Extreme Weather and COVID-19: Organizational Responses to Simultaneous Disasters Affecting Migrant Farmworker Communities

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Abstract

As climate change increases the frequency, intensity, and scope of disasters, the world is seeing a stark increase in disasters that transcend borders and put individuals and communities in danger. Eastern North Carolina is in the midst of recovery from simultaneous disasters: extreme weather and the COVID pandemic. The magnitude of the effects of disasters is catastrophic, yet the burden is not evenly distributed. Specifically, the effects of these disasters are even greater for migrant farmworkers, who already face extensive structural vulnerabilities such as occupational hazards, exploitation, lack of legal documentation, isolation, and marginalization. This project examines how various governmental and non-governmental organizations that focus on migrant and farmworker well-being have responded to simultaneous disasters that affect these communities. Through qualitative data from oral history interviews collected from five government agency and community organization employees dedicated to assisting migrants, I analyzed the needs and assets of farmworker communities, as well as the role of governmental and nongovernmental organizations, and multilevel collaboration between organizations to respond effectively to disaster. Implications for how study findings might inform the work of organizational leaders, governmental agencies, and all relevant stakeholders engaged in disaster recovery and the well-being of farmworker communities are discussed.

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Chapter 1: Introduction

As climate change increases the frequency, intensity, and scope of disasters, the world is seeing a stark increase in disasters that transcend borders, threaten institutions, and put individuals and communities in danger. Eastern North Carolina (NC) is currently in the midst of recovery from simultaneous disasters: extreme weather and the COVID pandemic. The term "simultaneous disasters" refers to when an area experiences at least two sudden, catastrophic events that concurrently cause upheaval and harm to people and property; this includes disasters that occur during the recovery period of a different recent disaster (Khan et al., 2008; Babu, 2017). The magnitude of the effects of disasters is catastrophic, yet the burden is not evenly distributed. For instance, the magnitude of the effects of these disasters is even greater for migrants, who already face extensive structural vulnerabilities.

Extreme Weather in North Carolina

Eastern NC faces continuous damage from recent storms, including hurricanes Matthew, Michael, Florence, Dorian, and Isaias, as well as tropical storms such as Bonnie and Arthur (North Carolina Climate Office, 2019). NC has experienced several significant hurricanes and tropical storms in recent years, leading to extensive flooding throughout the state. In particular, hurricanes Matthew, Florence, and Dorian struck the state between 2016 and 2019, thus compounding the damages done by each individual storm (North Carolina Climate Office). In NC, when hurricanes and tropical storms occur, the excess water does not only affect coastal areas; rather, river flooding extends far inland (Doll, 2021). Thus, most counties in eastern NC faced extensive damage from these storms, especially hurricanes Matthew and Florence (Sprayberry & Hogshead, 2019).

Migration to North Carolina

Many eastern NC counties that experienced damage due to extreme weather are also home to Latino migrant communities. Eight percent of the state's population, an estimated 800,000 people, was born in another country; of these immigrants, about half have ancestry in Latin America (Gill, 2020). Industries such as farming, meat and poultry processing, and other forms of agricultural work employ a high proportion of Latino workers. For instance, 57% of farm laborers nationwide are Latino and of Mexican origin, and 56% of all farm laborers originate from outside the US (USDA Economic Research Service, 2022). What's more, although Latino migrants inhabit all parts of the state, these agricultural industries are concentrated in eastern NC. Not all migrants who arrive to the state are undocumented; however, more than 200,000 U.S. citizens in NC live with at least one family member who is undocumented, and farmworkers are less likely to be US citizens, with approximately 50% of crop farmworkers nationwide lacking legal immigration status (Gill; USDA Economic Research Service).

For the purpose of this paper, I use the term "migrant" as an umbrella term to refer to all people who are newcomers to the United States. This term includes immigrants, who intend to settle permanently in the US, as well as seasonal workers and others who intend to stay in the US temporarily. Migrants may be documented or undocumented. The migrant experience is far from homogenous (Gill, 2018). However, many migrants face disproportionate financial, legal, educational, and health-related barriers that have impacted their experience with disasters such as COVID and extreme weather (Gill). Although federally qualified health centers that serve migrants do exist, these centers are often not physically accessible. Rural areas such as those in eastern NC also tend to lack culturally and linguistically competent health care centers (Ramos, 2018). Even where healthcare is available, lack of financial, educational, and procedural resources often deters migrants from seeking care. Many migrants are ineligible for many health services without paying high out-of-pocket costs. For example, for the first five years after arrival to the US, immigrants are not allowed to access social protections, including Medicaid, or

purchase health insurance (Ramos, 2018). This applies to both documented and undocumented migrants, but many undocumented migrants are rendered completely ineligible for social supports, even after this five-year period (Gill; Munger et al., 2015). Moreover, free health clinics that serve migrants are few and far between and are rarely advertised (Ramos). Many undocumented migrants, and sometimes even documented migrants with undocumented family members (i.e., mixed status families), avoid seeking health care or other forms of assistance out of fear of deportation and being charged exorbitantly high prices due to a lack of insurance (Munger et al.).

Undocumented migrants, in particular, are also often vulnerable to discrimination and occupational hazards. Dangerous industries, lack of education and familiarity with American systems, language barriers, and lack of social capital often make undocumented migrants vulnerable to exploitation (Ramos, 2018). For example, migrant and seasonal farmworkers, many of whom are undocumented and come from Mexico, have the worst health outcomes within the agricultural industry (Ramos). What's more, the average annual income for farmworkers in NC is $11,000 (Gill, 2020). Sparse enforcement of workplace safety measures leaves workers even more vulnerable to exploitation, dangerous work environments, and poor health outcomes (Ramos). Farmworkers face low wages, dangerous workplaces, and high rates of injuries; to make matters worse, only 31% of farmworkers have health insurance (Farmworker Justice, 2021). In addition, workers who are undocumented or live in mixed-status families may avoid seeking legal assistance to address occupational hazards for fear of being deported or otherwise punished (Gill).

Combining Structural Vulnerabilities in the COVID pandemic

When the COVID pandemic struck NC in early 2020, storm damage from hurricanes Matthew, Dorian, and Florence had still not completely subsided. The pandemic has increased structural vulnerabilities faced by migrants, resulting in large disparities in infection rates among US residents with Latin American ancestry, especially "those who live in states with more

recently arrived immigrants, like North Carolina" (Gill, 2020, para. 11). As of July 6, 2020, North Carolinians with Latin American ancestry made up 40 percent of COVID-19 cases in the state, despite only comprising 10% of the population (Gill). Additionally, for undocumented migrants, pursuing any government assistance carries some risk of being discovered and punished or deported. Some take the risk; others are discouraged entirely from seeking help in any form, even in response to disasters that affect their communities (Gill). Even for migrants who have documentation, assistance may not be accessible due to a lack of transportation, insufficient resources in Spanish or other indigenous languages (i.e., dialects), high costs, little information, and other barriers.

Moreover, in the face of disaster, community and governmental organizations can play a role in facilitating the recovery of farmworker communities. This study involved collection of qualitative data from people who work in community and governmental organizations that focus on farmworker health and well-being in order to address the following questions:

1. How do simultaneous disasters exacerbate structural vulnerabilities faced by migrant communities in eastern NC from the perspective of community professionals and governmental officials?
2. What is the role of community and governmental organizations in responding to simultaneous disasters affecting migrant farmworker communities in eastern NC?

Theoretical Frameworks

Disaster Management

In order to understand the current situation in eastern NC, it is crucial to have a common understanding of what constitutes a disaster. Disaster is defined as "a sudden adverse or unfortunate extreme event which causes great damage to human beings as well as plants and animals" (Khan et al., 2008, p. 43). Disasters may be natural or induced by humans. Key characteristics of disasters are that they exceed a given population's capacity to respond to the situation, thus resulting in life being "paralyzed" (Khan et al., 2008).

It is logical that in times of crisis, people often turn to governmental institutions for answers. After all, programs such as the US Federal Emergency Management Agency (FEMA) and county-level disaster plans exist to rescue people and communities from the dangerous aftermath of hazards such as flooding. However, disaster responses do not exist in a vacuum, only to be activated when a disaster occurs. Instead, they are shaped by all forms of governance and societal norms (Tierney, 2012). The framework of disaster management suggests that responses to environmental change must occur between different systems of governance, both during disasters and in general, emphasizing collaboration between different levels of governance (Khan et al., 2008; National Disaster Management Authority, 2006; Tierney).

Under the framework of disaster management, this project will examine how disaster governance has affected migrant populations in eastern NC. It is important to note that eastern NC is geographically and environmentally vulnerable to disaster because of its proximity to the coast. Moreover, migrants, particularly farmworkers, are a group that is vulnerable to disasters because of the socioeconomic and structural barriers they face in preparing for and responding to disasters (Khan et al., 2008). This project will use disaster governance as a lens with which to examine the effects of these combined vulnerabilities in the face of simultaneous disasters.

Vulnerability Framework

When the disaster management framework discusses vulnerabilities, it often excludes social vulnerabilities (Flanagan et al., 2011). The vulnerability framework adds nuance to the disaster management framework by emphasizing the ways that vulnerabilities exacerbate the challenges created by disasters. Vulnerabilities consist of characteristics that influence a person or group's "capacity to anticipate, to cope with, resist and recover from the impact of a natural hazard" (Singh et al., 2014, p. 71). Social vulnerabilities encompass factors such as physical, cultural, and environmental processes that shape the ways that groups and people experience disasters; social vulnerability is "a by-product of social inequalities" (Singh et al., p. 72).

When conceptualizing the impact of vulnerabilities on disaster management, it may be helpful to consider the following formula:

*Risk = Hazard * (Vulnerability – Resources)*

In this model, "Risk is the likelihood or expectation of loss; Hazard is a condition posing the threat of harm; Vulnerability is the extent to which persons or things are likely to be affected; and Resources are those assets in place that will diminish the effects of hazards" (Flanagan et al., 2011). The social vulnerability framework has its basis in the disaster management framework, using similar terminology and models, but it focuses on the way that inequalities and marginalization affect the experience of disaster.

Social class is the most important determinant of vulnerability, as it affects employment, income, education levels, housing quality and infrastructure, access to medical services, and many other key factors. More generally, access to resources, information, medical care, technology, social capital, and adequate infrastructure are crucial in determining one's level of vulnerability during a disaster (Singh et al., 2014). Combined, all of these factors shape the way that disasters effect various populations, with more marginalized groups often being more vulnerable to the damage and loss of disasters. Social vulnerability goes beyond one's physical vulnerability in a disaster to encompass the ways in which "social inequalities and historic patterns of social relations that manifest as deeply embedded social structural barriers that are resistant to change" (Singh et al., p. 73). In other words, existing social inequalities and barriers are exacerbated during times of disaster, and marginalized groups are often more vulnerable to negative effects of disaster.

It is important to note that one aspect of social vulnerability is administrative and institutional practices to respond to disaster (Singh et al., 2014). After all, "the most vulnerable people are likely those whose needs are not sufficiently considered in the planning of local response and relief organizations" (Flanagan et al., 2011, p. 3). Thus, this framework can be applied in this study, combined with the disaster management framework, to analyze the

vulnerability of migrant farmworker communities in eastern NC and how governmental and community organizations can address disaster recovery in this marginalized group.

The Current Study

As eastern NC recovers from both extreme weather and the COVID pandemic, community assets and disaster management practices that serve as protective factors against disasters are crucial in defining the trajectory of adaptation. Community assets are especially relevant when examining the experiences of migrant communities in NC, particularly migrant farmworker communities who face a host of vulnerabilities that potentially make them more vulnerable to the effects of disasters and to a slow recovery rate post-crisis. Relationships between community members, governing bodies, and organizations can play a significant role in the process of adapting and responding to disaster. This project addressed approaches to disaster preparation, management, and recovery by focusing on community organizations, relying heavily on qualitative data collection.

Chapter 2: Literature Review

To provide background knowledge on disasters faced by immigrants in eastern NC, this chapter focuses on scholarly conversations surrounding hazards, disasters, and migration. This literature review will demonstrate how the current situation in eastern NC can be conceptualized as a major interaction between hazards and risk factors, or between destructive events and the preexisting conditions in eastern NC that have allowed these events to take such a significant toll. In eastern NC, the underlying cause of many hazards is climate change and increased interaction with animals; these phenomena will be explained in further detail later in this chapter.

The term "hazards" refers to anything that has the potential to cause destruction. Major hazards in eastern NC are flooding and infectious disease. Disasters, on the other hand, are the result of hazards that disrupt daily life by endangering the livelihood of people and their property (Babu, 2017). A helpful way to conceptualize the difference is that "not all hazards are disasters, but all disasters are disasters;" the difference lies in the extent to which a hazard affects human livelihood (Babu, para. 3). Approaches to disaster response include the disaster management framework, top-down approaches, and bottom-up approaches. However, examining eastern NC through a lens of disaster governance and community resilience reveals the need for collaboration between different approaches to disasters. Lastly, this chapter will discuss how migrants, particularly farmworkers, face key vulnerabilities that affect collective recovery from disaster.

Frequency and Scope of Disasters

Current scholarly works about disasters emphasize that both the frequency and scope of disasters are increasing in the face of a changing global climate (O'Brien et al., 2008; Patz &

Hahn, 2012). Beyond hazards such as infectious disease or hurricanes, the magnitude of the effects of disasters is catastrophic, yet the burden is not evenly distributed. Importantly, hazards have always been a part of natural systems. Yet, as the literature has pointed out, hazards have become disastrous because of the ways societies have developed (O'Brien et al.). In order to understand the reality faced by migrants in eastern NC, we can look to existing literature regarding disasters to situate the state within a global context. This global context has been heavily influenced by climate change and habitat destruction.

Global Extreme Weather

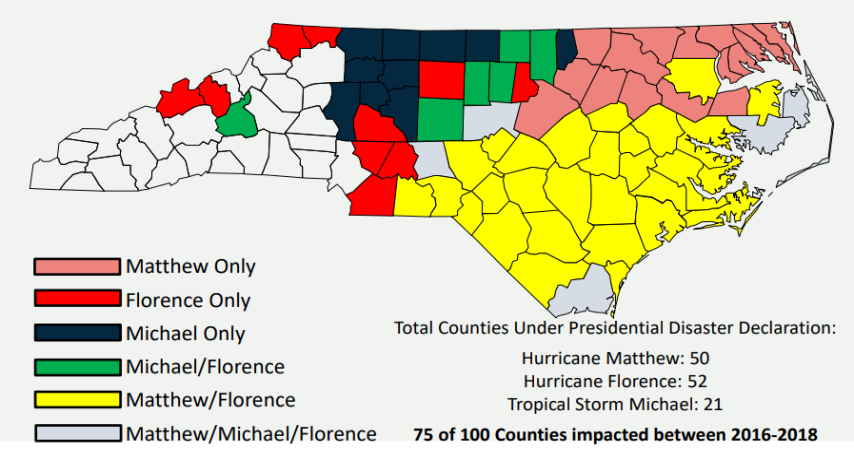
Worldwide, flooding is the most frequent natural disaster, and the "most devastating in terms of both lives lost and economic damage" (Doll, 2021, p. 29). Due to climate change, natural hazards are becoming more frequent, more deadly, and more costly (O'Brien et al., 2008). Effects of climate change include rising temperatures and sea levels and increased presence of greenhouse gasses. These factors have led to dramatic changes in earth systems, resulting in both increased incidence and increased intensity of extreme weather. For instance, higher temperatures cause soil moisture to evaporate more quickly, thus leading to severe droughts; higher temperatures also mean that the air can hold more moisture, thus resulting in heavy rains. Floods and droughts are known as "*hydrologic extremes*" (Patz & Hahn, 2012). Moreover, a rise in global temperatures causes ice in the Arctic and Antarctic to melt, increasing sea levels potentially changing the flow of currents. The sea level has risen approximately two millimeters per year on average since 1961. Snow cover and glaciers have shrunk in both hemispheres, but the melting of the Arctic ice cap has increased dramatically in the past 20 years (Patz & Hahn). Hydrologic extremes and intense storms have become more common with global climate change, and this trend is expected to increase with the acceleration of the pace of climate change and rising temperatures (Patz & Hahn).

North Carolina Extreme Weather

NC has experienced several significant hurricanes and tropical storms in recent years, leading to extensive flooding throughout the state. In particular, NC Director of Emergency Management Michael Sprayberry describes hurricanes Matthew and Florence as an "unprecedented 1-2 punch" (Sprayberry & Hogshead, 2019, p. 4). Hurricane Matthew, which hit NC in October 2016, led to an estimated $4.8 billion dollars in damage and impacted nearly 100,000 homes. There were 31 fatalities and over 4000 evacuees. Hurricane Florence, which hit the state shortly afterwards, led to at least 50 casualties and damages of up to $22 billion (Sprayberry & Hogshead). These storms occurred nearly simultaneously, thus compounding the damages done by each individual storm, as shown in Figure 1. Fifty counties were declared under a state of emergency during Hurricane Matthew, 52 were declared during Florence, and 21 were declared under Tropical Storm Michael; most counties in eastern NC faced extensive damage from both Matthew and Florence (Sprayberry & Hogshead). Hurricane Dorian, which occurred in September 2019, also caused extensive damage in North Carolina, particularly in the areas surrounding Cape Hatteras and Ocracoke (North Carolina Climate Office, 2019).

Figure 1

North Carolina Counties Impacted by Hurricanes Matthew, Florence, and Tropical Storm Michael



(Sprayberry & Hogshead, 2019)

In NC, when hurricanes and tropical storms occur, the excess water does not only affect coastal areas; rather, river flooding extends far inland. In particular, a study of the Neuse River Basin supports the consensus that river flooding affects "more people than any other natural disaster" by damaging infrastructure, ruining crops, residents, contaminating local water supplies, and disrupting ecosystems (Doll, 2021, p. 29). Eastern NC is home to extensive crops and farmland, which tends to be damaged in the event of flooding. What's more, floods can spread farm waste into surrounding areas. For instance, hog and poultry processing plants are concentrated in eastern NC (NCDA&CS Meat and Poultry Inspection Division, 2021). Instead of treating or storing hog waste in a sanitary manner, industrial farms discard it into massive lagoons. The lagoons are full of bacteria, insecticides, pharmaceuticals, and other dangerous substances that affect nearby residences, communities, and farms (Nicole, 2013). When flooding occurs, this waste washes into neighboring communities, spreading the dangerous contaminants along with the floodwaters.

Infectious Disease Outbreaks

In addition to flooding and other weather-related disasters, trade, consumption, and habitat destruction have resulted in increased contact between humans and wildlife, thus accelerating the rate of transmission of zoonotic diseases, which are diseases that originate in animals (Patz & Hahn, 2012). Habitat destruction and climate change are inextricably linked. As habitats are destroyed, animal hosts of diseases are removed from their homes. Additionally, increased contact with animals via hunting, trade, and consumption is linked to increased incidence of zoonotic disease cases and outbreaks in humans (Pokharel et al., 2021). Animals provide a "huge reservoir of circulating pathogens," and the effects to humans can be catastrophic (Pokharel et al.). Common zoonoses include salmonella, West Nile virus, plague, Lyme disease, and emerging coronaviruses such as SARS and the Middle East respiratory syndrome (Centers for Disease Control and Prevention, 2017). Although SARS-CoV-2, the pathogen that causes COVID, has not been confirmed to have transmitted from animals to

humans, the “identification of this virus from both domestic and wild animals furthers precautionary endeavors” (Pokharel et al., p. 1). In other words, it is likely that this virus was transmitted to humans via contact with animals.

One way to conceptualize the management of zoonotic diseases is with the One Health approach, which originates in literature regarding emerging infectious diseases and global health. The One Health approach emphasizes the need to move beyond traditional conceptualizations of disease to encompass health risks posed by the environment and wildlife. Proponents of this approach argue that human health is inextricably linked with the health of the environments and wildlife that surround us; healthier ecosystems lead to healthier humans (Patz & Hahn, 2012; Pokharel et al., 2021).

Current Disaster Management Frameworks

Overview of Disaster Management

Current disaster literature proposes a disaster management cycle that follows four main phases: mitigation, preparedness, response, and recovery (Khan et al., 2008; National Disaster Management Authority, 2006; Tierney, 2012). Phases of this cycle may overlap; the length of each phase depends on the severity of the disaster. The mitigation phase occurs long before disaster actually strikes. It involves minimizing the effects of the disaster by implementing building codes and public education. The preparedness stage includes deciding how to respond when a disaster occurs such as with preparedness plans, emergency exercises and training, and warning systems. The response phase occurs immediately after a disaster to minimize the threats created by the disaster. Response efforts include search-and-rescue teams and emergency relief. Finally, the recovery phase focuses on returning the community to normal via measures such as temporary housing and medical care (Khan et al.). In a 2008 study, Khan, Vasilescu, and Khan present a theoretical approach to disaster management. This approach is cyclical, incorporating the four phases of disaster management. Khan argues that within these four phases, there are also sub-phases. For instance, immediately after disaster strikes,

individuals practice disaster response by securing their safety and the safety of those around them. Moreover, the recovery phase can be broken up into two sub-phases: rehabilitation, which entails restoration of basic services and functions, and reconstruction, which consists of the "full resumption of services, plus preventative measures" (Khan et al., p. 47). See Figure 2 for a visualization of this process.

Figure 2

Disaster Management Cycle

(Khan et al., 2008)

In relation to disaster management, in the United States, the Federal Emergency Management Agency (FEMA) is at the head of disaster management. FEMA responds to floods, storms, and other events by deploying workers and providing funding to states that are experiencing catastrophes (Martin et al., 2020). For example, after Hurricane Matthew in NC, over 3,000 families stayed in FEMA sheltering (Sprayberry & Hogshead, 2019). However, literature indicates that there exists a disconnect between the actions of FEMA and the actual needs of communities (Frank, 2019). Birkland and Waterman (2008) argue that FEMA's current response to disaster prioritizes national security instead of collaboration with local and

state governments, and this lack of collaboration weakens state and local capabilities to respond to disaster. They explain that after the attacks of September 11, 2001, homeland security came to the forefront of policy discourse regarding preparing for and responding to disasters, including extreme weather. Increased focus on security prioritizes large federal disaster management organizations, such as FEMA, at the expense of local and state response capabilities. This prioritization of disaster response has major consequences, as "cutting out the state and local governments has deprived the federal government of a considerable body of expertise" and instead placed disproportionate focus on bureaucratic, inefficient federal mechanisms (Birkland & Waterman, p. 710).

Furthermore, the increased frequency and intensity of disasters challenges the very nature of FEMA. For instance, according to disaster journalist Frank (2019), FEMA is guilty of deploying emergency workers and money to states that do not need additional assistance. Investigations indicate that FEMA has "wasted more than $3 billion and misused thousands of its employees by responding to hundreds of undersized floods, storms, and other events that states could have handled on their own" (Frank, para. 1). FEMA is stretched thin by the sheer quantity of disasters such as floors and wildfires, yet it is overly extending itself in response by not taking existing state responses to disaster into account (Frank).

Top-Down Approach

Researchers O'Brien, O'Keefe, Rose, and Wisner (2007) examine global inequities in disaster incidence and response and advocate for better disaster management from large governing bodies such as national governments or supranational governments, including the United Nations (UN). For instance, disaster response goes hand-in-hand with the UN's plans for sustainable global development and poverty reduction; better responses to disasters can boost development, and vice versa. O'Brien and his co-authors advocate for risk assessment and reduction to multiple hazards such as disasters of natural origin, violent conflict, humanitarian emergencies, and technological hazards. These risk assessment and reduction efforts should be

carried out by UN agencies and other international organizations in conjunction with national governments. It is crucial that such efforts center accountability, democratic government institutions, financial capabilities, and political support. More specifically, disaster planning should be codified into a "set of risk management and emergency plans" that directly translate to helpful policies and practices, particularly in areas that are prone to disaster (O'Brien et al., p. 67). This approach can be considered "top-down" because of its emphasis on governmental and institutional efforts to direct a collective response to disaster. According to O'Brien and his colleagues, the most important goal of planning is risk reduction with the outcome of a "decrease in losses and a speedy return to normality" (O'Brien et al., p. 66).

This study emphasizes the need to incorporate climate change in comprehensive risk management. Climate change is both a "complex and protracted hazard," meaning that it manifests as a long-term disaster requiring extensive adjustment and as an intensely political phenomenon that weakens social, political, and economic systems (O'Brien et al., 2008, p. 68). O'Brien argues that climate change must be incorporated into routine developmental and hazard mitigation efforts (O'Brien et al.).

Autonomous (Bottom-Up) Approach

Despite advocating for a top-down approach to disaster management, O'Brien concedes that there is also a need for "actions based on local knowledge and the activities of the institutions of civil society that work on natural and technological hazards from 'the bottom up'" (O'Brien et al., 2008, p. 67). Bottom-up approaches are conducted autonomously from communities that are directly affected by disaster. Climate change-related policy focuses on plans for disaster response; researchers Eakin, Tucker, Castellanos, Diaz-Porras, Barrera, and Morales (2014) conducted a study of smallholder coffee farmers in Mesoamerica, focusing on sites in Mexico, Guatemala, Honduras, and Costa Rica to focus on farmers' perceptions of risk and livelihood responses. They argue that in reality, responses to disaster consist of "autonomous, 'unplanned' actions by individuals who are responding to multiple simultaneous

sources of change" (2014, p. 123). Moreover, these actions are often not considered to be in response to climate change; instead, they are motivated by other factors that communities perceive to be more urgent such as economic stress or immediate weather-related impacts like drought and rain. The literature indicates that there exists a disconnect between large-scale disaster management plans and the community actions, degree of planning with communities, and ways of perceiving threats. However, in the study conducted by Eakin and colleagues, participants often felt helpless in the face of climate-related disasters, with 68% reporting that they were doing nothing in response to these threats and 27% reporting that there was nothing they could do (Eakin et al.).

Disaster Governance Approach

Disaster governance, like the disaster management framework, argues in favor of proactive disaster management in all levels of governance. However, according to Tierney (2012), disaster governance emphasizes the need for collaboration among different institutions. The forms of collaboration can fall into three main categories: collaboration with different frameworks, collaboration at different levels of governance, and collaboration between governments and civil society.

Collaboration with different frameworks of governance. Governance does not exist in a vacuum; rather, governance mechanisms must adapt in the face of external pressure, including climate change. Tierney argues that disaster governance sits within a larger framework of "earth system governance," which consists of both formal and informal rules and actors that "influence the co-evolution of human natural systems" to promote sustainable human development (2012; Biermann, 2007, p. 329). Current forms of governance, particularly local governance, is often divorced from earth systems, and by extension, climate change. It is necessary to take earth systems into account when designing policy that relates to disaster. More broadly, because earth systems governance focuses on the ways that land is used and the relationship between the economy and the land, it can provide guidance for policy and

institutions to prioritize managing environmental problems in response to climate change (Tierney; Biermann).

Collaboration at different levels of governance. In addition to the need for collaboration between different frameworks of governance, it is necessary to integrate the different levels of governance (e.g., supranational, national, state, county levels of government). For instance, as previously described, there is a major disconnect between FEMA at the national level and state needs in regard to disaster management. Tierney argues that hierarchical systems of control should be replaced by "more decentralized network forms of organization" (2012, p. 343). For example, current governance arrangements disproportionately privilege local governments in disaster-related decision-making. Tierney explains that "the federal government can establish guidelines and provide financial support for local and state disaster preparedness efforts but cannot directly intervene in those activities" (p. 350). Moreover, this lack of collaborations undermines the effectiveness of responses to disaster, as local "political actors, e.g., real estate and development interests, can influence local decision making in ways that may work against disaster mitigation goals" (p. 350). The disaster governance framework argues for more interaction and collaboration between local and federal governments, as well as intermediate forms of government.

Collaboration between government and civil society. In addition to state, national, and county-based actors in the US, non-governmental organizations (NGOs) and social movements also support disaster response in key ways (Tierney, 2012). Although NGOs are institutions, they operate independently from the federal, state, county, or local government. Civil society actors are particularly relevant to migrant populations who may be wary of more entrenched, government-based institutions.

Combining with the Vulnerability Framework

The disaster governance approach emphasizes collaboration, but it is limited by its focus on structural vulnerabilities and institutional arrangements. The social vulnerability framework,

on the other hand, brings attention to the ways that certain groups experience disasters differently. Social vulnerability has been used as a lens with which to examine disaster management in previous studies (Flanagan et al., 2011; Singh et al., 2014). The social vulnerability approach has its basis in the disaster management framework and stresses the importance of addressing vulnerabilities in every phase of the disaster management cycle, shown in Figure 2. The disaster management framework emphasizes the need for planning and collaboration to address disasters; the social vulnerability framework takes this idea a step further by encouraging disaster management efforts to form a more equitable response that prioritizes vulnerable groups. In other words, "in mitigating and planning for emergencies, state, local, and tribal officials must identify socially vulnerable communities to provide those residents increased assistance over the course of a disaster" (Flanagan, et al., p. 3).

Latino migrants, in particular, are a socially vulnerable population, and this vulnerability is exacerbated by this population's "interactions as economically disenfranchised laborers" (Quesada, Hart, & Bourgois, 2011, p. 4). It is important to differentiate between classifying this group as an "at-risk" population and a "vulnerable" population. According to a 2002 study done by Bronfman, Levya, and Negroni, the term "risk" places emphasis on probability and individual behavior, while "vulnerability" points towards the presence of severe inequity and inequality. In other words, the vulnerability of Latino migrants extends beyond choices made by individuals within this population; it stems from historic inequality that permeates many aspects of life for this group. Within Latino migrants, farmworkers are especially vulnerable due to a variety of factors, such as their low pay, disenfranchisement, poor housing conditions, and relative isolation.

Case Study: Hurricane Katrina

In order to examine the contemporary effects of disaster on vulnerable groups, we can learn a lot from examining the effects of Hurricane Katrina. Beyond the hurricane itself, Katrina's recovery process is of particular interest. Katrina hit New Orleans on August 29, 2005,

causing an estimated 1,570 deaths and between $40-50 billion in losses, constituting the largest residential disaster in US history (Kates et al., 2006; Browne, 2013).

Despite strong winds and heavy rains, the hurricane itself did not directly hit New Orleans. Rather, it created conditions that interacted with human-made infrastructure and the human environment, and the consequences were devastating. New Orleans suffered from the "*levee effect*." Because levees were constructed in the area, more development could occur; however, altering the built environment led to larger losses when the levees broke due to the storm damage (Kates et al., 2006). Much of the city's population lived below sea level, between the "natural levees of the Mississippi River and the built levees (pierced by canals) along Lake Pontchartrain" (Kates et al., p. 14654). When the levees failed, water surged into about 80% of the city and filled this low-lying area. What's more, the inhabitants of the lowest areas were disproportionately poor and Black, as wealthier residents were able to move to the higher-elevated suburbs (Kates et al.).

The devastation of Hurricane Katrina was made even more confusing, upsetting, and terrifying by the governmental responses to the disaster, which are "generally cited as policy failures" (Birkland & Waterman, 2008). Much of the recovery efforts were placed in the hands of authorities such as FEMA which "rarely recognize the presence of their own assumptions or the problems those assumptions pose for those unfamiliar with them" (Browne, 2013, para. 3). For instance, FEMA refused help from local residents in cleaning up debris, and when a group of community members carried out their own cleanup, FEMA officials demanded that they return the trash and debris to its original location so that FEMA could inspect it and dispose of it. There was a huge discrepancy between community knowledge and the assumptions of FEMA, resulting in what anthropologist Katherine Browne refers to as "*unheard local knowledge*." Browne's 2013 study found the following:

> FEMA arrived and took over without knowledge of local people, their community, or how to tap into their strengths. They did not know that most people in this part of Louisiana

> claim membership in large family groups and are used to taking care of themselves through their own family networks. Instead, the government personnel in charge seemed to import everything they would use to do their job, including assumptions about what people needed, procedures for getting things done, lists of approved contractors, and even the language for how to talk to people and how to oversee a disaster zone.

Many plans encouraged prioritizing the high ground first, over the more damaged lower areas (Kates et al., 2006). This excluded many predominantly Black neighborhoods that were damaged. In addition to tensions between institutions and residents, there were also tensions between the institutions themselves, as different authorities and planning consultants had competing visions for the recovery process (Kates et al.).

Although eastern NC is quite distinct from New Orleans and Hurricane Katrina did not occur right before a global pandemic, there are two key parallels to be drawn between this situation and the current situation in NC. First, the damage from Hurricane Katrina was made worse by the storm's interaction with the built environment. The same is true in NC. For instance, 20 dams breached in NC because of Hurricane Matthew (Sprayberry & Hogshead, 2019). Moreover, much of eastern NC is farmland, which does not provide an adequate buffer against flooding, especially when rivers flood and cause damage to extend far inland (Doll, 2021).

Another key similarity between the response in New Orleans and the response in eastern NC is the exclusion of marginalized groups in the disaster response. For instance, farmworker communities are quite rural, and many disaster response efforts such as rescues and distributions of supplies do not reach these communities. More broadly, disaster-related communication is not always provided in Spanish, presenting a significant barrier to the recovery of farmworker communities. The idea of unheard local knowledge rings true in eastern NC; many local organizations must compete with larger, more institutional priorities that exclude migrant and farmworker populations.

Discrepancy between Current Disaster Recovery Efforts and Migrant Needs

Based on the lessons learned from Hurricane Katrina, it is clear that disaster recovery efforts do not always meet their intended goals, and more attention is needed towards structural vulnerabilities prior to disasters. In eastern NC, current approaches to disaster management often fail to address the needs of migrant populations, especially those who are engaged in the food and agricultural industries such as meatpacking, food-processing, and farmworkers (Douglas, 2020).

One feature of disasters is their significant impacts on work and employment. The COVID pandemic has caused a shift in the conceptualization of labor; jobs that protect the health, safety, and well-being of NC's population have been deemed indispensable to the state's overall functioning (Gill, 2020). Many essential workers within NC are migrants; for instance, almost 1 in 6 physicians in NC graduated from a foreign medical school, and in 2014, over 6% of NC nurses were immigrants. More than 15% of all STEM workers in the state are immigrants (Gill).

In addition to essential workers in the medical and technological sectors, agricultural workers are essential to the state's overall functioning. As explained in Chapter 1, NC is home to approximately 150,000 farmworkers and their dependents each growing season; 94% of migrant farmworkers in NC were born in Latin America (Gill, 2020). Although farm and agricultural workers have been required to work throughout the pandemic, their occupations present unique risks and barriers to optimal health during a time of disaster. One significant barrier to optimal recovery that is specific to farmworkers is the phenomena of agricultural exceptionalism, contributing to dangerous work environments for farmworkers. To avoid granting worker rights to predominantly African American sectors, farmworkers were deemed exempt from the National Labor Relations Act of 1935, which established basic labor protections for workers (Farmworker Justice, 2021). Even today, farmworkers face low wages, dangerous workplaces, and high rates of injuries; to make matters worse, only 31% of farmworkers have

health insurance (Farmworker Justice). What's more, workers who are undocumented or live in mixed-status families may avoid seeking legal assistance in response to challenges posed by their occupation for fear of being deported or otherwise punished (Gill).

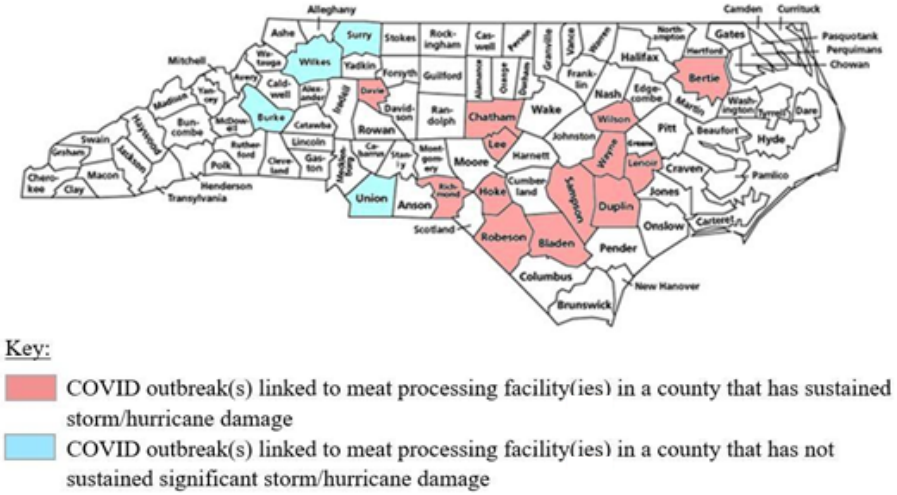
In addition to agricultural exceptionalism, farmworkers face other vulnerabilities such as rurality, lack of transportation, and lack of access to legal and governmental assistance. Many farmworkers are part of the H-2A program, created by the US federal government in 1986 to allow farmers to hire foreign workers, often for temporary or seasonal positions for up to ten months (Gill, 2018; USDA Economic Research Service, 2022). Thus, H-2A workers are transient, lacking stability and consistent access to assistance and other resources to protect against the negative effects of disaster.

In the early months of the pandemic, NC faced rapid spread of COVID among meatpacking, food-processing, and farmworkers (Douglas, 2020). As of May 2020, Iowa, Nebraska, and NC accounted for the highest numbers of meatpacking workers diagnosed with COVID; NC was the state with the most meatpacking plants with COVID outbreaks (Douglas). Hog and poultry industries rely heavily on Latino labor. Due to low pay and high incidence of injury, companies were met with "fewer and fewer native-born workers willing to work" (Gill, 2018, p. 74). However, with less freedom to advocate for safe conditions amidst NC anti-union laws, this need for cheap labor has been met by migrant workers. What's more, hog farming is concentrated in Bladen, Sampson, Duplin, and Robeson Counties, all of which have been severely affected by prior hurricanes and tropical storms, as shown in Figure 3 (Gill; North Carolina Climate Office, 2019). I created this map by compiling information from documents regarding the number and location of meat processing facilities in NC and the counties affected by recent storms, as well as investigative news articles and scholarly discussions that investigated the extent to which COVID spread in the food systems (NCDA&CS Meat and Poultry Inspection Division, 2021; North Carolina Climate Office; USDA Economic Research

Service, 2021; Gill, 2020; Douglas, 2020). There exists clear overlap between counties affected by recent hurricanes and those affected by COVID outbreaks in meat processing facilities.

Figure 3

COVID Outbreaks at Meat Processing Facilities, By County



Notes: Map: Therber, February 2021. Base template: North Carolina Maps. Content: NCDA&CS Meat and Poultry Inspection Division, 2021; North Carolina Climate Office, 2019; USDA Economic Research Service, 2021; Gill, 2020; Douglas, 2020.

Significance of Current Study

With this study, I will contribute to existing conversations about migration and disaster management. Current literature often excludes the experience of migrants; migrant agricultural workers are even less represented. The current study examines this population that is currently underrepresented in social science literature and even disaster-related literature. Moreover, this study differs from prior studies because of its focus on NC. According to Hannah Gill, this state is an important "barometer of contemporary immigration debates" within the US (Gill, 2018, p. 6). NC is in the midst of a rapid demographic transition, as both migrants and US natives are moving to the state; moreover, Latino communities have become a permanent feature of cities and towns across NC (Gill).

Qualitative data proves especially useful in examining the stories of underrepresented groups, including migrants and migrant farmworkers. NC is in the midst of a rapid demographic change towards urbanization and increased presence of immigrants, particularly Latino immigrants (Gill, 2018). As Lariza Garzón, one of the interviewees on this project, explains, migrants in NC face a "collective trauma" that has been worsened by recent experiences with disaster, both hurricanes and COVID. This trauma results in part from tension between efforts to welcome and support the wellbeing of migrants on one hand, and a cultural emphasis on Southern "'tradition' and other conservative values that has evoked a strong reaction in many places" on the other (Gill, p. 6). Qualitative data often helps to preserve the voices of marginalized groups by documenting their experiences in an in-depth, intimate manner that affirms community worldviews and lived experiences. Previous studies have demonstrated the need to center community knowledge when researching and responding to disasters (Maldonado, 2016). This study focused on migrants, particularly Latino farmworkers, whose voices are not often heard in conversations regarding experiences with disaster and recovery from disasters.

Moreover, the current study differs from previous research because of the recency of the disasters in question. Little data exists about the effects of hurricanes like Matthew, Dorian, and Florence; even less data exists about the effects of the COVID pandemic on migrant communities. Considering the compounding vulnerabilities associated with migration, extreme weather, and COVID, the current study makes connections between bodies of literature that explore each of these phenomena individually.

Lastly, the unfortunate reality is that the frequency and intensity of natural disasters and infectious disease outbreaks are on the rise (Patz & Hahn, 2012; O'Brien et al., 2006). Due to climate change and habitat destruction, the world is bound to experience more disasters; it is quite possible that these future disasters will occur simultaneously. This project poses an important question that is not yet adequately addressed in literature regarding disasters, climate

change, and global health: What do we do when a given population experiences multiple disasters at the same time?

Chapter 3: Methodology

Participants

This study focused on the experiences of Latino migrants in NC. Within this population, Latino migrant farmworkers are of particular interest. It is crucial to note that the migrant experience in NC is not homogenous; however, migrant farmworkers have unique experiences with disaster that are often excluded from traditional narratives of disaster recovery. This includes exclusion from local, state, and federal responses to disaster, such as dissemination of information or formal distribution of aid.

In order to learn more about the unique experiences of this population, I interviewed people who work with government agencies and community organizations dedicated to assisting migrants. I had the opportunity to interview Gayle Thomas, Natalie Rivera, and Nicandro Mandujano Acevedo of the NC Farmworker Health Program, Marlene Castillo of AMEXCAN, and Lariza Garzón of the Episcopal Farmworker Ministry. These are all community and government-based organizations dedicated to helping migrants, farmworkers, and the Latino community as a whole. As will be acknowledged in the design and procedures sections of this chapter, these five individuals have allowed their names to be released, as these interviews are stored in an archive that is accessible to the public through New Roots and the Southern Oral History Program archives, both of which are affiliated with the University of North Carolina at Chapel Hill.

Participants were recruited based on a convenience sample. Prior to participant recruitment, I attended several COVID-19 Task Force meetings hosted by AMEXCAN; these meetings focused on bringing together various stakeholders dedicated to addressing difficulties posed by the COVID pandemic for Latinx populations in NC. Thus, I first contacted

several people at AMEXCAN, including Castillo, who agreed to be interviewed. I also reached out to Dr. Gill of the Latino Migration Project to inquire about other organizations and people who would be interested, and she recommended that I reach out to the NC Farmworker Health Program. I contacted Thomas, who agreed to an interview and recommended that I reach out to other coworkers including Rivera; another DHHS employee recommended that I contact Mandujano Acevedo. I feel fortunate to have had the support of the Latino Migration Project in reaching out to interviewees; since this is a well-known organization in NC, I feel that my ties to their project enhanced my credibility as a researcher making initial contact with potential participants. Participant eligibility was largely dependent on their ability to respond to my request for an interview and their availability to be interviewed virtually.

Birth years were collected from interviewees; based on these birth years, interviewees ranged in age from approximately 24 to 63, with a mean age of 47.75. Four interviewees were female, and one was male. Two were born in NC, one in the Democratic Republic of the Congo, one in Mexico, and one in Colombia. These interviewees represent a variety of lived experiences with Latino migrants and natural disasters in NC.

It is important to note that participant availability and responses were likely influenced by the timing of these interviews. For instance, interviews took place during the summer, which is an incredibly busy time of year for farmworkers and those who work closely with farmworkers, as many crops are harvested during the summer. Moreover, at the time of the interviews, the Delta variant of COVID was gaining a lot of attention and warranting concern, while vaccination efforts were in full swing as organizations aimed to increase farmworkers' access to vaccines. These factors likely influenced potential participants' decisions about whether to respond to my initial request for interviews, and it is probable that the timing of these interviews played a role in participants' responses to questions regarding COVID, current issues faced by their organizations, and general responses to disaster.

Design

This project relied on qualitative data gathered from in-depth oral history interviews relating to how multiple consecutive disasters have affected migrant communities in eastern NC. Oral history involves semi-structured interviews that allow participants to tell their life stories to preserve their voices and memories (Southern Oral History Program, n.d.). As a researcher, my working definition of oral history is that it is a way to use storytelling to explore the worldviews and lived experiences of people and communities. Data collected for this project is situated in a larger body of work called the Southern Oral History Program (SOHP). The SOHP "conducts original research on the history and culture of the American South" to paint a picture of the South that includes people from "all walks of life" (Southern Oral History Program). Within the SOHP, New Roots is an initiative that includes an archive of oral history interviews "conducted by members, staff, and students at the Latino Migration Project and archived with the Southern Oral History Program and the University Libraries at the University of North Carolina at Chapel Hill" (New Roots, n.d.). Qualitative data for this project will be archived in both the SOHP and New Roots collections and publicly available at the following address: *newroots.lib.unc.edu*.

This project analyzed the roles of a variety of stakeholders concerned with including migrants in disaster recovery efforts, both as individual actors and collectively. These interviews were semi-structured, and questions varied according to the interviewees' personal experiences. The topics of each interview were baseline biographic information, experiences with prior disaster, experiences with the COVID pandemic, and connections and next steps for simultaneous disasters; responses to questions were centered around Latino and farmworker populations in NC.

Procedures

Interviews were 45-70 minutes in length, and they were conducted virtually using Zoom and Microsoft Teams. Each interview started with the same question: "Where are you from, and can you tell me about that area?" This was done intentionally in order to give the interviewees a chance to tell their stories from the beginning of their lives and reflect on how their past

experiences have shaped their current involvement with migrants and disaster-related work. As the interviewer, I kept an eye on the clock and made sure that we covered some questions from the following topics: baseline biographical information, experiences with prior disaster, experiences with the COVID pandemic, and connections and next steps for simultaneous disasters. Instead of using a set list of questions, due to the semi-structured nature of these interviews, I pulled questions from a question bank that I developed (see Appendix 1). Questions asked of each interviewee varied from those in the bank based on participants' responses, and each interview did not answer every question in the question bank for this project.

As part of the question bank that I developed, several interview questions were pulled from the Culture and Disaster Action Network (CADAN) Research Tool. This is an open access research protocol designed for studies that examine the cumulative effects of prior disasters and the COVID pandemic. The purpose of this research tool is "to facilitate the study of these effects across different communities through a shared research protocol and questions," promoting a common basis of understanding between researchers and disaster professionals (Culture and Disaster Action Network, 2020). This project will soon be registered with CADAN as a study that examines cumulative effects of disaster. The questions in the CADAN Research Tool are designed for use in semi-structured, qualitative interviews.

All interviewees completed the informed consent protocol both verbally before their interviews and by electronically signing the Southern Oral History Program IRB consent form and the New Roots Deed of Gift consent form. The Deed of Gift consent form indicates that these interviewees are essentially giving their interviews to the University of North Carolina at Chapel Hill; interviewers are "conveying all right, title, and interest in copyright to the University." All interviews have been submitted to the Southern Oral History Program and New Roots to be archived in their digital collection. This digital collection is public; all interviews can be found online through the New Roots website.

Analysis Plan

The data collected for this project were analyzed with NVivo, a qualitative data analysis software. NVivo organizes data by analyzing interview content within interviews and examining similarities and differences between interviews. NVivo is particularly helpful for revealing recurring themes, finding patterns, and examining trajectories of interviews. This software was used to explore the ways that these five interviewees express their experience and worldviews regarding COVID, migration, and natural disasters. Analysis answered the following questions:

1. How do simultaneous disasters exacerbate structural vulnerabilities faced by migrant communities in eastern NC from the perspective of community professionals and governmental officials?
2. What is the role of community and governmental organizations in responding to simultaneous disasters affecting migrant farmworker communities in eastern NC?

The NVivo logic model, or the hierarchy of codes, was verified by a qualitative research methods expert from UNC Libraries.

Trustworthiness

There were several systematic ways that this study approached the collection and interpretation of data. Prior to data collection, I took a course that included a training in oral history, including the procedures and ethics involved in conducting oral history interviews. I received funding from the Southern Oral History Program to conduct this study. Some questions used in this study were pulled from a verified collection bank from CADAN; other questions were original and were developed with guidance from the UNC Odum Institute for Research in Social Science. Data interpretation was based on the literature relevant to this study. In order to analyze data, I learned NVivo software to provide an objective interpretation of the results of this study. The NVivo coding hierarchy and coding logic was developed with extensive input from my faculty mentor and from the Odum Institute.

Positionality

Because this work is qualitative, it is important that I share my own positionality. I am not Latino, nor am I from a farmworker or migrant family. I did not grow up in eastern North Carolina. I became interested in the subject matter relevant to this work through prior coursework and volunteering related to structural determinants of health, improving my Spanish-speaking ability, the relationships between disaster and migration, and public health. Much of my coursework and academic interests come from two main disciplines: health, including health policy and the links between health and environment, and human development, including the role of families and communities in development.

Chapter 4: Results

Overview

This project relied on five qualitative interviews conducted in the summer of 2021. Interviews were 45-70 minutes in length, and they were conducted virtually using Zoom and Microsoft Teams. Each interview started with the same question: "Where are you from, and can you tell me about that area?" Other questions stemmed from the following topics: baseline biographical information, experiences with prior disaster, experiences with the COVID pandemic, and connections and next steps for simultaneous disasters. Due to the semi-structured nature of these interviews, I pulled questions from a question bank that I developed instead of having a set list of questions (see Appendix 1). Questions varied from those in the bank based on participants' responses, and each interview did not answer every question in the question bank for this project. However, some questions were consistent between interviews; for instance, every participant was asked about what resources they would need to solve issues described in their interviews, and most participants were asked to compare their disaster management strategies for hurricanes and for COVID.

In order to analyze these interviews, I used NVivo, which is software designed to analyze qualitative data and find patterns within data, including interview transcripts. One way to use NVivo is to create a "*logic model*," establishing a hierarchy of "codes," or categories of data. For instance, a passage from an interview transcript could fall into at least one of several different codes, with each code containing subcodes; in some cases, subcodes will have even more subcodes. My procedure for using NVivo was to code sentences and passages from each interview, coding them into at least one category based on their content. The following main codes were used: Collaboration, Community Resilience, COVID-19, Farmwork Stressors,

General Response to Migrant Farmworker Communities, Government and Policy, Life of the Interviewee, Migration Stressors, NC's History and Patterns of Migration, Organizational Planning and Management, and Storms. Subcodes were more specific facets of these categories. For example, subcodes of the Storms code included Difficulties Presented by Storms and Responses to Storms; subcategories of the Responses to Storms code were Communication, Education and Access to Information, Establishing Storm Protocol, Evacuation, and Food, Housing, and Other Supplies. A full list of codes and code definitions is available upon request to the author. After coding each section, I used analysis and comparison tools in NVivo to analyze the data and search for patterns within the data. A table that demonstrates how many instances each interviewee discussed the information pertaining to each code is also available upon request.

Trajectory of Each Interview

Before describing the main themes and relationships between the five interviews, I would like to present excerpts from the abstracts of each interview. Additionally, abstracts of each interview and their Spanish translations can also be found in the New Roots archive. The abstracts contain the information provided below, as well as details about the format of the interview and information about me, the interviewee.

Gayle Thomas

The main focus of this interview was Thomas's involvement with the Farmworker Health Program and her experience helping farmworkers mitigate the COVID pandemic and extreme weather. Thomas knew from a young age that she wanted to "help poor people," in her words, and found an opportunity to help Spanish-speaking populations in NC. She shared her personal journey of getting involved in farmworker health, as well as the challenges of including farmworkers in responses to COVID and extreme weather. She emphasized the importance of the outreach workers who bridge the gap between medical providers and members of the farmworker community. She discussed unique challenges that farmworkers in NC face such as

lack of access to transportation, crowded working conditions, and agricultural exceptionalism promoting a culture of exploitation in their work.

Lariza Garzón

The main focus of this interview was Garzón's involvement with the Episcopal Farmworker Ministry helping farmworkers mitigate the COVID pandemic, extreme weather, and other challenges such as mental health and the collective trauma that farmworkers and immigrants face. Garzón described working to help farmworker communities recover from hurricanes and facilitate processes of healing within these communities. Garzón drew connections between the trauma of immigration to NC and the trauma associated with disasters such as hurricanes and COVID, discussing the importance of allowing community members to share this trauma and have conversations about what is needed to promote collective healing. She emphasized the humanity of farmworker communities and the magnitude of the community response to COVID.

Marlene Castillo

The main focus of this interview was Castillo's involvement with the Association of Mexicans in NC (AMEXCAN) and her experience helping Latino immigrants mitigate the COVID pandemic and hurricanes. Castillo described her experience managing AMEXCAN's NC Latino COVID-19 Task Force, connecting a variety of stakeholders such as health departments, community-based organizations, community partners, and state leaders. A key part of Castillo's role in addressing the COVID pandemic was going to small businesses such as restaurants, flea markets, and stores to distribute crucial supplies and resources, as well as creating events to bring different providers together to distribute resources such as vaccines and dental screenings. She discussed the many different approaches that she and AMEXCAN have taken in order to provide as much help to immigrant communities as possible. Castillo emphasized the need for collaboration in the face of adversity and the importance of community networks.

Natalie Rivera

Rivera is from rural NC and has been working with immigrant communities since college. This interview follows her many roles in organizations dedicated to immigrant health and well-being. The main focus of this interview was Rivera's involvement with the Farmworker Health Program and her experience helping farmworkers mitigate the COVID pandemic and extreme weather, as well as other challenges such as HIV education, Internet access, and emergency-related communication in Spanish. Rivera described her experience addressing disasters such as COVID and hurricanes, discussing the need to set protocols to address disasters and explained how sometimes immigrant communities do not receive the help that they need in the face of these disasters. She emphasized the way that communities can come together to accomplish amazing feats in the face of adversity.

Nicando Mandujano Acevedo

The main focus of this interview was Mandujano Acevedo's involvement with the NC Farmworker Health Program and his experience helping farmworkers mitigate the COVID pandemic. Mandujano Acevedo emphasized the need for improved communication with farmworkers in regard to COVID and other disasters, as well as the overall challenges of working with farmworkers in NC. He explained the tension between the need to develop thoughtful emergency response plans and the unexpected, unplanned nature of emergencies. Despite the hardships of COVID, Mandujano Acevedo explained that the pandemic created an opportunity for better communication between farmworker health sites, collaboration with other organizations, and communication between sites and farmworkers.

Common Themes Across Interviews

The following topics were discussed in every interview: collaboration between organizations, collaboration with healthcare providers, collaboration with local government, collaboration with state governments, difficulties of COVID-19, responses to COVID-19, life of the interviewee, organizational planning and management, and migration-related stressors. The most commonly discussed topics were collaboration (at all levels), COVID-19 in general,

responses to COVID-19, and logistical and organizational planning in response to challenges faced by migrant and farmworker communities. The most frequently discussed topic was COVID, with 96 instances of discussion, followed by collaboration, with 87 instances, and organizational planning and management, with 61 instances.

When interviewees discussed collaboration, most of this collaboration was with the state government; each interviewee discussed this topic. Across all interviews, occupational hazards, including agricultural exceptionalism and exploitation by growers and labor contractors, are cited most frequently as a stressor of farmwork. While each interviewee discussed the difficulties posed by disasters, they discussed the response to disasters (storms and COVID) more than the difficulties posed by these disasters, except for Mandujano Acevedo, who discussed storm responses and storm difficulties equally. Within the responses to COVID, all interviewees discussed communication, including education and access to information. Surprisingly, there was very little discussion in the interviews about community resilience. Garzón and Castillo were the only interviewees who discussed community resilience; coincidentally, they were the only interviewees who work with organizations outside of the NC Department of Health and Human Services.

Comparing Across Interviews

While each interview presented common themes and all interviews had similarities between each other, there were many significant differences between interviews. Some interviews varied more than others, as shown in the figure below. Figure 4 shows how the interviews are "clustered" by their coding similarity. Interviews that are next to each other have more in common. For instance, Garzón and Castillo's interviews are similar to each other; within the other three interviewees, Thomas and Rivera's interviews are the most similar.

Figure 4

Interviews Clustered by Coding Similarity

Other key differences exist between these interviews. Within responses to COVID, all participants discussed communication, education, and access to information. While speaking about COVID responses, Thomas and Castillo discussed vaccination more than any other response, Rivera discussed Internet access more than any other response, Lariza discussed outreach workers more than any other response, and Mandujano Acevedo discussed communication more than any other response. Rivera talked more than other participants about storms, focusing on the response to storms, specifically access to food, housing, technology, and supplies. When explaining the organizational planning required to assist migrant and farmworker communities, Thomas and Mandujano Acevedo both discussed the role of community outreach workers more than any other type of organizational planning, Garzón discussed similarities between the responses to COVID and storms, Castillo discussed funding and fundraising, and Rivera discussed feedback and evaluation from other organizations and from community members.

Patterns in Codes Related to the Vulnerability of Migrant Populations

All interviews described the many vulnerabilities faced by migrant populations, emphasizing how these community needs make migrant farmworker communities more vulnerable to disasters. Some of these stressors are specific to farmwork, such as occupational hazards or the isolation of farmworker communities, while others apply to migrants in general,

such as language barriers, difficulties obtaining health insurance, marginalization, and the stress of being undocumented. Of course, these stressors presented major difficulties in the context of disasters, both COVID and hurricanes. For example, when examining the relationship between discussions of migration or farmwork stressors and the discussions of difficulties presented by storms, occupational hazards, including exploitation from growers, was the most common intersection of these topics. However, when participants discussed the stressors faced by farmworkers related to the COVID pandemic, they were more likely to discuss how these stressors shaped their responses to these communities, rather than focusing on the difficulties themselves. When examining the relationship between discussions of migration and farmwork stressors to discussions on the COVID pandemic, access to Internet and technology was the most common intersection of these topics, followed by linguistic stressors.

Patterns in Codes Related to Collaboration and Disaster Response

Above all, the greatest two themes in these interviews were COVID responses and collaboration. The specific types of collaboration explored in this project were collaboration between organizations, with growers, with healthcare providers, with local governments, with the national government, with the state government, and with the community, as well as areas where interviewees feel that more collaboration is needed. While these interviews have provided a powerful, rich dataset with many topics to explore, I would like to focus especially on the ways that collaboration relates to responses to COVID and to storms, as both are disasters that affect migrant farmworker communities in eastern NC. When comparing the number of instances of discussion of collaboration versus discussion of various facets of disaster response, collaboration at every level was significant in the interviewees' experience with disaster response.

Collaboration was discussed in the following responses to COVID: communication, education, and access to information, food access, internet connectivity, outreach workers, PPE, telehealth, testing, and vaccination and distribution of miscellaneous resources. Collaboration

was discussed more often in relation to responses to COVID than responses to storms; within responses to COVID, most instances of collaboration were collaboration with the state government. Vaccination was another response in which participants frequently discussed collaboration; collaboration in vaccination focused on collaboration with healthcare providers, followed by collaboration with the state government. In relation to storm response, the most frequently discussed form of collaboration was with the state government. Storm responses that involved collaboration were communication, education, and access to information, establishing a protocol for storm response, and provision of food, housing, and other supplies.

Chapter 5: Discussion

Summary of the Current Study

This study relied on qualitative data and aims to answer the following questions:

1. How do simultaneous disasters exacerbate structural vulnerabilities faced by migrant communities in eastern NC from the perspective of community professionals and governmental officials?
2. What is the role of community and governmental organizations in responding to simultaneous disasters affecting migrant farmworker communities in eastern NC?

This study focused on the experiences of Latino migrants in NC. Within this population, Latino migrant farmworkers are of particular interest. In order to learn more about the unique experiences of this population, I interviewed people who work with government agencies and community organizations dedicated to assisting migrants. I had the opportunity to interview Gayle Thomas, Natalie Rivera, and Nicandro Mandujano Acevedo of the NC Farmworker Health Program, Marlene Castillo of AMEXCAN, and Lariza Garzón of the Episcopal Farmworker Ministry. These are all employees of community and government-based organizations dedicated to helping migrants, farmworkers, and the Latino community as a whole. Interviews were analyzed using NVivo, a software tool designed to highlight patterns within interviews and relationships between interviews.

Summary of Findings

The following topics were discussed in every interview: collaboration between organizations, collaboration with healthcare providers, collaboration with local government, collaboration with state governments, difficulties of COVID-19, responses to COVID-19, life of

the interviewee, organizational planning and management, and migration-related stressors. The most commonly discussed topics were collaboration (at all levels), COVID-19 in general response to COVID-19, and logistical and organizational planning in response to challenges faced by migrant and farmworker communities. The most frequently discussed topics, in order of frequency, were COVID (96 instances of discussion), collaboration (87 instances), and organizational planning and management, (61 instances).

Discussion

Disaster vs. Non-Disaster Response

In order to understand participants' perspectives on disaster, it is important to understand their distinctions between disaster response and response to migrant communities outside of disasters. For the purposes of this study, non-disaster responses are defined as general responses to migrant and farmworker communities, or ways that organizations assist migrant communities (both migrant farmworker communities and migrant communities in general) that are not necessarily tied to disaster response. In this study, these responses included distributions of food and school supplies, community gatherings and events, HIV education, pesticide use and contact dermatitis education, mental health programs, assistance with college applications, and other resources. They differed from disaster response because of their lack of urgency and decreased emphasis on more short-term needs such as vaccination or rescue.

Comparing COVID and Extreme Weather Responses

Not all interviewees discussed hurricanes and other forms of extreme weather at length. This is likely due to the recency of the pandemic in comparison to storms. For instance, Mandujano Acevedo and Castillo were hired by their organizations after the response to hurricanes Florence, Dorian, and Matthew had completed. Prior to conducting interviews, I expected that responses to COVID would overlap with responses to extreme weather. But this was not the case; none of the interviewees discussed overlap in their disaster responses. In fact,

Garzón described 2019 as a lull in disaster, marking a distinct "before" and "after" COVID. Such descriptions of COVID are likely influenced by the fact that the pandemic is unlike any prior disaster in eastern NC, and it has not yet subsided. Moreover, the immediate responses to hurricanes ended before the early days of the COVID pandemic.

Similarities in COVID and storms. The most overlap between interviewees' descriptions of COVID responses and their descriptions of hurricane responses was in the context of communication, education, and access to information. For instance, a lack of disaster-related resources in Spanish was a difficulty present in both situations. Moreover, the isolation of farmworker communities presented difficulties in both COVID responses and hurricane responses. For instance, the isolation of farmworker communities has made it difficult to provide farmworkers with the vaccine, and it also made it difficult for them to evacuate from storms or obtain food and supplies in the face of hurricane damage. Interviewees also described a sense of unpreparedness in the face of both disasters. Both kinds of disasters occurred suddenly, and there was a need to create plans and protocol on the fly in order to address farmworkers' immediate needs.

Differences in COVID and storms. The most commonly discussed storm response was the provision of food, housing, and other supplies. The most commonly discussed COVID response was vaccination. The inherent differences between these two types of disaster also presented differences in their responses. For instance, before vaccines were widely available, outreach workers were less likely to travel directly to farmworker camps to provide assistance in response to the pandemic. On the contrary, hurricane responses involved a much more on-the-ground, physically involved response. Moreover, COVID has been a lengthier disaster than prior hurricanes. As explained by Thomas,

> *I think that because this [pandemic] has gone on for so long and it's been so universal, it's not just those five counties that are flooded over there, it's all of North Carolina, it's all of the United States, it's all of the world. One thing that's happened, fortunately, this*

time is that we have been able to make alliances and collaborations with people that we didn't before. And those have been really, really important.

The lengthier nature of the COVID pandemic has given way to increased collaboration with stakeholders who were not previously collaborating to respond to hurricanes.

Views of Government in Disaster Management

Here, it is important to note that Thomas, Mandujano Acevedo, and Rivera work for a branch of the state government; when discussing their views on government entities, I am referring to their relationship with other government agencies and their views on the state government as a whole.

It was not uncommon for interviewees to describe difficulties presented by the government while explaining their responses to disaster in farmworker communities. For instance, Garzón gave a powerful example of the disconnect between government agencies and actual needs of farmworkers in the pandemic by describing the creation of a policy that only permitted one person per camp to go to the grocery store to shop for everyone else in the camp. In her words,

So [a worker in a government agency] might think like, "Oh, yeah, we're protecting workers, we're doing great." Well, these workers, imagine, work and live with the same people. Every single day of their lives, they don't have any privacy. They're literally working all day long with the same people that they live with. And the only day and the only experience that they have where they get to see other folks is when they go shopping. And not only that, but they don't have control over so many things in their life, they don't control their schedule, they don't control their movements because they don't have transportation, they don't control so many things about their lives. And now they won't even be able to control the food that they buy. They have to tell somebody else to buy them something. But it might not be the brand or the variety or the kind of

things that they like. It was, it was just heartbreaking to hear government officials talk about protecting workers, in a way that felt like it was very paternalistic to me…

Moreover, it is likely that government actions affect farmworkers' and migrants' feelings of marginalization and trauma; for example, this quote from Garzón:

> *It's not that government officials are bad, it's just that this community has been so marginalized and they're never taken into account. And so now we needed these essential workers, and nobody really knew anything about them because nobody has ever put a place on the table for them, you know? […] I think that at least in North Carolina, the interest of businesses has been the priority over the safety of essential workers, and I think I say that knowing that there have been incredible efforts on the part of some of the agencies to get folks vaccinated and to provide support, but I think that more could be done if we held employers responsible for some of the working conditions that could affect the health of workers. And I think that the government is not willing to do that.*

However, despite the frustration that interviewees expressed with certain aspects of governmental response to disaster, interviewees tended to emphasize the positive aspects of collaboration with the government, particularly the state government. Interviewees expressed a positive sentiment towards collaborating with government officials. This finding from my study surprised me. Prior to conducting interviews, I was under the impression that governmental responses inherently excluded migrant farmworker communities and that organizations would often find themselves at odds with government policies. As explained in Chapters 1 and 2, migrant farmworkers face many structural barriers to optimal health, some of which involve their exclusion from federal and state social programs. While this may be the case, each interviewee expressed gratitude for governmental assistance and satisfaction for the extent to which they were able to collaborate with the government, particularly the state government. For instance, Castillo describes the benefits of working with governments at the local, state, and

federal levels to collaborate in a Task Force to provide information to other stakeholders regarding the pandemic and what resources are available to Latino communities. Thomas describes the important role of state-level planning in forming local teams to vaccinate farmworkers. All in all, participants described mixed attitudes towards government entities, but these attitudes were mostly positive and emphasized the importance of collaboration. Thus, it is crucial that government entities continue their efforts to collaborate with other stakeholders, including organizations such as the ones examined in this study.

Growers

Similar to the government, interviewees expressed mixed emotions about the role of growers in responses to disaster. Interviewees used the term "growers" to refer to the people who own the land on which the farmworkers work and arrange farmworker labor, often responsible for migrant labor contracts. On one hand, interviewees expressed feelings of hopefulness about collaborating with growers to respond to disasters and promote farmworker health. For instance, consider this quote from Thomas about the possibility of increased collaboration with growers in the face of disaster.

> *[…] We really would like to see these local teams maybe coalesce into regional teams and to continue to bridge this gap between the grower and the farmworker by using these regional teams to do disaster preparedness. So, we recognize that these teams have formed in response to the disaster [of the pandemic], but we would like to see them continue and be [hurricane] preparedness teams.*

However, growers were frequently mentioned when discussing instances of exploitation of farmworkers. Growers are described as having too much power over farmworkers, resulting in the denial of basic health services to farmworkers. For instance, Thomas describes the difficulties of collaborating with growers in response to general health care concerns, flooding, and the COVID pandemic.

> *Well, for one, we get chased off by growers where they're providing free health care to their workers late at night and they object and they feel like they should be able to control access to their workers and that only people that they allow to come see their workers should be able to come see their workers. So that's one thing that we experience. We experience growers who are like, "no, I don't, I don't want my workers to be vaccinated. I don't believe that the vaccine is needed. They're fine." Or, "I don't think my workers need to be rescued from floodwaters." So we just the…And not all growers are like that. Some are very, very concerned about their workers. But the ones that are like that, it's very discouraging. And they often, because of the way the laws are written, they are able to get away with that.*

While relationships between organizations and growers have the potential to improve farmworker wellbeing and emergency preparedness, current policies give growers disproportionate power over farmworkers, creating major roadblocks in responses to disasters.

Collaboration

The way the pandemic facilitated extra collaboration between different organizations merits attention. Not only was this a key theme in the qualitative data of this study, but it is especially interesting considering the temporal context in which these interviews took place and the nature of the COVID pandemic. After all, a key feature of the pandemic is the degree of isolation and division in workplaces and communities. Workplaces were divided into "essential" and "nonessential" labor, many jobs went remote, employees were furloughed or laid off, and people generally were forced to isolate themselves from their communities. These factors inherently undermine collaboration. Yet, every interviewee emphasized the ways that the pandemic opened new doors and allowed their organizations to collaborate with other organizations and institutions in unexpected ways. Consider this quote from Thomas:

> *One thing that's happened, fortunately, this time is that we have been able to make alliances and collaborations with people that we didn't before. And those have been*

> *really, really important. […] So, some of these programs that we always knew about each other. Right. But we didn't know each other individually and we didn't try to work together. That has made a huge difference.*

Similarly, this quote from Mandujano Acevedo describes how his experience as a new employee during the COVID pandemic facilitated the creation of new partnerships:

> *So, for better or worse, the pandemic kind of provided the perfect opportunity to be able to, I guess, start those partnerships anew or make them stronger than before. And as I said before, like, I think because we were new, we kind of play the naive role and was like, "we really don't know!" So, we kind of want to understand a little bit further that we know how to support you. So, it was it was kind of easy on our side.*

This section will explore various types of collaboration discussed by interviewees, including findings that were surprising and general trends of discussions of collaboration.

Collaborating with Local Governments. This was most often discussed in relation to vaccination, as well as communication and access to information and distribution of medical resources such as dental screenings. I had expected more collaboration to take place on the policy level and did not expect local governments to focus on health. However, county health departments played a larger role in collaboration with migrant-serving organizations than I had originally anticipated.

Collaboration with the State Government. This was the most common form of collaboration, which was a surprise to me, as I had assumed that most collaboration would be on the local or county level because of local institutions' proximity to the effects of disasters. The Department of Health and Human Services, which is the organization that Rivera, Thomas, and Mandujano Acevedo work for, is a body of the state government; however, all three individuals described ways that their organization collaborated with *other* forms of state-level governance. As explained by Mandujano Acevedo,

[…] The state was also developing new programming and better resources to make sure that the pandemic had as less of an effect as possible. Part of that response was also us being able to connect with other state entities and being able to bring those resources to the outreach clinics so they could provide them to the farmworkers.

Interviewees mainly focused on vaccinations and communication, education, and access to information when describing collaboration with the state government to respond to disasters. Advocacy was also an important form of collaboration. Consider the following quote from Garzón:

And then, the advocacy piece is also really important because we've met with the governor's office, we've met with DHHS [Department of Health and Human Services], we've met with the Department of Agriculture, et cetera, et cetera. People in the community are having access to these government representatives to really speak about what's going on in ways that nobody else could, and I don't think that Episcopal Farmworker Ministry is going to solve the issue of the pandemic any time soon [laughs], but I think what we're doing is that we're building leadership in these communities so that when there's another pandemic, they're going to be in a better place to face the challenges.

In interviewee responses, the state often takes a facilitating role, helping organizations by providing funding, information, and, in the case of the Farmworker Health Program, providing a state epidemiologist. Consider Thomas's explanation of how the state has facilitated even more collaboration between other stakeholders:

Well, the state level planning came up with the idea of forming these local vaccine teams by county and then pulled the teams together. And now the teams are taking it themselves and many of them are meeting weekly or every other week to talk about, okay, this grower is getting these workers this week who can provide vaccines. Have you called them? Have you talked to them? Has the outreach worker been out there to

talk to the workers to make sure their questions have been answered? Has the ag extension agent called the grower to make sure they understand what's going on? So that's kind of how it works.

As explained previously, interviewees generally expressed positive experiences in collaborating with the state government, but some aspects of state governance have increased marginalization of migrant farmworker communities.

Collaboration with the Federal Government. Much of my research prior to these interviews was focused on disaster management agencies such as FEMA. Surprisingly, these agencies were not mentioned by interviewees; only two interviewees even discussed collaboration with the federal government. Thomas explained that the Farmworker Health Program had received funding from the federal government for testing and other forms of COVID response. Castillo described the process of reaching out to federal government officials to ask if they would consider becoming community partners with AMEXCAN's NC Latino COVID-19 Task Force, which mainly focused on informing other community partners of current events and resources related to COVID response.

Other Organizations. When interviewees discussed collaboration with other organizations, they mostly cited collaboration in relation to the provision of food, housing, and other supplies after storms; they also frequently cited collaboration in regards to communication, education, and access to information in response to the COVID pandemic, as well as vaccination and distribution of resources in response to COVID. These organizations include other organizations that specialize in migrants, such as Migrant Head Start, organizations that promote the wellbeing of Latinx populations, and health-oriented organizations.

Collaboration with Healthcare Providers. Collaboration with healthcare providers was a key component of vaccination efforts, as well as provision of other health resources such as dental screenings, blood pressure checks, and blood sugar checks. One key component of

collaborating with healthcare providers was ensuring that these providers were available to provide vaccines during late nights and weekends, as this is when farmworkers are generally available. This is a challenge, as described by Thomas, who is a healthcare provider.

> *And as a provider, that's when they take me out is late in the evenings. And one other time that farmworkers are available for vaccinations are maybe Saturday afternoon, evening, and Sundays. So that's the stress now is how do you find vaccine providers who are willing to go late evenings and weekends? That's not when medical providers tend to want to work. We want our weekends off, too, but that's the only time farmworkers are available, so getting the vaccine to them at times when they're available is the challenge right now.*

While collaboration with healthcare professionals has been essential to vaccinating farmworkers, this requires healthcare providers to extend their hours and travel long distances to reach farmworker communities.

Collaboration with Growers. As explained above, interviewees have experienced increased collaboration with growers, but this relationship is rather complicated due to the degree of influence that growers have over farmworkers, which can sometimes lead to exploitation.

Internet Access. I would like to conclude this section with a note about access to technology and the Internet, as it serves as an important example of the importance of collaboration at all levels. Internet and technology access was a topic that was discussed by Rivera and Thomas, but mostly by Rivera. Rivera described internet access as both a general need and a necessity in times of disaster. For instance, farmworkers who have access to Internet, cell service, electricity, and other forms of technology are able to receive emergency alerts, schedule telehealth visits, order medication over the phone, and communicate with other important people in their lives. This project has involved collaboration with state agencies such as NC Broadband Infrastructure Office, organizations that are dedicated to providing Internet to

farmworker communities, and growers, especially when technology needs to be installed on their property.

Moreover, technology-related projects described by Rivera involved a great deal of collaboration with farmworker communities, most notably by traveling to farmworker communities to conduct in-person evaluations of an Internet hub provided to farmworkers. Rivera described that when evaluation interviews were conducted over the phone, farmworkers expressed how helpful the Internet hub was and how much they enjoyed it. In-person interviews told a different story:

> *The feedback that I got just doing [in-person evaluations] …was the Internet hub…they didn't like that it didn't reach out to all the housing units. When they were inside, they couldn't get Internet because part of that is that those housing units are metal buildings, so it's just really not going to penetrate through the buildings, the signal. And we kind of knew that going on in, but just wanted to see what it would be like. So, that was one of the good critical feedback.*

This example shows just how nuanced farmworker needs may be. For instance, while it is important that farmworkers have access to the Internet in any form, it is important that this access works for them, especially given the unique structure of farmworker communities. Rivera's descriptions of her organization's efforts to provide farmworkers with the Internet has incredible implications for the importance of multilevel collaboration and of community evaluations.

Connections to Disaster Management

As explained in Chapter 2, current disaster literature proposes a disaster management cycle that follows four main phases: mitigation, preparedness, response, and recovery (Khan et al., 2008; National Disaster Management Authority, 2006; Tierney, 2012). Phases of this cycle may overlap; the length of each phase depends on the severity of the disaster. The response phase occurs immediately after a disaster to minimize the threats created by the disaster.

Response efforts include search-and-rescue teams and emergency relief. Finally, the recovery phase focuses on returning the community to normal via measures such as temporary housing and medical care (Khan et al., 2008). Within these four phases, there are also sub-phases. For instance, immediately after disaster strikes, individuals practice disaster response by securing their safety and the safety of those around them. Moreover, the recovery phase can be broken up into two sub-phases: rehabilitation, which entails restoration of basic services and functions, and reconstruction, which consists of the "full resumption of services, plus preventative measures" (Khan et al., p. 47).

Disaster Management and Disaster Governance in the Pandemic

Following this framework, interviews for this project took place in the recovery phase of disaster management. However, in the responses to the COVID pandemic, the rehabilitation and reconstruction sub-phases have been warped due to the division of labor into "essential" and "non-essential" work. Farmworkers, clearly, are essential workers; therefore, they were required to continue their work in full swing even throughout the earlier phases of this disaster. Thus, even when other sectors found themselves in the rehabilitation phase, which entails restoration of basic services and functions, farmworkers have likely been in the reconstruction phase for a long time, which involves the full resumption of tasks, with preventative measures in place. Moreover, increased access to vaccines, PPE, and testing have allowed for reconstruction of farmworker communities by decreasing the spread of COVID within these workplaces and communities.

Similarly, it is important to note that as the needs of farmworkers increased in the face of disasters, the capacity of organizations to respond to these disasters often decreased. For instance, outreach workers were less likely to travel in-person to farmworker camps before vaccinations were available. Rivera and her co-workers received paid time off during hurricane Dorian. Farmworkers, on the other hand, do not have access to these protections. Thus, the response to disaster within these organizations differs from the ways that farmworkers cope

with disasters, and the phases of disaster management look different for farmworkers than those who work with farmworker-related organizations.

Responses to the pandemic have been both "top-down" (i.e., imposed by government officials) and "bottom-up" (i.e., coming directly from the communities affected by disasters). Some bottom-up responses are closely tied to community resilience such as the examples above of volunteering and fundraising. Other ways that bottom-up responses may manifest themselves is when responses to disaster emerge independently from organizations, independent from government imposition. Certainly, there are many ways that organizations moved beyond governance when responding to disaster such as planning independent fundraisers, distribution of resources, and outreach. However, the findings of this study point towards a more nuanced explanation of disaster management, involving integration of all levels of response, from community organization to governance practices, in the form of collaboration. This finding is consistent with the principles of disaster governance.

Disaster governance, like the disaster management framework, argues in favor of proactive disaster management in all levels of governance. However, disaster governance emphasizes the need for collaboration among different institutions. The forms of collaboration can fall into three main categories: collaboration with different frameworks, collaboration at different levels of governance, and collaboration between governments and civil society. A key finding of this study was the importance of collaboration between different levels of governance and between governments and civil society, thus supporting the disaster governance framework. The disaster governance approach emphasizes collaboration, but it is limited by its focus on institutional arrangements. Thus, it is important to bear in mind the importance of community resilience in fostering collaboration between different organizations and with government entities.

Connections to Social Vulnerability Framework

When the disaster management framework discusses vulnerabilities, it often excludes social vulnerabilities (Flanagan et al., 2011, p. 1). The vulnerability framework adds nuance to the disaster management framework by emphasizing the ways that vulnerabilities exacerbate the challenges created by disasters. Most of the interviews focused heavily on vulnerabilities experienced by farmworker communities, which were encapsulated in disaster-related difficulties and responses, as well as vulnerabilities associated with farmwork and migration in general. Certainly, this is a community that faces many barriers to optimal well-being, many of which have been exacerbated by disasters. The most frequently discussed vulnerability was occupational hazards, including exploitation and agricultural exceptionalism. All five interviewees emphasized that farmworkers are a vulnerable population that is often excluded from responses to disaster.

It is also important to note that one aspect of social vulnerability is administrative and institutional practices to respond to disaster (Singh et al., 2014). After all, "the most vulnerable people are likely those whose needs are not sufficiently considered in the planning of local response and relief organizations" (Flanagan et al., 2011). This study involved collecting data from response and relief organizations that focus specifically on migrant and farmworker populations; in other words, these organizations focus on addressing vulnerabilities. All five interviewees expressed the need for more attention to migrant and farmworker communities during disaster planning and management, a sentiment that is supported by existing literature related to the social vulnerability framework.

Conclusion

Limitations

While this study sheds light on multiple aspects of the experiences of farmworkers in eastern NC, there are various limitations that are worthy of mentioning. First, it is important to note that this study consisted of a small sample of five interviewees. While these interviewees provided a rich perspective and an in-depth understanding on farmworker health and disaster

response, including more participants would enhance the external validity of this study. Moreover, of the five interviewees, none were migrant farmworkers. There are several reasons for this. Firstly, these interviews occurred during the summer, which is an incredibly busy time for migrant farmworkers. Secondly, all interviews were conducted in English, which inherently excludes monolingual Spanish-speaking farmworkers. Lastly, interviews were conducted virtually, which excludes those who do not have reliable Internet access and technological literacy; as explained by Rivera, many farmworkers in eastern NC lack reliable access to the Internet.

The sample of participants does not truly reflect the demographics of all those who are involved in work related to migrant farmworkers, as this was a convenience sample based on people who were recommended to me to interview and people who responded to my email requesting an interview. Interviews and participant recruitment took place during the summer, which is an inherently challenging time to communicate with people involved in farmworker affairs, as the summer is a very busy season for farmworkers. On a similar note, many of my interviewees are affiliated with the NC Farmworker Health Program within the Department of Health and Human Services; it is possible that the inclusion of so many people from this organization could influence the participants' priorities because of a similar shared background. Moreover, it is possible that the COVID pandemic affected the availability of people working in these organizations, as the pandemic has presented unique stressors that often require a lot of effort to solve, thus limiting the availability of many potential participants.

Future Directions for Research

Future research should include the perspectives of migrant farmworkers in addition to the perspectives of those who work in organizations that focus on migrant farmworker well-being. This was a major limitation of my study, which did not include interviews with migrant farmworkers. Moreover, since the findings of this study emphasize collaboration, it would be helpful for future studies to include the perspectives of other partners in collaboration, such as

the state government, community partners, NC Agricultural Extension, and growers who employ migrant farmworkers. Including a more diverse variety of perspectives would enhance the findings of this study and provide a multifaceted analysis of disaster recovery from a variety of stakeholders who are connected to migrant farmworkers. Lastly, since this study occurred during the COVID pandemic, I recommend conducting a similar study after the effects of the pandemic have subsided to provide a more cohesive reflection of the impacts of this disaster.

Recommendations for Organizational and Governmental Policy

As demonstrated throughout this chapter, my main recommendation for community leaders, organizational management, and governmental agencies is increased collaboration between organizations and with the government. This includes collaboration that is not directly tied to farmworker communities or to disaster response. For instance, as described by interviewees, some of the most rewarding partnerships have occurred in unlikely ways such as collaborating with state agencies to provide Internet access to farmworkers or collaborating with community organizations that focus on Latinx populations in general to strategize disaster responses that are inclusive of Latinx and farmworker populations. The need for increased collaboration was portrayed clearly by each interviewee.

In addition to the recommendation for more cooperation, I have several other recommendations based on the findings of this study.

Needs Expressed by Interviewees. When asked about what support and resources they would like to have in their work, most needs expressed by participants fell into two categories: improved communication systems and increased staff.

Communication. Interviewees expressed a need for more disaster resources in Spanish and increasing farmworkers' access to technology, including Internet, power, and cell service, so that they are equipped to receive emergency alerts. This is a task that would undoubtedly require increased collaboration from the government, as the government is often responsible for disseminating disaster alerts and information about disaster protocol. Rivera, for instance,

described the need for alerts in Spanish on the state or county level, but preferably the state level so that the alert technology does not need to be replicated in each county.

Increased Staff Capacity. Interviewees, particularly Thomas and Mandujano Acevedo, described the importance of outreach workers and explained that increasing the quantity of outreach workers and the compensation of these workers would greatly improve their organizations' ability to respond to disaster. Similarly, Castillo described the need for staff to be paid more to adequately compensate them for their work. Ideally, as Castillo explains, more volunteers would be helpful because, in her words, "the Latino community isn't small, we make up a big portion of NC, especially in the agriculture industry." Moreover, Rivera describes the need for creation of a full-time job dedicated specifically to disaster response but explains that a lack of funding could get in the way of this goal. As stated by Rivera,

> *I think like if we had a position that was a permanent full-time position, really strategizing and focusing on emergency response for farmworkers, and then that person could have a seat at the table on the greater emergency plan statewide, I think that would be ideal. I don't know. It takes a lot to approve a position like that. And while we might have all this additional funding during this pandemic, that isn't going to necessarily continue in the next year or two. So, if you don't have continuous funding, I guess it's hard to make a permanent position available because you have to base it off of what you would normally get.*

Based on this input from interviewees, my main recommendation is for increased federal funding of farmworker health and disaster recovery programs. Thomas explains in her interview that outreach workers are paid for via funding from the federal government. Similarly, the pandemic emergency funding that Rivera describes is helpful, but it needs to become more sustainable, especially since the quantity and intensity of disasters is likely to continue to increase, as explained in Chapter 2. Increased federal funding would boost organizations' ability

to hire and retain full-time staff who can respond to disasters that affect the communities they serve.

Recommendations at the Organizational Level. As explained in Chapter 2, the unfortunate reality is that disasters are likely to increase in frequency and intensity due to climate change and destruction of animal habitats; this applies to both extreme weather, such as hurricanes, and the spread of infectious diseases. Thus, it is vital that organizations plan for disaster response, even when they are not in the face of imminent disaster. This is particularly important for organizations that are not focused exclusively on disaster recovery; none of the participants in this project work for organizations that are dedicated entirely to disaster response, yet disasters have shaped the work they do and the needs of the populations they assist. Planning is key. Many interviewees in this project explained that they plan to use the lessons and connections formed during the pandemic to respond to future disasters, or that they had learned important lessons from hurricanes that helped them respond to the pandemic.

The Importance of Community Participation. As explained by interviewees, there often exists a disconnect between responses to problems faced by farmworker communities and the actual needs of these communities. I recommend that in-person, participatory needs assessments and evaluations of current practices be used in order to gain the feedback and participation of farmworker communities. This includes ensuring that resources, such as medical resources or Internet connectivity, are logistically appropriate for farmworker communities and that education and communication is linguistically, culturally, and occupationally relevant. As explained at length by Rivera, feedback from farmworkers is vital to developing successful programs and distributing resources that actually meet the needs of this unique community. The importance of community participation is relevant for both governmental and non-governmental organizations.

Other Recommendations for Governmental Responses to Disaster. When responding to disaster, government plans must include migrant farmworkers. For instance, when

distributing resources in response to disaster such as food, shelter, vaccinations, or PPE, it is crucial that government officials take the extra steps to travel to farmworker communities, many of which are very isolated. Moreover, it is important that responses to disaster include the provision of health care services to migrants who may lack insurance.

Agricultural Exceptionalism. Finally, I would like to conclude with a reminder that farmworkers are an incredibly marginalized population that is very vulnerable to disasters, a phenomenon that is explained in great detail in all five interviews. One key reason for the vulnerability of farmworkers is agricultural exceptionalism. Historically, to avoid granting worker rights to predominantly African American sectors, farmworkers were deemed exempt from the National Labor Relations Act of 1935, which established basic labor protections for workers (Farmworker Justice, 2021). Agricultural exceptionalism is inherently racist and leads directly to occupational hazards and exploitation in farmwork. Child labor, unbearably hot work environments, and other dangerous working conditions are all permitted in agricultural sectors. One particularly jarring example, described by both Thomas and Rivera, involved several farmworkers who were trapped in a flooded camp. In Thomas's words,

> *And we had farmworkers at one point call 911 because their camp, they live in work camps in large groups, and their work camp was being flooded and 911 was preparing a white-water rescue for them. But then, the owner of the farm called 911 and said, "they're fine, you don't need to go." And the 911 operators listen to the owner instead of listening to the farmworkers who probably, because of language, weren't able to advocate for themselves as well as they would have liked. So, they start calling our Spanish-speaking outreach workers. And finally, the outreach workers were able to get someone to go rescue them.*

This is just one example of many provided by interviewees that illustrates the lack of farmworker protection and the degree of control that growers and farm owners have over their workers. This vulnerability is highlighted in times of disaster, including COVID and extreme

weather. My final recommendation of this study, in accordance with the recommendations of interviewees, is to establish workplace safety standards for farmwork and to revisit the H-2A migrant labor contracts to adjust the stark power differentials between growers and workers.

Appendix 1

Question Bank

Beginning: Baseline, biographic info	Prior experience with disaster	COVID pandemic	Connections and next steps
Where are you from? Can you tell me more about that area?	Tell me about your experience with extreme weather events like hurricanes or flooding. Have you ever faced extreme weather while working with [organization]?	Again, thinking back to the early days of the pandemic, how did your role shift in your organization? How did your job change?	Consider whether there is a relationship between what you learned from prior disasters you have experienced and your experiences with COVID-19. In other words, try to describe as best you can anything you learned in terms of knowledge or skills from prior disasters that has been useful in dealing with the COVID-19 pandemic
Does your family still live there?	Imagine you are talking to someone you know who has not experienced anything like [prior disaster]. Now, tell this person your story about [prior disaster], what that disaster required of you and how you got through it.	What stood out to you as being a serious issue for the communities you work with?	What knowledge, connections, or skills from your cumulative experience with prior disasters has been less helpful than expected, or perhaps even had negative effects in dealing with the COVID-19 pandemic?
(if not from NC) When did you choose to move to North Carolina? What factors influenced this change?	What would you tell them about the greatest challenges for you personally and in your work life from [prior disaster]? - the greatest challenges for your family and friends? - the greatest challenges for your associates/coworkers? - How about the greatest challenges for your community at that time?	What has the pandemic been like for you? How about you in your workplace and your associates/coworkers? How about the community?	Is there anything new or different that you are doing in [organization] because of the pandemic that you want to continue once it's over?
(if from NC) What made you decide to stay and continue working in North Carolina?	What would you tell them about what you learned from [prior disaster] – good or bad, positive or negative, anything you believe may have a lasting effect.	What would you say about the greatest challenges that you and those around you are dealing with because of the pandemic?	In state and county level responses to the pandemic, do you feel that immigrant and farmworker communities have been included?
How did you get involved with [organization]?	How do you feel this impacted your role at the organization?		What do you believe can be done to include immigrant/farmworker communities in disaster recovery efforts?
How has your role at [organization] changed since you began working there?	How do you feel that this impacted the communities you serve?		What stands out to you as being the greatest challenge that [organization] is currently facing?
What draws you to working with [farmworker/immigrant/Latinx] communities?	Since you began working at [organization], what disasters have stood out to you as being the most significant? (pre-		What supports would you need to address this issue?

	covid)		
What are your day-to-day tasks at the organization? Have your responsibilities changed at all due to the COVID pandemic?	If you can, think back to February/March 2020. Were you or the communities you work with still facing any kind of flooding/damage from prior natural disasters? (which ones?)		
	Can you tell me what it was like to experience the early days of the pandemic while still dealing with __?		

Note: Questions in blue come from the CADAN question bank (Culture and Disaster Action Network, 2020); questions in white were developed independently.

Appendix 2

Table of Instances of All Codes, By Participant

	Thomas	Garzón	Castillo	Rivera	Mandujano Acevedo
1 : Collaboration	10	11	21	26	19
2 : Between organizations	5	3	12	16	13
3 : Where more collaboration is needed	0	1	0	4	0
4 : With growers	3	0	0	4	0
5 : With healthcare providers	2	1	7	2	1
6 : With local government	4	2	2	2	5
7 : With national government	1	0	3	0	0
8 : With state government	6	4	10	3	9
9 : With the community	0	4	8	1	2
10 : Community resilience	0	8	6	0	0
11 : COVID-19	26	16	22	13	19
12 : Difficulties	11	8	2	3	7
13 : Difficulties presented by government	0	5	1	0	1
14 : Isolated, crowded nature of farmworker communities	2	0	0	1	1
15 : Response	23	12	21	11	16
16 : Communication, education, access to information	1	1	3	2	8
17 : Food access	1	2	2	0	0
18 : Fundraising and financial assistance	0	1	3	0	0
19 : Internet connectivity	1	0	0	9	0
20 : Misc resource distribution	0	1	5	0	0
21 : Outreach workers	3	6	1	0	1
22 : PPE	6	0	2	0	0
23 : Telehealth	2	0	0	1	0
24 : Testing	4	0	2	0	1
25 : Vaccination	9	2	8	0	3
26 : Farmwork stressors	7	12	1	11	3
27 : Access to tech, internet	1	0	0	7	0
28 : Housing	0	3	0	0	1
29 : Isolation, stressors of living in a fw community	0	1	0	3	0
30 : Low pay, poverty	1	4	0	1	0
31 : Occupational hazards	6	2	0	2	0
32 : Exploitation from growers, ag exceptionalism	4	2	0	2	0
33 : Transportation	3	1	0	0	1

34 : Trauma and marginalization	0	4	1	0	0
35 : Future directions	4	0	4	4	2
36 : What is needed	1	0	1	2	1
37 : General response to migrant communities	0	7	7	7	0
38 : Community gatherings and events	0	2	0	0	0
39 : Education	0	0	1	2	0
40 : Mental health	0	5	0	0	0
41 : Outreach	0	0	1	1	0
42 : Resource distribution	0	0	3	1	0
43 : Government and policy	8	3	1	2	7
44 : Funding of farmworker health programs and outreach	1	0	0	1	0
45 : Health insurance, health policy	6	0	0	0	0
46 : Migration status classifications	1	3	1	1	6
47 : Guest worker visas	1	1	0	0	0
48 : H-2A program	0	0	1	1	6
49 : H-2B program	0	0	0	0	3
50 : Undocumented	0	2	0	0	0
51 : Life of interviewee	5	8	6	12	9
52 : Personal experience with disaster	0	0	0	3	2
53 : Personal life, family	1	1	1	5	6
54 : Professional life	5	8	5	5	2
55 : Migration stressors	2	5	3	4	1
56 : Health insurance, uninsurance	1	0	0	0	0
57 : Language stressors	1	2	0	4	1
58 : Poverty	0	1	1	0	0
59 : Stress of being marginalized	0	5	0	0	0
60 : NC history, patterns of migration	4	0	0	0	3
61 : Organizational planning and management	14	7	8	18	14
62 : Feedback and evaluation	1	1	0	9	0
63 : Funding	1	0	4	2	1
64 : Role of outreach workers	9	0	0	6	6
65 : Similarities in planning between covid and hurricanes	0	5	1	0	0
66 : Storm	4	7	3	17	2
67 : Storm difficulties	2	4	1	17	2
68 : Difficulties presented by growers	1	1	0	3	0
69 : Inability to evacuate, isolation	1	0	0	4	0

70 : Lack of disaster resources in Spanish	1	0	0	2	1
71 : Lack of protocol	0	2	0	3	0
72 : Transportation, roads	0	0	0	4	0
73 : Storm response	3	7	2	10	2
74 : Communication, education, access to information	1	1	0	3	2
75 : Establishing storm protocol	1	0	0	2	0
76 : Evacuation and rescue	1	0	0	4	0
77 : Food, housing, and other supplies	1	3	1	6	0

Note: This table includes parent codes that have aggregated coding instances from their subcodes. For instance, COVID is a parent code of COVID Response, which is a parent code of codes 16-23.; the number of COVID instances includes the number of instances of all subcodes. A full list of codes, subcodes, and coding definitions is available upon request. Darker shading indicates a higher density of coding.

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