management agencies limit the access that community members and local leaders have to financial resources. In some cases, accessing financial resources through state and federal grants requires access to other resources, such as engineers and grant writers, that the town does not have. Without access to these resources, the perspectives of Princeville community members and local leaders are overlooked throughout the development and implementation of disaster mitigation strategies.

Local, state, and federal agency personnel highlight inequity as another factor that impacts the inclusion of community members’ perspectives throughout decision-making processes in Princeville. Community members and local leaders do not have access to the same resources to mitigate disasters that more affluent communities have, which leads to unequal shares of safety and disproportionate impacts of disaster (Hoffman 2017). True equity requires

disaster recovery and mitigation strategies to meet the unique needs of communities and community members (US House of Representatives 2021). The current inequities discussed by participants in the previous section point to the lack of inclusion of community members' perspectives throughout mitigation processes.

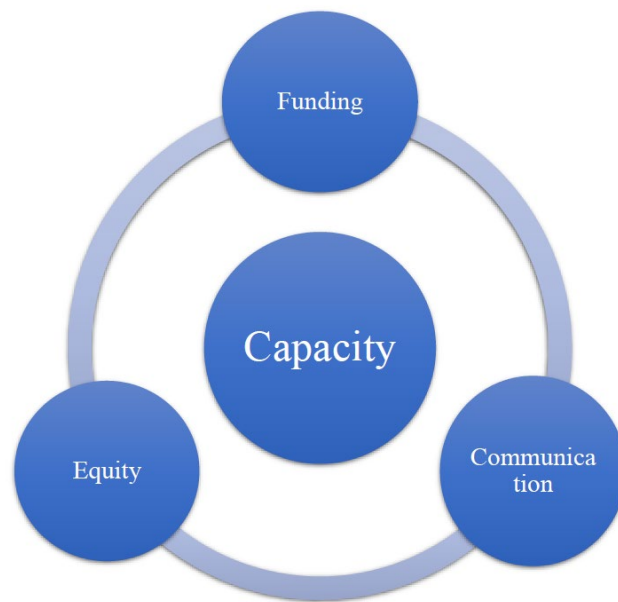


Figure 5.7 Link between challenges and barriers, and the capacity of institutions

The results suggest that ineffective communication, the lack of access to financial resources, and inequity work concurrently to elucidate the lack of capacity on the institutional level to utilize local context and knowledge throughout the development and implementation of disaster mitigation strategies in Princeville (Figure 5.7). While adaptive capacity is often discussed in terms of communities themselves, the results highlight the need for emergency management agencies to reevaluate their ability to adapt to the needs of Princeville as the impacts of climate change progress. Adaptive capacity requires a willingness to transform current responses to disaster, which does not seem to be present within the agencies assisting Princeville with their recovery and mitigation strategies. Rather than placing the burden of establishing and building adaptive capacity on Princeville community members and local leaders, I suggest that institutions should be assessed to identify the shortcomings in their adaptive capacity. State and federal institutions that establish and build their capacity to adapt to

could, in turn, promote more successful disaster mitigation strategies that utilize local context and knowledge to address the concerns community members have about the future risks of flooding (Adger 2000).

5.4.5 Emergent Themes Between Research Questions

Through an iterative analysis of the data collected through semi-structured interviews, I drew connections between the responses of community members and that of local officials that cannot be overlooked. Mainly, the theme of the lengthy timeframe of recovery identified by community members as a major concern to the future risks of flooding, and the barrier of equitable response to disasters identified by officials. While community members did not label this concern as inequity, a deeper analysis of these responses shows they are related.

Equity requires the recognition of the various needs of a community, followed by an effective response that addresses those needs (US House of Representatives 2021). The concern community members have about the slow-paced recovery processes not only acts as a form of bureaucratic violence (Reinke and Eldridge 2020), but also emphasizes the inequities present in Princeville's disaster mitigation process. As stated previously, the last major flood event occurred in Princeville during Hurricane Matthew, approximately 7 years prior to the development of this thesis. An examination of the results presented above shows that impacted community members are still dealing with long-lasting impacts in the form of displacement, damaged homes, and even exposure to mold. This supports the claim made by FEMA's National Advisory Council that FEMA did not meet the required elements of equity as expressed by the Stafford Act (US House of Representatives 2021). Section 308 of the Stafford Act expresses that to maintain equity, institutions must distribute supplies, process applications, and complete other relief efforts in an equitable and impartial manner, without any levels of discrimination (US House of Representatives 2021, p. 3). The results suggest that the constant change in financial assistance policies, the timeframe of the recovery process in Princeville, and the exclusion of community concerns throughout previous disaster mitigation strategies support claims that the state and federal emergency management institutions are not providing equal disaster mitigation strategies to the residents of Princeville.

Chapter 6: Conclusion

6.1 Chapter Overview

Throughout this thesis, I examined disaster mitigation strategies in Princeville to build on existing anthropological literature that emphasize the need for the inclusion of local knowledge and context throughout the development and implementation of mitigation within marginalized communities. By employing a political ecology framework, I was able to elucidate differential power relationships between decision-makers and community members and the ways in which disaster mitigation decisions shape the everyday realities of Princeville residents. Additionally, a political ecological approach allowed for the examination of the link between the town's historical, social, and economic circumstances and issues with environmental justice in the area, today. The overall goal of this research is to determine community members' concerns about the future risk of flooding and identify any challenges and barriers that hinder decision-makers' ability to consider local knowledge and context throughout the development and implementation of disaster mitigation strategies.

In this chapter, I summarize the main findings related to each research question and the ways in which these findings relate to one another. Additionally, I discuss this thesis's main contribution to the field of anthropology and provide a description of the limitations of this research. Lastly, I describe recommendations for policy changes and directions of future research related to disaster mitigation strategies within marginalized communities.

6.2 Research Questions and Results

Research Question 1

My first research question, "*What are the main concerns community members have about the future risk of flooding?*", was developed to further understand the lived experiences of Princeville community members who have been impacted by flood events. Eriksen and Simon (2017) discuss the ways in which perceptions of risks and hazards influence the measures people take to prepare for, respond to, and recover from disasters. Identifying the concerns held by community members provides decision-makers with the insight necessary to develop effective disaster risk reduction strategies. This supports claims made by many disaster anthropologists

regarding the benefits of including local knowledge and context throughout the development and implementation of disaster mitigation (Miller Hesed & Ostergren 2017; Maldonado 2016).

The conversational nature of semi-structured interviews provided an opportunity for participants to share information they deemed important. Three key themes emerged throughout the analysis process: flood insurance costs, timeframe of recovery, and preparation to withstand a future storm. It is beneficial for residents to obtain flood insurance because it ensures financial support following a devastating disaster, however, the results suggest that the difficulties in acquiring flood insurance and the cost of maintaining it acts as a deterrent to Princeville community members. If residents do not have flood insurance to finance repairs, they must try to obtain financial support from government and non-government agencies. The bureaucracy associated with this directly impacts the already lengthy timeframe of recovery, which supports claims made by Reinke and Eldridge (2020) that temporality act as a type of bureaucratic violence that add to the suffering of impacted residents.

The prolonged timeframe of recovery emerged as a theme throughout the analysis of interview questions regarding the impact of previous flood events. Hurricane Matthew impacted Princeville in 2016, and, at the time of this thesis, residents are still waiting for repairs and elevations to be made to their homes. This concern is validated by the increase in frequency and severity of flood events as climate change progresses. Residents will be further displaced if another hurricane affects Princeville before recovery and mitigation strategies are complete. Additionally, financial support from state and federal agencies may be more challenging to obtain. Any damage to residents' homes must be attributed to a specific disaster; if agencies, such as FEMA or NCEM, are unable to associate damages to a new disaster, then residents are left with more time-consuming red tape that acts as a barrier to necessary support.

Lastly, the town's preparation to withstand future flood events is a key concern among community members. Participants identified evacuation, transportation, and stormwater management as areas where the town's preparation could improve. As stated above, the ability to recover from a previous flood event may increase the impact of a future disaster, therefore, the results for RQ1 suggest that flood insurance costs and the timeframe of recovery also impact the level of successful preparation to withstand future flood events. Community members are concerned about the potential impact a future disaster could have on Princeville. I suggest that

these concerns highlight the value of including local context and knowledge throughout the development and implementation of disaster mitigation strategies.

Research Question 2

My second research question was: “*Do community members trust that decision-making bodies—including Princeville’s Board of Commissioners and state and federal agencies—will consider their concerns when developing and implementing post-disaster policies?*” The goal of this research question was to contextualize participants’ concerns related to RQ1, however, identifying levels of trust also provides insight into the lived experiences and everyday realities of impacted Princeville residents (Lazrus 2015; Oriangi et al. 2021). Research shows that community members’ perceptions, perspectives, observations, and priorities are necessary to develop effective disaster mitigation in racially and economically marginalized communities (Lazrus 2015). Decision-makers often shape the everyday realities of Princeville residents; therefore, their concerns and levels of trust should be considered when developing disaster mitigation strategies.

Throughout the interview process, I realized that community members have different levels of trust in local decision-makers than in state and federal decision-makers. Some participants expressed their high levels of trust that local decision-makers will consider their concerns when developing and implementing new disaster mitigation policies, while others stated that they did have trust in this. I believe this is directly related to the previous experiences that participants had with flood events; those who witnessed local decision-makers advocating for residents and providing much-needed assistance tend to have higher levels of trust than those who did not. Participants did not trust that state and federal decision-makers would consider their concerns throughout disaster mitigation processes. The results suggest that the prolonged timeframe of recovery and limited access to financial resources influence levels of trust in this context.

The complex nature of disaster mitigation in Princeville may influence the different levels of trust held by community members. For example, some responses to interview questions indicate that community members may not know which processes are controlled by which decision-makers. This has the potential to impact with whom community members place their

distrust. This point is emphasized by the lack of effective communication highlighted throughout RQ3 results.

As stated in section 5.4.1, differential levels of trust highlight the systemic vulnerabilities that leave Princeville residents disproportionately affected by disasters. It is evident that participants do not trust that state and federal decision-makers will consider or address their concerns throughout the mitigation process. Disaster mitigation that does not consider community members' concerns will perpetuate mistrust, further exclude Princeville community members from decision-making processes, and limit areas for the co-production of disaster mitigation (Bremer & Meisch 2017; Lazrus 2015). It is for this reason that I propose that this evidence of mistrust in decision-makers is a key flaw in the disaster risk reduction strategies within Princeville.

Research Question 3

My final research question was: *“What factors impact the extent to which local officials and state and federal agency personnel utilize local knowledge and context when developing and implementing disaster mitigation policies?”* Maldonado (2016) expresses that disasters and disaster mitigation strategies continuously shape and reshape culture and communities. In addition, other researchers express that disaster mitigation strategies are more successful if they align with the mitigation goals of the affected community (Hope et al. 2019). This question was developed to identify any challenges or barriers that hinder decision-makers' abilities to utilize local context and knowledge throughout mitigation processes.

The challenges and barriers associated with RQ3 were presented in two separate discussions, however, the challenges identified by the community members did fall in line with those identified by local officials, and state and federal agency personnel. Community members identified ineffective communication, limited access to financial resources, and environmental injustice as factors that may impact the extent to which decision-makers utilize local context and knowledge. Decision-makers also identified ineffective communication and limited access to financial resources as factors, however, they also recognize a lack of equity and limited capacity. Limited access to financial resources as a theme for RQ3 aligns with the high flood insurance cost that was a major concern for community members regarding future flood risks. Similarly, evidence of ineffective communication may be linked to differential levels of mistrust that

decision-makers will consider and address community members' concerns throughout the mitigation process. If disaster mitigation-related information is not shared with community members, then they do not witness any progress that is made or have any opportunities to gain more insight into the process of disaster mitigation.

The lack of equity identified by decision-makers aligns with the aspects of environmental injustice that community members identified as a factor that impacts the utilization of local context and knowledge. I presented these themes differently because I wanted to maintain the original context of the participants' responses. All participants who identified injustice and inequity as challenges and barriers recognize that Princeville does not have access to the same recovery and mitigation resources that more affluent communities have, such as grant writers. This leads to unequal shares of safety and disproportionate impacts of disaster (Hoffman 2017).

The results support the idea that the challenges associated with the overall capacity to withstand flood events are not solely on Princeville community members and local leaders, but rather the emergency management institutions themselves. According to relevant literature, institutional adaptive capacity can influence the recovery and mitigation process of Princeville, in turn supporting efforts to grow the adaptive capacity of the town (Adger 2006). However, this has yet to be achieved, which results suggest could be due to a limited capacity of decision-makers to adapt their policies to promote the inclusion of local context and knowledge.

It is important to acknowledge the link between the themes presented by all participant groups. Community member participants identified concerns that align with the challenges and barriers recognized by decision-makers. This provides further evidence that Princeville residents are knowledgeable about the ways in which disasters affect their community. Additionally, the analogous nature of responses that identified challenges and barriers to the utilization of local knowledge and context suggests that residents are aware of the ways in which mitigation strategies could improve in their area. These connections support previous literature that emphasizes the importance of including local knowledge and context throughout the development and implementation of disaster mitigation strategies (Maldonado 2016; Miller Hesed & Ostergren 2017).

While this research was conducted solely in Princeville, NC, I emphasize the potential areas of alignment with other marginalized, vulnerable populations. Princeville is not the only

Black community forced to reside in a hazardous area because of the historical and systemic racism throughout the history of the US. Therefore, this research can inform future practitioners in their exploration of disaster mitigation and environmental inequity in other areas nationally. Furthermore, as climate change increases the severity of flood events, the perspectives of community members will become increasingly necessary in the development of successful mitigation strategies globally.

6.3 Recommendations for Policy and Future Research

The findings outlined in this thesis have many implications for community members and decision-makers at the local, state, and federal levels. The knowledge held by community members indicates they are aware of issues associated with flooding and barriers to their inclusion throughout disaster mitigation processes. I hope that these findings empower community members to become more involved in recovery and mitigation efforts so their knowledge can be implemented. The distrust present in local decision-makers suggests that the communication gap between local leaders and community members should be addressed. Local leaders currently work to share information with community members; however, results suggest that this could be done in a more accessible way. The challenges and barriers that hinder decision-makers' ability to utilize local context and knowledge provide evidence that there are areas of recovery and mitigation that need improvement. Although unlikely, I suggest that decision-makers analyze their attempts to include local knowledge and context and identify any shortcomings.

The findings highlighted throughout discussions of limited access to financial resources and lack of equity and environmental justice suggest that constant policy changes may be negatively impacting flood victims in Princeville. I suggest that emergency management agencies should tailor their policies to fit the circumstances of specific communities. Unfortunately, limited access to financial resources and ineffective communication on the institutional levels need to be addressed before this can occur. I suggest that agencies employ someone to go back to impacted communities, specifically Princeville, to receive feedback from community members. Doing so will shed light on areas where recovery and mitigation policies may be hindering the recovery of residents. There is a unique opportunity for this in Princeville, because residents are still living in the recovery phase of Hurricane Matthew. As policies change,

they should move towards the direction of inclusionary practices that promote the co-production of policies and knowledge.

Further longitudinal research is needed to assess the success of new disaster mitigation strategies, such as the state centric approach. State-level agency personnel are sure that this approach will lead to the quicker implementation of disaster mitigation strategies, such as elevations, however, evaluating the benefit of this program lies outside the scope of this research. Additionally, research that relies on responses from a larger sample size will provide supplemental insight regarding community members' perspectives regarding disaster recovery and mitigation strategies. This is important when attempting to understand the measures taken to reduce the risk of future disasters. Furthermore, I suggest that future research should utilize the results related to differing levels of trust to explore systemic vulnerabilities that influence Princeville residents' abilities to prepare for and adapt to increasing environmental risks.

I believe there are also opportunities for a more in-depth examination to identify the factors that impact the effectiveness of communication between decision-makers and community members across all levels of disaster mitigation. Identifying areas where communication is lacking may highlight necessary improvements to agency-community interactions. Furthermore, future research should examine areas where agencies do not have the capacity to adapt their current mitigation strategies to include local knowledge and context. Doing so will promote more equitable responses to disasters in Princeville.

I propose that future research should focus on identifying reasons why different recovery and mitigation strategies do not complement each other. The above results suggest that ineffective communication between management agencies may lead to prolonged recovery. Additional research can also highlight the agencies or agency personnel who may be responsible for or able to remedy these opposing policies. Throughout additional explorations of disaster recovery and mitigation strategies, researchers should identify ways to improve or remedy policies, so they address community members' concerns and promote a more inclusive disaster mitigation process.

Lastly, I would like to encourage future practitioners to resist the urge to conduct extractive academic research in Princeville and other marginalized communities. Applied anthropologists have a duty to respect all participants regardless of age, race, gender, etc. Any

future research conducted in Princeville should be done on the terms of community members to ensure that an already marginalized population is not further marginalized.

6.4 Dissemination of Thesis Results

I will share the results of this thesis in multiple different ways. First, I will publish this entire document through East Carolina University's (ECU) library system, which is available to all students, faculty, and staff and can be shared with other universities through inter-library loans. This document will also be shared with the town of Princeville and could be added to the historical document the town is preparing for publication. Furthermore, I will share the results of this thesis with community member participants through follow-up discussions.

Additionally, results from this thesis may be added to the Community Data Portal currently being developed through ECU's Water Resources Center (WRC) which any member of the public can access. The data for this thesis may also be added to an NSF-funded project entitled Coastlines and People (CoPe). Lastly, I plan to disseminate this information to academics and practitioner audiences through the publishing of journal articles.

6.5 Limitations of This Research

The issue of representation presents a limitation to this research. The limited sample size of 8 community members suggests that the conclusions drawn with regard to community members' perspectives may not be representative of the entire community of Princeville. The nature and timing of this research hindered my ability to access additional members of Princeville's population, however, all claims are further supported by data collected through participant observation. Conducting in-person interviews with community members in the midst of the COVID-19 pandemic proved to limit my access to participants. With that being said, the direct quotes provided by participants should not be utilized to characterize the overall perceptions of all Princeville community members.

Levels of trust between state and federal agency personnel and I may act as a further limitation to this research. I did not have a chance to build much rapport with state and federal agency personnel prior to conducting the interviews. Instead, I contacted them by email and briefly introduced myself and the goals of the research prior to beginning the interview. I suspect

that gaining additional rapport with these participants may have prompted slightly different responses.

The virtual nature of the interviews with participants added another limitation to this research. The research was conducted during the heightened spread of the Omicron strain of the COVID-19 virus, therefore, a majority of the interviews with state and federal personnel were conducted online via Microsoft Teams. In 3 instances, I was not able to record the interview, however, I did take detailed notes of all responses. Because of this, I did not feel comfortable quoting any of the participants who did not have a transcription associated with their interview. This was done to protect participants' true meaning and context. Rather, I utilized their responses to further develop themes and provide additional context to others' responses.

Additionally, during the interview process, Hurricane Ian devastated many parts of Florida. North Carolina and Florida both reside in FEMA Management Region IV, meaning that quite a few potential participants were inaccessible while conducting recovery and mitigation efforts further south. Again, this limited my access to federal agency personnel. Ideally, I would have conducted the same number of interviews throughout all levels of government to represent all viewpoints equally.

Lastly, my positionality as a white, female, researcher in Princeville may have limited my access to participants and affected their responses to my questions. In previous research regarding social scientists' ability to gain access to communities of which they are not a part, similar questions arise, including but not limited to the reliability of the data, the ability to interpret the data, and biases (Stack 1975). Princeville has been the subject of many research projects with different academic institutions across NC, therefore, I suspect my association with East Carolina University may have influenced community members' willingness to participate in this research.

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APPENDIX A: Informed Consent

Dear Participant,

You are being invited to participate in a research study titled “Supporting Environmental Justice in Connected Coastal Communities through a Regional Approach to Collaborative Community Science” being conducted by a team of researchers at East Carolina University. The interview will take approximately 30 – 60 minutes. It is hoped that this information will assist us to better understand the factors that contribute to water-related vulnerabilities in your community, and the choices available to address these vulnerabilities. We will audio record the interview so that we can review your comments if necessary. Your responses will be kept confidential and no data will be released or used with your identification attached. Your participation in the research is voluntary. You may choose not to answer any or all questions, and you may stop at any time. We will not be able to pay you for your participation in this survey. There is no penalty for not taking part in this research study. Please call Stephen Moysey at 252-328-6131 for any research related questions or the University & Medical Center Institutional Review Board (UMCIRB) at 252-744-2914 for questions about your rights as a research participant.

Thank you for taking the time to participate in this study!

Sincerely,

The ECU Research Team

Alexandra Stevenson
Stevenson17@students.ecu.edu
Anthropology Department
East Carolina University

APPENDIX B: Interview Guide 1

1. How long have you lived in Princeville?
2. How have flood events in the past impacted you?
 - a. Hurricane Floyd
 - b. Hurricane Matthew
3. Are you still being impacted by flood events?
 - a. In what ways?
4. What are your top concerns about the future risk of flooding?
5. What does successful disaster preparation look like to you?
6. What are your thoughts on the proposed buyouts that FEMA has offered in the past?
7. Ideally, how would you like local government and state and federal agencies to address your flood concerns?
8. How do you feel about the way *the local government* has responded to flooding in the past?
9. How do you feel about *the way state and federal agencies* responded to flooding from Hurricane Floyd? Hurricane Matthew?
10. Were there any differences in government response to Hurricanes Floyd and Matthew?
11. Do you trust decision-makers to consider your concerns when implementing new disaster policies?
12. Do you trust decision-makers to address your concerns when implementing new disaster policies?
13. Can you think of any challenges that may interfere with implementing disaster policies that address your concerns and the concerns of other community members?
14. Who else should I talk to about this?
15. Is there any additional information you would like to add to this interview before we conclude?

APPENDIX C: Interview Guide 2

1. What is your role as [insert job title]
2. Were you in this position when Princeville was impacted by Hurricane Floyd?
 - a. Hurricane Matthew?
3. What is your role in disaster mitigation planning?
4. What does successful disaster mitigation look like to you?
5. What does resilience mean to you?
6. Did you participate in the development of the 2018 Princeville Recovery Plan?
 - a. If yes:
 - i. What was your role in its development?
 - ii. Were community concerns considered when planning and creating this document?
 - iii. How were these concerns identified?
 - iv. How were they addressed?
7. How are community concerns typically identified?
8. To what extent does current disaster mitigation consider community members' concerns?
9. Are there any barriers that you can think of that make it difficult to address all community members' concerns?
 - a. What concerns are most difficult to address? Why?
10. Are you also a member of this community?
 - a. If yes:
 - i. Ask questions 1-4 from community member interviews
11. Who else should I talk to about this?
12. Is there any additional information you would like to add to this interview before we conclude?

APPENDIX D: UMCIRB Approval Memo



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284
rede.ecu.edu/umcirb/

Notification of Amendment Approval

From: Social/Behavioral IRB
To: [Stephen Moysey](#)
CC:
Date: 3/30/2023
Re: [Ame10 UMCIRB 21-001363](#)
[UMCIRB 21-001363](#)
Coastlines and People

Your Amendment has been reviewed and approved using expedited review on 3/30/2023. It was the determination of the UMCIRB Chairperson (or designee) that this revision does not impact the overall risk/benefit ratio of the study and is appropriate for the population and procedures proposed.

Please note that any further changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must adhere to all reporting requirements for this study.

If applicable, approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Document	Description
BHIS 2023 Consent Information(0.01)	Consent Forms
BHIS 2023 Questions(0.01)	Surveys and Questionnaires

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

