DISSERTATION

SOCIAL CAPITAL AND COLLECTIVE EFFICACY FOR DISASTER RESILIENCE:

CONNECTING INDIVIDUALS WITH COMMUNITIES AND VULNERABILITY WITH

RESILIENCE IN HURRICANE-PRONE COMMUNITIES IN FLORIDA

Submitted by

Michelle Annette Meyer

Department of Sociology

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Doctoral Committee:

    Advisor: Lori Peek

    Jennifer E. Cross
    Michael Lacy
    Craig Trumbo

ABSTRACT

SOCIAL CAPITAL AND COLLECTIVE EFFICACY FOR DISASTER RESILIENCE:

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Disaster resilience broadly describes the ability of an individual or community to "bounce

back" from disaster impacts, through improved mitigation, preparedness, response, and recovery.

There has been academic and political interest in predicting resilience among different

individuals, communities, and populations. Two components of disaster resilience that are

commonly proposed, but under-theorized, are social capital and collective efficacy. These two

components capture the interactive aspects of a community that imply a capacity to respond,

adapt, learn, and effectively reorganize community life quickly following a disaster event. Social

capital and collective efficacy are not only less established in resilience research, but they are

also the key components that, from a sociological perspective, make a community "a

community" and have the potential to meet the needs of vulnerable populations. These concepts

represent individuals interacting and working together, and are signals that a community is more

than a population and more than a simply tally of their population attributes like race, income, or

housing structures.

This dissertation explored the relationship between individual and community resilience

and social vulnerability in hurricane-prone communities in the United States using social capital

and collective efficacy as conceptual grounding. *Social capital* represents the resources available

through individual social ties with others that can be activated to affect individual life outcomes

and outcomes for the entire network. *Collective efficacy* refers to the capacity of a group of people to work together for shared goals and has been linked to a variety of collective outcomes such as crime rates or disaster recovery. I use a grounding in the sociological understanding of these two concepts to contribute to the growing focus on resilience as an organizing concept in disaster planning while focusing on marginalized populations to elucidate the connection between vulnerability and resilience. The overarching research questions of this dissertation are: How does social capital and collective efficacy affect individual and community disaster resilience and how do these aspects of resilience incorporate concerns for those most social vulnerable to disasters?

 I pursue several specific research questions within this broad framework. 1) Individual-level social capital: How do individuals understand and leverage their informal (family and friends) and formal (organizations) social capital for disaster situations? What specific attributes of individuals and their networks affect their perceptions of social capital resources before a disaster occurs? 2) Individual-level perceptions of collective efficacy: How is collective efficacy for disasters understood and described by individual residents of a community? How does this understanding compare and contrast with routine (i.e., non-disaster) perspectives of collective efficacy? 3) Community-level social capital: How does disaster-specific social capital operate at a community level? What are the perceived attributes and effects of different forms of social capital on a community's overall disaster resilience? 4) Community-level perceptions of collective efficacy: How do organizational representatives understand and describe the disaster-specific collective efficacy in their communities? What attributes of their communities support and constrain disaster-specific collective efficacy?

To answer these questions, I completed case studies of two Florida counties, Leon and Dixie, using a mixed-methods approach. In each case study county, I collected individual- and community-level data. At the individual level, I used mail surveys of 138 residents and in-person interviews with 25 residents to collect data on disaster-specific social networks and perceptions of collective efficacy. At the community level, I conducted 28 interviews with representatives of community organizations (religious institutions, nonprofits, emergency management agencies, and social service agencies). These interviews produced data on their organizational networks for disaster situations and perceptions of collective efficacy.

Disaster social capital at the individual level describes the personal social networks of family, friends, neighbors, acquaintances, and organizations who individuals perceive as able provide assistance for disaster-related activities. My results highlight the following five main findings related to disaster social capital. First, respondents' disaster-specific social networks are limited in size. Many respondents perceived a small number of social capital ties as able to provide resources for disaster situations, and this result differed based on the resource considered (financial or nonfinancial) and by county. Second, family ties and geographically localized ties are prominent in these networks. Third, taken together with indicators of social vulnerability, disaster social capital involves a complex process of network size, composition, and resource needs and availability that influence the perception of potential social ties to activate in disasters. This process has implications for individual resilience, based on the resources an individual has and what they can receive from their networks. Fourth, this primary data on disaster social networks is positively correlated, but only weakly, to common measures of routine social capital. Fifth, nearly half of the respondents in this study lack formal social capital ties to community

organizations. Few of these individuals perceived these formal social capital ties as useful in a disaster situation and instead would rely on family and friends first.

At the community-level, the practice of social capital among community organizations varies. In Leon County, their disaster social capital is formalized in a network of government and nongovernmental organizations with varying degrees of involvement. I created a six tier typology to describe the levels of connection between different organizations in Leon County: Disaster Core, Conduits of Emergency Services, Social Service Semi-periphery, Faithful and Financial Periphery, External Assistance, and The Disconnected. Involvement in this disaster-specific organizational social capital network was perceived to have three main benefits related to disaster resilience: improve disaster response, improve organizational capacity to survive a disaster, and improve organizational capacity to assist their clients or members during a disaster. In contrast, Dixie County lacked a formal disaster-specific organizational network, and only two local government organizations collaborated regularly on disaster concerns. Other organizations in the area were expected to emerge in the aftermath of a disaster and assist with response and recovery as they could. The lack of formalized disaster social capital in Dixie County was attributed to the limited capacity of nongovernmental organizations, the lack of large disasters that require more than what local emergency management could handle, and confusion as to what nongovernmental organizations could offer or gain from being involved in such a network.

Perceptions of disaster collective efficacy from individual residents and organizational representatives incorporated understanding of individual traits, such as friendliness and neighborliness, and formal disaster response organizations which were perceived as important to coordinating collective action. Respondents from both counties described their collective efficacy as high, although organizational representatives saw the current economic context, lack

of recent large-scale disaster experience, and lack of understanding of social vulnerability as negatively affecting potential disaster collective efficacy. These results show how disaster-specific collective efficacy was viewed as an extension of routine collective efficacy. Further, organizational capacity to coordinate disaster-specific collective action was expected and necessary to foster this collective efficacy to its fullest potential.

This research helps illuminate the conceptualization and operationalization of community disaster resilience. Further, it highlights theoretical contributions to understanding social capital and collective efficacy as aspects of disaster resilience, indicating that the disaster context creates similarities and differences in how these concepts operate. Finally, this dissertation contributes methodologically by revealing the need for disaster-specific measures of social capital and collective efficacy, network-based measures of social capital, and understanding of organizational processes for community-level social capital and collective efficacy.

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do in person interviews, even after telling our whole Research Methods class that I preferred the

company of my computer. Her belief in me and guidance in that project gave this shy woman the

confidence to travel across the country and ask strangers to chat with me about disaster resilience. All three of these professors continuing to work with me as I transition from their student to a colleague is my fondest achievement.

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AUTOBIOGRAPHY

Growing up in Centralia, Illinois, I never thought I would be graduating with my Ph.D. over 1,000 miles away in the foothills of the Rocky Mountains. To get here, I graduated from Centralia High School, and then completed undergraduate study at Murray State University, in Murray, Kentucky. I majored in Sociology and minored in Biology and Dance—all my academic and personal loves. Then after a few years of wandering, I came to Colorado State University (CSU) to study environmental sociology and had the opportunity to be graduate teaching assistant and student of some of the brightest sociologists I know. After completing my Master's Degree at CSU, I continued on to the Sociology Ph.D. program at CSU, to which this dissertation is the culmination.

While at CSU, I was a Research Assistant on a variety of projects including: a National Science Foundation and the National Oceanic and Atmospheric Administration funded project on hurricane risk perception along the U.S. Gulf and Atlantic Coasts; a CSU Clean Energy Supercluster funded project on green building adoption; two projects on assessing disaster planning for persons with disabilities; a program evaluation of a disaster social services organization's training program; and several evaluations of different high school social norms campaigns. I also was a Graduate Research Assistant with the Center for Disaster and Risk Analysis at CSU, directed by Drs. Lori Peek and Sammy Zahran. Besides research, I also had the wonderful experience of teaching at CSU. I taught several sociology courses including undergraduate social statistics, research methods, and environmental sociology.

I have presented my research across the U.S., including in Boston, Washington, D.C., Denver, St. Louis, San Francisco, and Chicago. I have also had the opportunity to travel to

Germany to work with other young scholars interested in environmental migration and disasters at the United Nations University Institute for Environment and Human Security. Also, I presented research in Spain at the Oñati Disaster and Sociolegal Conference.

As I finish this dissertation, I am a Research Associate with the Hazard Reduction and Recovery Center at Texas A&M University. I am managing a National Science Foundation funded project on disaster mitigation planning among jurisdictions along the Gulf and Atlantic Coasts of the U.S.

My research and teaching interests include disaster resilience, climate change displacement, environmental sociology, community sociology and sustainability, quantitative and qualitative research methods, and the interplay between environmental conditions and social vulnerability.

DEDICATION

In hopes of greater resilience for all, this dissertation is dedicated to my interviewees and survey respondents for their time, energy, and hospitality while sharing their insights with me.

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CHAPTER ONE

INTRODUCTION

This dissertation grew out of an interest in the topic of "disaster resilience," which

broadly describes the ability of an individual or community to "bounce back" from a disaster or

other hazardous event (Adger et al. 2005; Manyena 2006). Disasters disrupt the fabric of

community life and are stressors to social systems (Fritz 1961). Resilience is the ability to

effectively deal with these stressors. Having grown more versed in the social vulnerability

paradigm of disaster research, I reviewed the new conceptual and methodological research on

this hot topic of disaster resilience with an underlying concern about socially vulnerable

populations. Research has consistently shown that stratification in societies result in

disproportionate impacts for different populations because economic, social, and political

inequalities (based on race, economic status, gender, citizenship, disability status, and age,

among others) are exacerbated in disaster situations (Phillips and Fordham 2010). Thus, I

wondered how a resilience framework might address these concerns—specifically, how would a

community disaster resilience framework address the needs of the most marginalized and

disenfranchised populations? This question goes beyond an academic exercise to ask: Can a

community, as a whole, practice in a manner that supports its population to rebound from the

depths of disaster destruction, including those persons who are less able to actualize individual

resilience?

What I found while reviewing this topic was that certain components of what contributes

to a community's resilience were measured with relative ease and, for the most part, well

established in the academic literature. These agreed upon components included economic attributes (e.g., median income of the population, economic development in a community) and demographic indicators (e.g., two-parent households, more able-bodied persons, higher levels of education) that are commonly depicted as in opposition to disaster vulnerability. Thus, from a preliminary review, it seemed resilience was little more than an antonym for vulnerability, and as such offered little to conceptually or practically advance the protection and positive adaptation of social vulnerable populations in disasters.

Beyond these basic economic and demographic components, however, there was an implication in the literature that disaster resilience is *dynamic* and includes processes of learning and adaptation, and thus should measure more than just point-in-time economic and demographic attributes of a community. Scholars, though, disagree on exactly what dynamic aspects of the community should be included to fully elaborate the concept of resilience.

Two additional components of community disaster resilience that are commonly proposed, but under-theorized, are social capital and collective efficacy. These two components for resilience capture the interactive aspects of a community that imply a capacity to respond, adapt, learn from a disaster, and effectively reorganize community life quickly following an event (Cutter et al. 2008; Norris et al. 2008). Social capital and collective efficacy are not only less established in resilience research, but they are also the key components that, in sociological speak, make a community "a community" and have the potential to meet the needs of vulnerable populations. These concepts represent individuals interacting and working together, and are signals that a community is more than a population and more than a tally of their population attributes like race, income, housing structure, etc. (i.e., social vulnerability). These two components representing dynamic social life may also hold the potential to counteract social

vulnerability issues in disaster, just as networks and collective processes have been shown as important to daily life of marginalized or disadvantaged individuals (e.g., Stack 1975). In this dissertation, I set out to study social capital and collective efficacy as they related to community disaster resilience, especially for vulnerable populations.

Social capital represents the resources available through individual social ties with others that can be activated to affect individual life outcomes and outcomes for the entire network (Bourdieu 1985a; Lin 1999). *Collective efficacy* refers to the capacity of a group of people to work together for shared goals and has been linked to a variety of collective outcomes such as delinquency rates or disaster recovery (Benight 2004; Sampson and Raudenbush 1997). The history of disaster research is full of examples of collectives working together to recover from catastrophic impacts (Fischer 2008; Quarantelli and Dynes 1977) and individual and community networks providing access to various resources in disaster situations (Elliott, Haney, and Sams-Abiodun 2010; Hurlbert, Haines, and Beggs 2000; Kaniasty and Norris 1993).

Since social capital and collective efficacy are focused on interactions between individuals and within collectives, they both have various units of analysis from individual to group to community. In sociological research and disaster research, the question remains at which scale these processes should be conceptualized (Varda et al. 2009). While I began with a relatively humble goal of aiming to fill a gap in current resilience theory and inform the measurement of these two topics for resilience research, I am also tackling this larger question that plagues disaster resilience research: How do we understand the unit of analysis for disaster resilience—individual or community—and how does social capital and collective efficacy link individuals, especially vulnerable individuals, and communities together to produce resilience?

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The importance of this dissertation lies in the fact that disaster resilience continues to grow in popularity throughout academic and policy circles. Population growth, increasing inequality, continued migration, and development in hazard-prone areas, such as the United States Atlantic and Gulf Coasts, means more people and property are at risk of disaster (Crossett et al. 2004). Furthermore, natural environmental risk is also increasing with climate change, causing sea levels to rise and the potential for more intense storms, droughts, and floods (Field et al. 2007). With rising disaster losses, disaster resilience now appears in various forms of disaster management guidance, ranging from local to federal to international, including for example, the United States Federal Emergency Management Agency's (FEMA) "National Disaster Recovery Framework" (2010) and "The Whole Community Approach to Emergency Management" (2011) to the United Nations' "Making Cities Resilient Campaign" (UNISDR 2012) and "Hyogo Framework for Action"(UNISDR 2005). Yet, even with the growing attention, sociology and disaster research lack a clear, operational definition of disaster resilience and a consistent method of empirical analysis—which is a gap I address in this dissertation.

<div align="center">Dissertation Objectives</div>

My interest in community disaster resilience is driven by the desire to understand the ability of resilience, as a construct and operational activity, to fully incorporate *all* community members into disaster protection and recovery. Thus, this dissertation addresses two distinct but related projects: 1) the relationship of individual and community levels of analysis for disaster resilience and 2) the conceptual and practical relationship between social vulnerability to disaster and disaster resilience. These two projects are achieved through my detailed qualitative and quantitative analysis of disaster-specific social capital and collective efficacy. In this dissertation, I pursue several specific research questions, each addressed in a separate chapter:

Individual-level social capital: How do individuals understand and leverage their informal (family and friends) and formal (organizations) social capital for disaster situations? What specific attributes of individuals and their networks affect their perceptions of social capital resources before a disaster occurs? I address these questions in Chapter Four.

Individual-level perceptions of collective efficacy: How is collective efficacy for disasters understood and described by individual residents of a community? How does this understanding compare and contrast with routine perspectives of collective efficacy? These questions are discussed in Chapter Five.

Community-level social capital: How does disaster-specific social-capital operate at a community level? What are the perceived attributes and effects of different forms of social capital on a community's overall disaster resilience? I address these questions in Chapter Six.

Community-level perceptions of collective efficacy: How do organizational representatives understand and describe the disaster-specific collective efficacy in their communities? What attributes of their communities support and constrain disaster-specific collective efficacy? These questions make up Chapter Seven.

With each question, social vulnerability is prevalent in the analyses, as these topics are discussed in relation to their impact on the resilience of all populations in a community. Furthermore, the results from each chapter speak to the overall conceptualization and measurement of community disaster resilience, and how each concept compares and contrasts in conceptualization and measurement for routine (non-disaster) and non-routine (disaster) situations. These questions ultimately address how to more accurately predict resilience and to point out areas for improvement among different communities. The results from my

investigation of disaster social capital and collective efficacy point to the uniqueness of disaster-specific conceptualization and measurement for resilience.

Research Methods Overview

To address these questions, I used a mixed-method case-study approach. Through in-depth descriptive and corresponding explanatory work in the Florida counties of Leon and Dixie (described below), I coordinated individual- and community-level data. At the individual level, I conducted a mail survey of residents in each county and then follow-up in-person interviews with willing survey participants to gather more detailed information about disaster-specific social capital and collective efficacy. At the community level, I performed in-person interviews with representatives of governmental and nongovernmental organizations who are theorized to be important to resilience and important to socially vulnerable populations. My dissertation contributes to an understanding of community disaster resilience that is place-based, local, and contextualized.

Florida and the Selected Cases

With the interest in rising disaster impacts propelling research on resilience, I chose two counties in a state highly prone to natural disasters as case studies for this dissertation. Florida, as a peninsula into the Atlantic Ocean and Gulf of Mexico, faces the annual threat of hurricanes as well as other natural disasters such as drought, wildfire, flood, and tornado. Because of this regular experience, Florida's state government structures and population have experience with responding to and learning from disasters, and as such, Florida is often viewed as a national leader in emergency management. Taken together, this makes Florida an excellent case study for researching disaster resilience. While I focused on natural disasters because of their regularity in parts of the country, my findings are applicable to other types of disasters.

Within Florida there is variation among communities, in terms of experience of and risk to disasters. Further, community-level differences exist in the contribution of local emergency management as well as population size and demographics. With disaster resilience practice and research beginning at the local level (Wilbanks 2009), finding two local communities to compare within one state structure was important so I could hold the state context constant. The selected counties, Leon and Dixie, lie about 100 miles apart in the panhandle of Florida (see Figure 1.1). Although they are relatively close together in terms of geographic proximity, they are quite distinct in terms of sociodemographic traits, culture, economic activity, and lifestyle. Leon County is an urban-suburban county with economic and social activities centering around the state capital of Tallahassee, where 65 percent of the county residents live (Census 2010). In contrast, Dixie County contains two small rural towns and nine unincorporated communities, none of which claim more than 2,000 residents, which makes it one of the most rural counties in Florida (USDA 2003).

Figure 1.1. Selected Case Study Areas: Leon and Dixie Counties, Florida, U.S.

I selected these two areas to showcase differences in the economic and social attributes that current resilience theory and research deems important. Leon County, for example, scored highly resilient on the recent Baseline Resilience Indicators for Counties index, while Dixie County received one of the lowest resilience scores in the state (Cutter, Burton, and Emrich 2010). Current resilience indices, like that one, tend to correlate with population size; urban counties achieve higher resilience scores than rural counties because they have more governmental and nongovernmental organizations, more economic diversity, and more overall financial assets. Thus, I took this correlation to task by including a more urban (Leon) and a more rural county (Dixie) as cases. To introduce each county, I now provide some context on community life, the focus of this dissertation, including religious institutions, nongovernmental organizations, emergency management, and social life.

Leon County, Florida

One county and ten miles separate the southernmost part of Leon County and the Gulf of Mexico, and it shares its northern border with the state of Georgia. Leon County is home to approximately 275,000 individuals, of whom 63 percent are white, 30 percent are African American, three percent are Asian, and the median age is 30. When compared to the population size of other metropolitan counties in Florida, such as Miami-Dade County (2,496,435) or Broward County (home of Tampa) (1,748,066), Leon County is a relatively small urban area. Yet, the county contains the infrastructure common to urban areas: public transit (including local and long distance bus services and an airport), many social service and nonprofit organizations, three institutions of higher education, and numerous industries and businesses. Furthermore, Leon County contains Tallahassee, the state capital, which means it is home to state government

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offices, the Governor's residence, the state legislature, state public service organizations, and the state's emergency management headquarters.

Community life in Leon County is full of activities, social and religious organizations, and university events, among others. Leon County is also home to hundreds of churches as well as numerous nonprofits, social organizations, and vibrant neighborhood associations. Downtown Tallahassee contains eight- to ten-story buildings, legal offices, as well as the state capital buildings. Florida State University, Florida A&M University, and Tallahassee Community College occupy large swaths of land within the city limits, and there are also five hospitals. The outskirts of the city include suburbanized communities and large suburban shopping areas. Farther out from Tallahassee, there are sparsely populated areas of Leon County and portions of the state park system.

In terms of disaster experience, residents of Leon County recall Hurricane Kate in 1985 as the last major storm to impact the area, which caused power outages for several days and much flooding. Other than that storm, residents describe how storms often "turn" before hitting the County, and thus imply a perceived natural safety due to the county's location on the Panhandle (Personal Interviews 2012).

Dixie County, Florida

Dixie County has approximately 30 miles of the Gulf of Mexico coastline called "The Nature Coast" for tourists, which includes two unincorporated fishing communities that are populated mostly by weekend fishing tourists from other areas of Florida and Georgia. The county contains plots of forest in various stages of regrowth and timber harvesting, remnants of the County's once thriving sawmill industry. Dixie County has only one grocery store, and residents must drive to a neighboring county, nearly 50 miles, to reach a hospital. The common

method of giving directions is to inform someone which direction to turn at the only traffic light in the county, simply referred to as "the red light."

Dixie County is the center of a rural swath of the Florida Panhandle and is bordered by four other rural counties. While the population of Dixie County has risen over the past three decades to just over 16,000 people, the area faces the common rural concerns of persistent poverty and dependence on supplemental government income (Flora and Flora 2012). Sixteen percent of residents live in poverty and nearly half receive Social Security income, and there has been a continual decline of local employment opportunities, especially for younger persons (Census 2010).

Community life in Dixie County centers around religious organizations, with 28 churches in the area, some with congregations of less than 50 people (Personal Interview 2012). Along State Highway 27, which runs through the center of the county, there are no less than six billboards encouraging drivers to find eternal salvation in Christ before it is too late, and many more large and small Christian crosses dot the roadside. The only locally-based charity organization is funded by local church and individual donations, and provides free and reduced-price clothing, utility assistance, and food. Lack of financial capacity in the community means they run out of money to provide these services before the middle of each month (Personal Interview 2012). This lack of organizational capacity is in stark contrast to Leon County's organizational milieu.

Geographically, Dixie County is bordered on the north and south by two rivers: the Steinhatchee and the Suwannee. This river basin geography plus the Gulf of Mexico coast leaves nearly 85 percent of the county identified as in a floodplain (Personal Interview 2012). Residents recall floods with little concern—the type of acceptance that often comes with common

experience. They describe more excitedly the "Storm of the Century" also called the "No Name Storm," which was the most destructive tropical storm to hit the county in recent memory. This storm came ashore in the middle of the night on March 13, 1993, damaging homes and killing 44 people in Florida, but none in Dixie County. This storm and Hurricane Kate that hit Leon County were a mere two years apart, with both approaching their 30 year anniversaries. While both case study counties have faced disaster destruction before, the yearly risk is not extreme and thus their experiences are similar to those of many other areas of the country that face relatively infrequent large-scale disaster events (e.g., flooding once a decade along the Mississippi River).

Because of these differences in community context between the two counties, but similarities in disaster risk and experience, they provide divergent cases to understand community disaster resilience. As FEMA (2011) encourages all local communities, regardless of resources or population size, to work with their "whole community" of individuals, businesses, nonprofits, civic groups, recreational groups, and emergency management to take responsibility for their own resilience, my research provides further understanding of the capacities and constraints within any community that can affect resilience. With these case studies of areas prone to, but lacking recent disaster experience, I am able to showcase a dynamic and complex understanding of social capital and collective efficacy for potential resilience, applicable for practitioners and researchers as we move forward with growing climate change impacts, population growth, and increasing disaster losses.

In this chapter, I introduced the reason for my interest in disaster resilience and my research objective to further understand social capital and collective efficacy as they contribute to community disaster resilience. Next, in Chapter Two, I outline the contours of disaster resilience research literature, focusing on definitions, operationalization, and its relation to social

vulnerability. I review theory and research on social capital and collective efficacy for routine and disaster settings, especially as it relates to their use in disaster resilience research. In Chapter Three, I provide more detail on my mixed-methods case study, the selection of the cases, and my quantitative and qualitative data collection and analysis.

Chapter Four through Seven summarize the results of my research. In Chapter Four, I elaborate on social capital at the individual level, comparing and contrasting residents' perceptions of their potential disaster-specific networks. Chapter Five includes my analysis of individual residents' perspectives on collective efficacy in their relevant counties. In Chapter Six, I move to what I refer to as the community level of analysis, and the results from the interviews with organizational representatives in each county. Chapter Six discusses of social capital among organizations, including a comparison and contrast of the operation of social capital among Leon County and Dixie County organizations. Chapter Seven continues the focus on the community level with my discussion of organizational interviewees' perceptions of disaster-specific collective efficacy in their respective counties. Finally, in Chapter Eight I integrate the individual and community level of my analyses to discuss the methodological and theoretical implications of this dissertation for community disaster resilience.

CHAPTER TWO

LITERATURE REVIEW

The academic literature reviewed in this chapter helps situate my research on the two

coinciding foci of this dissertation—first, linking individual and community resilience and

second, understanding the relationship of social vulnerability and resilience. With a focus on the

disaster and hazard literature, I begin with definitional history, discussion and debate, and

empirical applications of "resilience" at individual and community levels. Then, I focus on social

capital and collective efficacy as interactional processes that link individuals together in

networks and in communities. I close with a review of the social vulnerability and disaster

resilience debate. This literature review highlights the gaps in current disaster resilience research

and how my research on social capital and collective efficacy addresses ambiguity on the use of

these concepts in resilience conceptualization and operationalization.

Resilience Definitions

The history of the term resilience can be traced to C.S. Holling, who described changes in

ecosystems. According to Holling (1973: 14), resilience is "a measure of the persistence of

systems and of their ability to absorb change and disturbance and still maintain the same

relationships between populations or state variables." He coined ecological resilience to

acknowledge that fluctuations are natural, which created a paradigm in contrast to equilibrium or

stability models that preceded his work. Many academic fields draw from this conceptualization

of resilience including psychology (e.g., Bonanno 2004; Masten 2001), sociology (e.g., Mileti

1999), socio-ecological systems (e.g., Folke 2006; Nelson, Adger, and Brown 2007), and, most

specific to my dissertation, sociological disaster research (e.g., Bruneau et al. 2003; Manyena 2006).

I introduce the origin of the term to underscore certain components of its contemporary conceptualization for disaster research. Specifically, researchers have adopted the idea of resilience to describe the capacity of an individual or of a community to persist after a traumatic, external event. Most broadly then, disaster resilience is commonly described as the capacity of individuals or communities to "bounce back" from a disaster to a functioning state (Adger 2000; Cutter et al. 2008; Norris et al. 2008). This broad definition of resilience has become widely used by researchers, practitioners, and politicians. Below, I outline the contours of the disaster resilience definition to situate my research within this rapidly growing area of inquiry.

Disaster Resilience Definitions

Several scholars have detailed the definitional development of resilience and use of the term in disaster research, including Manyena (2006), Norris et al. (2008), and Plodinec (2009). I updated the lists of definitions from various authors' reviews to focus only on social science and social-ecological fields and incorporated recently published work to create Table 2.1 This table includes central definitions in the field, organized by their level of analysis and date.

A variety of definitional aspects are important to highlight from Table 2.1. First, resilience implies a *systems analysis* in which many subsystems interact in a dynamic process, such as integrated social-ecological systems of coastal areas (Adger 2000). The word "system" is in many of the definitions and implies that there are many moving parts within one whole that affect overall system resilience. For example, at the individual-level, the systems focus in resilience research involves the interaction of genes, neural systems, personality, resources, and relationships (Masten and Obradovic 2008).

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Table 2.1. Representative Definitions of Disaster Resilience and Levels of Analysis

Author and Year	Level of Analysis	Definition
European Commission (EU 2012)	Any	The ability of an individual, a household, a community, a country, or a region to withstand, adapt, and quickly recover from stresses and shocks
Masten, Best, and Garmezy (1990)	Individual	The process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances
Butler, Morland, and Leskin (2007)	Individual	Good adaptation under extenuating circumstances; a recovery trajectory that returns to baseline functioning following a challenge
Kendra and Wachtendorf (2003)	Organizational Units	The ability to respond to singular or unique events
Timmerman (1981)	Community	The capacity to absorb and recover from the occurrence of a hazardous event
Comfort (1999)	Community	The capacity to adapt existing resources and skills to new systems and operating conditions
Mileti (1999)	Community	The ability to withstand an extreme natural event without suffering devastating loses, damage, diminished productivity, or quality of life without a large amount of assistance from outside the community
Adger (2000)	Community	The ability of communities to withstand external shocks to their social infrastructure
Paton, Smith, and Violanti (2000)	Community	The capability to bounce back and to use physical and economic resources effectively to aid recovery following exposure to hazards
Bruneau et al. (2003)	Community	The ability of social units to mitigate hazards, contain the effects of disasters when they occur, and carry out recovery activities in ways that minimize social disruption and mitigate the effects of future earthquakes
Cardona (2003)	Community	The capacity of the damaged ecosystem or community to absorb negative impacts and recover from these
Godschalk (2003)	Community	The capacity to manage extreme events; during disaster; must be able to survive and function under extreme stress
Pelling (2003)	Community	The ability of an actor to cope with or adapt to hazard stress
Ahmed (2004)	Community	The development of material, physical, socio-political, socio-cultural, and psychological resources that promote safety of residents and buffer adversity
Coles and Buckle (2004)	Community	A community's capacities, skills, and knowledge that allow it to participate fully in recovery from disasters
Allenby and Fink (2005)	Community	The capability of a system to maintain its functions and structure in the face of internal and external change and to degrade gracefully when it must

Pfefferbaum, Reissman, and Klomp (2007)	Community	The ability of community members to take meaningful, deliberate, collective action to remedy the impact of a problem, including the ability to interpret the environment, intervene, and move on
United Nations International Strategy for Disaster Reduction (2005)	Community	The capacity of a system, community, or society potentially exposed to hazards to adapt, by resisting or changing, in order to reach and maintain an acceptable level of functioning and structure; determined by the degree to which the social system is capable of organizing itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures
Norris et al. (2008)	Community	A process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance
Wilbanks (2009)	Community	The capacity to anticipate problems, opportunities, and potentials for surprises; reduce vulnerabilities related to development paths, socioeconomic conditions, and sensitivities to possible threats; respond effectively, fairly, and legitimately in the event of an emergency, and recover rapidly, better, safer, and fairer
Cutter, Burton, and Emrich (2010)	Community	A set of capacities that can be fostered through interventions and policies, which in turn help build and enhance a community's ability to respond and recover from disasters
The U.S. White House (Obama 2011)	Community	The ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies
Committee on Increasing National Resilience to Hazards and Disasters (2012)	Community	The ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events
Adger et al. (2005)	Social-ecological system	The capacity of linked social-ecological systems to absorb recurrent disturbances, such as hurricanes or floods, so as to retain essential structures, processes, and feedbacks
Folke (2006)	Social-ecological system	(1) the amount of disturbance a system can absorb and still remain within the same state or domain of attraction, (2) the degree to which the system is capable of self-organization (versus lack of organization, or organization forced by external factors), and (3) the degree to which the system can build and increase the capacity for learning and adaptation

This focus on systems also coincides with sociological disaster research. Early disaster researchers saw disasters as "disrupting ongoing societal systems and subsystems, requiring adaptation" (Tierney 2007: 505). Community disaster resilience focuses on the community system that includes individuals, neighborhoods, businesses, nongovernmental, and government agencies working together through the economic, cultural, and social subsystems. As described by the Federal Emergency Management Agency (FEMA), resilience,

> Takes all aspects of a community to effectively prevent, protect against, mitigate, respond to, and recover from threats and hazards. It is critical that individuals take responsibility for their own self-preparedness efforts and that the community members work together to develop the collective capacity needed to enhance their communities security and resilience. (FEMA 2011: 23)

While resilience has risen in popularity, concerns remain as to its conceptual foundation. This systems focus has been particularly critiqued in general sociology, as well as in disaster research. A systems perspective can lead to assumptions that communities are "single, bounded, and autonomous" entities, which in practice can overlook the dynamic, contingent interactions and relationships among many interlinked groups and subsystems (Peacock and Ragsdale 1997: 22). Overlooking these dynamic relationships often means that a systems perspective takes a consensus view of communities, ignoring the conflict and competition inherent in the relationships among individuals, groups, and subsystems that make up a community.

Second, the roots of Holling's definition identifying resilience as *capacity or ability*, not an outcome, are apparent in many of the common conceptualizations of disaster resilience seen in Table 2.1. Persistence or survival is the outcome that the process of resilience manifests and should not be confused with resilience itself. As Manyena (2006: 348) argued, this conceptualization of resilience focuses on society's role in disasters rather than just environmental risk: "Viewing disaster resilience as a deliberate process (leading to desired

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outcomes) that comprises a series of events, actions or changes… places emphasis on the human role in disasters."

Third, resilience is *adaptability* not stability, again following Holling's original conception. A focus on resilience changed the management of ecosystems from controlling out variability to allowing for some variability and fluctuation (Folke 2006) and is similarly applied to social systems. Norris et al. (2008) most clearly distinguished this point by arguing that resistance to disaster is not the same as resilience. For example, levees that prevent flooding is a form of resistance, which requires different resources and a different capacity level than allowing a flood to occur and bouncing back from that flood. This distinguishes resilience from mitigation, although, as noted below, disaster mitigation is incorporated into disaster resilience discussions.

Fourth, Holling's conception also highlights an interesting, yet under-theorized, component of disaster resilience: there are *multiple configurations* for a system. He argued there are multiple different stable states where an ecosystem may form equilibrium and maintain the basic features of the interaction among various components (e.g., relationships between predators and prey). This not only means that the system is allowed to fluctuate when an event occurs, but that theoretically the system can return to something different from its previous form. Resilience is identified as long as basic features of the system remain.

Many disaster resilience definitions include the goal of "learning" that will make the individual or community more resistant to future disasters. This focus on learning highlights that social systems differ from ecological systems in their internal ability to learn and change purposively through human agency (Adger 2000). But, it is unclear what qualifies as learning. First, how much communities learn from disasters is debated in the literature (Birkland 2006).

Second, the possibility for different configurations resulting from resilience introduces the

problem of determining what those end states will look like (e.g., less or more social

vulnerability, less or more inequality, changes in housing availability or work opportunities).

This question of different results of resilience has compelled some scholars to divide resilience

into "recovery" or "transformative" resilience. Recovery is bouncing back to what was and

transformative is bouncing back and adapting to a new configuration (Shaw and Maythorne

2012).

A final aspect of resilience definitions, unique to disaster situations, is how resilience

covers the four stages of disaster: mitigation, preparedness, response, and recovery. As Wilbanks

(2009) observes, a resilient community anticipates issues and opportunities, reduces and

mitigates vulnerability, responds effectively, and recovers rapidly and well. Allenby and Fink

(2005: 1034) stated similarly that to develop resilience,

> One might invest in avoiding any event in the first place; creating long-term plans
> that reduce or mitigate threat; generating a warning in time to implement or adjust
> plans and reduce potential costs; mitigating the event as it occurs; or planning
> short-term responses and recovery or longer term recovery capabilities.

The ability of resilience to incorporate all stages of disaster is also seen in practical

application of the concept. For example, on September 27, 2012, FEMA announced a new grant

opportunity for local and state jurisdictions entitled "Community Resilience Innovation

Challenge." FEMA was searching for innovative planning activities that helped communities

mitigate, prepare, respond, or recover from a disaster (FEMA 2012). Finally, the most recent

National Academies Report on U.S. resilience (2012) incorporates all four stages into resilience

definitions. Resilience, then, is an umbrella concept that can subsume the previous stage-based

foci in disaster discussion.

Together, these definitions identify disaster resilience as: the capacity of a system to adapt to an external impact through mitigation, preparedness, response, and recovery to any one of multiple potential states that maintain the basic functioning features of the system. While the definition of resilience is generally similar across studies, there is dramatic variation in operationalization.

Operationalization of Individual and Community Disaster Resilience

My primary interest is in community disaster resilience and how it affects, is affected by, and corresponds with individual disaster resilience. Research integrating individual and community resilience is limited though (Bonanno et al. 2010; Kulig 2000; Masten and Obradovic 2008). The focus on the community as a system implicates an understanding of individuals—and their resilience. In this section, I review influential academic studies that have attempted to operationalize and systematically measure disaster resilience at the individual or community level. I also include, where appropriate, guidance from the U.S. government on disaster resilience and emergency management.

Individual Disaster Resilience Operationalization

The ability of individuals to rebound from adverse events like a disaster has been the interest of different disciplines, especially human development (Masten 2001), psychology (Norris et al. 2002), and sociology (Peacock, Dash, and Zhang 2006). But, the majority of individual resilience research has been led by psychologists interested in the effects of trauma on mental health (Masten and Obradovic 2008). Reviews have shown that only 30 percent of individuals who experience a disaster will have some long-term form of post-traumatic stress, extended grief, depression, substance abuse, or increased risk of suicide. The rest will return to pre-event mental functioning either immediately (showing little psychological problems) or

within one to two years (Bonanno et al. 2010). Many psychological researchers use the resilience concept to describe what factors allow for individuals to avoid or quickly recover from any disaster-induced mental distress. Overall, psychological research highlights a plethora of factors influencing individual-level resilience, including disaster impact and experience, personality and demographic factors, and social factors. I briefly review these below.

Disaster Impact and Experience for Individual Resilience

Disaster proximity, amount of loss, and amount of distal effects during recovery all affect individual resilience (Bonanno et al. 2006; Nolen-Hoeksema and Morrow 1991). For example, loss of economic resources, displacement, relocation all increase the likelihood of mental health dysfunction and reduced resilience (Abramson and Garfield 2006; Tobin-Gurley, Peek, and Loomis 2010).

Previous experience with disasters can buffer these effects and increase resilience because individuals with previous experience with disasters are able to understand the disaster process and potential effects and be psychologically prepared for the next event (Knight et al. 2000; Norris and Murrell 1988). This research indicates that while experience with disasters can increase resilience, it is tempered by the amount of disaster impact—greater disaster impacts require more capacity to bounce back than lesser impacts.

Mental Health and Demographic Factors for Individual Resilience

Beyond impact and disaster experience, individual variation in resilience relates to psychological and demographic factors. Disasters exacerbate pre-event stress and psychological dysfunction, or conversely, bring out personality traits that make some individuals more or less likely to bounce back. For example, individuals with existing stress, grief, anxiety, substance abuse, and other mental health issues have less resilience to disasters than those without these

issues. Relatedly, personality factors such as negative or positive outlook, perceived control, self-efficacy, propensity to rumination, and "hardiness" have been found to affect individual resilience along with cognitive abilities such as problem solving ability (see Bonanno et al. 2010 or Mastens and Obradovic 2008 for reviews).

Demographic factors, which often identify social vulnerability to disaster, have been found to correlate to disaster impact (which as noted above affects resilience) and resilience itself (see Phillips et al. 2010 for comprehensive discussion). While numerous demographic traits have been linked to disaster vulnerability or resilience, economic status, age, gender, and race receive the most research attention.

First, economic resources are an important component of individual resilience. Individuals of lower economic status have less resilience and commonly face higher rates of psychological distress following an event (Abramson, Garfield, and Redlener 2007). Economic status works indirectly on resilience by affecting the availability of economic resources to mitigate and prepare for impacts, thus affecting the amount of the disaster impact. Also, economic resources assist in disaster recovery, allowing individuals to more quickly return their physical surroundings to pre-event status (see Fothergill and Peek 2004 for a review). For example, the return of stable housing following a disaster is often necessary for individuals to achieve resilience in other areas, such as health, employment, and education (Abramson et al. 2010; Peacock, Dash, and Zhang 2006).

Age is another factor affecting individual resilience. As people move through the life course, their resilience changes. Research shows that children tend to be able to recover from adversity well over time (Masten and Osofsky 2010; Norris et al. 2002). These conclusions are largely based on studies of other forms of trauma besides disasters. Research on disaster-specific

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resilience among children is relatively limited, but the results indicate that much variation in disaster vulnerability and resilience exists among children, that children's resilience is related but not subsumed by their parent or caregiver's resilience, and that children are active participants in their own and their families' disaster activities (Peek 2008).

At the end of the life course, similar varied results exist. On one hand, older adults show less stress symptoms than younger adults to traumatic events (Bonanno et al. 2010). On the other hand, the elderly commonly have more physical health concerns pre-disaster that affect their resilience and aging can further deteriorate physical ability to respond and recover to a disaster (Peek 2010).

As for gender, women tend to experience and express greater psychological stress following a disaster than men (Anderson and Manuel 1994). Even when controlling for impact, women subjectively experience the threat more than men (Norris et al. 2002). Beyond psychological resilience, men and women also face different risks of loss in disaster (Enarson 2009), different roles in response and recovery (Enarson 2001), and different experiences with post-disaster assistance (Fothergill 2004), all of which can further the gender disparity in disaster resilience (Enarson, Fothergill, and Peek 2007).

Finally, race and ethnicity also correlate with individual capacity to bounce back from disasters, although the results are often confounded by the correlation between race and socioeconomic status (Bonanno et al. 2010). Racial and ethnic minorities commonly have more pre-event mental health concerns, which affect resilience. Furthermore, broader societal issues affect resilience among racial and ethnic groups, through variation in differences in language access, housing conditions, community isolation, and culturally insensitive emergency management (Dash 2009; Fothergill, Maestas, and Darlington 1999).

Social Context for Individual Resilience

Individuals are embedded in social relationships, from family, school, work, and the community through which assistance and support during stressful events could flow. Social support studied in disaster and related to resilience includes emotional support (e.g., listening, positive encouragement) or tangential support (e.g., help with clean-up, sheltering, and rebuilding). Increased amounts of both types of support increase individual resilience (Luthar 2006; Masten and Obradovic 2008; Reich 2006).

The psychological literature on individual resilience distinguishes between the effects of perceived and received social support on mental health. Individuals who subjectively experience support during and following a disaster (perceived support) are more likely to avoid or recovery quickly from psychological stress (Bonanno et al. 2007). Received support, on the other hand, has a complex relationship with psychological outcomes, with some studies finding a positive correlation and others showing no effect. Received support is also positively correlated with amount of disaster impact (Kaniasty and Norris 1995). I will further elaborate on individual social support below when I define and discuss social capital.

Community Disaster Resilience Operationalization

Moving to the community level, disaster resilience is, in some ways, more difficult to operationalize. Only a few empirical models of community disaster resilience as a whole concept exist in the disaster literature, and what is measured in these studies varies. Two general models and one rural model are particularly relevant: Cutter, Burton, and Emrich (2010), Norris et al. (2008), and Sundet and Mermelstein (1997). Cutter, Burton, and Emrich's set of disaster resilience indicators includes 36 variables attributed to one of five components of resilience: social resilience, economic resilience, institutional resilience, infrastructural resilience, and

community capital (2010: 2). Norris et al. (2008) offer a similar model of community resilience that includes four components: information and communication, economic development, social capital, and community competence. Sundet and Mermelstein (1997) focus on six broad components: demography, history, culture, ecology, government, and business.

Commonly Measured Aspects of Community Disaster Resilience

Across studies, economic and demographic characteristics of communities are consistently included somewhere in the model, though the specific measures vary. The robustness of a community's economy and the financial resources available to the population are predicted to increase a community's ability to resist an impact (through mitigation and preparation activities) and adapt and rebuild post-impact. For example, higher income and wealthy neighborhoods return and rebuild quicker than low-income and impoverished areas (Finch, Emrich, and Cutter 2010). Areas with stronger and diverse business activity also recover more quickly following a disaster (Peacock, Morrow, and Gladwin 1997), although the capacity of economic sectors in resilience varies across communities (Sundet and Mermelstein 1997).

To operationalize these economic aspects, empirical measures include household economic information and community business data. Cutter, Burton, and Emrich (2010) include housing capital, equitable incomes, employment, business size, physician access, and diversified economy. Economic development in the Norris et al. (2008) model includes the broad categories of economic growth, economic diversity, and financial equity, which are operationalized with 10 variables such as median income, income inequality measures, urban influence, occupational diversity, and tax base (Sherrieb, Norris, and Galea 2010). For rural communities, Sundet and Mermelstein (1997) found that lower rate of poverty is the best economic indicator of resilience.

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Demographic factors included in community disaster resilience are those affecting individual resilience and negatively correlated with common measures of social vulnerability. For example, neighborhoods with fewer vulnerable populations, as indicated by fewer racial and ethnic minorities, higher education levels, and fewer elderly and persons with disabilities, are expected to have more resilience. Cutter, Burton, and Emrich's (2010) model includes demographic attributes such as educational inequality, elderly population, disabled population, and non-native English speaking population, which all negatively affect resilience. Norris et al. (2008) also include common demographic traits such as education levels and rate of two-parent households to single-parent households, which positively affect resilience. Sundet and Mermelstein (1997) found that cultural homogeneity is predictive of greater community disaster resilience.

Less Commonly Measured Aspects of Community Disaster Resilience

Beyond economic and demographic factors, a variety of different aspects of community life have been put forth as important to resilience. I briefly list these different attributes by study before focusing on the two central to this dissertation: social capital and collective efficacy.

Cutter, Burton, and Emrich (2010) include three additional aspects in their resilience model. Institutional resilience "contains characteristics related to mitigation, planning, and prior disaster experience." It is measured with variables such as population covered by a hazard mitigation plan, population residing in FEMA "Storm Ready" communities, and political fragmentation among jurisdictions. Infrastructure resilience incorporates sheltering capacity, vacant rental housing units, healthcare facilities, amount of mobile homes, and presence of critical infrastructure. Finally, community capital "captures the relationships that exist between

individuals and their larger neighborhoods and communities," which the authors acknowledge is commonly referred to as social capital.

Norris et al. (2008) also identify three additional aspects of resilience. Information and communication includes emergency communication infrastructure and shared meanings and narratives about the community. Social capital includes network ties among individuals and community organizations, social support and mutual aid, and community bonds, such as place attachment, sense of community, and citizen engagement. Sherrieb, Norris, and Galea (2010) operationalized this component using seven variables such as crime rate, residents' tenure in community, and presence of nonprofit organizations (see below for further discussion). Community competence identifies collective action, collective efficacy, and empowerment as the final set of factors important to community resilience.

Sundet and Mermelstein (1997), in reference to rural communities, include government (leadership and intergovernmental emergency management), culture (ethnocentrism, individual/group orientation, common mores), history (internal strife, horizontal integration), and ecology (communication about environment, topography, proximity to resources). From these results, the authors argue for community coalitions, education about mutual support mechanisms, communication linkages among critical leaders, resource awareness and preparation, and anticipation of and planning for community crises. Many of these additional attributes in community models speak to the participatory and dynamic aspects of a community, such as social capital and collective efficacy.

Concerns with Community Disaster Resilience Operationalization

As noted from this discussion, the community disaster resilience research lacks consistent measures across studies. The lack of consistency reduces comparability among studies and

highlights some concerns for theoretically-informed measurement. First, how different measures and sub-indices combine into overall resilience is not understood (Cutter, Burton, and Emrich 2010). Currently, resilience indices are additive with different components equally weighted. Could the different aspects act as replacements for each other? For example, could strong economic resilience make up for less social capital, or vice versa? Furthermore, the current measurement that uses equal weighting results in potentially spurious correlations with community disaster resilience. Specifically, the quantitative measures discussed above highlight a rural-urban divide. Urban areas, because of greater economic and nongovernment organization activity score as more resilient than rural areas. Is this correlation accurate or does it signify problems with the measurement?

Second, there is a lack of theoretical grounding on some of the proposed aspects of resilience, specifically for the community aspects such as social capital and collective efficacy. These aspects vary in definition across studies, vary in measurement, and often result in an approach that includes numerous variables attempting to measure the potential for social interaction that affects resilience. Sociologists have a strong potential contribution to make in discussing community as it relates to these questions.

To address these concerns, my research in this dissertation helps clarify two theorized—but difficult to define and assess—aspects of community resilience: social capital and collective efficacy. To truly understand these aspects for community disaster resilience, I move to the sociological and disaster literature on these topics.

Interactive Aspects of Disaster Resilience

Disasters, as place-based phenomenon, call for research on geographic communities, whose characteristics and interactions may contribute more or less to resilience. In this

dissertation, *community* is defined as a geographic space and the people and their interactions within it (Bruhn 2005), and I draw on two bodies of literature related to community: social capital and collective efficacy. *Social capital* is defined and measured differently among resilience studies—levels of trust, density of social ties, or amount of community organization involvement. The second focus is the *collective efficacy* within communities, which in disasters is defined as "the shared belief that a group can effectively meet environmental demands and improve their lives through concerted effort" (Benight 2004: 402).

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Social Capital and Community Disaster Resilience

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Social capital is used in many contexts and academic fields (see Portes 1998 for a review of the concept). It is a central concept in sociology, traced back to early theorists and associated with a prolific amount of contemporary research that broadly identifies how "involvement and participation in groups can have positive consequences for the individual and the community" (Portes 1998: 2). Two distinct conceptualizations of social capital exist; one is the social network-based approach from the academic tradition of Bourdieu (1985a) and Lin (1999), and the other is the norms, trust, civic-based approach of Putnam (2000) and Fukuyama (1995).

In this dissertation, I refer to the social network approach as "social capital" and incorporate the tradition that focuses on norms, trust, and civic-ness with the discussion of collective efficacy. This differentiation is common among social capital theorists such as Portes (1998) and Lin (1999). As Lin (1999: 33) argued,

> Divorced from its roots in individual interactions and networking, social capital becomes merely another trendy term to employ or deploy in the broad context of improving or building social integration and solidarity…. [S]ocial capital, as a relational asset, must be distinguished from collective assets and goods such as culture, norms, trust, etc.

Bourdieu provides a central and theoretically grounded definition of social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu 1985a: 248). Social capital is one of four forms of capital described by Bourdieu that also includes economic, cultural, and symbolic. These four capitals are unequally distributed in society and interact to determine an individual's trajectory within a specific social space (Bourdieu 1985b). Individuals' use of social capital can result in acquisition of other forms of capital, such as economic opportunities (e.g., Granovetter 1973) or cultural prestige (e.g., Anheier, Gerhards, and Romo 1995). This definition clearly identifies social capital as an interaction-based concept existing within social connections. Unlike other forms of capital, "To possess social capital, a person must be related to others, and it is those others, not himself, who are the actual source of his or her advantage" (Portes 1998: 7).

Social capital has two clear components: a durable social network and the amount and quality of resources available to be passed through the network ties (Lin 1999). Disaster research that uses this conceptualization of social capital often focuses on how social ties affect resources and support offered to disaster survivors, or how emergency and social service organizations work together during disasters (Murphy 2007; Nakagawa and Shaw 2004; Varda et al. 2009). Disaster researchers identify financial (loans and gifts for property repair) and nonfinancial resources (search and rescue, debris removal, childcare during recovery, emotional support, sheltering, information) that can be transferred through social ties and affect resilience.

Empirical research on social capital in disaster highlights the proposition by Bourdieu and Lin: social capital amount and type affects life chances. Much of the history of disaster

research can then be viewed through the lens of social capital and as Quarantelli (2005: 357) noted, ''social capital might be a very useful concept to capture one major kind of resources that those involved in disaster-related activity might or might not have." In disasters, the life chances affected by social capital can be *literal*: lifesaving assistance or information. Disaster research has shown concretely that isolated individuals are "less likely to be rescued, seek medical help, take preventative action such as evacuate, or receive assistance from others in the form of shelter" (Dynes 2005: 15). As Klinenberg (2002) showed in his study of the Chicago Heat Wave of 1995, isolated, elderly individuals were the most likely to die and not be found until days or even weeks after the event.

Types of Social Capital: Formal and Informal, Strong and Weak

Social capital research focuses on how "characteristics of resources of friends, contacts, and groups may affect individual outcomes" (Mouw 2006: 81). Two main distinctions exist in social capital research: informal/formal and strong/weak. The informal and formal distinction relates to attributes of the person with which a tie exists. Informal social capital refers to ties with friends, family, co-workers, and acquaintances, and describes the networks of individuals who share confidences, personal information, provide social support, and discuss problems and important topics (Paxton 1999). Formal social capital describes individuals' connections to organizations and institutions, such as churches, schools, workplaces, and nongovernmental organizations. Formal ties provide access to institutional resources and information, and can lead to additional informal ties to other group members that may not exist without shared group membership (Breiger 1974).

While disaster situations call forth images of trained professionals and formal rescue operations, throughout the sociology of disaster literature, research has shown that informal ties,

particularly neighbors, are the real "first" responders who check on the well-being of others and provide immediate life-saving assistance following a disaster. As introduced with individual resilience above, social support affects resilience. Friends, neighbors, and family members communicate warnings, encourage disaster preparation, provide shelter and supplies, and offer immediate aid and initial recovery assistance (Elliott, Haney, and Sams-Abiodun 2010; Hawkins and Maurer 2010; Heller et al. 2005; Hurlbert, Haines, and Beggs 2000).

Specifically, research on informal social capital in disasters shows that the size and composition of social networks affect resilience. Individuals with larger social networks receive more tangible (e.g., debris removal), informational (e.g., directions to formal aid resources), and emotional (e.g., encouragement) assistance following disaster (Kaniasty and Norris 1995). Also, individuals whose networks are comprised of more men, younger people, and family members are more likely to receive informal support from their social networks (Hurlbert, Haines, and Beggs 2000).

Formal ties to churches, nonprofits, and social clubs and organizations also provide resources during disaster situations. Ties to social organizations provide both connection to an organization that can provide support through institutional channels (e.g., a church collecting money for a family in need) and potential informal ties to individuals (e.g., friendships developing between fellow church members). Haines, Hurlbert, and Beggs (1996) found that members of social groups received more support following Hurricane Andrew, but organizational membership did not affect support during the preparation for the disaster. Other researchers have found similar effects of formal social ties on resource access during crises (Adger 2003; Nakagawa and Shaw 2004).

Another distinction in the type of social capital is strong versus weak ties. Strong ties, sometimes referred to as bonding ties, are connections with individuals that are particularly close, usually with close friends or family, and result in tight bonds to a particular group (Adler and Kwon 2002). Strong ties are commonly characterized by homophily in demographic characteristics, attitudes, and available information and resources (McPherson, Smith-Lovin, and Cook 2001; Mouw 2006). The strong connection makes this type of social capital good for providing social support and personal assistance. Well-established in the disaster literature is the importance of family ties, as strong ties, to disaster resilience because family members are commonly the first source of assistance (Drabek and Boggs 1968; Garrison and Sasser 2009; Haines, Hurlbert, and Beggs 1996; Hurlbert, Haines, and Beggs 2000).

In contrast, weak ties describe acquaintances or individuals loosely connected to an individual that may span across social groups (Granovetter 1983). Weak ties are more likely to include diversity in demographics and provide novel information and resources to an individual that can assist individuals in moving up in social space (Granovetter 1973). Weak ties have been shown to provide similar benefits in disaster contexts as they do in daily life— new opportunities and information to access novel resources that assist in long-term recovery (Hawkins and Maurer 2010).

In routine situations, a lack of weak ties among individuals in disadvantaged communities has been shown to affect their access to upward mobility opportunities (e.g., Wilson 1987), while at the same time the available strong ties with other disadvantaged individuals is used to help make ends meet in daily life (e.g., Stack 1974). In disasters, these inequalities in social capital resources are exacerbated, meaning those with less social capital or fewer ties with individuals who can provide the necessary resources often have reduced

resilience. One good example of disaster research distinguishing between types of social capital and the effects of inequality compared disaster outcomes for residents of two communities in New Orleans: the Lower Ninth Ward, a poor, majority African American community and Lakeview, an affluent, majority white community. Elliott, Haney, and Sams-Abiodun (2010) found that while Ninth Ward residents relied on strong ties for informal support during Hurricane Katrina, they received less support overall, including less sheltering assistance from social ties and less contact with neighborhood ties in the year following the event. The authors concluded that a lack of weak social ties to people outside the affected area and ties with individuals with more resources resulted in reduced resilience for disadvantaged residents from the Ninth Ward compared to residents of Lakeview.

Organizational Social Capital

Social capital between individuals is widely researched, but this concept also has applications to organizations. Similar in definition, organizational social capital describes durable social networks and resources available through them. Organizations become the "actors" who have ties with other organizational actors. Ties between organizations can occur through individual employees' relationships with other individuals (e.g., board interlock) (Purdue, Diani, and Lindsay 2004), through collaborative networks that facilitate interaction among organizations (e.g., innovation networks) (Provan, Fish, and Sydow 2007), or through institutionalized arrangements (e.g., Mutual Aid Agreements) (Flora and Flora 2012). These ties can provide resources that benefit the individual organization and produce collective benefits for the whole network (Cohen and Prusak 2001; Lesser 2000). Well-researched benefits from these ties include knowledge creation and sharing, financial resources, and innovations (Provan and Milward 2001; Reagans and McEvily 2003). This social capital also produces greater efficiency

and effectiveness among participating organizations, which is especially important to social service and nongovernmental organizations focused on community outcomes (Provan et al. 2005).

Organizations not involved in disaster management can benefit from using social capital ties to recover from a disaster. For example, Boerfel, Lai, and Chewning (2010) found that organizational leaders called upon their professional network ties for grants and physical resources during the recovery from Hurricane Katrina. This use of social capital affected how quickly they were able to return to operation.

But more frequently, disaster scholars focus on social networks among emergency management organizations, in which the importance of organizational social capital for disaster resilience cannot be overstated. From local to international levels, formal social capital improves disaster response and recovery (Varda et al. 2009). The most important aspect is the existence of this social capital *prior* to a disaster. Regular interaction between emergency service organizations allows for these organizations to plan and practice emergency response more efficiently (Kapucu 2006a; Kapucu 2006b; Kapucu, Arslan, and Collins 2010). A lack of pre-event organizational coordination results in inefficient delivery of disaster services and resources, even when policies and plans for collaboration exist (Averch and Dluhy 1997).

Social capital between emergency management organizations and community organizations provides both assessment of the capacities available in the community and the potential needs of different populations, which if capitalized by emergency management can increase community resilience (Bolin and Stanford 1998; Murphy 2007). For example, a tie between a local emergency management organization and a service provider for individuals with disabilities can provide knowledge, such as the location of these vulnerable individuals for

search-and-rescue. Faith-based organizations that have disaster-related missions often have memorandums of understanding with emergency management organizations to provide food, water, or shelter during disasters (e.g., The Salvation Army provides food). Community organizations that are not specific service providers are also important to disaster response and when tied to emergency management can offer and receive resources for their members. Local churches often respond with resources during disasters for the general community, and when connected through organizational ties to emergency management can provide efficient disaster services (Phillips and Jenkins 2010).

Organizational social capital is at the root of a new philosophy for approaching disaster management and increasing the nation's resilience proposed by FEMA called the "Whole Community Approach." The Whole Community Approach is based on three principles: 1) Understand and meet actual needs of the whole community, 2) Engage and empower all parts of the community, and 3) Strengthen what works well in communities on a daily basis (institutions, assets, and networks). Further, FEMA (2011) identifies the following themes for increasing community disaster resilience, the final four of which focus specifically on social capital: 1) Understand community complexity in non-disaster circumstances, 2) Recognize community capabilities and needs, 3) Foster relationships with community leaders, 4) Build and maintain partnerships among emergency management, community sectors, and organizations, 5) Empower local action through increased social capital and civic activity, and 6) Leverage and strengthen current social infrastructure, networks, and assets.

The Effect of Disaster on Social Capital

The above discussion highlights social capital as a mechanism improving disaster resilience. But, social capital can also be studied as an outcome affected by disasters, and

research has highlighted how disaster can reduce social capital (Varda et al. 2009). Social capital may deteriorate following a disaster because of dislocation of network members, loss of network ties through injury or death, or overwhelmed network resource capacity (Kaniasty and Norris 1993). In other words, disasters can affect both aspects of social capital: the network relationships and the resources available through those relationships.

In relation to social vulnerability, research has shown that a disaster can affect the provision of social capital resources poor individuals need (Domínguez and Watkins 2003; Stack 1975). The disruption of social capital resources can be particularly damaging to these individual's resilience. For example, Tobin-Gurley, Peek, and Loomis (2010) showed this effect for single mothers reliant on family and friends for childcare, housing, and financial assistance. When displaced to Colorado, these women who lost these resources had slower recovery.

Similar concerns relate to organizational social capital. Networks, collaborations, and agreements are tested by disasters and new organizational actors, often from outside the community, are added to the network affecting relationships and resources available (Averch and Dluhy 1997). As Hurlbert et al. argued, social networks "produce 'interpretive contexts' or 'frames' that condition individuals' responses to nonroutine situations through their effects on individuals' routine experiences" (2000: 601). Thus, understanding the role of social capital in resilience requires in-depth knowledge about individuals' and organizations' experiences in their networks and their perspective on those network resources. Understanding social capital for resilience requires understanding not just the amount of social ties, but also the type of tie (formal/informal and strong/weak), the resource itself, and its interaction with the different phases of the disaster. Unfortunately, most "social capital" variables identified in resilience operationalization ignore informal networks, individual-organizational links, and the

"interpretive context" of resource and support mobilization that makes social capital theoretically

and methodological distinct from other community phenomenon (Nakagawa and Shaw 2004;

Ritchie and Gill 2007). Often what researchers describe as social capital is really the "latent"

potential of existing social capital to be actualized into disaster resources or new emergent

collective behavior to develop (Paxton 1999). Collective behavior that emerges following a

disaster is theoretically distinct from the network-based social capital discussed above, and is

better conceptualized as collective efficacy. I now turn to that scholarly literature.

Collective Efficacy and Community Disaster Resilience

Resilience research connects to sociological research on neighborhood- and community-

level interactional mechanisms related to various community outcomes such as crime, health,

risk-taking behavior, and school drop-out rates (Sampson, Morenoff, and Gannon-Rowley 2002).

Interest in explaining all types of positive and negative community-level phenomena by

community-level interactional and associational variables (networks, collective efficacy, norms,

trust, and reciprocity) has grown, and in this dissertation, I focus on collective efficacy as a

mechanism that may affect community disaster resilience. A community that operates well under

normal circumstances is believed to be resilient during crises. In other words, many of the

features of cohesive communities are features that also may foster disaster resilience (FEMA

2011). Further, Masten and Obradovic (2008) noted that collective efficacy is important to

integrating individual and community disaster resilience.

While related to social capital, collective efficacy differs conceptually and empirically

(Lin 1999; Sampson, Morenoff, and Gannon-Rowley 2002). In Bourdieu's network-based social

capital theory, the importance of reciprocity, norms, trust, and unstated obligations is outlined,

but he argues these aspects govern the process of social capital and are not social capital

themselves. Collective efficacy research, in contrast, focuses specifically on these norms, trust, and unstated obligations.

Collective Efficacy Definition

Community and collective action have a long tradition in sociology, with American sociology interest in neighborhood causal processes rising with the Chicago School tradition of Park (1915) and Shaw (1929) and later with Wilson's (1987) discussion of communities facing concentrated poverty (see Sampson 2012 or Bruhn 2005 for further history of this research). This research begins from the assumption that communities are more than aggregates of individuals, and the collective group has properties of its own. From this tradition arose the idea of collective efficacy from Sampson and Raudenbush (1997). They defined collective efficacy as "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (1997: 918). In response to the common finding that structural differences in communities economic and demographic composition (e.g., percent minority or percent poor) correlate with other outcomes (e.g., crime or health), their theory identifies the interactional aspects of a neighborhood or community as important intermediaries between demographics and social outcomes.

Sampson and Raudenbush measured collective efficacy through two separate but correlated sets of Likert scale items. The first, informal social control, used survey questions asking respondents how likely their neighbors would intervene in the following situations: 1) children were skipping school and hanging out on a street corner, 2) children were spray-painting graffiti on a local building, 3) children were showing disrespect to an adult, 4) a fight broke out in front of their house, and 5) the fire station closest to their home was threatened with budget cuts. The second set identified "social cohesion" and asked respondents' level of agreement on

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the following: "people around here are willing to help their neighbors," "this is a close-knit neighborhood," "people in this neighborhood can be trusted," "people in this neighborhood generally don't get along with each other," and "people in this neighborhood do not share the same values" (1997: 919-920). The authors found that taken together as collective efficacy these variables mediated the relationship between concentrated disadvantage and crime rates.

This research is a central piece in the line of research on neighborhood- or community-level effects on negative and positive outcomes that vary across communities. High collective efficacy has been linked to a community's ability to perform collective action that affects infant mortality, delinquency, violence, mental and physical health, involvement in risky behaviors, and also helps communities resolve disputes and take advantage of new opportunities. Furthermore, just as self-efficacy promotes individuals belief in their ability to complete tasks and motivates goal-attainment behavior, perceived collective efficacy motivates groups to commit to their missions, promotes resilience to adversity across a range of settings, and affects performance of group activities (Bandura 2000).

Putnam's famous version of social capital, defined as, "features of social organizations, such as networks, norms, and trust, that facilitate action and cooperation for mutual benefit" (1993: 35) has led many researchers to subsume various community phenomena under the umbrella of social capital. To avoid enlarging the social capital concept beyond its usefulness and its original foci within existing social networks, I incorporate conceptions of social capital in line with Putnam's into this discussion of collective efficacy. Again, this research focuses on the general ability and willingness of individuals within a group or community to work together towards shared goals and generate shared outcomes (Tolbert et al. 2002). The focus is on the "externalities" of interactional processes "that affect the wider community, so that not all the

costs and benefits of social connections accrue to the person making the investment" (Putnam 2000: 20). Thus, the interactional processes highlighted as important for positive community outcomes are commonly seen as a general form of "civic virtue."

Collective efficacy and civic virtue research varies in empirical measurement. Less research uses the survey format of Sampson and Raudenbush (1997) than that which uses correlates of collective efficacy or proxies for the concept proposed by Putnam (2000). A few of these correlates include: tenure in community, homeownership rates, patterns of neighboring, frequency of social interaction, levels of institutional resources, place attachment, and amount of trust (Sampson, Morenoff, and Gannon-Rowley 2002). At the individual-level, collective efficacy measures, such as those in the National Social Capital Benchmark Community Survey from Harvard University (2006), include: attendance to club meetings, serving on organizational boards, social group membership, attendance at public meetings, and volunteer hours. For example, place attachment is correlated with collective efficacy because individuals who are more invested either physically or subjectively are more likely to intervene to improve the community (Brown, Perkins, and Brown 2003; Lewicka 2011).

Place attachment describes has a variety of attributes, from cognitive experience to natural landscape (Hidalgo and Hernandez 2001; Riger and Lavrakas 1981). Thus is has been used to describe both the objective stability of a community, including measures of community tenure, housing turn-over rates, and homeownership rates, and subjective attachment to a locale. Generalized trust in others and in institutions is another common correlate of collective efficacy and describes the expectations one has of others (Fukuyama 1995; Paxton 1999). Trust in this context is commonly measured by Likert-scaled items such as "Most people can be trusted" or "Most people are honest" (Putnam 2000: 291).

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Empirical measures of collective efficacy commonly use proxy variables, such as per capita social and club organizations, per capita nonprofit or volunteer organizations, and voter turn-out at the community level. These variables may indicate a willingness and desire of individuals to intervene to improve community life, but using proxies assumes social interaction that generates collective efficacy from the mere presence of various opportunities for interaction. For example, interaction in institutions such as local libraries, schools, nonprofit organizations is measured by only counting the total number of these institutions located in the community rather than actually measuring participation in these institutions or the capacity of these institutions to foster or direct collective behavior (Sampson, Morenoff, and Gannon-Rowley 2002).

Critiques of the above literature question the ambiguous nature of many measures of collective efficacy and community and the normative stance of much of this research. This is an important distinction between the tradition of Sampson and Raudenbush and Putnam; Putnam's tradition focuses on the perceived decline of collective efficacy in contemporary society (Fukuyama 1995; Paxton 1999). As Sampson (2012) argued, research on community effects needs to hold up to analytic rigor *and* avoid normative and nostalgic assumptions about what is a "good" community. The normative stance leads much of this research to be tautological: e.g., collective efficacy is both a result of trust and a proxy of trust. Portes (1998) argued that the increasing popularity of community-level interactional processes research coincides with a growing lack of specificity in the variables and types of interactional processes of interest. Addressing these theoretical and methodological problems requires understanding the content and context of community associational and interactional processes and distinguishing between different types of social processes (such as social capital versus collective efficacy): "Put differently, the shared content of what passes through social networks matters as much as their

structural configuration—cohesion or efficacy cannot be 'read off' from the simple density of networks" (Sampson 2012: 45).

Collective Efficacy in Disaster Research

As in sociology in general, collective efficacy and action have been a major foci throughout the history of disaster research (Patterson, Weil, and Patel 2010). From the earliest research by Prince (1920), disaster sociologists have studied the planned (e.g., policy, fire, emergency management) and emergent collective action that occurs immediately following a disaster (Quarantelli and Dynes 1977). For example, disaster researchers have dispelled common myths about panic and disorganization following a disaster, instead showing the emergence of collective efficacy in the form of an altruistic community and mutual helping that supports survivors emotionally and physically (Barton 1969; Fischer 2008; Rodríguez, Quarantelli, and Dynes 2006). Disaster resilience research hopes to identify aspects of communities that can effectively predict this collective efficacy in the immediate aftermath of a crisis as well as during long-term recovery, but few researchers have attempted to operationalize collective efficacy for disaster settings.

Benight (2004) is one researcher that has attempted to specify collective efficacy research to disaster situations following the tradition of Sampson and Raudenbush. He defines collective efficacy for disasters as: "the shared belief that a group can effectively meet environmental demands and improve their lives through concerted effort" (2004: 402). He used a set of 12 questions asking respondents to rate their perception of their community's ability to handle the disaster setting:

1. Ability to quickly coordinate community wide action.

2. Ability to organize how specific demands facing the community will be address across the community.

3. Ability for organizational structure to delegate responsibility to the most appropriate individuals to meet crisis demands.

4. Ability of community to identify and respond to individuals in greatest need.

5. Ability of community to recognize the need for outside support.

6. Effective utilization of outside resources (physical labor, money, food) that are offered.

7. Ability to adequately solve conflicts within the community.

8. Ability of community to successfully respond to a future disaster.

9. Ability for me to work effectively with others in the community.

10. Ability of others within the community to work effectively with me.

11. Ability to identify appropriate individuals within the community to lead recovery efforts.

12. Ability of community to deal with emotional responses that are part of disaster.

Benight's research, post-disaster and with a sample size of 66, highlighted how collective efficacy positively affects goal-setting following a disaster. His work also highlighted how disaster reduces perceptions of collective efficacy, especially for those who were more greatly impacted by the disaster. Beyond Benight's work, resilience studies using population data often use proxy variables, such as per capita non-profits, or correlates of collective efficacy. For example, Haines, Hurlbert, and Beggs (1996) found that amount of owner-occupied housing (representing place attachment) and trust in local government affected the amount of social support offered to residents following Hurricane Andrew.

To further understand the conceptualization and operationalization of collective efficacy in disaster resilience research, it is useful to take a detailed look at these components within two

central resilience models, the "community capital" sub-index from Cutter, Burton, and Emrich

(2010) and the "social capital" component of Sherrieb, Norris, and Galea (2010) that builds off

of the Norris et al. (2008) conceptualization. While Sherrieb, Norris, and Galea's model refers to

this as social capital, the variables measured are theoretically related to collective efficacy

moreso than network-based social capital. Table 2.2 shows how the operationalization from these

two authors compare and contrast. Those variables shaded at the top of the table are comparable

across the two indices, and those towards the bottom are distinct. Also identified in the table is

the tradition of colletive efficacy research that each item relates to, either Putnam's more civic-

minded and associational measures or Sampson and Raudenbush's foci on social cohesion and

order. Notice that while both traditions are represented, the ones related to Sampson and

Raudenbush are often proxies that correlate to collective efficacy rather than direct measures of

the phenomenon (e.g., two parent hosueholds, populations born in the state) or outcomes of

collective efficacy (e.g., crime rate).

As shown in Table 2.2, only one community-level measure is present in both indices: rate

of civic organizations. The other four common measures (voter turn-out, migration, religious

adherents, and creative class employment) are population-based measures. These aggregate

measures assume interaction through counts of organizations present or tenure in community as

assumed by migration rates, which is a common critique of collective efficacy research in non-

disaster settings as well. Both authors acknowledge this difficulty in assessing resilience through

aggregate population data. Thus, contextual understanding of collective efficacy is needed to

explore its role in community disaster resilience.

Table 2.2. Operationalization of Collective Efficacy in Community Disaster Resilience Indices

Cutter, Burton, and Emrich 2010	Sherrieb, Norris, and Galea 2010	Collective efficacy tradition
Rate of civic organizations	Rate of civic organizations	Putnam
Voter participation recent federal election	Voter participation recent federal election	Putnam
Net international migration	Net migration rate	Putnam;Sampson and Raudenbush (proxy)
Rate of religious adherents	Rate of religious adherents	Putnam
Percent creative class employment	Percent creative class employment (included as part of economic development sub index)	neither
Rate of social advocacy organizations	--	Putnam
Percent population born in a state that still resides in that state	--	Sampson and Raudenbush (proxy)
--	Rate of arts/sports organizations	Putnam
--	Ratio of two parent households to all households with children	Sampson and Raudenbush (proxy)
--	Crime rate	Sampson and Raudenbush (proxy)

Beyond a lack of conceptual clarity and precise methods of measurement, there is little theoretical discussion of how collective efficacy for daily life relates to collective efficacy in disaster situations. Because disasters disrupt the regular interactional patterns and processes in communities, it is unclear how collective efficacy in non-disaster periods relate to these aspects in the disaster context. As Dynes (2006: 11) summarized, disasters include both normal and extended forms of daily collective behaviors and "create unknown problems, some even life threatening, and provide the opportunity for stronger identification with the community on part of its residents. In effect, then, the obligations of citizenship are enhanced and the focus of activity is clarified." This result of disaster raises the question of how to predict latent disaster-specific collective efficacy from routine collective efficacy measures and other community information. For example, the effect of collective efficacy on neighborhood differences in mortality during the 1995 Chicago Heat Wave was found to be non-statistically significant, while it was significantly related to mortality during the same time period in years prior to the Heat Wave (Browning et al. 2006).This understanding of disasters creating community in all

communities contradicts some of the assumption behind the resilience framework that communities that "work well" during normal situations will work well during disasters.

Similar to the discussion of social capital above, collective efficacy can both *affect* and *be effected by* disaster impacts. This two-way relationship is often overlooked in the resilience literature, and raises questions about what type and amount of stressor will reduce the ability of collective efficacy to promote resilience? For example, technological disasters have been found to detrimentally affect trust, collective efficacy, and mutual aid (Erikson 1976; Picou, Gill, and Cohen 1997; Picou, Marshall, and Gill 2004; Ritchie and Gill 2007). This effect is also being seen in what are termed "na-tech" disasters or events that are both natural and technological, such as Hurricane Katrina as both a hurricane and a failure of the levee system in New Orleans (Picou and Marshall 2007). Thus, research needs to carefully consider the context of disasters, the types of collective efficacy needed, and how to determine whether collective efficacy will be affected (positively and negatively) by the event.

It is my argument that the form of collective efficacy in daily life, and its measurement, may not be applicable to disaster situations when daily routines are disrupted and when new or different collective processes emerge to address disaster needs, but that does not mean it cannot be predicted pre-event. My contention follows Sampson and Raudenbush's maintenance of specificity on collective efficacy outcomes: "And just as individual self-efficacy is situated rather than global (one has self-efficacy relative to a particular task or type of task)… we view neighborhood efficacy as existing relative to the tasks of supervising children and maintaining public order" (1997: 919). To this end, the Community and Regional Resilience Initiative (CARRI) argued that disaster resilience measures should include community engagement in *disaster-specific* endeavors, leadership in *disaster planning*, communication and coordination

across sectors and populations, and ongoing *disaster preparation and training*. These attributes

of community life found important in case studies are not directly included in the above

community disaster resilience measures that focus on presence of resources found to benefit

routine daily collective efficacy not disaster situations. These arguments point to the need for an

understanding of disaster-specific collective efficacy measurement.

Finally, collective efficacy research must account for differences *within* communities.

Different populations within a community will have different access to community resources and

different perceptions of community support and resource provision in daily life and in disaster

settings, as is clearly noted through the social vulnerability to disaster literature (Dyson 2006;

Fussell and Elliott 2009). It is unclear exactly how the collective effiacy items used for resilience

research incorporate the resilience of *all* populations within a community. This issue plagues

most research on community-level effects, which due to data availability and intensity of

research required uses geopolitical jurisdictions to identify communities (Sampson, Morenoff,

and Gannon-Rowley 2002). But, this question leads back to my original interest in disaster

resilience, how can this new concept be used to affect the disaster outcomes for socially

vulnerable populations? Will greater community resilience reduce the impacts of disaster and

hasten recovery for socially vulnerable populations? Or is community resilience another resource

that is not distributed equitably across groups within a community? To understand this question,

I now move to the discussion and debate about social vulnerability's relationship with resilience.

<center>Social Vulnerability and (*or?)* Resilience to Disaster</center>

Social vulnerability to disaster describes "the characteristics of a person or group and

their situation that influence their capacity to anticipate, cope with, resist and recover from the

impact of a natural hazard" (Wisner et al. 2004). This perspective highlights how social relations

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within a given society create differential impacts of disaster for different parts of the population (Cutter, Boruff, and Shirley 2003; Elliott and Pais 2006; Phillips et al. 2010; Shelton and Coleman 2009).

Because distribution of resources in society is related to some demographic traits, social vulnerability also follows demographic patterns. For example, women, minorities, persons with disabilities, persons living in poverty, and the elderly often face increased or differential impacts from a disaster because of social stratification of resources in society (Phillips and Fordham 2010). There have been extensive reviews of vulnerability in terms of the differential effects of disaster based on race (see Fothergill, Maestas, and Darlington 1999), poverty status (see Dash, McCoy, and Herring 2009; Fothergill and Peek 2004), gender (see Enarson 1998; Enarson 2009; Enarson, Fothergill, and Peek 2007), and age (Peek 2008; Peek 2010).

The Conceptualization of Social Vulnerability in Resilience Research

Throughout this chapter, vulnerability has been an undercurrent. For example, socioeconomic resources are important to individual resilience, and the quantity of socially vulnerable persons in a community is included in community disaster resilience measures. Much disaster resilience research posits that social vulnerability is the opposite of resilience (Klein, Nicholls, and Thomalla 2003). Other research subsumes resilience into vulnerability discussions such as Alwang, Siegel, and Jorgensen (2001), who state that vulnerability results from the interaction of resilience (defined as coping capacity) and sensitivity (defined as hazard exposure). In their conceptualization, resilience plus risk results in vulnerability; for example, high resilience and low sensitivity lead to low vulnerability. In these conceptionalizations, a higher prevalence of the socially vulnerable (elderly, children, female-headed households, the poor, etc.) reduces a community's resilience when controlling for the amount of hazard exposure.

Recent conceptualizations of resilience either explicitly or implicitly follow this line of thought and identify reducing social vulnerability as central to improving community disaster resilience (Morrow 2008). As described by the European Union (2012), "One practical tool to increase resilience, especially to recurrent crises like droughts and floods, are the 'seasonal safety net' programmes, targeted at the most vulnerable households, aiming to catch them before they fall into crisis, such as a poor harvest."

While I do agree that addressing the roots of social vulnerability, such as unequal distribution of resources, may improve resilience for those individuals and their community, I do question this muddling of the concepts of vulnerability and resilience by implying they are merely opposites. Some scholars agree arguing that these two concepts are, and should be, discrete entities, in that a system can be vulnerable yet have resilience. In this conception, vulnerability is more about static conditions of risk, whether environmental, social, or economic, which is a distinct phenomenon from resilience as a capacity for adaptation to a specified risk (Manyena 2006). For example, communities with a high aggregate population of socially vulnerable residents may have an unexpected ability to cope with and recover from disasters, such as the poor immigrant Vietnamese community in New Orleans (Li et al. 2010).

Importantly, seeing vulnerability and resilience as distinct phenomenon allows for the role of interactional processes in resilience for counteracting social vulnerability and producing resilience. The interactional processes described in this literature review can affect vulnerability, and also take to task the true question of integrating individual and community resilience. Yet, the question remains as to whether resilience theory and communities can address vulnerability through social capital and collective efficacy (Berke et al. 2010).

Rather than treating resilience as the opposite of vulnerability, a robust conceptualization of resilience must speak to the diversity of relationships and interaction patterns in communities that promote or inhibit adaptation to disasters, as implied and attempted in recent operationalization of disaster resilience. This leads to my ultimate research question of: How does social capital and collective efficacy affect individual and community disaster resilience and how do these aspects of resilience incorporate concerns for those most social vulnerable to disasters?

CHAPTER THREE

METHODS

In this dissertation, I completed case studies of two counties in Florida, Leon and Dixie, using a mixed-methods approach. Case study research provides in-depth descriptions of a process or phenomenon within a bounded system or setting (i.e., a community) (Creswell 2012; Lincoln and Guba 1985). This type of research has a long tradition in disaster research, and offers a way to incorporate traditional vulnerable populations into studies (Phillips 2002). These particular traits made case study methodology a useful fit for my research interests. Case studies are also a method to gather different forms of data; I gathered both qualitative and quantitative data in both counties to generate a more robust picture of social capital and collective efficacy for disaster resilience.

Because understanding the linkages for disaster resilience between individuals and communities was a specific goal of this dissertation, I collected data at both the individual and community levels of analysis. Quantitative survey data and qualitative interview data were gathered at the individual level, paired with qualitative data collected at the community level. The quantitative data from the survey allowed me to compare and contrast measures of these two concepts common for routine situations and in various surveys, such as the National Social Capital Survey (2006), with disaster-specific measures, which to my knowledge has not been completed in previous research. To evaluate my measures of disaster-specific versions of social capital and collective efficacy and generate theoretically innovative insights from emergent data, I supplemented the individual resident surveys with qualitative fieldwork. In-person interviews

with residents and organizational representatives provided for a more naturalistic understanding and detailed information on context and process. The various levels of data gathered highlighted the quality of social capital and collective efficacy rather than just its quantity or aggregate count of resources available, such as through a list of social ties (Marshall and Rossman 2006; Weiss 1994). In this chapter, I describe the selection of case study counties and the data collection conducted in each. Then, I describe my analyses.

Case Study Selection

The main reason I selected Florida for this dissertation is because it is a disaster prone state; their annual hurricane season lasts from June 1 through October 31 each year along with the threat of tornadoes, floods, and wildfires. Besides physical risk, another reason for my selection was the leadership shown by the state in many areas of emergency management. For example, during one fieldwork trip, I attended a day of the state's annual weeklong hurricane response exercise with the Emergency Service Function 15 organizations (ESF-15 volunteers and donations).[1] This exercise involved hundreds of participants from state government, state emergency management, national and state disaster response nonprofits (e.g., the American Red Cross), and federal government advisors. Representatives from other states' emergency management even attended this exercise to learn from Florida experts. Furthermore, the Federal Emergency Management Agency's (FEMA) director at the time of the research, Craig Fugate, had previously worked as Florida's Emergency Management Director. He took skills and tools used in Florida with him into the federal disaster management system. Thus, when one thinks of studying disasters and disaster resilience in the U.S., Florida is an excellent case.

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[1] Emergency Support Functions (ESF) groups disaster organizations into 18 different aspects of emergency response that is common across all types of disasters. They are used at the federal, state, and local levels to coordinate various agencies and organizations which do similar emergency management activities, such as feeding or volunteer management, into one cohesive unit. Each ESF has a primary agency that leads the response. See www.floridadisaster.org for more information.

While Florida as a whole is seen as a leader in disaster management, variation exists between counties and cities within the state in terms of disaster risk, social vulnerability to disaster, emergency response capacity, and potential resilience. Also, variation exists between Florida counties in terms of social capital and collective efficacy. Thus, to represent potentially contrasting versions of resilience and understand the potential variation in my topics of interest across different settings (Berg 2007; Yin 2003), I selected counties to represent divergent cases. I compared population data and Cutter, Burton, and Emrich's (2010) resilience index for different counties to ensure variation. Then, I selected Leon and Dixie Counties because of their variation in population composition and the economic, social, and built environments. They also have similar locations along the Gulf Coast of Florida and similar frequency of and risk to various natural hazards. By using divergent cases on expected resilience and social vulnerability, I am able to represent contrasting situations and provide broader understanding of social capital and collective efficacy for resilience, which makes the study more robust than focusing only on one case (Yin 2003). Table 3.1 shows the characteristics I used to select the cases, as well as summary measures for counties in Florida and across the United States, which show how comparable the selected counties are to others across the state and the country.

As is apparent in Table 3.1, many of Dixie County's characteristics, especially economic features, indicate greater social vulnerability to disaster than Leon County—thus if vulnerability and resilience are perceived as opposites, Dixie County would be predicted as less resilient than Leon County. For example, in terms of economic vulnerability, Dixie County residents have lower median incomes, a greater percent of the population receiving government assistance (Social Security Income, cash assistance, or Food Stamps), fewer high school and college graduates, and a greater percent of the population unemployed than Leon County.

Table 3.1. Demographic Information on Dixie County, Leon County, Florida, and the U.S., 2010

		Dixie	Leon	Florida	U.S.
Population	Population	16,422	275,487	18,801,310	308,745,538
	Population Density (Persons/mi^2)	23.3	413.1	350.6	87.4
	USDA Rural 2003 Rural-Urban Continuum Code (1, urban; 9, rural)	2	6	3*	6*
	Urban Influence Code (1, urban; 12, rural)	2	7	2*	5*
	Total Households	6,316	110,945	20,221*	10,014*
	Mean Household Size	2.37	2.35	2.53	2.59
Economic	Income (2010 ACS 5 Year Estimates) Median Household Income	$32,312	$44,490	$47,661	$51,914
	Households with Social Security Income	48.6%	18.8%	34.6%	27.5%
	Households with Cash Public Assistance	1.8%	1.0%	1.5%	2.5%
	Households with Food Stamp/SNAP Benefits in Past 12 Months	12.1%	8.4%	8.5%	9.3%
	Persons Below Poverty Level	15.5%	22.0%	13.8%	13.8%
	Educational Attainment Persons with High School Degree or Higher	72.6%	90.6%	85.3%	85.0%
	Persons with Bachelor's Degree or Higher	6.2%	41.3%	25.9%	27.9%
	Unemployed Population 16 Years and Over	10.2%	8.4%	12.1%	9.9%
Social	Median Age	45.4	29.6	40.7	37.2
	Persons 65 Years Old or Older	19.3%	9.4%	17.6%	13.3%
	Persons under 18 Years Old	19.1%	19.6%	21.0%	23.7%
	Households with Children (Under 18 Years Old)	21.9%	27.1%	26.0%	29.8%
	Female Householder with Children (Under 18 Years Old)	5.6%	7.8%	7.1%	7.2%
	Persons with a Disability	33.5%[1]	8.9%	12.8%	11.9%
	Race White Alone	88.8%	63.0%	78.5%	78.1%
	Black/African American alone	8.4%	30.3%	16.5%	13.1%
	Asian Alone	0.3%	2.9%	2.6%	5.0%
	Other and Two or More Races	2.5%	3.8%	3.0%	3.8%
	Hispanic or Latino (of any race)	3.1%	5.6%	22.9%	16.7%
Built	Total Housing Units	9,319	124,136	54,374	11,972
	Vacant Housing Units	32.2%	10.6%	17.4%	12.2%
	Mobile or Modular Homes[2]	45.5%	9.1%	9.5%	6.6%
	Renter-occupied Housing Units	17.8%	45.6%	32.6%	33.4%

*Median value for counties in Florida or U.S., as applicable.
[1] 2000 Census data, 2010 unavailable for rural county
[3] 2007-2011 5-year Census estimate
Source: 2010 U.S. Census, 2010 American Community Survey (1 year, 3 year, and 5 year estimates)

As for sociodemographic characteristics, Dixie County also has indicators of greater

social vulnerability, including a higher percentage of the population over the age of 65 or living

with a disability. Leon County has higher racial and ethnic minority populations, which may increase social vulnerability (Fothergill, Maestas, and Darlington 1999). The housing stock also differs between the two counties. Dixie County has a higher vacancy rate and higher percent of owner-occupied homes than Leon County. These two indicators often point to quicker recovery due to speedier restoration of owner-occupied housing and access to open housing in the event of housing stock destruction (Finch, Emrich, and Cutter 2010). Nearly 45 percent of Dixie County's population lives in mobile homes, which greatly increases their vulnerability to disaster impacts.

In addition to these social and economic characteristics, the two counties differ in population and population density, which was another consideration for my selection of cases. Dixie County is more rural and Leon County more urban. The rural-urban issue in disaster research is important but understudied because disaster research commonly focuses on large-scale or large impact events which correlate with heavily populated areas (Cross 2001; Dunlap 2010). Furthermore, because of the fewer overall organizations in rural areas, current resilience indicators—including social capital or collective efficacy measures based on organizational presence—create a divide in predicted resilience based on these categories. Thus, by selecting divergent cases in demographics, population, and in predicted resilience, my research also aims to evaluate the accuracy of this correlation between resilience of urban/rural status.

As shown in Table 3.1, Dixie is a rural county based on the two United States Department of Agriculture indicators of "rural" (USDA 2003). These are the Rural-Urban Continuum, with scores ranging from 1 (urban) to 9 (rural), and the Urban Influence Code, with scores ranging from 1 (urban) to 12 (rural).[2] Although a majority of Florida's 67 counties are urban, these USDA measures tie Dixie County for the fourth most rural county in the state. Dixie

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[2] The USDA Rural-Urban Continuum score is based on population density and proximity to metropolitan areas, whereas the Urban Influence score indicates size of largest city or town and proximity to metro and micro statistical areas. See USDA (2003) for detailed calculations.

County's scores of six on the Rural-Urban Continuum and seven on the Urban Influence Code place it near the median or slightly more rural than all other counties in the U.S. To put this into context, Dixie County contains only two small towns and nine unincorporated communities. The largest town and county seat, Cross City, has a population of 1,728. In comparison, Leon County is home to the state capital of Tallahassee (city population of 181,376), which is also the center of the four-county Tallahassee Metropolitan Statistical Area. Besides Tallahassee, Leon County contains 22 unincorporated communities. Leon County's score of two on both the Rural-Urban Continuum and Urban Influence Code indicate it is an urban area. While it is a smaller urban area in comparison to areas such as Miami-Dade County, only 14 percent of all U.S. counties were ranked more urban than Leon County on these measures (USDA 2003).

Taken all together, these two counties differed in economic and population indicators that are commonly used to measure social vulnerability and resilience to disaster. My selection of these divergent cases allows me to develop a more complete understanding of social capital and collective efficacy in two different county contexts.

Sampling and Data Collection

In each case study county, I collected individual- and community-level data. At the individual level, I used mail surveys and in-person interviews with a subsample of survey participants to gather detailed information about individual social capital networks and the resources respondents believe are available through these networks. The interviews also helped me develop an understanding of how individuals define these relationships in disaster contexts and select which ties to activate for disaster-specific resources (Schensul et al. 1999). Because individual perceptions of community influence individual and group outcomes, as well as collaborative processes (Sampson 2012), I gathered quantitative and qualitative data on

perceptions of collective efficacy and correlates for collective efficacy used by resilience researchers. These were: social cohesion, trust, leadership and organizational response capacity, and place attachment.

At the community-level, I conducted interviews with representatives of community organizations (churches, nonprofits, emergency management agencies, and social service agencies) in the two counties. While I recognize that organizations do not equate directly to community, interviewing organizational representatives provided more than just an understanding of organizational capacity in the community. Specifically, my focus on organizations as representative of the community level for this dissertation contributes to my discussion of community disaster resilience in four ways.

First, there is an outstanding conceptual and methodological question in terms of the actual role of organizations for community disaster resilience. As discussed previously, quantitative counts of organizations are often used as evidence of social capital and/or collective efficacy that affects disaster resilience (Cutter, Burton, and Emrich 2010; Sherrieb, Norris, and Galea 2010). This method implicitly assumes that all organizations are created equal and that quantity of organizations is a proxy for quality of interaction or a mission that affects resilience. These assumptions lead to the same critique scholars target at studies that use organizational counts as a proxy for social capital and collective efficacy in routine situations, namely that studies often ignore interaction, which is the conceptual power of these two concepts (Portes 1998).

Second, organizations provide the physical and conceptual space for community organizing of disaster resilience. Community organizations often contribute to "place" in a variety of ways, much beyond their sometimes limited mission, that affect community-level

outcomes (Thomas and Cross 2007). While a count of organizations in a community cannot provide information on the social interaction therein, talking with organizations can elucidate their capacity for affecting disaster-specific outcomes related to community social capital and collective efficacy. For example, organizations, especially those with disaster missions, affect disaster planning and the management of volunteers for community response to disaster and are often the face of collective processes in a disaster (e.g., when the American Red Cross arrives following an event).

Third, and relatedly, organizations provide resources for disaster resilience and have the capacity to direct the restoration of community infrastructure following a disaster (e.g., electrical system and roads), as well as direct financial donations, and acquire grants for disaster-related projects. Research has shown that these aspects of community resilience are required for individuals to bounce back from a disaster (Abramson et al. 2010). Organizational resilience and their ability to garner resources for community projects affect individual resilience, thus furthering my goal of understanding the integration of individual and community resilience. Finally, my focus on organizations furthers my exploration of the relationship between social vulnerability and resilience. Community social service organizations can provide a formal connection between socially vulnerable individuals and their communities. These organizations offer services that assist individuals with everyday needs and thus can affect vulnerable populations' resilience by providing these services, resources, and more in disaster situations (Zakour and Harrell 2003).

Empirically, my research on organizations adds to the literature on emergency management for social vulnerability. Theoretically, communities' rates of vulnerability affect their estimated resilience, thus focusing on organizational social capital and collective efficacy

moves the discussion beyond aggregate measures of individual vulnerability, such as poverty, educational attainment, and proportion of minority populations, and may inform our understanding of the relationship between these two constructs.

My interviews with organizations in Leon County and Dixie County addressed these goals by providing information on how different types of organizations (emergency management, churches, service, etc.) think about and potentially influence resilience. Specifically, how they are connected to each other, what benefits they perceive from this connection (social capital), and what they perceive as contributing to and constraining disaster-specific collective efficacy in their respective counties.

Individual-level Sampling and Data Collection

I used mailing addresses to sample individual households from Leon and Dixie County for participation in the survey, and if willing, the in-person interview. Survey Sampling International drew the sample according to my specifications. Two separate samples were drawn, one in October 2011 and one in January 2012, to achieve enough responses for analysis and interview participation.

I used different random sampling strategies in the two counties because of their differences in population density. In Leon County, I used a stratified cluster sampling strategy— first selecting Census tracts and then randomly selecting households within the selected tracts. It was expected that households with higher social vulnerability, such as those living in poverty or racial minorities, would respond at a lower rate than other populations. Because I could not determine which addresses contained more or less social vulnerable individuals, I oversampled at the mailing stage from Census tracts with high population of socially vulnerable individuals to

compensate for this concern. This process helped me gather a completed set of surveys that were mostly representative of the County in terms of economic and demographic variation.

The set of sampled Census tracts included six out of the 48 total Census tracts in Leon County. I used eight variables common in economic and demographic analysis of disaster resilience and social vulnerability to incorporate diverse and potentially more or less vulnerable populations: percent poverty, median income, percent racial minority, household size, percent female-headed households, percent renters, percent elderly, and percent children. I gave each tract one point for each of these variables that indicated higher socially vulnerable populations (e.g., low median income or high elderly population) compared to other tracts in the County. I then added their scores. The summed scores ranged from zero and seven. Only two tracts received a seven and six on this scoring process (tracts 10.01 and 19, respectively). I included both these in my sample. Six tracts earned zero or one, indicating low social vulnerability, and I randomly selected two of these tracts (3.01 and 22.04). The final two tracts I selected randomly from those tracts which scored between two and five on my scaling system to include tracts with populations falling in the middle of the social vulnerability spectrum (see Figure 3.1 for map of the sampled Leon County Census tracts and Appendix A for table of Census tract selection criteria). Although this method ignored some areas of the county, I was able to gather a relatively representative sample and include socially vulnerable populations (see Table 3.2. below). Furthermore, by grouping households within tracts, I could better approximate neighborhoods which are important to collective efficacy research.

One hundred households total, spread equally over the six tracts of interest, were drawn in the first sample from Leon County in October 2011. Because of a low response rate, a second sample of 200 households, without replacement of those 100 households from the first sample,

was drawn using the same specifications in January 2012. Across both samples, 50 households

from each of the six tracts were sampled.[3]
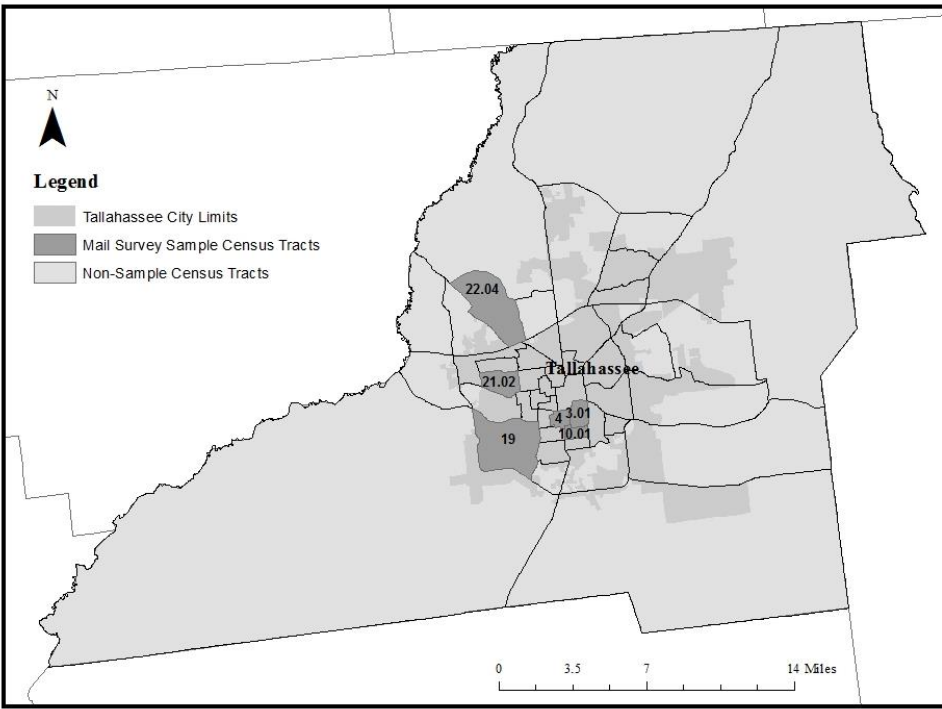
Figure 3.1. Leon County Mail Survey Sampled Census Tracts and Tallahassee Boundaries

Because Dixie County only has two census tracts, 100 households were randomly

selected from the entire county, and then an additional 200 households were randomly selected,

without replacement, to increase the number of returned surveys. Figure 3.2 shows the map of

Dixie County, its Census tracts, and location of the two largest towns. In total, 600 households,

300 in each county, were included in the sample.

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[3] Sampling using equal proportion based on the population within the selected Census tracts could have also been used. Equal number sampling, as I did, simplifies the sampling strategy and also only results in a small increase in the expected standard error.
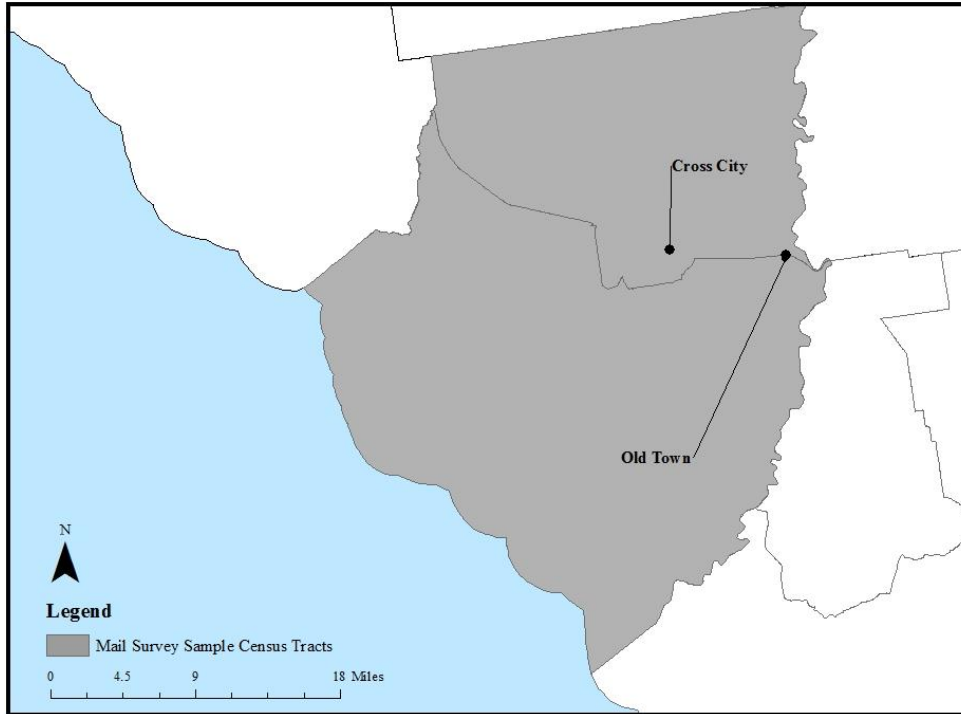
Figure 3.2. Dixie County Mail Survey Sampled Census Tracts and Town Locations

I disseminated the survey to both samples according to the Dillman method (2007), including a pre-notification postcard, the survey, a reminder postcard, and a second survey with $1 token incentive, with two weeks in between each mailing.[4] Survey data collection lasted from November 2011 through June 2012. A total of 71 undeliverable addresses were removed from the samples (26 from the first sample and 45 from the second) leaving 529 valid households (275 from Dixie County and 254 from Leon County). Twenty-two households declined to participate by either emailing or returning the blank survey. Of the 507 remaining households, 138 completed the survey for a response rate of 27 percent overall (27 percent in Dixie County and 25 percent in Leon County) (see Table 3.2 for demographics of survey participants). This response rate is comparable to other similar mail survey research, in which response rates have declined overtime (Kaplowitz, Hadlock, and Levine 2004; Tourangeau 2004).

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[4] Prepaid token incentives of one to five dollars can improve response rates (Dillman 2007).

Table 3.2. Survey Participant Demographics

		Dixie (n =75)	Leon (n =63)	All (n =138)
Population	Mean Household Size	2.39	2.06	2.24
	Median Years Living on Coast	34	29	31
	Median Years Living in County	19	32	24
	Median Number of Hurricanes Experienced	3	2	3
	Relationship			
	Married	52.80%	40.30%	47.00%
	Cohabitating	11.10%	8.10%	9.70%
	Divorced/Widowed	31.90%	27.40%	29.90%
	Single	4.20%	24.20%	13.40%
Economic	Annual Household Income			
	Less than $15,000	23.08%	21.43%	21.77%
	$15,000-30,000	24.62%	14.29%	20.16%
	$30,000-45,000	21.54%	12.50%	19.35%
	$45,000-60,000	9.23%	10.71%	9.68%
	$60,000-75,000	7.69%	10.71%	8.87%
	$75,000-130,000	9.32%	25.00%	16.13%
	Greater than $130,000	3.08%	1.79%	4.03%
	Educational Attainment			
	Persons with High School Degree or Higher	90.40%	93.70%	91.90%
	Persons with Bachelor's Degree or Higher	24.60%	57.10%	39.70%
	Employment			
	Full-time	34.29%	59.32%	45.74%
	Part-time	5.71%	3.39%	4.65%
	Retired	41.43%	23.73%	33.33%
	Not employed	8.57%	10.17%	9.30%
Social	Median Age (in years)	62	57	60
	Persons 65 Years Old or Older	42.50%	25.80%	34.80%
	Disability			
	Respondent Has a Disability	28.40%	9.70%	19.90%
	Another Member of the Household Has a Disability	24.60%	6.20%	16.20%
	Race			
	White Alone	91.70%	67.20%	80.50%
	Black/African American Alone	1.40%	31.10%	15.00%
	Asian Alone	0.00%	0.00%	0.00%
	Other or Two or More Races	7.00%	1.60%	4.60%
	Female	51.40%	54.10%	52.60%
Built	Housing			
	Single Family Home	42.70%	61.30%	51.10%
	Mobile Home	53.30%	1.60%	29.90%
	Other	4.00%	37.10%	18.90%
	Homeowners	90.70%	58.10%	75.90%
	Insurance Coverage			
	Homeowners	53.50%	57.10%	55.20%
	Hurricane	18.30%	23.80%	20.90%
	Flood	15.50%	9.50%	12.70%

Survey respondents are mostly representative of the population of each county, except that respondents are older and more likely to have a person with a disability in the household than the general population (see Table 3.2). Also, importantly for this study, the respondents between the two counties differ on the variables that led to the county case study selection. Specifically, Dixie County respondents are more likely than Leon County respondents to live in a mobile home, have less education, have lower incomes, and were more likely to be White. The final question on the mail survey asked respondents if they would be interested in being interviewed about this topic and offered $10 incentive for interview participation. If interested, respondents included their name, two phone numbers, and email address, if available, on the survey form. Forty-six survey respondents, 27 from Leon County and 19 from Dixie County, indicated interest in being interviewed (35 percent of all survey respondents).

I conducted fieldwork in Leon and Dixie County over four weeks during the spring of 2012: March 4th through 18th and May 14th through 25th. I spent one week during each fieldwork trip in each county. One week prior to arriving in the area, I contacted interviewees to schedule a time and place to meet. I called each interviewee three times and emailed twice. I was unable to reach 17 of the 46 potential interviewees, two individuals were unavailable during the fieldwork periods, two individuals declined to participate upon telephone contact, and three individuals did not show up at the scheduled interview time. The total number of interviewees from the mail survey participants was 22: seven from Dixie County and 15 from Leon County.

During these interviews I attempted to snowball sample individuals within interviewees' social networks and gained three more interviewees: one snowball interviewee and two spouses who joined in the interview. I interviewed a total of nine individuals from Dixie County and 16 individuals from Leon County (see Table 3.3).

Table 3.3. Interviewee Demographics[1]

		Dixie (n = 9)	Leon (n = 16)	All (n = 25)
Population	Mean Household Size	2	2	2
	Relationship			
	Married	45.45%	57.14%	52.00%
	Cohabitating	27.27%	7.14%	16.00%
	Divorced/Widowed	27.27%	28.57%	28.00%
	Single	0.00%	7.14%	4.00%
	Median Years Living on Coast	35	40	35
	Median Years Living in County	22	35	28
	Median Number of Hurricanes Experienced	1	3	2
Economic	Annual Household Income			
	Less than $15,000	44.44%	23.08%	31.82%
	$15,000-30,000	22.22%	15.38%	18.18%
	$30,000-45,000	11.11%	15.38%	13.64%
	$45,000-60,000	0.00%	0.00%	0.00%
	$60,000-75,000	11.11%	7.69%	9.09%
	$75,000-130,000	11.11%	30.77%	22.73%
	Greater than $130,000	0.00%	7.69%	4.55%
	Educational Attainment			
	Persons with High School Degree or Higher	91.91%	76.92%	83.33%
	Persons with Bachelor's Degree or Higher	27.27%	53.85%	41.66%
	Employment			
	Full-time	27.27%	42.86%	36.00%
	Part-time	18.18%	21.43%	20.00%
	Retired	36.36%	28.57%	32.00%
	Not employed	18.18%	7.14%	12.00%
Social	Median Age (in years)	62	59	60
	Persons 65 Years Old or Older	45.45%	14.29%	28.00%
	Disability			
	Respondent Has a Disability	72.73%	7.14%	36.00%
	Another Member of the Household Has a Disability	60.00%	0.00%	22.73%
	Race			
	White Alone	90.91%	64.29%	76.00%
	Black/African American Alone	0.00%	35.71%	20.00%
	Asian Alone	0.00%	0.00%	0.00%
	Other or Two or More Races	9.09%	0.00%	4.00%
	Female	54.55%	57.14%	52.00%
Built	Housing			
	Single Family Home	54.55%	57.14%	56.00%
	Mobile Home	45.45%	0.00%	20.00%
	Other	0.00%	42.86%	24.00%
	Homeowners	90.91%	57.14%	72.00%
	Insurance Coverage			
	Homeowners	50.00%	57.14%	54.17%
	Hurricane	27.27%	42.86%	36.00%
	Flood	9.09%	14.29%	12.00%

[1] The two spouses who joined in the interview did not complete demographic sheets, thus their information, except for gender, was imputed based on their spouses responses.

These participants had similar demographic traits to the full survey sample, except that the Dixie County interview sample had a higher proportion of individuals reporting a disability (73 percent) than the full Dixie County survey participant sample (28 percent) and a higher number of individuals reporting that someone in their household had a disability (60 percent) than the full Dixie County survey participant sample (25 percent).

The interviews ranged from 20 minutes to two hours in length and were conducted at the person's home, work, or a public location such as a restaurant, coffee shop, or library. All interviews were digitally recorded and later transcribed verbatim.

<div align="center">Individual-level Data</div>

I coordinated the data from the surveys and interviews, gathering similar data in different formats to check the validity of survey measures and inform future measurement. Below, I describe the data collected in each method.

Individual-level Survey Data

The individual survey, which was five pages long, included measures of social vulnerability, social capital, perceptions of community, and hurricane experience. Table 3.4 provides a summary of the survey concepts and measures (see Appendix B for the survey instrument). Indicators of social capital included friends and family ties within and outside the area. To coordinate with other disaster resilience research, I asked respondents about their civic participation through organizations and their voting behavior, which are often used as proxies for collective efficacy. I also included direct measures of collective efficacy by Sampson and Raudenbush (1997) for community cohesion and Benight (2004) for disaster-specific collective efficacy. Also, trust and place attachment from Putnam (2001) and Harvard University's Social

Capital Community Benchmark Survey (2006) were included because of their correlation with

collective efficacy.

Table 3.4. Individual Mail Survey Concepts and Measures

Concept	Survey Measures
Social Vulnerability	Economic Income Wealth Employment status Education Insurance coverage Transportation availability
	Social Age Disability Gender Race Language Relationship status Household size
	Built Housing structure Housing ownership
Social Capital	Social Capital Number of family living in community Talking with neighbors Talking with friends and family within and outside community
	Disaster Social Capital Evacuation-specific social networks Disaster social capital name generator (see Table 3.5 below) Disaster social capital order of importance
Collective Efficacy	Direct Measures of Collective Efficacy Perceptions Community Cohesion Index from Sampson and Raudenbush (1997) Disaster Collective Efficacy Index (partial version) from Benight (2004)
	Indirect or Proxy Measures Voting Satisfaction with local government disaster preparations Membership in social organizations Tenure in community Trust
Disaster Experience	Tenure along coast Lifetime experience with hurricanes Lifetime experience with evacuation Lifetime experience with sheltering

To gather further details on the resources available within these social networks, I collected data on "Disaster Social Capital" or the specific resources available from social networks useful in disaster situations. I used two question formats to collect this information. First, I included a social network name generator for respondents to indicate up to eight people that they could ask for assistance during a disaster. Name generators ask the respondent to list the people with whom they have a certain type of relationship (Knoke and Yang 2008: 21). I asked the following for each person listed: relationship, age, location, race, gender, type of disaster assistance which they could provide (financial or nonfinancial), and previous assistance supplied to the interviewee and provided from the interviewee (see Table 3.5 for the name generator). Second, I also used closed-ended survey items for respondents to indicate the types of individuals they would receive or provide financial or nonfinancial assistance during disasters.

Table 3.5. Disaster Social Capital Name Generator from Mail Survey

Person	Relationship (parent, sibling, friend, neighbor, etc.)	Age	Gender	Race	Location (City, State)	Help they could provide (check all that apply)	Have they helped you in past hurricanes?	Have you helped them in past hurricanes?
1			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
2			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
3			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
4			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
5			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
6			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
7			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
8			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No

Individual-level Interview Data

I used the individual interviews to collect data on informal and formal social capital and

perceptions of community collective efficacy (see Appendix C for the interview guide). During

the interviews, I gathered information on social networks, the resources the interviewees believe

to be available through these networks in the event of a future disaster, and resources they

received in past disasters as applicable. Gathering social network data through interviews

allowed me to understand *how* individuals describe certain relationships as important in disaster

contexts and what particular traits of individuals interviewees used to determine whether who

they included (Hurlbert, Haines, and Beggs 2000; Schensul et al. 1999). The individual

interviews also provided data on perceptions of the community that have been theorized in the

resilience literature: trust, community cohesion, ability to respond to traumatic events, capacity

of leaders and organizations in disasters, community engagement, and place attachment.(Kimhi

and Shamai 2004; Puddifoot 2003).

Community-level Sampling and Data Collection

To understand disaster resilience from the community level, I focused on the community

organizational context in Leon and Dixie Counties. I started by gathering secondary data from

county and organization websites, along with media articles from the local and regional

newspapers and television stations to provide a portrait of the community organizational life in

each case study county. I gathered information on the extent of community organizations

operating in each county, the primary economic activities, and general collective activities such

as festivals and events.

From these secondary sources, I identified organizations theoretically important to

disaster resilience to include in the sample (e.g., emergency services, religious organizations and

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churches, social service providers). Within each county's sample of organizations, I only included those that served the local population and had a physical presence (e.g., office or staff) in the county. This process removed regional organizations that may have jurisdictional coverage but were not physically operating within the county on a daily basis and aligned my research with quantitative measures of organizational counts within a county. For example, Dixie County is covered by the American Red Cross Chapter located in Gainesville, but there is no local branch office operating daily within the county.

In Leon County, I identified 51 organizations as potentially important to disaster resilience and over 400 possible churches. Because Dixie County is a rural county with a smaller population, dramatically fewer community organizations operate in the county. Thus, in Dixie County, I identified only six *total* government and nongovernmental organizations and 27 churches as potential organizations to interview.

From these lists of organizations, I used a purposive sampling strategy to select organizations to contact for interviews. I evaluated organizational type, mission, and population(s) served in an attempt to gather representative interviews across these areas and include all theoretically important types of organizations across the different populations within the county. First, I included all organizations directly involved in disaster management: local and county government emergency management organizations, public health agencies, nonprofits that have a disaster mission (such as local chapters of the American Red Cross and the Salvation Army). Table 3.6 provides information on the sample of organizations in each county, method of identification and the interviews completed.

Finally, I categorized Leon County churches and religious organizations by denomination (Catholic, Baptist, Jewish, Muslim, or other Christian). I attempted to interview representatives

with one church (mosque, synagogue, or temple) or other religious organization (e.g., religious

community group) from each of these five religious denominations.

Table 3.6. Community Organizations in Leon and Dixie County Sampled and Interviewed

County	Organization type	Identified from secondary information	Identified from snowball reference	Solicited for interview	Interview completed
Leon County	Government	4	4	8	6
	Disaster mission	4	2	6	4
	Referral organizations	2	0	2	2
	Private	2	1	3	0
	Women/Children	18	0	1	0
	Low-income	12	1	6	4
	Elderly	1	0	1	1
	Disability	3	0	1	1
	Medical	5	0	2	1
	Racial minority	2	0	2	1
	Catholic	5	0	1	1
	Baptist	117	0	3	0
	Jewish	4	0	1	1
	Muslim	3	0	1	0
	Other Christian	293	1	1	1
	Total	**475**	**6**	**39**	**23**
Dixie County	Government	3	1	3	2
	Disaster mission	0	0	-	-
	Referral organizations	0	0	-	-
	Private	1	0	1	0
	Women/Children	1	0	1	0
	Low-income	1	0	1	1
	Elderly	0	0	-	-
	Disability	0	0	-	-
	Medical	0	0	-	-
	Racial minority	0	0	-	-
	Catholic	1	0	1	0
	Baptist	9	0	7	1
	Jewish	0	0	-	-
	Muslim	0	0	-	-
	Other Christian	18	0	8	1
	Total	**34**	**1**	**22**	**5**

After generating the list of potential organizations, I contacted the identified

organizations in each county four times either by email or phone to solicit participation, leaving

telephone messages as available (see Appendix D for recruitment materials). For Leon County

organizations, if after the fourth attempted contact I received no response, I replaced the organization with another organization from its mission group and attempted to gather an interview from them using the same contact protocol. Soliciting interviews in Dixie County was much more difficult, as most organizations and churches did not have staffed offices. Many did not have email or anyone answering the phone regularly and some lacked answering machines to leave my contact information. Thus, if after four attempted contacts I could not reach anyone from the organization, I marked them off my list of potential interviewees.

When contacting the organizations, I targeted my interview request to individuals who worked directly on disaster management, if applicable, or were executive directors or client service directors. These individuals would have the most information on organizational involvement in disaster situations and collaboration with other organizations. If upon contact, another individual was suggested, I contacted them.

During completed interviews in both counties, I also performed snowball sampling to ensure inclusion of all theoretically important organizations (Biernacki and Waldorf 1981). This procedure helped me identify five more organizations in Leon County and one more organizations in Dixie County to potentially interview. I followed the same contact protocol with these organizations to solicit interviews. I continued contacting organizations for interviews until reaching theoretical saturation in the data collected (Glaser and Strauss 1967).

The interviews were semi-structured, allowing me to gather similar information from each participant and simultaneously allow for interviewees to initiate topics of discussion (Weiss 1994). Of the total 28 interviews, 21 were conducted in-person in the organization's business office and the remaining seven were conducted over the phone. The interviews ranged from 15 to 80 minutes in length and were audio recorded for later transcription.

Community-level Data

My data collection included these interviews and observational data collected while in each county. The interview guides varied slightly depending upon whether the organization's mission related directly to disaster management (see Appendix D for the organizational interview guides). The interviews collected data on organizational mission (including targeted populations), role of the organization in disaster management, public involvement in disaster management, collaboration and social network connections to other organizations for disaster management purposes, perception of the disaster specific collective efficacy and resilience capacity, and constraints to resilience for their targeted population and the county population as a whole.

While in the field, I recorded and wrote observations of the counties (Emerson, Fretz, and Shaw 2011). These observations helped me to triangulate the data gathered in the interviews as well as gather first-person experience. My observations included notes on the natural environment (e.g. low-lying areas, coastal areas), the built environment (e.g. style and maintenance of housing, location of housing, industry, shopping, and community organizations, general infrastructure), and the social environment (e.g. parks, business areas, shopping areas, community "third places," and community events) (Oldenburg 2001).

Data Analysis

Survey Data Analysis

I coded and entered the survey data into a spreadsheet and then to Stata 12-IC for analysis. The data was assessed for missing items. The average percent of missing items by observation was 4.0 percent (or two items). The largest amount of missing responses by observation was 52%, in which one respondent failed to complete the final two pages of the

survey. Another two respondents skipped one page of the survey each, resulting in 31% missing

items for each. Excluding these three respondents, the average number of missing items was 3.3

percent. Of the variables, the income and wealth variables had the highest rates nonresponse,

10.1 percent and 8.0 percent, respectively. Missing values were imputed only for the total tie

count, financial tie count, and nonfinancial tie count. These values were matched to the

respondent's answers to the open-ended questions that asked them to indicate the total number of

people they could ask for financial or nonfinancial assistance.

Data analysis and variable creation was the most intensive for the social network name

generator, as I created various measures that describe each individual's disaster social capital

including network composition based on relationship, resource, race, gender, location, and age. I

discuss in detail these analysis procedures in Chapter Four with the corresponding results.

For the collective efficacy information, I performed confirmatory factor analysis on each

separate set of questions: 1) the disaster collective efficacy, 2) social cohesion, and 3) a set of

community capacity questions. I discuss these analysis details more in Chapter Five in

conjunction with the results.

Interview Data Analysis

After the completion of each interview and at the end of each day in the field, I typed

fieldnotes about the interviewee, the interview location, the community area, and other

observational data. I then uploaded the verbatim interview transcripts and the fieldnotes into

Atlas.ti for coding and analysis.

I used a grounded theory approach to analyze this qualitative data. While in the field, I

reviewed my notes from the interviews and fieldnotes and listened to the interviews to determine

if there were areas of data to explore in the remaining interviews. Once I returned from the field,

I began analysis of the verbatim transcripts and fieldnotes. I coded and recoded the data in three stages, keeping the interviews from the organizational representatives and the individual residents separate. First, I performed open coding of basic themes in the data. Then, I examined relationships between these themes, and performed axial coding to connect similar themes together under larger concepts. Finally, I identified core concepts or processes and performed selective coding of the data in relationship to these ideas (Charmaz 2001; Strauss and Corbin 1990). As I worked through the data, I incorporated theoretical memos that highlighted key issues in the data.

CHAPTER FOUR

INDIVIDUAL-LEVEL SOCIAL CAPITAL:

DISASTER-SPECIFIC NETWORKS AND RESOURCES

People require specific resources to prepare for, respond to, and recover from a disaster. Some of these resources are similar to daily life while others are unique. Disaster-specific resources can include things like information on the event during the preparation period (e.g., predicted storm location and/or strength of impact), evacuation transportation or shelter during the immediate response period, help with watching a child or other dependent loved one during the response or recovery period, or financial and nonfinancial assistance with debris removal and rebuilding. Social capital, as the potential or actualized resources available to an individual through his or her social network (Bourdieu 1986), can provide access to these resources and in turn affect disaster resilience by contributing to individuals' ability to bounce back from disaster impacts.

In this chapter, I showcase disaster social capital from the respondents' perspectives by presenting the results of my individual-level analyses of survey and interview data with residents of Dixie and Leon County, Florida. The focus in this chapter arises from my research question on understanding how individual and community disaster resilience relate. As discussed in Chapter Two, there are theoretical and methodological gaps in the disaster resilience research on how individuals connect with their communities, and how this connection affects individual social vulnerability (or resilience) to disaster impacts. Social capital is particularly relevant to these issues, as it describes the interaction between individuals, and between individuals and

organizations. As discussed in Chapter Two, two gaps exist in the disaster resilience research in terms of social capital. First, research often assumes the interaction inherent to social capital from aggregate data (e.g., organization counts, clubs or other social activities counts, etc.). Second, research commonly uses data on social capital in routine situations (e.g., frequency of talking with friends). In this chapter, I use primary data on social networks focused on the disaster-specific resources individuals perceive as being available through these networks.

With this data, I answer several discrete research questions related to the role of social capital in disaster resilience. I begin by asking: How do individuals perceive their informal social capital for disaster situations? My research provides a novel measurement of disaster-specific social capital *prior* to an event and includes an analysis of informal network size, disaster-specific resources available, and network composition by relationship, demographics, and geography. I consider each of these analyses in separate sections below.

Then, I ask: How do measures of disaster social capital relate to measures of social capital during non-disaster situations? I address this question by comparing my disaster-specific results to common measures of what I call "routine social capital." Finally, I move to a discussion of formal social capital and ask: How do residents of Leon and Dixie Counties perceive the ability of membership organizations to assist them during a disaster? I provide an analysis of routine and non-routine formal social capital, which allows me to differentiate between general measures of formal social capital (group membership) and that which is perceived as useful for disaster situations.

The underlying concern with social vulnerability runs throughout the chapter for both informal and formal social capital, as I evaluate each my findings for differences based on financial, gender, and race characteristics of respondents that are commonly found to affect

disaster impacts and outcomes. Further, I maintain the distinction between the two case counties, comparing and contrasting their results to understand variation between more urban and more rural respondents as it may be applicable to disaster resilience research.

<div align="center">Informal Disaster Social Capital: Network Size, Resources, and Composition</div>

Informal disaster social capital describes the personal social networks of family, friends, neighbors, and acquaintances who individuals perceive as being able provide assistance for disaster-related activities (whether during mitigation, preparedness, response, or recovery). My results highlight the following four main findings. First, respondents' disaster-specific social networks are limited in *size*. Many respondents perceived a small number of social capital ties as able to respond to disaster situations, and this result differed based on the resource considered (financial or nonfinancial) and by county. Second, relationships between individuals and geographic location affect the *composition* of disaster social networks. Specifically, family ties and geographically localized ties are prominent in these networks. Third, taken together, these create a complex process of network size, composition, and resource needs and availability that influence the perception of potential social ties to activate in disasters. This process has implications for potential individual resilience, based on the resources an individual has and what they can receive from their networks. Finally, this primary data on disaster social networks is positively correlated, but only weakly, to common measures of routine social capital.

<div align="center">*Informal Disaster Social Capital Network Size*</div>

With his daughter at college in Maryland, Glen and his wife, Jane, live alone in an older, established middle class suburban neighborhood of Tallahassee. Their neighborhood is squeezed between two lower income neighborhoods that show signs of decline, such as graffiti, cars on concrete blocks, and overgrown lawns. Glen has homeowners insurance and he and his wife

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together make upwards of $100,000 a year, which is over double the median income of Leon County. Yet, he nervously wrung his hands as we talked about assistance from friends and family in a disaster. As he explained, he had one local friend with whom he shares reciprocal favors and could provide nonfinancial assistance in a disaster but there is no one that he would call on for financial assistance. Glen elaborated during our interview:

> I guess we've been friends for 20 years or so. He lives pretty close to our house. We've assisted each other on home projects and stuff so it's just a friend who would, you know, we've shared labor back and forth, off and on…. I guess we haven't really had a lot of discussion [about disasters], maybe he wouldn't even be here for that matter…. Uh, well I don't really have somewhere else to turn [for financial assistance]. I suppose I'm kind of on my own so… I don't quite know what else I would do, you know? I mean, I have what I have, and that would carry us as far as it would carry us.

As discussed in Chapter Two, the effect of social capital on disaster outcomes has been studied quantitatively. For example, Kaniasty and Norris (1995) found that individuals with larger social capital networks received more assistance following a disaster. I talked with individuals about those in their social networks who they believed could assist them and conversely that they would assist with disaster needs. Many respondents were similar to Glen: they said that they have few individuals they would ask for disaster assistance, and when divided by type of assistance (financial versus nonfinancial), they asserted they have even fewer social ties to provide financial assistance.

Overall Disaster Social Capital Network Size

To calculate disaster-specific social network size, I used data from the name generator in the survey (see Chapter Three, Table 3.5). In this name generator, respondents could identify up to eight individuals they perceived as able to provide disaster assistance and indicated what type of assistance for each listed individual: financial, nonfinancial, or both. Table 4.1 shows the percentage of survey respondents reporting each size of network ranging from zero to eight

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persons. The overall network identifies the number of all individuals listed in the name generator regardless of type of assistance. Then network sizes are shown based on type of resource: financial and nonfinancial.

Table 4.1. Survey Respondents Disaster Social Capital Network Size by County and Resource

Network Size	Dixie (n=74)			Leon (n=63)			Total (n=137)		
	Financial	Non-financial	Overall network	Financial	Non-financial	Overall network	Financial	Non-financial	Overall network
0	50.00%	18.92%[†††]	13.51%	23.81%**	14.29%	4.76%	37.96%	16.79%[†††]	9.49%
1	16.22%	16.22%	17.57%	22.22%	15.87%	14.29%	18.98%	16.06%	16.06%
2	14.86%	12.16%	13.51%	20.63%	15.87%	19.05%	17.52%	13.87%	15.06%
3	9.46%	13.51%	10.81%	9.52%	17.46%	12.70%	9.49%	15.33%	11.68%
4	2.70%	6.76%	6.76%	7.94%	14.29%	14.29%	5.11%	10.22%	10.22%
5	1.35%	8.11%	10.81%	6.35%	4.76%	9.52%	3.65%	6.57%	10.22%
6	0.00%	5.41%[†]	5.41%	4.76%	6.35%	7.94%	2.19%	5.84%	6.57%
7	0.00%	8.11%[††]	0.00%	1.59%	9.52%[††]	4.76%	0.73%	8.76%[†††]	2.19%
8	5.41%	10.81%	21.62%	3.17%	1.59%*	12.70%	4.38%	6.57%	17.52%
Mean	1.35 (2.01)	3.24 (2.71)	3.62 (2.86)	2.20** (2.12)	2.98 (2.23)	3.78 (2.42)	1.74 (2.10)	3.12 (2.50)	3.69 (2.66)
Mean proportion of overall network	0.34 (0.38)	0.86[†††] (0.27)	--	0.56** (0.38)	0.77[††] (0.32)	--	0.44 (0.39)	0.82[†††] (0.30)	--

* p < 0.05, ** p < 0.01, *** p < 0.001 for differences between counties, indicated in Leon results.
† p < 0.05, †† p < 0.05, ††† p < 0.001 for differences within counties, indicated in non-financial column.

Ten percent of all survey respondents identified zero individuals in their disaster-specific social network. Dixie and Leon Counties varied dramatically, with 14 percent of Dixie County and only five percent of Leon County respondents listing zero people in the disaster network. Dixie County also had a higher percentage of respondents falling into the highest category of eight individuals (22 percent) than Leon County (13 percent). Thus, Dixie County results were more bifurcated with the highest number of respondents reporting very small (zero or one) or large (eight) disaster social capital ties. The mean of network size across the study was three and half individuals, and the median was three individuals. Even as the distribution differed between the counties, the mean network size was similar (mean difference of 0.16 individuals).

The interviews from each county depicted the general pattern of disaster network size and the differences between the counties identified in the survey data. Glen, whose story opened this section, aligned with nearly 20 percent of survey respondents from Leon County who reported one or fewer disaster-specific social ties. More Leon County interviewees named several family members, friends, and neighbors who could provide disaster assistance. For example, Dan, a white middle-class male, described two of his immediate neighbors, his daughter and son-in-law, and three former coworkers; and Raymond, a black, low-income male, talked about his wife, three children, and one neighbor as individuals each one would provide or receive disaster assistance.

In the Dixie County interviews, the bimodal distribution of disaster network size from the surveys was noticeable in the interviews as well. Dixie County, as a rural area, attracted residents because of its isolation, which residents indicated affected the amount of social capital they had. Specifically, all the Dixie County residents expressed enjoyment in their privacy and the isolation of rural life, stating that other people were far enough away to "not bother" them. This privacy, for some, also meant they had few, if any, other persons to identify in their disaster-specific social networks. For example, Marty, a married father of two living in poverty, stated that he would rely on his parents who live a couple miles away for anything needed during a disaster: "My parents, my kids, pretty much is what I think about all the time. If I need something, I talk to my mom and dad, see if they can help. A lot of times I don't ask my mom, I pretty much get myself out of everything." Rick, a married, elderly man taking care of his three-year old grandson, also described a small disaster social capital network, including his mother and one neighbor.

> Maybe my mother. She's about the only one [I would turn to for disaster
> assistance]…. Well, probably the neighbor [too]. We had a power outage last

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week, and I know the one lady next door, the generator never kicked on. I had to have her nephew teach me how to run that thing so I could take care of it. That's about the only people I could think of that would come to me.

At the other end of the spectrum, some Dixie County respondents identified numerous other individuals, family and non-family, as part of their disaster social capital network. Adelle, a 90-year-old lifelong resident of Dixie County, included her four children and their spouses, a weekly housekeeper, two neighbors, and several fellow church members in her disaster social network. She also knew many more people in the community that, "if necessary," could help her. As the following quote from Stan, a middle-aged man who worked for a local construction company, emphasized, these Dixie County residents often had trouble naming each individual person and described the "many" or "a lot of" people that could provide disaster assistance. Their responses indicate the assumed nature of social ties being able to respond to disaster needs, if necessary. He remarked, "Oh, I think we'd be OK, depending on what kind of hit my house took, you know. I live in a log home. So far we've had a lot of high wind, but so far it's held together OK. We've got family and friends all around to help. I wouldn't have a problem findin' shelter with someone close by."

In terms of social capital's ability to affect disaster resilience, the size of the network is one important factor for understanding access to disaster resources. These results indicate that for a substantial minority of survey and interview participants, there are few individuals with which they could exchange disaster-specific resources. What can help explain these differences in network sizes? As I move further through this chapter, I explore how different compositions of disaster networks affect the size reported along with different demographics of the respondent. First, I describe the resources available in these networks and how resource type affects the size of the disaster network.

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Financial and Nonfinancial Disaster Social Capital Network Sizes

The above discussion describes disaster-specific network size irrespective of resource type. To elaborate on the specific type of disaster resource available through social networks, I calculated resource-specific network sizes based on whether each individual listed in the name generator could provide financial and/or nonfinancial assistance. Financial assistance in this study relates to any type of monetary assistance, such as helping with evacuation or rebuilding costs, while nonfinancial assistance relates to other forms of assistance including offering labor or providing emotional support. Previous research on social capital and disaster assistance has often focused on nonfinancial assistance (Haines, Hurlbert, and Beggs 1996) or has ignored the distinction altogether (Kaniasty and Norris 1995).

My results indicate that the type of resource greatly affects whether social ties are perceived as available for disaster assistance. Returning to Table 4.1 above, financial disaster networks were smaller than nonfinancial networks—nonfinancial networks included, on average, one and a half more persons than financial networks. Furthermore, nearly 40 percent of all respondents reported zero individuals that could provide financial assistance, whereas only 17 percent reported the same for nonfinancial assistance. This distinction between financial and nonfinancial disaster social capital appeared in the interviews as well. Debra, a middle-aged woman from Leon County, clearly described the difference between types of resources that social ties could provide:

> One is the financial aspect. We have insurance for the house, always have, always will. Financially, we have the savings that we would need to recover from anything that would happen, and then the immediate support system of friends and family and neighbors for any annoyance kinds of things. You know, the house wrecked is a financial thing. A broken window and water on the carpet is, you know, an annoyance kind of thing that you would call family and friends to assist.

As this quote indicates, social ties were often viewed as having a specific role during disasters; and that role was more likely to be nonfinancial assistance. Interviewees described either a previous disaster event or another routine everyday emergency to explain who would help them in nonfinancial ways, but often had to be explicitly asked about financial assistance. For example, the following quote describes sheltering assistance received by Barbara from Leon County and is a representative example of nonfinancial assistance from social networks: "I went with my friends over to their apartment building and of course we stayed up all night. You can hear the wind blowing and everything like that, and there was maybe about six couples in the apartment 'cause it was a sturdy building." In contrast, many of the same people that could provide nonfinancial assistance were viewed as unable or unsuitable for providing financial assistance. As Sheila from Dixie County described, her local friends and neighbors could assist with debris removal, but could not provide money, "The ones close by don't have two nickels to rub together, so if we needed money, we would probably be calling Chicago, you know, to relatives. If it's assistance moving trees or whatever that are down, I've got friends down here."

Looking within each county, the difference between financial and nonfinancial network sizes is largest for Dixie County respondents, whose nonfinancial networks contained, on average, two more people than their financial networks, compared to only 0.75 more persons in the nonfinancial than the financial networks of Leon County respondents. Further, the variation between counties again was noticeable, especially for financial networks. While half of Dixie County respondents reported zero network ties that could provide financial assistance, only 24 percent of Leon County reported the same. Also, a greater percent of Dixie County respondents reported zero nonfinancial network ties than Leon County respondents (19 percent and 14 percent, respectively). It is in the nonfinancial networks that we again see the nonlinear

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distribution for Dixie County that has a high percentage at each end of the distribution (19 percent reporting zero and 11 percent reporting eight individuals). This result contrasts with the mere 1.6 percent of Leon County respondents who reported eight disaster network ties who could provide nonfinancial assistance.

To further understand the difference between financial and nonfinancial disaster networks, I calculated the proportion of each respondent's entire network that was identified as financial. I performed these additional analyses because financial resources are apparently more difficult to acquire, at least based on my data. As shown in the last row of Table 4.1, a majority of respondents' networks consist of ties that can provide nonfinancial assistance. On average, 82 percent of the overall disaster networks included ties that provide nonfinancial assistance. On the other hand, less than half of these disaster networks consisted of individuals who can provide financial assistance.[5] For example, a respondent reporting four individuals in the name generator is predicted to report only two of those individuals as providing financial assistance. Again, Dixie and Leon County respondents' networks differed with Leon County respondents reporting on average a higher proportion of their total networks could provide financial assistance (Leon County = 0.56, Dixie County = 0.34).

Overall, the type of resource, here divided into financial and nonfinancial, distinguishes how individuals perceive their social capital, and this difference is greatest for Dixie County respondents who have fewer individuals to rely on for financial assistance. This distinction is important for understanding potential individual disaster resilience. Nonfinancial assistance may be more readily available in a disaster. Research has also shown that friends, family and neighbors are often the first responders and come together after a disaster to help remove downed trees or assist with repairing broken windows (Dynes 2005). But if individuals need

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[5] Because individuals could be listed as providing both types of assistance, these proportions sum to more than 1.00.

money to complete a repair or to pay for a stay in a hotel during evacuation, there are fewer individuals that they would or could ask for assistance, with nearly half of my respondents listing no one. This result indicated that individuals will rely on savings or insurance, if they have it, governmental disaster aid or aid from other organizations when available, or go without financial assistance after an event.

As in routine situations, social capital often fills the gaps in other capitals during disaster situations. For example, poor individuals may need to ask for financial assistance from social capital ties more so than others who have financial savings or insurance coverage. Thus, it is important to understand those who do not have these informal ties, and how that interacts with other vulnerabilities to affect their overall resilience. Because of the relatively small number of survey respondents, I analyzed the effect of different indicators of financial capital and social vulnerability (controlling for county) on the odds of reporting at least one financial tie (Table 4.2 shows the odds ratios for each independent variable). Recall that based on survey responses, financial resources are more difficult to access than nonfinancial resources from social capital, and that nearly 40 percent of respondents across the study lacked a social capital tie to provide monetary assistance.

These results indicate that being poor, elderly, disabled, female, or a homeowner reduced the likelihood of a survey respondent reporting a social capital tie to provide financial disaster assistance, even when controlling for the County of the respondent. Except for the result of homeownership, these results correspond to what is expected from social vulnerability perspective (Cutter 1996; Morrow 1999; Phillips and Fordham 2010; Wisner et al. 2004). Being elderly and living with a disability showed the greatest effect on the odds of reporting this social capital resource; elderly respondents were one-third as likely to report a financial tie as non-

elderly respondents and respondents with a disability were half as likely to report a disaster-specific financial network tie. In particular, age and county together explain the most variance in the odds of reporting this social capital resource ($R^2 = 0.11$). These data indicate that these socially vulnerable respondents may face even more difficultly being resilient than others if they cannot access financial resources.

Table 4.2. Odds Ratios of Reporting One or More Disaster-specific Social Capital Financial Ties for Various Indicators of Social Vulnerability, Controlling for County

Variable	County	Poverty	Wealth	Homeowner	Age	Race	Disability	Gender
Leon County	3.20** (1.20)	2.93*** (1.65)	3.39** (1.39)	2.55* (1.03)	2.96** (1.16)	3.33** (1.33)	2.96** (1.16)	3.47*** (1.33)
Below 150% poverty line	--	0.711 (0.289)	--	--	--	--	--	--
Less than $5,000 wealth	--	--	1.05 (0.435)	--	--	--	--	--
Homeowners	--	--	--	0.331* (0.183)	--	--	--	--
Elderly	--	--	--	--	0.312** (0.123)	--	--	--
Minority	--	--	--	--	--	1.01 (0.515)	--	--
Disability	--	--	--	--	--	--	0.502 (0.230)	--
Female	--	--	--	--	--	--	--	0.851 (0.317)
Constant	1.00 (0.232)	1.20 (0.370)	1.02 (0.289)	2.74 (1.54)	1.522 (0.442)	0.918 (0.222)	1.25 (0.337)	1.06 (0.322)
Pseudo R^2	0.056	0.082	0.061	0.085	0.110	0.060	0.072	0.064

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Homeownership, which is commonly viewed as a financial resource, greatly reduced the odds of a respondent reporting a financial network tie. This result could be due to what Debra described above: homeowners may have the insurance available to cover this damage and may not have reported financial network ties. If not though and these respondents simply have fewer ties for financial assistance, this result could leave some homeowners without financial assistance or reliant on disaster aid, which can slow their recovery from disaster.

Furthermore, these results indicate that we cannot assume that individuals will have

social capital resources to fill gaps in financial capital resources. At best there is little difference

between respondents with fewer financial resources and others in the likelihood of having access

to financial resources through social capital (such as those who less than $5,000 in wealth). At

worst, some of these results indicate that the populations lacking financial resources also have

less financial social capital than other populations.

What is not explained in the table is the difference between the two counties respondents.

Depending on the variables in the models, Leon County respondents were 2.5 (Homeowner

model) to 3.5 times (Gender model) as likely to report at least one financial social network tie as

Dixie County residents. Two explanations are available from the interview data. First, as

mentioned previously, Dixie County respondents enjoy their privacy and solitude, thus they keep

smaller social networks and may prefer to protect their financial privacy and not seek social ties

for this type of assistance. Second, Dixie County is a poorer area than Leon County, and

interviewees openly admitted that many in their area lack financial capital to share. Thus, they

may report fewer ties because there are fewer people in their networks that could afford to

provide it.

These survey results indicate social capital may not replace other forms of capital to

contribute to resilience and based on the interviews, the role of social capital for assistance was

often drawn from an understanding of individual financial capacity. Social vulnerability,

especially financial vulnerability, complicates the discussion of social capital and disaster

assistance. Studies have shown that sharing of money and labor among people who live in

poverty occurs frequently in non-disaster situations (e.g., Stack 1975). One would expect that a

similar sharing of money and labor is necessary for these individuals living through a disaster.

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Thus, while disaster social capital may be present for individuals across the spectrum, it is likely

more important to the resilience of lower income individuals. Interviewees with more financial

capital (higher incomes, wealth, and insurance coverage) often explained how they would not

ask family or friends for money, and that their financial reserves should cover all their needs in

this area. For example, Neil, a white man from Leon County whose household income is over

$100,000, described how his neighbors checked on his home during a recent storm. He indicated

that this was all he and his family would require from their social capital networks during

another disaster.

> We didn't need any financial help, but we appreciated them coming over.…We're
> financially fit enough that we probably wouldn't ask for it. And we have a family
> in town that actually would help us but we're not in the position where we would
> have to ask for financial help except maybe in the short term. Even then we
> probably wouldn't do it. But we do have family in town who are wealthier than
> we are, so they actually could afford it if we needed them to.

When discussing social capital resources, interviewees from Leon County like Neil

commonly mentioned that they would not need assistance or referred to the financial assets they

already had in place. Common forms of financial capital that interviewees from Leon County

described included motor homes and second homes for evacuation, homeowners insurance, and

savings accounts. While there were a few Dixie County residents who indicated they had

homeowners insurance or a savings account, no interviewees described second homes. Instead,

some Dixie County interviewees clearly described their lack of homeowners insurance and

financial capital, as Dave expressed, "I think we'd take the chance, I don't know. We've pretty

much cleared the trees away from the house, it's a mobile home, actually. But if it goes, it goes.

There's nothing you can do about it. We'd still have land to live on. See, we can't afford home

insurance here. It's too expensive for a mobile home, for a hurricane." Dave is correct: Getting

homeowners insurance on mobile homes is difficult in Florida, especially if the mobile home is

old. In the area, new single-wide mobile homes were advertised at $15,000, but this amount is out of reach for many Dixie County residents. Nelson described the insurance conundrum that leaves him financially vulnerable to a hurricane impact:

> Now I'm living in a trailer that if the wind hit me, the trailer would be probably close to demolished. I can't buy insurance for it. They want $1,800 a year last time I checked, but this was back in '05. They wanted $1,800 a year on a trailer that I bought for $900. OK? So I have no insurance. I own the trailer, so I can't buy renters' insurance. I don't know where that leaves me, but I'm not going to go out and spend that kind of money. The trailer isn't worth it. So I'd just be wiped out. I'd go wherever they tell me to go….

These interview results imply a potential explanation for the survey results; homophily in economic status among social networks will affect the ability of social capital to contribute to individual disaster resilience. As Barbara described in a previous quote, social networks help higher income individuals with "annoyance things" like water on the carpet, but financial matters are covered by individual insurance and monetary savings. If needed, as Neil indicated, higher income individuals may have other, potentially higher income, individuals they could ask for assistance, after they have expended their own resources. These responses contrast to Sheila's, who recognized that she lived in a very impoverished area and stated that most of her social ties were like her and "didn't have two nickels to rub together."

 As recalled from above, in general, reporting a disaster social network tie for financial assistance was less likely than reporting a tie for nonfinancial assistance. In Table 4.3 below, I report a similar analysis to understand the effects of characteristics of the respondent on reporting nonfinancial ties. Because only 16 percent of all respondents reported zero social ties that could provide nonfinancial assistance, I recoded nonfinancial assistance networks to produce two groups of approximately equal number of respondents. Thus resulted in 46 percent of respondents being categorized as "small" nonfinancial networks (contains zero, one, or two

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individuals) and 54 percent as "large" nonfinancial networks (contains three to eight

individuals).

In general, these results indicate that financial and social traits of respondents are less

able to predict size differences in nonfinancial disaster assistance networks. None of the models

explain more than two percent of the variance in nonfinancial network size. That said, again

indicators of financial and social vulnerability to disaster reduced the likelihood of reporting

larger nonfinancial networks (three to eight people). Specifically, every trait analyzed in the

model, except for being a homeowner, reduced the odds of having a large network; and racial

minorities or having a disability status had the greatest effects of nonfinancial network size (each

were less than half as likely to report a larger network than whites or able-bodied respondents,

respectively).

Table 4.3. Odds Ratios of Reporting a Three to Eight Person Disaster-specific Social Network
Sizes for Nonfinancial Resources by Various Indicators of Social Vulnerability, Controlling for
County

Variable	County	Poverty	Wealth	Homeowner	Age	Race	Disability	Gender
Leon County	1.05 (0.362)	0.920 (0.341)	0.873 (0.234)	1.21 (0.455)	0.929 (0.331)	1.23 (0.457)	0.836 (0.303)	1.03 (0.928)
Below 150% poverty line	--	0.638 (0.241)	--	--	--	--	--	--
Less than $5,000 wealth	--	--	0.634 (0.244)	--	--	--	--	--
Homeowners	--	--	--	1.53 (0.669)	--	--	--	--
Elderly	--	--	--	--	0.589 (0.219)	--	--	--
Minority	--	--	--	--	--	0.460 (0.217)	--	--
Disability	--	--	--	--	--	--	0.413 (0.189)	--
Female	--	--	--	--	--	--	--	0.928 (0.322)
Constant	1.11 (0.259)	1.62 (0.496)	1.46 (0.420)	0.760 (0.350)	1.41 (0.405)	1.16 (0.281)	1.48 (0.403)	1.19 (0.350)
Pseudo R^2	0.0001	0.0086	0.0095	0.0051	0.0111	0.0153	0.0207	0.0003

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Social Composition of Disaster Networks: Family Ties and Homophily

Lynn, who is white and nearly 70 years old, lives in a mobile home in Dixie County with her special needs adult son. In the last major storm in the area, her brother, who lived a mile away, was watching her son. She rushed home from work before the storm made landfall, knowing that her brothers' mobile home lacked a foundation to secure it to the ground. Thus, the three—brother, sister, and special needs adult—stayed together in Lynn's mobile home during the landfall and managed for a week without electricity or water. Since her brother passed away, she told me that she would take her son and evacuate to one of her other two children's homes in future storms. She also described her local church, which she and her son attended every Sunday and the small baskets church members put together for families in need, such as toiletries for those recovering from a hurricane. As she spoke with pride of her church's ability to help disaster survivors in this small manner, I asked her about fellow church members she would turn to for disaster assistance. Lynn replied simply, "Not really, not when I have children. It's family first… the youngest child got a brick home. The boy lives in a fifth wheel trailer with his wife. And that's where I would head, with one of them."

Lynn's discussion brings the attention to composition of disaster social capital based on tie attributes, such as relationship with the respondent, and network members' attributes, such as demographic factors of gender, age, and race. In the disaster literature, some researchers have found that a greater proportion of family members, men, and younger persons among individuals' social networks increase the amount of disaster assistance received (Hurlbert, Haines, and Beggs 2000). By understanding the composition of networks, we can help understand what particular types of social capital ties are perceived to be most important for

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individual disaster resilience. I begin with relationship type then move to demographic composition of these social networks.

Relational Composition of Disaster Networks

Individuals choose among the people in their entire social network of friends, family, coworkers, and acquaintances to provide various resources or complete different tasks (McPherson, Smith-Lovin, and Cook 2001). In the well-known tradition of Granovetter (1973), for example, research shows that *strong ties* (family and close friends) provide different resources, such as emotional support, than compared to *weak ties* (coworkers or acquaintances), who are more likely to provide novel information and opportunities. A few studies post-disaster have also indicated that relationship type may affect the resources available through social networks to assist in disaster situations (Elliott, Haney, and Sams-Abiodun 2010).

To explore the composition of disaster social capital among my study participants, I used the open-ended question that elicited the type of relationship between the respondent and each individual in the name generator. Survey respondents listed a variety of different relationships, which I categorized into four groups: family, friends, neighbors, and other. Figure 4.1 shows each specific relationship listed in the name generator and my categorization of these. Family includes immediate and extended family (parents, children, siblings, grandparents, grandchildren, aunts/uncles, and cousins), as well as family through marriage (in-laws) and blended family members (step-parents and step-siblings). Friends category includes friends and co-workers, neighbors are only those individuals listed as neighbors, and Other includes the three responses that did not fit into the first three categories.

Family	Friends	Neighbors	Other
• parents • step-parents • parent-in-laws • children • step-children • siblings • siblings-in-law • aunts/uncles • cousins • grandparents • grandchildren • spouse	• friends • co-workers • fellow church members	• neighbors	• pastor • landlord • county commisioner

Figure 4.1. Listed Relationships of Disaster Social Network Ties and Their Categories

My analysis of the survey data indicates that family is central to disaster social capital. While friends, neighbors, and others were included in many survey respondents' networks, family members were overwhelmingly identified as a source of potential disaster assistance (see Table 4.4). Recall that ten percent of all survey respondents indicated no disaster social capital. The following results are based off of the respondents who included at least one disaster social capital tie. Of these, over 80 percent included at least one family member in their disaster social networks and 36 percent only included family. On average, 59 percent of all respondents' overall disaster networks were comprised of immediate or extended family members, and this result was similar across the two case study areas. As Meryl, an interviewee from Dixie County, explained, a disaster is "when family have to take care of each other. When they have to step up to the bat. If they would still do it. I don't have a mother or father no more.... My kids, they're in Tennessee, so I'd have to move up there, in with them."

To provide more detail, Table 4.4 also shows the percent of respondents who included at least one of each type of the common relationships reported (parent, sibling, child, extended family, grandchild, grandparent, neighbor, and friend). Parent was the most common familial

relationship type, with 45 percent of all respondents including at least one parent. Sibling and

child were the second and third most common familial relationship included in the disaster

networks. The two case study areas differed in these detailed results. More Leon County

respondents included a parent or sibling in the networks (52 percent each), while 39 percent of

Dixie County respondents included a parent and 33 percent included a sibling.

Table 4.4. Survey Respondents Perceived Disaster Social Capital Network Composition by

Social Relationship

Relationship Type	Dixie (n=54)	Leon (n=58)	Total (n=112)
Percent network: family	Mean 57.66% (36.64)	Mean 59.99% (35.91)	Mean 58.88% (36.11)
100%	36.54%	35.09%	35.78%
75-99%	0.00%	3.51%	1.83%
50-74%	25.00%	24.56%	24.77%
25-29%	21.15%	21.05%	21.10%
< 25%	17.31%	15.79%	16.51%
Percent network: neighbors	Mean 9.49% (19.92)	Mean 5.62% (13.26)	Mean 7.47% (16.80)
100%	3.70%	0.00%	1.82%
75-99%	0.00%	0.00%	0.00%
50-74%	3.70%	5.36%	4.55%
25-29%	12.96%	5.36%	9.09%
< 25%	79.63%	89.29%	84.55%
Percent network: friends	Mean 30.45% (32.77)	Mean 31.19% (33.09)	Mean 30.84% (32.79)
100%	7.41%	7.14%	7.27%
75-99%	5.56%	1.79%	3.64%
50-74%	18.52%	33.93%	26.36%
25-29%	20.37%	7.14%	13.64%
< 25%	48.15%	50.00%	49.09%
Percent networks at least one family member listed	85.19%	85.71%	85.45%
Percent networks containing at least one of the following:			
Parent	38.89%	51.79%	45.45%
Sibling	33.33%	51.79%	42.73%
Child	33.33%	26.79%	30.00%
Extended Family	9.26%	8.93%	9.09%
Grandchild	7.41%	0.00%*	3.64%
Grandparent	0.00%	5.36%	2.73%
Friend	27.78%	19.64%	23.64%
Neighbor	57.41%	55.36%	56.36%

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Interestingly, while in-laws were included in disaster social networks, spouses were not.

In fact, only one individual included a spouse in the name generator even though 47 percent of

respondents were married. This result implies that respondents perceived disaster social capital from the household level, and included only those family, friends, and neighbors who lived outside their home. Interview results support this proposition, as married interviewees commonly used the pronoun "We" when discussing these social networks, as many of the quotes displayed in the chapter indicate. For example, Sheila stated, "…we would call family" referring to herself and her partner and Neil stated, "We didn't need financial assistance…" referring to himself and his wife.

Looking at the variation between case study areas, the difference in family composition between the two counties is likely due to the age difference between respondents from the two counties. Dixie County respondents are, on average, older than Leon County respondents and one would expect that a respondents' position in the life course would affect the type of family available to them. For example, older respondents would be less likely to have a parent still living or would be more likely to be caring for that parent financially and nonfinancially. Conversely, older individuals would be more likely to report children in their disaster networks, in that individuals old enough to have children able to contribute during a disaster setting (i.e., children who are old enough to be employed and have financial resources to assist or old enough to have their own housing to offer during evacuation) would more likely report children in their network.

Table 4.5 below looks into this proposition comparing the inclusion of parents, children, other family, and non-family between Dixie and Leon County respondents based on age category. As expected, age of respondent affected the inclusion of a parent in the network; only 14 percent of Dixie County respondents over 65 and none of the same Leon County respondents included a parent. In comparison, respondents over 65 were more likely to include a child in their

disaster network (38 percent of Dixie County and 43 percent of Leon County). While place in the

life course affected whether parents or children appear in one's disaster network, similar life

course effects were not seen for other ties. The percent of individuals reporting other family or

non-family (neighbors and friends) in the disaster name generator was similar across the age

categories in both counties.

Table 4.5. Tie Relationship Composition in Disaster Social Capital by Respondent Age

Age by County	Parent in network	Child in network	Other family in network	Non-family in network
Dixie (n=54) Age:				
20-34 (n=3)	100.00%	0.00%	100.00%	66.67%
35-49 (n=12)	75.00%	8.33%	50.00%	58.33%
50-64 (n=16)	18.75%	56.25%	25.00%	75.00%
65-93 (n=21)	14.29%	38.10%	42.86%	66.67%
Leon (n=58) Age:				
20-34 (n=12)	83.33%	8.33%	50.00%	66.67%
35-49 (n=9)	88.89%	11.11%	66.67%	66.67%
50-64 (n=20)	50.00%	35.00%	65.00%	45.00%
65-93 (n=14)	0.00%	42.86%	42.86%	71.43%

Moving now to the disaster network ties beside family, neighbors and friends were

commonly included in the disaster networks. Referring to Table 4.2 farther above, approximately

the same percent of respondents in both counties reported at least one neighbor in their disaster

social capital network (57 percent in Dixie County and 55 percent in Leon County). While these

networks commonly included at least one neighbor, neighbors made up small portions of the

total composition of disaster networks. On average, neighbors comprised only seven percent of

all respondents' disaster networks, and ten percent of Dixie County respondents' networks and

six percent of Leon County respondents' networks. To elaborate, a majority of all survey

respondents (85 percent) identified less than a quarter of their network ties as neighbors. In

contrast to neighbors, fewer respondents reported at least one friend in the network (24 percent),

but the average percent of friends in the networks was higher (nearly 30 percent overall and in each county).

When describing the ability of neighbors or friends to help in disasters, interview respondents often recalled routine emergencies as examples that foretold the type of assistance these non-familial ties could provide. These stories included shared car rides, electrical outages and shared generators, and help moving, among others. Savannah, a 25-year-old white woman, lived in an apartment in Leon County with her boyfriend, who worked several days each week out of town. She focused on nearby friends as potential assistance based on previous experiences helping each other with routine emergencies:

> We help friends out with moving all the time and helping patch up walls and painting and stuff like that. So if something happened to their house or if they needed a place to stay with their animal or needed food or something, definitely I would lend a helping hand to those in need and I feel the same, that they would do that for me as well.

Nathan, a white man from Leon County, explained that he would call on friends for assistance if local family were unavailable: "We also know we have friends who are just houses away from us, and I'm sure that they would do the same thing [as family would] and let us sleep over."

Another way to analyze social network composition includes the relative importance of the different types of ties listed. For example, research on family networks often finds that mothers are ranked first and highest in importance (Widmer 2006). For most people in my study, family not only comprised the majority of the networks but was also the first ones they would ask for disaster assistance. I asked respondents to indicate on a typology who they would turn to *first* for financial and nonfinancial disaster assistance (separately); the prominence of family, especially for financial assistance, is clear, as indicated in Table 4.6. Fifty-three percent of respondents indicated that they would turn to family either inside or outside of the community

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first for financial assistance. This result differed by county, with 40 percent of Dixie County

residents and 68 percent of Leon County residents indicating family would be their first tie

selection.

Table 4.6. Disaster Social Networks First Assistance Sought by Survey Respondents

Rank of Tie	Dixie (n=74)		Leon (n=62)		Total (n=136)	
	Financial	Nonfinancial	Financial	Nonfinancial	Financial	Nonfinancial
Family inside community	23.29%	37.14%	29.03%	32.26%	25.93%	34.85%
Family outside community	17.81%	14.29%	38.71%	8.06%	27.41%	11.36%
Friends inside community	5.48%	12.86%	4.84%	30.64%	5.19%	21.21%
Friends outside community	2.74%	1.43%	1.61%	0.00%	2.22%	0.76%
Neighbors	1.37%	10.00%	1.61%	14.52%	1.48%	12.12%
Government	10.96%	1.43%	4.84%	1.61%	8.15%	1.52%
Organization	8.59%	10.00%	1.61%	9.67%	5.92%	9.85%
Would not need financial assistance	17.81%	--	6.45%	--	12.59%	--
No one	9.59%	7.14%	9.68%	1.61%	9.63%	4.55%

When considering nonfinancial assistance, local friends and neighbors increase in

frequency of first tie selection and family inside remains important. Family outside the

community loses some frequency of first tie selection, although they are still relied upon more

than formal social capital of local organizations or government.

Demographic Composition of Disaster Networks

One common question about routine social capital is the demographic network

composition based on demographic characteristics of social ties such as gender, age, and race.

Individuals commonly associate with others who are like them, which is called homophily.

Because information and resources are segregated by demographic characteristics, such as

gender and race, homogenous social networks can contribute to continued stratification

(McPherson, Smith-Lovin, and Cook 2001). Disaster vulnerability research focuses on the stratification of disaster impacts and recovery by different demographic characteristics (see Chapter Two for a review), and thus describing the demographic composition of disaster social capital networks further allows me to understand the role of social capital in disaster resilience. In other words, if individuals identified as vulnerable (e.g., the elderly) have disaster networks comprised mostly of others like them (e.g., also elderly), then social capital may contribute little to their disaster resilience if these ties are less able to provide certain types of assistance.

Below, I characterize the gender composition of disaster networks, then move to age, and conclude with race. Within each demographic category, I describe the overall composition of survey respondents' disaster networks and provide measures of homophily to compare the demographic attribute of the respondents with those listed in their disaster networks. I use the Krackhardt and Stern's E-I Index (1988), which measures homophily in social networks by comparing the number of network ties that are different from the individual to the number of network ties that are the same as the individual on a specific attribute.[6] This Index ranges from +1.00 (complete heterophily, or all ties different from the individual) to -1.00 (complete homophily, or all ties the same as the individual). A score of zero indicates that half of the network is the same as the individual and half is not (e.g., half male and half female). Table 4.7 displays the results of these analyses.

Gender. The proportion of men in a social network may increase the disaster assistance provided, especially nonfinancial assistance such as home repairs (Hurlbert, Haines, and Beggs 2000). On average across all survey respondents, 58 percent of disaster network ties were men. The gender composition was similar in Dixie and Leon Counties. For gender, there was partial

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[6] Krackhardt and Stern's E-I Index (1988) = (External ties - Internal ties) / Total ties.

homophily across the whole study (-0.052). Dixie County respondents' networks showed slightly

more homophily than Leon County.

Table 4.7. Survey Respondents' Perceived Disaster Social Capital Network Composition by

Gender, Race, and Age

Demographic Characteristic	Dixie (n=60)	Leon (n=59)	Total (n=119)
Gender			
Mean percent network: male	56.08 (33.45)	59.26 (29.78)	57.66 (31.59)
Homophily gender	-0.127 (0.664)	0.026 (0.652)	-0.052 (0.660)
Age			
Mean percent network: elderly	20.65 (0.308)	17.53 (0.232)	19.09 (0.271)
Homophily elderly	-0.062 (0.847)	-0.256 (0.748)	-0.161 (0.800)
Race			
Mean percent network: minority	3.31 (14.66)	30.54 (42.62)***	16.57 (34.25)
Homophily minority	-1.00 (0.00)	-1.00 (0.00)	-1.00 (0.00)

$* \ p < 0.05, ** \ p < 0.01, *** \ p < 0.001.$

The slight effect of gender in distinguishing among network ties for disaster assistance

was showcased by the following quote from Sheila, a Dixie County resident. The assumedly

greater physical strength of men was perceived by some interviewees as an asset for completing

physical labor following a disaster like debris removal.

> If it's assistance moving trees or whatever that are down, I've got a friend down
> here. He's the guy that owned this home before us, and he would come up and
> help me. He's about eight miles away. He's pretty strong, I mean the build on this
> guy, he's just-oh man, all muscle!

The greater inclusion of men in disaster assistance networks, as this quote shows, gives

an insight into how individuals may think about the types of assistance required in a disaster.

Particularly, assistance that requires physical strength and traditional male-dominated activities

were common examples described by interviewees. Many interviewees named male relatives or

friends when they described assistance such as clearing trees, patching roofs, or repairing broken

windows. In fact, no interviewee discussed the need for emotional support, childcare, or feeding

and cleaning, which are activities commonly completed by women and often the hidden labor in

disasters (Emmanuel and Enarson 2012; Enarson 2001). These differences in interview descriptions of predicted disaster labor, may explain the slightly higher proportion of men in these networks.

Age. For disaster assistance, younger individuals also may be perceived as more physically able and have the endurance to provide certain types of nonfinancial disaster assistance than older individuals. On the other hand, older individuals may have more access to financial resources to assist during an event. To better understand this dynamic, I categorized respondents' network members into elderly (65 years old and older) and non-elderly (64 years old and younger). On average, 19 percent of respondents' disaster networks are comprised of elderly individuals, with Dixie County respondents reporting slightly higher percent (21 percent) than Leon County (18 percent). In both counties, recall that the respondents are older than the general population (43 percent and 26 percent elderly in Dixie County and Leon County, respectively). These disaster networks show slight homophily (-0.161) in which respondents indicate on average more network members of their similar age category than the opposite age category, and Leon County respondents' networks have higher homophily (-0.256) than Dixie County respondents (-0.062).

Age was discussed by interviewees in a manner similar to how gender was described—younger age implied greater physical ability to complete disaster tasks. For example, Henry and Lily, both over 80 years old, clearly perceived age as important to disaster assistance. Henry, though still working hard repairing tractors and growing a small plot of sugar cane, uses a hearing aid and his wife, who is only a few years younger than he, repeated my interview questions loudly so he could also respond. Recalling a recent routine emergency of a broken water pipe to provide context to her response, Lily discussed social capital resources they

received from their fellow church members, their pastor, and another friend. Notice how she

commented on the age of each as she recounted the story.

> When our water pipes froze, people from the church came to see what they could
> do to help, and we have a friend that lives in Cross City [in Dixie County]. And of
> course they're both younger than what we are. At the time our son was not up
> here, so they both came and did what they could to help us…. I think our son
> would probably be the first person I'd call [now]. If I thought that our damage
> maybe was worse than [near the church], I might call my pastor. He's a young
> man too…. Like I was telling somebody else, most of our church is elderly like
> us. It's kind of like a resort area, and the younger people who are down there are
> usually just down there for a weekend or for a vacation so our church disaster
> relief team is not as active as they were at one time.

Henry and Lily's discussion mirrored the discussion of many interviewees, especially elderly

interviewees, who described the need for younger, more able-bodied individuals to assist in an

emergency or disaster situation.

Race. Moving to composition of disaster networks by race, racial homophily is often the

strongest in routine social networks and in disaster situations (Ajrouch, Antonucci, and Janevic

2001). Residential racial segregation is expected to create racial homophily in disaster networks

because neighbors are likely to be of the same race. Furthermore, the reliance on family

described above also implies that disaster networks will show high levels of racial homophily. In

this study, survey respondents (80 percent) and their disaster networks were majority white (on

average 83 percent). The racial composition differs greatly by case study county with Leon

County respondents reporting, on average, 31 percent of their network members were non-White

and Dixie County only reporting three percent. This difference was expected considering the

greater number of minority respondents in Leon County and the high percentage of family

represented among disaster networks. Yet, racial homophily, the amount of individuals of the

same race as the respondent, was the same and extreme in both counties. This result indicates

that respondents identified individuals of their same race almost exclusively in their disaster

social networks. Because these networks are comprised largely of family members, this result is not surprising.

Only two respondents openly discussed race during our interviews, one was a black man from Leon County and one was a white woman from Dixie County. Both commented that certain rural areas of Florida still remain heavily segregated, the black man stating he would not go to Dixie County like I was, and Sheila, the white woman, mentioned that white supremacists maintained an active presence in Dixie County. During my fieldwork in Dixie County, I noticed racially charged signs and stickers on cars, often referencing President Barack Obama's race. Sheila asked if I noticed these signs and stickers, and then explained how she perceived race affecting disaster assistance networks in Dixie County.

> It's very white, especially around here, and there is one black woman who lives about a mile from me back here. And she's just the loveliest lady, and every time I see her at the gas station I'm like 'hey Mary, how you doing?' One day a car drove up, and this guy got out, older gentleman, and on the back of his car it said "don't re-nigg in 2012." I couldn't believe it. So when he came out the door, I turned to Mary. I'm like 'Give me a hug Mary!' And he just looked at me, oh if looks could kill. So yeah, it's very… the whites would take care of themselves, and the blacks would have to take care of themselves. That's how segregated it is here.

The extreme homophily scores of respondents disaster networks indicates that Shannon may be correct in her assessment of the area. As long as resources in the U.S. are stratified by race and disaster networks are localized (in still segregated communities), or assistance flows mostly through family ties as shown above, the racial homophily of social capital affects its ability to contribute equally to the disaster resilience of all residents of a community.

Geographic Composition of Disaster Networks

The final aspect of disaster social capital composition to analyze is location. Geographic aspects of social capital are important to disaster assistance, and respondents often considered the

location of certain social ties when making decisions in a disaster situation, such as where to go during an evacuation. During disaster situations, individuals in close proximity can provide immediate nonfinancial assistance following an event, checking on the welfare of their local family, friends, and neighbors. But depending on the size and impact of the disaster and the location of social ties, residents may be forced to draw upon ties farther away and outside the impact area of the event. As noted during Hurricane Katrina, local social networks can be overwhelmed in disasters and disrupt the ability of resources to flow through social ties (Fussell 2010). For disaster resilience then, a diversified mix of local and non-local ties are needed for different types of resources in varying degrees of disaster impact.

I assessed the geography of social capital in two ways in the survey: 1) asking for the location of ties listed in the name generator and 2) asking for social ties specifically for evacuation. Survey respondents indicated the city and state for each of their disaster network members, which I categorized by whether these cities were within the same county as the respondent (Dixie or Leon) and within Florida to proximate geographic distance. These results indicate that local family, friends, and neighbors comprise large proportions of survey respondents' disaster social capital networks (Table 4.8). On average, individuals living in the same county comprised half of all survey respondents' disaster networks (51 percent), and Dixie and Leon County have similar results (49 percent and 53 percent, respectively). Also, over 75 percent of these networks consisted of individuals who also live in Florida; Dixie County respondents indicated that a slightly higher percentage of their networks are Floridians (83 percent) than Leon County respondents (76 percent). These results imply the respondents have, on average, network ties to call upon for assistance locally, which is often temporal immediate to

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the disaster impact. Respondents also have more geographically dispersed network ties in case of

a larger event that requires evacuation or overwhelms local social capital resources.

Table 4.8. Geographic Composition of Disaster Social Capital Networks

Network Geography	Dixie (n=45)	Leon (n=59)	Total (n=120)
Mean percent network within County	49.33 (43.49)	53.06 (37.56)	51.16 (40.55)
Mean percent network within Florida	82.89 (35.34)	75.67 (30.40)	78.82 (33.01)
Percent respondents entire network within County	32.79	28.81	30.83
Percent respondents entire network within Florida	73.77	50.84***	62.50

* p < 0.05, ** p < 0.01, *** p < 0.001.

Looking beyond averages though, a sizeable minority of respondents—nearly one-third

of Dixie County respondents and 29 percent of Leon County respondents—included only other

residents of their respective counties in their disaster social capital networks. These individuals

may be rendered more vulnerable if local social capital networks are overwhelmed in larger-

scale disaster events. Also, 74 percent of Dixie County respondents and 51 percent of Leon

County respondents included only other Floridians in their disaster social capital networks,

which is a statistically significant difference between the counties. Leon County borders the state

of Georgia, thus Leon County respondents' disaster network ties that are located outside of

Florida may still live in very close proximity to them.

Evacuation assistance. As alluded to in the results above, location of social capital is

important for understanding the ability of social ties to provide evacuation shelter. Without

friends or family to stay with, evacuees can incur high costs of staying in a hotel or stay in

temporary public shelters that are often perceived as dangerous, uncomfortable, and/or over-

crowded.

Beyond the name generator used for the above results, I asked respondents about their

social capital ties that could provide shelter during an evacuation, the geographic distance to

these evacuation resources, and the length of stay available with these ties. A majority of

respondents from both counties (nearly 80 percent in each) have friends or family that they say

they could stay with during evacuation (Table 4.9). Most interviewees described family or

friends who could shelter them during a storm, such a Neil and Lynn, mentioned above, who

would stay with family who live nearby but outside their home community.

Table 4.9. Evacuation Social Capital Networks and Resources

Evacuation Network	Dixie (n=75)	Leon (n=63)	Total (n=138)
Network evacuation shelter available	81.33	79.37	80.43
Length of stay available	(n=61)	(n=50)	(n=110)
1 week or less	22.95	24.00	23.42
2 weeks to 1 month	18.03	16.00	17.12
More than 1 month	59.02	60.00	59.46

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

As an example, Vera is an African American woman who lives in Tallahassee with her

college-aged son. Her husband works and lives in another state most of the year. She is active in

community organizations, meeting with me for our interview after attending a local political

committee meeting. Yet, she still sees her geographically dispersed family as the main people

she believes would "pull together" during a disaster. While she has other types of social ties

nearby, during a storm and evacuation, she would gather the family and travel to another family

members' home that is farthest from the predicted landfall.

> [During an evacuation,] I know we have to meet somewhere in the middle of
> central Florida, because my mother's in the Fort Myers area, and that's not good.
> They're always being hit [by hurricanes]. But my mom and my sister, and my
> brother live there, so we'd probably do that. That's about it, really. Friends, you
> know, I suppose they would do the same thing, probably. The family, we always
> kind of stick together a little bit.

A majority of survey respondents who have social capital ties that could provide

evacuation shelter perceived that they can stay for more than one month (60 percent of those

with evacuation ties). In the event that someone's home is completely destroyed and evacuation

turns into longer-term displacement, having the place to stay for a long period of time in one

place promotes resilience. Research on long-term displacement in the U.S. indicates that individuals displaced from disasters change residences more frequently than people who move voluntarily, and each additional move reduces the well-being of evacuees by affecting their ability to establish employment or schooling (Morrow-Jones and Morrow-Jones 1991; Weber and Peek 2012). In the interviews, the ability to stay with family during evacuation led interviewees to be quite sure they could stay for longer periods of time if necessary. As Meryl, quoted above, described, he could move permanently to Tennessee to stay with one of his children if there was no way for him to remain in Dixie County.

But uncertainty prevails for some individuals about where they would stay during an evacuation, as the following quote from a young woman in Tallahassee indicated:

> I would not know where to go if we were to evacuate here. My boyfriend has grandparents who live 45 minutes north of here in Georgia. If we had to evacuate, I would probably try to go there first instead of like a gym or high school or something like that. I don't know exactly what the evacuation plan is, or like where you take your pets or anything. Not a clue.

While a large majority of survey respondents had social networks to provide evacuation shelter, nearly one-fifth of survey respondents without these network ties will be staying in a motel or public shelter during an evacuation, as the young woman above may do, or sheltering in place, potentially in harm's way. Taken together, those survey respondents without evacuation networks and those unable to stay for more than one month comprised over half of the survey respondents (52 percent each county). For events that create large-scale destruction, long-term temporary housing will be needed for many individuals.

Specifically, in relation to the distance of evacuation network ties, a majority of respondents in both study counties will be traveling over 60 miles to reach their social network evacuation shelter (Table 4.10). As described by Diana, an interviewee from Dixie County,

respondents could often identify family or friends outside the area, if needed, to evacuate to, "If I had to evacuate, I've got relatives all over. My dad's in Phoenix, and my sister's in Virginia, my mom's in Pennsylvania, so I have a couple places to go." Leon County respondents were more likely to travel farther than Dixie County respondents to reach these evacuation resources. Sixty-three percent of Leon County respondents and 48 percent of Dixie County respondents will be traveling over 100 miles to shelter with friends or family. In contrast, nearly 20 percent and only eight percent of Dixie and Leon County respondents, respectively, will travel less than 30 miles to a social tie that can provide evacuation shelter, which at the farthest is a bordering county. This result indicates that this minority of respondents, along with the almost 20 percent who do not have social capital to provide evacuation shelter, may be searching for public shelters or paid accommodations in the event of a large-scale disaster that affects several counties in the region.

Table 4.10. Evacuation Social Capital Networks Distance and Transportation

Evacuation Network	Dixie (n=61)	Leon (n=50)	Total (n=110)
Distance to network			
Less than 30 miles	19.67%	8.16%	14.55%
30-60 miles	19.67%	20.41%	20.00%
61-100 miles	13.11%	8.16%	10.91%
More than 100 miles	47.54%	63.27%	54.55%
Vehicles available			
0	4.11%	11.67%	7.52%
1	31.51%	36.67%	33.83%
2	31.51%	30.00%	30.83%
3	21.92%	13.33%	18.05%
4 or more	10.96%	8.33%	9.77%

Understanding the implications of social capital and evacuation resources requires an investigation of vulnerability factors that affect whether individuals will be *able* to access these social capital resources. In this discussion, it is important to consider the financial and physical resources necessary for evacuating, such as transportation. Table 4.10 includes the descriptive information of transportation resources for respondents. As noted, most respondents (near 90 percent in each county) had access to at least one working vehicle. Social vulnerability analysis

asks us to look in detail at the minority, in this case, that would be unable to transport themselves. Of the ten survey respondents who indicated they did not have access to a vehicle, four also indicated they did not have friends or family to evacuate to and six indicated they did have access to evacuation shelter. These six then would need assistance, possibly from their social network, to even access these evacuation shelter resources.

Along with access to transportation, access to financial resources to pay for gas and other incidentals during evacuation affects resilience and the ability to access social capital evacuation networks. Because of the small number of respondents who indicated they lacked social capital evacuation resources, I provide comparisons of proportions based on poverty status in Table 4.11. In my sample, survey respondents living at or below 150 percent the poverty line were more likely to lack social capital resources that could provide evacuation shelter than other respondents (23 percent to 13 percent, respectively). Because of their poverty status, this group may have more difficulty affording shelter in a hotel and be forced to stay in publically available evacuation shelters.

Table 4.11. Evacuation Social Capital by Poverty Status

Evacuation Network	No, not living in poverty (n= 75)	Yes, living at or below 150% poverty level (n= 48)
Lack social capital for evacuation shelter	13.33%	22.92%
Distance to social capital evacuation shelter	(n=65)	(n=37)
Less than 30 miles	6.25%	29.73%
30-60 miles	23.44%	13.51%
61-100 miles	12.50%	10.81%
More than 100 miles	57.81%	45.95%
Length of stay available		
1 week or less	12.31%	35.14%
2 weeks to 1 month	18.46%	18.92%
More than 1 month	69.23%	45.95%

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

For those who do have social capital evacuation resources, respondents living at or below 150 percent the poverty line were more likely to report their evacuation network tie who lived

within 30 miles of them (30 percent compared to six percent of non-poor). This result indicates that poor individuals may be more likely to encounter overwhelmed social networks in larger disasters. At the other end of the spectrum, for the 46 percent of poor respondents who indicated they will travel over 100 miles to these social capital evacuation resources, it will be more difficult to afford this distance of travel. For example, Diana, quoted above, has family in Virginia, Pennsylvania, and Arizona that she considered as potential evacuation shelter. Diana, though, is currently unemployed with a slowly debilitating physical illness. As she waits to hear about her application for federal aid, a friend pays her to do simple jobs around her home and also provides her free dinner most nights. She did not explain how she would afford the long-distance travel if necessary.

As stated throughout, evacuation can be expensive requiring access to transportation and money for gas and hotel. Individuals lacking these financial resources will need more social capital assistance, whereas those who have financial resources will have the ability to travel farther and find and pay for accommodations independently. Thus again, social capital resources may not have similar effects for successful evacuation, in this case, and resilience capacity overall. For example, Kyle, a higher income interviewee from Tallahassee, indicated that he would evacuate to his second home, "When you were asking about people outside the area [to provide assistance], because I have a second home in Atlanta, I have the ability to escape there if I need to."

Disaster Social Capital: Integrating Resources, Relationships, and Geography

Taken together the results above imply an interaction between the type of assistance, relationship, and proximity in disaster social capital. The interviews illuminated this process, as they discussed how they determined who they would ask for different types of disaster

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assistance. Interviewees differentiated both by whether the tie was local or not, whether they were family or not, and each of these affected the type of assistance sought. Speaking first of nonfinancial assistance that did not involve evacuation, such as debris removal or borrowing supplies, location, specifically being geographically local, is a reason to ask local family, neighbors, or friends for nonfinancial assistance. For example, Sarah who lived an hour away from her family, included local friends on her survey. When I asked her why she would turn to friends first, she said, "My family is so far away and I just would just not want to bother them. And my friends are more local here and they would be more willing to help I believe, than family." Kyle included only family on the survey, but upon being interviewed, described how he would help local friends with nonfinancial assistance, if needed.

> Close friends, and those sort of people. Those are the ones I'm talking about, that I would want to check on and who I would gladly help if they needed help like getting a tarp over their roof or getting my chainsaw out and helping them cut debris off of the house in some fashion or form, those sort of things.

Social capital, as it refers to the activation of specific social ties, calls forth mostly those individuals with which respondents have specified relationships. For Kyle, these neighbors were not necessarily people he already knew personally or would include in a social network of friends and family, but he would offer any nonfinancial disaster assistance he could provide when needed. This result, not uncommon among interviewees, highlights how qualitative and quantitative data offered different types of information about social capital and implies a distinction between social capital and collective efficacy. The role of neighborhood and neighbors as a place for emergent disaster assistance, such as what Kyle described, is explored in Chapter Five when I focus on disaster collective efficacy.

For the most part, though, family dominated interview discussion and was distinguished from friends in terms of whether they would be asked for financial assistance. Family members,

whether local or long distance, were perceived as able to provide financial or longer-term evacuation assistance. As a representative example, Erica, a new resident of Tallahassee preparing for her first ever hurricane season, described how she noticed that others in her church seemed to be very generous people but that she and her husband would call family back home in Iowa if they needed money.

> There are some people in our church, we know that they would have the money to help. We've been to people's houses, to know they would have an extra room, if we were to call and need to stay somewhere. Then in that church atmosphere, we know that some of them are pretty giving. They probably wouldn't say no, but definitely nothing that I've ever spoken to them about. Um, if it was any kind of monetary help that we were seeking, we would go to our parents first as opposed to someone who was local.

This data indicates that disaster social capital is heavily dependent upon family ties, and thus is more the "strength of strong ties." Immediate family, extended family, and family through legal changes (in-laws, divorce, marriage) are all perceived as the main members of disaster social capital networks. This result coincides with research on the role of family in non-disaster emergency situations, especially financial trouble (Chua, Madej, and Wellman 2011; Longino Jr. and Lipman 1981). For example, family is often who individuals will turn to for assistance that is more burdensome for the individual providing assistance, such as financial loans, etc. (Furstenberg and Kaplan 2004). Family, then, is central to understanding social capital for individual resilience, which also implies the concern for those individuals in a community with few family ties.

The process of disaster-specific social capital is depicted in Figure 4.2. The type of assistance is on the right and the relationship of the network tie is on the left, as available to a household. The types of assistance are in order of magnitude of impact for each household; for small disasters that have small impacts for the household, only the Level One may be activated

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(neighbors and local family and friends). This level resembles that of assistance with routine emergencies, such as a burst water pipe or a car ride to work. Level Two includes larger impacts for the household that result in the need for evacuation or a place to stay while the home is repaired. At this level, assistance includes family or friends who live outside the area. Level Three involves impacts that are beyond the financial means of the household, and financial assistance is sought from local or extra local family. As I noted above, though, this level is dependent upon the amount of impact and financial vulnerability of the household. Thus, a much larger disaster would be required to push higher income and wealthy individuals into this category as the impacts overwhelm their savings or insurance available. In contrast, lower income individuals may face the need for financial assistance for small disasters, and even *prior* to requiring evacuation assistance as in Level Two.

Level One:
Non-financial
Local

- Neighbors
- Family - local
- Friends - local

Level Two:
Non-financial
Extra-local

- Family - extralocal
- Friends - extralocal

Level Three:
Financial

- Family - local or extralocal
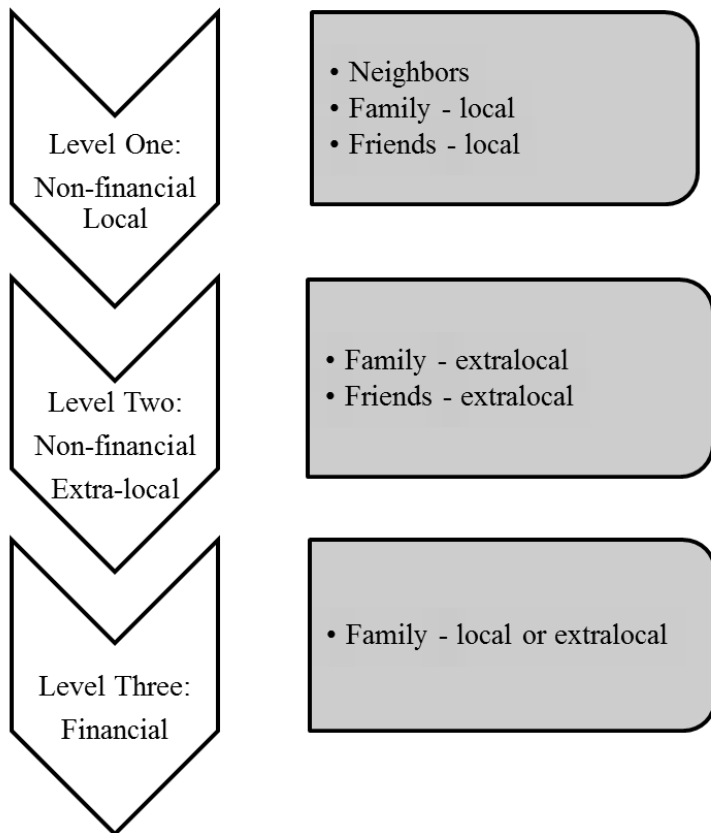
Figure 4.2. The Process of Disaster Social Capital: Resources, Relationships, and Location

Routine and Disaster Social Capital

The name generator offers interesting and novel information about individuals'

perception of the latent potential of their social networks for disaster situations. But name

generators are intensive methods of measurement. When hoping to compare social capital and

disaster resilience across many geographic areas, often proxies or other aggregate estimates of

social capital (e.g., organizational membership) or information from national surveys (e.g.,

frequency talking with friends) are substituted. Thus, the question becomes how the results from

this disaster-specific name generator differ from measures of routine social capital (i.e., social

capital measures that are unrelated to disaster situations) that are more readily attained and used

more often in disaster resilience studies. To investigate this question, I asked respondents to

indicate the frequency that they talk with their neighbors, their local friends and family, and their

long distance friends and family. These questions are common on national studies of social

capital, such as The Social Capital Survey from Harvard University (2006). Each question used a

Likert scale of response categories: not at all, once a month, a few times a month, a few times a

week, or everyday.

My results show little correlation between disaster-specific network sizes and these

common measures of routine social capital, which highlights an important contribution of this

dissertation to measuring disaster social capital. Table 4.12 shows the Gamma statistic (used for

relating ordinal-level variables) of these three common social capital questions along with a

question asking the number of family members living in the community and the three different

disaster social capital network sizes (entire network, financial network, and nonfinancial

network). Means and standard deviations are listed on the diagonal. All three disaster social

capital network sizes are positively correlated with the measures of routine social capital as expected, but the correlations are small (Gamma<0.25 across all pairs).

Table 4.12. Gamma Statistic of Routine Social Capital Measures and Disaster Social Capital Network Sizes with Means and Standard Deviations on Diagonal

	Entire disaster network size (0-8)	Financial network size (0-8)	Nonfinancial network size (0-8)	Local family[1] (1-5)	Talk with neighbors (1-5)	Talk with friends and family in community (1-5)	Talk with friends and family outside community (1-5)
Entire disaster network size	3.69 (2.66)						
Financial network size	0.646***	1.74 (2.10)					
Nonfinancial network size	0.927***	0.469***	3.12 (2.50)				
Local family	0.045	0.096	0.015	1.40 (1.51)			
Talk with neighbors	0.095	0.048	0.051	0.086	3.39 (1.26)		
Talk with friends and family in community	0.219**	0.254**	0.227*	0.285**	0.157	4.09 (1.11)	
Talk with friends and family outside community	0.159	0.180	0.150	-0.184	0.139	0.272**	3.64 (0.945)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
[1] Transformed into ordinal variable from nominal, categories are 0, 1-2, 3-4, 5-12, 12-100

Based on the analysis of the disaster network composition in this chapter, one would expect that talking with friends and family (whether inside or outside) the community would strongly correlate with disaster social capital network sizes. While statistically significant, the correlation of 0.25 is less than expected. But this result could be explained by returning to the interview data in which some respondents indicated that the family members they would call

upon were not necessarily those that they talk with regularly. For example, Neil indicated that if necessary he could has a brother in town for assistance, though he would not want to since they were the "type of people" who would remember that he needed assistance. Other interviewees did not report as potentially negative encounters with their social networks for assistance, but did indicate that they would reach out to those family members with whom they lack regular contact as necessary. Thus, these general measures of social capital may not capture the potential social capital for disaster situations. It is possible that more specific measures of routine social capital, such as "discussion" network sizes used by McPherson, Smith-Lovin, and Brashears (2006), would show more correlation with these disaster social capital measures.

<center>Formal Disaster Social Capital: Household Organizational Involvement</center>

Thus far, this chapter has focused on informal disaster social capital networks, or the ties between friends, family, or acquaintances. Formal social capital is a distinct form of social capital measured in this study. It offers one way to explicitly link individuals to their communities by knitting people together within and through organizations. Ties to formal organizations, such as churches, nonprofits, government agencies, and employment, is conceptually distinct from informal social capital although it can supply resources to supplement informal social capital as well as foster informal social networks (Haines, Hurlbert, and Beggs 1996; Lipman and Longino 1982).

Social capital for disaster resilience research, as discussed in Chapter Two, is often operationalized by tallying the presence of organizations in a community or measuring organizational membership rates. No research, at least that I have found, specifically asks individuals how they perceive the ability of the organizations they are involved in to assist them during a disaster, as I did. I asked survey respondents to indicate the number of organizations

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people in their households are members of, as well as how many of those organizations they feel could provide assistance to them during a disaster. Thirty percent of survey respondents across the survey and within each county indicated they do not belong to any local organizations, while another near 30 percent belong to just one organization (Table 4.13). This sizeable minority of individuals who lack these ties raises questions about using quantity of organizational presence as an indicator of social capital for disaster resilience. For example, Michael from Dixie County indicated in our interview that he and his immediate family were not members of a church or other social organization, responding instead about what he thought was generally available in the County, "I think there's like a tri-county outreach program. I didn't really keep up with that, I am too busy working." Similarly, Nathan from Leon County indicated that he and his wife had no formal social capital, "No, I wouldn't say we are formal members of organizations that would be able to help on something like [a disaster]." Interviewees who did have formal social capital, often had ties with one local church, like Meryl from Dixie County described, "I go to church, and that's about it. I don't help FEMA or nothing. I donate clothes to the Christian Service sometimes. Other than that, that's about all I do."

Table 4.13. Formal Routine Social Capital, Household Organizational Involvement by County and Overall

Number of organizations that household belongs	Dixie (n=73)	Leon (n=60)	Total (n=133)
0	30.14%	30.00%	30.08%
1	32.88%	28.33%	30.83%
2	6.85%	23.33%	14.29%
3	13.70%	1.67%	8.27%
4	8.22%	8.33%	8.27%
5-10	8.22%	8.33%	8.27%

* p < 0.05, ** p < 0.01, *** p < 0.001.

Survey respondents who had formal social capital also indicated how many of these organizations could offer disaster assistance. Half of Leon County respondents and 36 percent of

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Dixie County respondents felt that none of the organizations they were involved with could provide disaster assistance. Furthermore, compared to all the organizations that they were members of, on average, only 48 percent of the organizations that Leon County respondents identified and 61 percent of the organizations Dixie County respondents identified were perceived as able to provide disaster assistance. This result indicates that only 42 respondents of the total 133 survey respondents have at least one organization that they feel would provide assistance during a disaster.

Table 4.14. Formal Disaster Social Capital, Household Organizational Involvement by County and Overall

Number of organizations that could assist in disaster	Dixie (n=53)	Leon (n=50)	Total (n=103)
0	35.85%	50.00%	42.72%
1	35.85%	30.00%	33.01%
2	16.98%	14.00%	15.53%
3	5.66%	2.00%	3.88%
4	3.77%	0.00%	1.94%
5-10	1.89%	4.00%	1.91%
Mean proportion of disaster assistance of all org involvement (SD)	0.61 (0.44)	0.48 (0.44)	0.55 (0.44)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Looking at the qualitative data, this type of involvement is often tenuously assumed and many respondents feel that this would be a last option, especially when disaster-specific organizations, such as the American Red Cross, are expected to respond. Only one respondent, a disabled man living in a Housing and Urban Development (HUD) planned community, had ties specifically to an organization with a disaster mission. Even with that direct formal tie, he felt that informal social capital was still more important. He responded, "I feel that I could call on [the organization], but I don't know how far down the priority list that they would be, I would probably call immediately the kids here, the kids out there, the estranged wife, brother to sister."

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As represented in the following quote from Vera, a Leon County respondent who was involved with numerous social and political organizations, respondents were often unsure about the ability of their social organizations to provide disaster assistance but guessed that they could if needed:

> I suppose if we put an SOS out, I'm sure we'd get a response back from some of the groups that I'm a member of, or anybody, really, in need. We'd just announce it at a meeting, "So-and-so needs this and that, is there anybody who has anything available to help?" Yeah, I think we're that kind of group, maybe. I think so. Yeah, I think they do, because, you know, we have our senior groups and there's always activities going on, so there's that unit, and then they have-just like with churches and different-so yeah, I think so. I think if you're not a member of something, somehow you'll fall in one of those organizations will grab you. If you're not a member of a church and your church family doesn't grab you, then there is another.

As the above quote implies, the role of organizations in disaster resilience may not be linked solely to formal social capital ties to individual members, but is assumed to be latent, with organizations responding to anyone in need. As this quote points out, there is a fine, but important, distinction between what is social capital (in terms of durable networks with specific resources available through them) and what is collective efficacy (or the capacity to collectively work together for a common goal). I explore this assumption about organizations' perceived role in disasters along with more detail on the role of neighbors and neighborhoods as places for emergent collection action in disaster situations in the next chapter on collective efficacy.

CHAPTER FIVE

DISASTER-SPECIFIC COLLECTIVE EFFICACY: PERCEPTIONS OF RESIDENTS

In this chapter, I focus on collective efficacy, the second community disaster resilience contributor I investigated in this dissertation, through describing the perspectives of survey and interview respondents in Dixie and Leon County, Florida. As the reader may recall from Chapter Two, collective efficacy is the process of groups of people working together to respond to a particular collective need and produce collective benefits (Sampson 2012). Like social capital, collective efficacy is inherently an interaction-based concept—one that crosses the distinctions between individual and community and furthers my objective of linking these two levels of analysis in community disaster resilience research.

To understand disaster-specific collective efficacy, I explore the following question: How do individuals perceive collective efficacy in their communities? This is an important question because perceptions of collective efficacy influence individual willingness to join into collective processes and work together to better their community—a theoretically important step in disaster resilience (Masten and Obradovic 2008). I begin this chapter by summarizing the survey results from three different sets of collective efficacy measures: two targeted for routine situations and one developed for disasters. I compare and contrast these results to address the issue of how to most effectively measure collective efficacy for community disaster resilience.

Following the presentation of the survey results, I describe themes from the interview data on disaster-specific collective efficacy. Across both counties, interviewees emphasized their fellow community members' friendliness, the routine assistance of their neighbors, and effective

formal response mechanisms as evidence of their community's ability to "come together" during a disaster.

Perceptions of Routine and Disaster-Specific Collective Efficacy: Survey Results

In this section, I describe the results of survey respondents' perceptions of both routine and disaster-specific collective efficacy. I include descriptive results of the three sets of questions about collective efficacy: 1) Social Cohesion Index, 2) Community Index, and 3) Disaster Collective Efficacy Index. Recall from Chapter Three that the Social Cohesion Index includes direct measures of perceived collective efficacy from Sampson and Raudenbush (1997), while the Community Index uses correlates to collective efficacy such as place attachment and general perception of the community (Harvard University 2006; Putnam 2001). The questions in these two indices are designed for non-disaster situations, and because routine collective efficacy is theorized as a predictor of disaster-specific collective efficacy, these measures may be useful for predicting disaster resilience (e.g., Norris et al. 2008).

Yet, disasters, by their sociological definition, influence the collective processes in a community—both by potentially increasing togetherness as described by the concept of the altruistic community (Barton 1969) and simultaneously potentially decreasing togetherness by disrupting routine patterns and interactions (Dynes 2005). With this context in mind, I also included a subset of Benight's (2004) Disaster-Specific Collective Efficacy Index in the survey. This index differs from the previous two by focusing on the potential for collective processes in a disaster (see Appendix B for specific survey questions for all indices). After comparing and contrasting the results of the measures, I then use each in regression analysis to understand what factors affect individual perceptions of collective efficacy.

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Comparing Measures of Social Cohesion, Community, and Disaster Collective Efficacy

Table 5.1 shows the descriptive results of these three indices by county, including the results for each survey question. Starting with an overview of the descriptive statistics, the mean responses to all the questions were positive, indicating, on average, agreement to every question across the entire set of indices. Yet, the average scores range from 0.107 (close-knit neighborhood) to 0.868 (willingness to help neighbors), which is indicative of small to moderate agreement to each item.

Table 5.1. Survey Respondents' Perceptions of Collective Efficacy by County Including Descriptive Statistics and Cronbach's Alpha for Each Scale

Questions by Index	Dixie (n =70)	Leon (n = 63)	Total (n = 133)	α
Social Cohesion Index Mean (SD)	**2.92 (3.93)**	**2.27 (3.74)**	**2.62 (3.85)**	**0.832**
Can be trusted[1]	0.563 (1.13)	0.403 (0 .983)	0.489 (1.06)	
Don't get along[2]	0.912 (0.842)	0.790 (1.03)	0.854 (0.953)	
Willing to help neighbors	1.01 (0.920)	0.698 (0.891)**	0.868 (0.917)	
Close-knit neighborhood	0.232 (1.10)	-0.032 (0.940)	0.107 (1.03)	
Don't share similar values[2]	0.380 (1.09)	0.435 (1.10)	0.406 (1.09)	
Community Index Mean (SD)	**3.03 (3.97)**	**3.41 (4.06)**	**3.24 (4.01)**	**0.792**
A safe place	0.803 (0.965)	0.619 (0.958)	0.716 (0962)	
People can have an impact on community	0.808 (0.861)	0.809 (0.913)	0.809 (0.882)	
Will get worse in next 5 years[2]	0.514 (1.09)	0.349 (1.14)	0.437 (1.11)	
People would not cooperate[2]	0.575 (1.14)	0.809 (0.965)	0.684 (1.07)	
I would like to move[2]	0.871 (1.31)	0.444 (1.46)	0.669 (1.39)	
Disaster Collective Efficacy Mean (SD)	**3.53 (4.16)**	**2.95 (4.18)**	**3.27 (4.16)**	**0.930**
Community would distribute resources effectively following a disaster	0.611 (1.00)	0.476 (1.03)	0.548 (1.01)	
People in my community will work well with each other during disaster recovery	0.819 (0.939)	0.635 (0.938)	0.733 (0.940)	
Organizations and individuals are ready to respond to the community's needs following a disaster	0.653 (0.966)	0.540 (0.930)	0.600 (0.948)	
Supporting those in greatest need after a disaster would be a priority for my community	0.778 (0.907)	0.698 (0.978)	0.741 (0.938)	
Community could work toward common recovery goals	0.819 (0.845)	0.603 (0.925)	0.719 (0.886)	

* p < 0.05, ** p < 0.01, *** p < 0.001, two tailed t-test for mean difference between county respondents.
[1] Individual questions used Likert-scale: strong disagree (-2), disagree (-1), neutral (0), agree (1), strongly agree (2).
[2] Reverse coded.

When comparing the two case study areas, the collective efficacy responses for Dixie and Leon County were very similar. Across the individual questions, the only statistically significant difference between the average scores was in response to the statement: "People around here are willing to help their neighbors." Dixie County respondents indicated higher agreement, or greater perceived helpfulness of their neighbors, than Leon County respondents.

Moving to the three indices, each index is a summed score of its five items, ranging from -10 (strongly disagree to all items) to +10 (strongly agree on all items). Each index had good inter-item reliability of the responses to its individual questions, with the Disaster Collective Efficacy Index having the highest reliability (Disaster Collective Efficacy Index $\alpha = 0.930$; Social Cohesion $\alpha = 0.832$; Community Index $\alpha = 0.792$). The mean scores indicate moderate positive collective efficacy for both counties on all indices. The Social Cohesion Index had the lowest mean of the three indices at 2.62 (indicating the lowest levels of collective efficacy) and the Disaster Collective Efficacy Index had the highest mean score, or the highest perception of collective efficacy, at 3.27. Furthermore, the Social Cohesion Index differed significantly from both the Disaster Collective Efficacy and Community Indices (t = -2.14 $p = 0.034$ and -2.54 $p = 0.012$, respectively). The counties' average scores were comparable on the Indices as well.

An important distinction between the three indices is the level of analysis the questions target. The Social Cohesion Index asks about neighborhoods, and the other two ask about communities, which could explain the distinctiveness of the Social Cohesion Index and lack of differentiation between the counties. When summarized at the county level, variation among smaller geographic units within the counties is lost. While it is plausible to separate Leon County into smaller geographic units (such as Census tracts) for analysis, the same is not possible for Dixie County, which has only two Census tracts comprising the entire county. Determining the

appropriate geography for measuring neighborhoods is a difficult issue throughout the research literature on collective efficacy, and often Census tracts that are small cannot approximate a natural neighborhood, let alone the large Census tracts of Dixie County. Also, because of the difference in scale, the Community Index and Disaster Collective Efficacy Index have items that imply formal resources in the community—organizations responding to safety or disaster—whereas the Social Cohesion Index focuses solely on individual actions. As described below in the qualitative responses, this distinction is likely important to measuring disaster-specific collective efficacy because individuals tend to incorporate formal local, state, regional, and even federal response mechanisms into their assessments of their community's capacity for collective action in disasters.

Even with these differences, the three indices were moderately correlated, indicating that the three measures are related (see Table 5.2). To further explore the relation between these items, I calculated Cronbach's α for all items together, which equaled 0.925 indicating high interitem reliability. Further, I performed polychoric factor analysis of all 15 individual questions across the three indices, without rotation. This analytic method uses correlation specifically for ordinal variables such as the Likert-scaled items included in my survey (Drasgow 1988). These results further supported that these measures are similar, with all questions correlating with a single underlying factor with an Eigenvalue of 8.24 explaining 0.770 of the variance. If each separate index measured different constructs, there should be three factors appearing in the analysis with the questions separating into groups aligned with the pre-established indices. However, these results indicate that there is little evidence these sets of questions each measure a different latent concept.

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Table 5.2. Correlation Matrix for Social Cohesion, Community, and Disaster Collective Efficacy Indices and Indirect Measures of Collective Efficacy

	Social Cohesion	Community
Community	0.738	-
Disaster Collective Efficacy	0.613	0.619

Predicting Perceptions of Routine and Disaster-Specific Collective Efficacy

Using these indices as dependent variables, Table 5.3 shows regression analyses of each index on seven theoretically important predictors of collective efficacy: (1) number of hurricanes experienced, (2) years living in the county, (3) living at or below 150 percent of the poverty line, (4) satisfaction with local government hurricane preparations, (5) gender, (6) voting in last presidential election, and (7) county. Because these indices have not been compared within the same study before, this analysis highlights differences between the collective efficacy measures. Also, this analysis shows potential correlated variables that could be used in aggregate population-based measures of disaster resilience, such as the Baseline Resilience Indicators for Communities or the Community Resilience Index (Cutter, Burton, and Emrich 2010; Sherrieb, Norris, and Galea 2010).

Hurricanes experienced and tenure in the county both had positive effects on all three indices; in other words, each additional hurricane experienced or each additional year living in the county increased positive perceptions of the community. Because tenure in a community is an indicator of place attachment and found to contribute to the desire to work collectively to improve one's community (Brown, Perkins, and Brown 2003; Sampson, Morenoff, and Gannon-Rowley 2002), this result, which was statistically significant, was expected. However, the effect is small. For example, twenty additional years living in the community is predicted to increase Social Cohesion by only 1.2 points (or about five percent of the index's range).

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Table 5.3. OLS Regression Analysis of Disaster Collective Efficacy, Social Cohesion, and Community Indices

Variables	Community	Social Cohesion	Disaster Collective Efficacy
Hurricane(s) experienced	0.079	0.017	0.117
	(0.128)	(0.13)	(0.132)
	0.0126	*0.0056*	*0.0228*
Tenure in county (years)	0.057**	0.062**	0.038*
	(0.018)	(0.019)	(0.019)
	0.0984	*0.1092*	*0.0635*
Living at or below 150% poverty	-1.75*	-1.13	-1.93*
	(0.799)	(0.83)	(0.828)
	0.0912	*0.0382*	*0.0958*
Local government hurricane preparations[1]			
Unsatisfied or very unsatisfied	-2.84*	-2.18	-0.369
	(1.38)	(1.44)	(1.43)
Satisfied	0.937	1.360	2.26*
	(0.859)	(0.89)	(0.889)
Very satisfied	2.10	1.68	3.67**
	(1.21)	(1.26)	(1.25)
	0.0836	*0.0606*	*0.0868*
Male	-0.625	-0.130	-0.394
	(0.755)	(0.786)	(0.78)
	0.0040	*0.0001*	*0.0023*
Voted in 2008	0.723	0.484	-0.072
	(1.05)	(1.10)	(1.09)
	0.0034	*0.0015*	*0.0000*
Leon County	-0.894	-1.37	-1.20
	(0.726)	(0.757)	(0.753)
	0.0109	*0.0255*	*0.0186*
Constant	1.86	1.11	2.16
	(1.22)	(1.27)	(1.26)
Observations	107	107	107
R^2	0.304	0.241	0.290

Standard errors in parentheses
R-squared change in italics
* $p<0.10$, ** $p<0.05$, *** $p<0.01$
[1] Reference category is "neutral", because of small number of responses the very unsatisfied and unsatisfied categories were grouped together.

Living at or below 150 percent of the poverty line (which represents nearly 40% of the sample and is an important indicator of disaster vulnerability) negatively affected the perception of collective efficacy across all three indices and had the greatest effect on Disaster Collective Efficacy. Individuals living in poverty scored, on average, two points below individuals not living in poverty. These effects were also statistically significant, indicating that this result is

expected in the general population. At the community level, higher poverty rates are often correlated with less collective efficacy (Sampson, Morenoff, and Gannon-Rowley 2002). My results indicate that individuals living in poverty perceived less collective efficacy, or the belief that their fellow community members would work together when needed.

In the survey, respondents also expressed their satisfaction with their local government's preparation for hurricanes. It is expected that this satisfaction will affect Disaster Collective Efficacy scores. Controlling for the other variables in the model, this expectation is true. For example, compared to people who respond with neutral on satisfaction with their local government's preparation for hurricanes, those who were very satisfied scored 3.7 points higher, on average, for Disaster Collective Efficacy. This satisfaction affected the other indices similarly. Individuals who expressed more satisfaction had higher scores on the Social Cohesion and Community indices; conversely, those who expressed less satisfaction had lower scores on these indices. The positive effect of satisfaction with local government's hurricane preparations had the largest effect on disaster-specific collective efficacy.

Gender and whether the respondent voted in the 2008 general election were also included in the analysis. There was very little difference between men and women's perceptions of collective efficacy across all three indices. Men scored only slightly lower, on average, than women when controlling for the other variables in the model. Voting is often used as a proxy for collective efficacy for researchers following the tradition of Putnam (2001). Recalling that there is little variability in this indicator with nearly 85 percent of the sample voting in the last presidential election, this variable has little effect on these measures of collective efficacy. Specifically, people who voted in 2008 scored on average less than one point higher on the two

routine collective efficacy indices than those who did not vote, and less than one point lower on the disaster-specific index.

Finally, comparing the two case study areas and controlling for these other variables, Leon County respondents, or those from the urban county, scored lower on average on each index. The county effect was small, with the largest difference of only 1.4 points in Social Cohesion perceptions. This analysis shows that when controlling for these other variables, perceptions of collective efficacy vary only slightly between the two counties, with Leon County respondents indicating less collective efficacy than Dixie County respondents.

These models explain a moderate amount of the variance in each index. Specifically, these variables together explain 29 percent, 24 percent, and 30 percent of the variance in Disaster Collective Efficacy, Social Cohesion, and Community Indices, respectively. Within each of these models, tenure in the county, living in poverty, and satisfaction with local government preparations contribute the most to the overall explained variance (see R^2-change in italics in Table 5.3). Tenure in county changed the R^2 by approximately 0.10 in each of the routine collective efficacy models, and 0.06 in the disaster-specific collective efficacy model. Poverty also resulted in an approximately 0.10 R^2-change in the models for Disaster Collective Efficacy and Community, but only a 0.04 R^2-change for Social Cohesion. Satisfaction in local government hurricane preparations also created moderate changes in R^2 for the model of Disaster Collective Efficacy (0.09), Community (0.08), and Social Cohesion (0.06). Gender, voting, and county affected the R^2 by less than 0.02 in these models.

Overall, these results point to the importance of economic vulnerability (such as living in poverty) and satisfaction with local government disaster preparations in predicting perceived collective efficacy, especially disaster-specific collective efficacy. The implications are that

inequality in the community (such as poverty) and formal disaster response mechanisms may affect our understanding and operationalization of disaster collective efficacy and, consequently, potential resilience.

The results from the survey show small differences in perceptions of collective efficacy between the two counties *and* between routine and non-routine disaster situations. Thus, collective efficacy for disasters may be accurately measured using non-disaster measures of collective processes, especially those that ask about community level factors including place attachment.

Perceptions of Disaster-Specific Collective Efficacy: Qualitative Results

To assess the validity of the above measures of collective efficacy for disaster situations, I asked interviewees to describe various aspects of their respective community's ability to "come together" in a disaster. Three key themes emerged that these interviewees saw as evidence of what is referred to as collective efficacy: 1) the perceived friendliness of individual community members, 2) the role of neighbors, and 3) the assumed effectiveness of emergency response organizations. These findings highlight both routine aspects of communities that affect disaster resilience and the perceived distinctiveness of collective efficacy processes in disaster situations.

Coming Together: Images of Southern, Small-Town Friendliness

In Dixie County's only non-fast food restaurant, Meryl said hello to the other three customers and the one waitress upon entering, addressing each person by his or her first name, before he joined me for our interview. At 65 years old, Meryl was energetic and congenial with everyone and talked lovingly about the female owner of the restaurant and her adult children. He also seemed to know all the regular customers who enjoyed the mashed potatoes, fried okra, and sweet tea from the Southern home-cooking menu. He spoke with a similar level of attachment

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about the residents of his mobile home park, who he said would welcome anyone "like they are family." To Meryl, and many respondents in this study, a disaster would be just another situation in which community members would continue their usual friendly nature and help each other. As he explained, "If it didn't blow us away, we'd be good. Everybody sticks together. Everybody helps everybody out around here. We pretty much take care of each other. For some reason, we do. Lot of places they don't, but here, we do."

Meryl's story highlights the first theme in the qualitative data related to collective efficacy—interviewees perceived fellow community members' potential disaster-related collective efficacy as an extension of the general character of their fellow citizens, particularly their friendliness. In other words, a disaster situation would simply provide the context for enhancement or extension of their routine good-natured character. Across both case study areas, individuals expressed belief in the ability of their respective communities to come together and help whomever might be in need; whether that need involved more mundane needs, such as fixing a flat tire on a vehicle or providing directions to someone who was lost, or more extensive situations such as in a disaster or emergency to help rebuild, provide information, or offer shelter. As described below, this perceived friendliness was drawn from both areas' cultural story of being "small, Southern towns."

In both counties, interviewees commonly used the word "friendly" to describe the character of the average community member. "Just the friendliness of the people," as one middle-aged man from Dixie County said. "The general friendliness of all the people, the willingness to help each other out," a woman from Dixie County explained as the reason she believed in the community's ability to respond collectively to a disaster. As Meryl's story and these quotes highlight, interviewees referred to "others around here" or "people in this town"

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when talking about the character of those living in the local community in relation to routine collective efficacy. This perception of helpfulness and friendliness was offered in contrast to a non-specified "other community" and "other community members," allowing interviewees to believe even strangers in their own community would help each other as required. An elderly white female from Dixie County explained that this belief in the friendliness as evidence of latent disaster-specific collective efficacy remained even as respondents acknowledged that negative events did occur in the county.

> That's the way people are in Dixie County, you wouldn't want something like that to happen unless it was [here]. But I know in years past, I've heard a lot of bad reports, things about things that had happened in Dixie County. Still, there's some bad people here, yes. But there's so many more good ones... So yes, we stick together in trouble.

The description of friendliness was bolstered by interviewees from both counties by referring to their community of people as "small towns" and "Southern towns" where people are friendly, "know each other," and "come together." Whether they lived in one of the two towns in Dixie County, in the city of Tallahassee in Leon County, or an unincorporated rural area, interviewees referenced their surrounding geographic areas as "towns" and would interchange "town" with "county" regularly. Town, then, resonates more with the linguistic story that describes the general population of people in an area rather than a designated place.

Often, they would depict their towns in contrast to "big cities" and cities in Northern states. In this discussion, small town imagery and Southern hospitality were intertwined, and often directly related together in a single sentence. Even though Leon County contains the state capital of Florida and has over five times the population as Dixie County, residents called the area small with Southern, small-town friendliness. Nathan, a middle-aged man who taught school in Leon County for nearly 20 years, stated it as follows, "Yeah. This is part of the old

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South. Like a lot of places where hurricanes hit, it's small-town. People do pull together. This is a little bit more urban than the small town pulling together, but it still exists there."

In this context, "Southern" refers to a lifestyle as much as, if not even more than, geography (indeed, as the saying goes in this area, the "farther north you go in Florida, the more 'Southern' you get"). Dixie and Leon Counties are more geographically and culturally proximate to Georgia, Alabama, and other parts of the American South than the geographically southern areas of Florida such as Miami. "People are warm around here to other people. I met a few people just at the Post Office, and I enjoyed myself. So I know some things will work out here. They're not snobby like the people down South [who] like to stick with their own," described a middle-aged man who had relocated to Dixie County about six years ago.

Of course, just as the image of being small, Southern towns provides the cultural context for respondents' perceptions of friendliness, this image also creates the setting for perceptions of intolerance. A few Dixie County respondents openly discussed the potential prejudice of those same small town Southern people that thrive on homogeneity, which negatively affected the interviewees' perceptions of disaster collective efficacy. James, a newer resident to Dixie County by way of Tampa, Florida and Chicago originally, personally felt the way that Dixie County was divided along various social lines, including race and sexual orientation, may weaken the collective processes during and following a disaster. In the following extended quote, he, as a white gay man, described the inequality and distrust that left him uncertain about the collective efficacy of the area in a disaster.

> It's getting better, I see more people, you know, whites and blacks interacting and stuff like that, but there's still a lot of prejudice here and it's so sad. The rest of my neighborhood, they won't give us the time of day. At least [my partner] and I, because we're gay. The other neighbors I'm sure they're fine with them, but they have an attitude towards us, and that's a shame because we're really nice people… I mean in our neighborhoods growing up in Chicago, you didn't lock

your door, when you went over to a friend's house you just walked in. Oh, you wouldn't do that here. That's why everybody's got a fence and a gate. This is the truth we learned. They literally think, you're standing at your front door with a shotgun, nobody will walk up your property without your permission, nobody…. Yeah, they might not help other people. I think they'd kind of just help their friends, their neighbors, and then that would be it… so I don't know how they'd react in a bad disaster situation.

James was among three respondents from Dixie County that connected the guarded privacy of rural area residents, the homophily of social networks (as described in Chapter Four), and un-friendliness in their descriptions of Dixie County's lack of potential disaster collective efficacy. These negative cases, although limited are still apparent in the qualitative data, and point out that perceptions of collective efficacy often relate to an individuals' own demographic positionality as well as their position in the community, which can include being a newcomer or having marginal social status.

Conversely, for those who had lived in Dixie County longer, increasing growth and diversity were concerns. When using the cultural frame of "small towns" as their explanation of the friendliness of their community members, these changes in the community composition hindered their story and was acknowledged as potentially, though not yet, affecting collective efficacy. An employee of one of the few remaining Dixie County locally-owned companies described, "I've seen it [people coming together]. We're still a small community, although we've had a number of people move in to the area, we're still a close-knit community where people help each other. They really do. You'll see people, if a senior citizen needs something, they'll take care of it."

The application of this story to disasters allowed interviewees to express the belief that community members they do not personally know would still help anyone in need during a crisis situation. In this next quote, Bryan, a lifelong resident of Florida and active participant in

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Tallahassee community activities, describes what he likes about Leon County, even though he

planned to move to a more populated city within the year.

> I find people here to be very friendly so again I think that goes well too, with kind
> of the community bond that should a disaster happen, people tend to be friendlier
> and more helpful. You know, if you look lost or whatever, I think you'd be more
> apt to have someone here ask you if you're lost and could I help you voluntarily
> then you having to go and ask them for your help, say versus a larger city…. I
> think you'll find you like it here. I think you'll find the people to be really
> friendly. And it's interesting, the same people who come here from different areas
> consider coming here, when I ask them about their impressions or how has their
> visit gone or whatever, they almost always comment about how friendly people
> are here.

As shown in this quote, evidence of collective efficacy was viewed through a lens of how

friendly the people were in the community, and this friendliness was expected to extend or even

be enhanced in disasters when the need was greater.

Neighbors Helping Neighbors: Neighborhoods as First Order Groups of Collective Efficacy

Kyle, a 40-something white man from Leon County, sits in the front room of his small

duplex in a historic area of Tallahassee as he describes his love for this city. As a member of a

professional organization, a neighborhood association, and a board member of a local nonprofit,

Kyle is one of four individuals that I interviewed in Leon County who was highly involved in

community life. As he talks about why he believes the people of Leon County will pull together

in a disaster, he uses vivid examples from the neighborhood association he belongs to in this

highly educated, gentrifying district of Tallahassee.

> We have crime watch networks and so there are systems in place to where if
> something were to happen, those emails would go out. I mean if there's a lost dog,
> if there's crime going on, I mean seriously, that's the kind of stuff just [snaps
> fingers] instantly. Yeah, so they're great for that. So I think the same thing, you
> know again, because of the ability to have email networks and we have Facebook,
> you know groups and whatnot, it's just so easy for us to shoot something out over
> the internet through either the email system or through one of our special
> networking sites and get help instantly. Whether it's a referral for a repair in the
> house or your dog is lost or you need a babysitter because your regular one isn't-

you know, that sort of thing. And so I think all of that would go into play with that sort of disaster too. I think there's some good leadership in the areas and people would be very, very helpful to help one another.

Residents like Kyle spoke of their neighbors and neighborhoods enthusiastically and used them as evidence that those people geographically near them would respond to emergent disaster needs. This theme in the qualitative data highlights how in both counties, residents often knew their neighbors and could describe how their neighborhood or the several households around them, whether they lived on a city block or a dirt road, could pull together during a disaster. Two subthemes relate to the importance of neighbors in discussions of disaster collective efficacy: (1) individual neighbors who assist other individual neighbors and (2) neighborhood associations or semi-formal groupings of neighbors and community members.

Assistance among Individual Neighbors

Most interviewees assumed that neighbors would exchange goods and services during a disaster. Their stories of past occurrences of neighborly disaster assistance included recollections of chainsaws and generators being passed around to remove debris and provide power; perishable food communally gathered, cooked, and shared among neighbors; and the simple checking in on the wellbeing of neighbors' health and property after a storm. For example, Dan, who recently retired from local government in Leon County, pointed out the window to name those living around him and described how the neighbors worked together to respond to disaster needs.

> We've got new neighbors here, and people in the neighborhood that we've come to know and it's just like when we've had high winds before, and trees were blowed over. It wasn't nothin' for me to take my chainsaw and go over to neighbors and cut tree limbs off so they could get back in their place, or help remove it to get it off the roof or things of that sort. That chainsaws been passed around to many people, and it's still goin'. Especially the Jackson's over here, [they] are much older than us, and I watch their place when they go somewhere and whatever.

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Debra, from Leon County, supported the importance of neighbors in disaster-specific collective efficacy stating plainly, "I perceive, in terms of a disaster, my help and assistance being pretty much limited to my neighborhood." Even in rural Dixie County where the closest neighbors may be miles away, interviewees talked of their neighbors as important to disaster resilience. As Meryl explained about his mobile home park, "We live in a neighborhood, it's like a little subdivision. Everybody knows everybody. We all take care of each other. That's the way it is around here."

These above examples, and many others included in the interview data, showcase how individuals across the two case study areas use specific examples of assistance from their geographic neighbors to establish their belief in their community's disaster collective efficacy. But for a few interviewees, neighbors were viewed as less helpful, and this view consequently dampened their perceptions of disaster collective efficacy. One of these perspectives comes from a Leon County interviewee. Only six city blocks south of Kyle's gentrifying Tallahassee neighborhood described in the opening of this section, Etta a 40-something African American woman, lives on a dead-end street that contains approximately eight dilapidated houses. As she recounted the gunshots fired in her block the night before our interview, Etta explained that she and her husband remain indoors after dark for fear of their safety, and her daughter refuses to bring their grandson over to visit anymore due to the lack of security in that small area. According to Etta, this neighborhood, barely a block long, lacked collective efficacy that would contribute to disaster resilience.

> I think if everybody would come together with each other, we could [respond to a disaster]. You know if everybody would stick together with each other. But everybody's not like that, you know…. [In this neighborhood], I think I'd rather be somewhere else. And see you have to understand down here it's nothing but drugs, and I don't want anything to do with drugs. Do you? …. But, see it's just so much going on, and I don't trust anything no more. I don't. Not in this

neighborhood. Best stay to yourself, tending your own business and go ahead on. That's how I do. 'Til I can move out of here.

When Etta expanded her discussion to Tallahassee and Leon County as a whole, her perspective changed and she, like most other interviewees, believed that the broader community *as a whole* would come together and respond to a disaster—just not the people living closest to her. Other respondents, though not expressing the same level of safety concerns as Etta, lacked knowledge of most of their neighbors and would not rely on them to help strangers, even strangers who lived next door. For example, Michael, a father of three young children whose wife recently lost her job, waved his hand up and down his dirt road in Dixie County while stating, "Community-wise, it's not like they watch out for each other, they watch out for themselves."

These negative cases point out that neighborhoods, for better or worse, provide a context for perceptions of collective efficacy and these perceptions affected individuals determination of whether they themselves would attempt to participate in collective assistance processes in their local neighborhood. Furthermore, for understanding the measurement of collective efficacy, neighborhoods, which can be merely a city block long, may differ widely from other neighborhoods within a county in their perceived and actualized ability to come together following a disaster. When collective processes are aggregated to the county level, these important distinctions, and the crucial role of neighborhoods in general and in disaster-specific collective efficacy, are lost.

Semi-Formal Groups of Neighborly Assistance

As the discussion of collective efficacy expanded from individual friendliness and describing individual neighbors assisting each other to examples of small groups of community neighbors working together, differences between the case counties arose. On the one hand, Leon

County residents, like Kyle, could reference semi-formal neighborhood associations that performed disaster exercises and met with County Emergency Management along with describing their individual neighbors who helped each other. On the other hand, Dixie County residents only referenced those living along their street and the few houses closest to them without discussion of semi-formal groups as examples of collective processes. Instead, examples of collective action in Dixie County involved prominent individual community members who provided charity and funded events that brought groups of residents together.

Debra, a self-employed middle-aged white woman who lived on a cul-de-sac that overlooked one of the area's lakes, felt that the neighborhood associations were particularly important for Tallahassee, and a reason for citizen responsibility to each other.

> There are strong neighborhoods in Tallahassee. That's one of the things this town is known for is its neighborhood associations. It's clear to see where this neighborhood begins and ends, but also because there's homeowners association responsible for maintaining the road out there. A lot of neighborhoods have common maintenance things and those dues create the need for an association and the association creates relationships and neighborhoods.

A middle-aged, white man also described how the sense of community in his area of Tallahassee, which encompassed about nine square blocks, was expressed in opportunities to provide input to governmental planning. "We have a new city park being built and the city had an open house to say, 'Hey, this is what's going on, we want to tour you through the construction site or whatever.' And I mean the auditorium was *packed*. There were like 400 people there and the vast majority of them were people from these three neighborhoods."

Two miles away in a majority African American neighborhood, Hattie, an elderly African American woman who has been president of her neighborhood association during her near 50 year tenure in that particular neighborhood, also described the ability of neighbors to come together in disaster because of their organization in a neighborhood association. The association

provided the collective space for communication between individuals and local government, for specific training of individual neighborhood members for disaster or emergency tasks, and coordination of house-checking and safety procedures for emergencies.

> [The neighborhood association] meets monthly, and the police come, or we invite someone from the police department, and let's see, I think we've done emergency medical services. And then there is a city-wide council of neighborhoods that has handouts. …. [The neighbors] would look out for each other. They would make sure we have a directory of neighbors, and we have neighborhood watch. We have disaster preparedness trained individuals in neighborhoods, and they would, they would do whatever they have been trained to do, which involves checking every household…. So it's a wonderful place to live in terms of them watching out for the citizens.

In these examples and others in the interview data, the many benefits of neighborhood associations are offered. It is true that these semi-formal groups can offer the collective space for organizing for disaster response specifically, can be a center for the distribution of information, and can be a conduit with local government. Further, they can provide a mechanism for getting to know one's neighbors, can be a tool for generating feelings of responsibility to the well-being of the collective group, and finally, as often directed by elected councils, can offer a democratic form of participation and organization to address residents' needs.

There was no similar discussion of neighborhood associations in rural Dixie County. This was expected, as rural areas such as Dixie have fewer of these semi-formal groupings which are most common in suburban communities. Thus, examples of collective processes recounted by Dixie County interviewees beyond individual residents helping other individual residents were limited, but the limited number of examples that were offered often highlighted the generosity of two specific community residents who organized community action: a wealthy man, Mr. Jackson, and a small local business owner, Ms. Susie.

Several Dixie County interviewees described Mr. Jackson, who had donated many items to the County, including an entire local government building. Throughout the county, the name "Jackson" was prominently displayed (for example, on buildings and on a future park space). One respondent spoke with awe and deference to the role he played in contributing to the community, recalling the debate over a controversial religious statue he had donated at a community building. The interviewee explained that when Mr. Jackson called for residents to join in a protest to save the statue from being removed, an estimated "1,500 people showed up" in support of him. This was evidence, the woman explained, of how Dixie County residents come together to support each other.

Another person described by several Dixie County residents as an organizer of collective processes was Ms. Susie, who ran the Southern home-cooking restaurant described above. Descriptions of her restaurant implied that it is a physical "third place" as described by Oldenburg (2001), where people can get together and community processes happen. Ms. Susie provided free meals to individuals who could not pay, informally catered community picnics for free, or cooked free community meals following disasters. For one elderly Dixie County resident, eating at the restaurant was a joy for her special needs son who all the waitresses knew by name. When asked if she believed the community would pull together in a disaster, she referenced this restaurant and the owner first:

> Oh, yeah. They will do that. They're not one to bother you all the time, but as a community, I see them pulling together. And [the restaurant] is just a country restaurant. She has a lot of singles come in. There's an old man who comes in now, and if some of the older ones don't come in for a while, Ms. Susie and her daughters will say, "Why don't you just go check and see? They live alone. See if they're OK."

This intermediary level of collective organization that is between individuals helping other individuals and formal government or nonprofit organizations is one clear distinction

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between rural and more urban or suburban areas. In contrast to neighborhood associations that can offer a semblance of democratic governance, with meetings and elected councils, the types of collective efficacy interviewees described in Dixie County are often spontaneous and temporary. They also seem to emerge from the charitable will of individual residents rather than group processes. For example, Mr. Jackson was able to garner collective support after he, as an individual, chose to donate a controversial statue and Ms. Susie chooses when to host community picnics and donate the food.

The Importance of Structural Response: Perceived Disaster Organizational Capacity

Diana, a white woman from Dixie County, was waiting anxiously for news on her third attempt to get federal Social Security disability income. She had been living with a slowly debilitating disease for several years before getting the correct diagnosis, and had now been waiting six months to get the disability payments started. If denied again, she was unsure what she would do; she could no longer work and yet she and her partner (who waited tables at a restaurant in the next county), supported themselves, their teenage son, and their grandson. Together, the four lived in one small RV that they had added a porch on to convert it into a permanent home. Even in the face of financial and physical difficulties, she spoke with pride of the ability of herself and other rural Dixie County residents to be self-sufficient in a disaster. This self-sufficient discussion, as with many interviewees, was woven with the assumption that emergency management and disaster response organizations would be in place and working effectively. During our interview, she described a recent hurricane experience. In the narrative, she focused on her perception of self-sufficiency and the underlying dependence on formal disaster response.

> We were trying to save everything we could. The wind was really fast. When the
> wind was flapping with the power lines going back and forth, so we were just

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running in and grabbing everything we could and running out as fast as we could and taking it to the dry side of the house before the power and everything went out. I didn't think calling 9-1-1 would help any. What could they do? So we waited. And after the storm passed and all and everybody got all set, we called FEMA and they came out…. The Red Cross came in and everything. They had big tanker trucks full of water…. A lot of people around here are very low-income, so they're pretty self-sufficient when it comes to a lot of stuff, rebuilding or helping out. You're not in the middle of the city where everybody depends on—I don't know how to say it—people out here know how to take care of themselves better in an emergency situation. People in the city don't have to build their own porches, buildings, sheds. They don't have gardens, stuff like that. And the people who do have it will help the people who don't.

Diana's quote highlights an interesting juxtaposition in understanding collective efficacy in disaster situations. First, as Diana argued, individuals are capable to assist themselves and other individuals when needed, which was a story of self-sufficiency that Dixie County residents often attributed to living a rural life and Leon County residents felt no need to qualify. Second, she mentions in passing several governmental and nongovernmental disaster response organizations, as if those components of disaster collective efficacy are assumed to occur. Even her first telephone call following that hurricane was directly to the Federal Emergency Management Agency (FEMA), the highest level of disaster response in the U.S., *before* a federal disaster declaration and *before* the local and state governmental response mechanisms were operational.

While referencing collective efficacy in the communities, Diana's description was not unique—respondents across both counties believed that the formal emergency response mechanisms would provide the structural context of collective efficacy for resilience. Granted, respondents were commonly uncertain of specific plans within their communities, but when speaking of the ability of the community as a whole to respond and individual community members to "come together," the participants in this study included local governmental emergency services, private response from the American Red Cross or Florida Baptists Disaster

Response, and other local non-disaster organizations. What became clear in these interviews was that disaster-specific collective efficacy is highly entangled with expectations of effective and efficient formal disaster response.

Local, State, and Federal Government for Disaster-Specific Collective Efficacy

The ability of local and state emergency services to respond to any event was discussed by many interviewees. Respondents spoke of the availability of public disaster shelters and the expectation that local schools would be open as shelters in an emergency. They also believed that fire and ambulance services would function efficiently, if needed. Henry and Lily lived several miles outside of Old Town in Dixie County, and the elderly couple who retired to this area 15 years before, were still unaware of where they would go if a storm, "heaven forbid," would be strong enough to dramatically affect their home. As Lily explained, "You know I never really thought about it because we have disaster relief here in Dixie County, and they usually go, you know, to the areas that are hit worst that have the most damage and everything, and they usually open the schools for people who do evacuate." Meryl went even further in his belief of Dixie County's local emergency services, volunteer fire department, and ambulance service capacity, referencing the emergency managers by first name as he introduced his thoughts on the ability of local emergency management to respond effectively.

> We'll make it, though. The EOC [local Emergency Operations Center] will make sure of it. They've probably got stuff stockpiled now. And I know it's not gonna blow away. It's solid concrete, just about. And they got one of them mobile command centers, a bus, the sheriff's department, all that stuff for emergency use…. We don't have a full-time fire department for that or anything. But they're really good at what they do. They're well-coordinated in Old Town, Cross City, Steinhatchee, Horseshoe [towns and unincorporated areas in Dixie County], they all have their little departments and they meet and they practice and they're very into it. I'm not sayin' it's just perfect, there's always room for improvement, but I think they really do a good job of in-service training for different types of emergencies to be prepared for.

In Leon County, the perception of local government emergency services capacity also included the added benefit of being the state capital, and thus home to the state-level disaster services. Debra was unsure of the disaster specific plans, but assumed that Leon County would be prepared as would the rest of the state of Florida. "Tallahassee has some reserve funds for disaster and I can't say that I know what their emergency management plan is but I'm gonna assume that after [Hurricanes] Hugo and Andrew that every public works department has the same kind of thing that we had when we lived in Miami…."

Florida, as a state, was viewed by many interviewees as extremely prepared for disaster response, and this led Tallahassee residents, in particular, to believe that they would benefit from a quick and efficient state-level response. As a middle-aged man from Leon County explained, "Again, because it's the capital, state government is here. Florida doesn't mess around. I mean we're organized and I've seen in the past how the state just really is quite proactive when it comes to storms coming in and when things happen they seem to do a pretty good job of getting things out and having their emergency plans in place."

Nonprofit and Faith-Based Organizations for Disaster-Specific Collective Efficacy

Government was not the only sector that interviewees perceived would have the capacity to respond to disaster. Interviewees also highlighted the American Red Cross and faith-based disaster response organizations in their responses, believing these organizations would "arrive quickly" after a disaster and "effectively support" the community. Respondents believed that these organizations would provide both physical assistance following a disaster and the community space for collective efficacy by organizing donations and volunteers.

When respondents referenced the American Red Cross, their comments were typically rooted in their first-hand experience during previous hurricanes. Sheila from Dixie County, for

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example, recalled that the Red Cross was operating immediately following a hurricane in 2004, putting out public radio announcements for donations and indicating their locations for assistance. Also, Gary was a state employee from Tallahassee who assumed that the Red Cross would provide all needed items because of its appearance following much smaller events in the area: "If something like that [a hurricane] were to happen, I'm sure there would be like Red Cross shelters or that kind of thing… There are low lying areas that get flooded and stuff like that, and so that's at least one thing that's an available resource." Similar to the belief in Dixie County that the new physical structure of the local government's emergency operations building signified capacity to respond, this belief in organizational capacity in Leon County was supported by the recent completion of a new Red Cross facility that housed most of the debris removal tools and vans for mobile response.

Beyond the Red Cross, other state and national disaster response organizations were mentioned by interviewees as having capacity to ensure the community would come together during a disaster situation. Organizations identified included the Florida Baptists, who run a program that provides tarps and roofing material following storms, the Salvation Army, which supplies meals and water, and other state or regional churches that had congregations in the area. By underscoring of the availability of these organizational resources, interviewees confidently described their communities as "resilient." Stan, a manager at one of the few places offering middle-class jobs in Dixie County, echoed the rural self-sufficiency storyline to argue that Dixie County had plenty of churches and local organizations to provide for its citizens in disaster.

> We're not totally dependent on governmental services, if you get my drift, if you know what I'm saying there. There are lots of religious groups, Southern Baptist Convention, they come in and provide services out of Jacksonville. Various churches have feeding programs, transportation to doctor visits that sort of thing. So it's not just totally reliance on the government, you know, "I'm helpless, what

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can you give me?" A lot of people here are self-reliant. They're not lookin' for a handout.

Lynn, along with other respondents from Dixie County, also highlighted how her small church congregation prepared care packages for individual families going through crisis; members of the church believed that they could scale up these efforts in a disaster. And if overwhelmed, these individual churches were connected with the larger churches in their denomination in urban areas, and they could likely ask for assistance. Lynn explained, "Of course, our women's ministry makes up things for people, for disasters and problems that we have. We make up a bag that has the necessities, toothpaste, toothbrush, washcloth, shampoo. Just to get you through. We're not a big church. But our church in Orlando, they have the trucks and everything down there. They do a lot of disaster work."

If disaster-specific collective efficacy requires formal structures to organize and coordinate collective behavior, then areas with fewer of these organizations to do so, such as rural communities, will be reliant on only a few local agencies and regional offices of larger organizations to facilitate this collective activity. I address this issue in the next two chapters, where I present the findings from my interviews with representatives of these formal organizations about disaster resilience in their communities.

CHAPTER SIX

COMMUNITY-LEVEL SOCIAL CAPITAL:

DISASTER-SPECIFIC ORGANIZATIONAL NETWORKS

The previous two chapters focused on my analyses of Dixie and Leon County residents'

perspectives on disaster-specific social capital and collective efficacy. With my guiding

objectives in this dissertation of exploring how individual and community disaster resilience

relate and how community disaster resilience incorporates notions of social vulnerability, in this

chapter, I move on to discuss what I describe as community-level analyses. I use data from my

interviews with organizational representatives in each case study county and return to the first

focal concept of this dissertation—social capital— to explore how disaster-specific

organizational social capital operated in the case study areas.

Social capital is defined in this dissertation as involving two components: a durable social

network and resources in that network (Bourdieu 1985a). Scholars often study networks of

organizations or networks of organizational employees to understand the effect of social capital

on a variety of organizational performance indicators. This literature has shown how these

networks affect knowledge creation and sharing, research and development, and funding

acquisition, among other organizational goals (Argote, McEvily, and Reagans 2003; Borgatti and

Foster 2003; Brass et al. 2004; Cummings and Cross 2003). In a community, defined here as a

geographic space and the people and their interactions within it (Bruhn 2005), public and private

sector organizations—including government, nonprofit, faith-based, schools, and businesses—

affect community processes, including disaster resilience. Social capital between these

organizations is theorized as an important mechanism for achieving organizational and community goals. For example, the Federal Emergency Management Agency's (FEMA 2011) new "Whole Community" program has brought recent interest to the interconnection and role of all community organizations in disaster resilience; and organizational presence, membership, and activities are incorporated into models of community disaster resilience (e.g., Cutter, Burton, and Emrich 2010; Sherrieb, Norris, and Galea 2010). Furthermore, organizations represent a link between individuals and their communities, especially for vulnerable individuals who may interact with several different community groups, in routine and non-routine situations, for such services as food, housing, and health assistance (Zakour and Harrell 2003). Thus, while I understand that organizations do not equate to community, their role in community-level processes of resilience and their often direct mission to support the most vulnerable in their community makes analysis of their perspectives important to fleshing out our understanding of community disaster resilience.

The broad question I address in this chapter is: how does disaster-specific organizational social capital operate? To answer this, I compare and contrast four aspects of the two case study counties' organizational social capital networks: 1) structure, i.e. the 'who' of organizational actors involved in disaster activities and the ties connecting them, 2) operation, i.e. the 'how' of network operation including development and maintenance, 3) resources, i.e. the 'what' that is transferred through the network, and 4) explanation, or the 'why' that interviewees offered to explain their use of the network. This analysis allows me to elaborate on the *quality* of organizational relationships and how they are perceived to affect community disaster resilience.

To complete this comparison, I use the 23 interviews from Leon County and five from Dixie County that I completed with a variety of community organizational representatives. As

the reader will recall from Chapter Three, the field of organizations in Leon County was large, and my interviews with disaster mission organizations, nonprofit organizations, social service organizations that serve socially vulnerable populations, and religious institutions create a representative sample of the sectors of organizations operating in the county (see Table 3.6 for review of organizational sample). In comparison, Dixie County has fewer organizations based in its borders, and my interviews with representatives from two churches, two local government agencies, and one social service organization serving low-income populations also incorporates voices from different sectors of organizations operating in Dixie County. I begin with disaster-specific social capital in Leon County that includes a network of organizations referred to as the "Big Bend COAD." Then I compare those results with the practice of disaster-specific social capital among organizations in Dixie County, which is highly centralized in two governmental response organizations.

Disaster Social Capital by Design: Leon County's Disaster Organizational Network

In Leon County, disaster-specific social capital is formalized among many local organizations in a network called the Big Bend COAD[7] or "Community Organizations Active in Disaster." The COAD is a network of organizations working together to support disaster response and recovery across the "Big Bend" or eastern Panhandle area of Florida. The COAD is a local embodiment of the "National Voluntary Organizations Active in Disaster" network design (NVOAD 2013), and its mission is to:

> Enhance and develop ESF-15 Volunteers and Donations [FEMA's Emergency
> Service Function #15] structures in the eight Big Bend counties and to more
> effectively coordinate volunteer and faith-based organizations involved in disaster
> response and long-term survivor and community recovery. (COAD 2013)

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[7] I will refer to the Big Bend COAD simply as COAD throughout this dissertation.

In our hour and half interview, Jana spoke excitedly of the successes, failures, and new adventures of the COAD, which she, a Leon County government employee, coordinated. As she described, this COAD represents an intentional practice of organizational networking designed to bring organizations together to plan for, mitigate, prepare for, respond to, and recover from disasters.

> What we discovered during Tropical Storm Fay [in 2008] was that there is a 10-day lag between the time it's a declared disaster and the time FEMA gets in, and there's all these unmet needs…. [So] a few years ago, we created the Big Bend Community Organizations Active in Disaster – the COAD. We did that because there was no centralized system for talking to other [organizations] during an emergency, and during an emergency is not the time to start the conversation. It's all about Community, Coordination, Collaboration, and Cooperation, the four Cs, as we call them. So in the past, we have exercised with all these agencies. We have about 100. A lot of them are faith-based organizations. [With the COAD,] we're more proactive, and hopefully meeting the more critical needs as they come in, and then as we get into recovery phase, we know we can better organize ourselves. We think we have a really strong coalition.

In Jana's words, the COAD offers "community, coordination, collaboration, and cooperation," and below I detail different components of the network to understand her statement: 1) structure (who), 2) development and operation (how), 3) resources and activities (what), and 4) interviewees' explanation for their involvement and the COAD's effect on community disaster resilience (why).

Leon County Network Structure: The 'Who' of Disaster Social Capital

The first component to understand disaster-specific social capital is identifying a durable network of organizations that address disaster concerns. The structure of this network in Leon County is centered around a fluctuating group of approximately 100 Big Bend COAD member organizations representing eight counties: Leon, Franklin, Gadsden, Jefferson, Liberty, Madison,

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Taylor, and Wakulla (Personal Interview 2012).[8] As Jana described, the network was actively

created with a goal to reach all different sectors of community organizations, some of which had

never been involved in community-based networks, let alone emergency management activities.

> When we first started [the COAD], some people said to us, "We have never been
> asked to the table before. We're always asked after the fact, and then we're left
> scrambling and we look like idiots." So getting involved in the beginning,
> listening, giving them responsibility and ownership is helpful. Everybody's
> welcome to play. Businesses, that's why we call it the COAD. It's all about
> making sure that everybody knows we're out here…. So it should be part of what
> we do every day, not just when the alarm sounds.

Through my interviews and secondary research on the COAD, I found two structures of the

network, formal and informal, described below.

Formal COAD Structure

The COAD is formally divided into two groups of organizations: a core leadership group

of seven organizations and a group of general membership organizations containing

governmental and non-governmental local organizations and state-level disaster organizations

(see Table 6.1 for a partial list of organizations involved). The leadership group meets more

frequently and separate from the general membership to direct COAD activities and goals,

whereas the general membership organizations have more sporadic involvement in meetings,

attending the quarterly all-membership meetings as they can.

As noted in the Table 6.1 and discussed more later, the formally identified COAD

leadership includes local chapters of nongovernment organizations with disaster missions (e.g.,

The American Red Cross) and government volunteer offices from two of the eight counties

(Leon and Wakulla). Whereas, general membership includes local chapters of other national

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[8] It is reasonable to expect the other seven counties, besides Leon, had different experiences in the COAD, and many
of the interviewees alluded to that point. Because of my unit of analysis is county to align with other studies of
community disaster resilience, and because COAD membership is predominated by organizations located in Leon
County, I describe the COAD network in relation to this single county.

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nongovernmental organizations (e.g., The United Way), local non-profits and social service

organizations (e.g., Advocacy Center for Persons with Disabilities), state-level disaster response

agencies, and local government emergency management.

Table 6.1. Big Bend COAD Formal Structure: Leadership and General Membership

Leadership	General Membership
• American Red Cross (local chapter) • America's Second Harvest Food Bank (local chapter) • Catholic Charities (local chapter) • Goodwill (local chapter) • 2-1-1 Big Bend (local chapter) • VolunteerLEON • VolunteerWAKULLA	• The United Way (local chapter) • The Salvation Army (local chapter) • Ability 1st • Advocacy Center for Persons with Disabilities • Big Bend Cares • Big Bend Homeless Coalition • Elder Care Services • The Alzheimer's Project • Floria Assets Building Coalition • Tallahassee Amateur Radio Society • City of Tallahassee Emergency Management • Leon County Emergency Management • Leon County Animal Control • United Methodists (state chapter) • Florida Baptist Disaster Relief (state level) • VolunteerFLORIDA • Florida Deparment of Emergency Management

Informal COAD Structure

Social network researchers often highlight how the official organizational chart (within or

between organizations) differs, sometimes dramatically, from the "informal structure" of social

ties. This informal structure can more accurately capture the social interaction and flow of

information between network members that affects knowledge transfer, performance, and power

in the network (Krackhardt and Hanson 1993).

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To evaluate the informal structure of the network, I used several main themes that emerged during my interviews which indicated that there may be more to the structure of the network than the formal two group depiction of the COAD described above: 1) the centrality of immediate emergency response, 2) the role of referral and information organizations as crucial conduits between members, non-COAD organizations, and the public, 3) the uneven representation of organizations representing socially vulnerable groups, and 4) the temporal and weak connection between churches and businesses and the rest of the network.

Based on these themes and how interviewees described COAD leadership and their organization's role in the network, I developed a six tier involvement scale to describe the informal structure (depicted in Figure 6.1). These tiers are not mutually exclusive, and some organizations in Leon County operate in two tiers. The first tier is the "Disaster Core" and is the group that directs COAD activities and processes. The second tier is the "Conduits of Emergency Services" and is the referral organizations that form the informational link between members of the network, between the network and non-COAD organizations and between the network and the general public. The third tier is the "Social Service Semi-Periphery," which is a group of organizations who use network membership to support their clients, but do not direct COAD activities or processes. The fourth tier is the "Faithful and Financial Periphery," which describes organizations who have irregular and temporary involvement with the network. The fifth tier is the "External Assistance," which is a group of organizations that provide disaster-related services and are called upon by emergency management during a disaster. The final tier is the "Disconnected," which includes mostly small social service or community organizations that are unaware of and lack a direct connection to the COAD. My choice of names for each group is modeled loosely from World Systems theorists (e.g., Wallerstein 1974), who describe the

hierarchy of various countries in terms of power and the transfer of resources between levels. My

adoption of these names allows me to highlight how different levels of connection affect the

organizations themselves and community disaster resilience.

1. Disaster Core
2. Conduits of Emergency Services
3. Social Service Semi-Periphery
4. Faithful and Financial Periphery
5. External Assistance

6. Disconnected
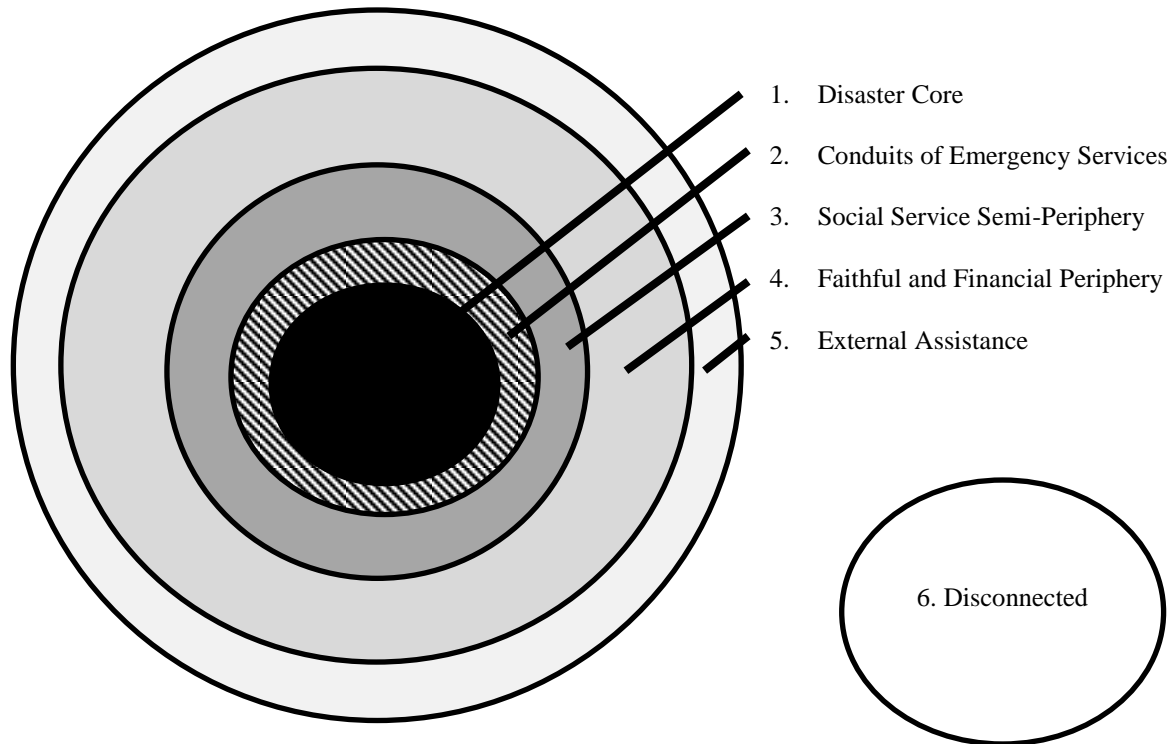
Figure 6.1. Big Bend COAD Informal Structure: Six Tiers of Disaster-Specific Social Capital

This typology differs purposefully from Dynes' (1974) typology of organizations in

disaster. My typology identifies the different places in a network structure, whereas Dynes'

typology identifies organizations based on how they would respond to a disaster. My typology

allows me to describe the effects of network location, such as the effects on their organizational

survival in disaster and their disaster-related services to their clients and the entire community.

My typology is specific to Leon County, but may be applicable to other communities. I describe

each of the six tiers in detail below.

Disaster Core: Strong ties, disaster response, and COAD leadership. The Disaster Core

includes those organizations that are most greatly involved in COAD development, planning, and

activities. Organizational representatives from these organizations were able to provide the most

detailed information about the COAD and they were most likely to be identified by other

interviewees as central leaders in the Leon County disaster-specific organizational network.

Representatives of these Core organizations often referred not to other organizations, but instead

referenced specific individuals in the other core organizations, knowing each other personally.

For example, representatives would tell me, "Do you know Jana? You have to talk to Jana at

VolunteerLEON." Based on the interview data, this group had the strongest ties among

organizations in the COAD, which meant that information and resources flowed easily between

them.

As a "Community Organizations Active in Disaster" local network, one would expect

that the mission of many organizations in this social capital network is disaster-related. My

interviews indicated that disaster response was the main mission of the COAD. Interviewees

commonly talked about the network's importance during this one phase of a disaster, for

example, in establishing volunteer centers, doing search and rescue, and providing food, water,

and immediate shelter to survivors. Recall Jana's quote that opened this section on Leon County

in which she described the need for a COAD to coordinate organizations for that immediate

response period between disaster impact and the arrival of federal assistance. Thus, it is not

surprising that organizations with disaster missions are well represented in the entire network

and make up the informal Core, which led to the name "Disaster Core."

The Disaster Core included those disaster-mission organizations who were identified as

formal leadership organizations above, along with a few other disaster response organizations

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that are not officially recognized as COAD leaders; specifically, the local government emergency management agencies. All seven formally identified leader organizations and members of the Disaster Core include disaster response as part of their mission and/or disaster response activities as a central part of their formal programming tasks.

Further, besides the two local volunteer management organizations (VolunteerLEON and VolunteerWAKULLA), the leadership organizations are local chapters of national organizations that share these missions. For example, the American Red Cross is the most recognized disaster response nonprofit in the U.S., and the local chapter plays a central role in coordinating evacuation shelters and other response mechanisms. Catholic Charities has two disaster-related components of their mission, as their representative described, "We're considered first responders, and then we're considered long-term case managers." Along with Goodwill, they coordinate donations of goods during disaster response. Second Harvest Food Bank is also a local chapter of a nationwide food network that supplies food to individual food banks and is incorporated formally into emergency management food distribution at state and national levels. 2-1-1 is a telephone line that provides callers with referrals to services including disaster-related assistance, which allows the phone line to function as an information source for the public during disasters. Finally, the two Volunteer management organizations are local government counterparts, one in Leon County and one in coastal Wakulla County directly south of Leon, tasked with FEMA ESF-15 volunteer and donation management. As such, each of the formal leadership organizations has disaster response as a central, if not *the* central, component of their mission.

Tallahassee emergency management and Leon County emergency management are also part of the Disaster Core, although they are listed as general members of the COAD. These

organizations are the catalysts to network operations because they allow access to emergency

information, share and organize resources, and choose to outsource certain response and

recovery capacity to other COAD organizations. Without the direction of local government

emergency management the network would be inoperable. As one interviewee described, the

COAD activates for a disaster at the call of local emergency management, "Generally, Leon

County Emergency Management would hold a coordinating conference call to determine what

the situation is, what's the scenario, what are our plans of operation." These organizations may

not be included in the formal leadership, although they attend all the regular meetings, because

the COAD is meant to be a network of community organizations, not just emergency

management, that offers services to the public. The COAD works to assist emergency

management with those social service tasks of disaster (e.g., providing food and water) so that

emergency management professionals can be free to perform their central duties of protecting

life and property. As one interviewee explained, the COAD exists because emergency

management agreed to share information and certain tasks with other organizations, but they do

not "officially" manage the COAD.

The centrality of disaster mission organizations to the COAD network and the

composition of the Disaster Core are partially due to policy prescriptions. State

recommendations suggest that these networks focus first on gathering all the disaster response

organizations before bringing in other organizations, as one COAD member described:

> [State programming encourages us] to work to bring to the table the current
> disaster-related organizations, such as Red Cross, Salvation Army, etc. But then
> also identify new partners and bring them to the emergency management arena to
> provide them with some opportunities to gain a more thorough or stronger
> understanding as to what it is emergency management does and what they can
> bring to the table to help their community to respond, based around this whole
> initiative about the [FEMA] "Whole Community."

The Conduits of Emergency Services: Cross-cutting role of referral agencies. The Conduits of Emergency, represented in the Second Tier in Figure 6.1, include organizations that play a very important role in the network—they connect all the levels of the COAD together and connect the network with the general public. The Conduits help develop and maintain the network, attend the regular meetings of the COAD, and have close relationships with the Disaster Core.

The Big Bend COAD includes three referral organizations, which make up the Conduits of Emergency: the local 2-1-1 information telephone line, the local United Way chapter, and VolunteerLEON. While, VolunteerLEON and 2-1-1 are also part of the Disaster Core and listed as official COAD leaders, they along with the United Way also act as conduits for the entire network connecting the member organizations to each other, to non-member organizations, and to the public. Thus these organizations straddle the line between the Disaster Core, or the most central component of Leon County's disaster network, and the rest of the network. By doing so, the Conduits are "bridging" organizations in the network (Brown 1991) along with participating in COAD leadership.

None of these organizations have specific service mandates related to certain population groups, but work broadly to coordinate financial, volunteer, and information resources. Again, 2-1-1, is a Disaster Core organization and also a main conduit. As the informational line that individuals call to find out where they can receive certain organizational services (e.g., homeless shelter, food vouchers, rent assistance, domestic violence shelters, etc.), the organization maintains a database with all the local organizations providing services (Personal Interview 2012). The United Way's role is to coordinate organizations and provide grants to meet community-wide needs (Personal Interview 2012). VolunteerLEON, which is also both a core

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member and conduit, is the local government volunteer hub that coordinates volunteer

opportunities for different local government and nonprofit projects, such as engaging in

community clean-up and beautification, helping with special events, and assisting low-income

members of the community with home repairs (Personal Interview 2012). For some of these

organizations, this role of coordinating organizations and services has become formalized in

disaster plans, as described by a local emergency management employee.

> We task that kind of stuff out by the Comprehensive Emergency Management
> Plan and in effect identify lead agencies, and we expect them to take that lead.
> They become a conduit. They tell us what their clients are going to expect and
> need from us, and they provide the coordination mechanism among those
> agencies to make sure they're kept apprised of what's going on [in our response].

This type of organizational glue that these organizations provide was viewed by

interviewees to help create the resilience net for the community, as one Conduit representative

explained, "making connections happen, making sure that the agencies that we work with are

working together in a family safety net kind of service way to make sure that people get the

supplies and resources and things that they need." This representative continued to describe how

this maintenance of a safety net affects disaster response and fosters collective action to

community needs:

> I think there are main things that [our organization] brings to the table, and that is
> trying to get our agencies together in a collective manner to figure out how we
> can attack a specific problem, like, if we need to provide food, trying to figure out
> what's the best way to do that through the free food bank trees that we help
> provide food for and getting the word out and making sure there are stations
> where people can get that food in an easy manner.

The bridging role of the Conduits extends beyond the COAD network to non-COAD

organizations and the general public as well. Because the Conduits of Emergency Services are

connected to numerous community organizations, they work to maintain connection between

COAD members and organizations outside of its formal membership. As long as an organization

is known to one of these Conduits, which according to organizational procedures means that the organization provides a service to the community, then they are loosely connected to the disaster social capital network and emergency management. For example, a local emergency management employee described VolunteerLEON's role as follows: "Their organization usually helps facilitate the outreach with those [non-COAD] groups. A lot of them are volunteer-based organizations. They are in touch with them a lot, and they help us stay in touch with some of the different organizations." Another organization, which was not a member of the COAD but focused on poverty issues in Leon County, described their relationship with the United Way and how they hoped to leverage this connection in a disaster:

> Other agencies with whom I might make sure we have a relationship would be United Way of Big Bend, which is to us somewhat of a funder. Most of our programs are federally funded and pass through a state agency. But we do get some funds from United Way of Big Bend. They may be able to serve in a centralized role to coordinate emergency services with us.

Borrowing from Granovetter (1973), the Conduits maintain those weak ties, the 'friend' of a 'friend,' that may be able to offer novel assistance and information.

The Social Service Semi-Periphery: Supporting residents. The social service organizations involved in the COAD have a more distant relationship with the Disaster Core and associated power structure of the network than do the Conduits, resulting in their name of Social Service Semi-Periphery (represented in the Third Tier of the network, Figure 6.1). These organizations commonly attend some, but not all COAD meetings. They know and work with other COAD members outside of disaster-related work, but do not direct disaster response or lead COAD programming. The Social Service Semi-Periphery is the product of the Disaster Core working to epitomize FEMA's "Whole Community" in the COAD membership. The Disaster Core has successfully incorporated a number of social service organizations that assist vulnerable

populations into the COAD. Organizations identified during the interviews as the most highly

visible members of this Social Service Semi-Periphery included those that represent the needs of

the elderly, persons with disabilities, and the homeless.

The organizations in this tier do not have disaster response as a component of their

organizational missions. Thus, the involvement of these organizations in the network is less

focused on immediate response to the community and more on supporting their own members'

needs before, during, and after a disaster. The network provides the opportunity for them to

gather information for their clients as well as provide information into the network on the needs

and capacities of their organization and clients, as one COAD member organization that serves a

special needs population described:

> I go [to a COAD meeting or exercise], I may take some [information] to my
> house, some plans, but I also take some things back that benefit the 1,000 clients
> in my agency…. So it gives us a little bit better insight into being able to say to
> them, "OK, well, have you thought about this? How about two bottles of water?"
> Dealing with it client by client, I don't think everybody does that. And maybe not
> everybody has to, but you have to know who the people you serve are so you can
> put the things in place that are best going to serve them. We do probably more
> than any place else I've ever lived. We never had COAD any place I've been or
> tabletop exercises.

The Faithful and Financial Periphery: Intermittent and temporary connection. The

Fourth Tier of Leon County's network represents the last group of Leon County-based

organizations that are still connected, though loosely, to the rest of the network (see Figure 6.1).

This Tier is defined by the sectors represented and the limited amount and type of interaction

they have with the rest of the network. Comprised of churches and businesses, the Faithful and

Financial Periphery have intermittent and temporary involvement with the rest of the disaster

network, usually through special events or short-term intense networking programs. These

organizations, like the Social Service Semi-Periphery, offer little to direct COAD programming,

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expansion, or goals, and are focused mostly on gathering information for their own organizational and membership purposes. But unlike the Social Service Semi-Periphery, churches and businesses are not commonly "members" of the COAD, thus they are not listed in the formal structure. Instead, they receive specialty programming (e.g., presentations, workshops) from COAD members targeted at their respective sectors.

Whereas the larger faith-based groups that have social service missions are regular members, like Catholic Charities, the lack of individual church involvement in the COAD is related to organizational missions.[9] For example, individual churches that provide a social service for the community at large—a food pantry, a shelter, a children's reading program—are included in the Conduits' organizational networks and could have those programs brought into COAD membership (e.g., Florida Baptist Disaster Relief). Religious institutions that only do religious activities or provide services only for their members are left out. These include churches, synagogues, temples, mosques and any denominational group attached to one of these houses of worship. As one Conduit representative described, the issue of separation of church from state and nonprofit from church creates a complicated situation, especially in disasters when needs and capacities emerge from a variety of organizations.

> So faith-based organizations, we just want to make sure that if they offer services it's for the entire community, not just the congregation. We don't want somebody to walk in there to try to get services and they have to become a member of the church first before they can get utility assistance or food assistance. That's not going to work. It's not that we exclude them, but we just need to make sure of that. And we do that with all of the organizations, make sure somebody doesn't have to be, like, a member of the YMCA to get assistance [from the YMCA]. There are several faith-based organizations and churches around town that are

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[9] The distinction between the Faithful identified here and those identified in the Disaster Core or Social Service Periphery relates to organizational mission and procedures of the COAD. Faith-based organizations that offer a regular service to the general public and do not prosthelytize can become members of the COAD and can be listed in social service directories (Personal Interview 2012). Thus, they have access to regular COAD programming, meetings, and leadership roles if desired, especially those faith-based organizations who have *non-religious* disaster response missions (e.g., Catholic Charities). The Faithful identified in this Periphery are houses of worship or denominational organizations that do not regularly provide services to the larger community.

actively involved. One of the things that we're also collaborating with is the Cold Night Shelter. It's not really emergency management or hurricanes, but it's an example of a collaboration.

The Cold Night Shelter, described in the above quote, was an example of a secondary service provided to the community, in which one church opens its facility to the homeless on nights that drop below 32 degrees. But even the Cold Night Shelter did not equate a more central position of the church in the COAD network. They instead were linked to the network for this one particular service, as needed, but as one of their representatives indicated, their only regular involvement in the COAD was reading the emails.

The external exercises specifically targeted at religious institutions do not require COAD membership and focuses on helping them address disaster concerns relevant to their religious mission. This intermittent involvement provided disaster preparedness information for the organizations and their members, but does not offer the routine interaction or collaboration with many organizations that the Core, Conduits, and Semi-periphery levels do.

For example, two individual churches that I interviewed (the Faithful part of the Periphery) were involved in COAD activities for a short period of time, but are not regular members. To galvanize the local church community, previous workshops and collaborative exercises were offered by the COAD, including one program several years previous that worked to coordinate numerous churches with the COAD. This effort lasted approximately two years and this short term involvement was perceived as successful for one church in my sample. Susan, representative of this church, described how this short-term but intense involvement with COAD members helped her church prepare their own disaster plan and provide information to their church members.

> We met with the head of the Red Cross at that time and an organization called
> COAD…. [A representative from COAD] contacted all of the different churches

and parishes, and we all had several meetings where we talked about disaster preparedness. Mainly, he filled us in and gave us all the materials from the Red Cross…. And then he also did several different other types of meetings where we discussed what we were doing and exchanged plans with each other, different people that were doing plans, and exchanged plans. That was really, really active for about two years. I'm still on their email list and I still get all the information from them when they're doing hurricane exercises, because they do a lot of exercises. I think we participated in the very first one, but we just haven't been able to do it for however many years it's been since.

Another local church also mentioned that they attended the same meetings two years ago, but currently only received the emails from the COAD. The third religious institution interviewed described how his group collected donations for larger disasters and was connected with state-level disaster organizations in the County.

Businesses (the Financial part of the Periphery) have been the most difficult for the Leon County disaster network members to involve in their network. When I asked Jana from VolunteerLEON who she wished was more involved in the COAD she quickly responded, "Probably more businesses. We're pretty good on the faith-based. Nonprofits we're connected with." Interviewees involved with increasing membership described the difficulty of showing value—economic and business strategy value—of the COAD. While social service organizations and some churches saw COAD involvement as a benefit for their mission to support their clients and members, convincing businesses of the value of involvement for their operations was more difficult as one COAD member described:

On the private side, bringing Chambers of Commerce to the table can be difficult. It's difficult in west Florida. Bringing businesses to the table can be difficult. The methodology in identifying who in this process we thought would be the most logical to bring to the table are those directly or indirectly involved in disaster response and recovery, the big box stores, Home Depot, Lowe's. But also we looked at it from the standpoint of insurance providers, home security companies, even drilling down to banks. Across the board, you get different levels of entrance by different business organizations.

Again, there have been business only exercises and practices, similar to the church ones described just above. These are separate exercises and operated for short periods of time, and that do not provide the regular interaction with COAD members that the previous three tiers of involvement entail. But unlike churches, businesses are welcome to join the COAD because there is no issue of church and state separation. They have just been slow to see the benefit for themselves according to interviewees. I also had a difficult time gaining access to interviewees representing local businesses, despite reaching out to several private sector organizations in my sample recruitment.

The External Assistance: Regional, state, and federal resource-specific ties. An additional layer of the organizational disaster-social capital network in Leon County is the External Assistance, identified as those regional, state, or federal level organizations that would be activated in a disaster response to contribute assistance (the fifth tier in Figure 6.1). This group includes such organizations as The Florida Baptists, and the state level disaster volunteer management office (VolunteerFLORIDA). While listed as general members of the Big Bend COAD, these organizations are non-local organizations and do not attend COAD regular meetings. These organizations are used during the immediate disaster response period for specific tasks such as removing fallen trees, providing tarps for roofs. As organizations outside of the local jurisdiction, they are connected only insofar as their capacity is known to local emergency management. These organizations were not included in my sample due to my focus on local organizations, but the ties with these organizations provide specific resources important to the network.

The Disconnected: Isolated organizations. The final tier of COAD connection (Figure 6.1) actually identifies a lack of connection and includes some social service agencies in the area.

I purposely tried to gather interviews from organizations not involved in the COAD, to determine their knowledge of this group and their focus on disaster resilience. My interviews revealed a large disjunction between knowledge and disaster capacity, detailed below when I describe the benefits of the network. Interviewees outside the COAD had often never heard of the COAD or its process, and when asked would respond by saying that they really needed to look up that information. These are the organizations that make up The Disconnected tier of Leon County's disaster-specific organizational network.

While the Big Bend COAD attempted to approximate FEMA's "Whole Community" approach, not all of the community organizations in Leon County were part of the network. In particular, three organizations that I interviewed, one representing minority populations and two others that coordinate housing and financial assistance for low-income populations, were confused about why I would interview them about disasters and expressed no knowledge of any community-level organizational networks for disaster. As one interviewee described, he would be interested, but was unaware of any opportunities:

> In terms of preparation, in terms of what's going on in the city, in Tallahassee, the county, the school board, etc., I have absolutely no idea what their plans are. I don't know of them personally. I know they do exist. To what extent, I don't know… If [our organization] is not destroyed, I think [disaster response] would be something that we should participate in. If there's a plan somewhere that we can partner with, it certainly would be interesting trying to find out what that plan is. But we won't initiate it. It would be initiated probably through the Red Cross or somebody who's actually, that's what they do. We do a lot of things, but that's not one of them.

This organization's lack of knowledge of local disaster networks and capacity is juxtaposed to this organization's emergent capacity to respond to great need, in the case of their assistance to survivors of Hurricane Katrina as the interviewee continued: "We took a busload of goods and stuff to Mississippi…. There was a church that was there that we were able to work

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with them…. They needed a lot of help, and that's why we did it." Interviewees from these

organizations often did not see what their role would be in community disaster network other

than this type of emergent response, though they acknowledged that disaster would cause great

harm to their clients.

These organizations may be weakly tied to the network through the Conduits of

Emergency. But, as a representative of another Disconnected organization indicated, a weak tie

to a referral agency did not lead to her awareness of the COAD.

> There have been seminars offered, I know, over my years in town they've done
> mock scenarios where you come up with a plan. I haven't done it while I have
> been here…. The only collaborative partner we have would be the Red Cross or
> 2-1-1, which would be a referral service. And then other organizations we work
> with the homeless community are emergency shelters, being able to refer them
> there. We tell them where to go if there's an evacuation, where the closest place
> would be. That's it. I don't even know where that is here. You're challenging me.

This result indicates that there is a distinct line between direct involvement in the COAD, even

sporadic involvement like that of the Faithful and Financial Periphery, and those with indirect

involvement through Conduits or no involvement at all.

These interviewees of Disconnect organizations often knew of local disaster nonprofits,

and commonly named the American Red Cross as the group that I should interview for more

information. For example, an interviewee whose organization specialized in low-income

populations, named the Red Cross and the United Way as two organizations he felt, informally,

had the capacity and expertise to do some organizing of agencies for disaster and create a

network. He planned in the next year to reach out to the American Red Cross for assistance in

developing the first emergency operations plan for his agency, which had been operating for

decades in Florida. He continued, "I do not know of other groups right off the top of my head,

nor can I think of any with whom we might do some immediate work. Even though I'm new to

my role [in this agency], I'm not new to the community. I've been here 28 years, since '84. I know a lot of the players."

<center>*Leon County Network Operation: The 'How' of Disaster Social Capital*</center>

The Big Bend COAD was formed in 2008, and its creation and maintenance comprised an important theme of the interviews. In terms of basic operation, members of the COAD meet quarterly (which is open to the Core, Conduit, and Semi-Periphery organizations), and since my fieldwork, the Disaster Core began a separate, more frequent meeting schedule. These meetings offer time to review plans, community needs, and organizational capacity, and to distribute relevant disaster preparedness information. Just before a disaster impact, such as a hurricane, meetings increase in frequency as protocols for coordination of preparedness and response are activated. Outside the regular meetings, the COAD holds disaster response exercises with the full COAD or different segments. As a Disaster Core organizational representative described, the exercises test the response capacity of all organizations involved.

> We hold exercises with different partner agencies and ourselves to actually acclimate ourselves with the different services that we provide and what would be the best way to streamline and get those services out to the population during a disaster. Besides exercises, we hold quarterly meetings to talk about our planning efforts, [such as] what are our strong points, what are our shortfalls, so we can strengthen those and better prepare ourselves to help people during a time of disaster.

In this section, I describe the nuts and bolts of general development and maintenance of the network. There are three key findings from the interviews related to these aspects of the Leon County network. The first is piggybacking the disaster network management onto existing local government operations. The second is recruiting COAD members from existing networks in Leon County. The third is general outreach.

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The COAD and Local Government

Leon County and the COAD have both benefitted from the work that Carlos has completed in the area. He was a former employee of a national disaster organization before opening his own consulting business focused on supporting disaster preparedness. Now, Carlos works with organizations across the country helping develop disaster exercises and connecting emergency management with their local organizations, including in his home county of Leon. Based on his experience, organizations other than local government emergency management, such as local volunteer management or other agencies that are tuned into community needs, assets, and networks, are often the best organizations to engage and enliven their community for disaster. Speaking about any community generally, Carlos explained:

> What I see as the challenge is finding the right combination of organizations to really drive home community preparedness [within a community]. Please don't look at this as a negative. Is that necessarily local government emergency management? It's not always the best avenue, because they have a tendency to be very regimented in terms of process. I do think there are other community organizations, some of them being government, that are much better at engaging citizens than local emergency management.

The true galvanizers of the COAD were local citizens who had personal interest in disaster issues and worked in local government. For example, VolunteerLEON, which coordinated the COAD at the time of my research, is a local government office and their representative, Jana, is a government employee whose main professional role is general volunteer management and coordination of volunteer activities in the county. As described by another government employee, "Yeah. [VolunteerLEON] really started back in the '90s, they were primarily recruiting volunteers to work in the library and the courthouse and stuff like that. They really expanded out. They took on the disaster role for volunteers and have done a fantastic job."

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Again, for Leon County, volunteer services are based out of local government, although, other nonprofits (e.g., United Way) may fulfill this role in areas that have less governmental capacity (Personal Interview 2012). Yet, housing the COAD in a volunteer services organization made it uniquely positioned to capitalize on existing organizational knowledge and resources. Because of this role as a general volunteer coordinator, VolunteerLEON came to represent an effective organizational structure to also coordinate the FEMA ESF-15. Between coordinating volunteers and donations in routine situations locally and disaster situations from the ESF-15 role, VolunteerLEON is highly involved with nonprofit and emergency response organizations. VolunteerLEON, as a local government volunteer service organization, is able to connect the general volunteer and social service organizations for disaster purposes. The following quote illustrates this process:

> It's as simple as just the windshield tour in regard to the church of what's happening now. We tell them, "Are you prepared for an event of any sort? What will you do for your congregation? Would you be willing to do this or this or this for you?" And the answer is always yes. They want to be asked. When we first started this, some people said to us, "We have never been asked to the table before. We're always asked after the fact, and then we're left scrambling and we look like idiots…. People didn't even know about VolunteerLEON in some cases, too. That's just what happens. You know us when you need us. When you don't- and that's the tough part, getting out there and talking to people and asking."
> By placing COAD coordination with the local government volunteer services

organization, the COAD was instantly connected with the field of other volunteer organizations operating in Leon County. Furthermore, Jana felt that making COAD part of local government offered more stability than if it was placed in a nonprofit organization because a nonprofit depends on charitable donations rather than tax dollars.

COAD Recruitment and a Networked Community

As Jana described above, overlaying the COAD on local volunteer services organizations provides a means to reach many non-government organizations in the local community and

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begin drawing them into the COAD. The COAD was able to foster more participation by inviting members of another local organizational network to participate. Specifically, a network of organizations focused on public health issues existed in Leon County. One social service organization representative described how he was recruited because of involvement in this other organizational network.

> We have a group in town that we are a member agency of, which is United Partners for Human Services (UPHS). Again, it is restricted to human service provider agencies, there's about 90 of them…. So when COAD was being developed, I was a board member of UPHS, as was the person who was organizing [COAD], so she's of course recruiting from the people she already knows to get everybody there. It's the networking piece of human services in Tallahassee in particular that are very, very good. If you want it to be; you're as involved as you want to be.

As this quote highlights and many interviewees discussed, Tallahassee and Leon County had a history of organizational networks, of nonprofits and social services and government agencies meeting regularly to share information and concerns. This culture of networking supported the growth of the Big Bend COAD.

General Outreach and Bringing in New Members

Utilizing existing organizational networks and VolunteerLEON capacity helped Leon County to formalize a disaster social capital network. This led to a quickly populated network of organizations who commonly work together, but also meant that organizations operating in isolation have been slow to enter the network. Bringing in some of these other organizations involved more direct solicitation. For example, a few organizations actively sought out participation and some had been directly targeted for membership in the COAD, as a local emergency management employee explained:

> We'll get a call from somebody that says, "Hey, I have this capability, I don't know if you're aware of it." "Fine. We want you to come to our next Community Organizations Active in Disasters meeting." Or we'll find out that somebody has

a certain capability, maybe we're talking to somebody from Georgia and they go, "Our faith-based organization does this for us." We might go out and talk to our people in the faith-based community and go, "In Georgia they do this. Do you guys do that kind of thing?" And sometimes they'll take on that role…. With these tornadoes happening the last couple of seasons, people see stuff happening in other places and realize, "Oh, man, that could happen here!" That prompts them to come to us.

So far, I have described the structure and the operation of Leon County's disaster-specific organizational network. The question remains, how does this network affect community disaster resilience? What does a network provide to Leon County's resilience that the aggregate of these organizations working independently would not? I now move to the 'what' and 'why' of the Big Bend COAD to answer these questions based on the perspectives of those inside and outside this network.

Leon County Network Effects: The 'What' and 'Why' of Disaster Social Capital

Just as individual disaster-specific social networks provide access to benefits such as financial or nonfinancial assistance, as discussed in Chapter Four, organizational social capital networks promote benefits for the organizations involved. There is an established scholarly literature on the effects of organizational social capital on organizational performance and knowledge management (e.g., Inkpen and Tsang 2005). This literature, though, is largely composed on research on corporations rather than nonprofit or government organizations, which have different organizational missions affecting their use of and involvement in networks (see Provan et al. 2005 for exceptions to this general trend). Furthermore, this literature almost exclusively focuses on routine social capital; in other words, social capital networks operating under non-disaster situations. Research that does exist on organizational social capital in disasters is commonly completed post-event and focused on the immediate disaster response period, though often arguing that pre-event connections between organizations may affect these

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post-event network outcomes (Kapucu 2006b). Thus, as one could easily predict, disaster-specific social networks, like the COAD, are fundamentally different than those commonly researched both because they are comprised of various sectors and organizations of widely different missions and because they are focused on a potential, but somewhat unpredictable, external shock to their organization and the community at large that will affect the network itself and the organizations involved.

Based on interviewees' descriptions of their reasons for involvement in the COAD and comparison between Big Bend COAD member interviewees and non-member interviewees, I explore the perceived effects of a disaster-specific organizational social capital network on community disaster resilience. Three broad reasons for involvement and effects of the COAD on resilience in Leon County emerged from the interview data: 1) more effectively organized disaster response, 2) improved organizational survival through disaster, and 3) increased attention to vulnerable populations, with a special emphasis on their needs and capacities. This section, therefore, provides specific evidence of the overlap between community and individual levels of resilience and how the first of the two central concepts of this dissertation, social capital, can be used to integrate the two levels of analysis.

Efficient Disaster Response: Learning about Organizational Capacities and Needs

Carlos, introduced above, runs a consulting company based in Leon County that hosts different online practices and games for organizations across the country to see how their disaster plans "work." During our interview, he talked passionately and frankly about the importance of bringing more and more groups of people to the table to talk about disaster. From his perspective, greater participation in a network like the Big Bend COAD would mean that more people would come to know what each other could and would do in a disaster response. This

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information about where capacity and needs are located in a community was perceived as

fundamental to effective disaster response. He described this process with an example of a

practice exercise, like one the Big Bend COAD had recently completed.

> As teams play through the exercise, they key in their responses. It's interesting to see, for example, community emergency response team people who play that really do not know what the other community partners do in a disaster.

> Let's take a simple scenario, in one exercise, Mrs. Jones, the 87-year-old widow woman, doesn't have any family, friends, relatives in the area. She lives in a floodplain. She doesn't have any insurance. She's just contacted your local organization, whatever it may be, and asked, "Can somebody come build a sandbag wall around my house?" It's a simple yes or no. Most organizations playing will say, "No, that's not what we do. We're the community emergency response team. We don't do that." But if during the exercise they answer no, which it's OK to do, I cue them up to say, "OK, who are you going to refer Mrs. Jones to, in order to help build a sandbag wall?" And I'll see responses, everything from the American Red Cross to the Salvation Army. And neither one of those organizations builds sandbag walls for people.

> So it tells me that there's a gigantic disconnect in terms of the "Whole Community," not only from the standpoint of being able to work together in response, but really beginning to understand what it is the other partners do…it's been an eye-opener to see how little organizations know what the others are doing.

The saying goes that "it is not what you know but who you know." In the case of the

COAD for increased response capacity, this saying can be adapted to, "it's what you know *about*

who you know." The first key benefit identified from the interviews and noted in Carlos'

example is that involvement in the COAD network provides organizations with knowledge about

the capacity and needs of other member organizations. As an emergency management

representative explained, "It's a constant cycle of learning and finding out who has what

capabilities and who has what responsibilities. That helps us improve our ability to help serve

those people in an emergency." Interviewees argued that this knowledge, gained through

COAD's formal exercises, quarterly meetings, and email communication, increased the

efficiency of disaster response in four ways: 1) reducing the duplication of efforts, 2)

streamlining resources, 3) assessing formal emergency management plans, and 4) transferring

real-time disaster information to and from the general public.

Reducing duplication of services. First, simple knowledge of which organizations have

chairs, buildings for shelters, food and water, and so forth, helps the central emergency response

organizations create procedures for sharing those resources —*before* an event occurs. Many

COAD members interviewed described how this knowledge helped the network avoid

duplication of services and thus improve disaster response. The following quote from faith-based

disaster organization is one specific example of a storm pre-COAD in which benefits were

duplicated:

> During [Tropical Storm] Faye, we had several agencies that went to a business
> and got gas cards, and they did not share the wealth. And then they got hotel
> cards…. We wound up seeing people going to these agencies, getting gas and
> hotel vouchers for however long, and then going over to [another agency] and
> trying [to get more benefits], but they're not in our system.

This benefit of network involvement resulted from agencies communicating before and

during an event about what individuals and groups were doing. Kim, a representative from a

local food bank, compared this network to her previous work in a community without a COAD

to show the benefits of the organization on disaster response:

> I think [COADs] are incredibly important. I've been in situations [in other
> communities] to where a disaster happened and we weren't prepared. So it's
> much better when you have COADs from the beginning, [it leads to a] much more
> organized response. Are there not sometimes issues of who's going to do what, a
> little bit of ego in there? Yeah. But not having it is far more disastrous than
> having it. It keeps you from duplicating services. You're just more organized and
> strategizing, "What do we need to do? Who do we need to do it for? Have we
> covered all our bases?" Some of the pros of meeting are where we know where
> we stand, we're able to streamline the needs of the community and how
> proficiently we will provide that help during the time of an emergency, but also
> knowing who provides what, like I said, during the time of disaster gives us a
> great opportunity so that we're not duplicating services.

Streamlining resources. Second, as described in the previous quote, this type of

networking helped agencies manage their funds and reduce the possibility of fraud from

individuals getting duplicate benefits (a fear of agencies with limited funds). With nonprofit

organizations operating in a recession at the time of this research, saving money while

maintaining a level of adequate service was at the forefront of their representatives' minds. As

one disaster organization representative described, improved response organization through

COAD involvement "gives us an opportunity to be conscious of the donor dollar, because we are

a nonprofit, so we're able to have more funds to provide for more services during non-disaster

times."

Assessing formal emergency management plans. Third, this information shared among

organizations in the COAD can then be transferred into formal plans by local emergency

management, or simply stored by emergency management so they can call on an agency when

they become aware of particular need. Network interaction also functioned as a time to gather

input on plans and review and revise mitigation, preparedness, response, and recovery plans. One

local emergency management representative described the review of the post-disaster

redevelopment plan the morning of our interview, "Matter of fact, the meeting we had today was

to talk to the COAD partners about our post-disaster redevelopment plan which we'll finish in

the next month or two."

Transferring real-time disaster information to and from the general public. Finally, the

COAD involvement allowed for the incorporation of organizations that can quickly assess

general community needs in real-time during a disaster response and direct the public to

resources and volunteer opportunities, which is a common problem during disasters (Quarantelli

1986). During emergency response, COAD agencies funnel information to emergency

management about community needs, especially the Conduit referral agencies. Leon County

incorporated 2-1-1 and VolunteerLEON into the Emergency Operations Center (the local

government emergency response headquarters) during disaster response phases specifically to

ensure information transferred efficiently from the public to them. For example, 2-1-1 provided

disaster information to individual callers, as described by a COAD member.

> This is what our citizens' information center and 2-1-1 Big Bend do - give
> information to the public during events. The public can access it directly, or they
> call in and ask question and they look it up here and give them the information.
> It's a real-time communication tool…. [Individuals] are probably not going to be
> able to look up FEMA or access that phone number. So they can call 2-1-1 and
> they will let them know what they need to do to get the services or the help or an
> adjuster or whatever from a FEMA representative.

These organizations, along with social service organizations, inform emergency

management of the types of needs they are hearing of from their callers or clients, which allows

emergency management to redirect disaster services as needed. Beyond supplying information,

COAD members also connect residents and their volunteers with disaster volunteer opportunities

which improves disaster response. As a VolunteerLEON representative describes, this is another

aspect of being a conduit in the COAD:

> Organizations can email us what their needs are easily, and volunteers can see, "I
> am a certified tree person [who can remove fallen or damaged trees]." "Good, you
> can go here." It's the responsibility of that receiving agency. So that agency
> would get a message saying, "This volunteer is coming," and that volunteer would
> go, and they would be a volunteer for them. We are the middle-people.

Strengthening Organizational Survival and Supporting Service Missions

Previous literature indicates that involvement in any community network reduces the

likelihood of a community organization closing (Baum and Oliver 1991). My finding extends

this research to identify how connection with a disaster-specific network can support

organizational survival during a most trying situation—a disaster. Strengthening organizational

survival through better planning was perceived as the second main benefit of COAD involvement.

Organizations in the first four tiers of the COAD described how access to COAD members with disaster expertise helped them receive assistance in developing plans, identify key staffing needs, identify funding sources for disaster mitigation, prepare back-ups of important information, and even practice evacuation or disaster exercises. As one organizational representative, whose organization provides services to individuals with special medical needs described, COAD activities compelled him to think about disaster issues that were not always a central focus of his job:

> Pretty much it's just the tabletop exercises, this is happening, so you have to sit there and think for half a day of things that I probably just don't have half the day to sit in my office thinking about that. I would say for us, the benefit was participating with the guy who sort of invented these tabletop exercises and then developing a relationship so he could help me develop the disaster preparedness plan and the operations and contingency plan. So sort of work down the road, but also think about we need to have, who needs to be on the on-call list really, what equipment do I really need to run and make things happen?

A local emergency management representative described his assistance to a Leon County church, "For two years, I've done an exercise for a church here on development of a disaster plan and evacuation planning. We've done two full-scale exercises where we've pulled the fire alarm during a service, evacuated people, have fire and police there. We evaluate it all." My interview data indicated that even short-term involvement with the COAD, such as that of the churches in the Faithful and Financial Periphery, helped organizations develop internal disaster planning capacity, which was perceived as supporting their survival during a storm.

In addition to developing plans, as one COAD member explained, involvement in the network allowed organizations to learn how they can best assist each other in many ways: "You'd be surprised what happens at these meetings. 'I didn't know you did that.' 'Can you do

this for me?' 'I can do this, I can help you with this.' It's all about communication, 90% of the stuff is communication." For example, one organizational representative described the need for food for their clients during a disaster explaining how they can seek assistance from other network members. "[COAD members] have contacts enough with these stores where they get palettes of corn, green beans. As long as we're in coalition with them, I'm sayin', 'OK, I don't have any of this or any of that, do you have any?' That's a huge thing."

Sharing information and assisting each other with resources necessary for organizational survival during a disaster requires involvement in the network. Those organizations in the Disconnected group did not express these benefits. All the interviewees from the Disconnected group had the same response when asked about internal organizational disaster planning—"we lack that." Some of these interviewees had thought about disaster procedures or were attempting to contact organizations in the community they thought could assist them with their disaster planning, as explained by a representative from low-income assistance organization, "I've asked, for example, the employees to reach out to the American Red Cross local chapter to see what technical assistance we can get from them in helping us put together our plans." Other agency representatives described how they had no plans for a disaster to address their own organizational survival *or* the needs of their clients, as exemplified by the following quote from a low-income housing provider, "For our offices, I don't know what our contingency plans are for needing to shut down, needing to reopen, needing to relocate, or what-all needs to be in those plans."

Incorporation of Social Vulnerability: Assisting Vulnerable Clients during Disasters

The third benefit of organizational connection through the Big Bend COAD was the perceived direct effect on the resilience of individuals in the community, especially the socially

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vulnerable. Specifically, interviewees believed that participation in the organizational disaster network: 1) fostered the knowledge sharing about the needs of vulnerable clients in an emergency and in routine situations, and 2) increased the capacity of organizations to help their vulnerable clients prepare for a disaster.

Fostering knowledge of social vulnerability. First, the involvement of community organizations in the COAD raised the awareness of different types of social vulnerability and the geographic location of these groups, as explained by one organizational representative who worked with individuals with disabilities.

> Knowing where consumers are, knowing where pockets of people that are less able to take care of themselves are - my staff has a handle on that. I feel like I've probably been more involved with the preparedness stuff than a lot of the other organizations, but I think I should be, because I'm representing one of the most vulnerable populations, so I should be engaged in some way.

Another COAD member stated simply that communication between the Conduits, Social Service Semi-Periphery, and the Disaster Core, "makes [emergency management] sure that you've covered a lot of the populations that might not normally come for help." As a local emergency management representative explained from his perspective, "[COAD members] really bring a lot to the table. You can engage those partners, and they bring a lot of knowledge and experience, particularly knowing what the needs of those vulnerable people are that we may not necessarily know."

COAD involvement also generated more general awareness of community needs. For example, one agency representative described how COAD involvement kept attention on the increasing homeless population in the County: "It spreads awareness about the issue of homelessness. It's constantly in the paper when it gets cold, and people see the community

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collaborating to address the issue and get people's attention, and then maybe more people are interested in getting involved."

Assisting socially vulnerable clients. Second, the information transferred throughout the COAD network allowed organizations to assist their clients with individual disaster preparedness. This was most obvious for organizations that worked with special needs clients, such as the elderly, those with disabilities, and those with special medical needs. In particular, these organizations often mentioned the Leon County's special needs registry for disasters. As one of these organizational members who works with the elderly explained, "We work closely with the local emergency preparedness office. We give them a list of all our at-risk clients so that they know who they are, who's on oxygen, who might have special needs." Individuals on this registry will be contacted and then assisted with evacuation if needed, so this organizational representative was able to ensure his clients' needs were known during an emergency.

Even when vulnerable individuals are unwilling to join these registries, the involvement of an organization knowledgeable of their needs can still support them during a disaster. For example, Jason, a representative from an organization focused on special medical needs, described how if clients do not wish to register on the governmental form, he could use his network connections to assist them in other ways. Jason explained that he can either ask his clients for a waiver during a disaster so he can alert emergency management of their needs or he can find ways to support his client through other organizational connections in the network, as he described below:

> I think it's knowledge. Everything is based on knowing ahead of time: who does what and better yet, who's organizing it. This guy could get out of his driveway if he could move that tree. I know a church that works through COAD that does nothing but a chain saw crew. OK. I don't need to drive out there if somebody nearby will just go over there and cut the tree out of his driveway. And now I can cross him off my list. Not everybody needs you to do everything, and knowing the

difference of, "That would take us seven hours, and they could do it in 45 minutes. Why don't we go that route?" It's knowing.

For religious institutions I interviewed in the Faithful and Financial Periphery, network involvement helped them become aware of how to assist their most vulnerable members, such as elderly church members or immigrant populations. As one church representative explained, they conducted a special needs registry sign up and helped individuals evaluate their disaster plans and needs during their regular at-home ministry services:

> We worked with the [local emergency management] on getting special needs assessments forms filled out for people in the parish who might need additional help. We have a communion for the sick and home-bound, and we distributed those forms to all the people that were involved with that ministry. So they got them filled out and returned them.

This benefit of the network on resilience can be described as increasing the incorporation of disaster into the regular missions of organizations that work with the socially vulnerable or marginalized. As VolunteerLEON representative, Jana, explained, this helped them meet disaster needs while assisting with the routine, everyday needs of many people. It also provided at least a short time in which individual residents discussed and thought about their disaster plans. In the following quote, Jana described how she has embedded disaster into daily volunteer and community service in Leon County to reach the general public:

> I'm doing an event tomorrow. We're building a ramp for a couple that's disabled. We are taking down a tree that's hanging over their mobile home. We're replacing bathtubs. We're doing some renovation, all volunteer-driven. When I went out there to look [at the house], it's way out in the county. You take a dirt road and then another dirt road to get to these folks. I'm thinking to myself, "If something ever happened, they're not getting out of here. They're stuck." So we're going to give them a disaster kit and I'm going to register them on our special needs list, because one is in a wheelchair, the other one had a kidney transplant, so they're not in the best of health. We're trying to do more outreach to people who have never heard of us, don't know the process, and aren't connected with healthcare agencies to put them on a specials needs registry.

In another example, Jana described providing disaster preparedness resources to those who often cannot afford to prepare on their own, "We gave away 200 [emergency preparedness] buckets one year to a low-income community and somebody said to me, 'What if they use the stuff in there before a disaster?' I said, 'And your point is-?' They have a world radio, flashlight, things that are reusable, so if they pull out the water, big frickin' deal!"

This benefit of the COAD was, again, unevenly distributed among the Leon County organizations. For organizations not involved in the COAD—the Disconnected— they not only lacked strategies for their continual operation as discussed above, they also lacked plans for what they would or even *could* do to assist their clients during a disaster. The organizations interviewed who lacked connection to the COAD all indicated that they did not provide any disaster information to their clients. One interviewee assumed her organization's low-income housing clients would go to a shelter, but worried that because of their poverty many lacked televisions or radios to receive emergency notifications. Thus, the lack of a tie to the network prevented the trickle down of disaster planning information from the emergency organizations to clients of these Disconnected organizations; these individuals would need to rely on gathering their own information through media or personal networks, if available to them, or calling 2-1-1.

Assumed Disaster Social Capital: Dixie County's Emergent Response Network

While Leon County's disaster social capital exists within a durable network of organizations that work together in routine and non-routine situations, in most disaster-specific organizational ties are expected to emerge when needed. Again, I frame my discussion around the 'who' (structure), 'how' (operation), 'what' (resources and activities), and 'why' (explanation of network involvement and effects).

Dixie County Network Structure and Operation: The Who and How of Disaster Social

Capital

Dixie County's disaster-specific organizational social capital is not formalized into a durable network like the COAD in Leon County. Based on analysis of the interviews, Dixie County organizations for disaster response are organized into three tiers pictured in Figure 6.2: 1) "Disaster Core," which includes strong ties among government agencies with disaster-related missions, 2) "Response Periphery" of regular, but weak ties between the Core and other governmental agencies and the American Red Cross for disaster response, and 3) "Emergent Exterior" of non-governmental organizations who have no disaster-specific ties to the network, but are assumed to emerge with resources when needed.
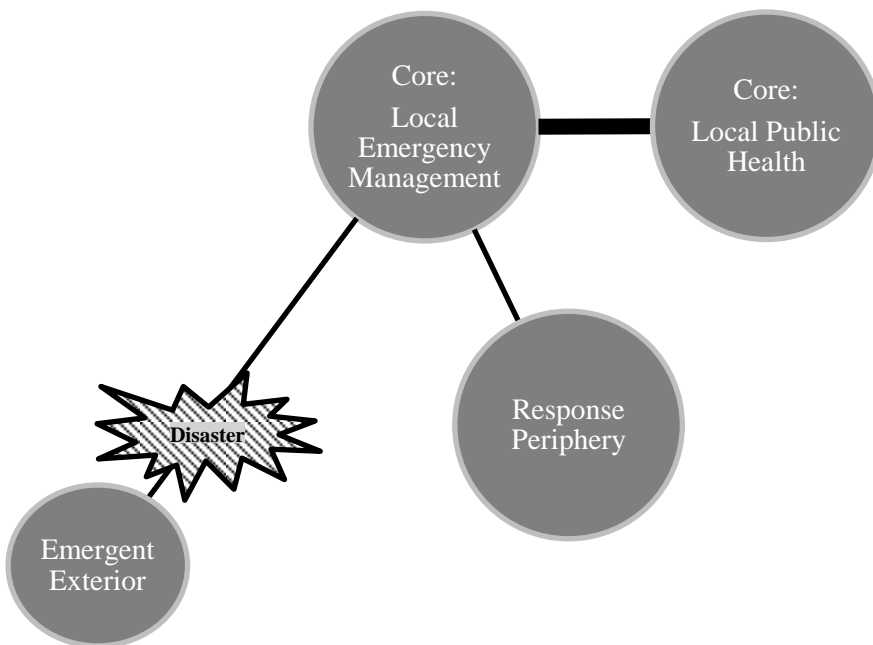

Figure 6.2. Dixie County Organizational Disaster Social Capital

Disaster Core: Performing All the Emergency Management Tasks

The Disaster Core in Dixie County functions similarly to the Disaster Core in Leon County: directing emergency planning, response, and recovery. Except in Dixie County, the

tightly knit Disaster Core contained only two agencies, both from local government—County

Emergency Management and County Department of Public Health (which oversees Dixie and a

neighboring rural county). These two agencies work together to do all the disaster-related

planning and activities in the county, including public outreach for individual preparedness for

disasters, coordination of response during routine emergencies such as small water

contamination issues, and organization of other local government agencies during disasters. For

example, a local public health representative described how he was collaborating with

emergency management at the time of our interview:

> Every year we make available these public preparedness guides that we try to
> distribute. We have messaging going on throughout the year about, 'Hurricane
> season's coming, are you prepared? Do you have a supply kit?' We work with
> emergency management right here, see the County Emergency Operations Plan
> that I'm working on updating the media portion.

Interviewees from these agencies explained that they knew each other by name and spoke

frequently about disaster concerns.

Response Periphery: Connecting During Disaster

The next level of the disaster-specific organizational network in Dixie County is the

Response Periphery. The Response Periphery is identified by its weak connection with the

Disaster Core and its participation in emergency management that occurs primarily during

annual exercises and is directed by the Disaster Core. This Periphery includes other local

government agencies, including those handling critical infrastructure that may require repairs

following a disaster (e.g., power, roads, water, and sanitation), the school district, which is used

for sheltering during a hurricane evacuation, and the American Red Cross. A Disaster Core

representative explained the interaction between themselves and these government agencies:

> Two weeks from now, we have a tabletop exercise at the Emergency Operations
> Center that we do annually. So we're pretty engaged with the other agencies, the

other municipalities within each county and practice pretty regularly…. They ask
every agency within the county, from the road department to the clerk's office to
the health department to everybody, because you have all these functions going
on. You have a financial piece, the road piece, your electrical companies come in,
because the electricity plays a huge portion of what's going on. You have health
on public health issues. So there's everything from financial issues in an
emergency right on down to the basic infrastructure stuff. As a matter of fact, the
one in two weeks, every county agency is required to have someone at the table,
so pretty much every agency would be there.

Also included in the Response Periphery is the American Red Cross; they are the only

non-governmental agency regularly connected to the Dixie County Disaster Core. One individual

volunteer provided the main line of connection between Dixie County Emergency Management

and the American Red Cross local chapter, which is located 50 miles away. A Disaster Core

representative described this relationship:

We have a [Red Cross] representative in this office; he's a volunteer that comes in
and does stuff in our office weekly. He's here for the public to come in and ask
any questions, sign up to volunteer. We use them for home fires, for burnouts,
when somebody's lost their home or their belongings during a house fire. So we
have a very good working relationship with the Red Cross.

The Red Cross' involvement in Dixie County emergency management is directed by the

Disaster Core, they do not participate in pre-event planning in the way that the American Red

Cross office in Leon County does. This relationship, between emergency management and the

Red Cross through one individual makes this tie weaker than the working relationship between

emergency management and public health and instead similar to the regular but weak tie between

the Disaster Core and the other local government agencies.

Emergent Exterior: Charitable Disaster Response

Churches and nonprofits in Dixie County lack formal connections to both the Disaster

Core and the Response Periphery and make up what I call the Emergent Exterior. This group of

organizations is not formally connected to the Disaster Core or Response Periphery pre-event,

but these ties are expected to emerge in the aftermath of a disaster. As one interviewee from Dixie County explained, representatives of their non-governmental organization attended meetings with local government, none of which have addressed disaster specifically, "We have gone to meetings at our city hall, that type of thing. The subject [of disaster] has not really come up per se, but they know that we are involved in the community." Thus, the Emergent Exterior may be connected with others in the community, but these connections do not include disaster information.

The discussion from a church representative provides an in-depth example of this level of interaction. Sarah, a church assistant, moved from Tampa to Dixie County when her husband became the pastor of a small church in the area. Their church, located in a remote part of the County, has 100 members. Most of those members are weakly connected with the church, or, in her words, "Some of 'em you couldn't find with a search warrant. On a good Sunday, we'll have usually about 30 people in our worship service." As we talked about disaster response in Dixie County, she explained how the religious community, including her church, would respond. She talked about their connection with the local mayor, which was intermittent and not disaster-specific. Her description below shows why organizations like hers are considered the Emergent Exterior.

> Certainly anyone in this area that would need help [during a disaster] could contact us, and they know that at city hall, the mayor knows that. As far as calling it disaster relief in this area, I don't know that there's a specific organized effort as far as the churches are concerned… Like I say, they do have a disaster relief center that is located in Cross City. Probably if you call them, they more than likely would be organized. They would have a plan, so to speak. As far as the churches are concerned, I don't know that there's really a plan. We take it as it comes! [laughs] We don't mind calling on people to help, and we don't mind rolling up our sleeves and emptying our pockets and working to help. But as far as an actual plan in case of a disaster, probably the disaster relief center, I'm not sure if it's county or state, I imagine it's county-run, but I don't know if it's state-funded, they would be the organized people that would tell you, "OK, here's what

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we would do in case of X." But as far as disaster relief in this area, we've not had need for that so far. I hope that we don't.

As she and other interviewees from the Emergent Exterior stated, government was expected to ask for what they needed when a disaster occurs and then the organizations would provide the resources they could. Involvement of non-governmental organizations (besides the American Red Cross) was viewed as an act of charity that would emerge in a disaster situation, as one governmental representative's example shows:

> [The churches] always show up as a great resource in the aftermath to basically feed, do whatever needs to be done. You don't even have to ask for it. They're going to show up and help. I wouldn't say they're part of a formal plan, because anything you get from them is just out of the goodness of their heart, but you can always count on them to show up.

Yet, there was disagreement amongst the interviewees in Dixie County about the strength of the connection between the Disaster Core and the Emergent Exterior. In contrast to information from the three non-governmental organizations interviewed, which mirrored Sarah's comments, the Disaster Core described their relationship with the local churches, specifically, as good. One Disaster Core interviewee said that local government employees have attended church meetings to distribute preparedness information. He continued: "We do a lot with our faith-based communities. We try to get to some of their meetings, whether it be different churches or just some Deacon's meetings. We try to get literature handed out at them. They take it back to whatever church they belong to and distribute it from there." My interviews with the two church leaders did not confirm that this type of connection had been developed, though it is possible that churches I did not interview would recall this interaction with the Disaster Core. Even so, as the last quote indicates, if this relationship exists between the Disaster Core and the Emergent Exterior it would be intermittent and used primarily to distribute information about preparedness.

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Dixie County Network Resources and Explanation: The 'What' and 'Why' of Disaster Social

Capital

As is apparent in the above data, Dixie County lacks a formal network of disaster-specific

social capital as was embodied in the Big Bend COAD. Instead the connections in Dixie County

rely on more individualized linkages between specific representatives of various agencies. This

included the strong tie between employees of the Disaster Core, the weaker tie between an

individual American Red Cross volunteer and the Disaster Core, or a routine knowledge of some

governmental representative (such as the Mayor) and a church or nonprofit representative. Dixie

County did not offer regular meetings of community organizations to talk about disaster issues.

Even without the formalization of a network, interviewees perceived that their

relationships as they existed benefitted emergency management because they "knew who to call"

when needs emerged (and that the government would call others if specific needs were

identified). As a representative from public health explained, the close personal relationship

between himself and the emergency managers was described as one of the most important pieces

of the County's emergency response capacity.

> The biggest asset is the good working relationships. You just can't underestimate
> it, not having to build a relationship with [the emergency managers], because I
> already know them, I've worked with them for 10, 15 years. We've been on this
> one and that one and the next one. All it is is a phone call. We have each other's
> phone numbers. It's not to build this relationship when the time comes, it already
> exists. You know who's going to be at the table." "We're going to be at the table.
> People that we work with all the time. I think to me, if you ask me personally,
> what the biggest resource is, it's those relationships that you don't have to build
> because they're already there.

This expressed importance of this strong relationship for disaster situations contrasts to

the expressed satisfaction with the weak relationships to all other organizations. While seen as

supporting emergency management, the structure and operation of this conglomeration of

organizations reduced the knowledge sharing found in the Leon County network. Because organizations outside of government were not connected to emergency management, knowledge and information was not shared pre-event about organizational needs or capacity. Specifically, the three non-governmental organizational representatives I interviewed each described generalities of how emergency management operated in Dixie County including where the County Emergency Operations building was, though they were unsure if that building housed local or state personnel and lacked knowledge of County emergency plans. But it is only in comparison to Leon County that we are able to see effects, such as reduced knowledge sharing, of this form of organizational social capital. Instead, organizations in Leon County saw the only resource available through network ties outside of the Disaster Core to involve physical resources for disaster response, such as sheltering space, food, water, and clothing.

From the interviews in Dixie County, though, I can discuss why they operated disaster social capital in this manner. While in Leon County the "why" of the network was expressed through a set of benefits from involvement, in Dixie County the "why" of the structure of social capital was a list of reasons for the lack of involvement of more organizations. Specifically, social capital embodied as emergent response was based on three beliefs about disaster and organizational capacity in Dixie County: 1) the lack of disaster in the area and the ability of government to respond effectively to past events, 2) the small size and capacity of local non-governmental organizations, and 3) uncertainty as to what external organizations could provide to emergency management and reliance on government agencies.

Lack of Disaster Equals Lack of Network Needs

First, all organizations I interviewed in Dixie County explained how a large disaster had not occurred since the early 1990s when the Storm of the Century made landfall in the County.

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While floods regularly occur, large scale displacement or damage had not affected the county in recent memory. As interviewees described, these small, regular events were easily addressed by the Disaster Core and Response Periphery. For example, one church representative explained that needs requiring involvement of agencies outside of government had not occurred recently, "When I think of disaster relief, I'm thinking of the big storm of 1993 that wiped everything out, or let's say there is a huge forest fire, somebody's home has burned down. We have been here two years, and we've not been approached with any of those needs."

Because of the reliance on governmental emergency management and lack of involvement of the other organizations in the county, Dixie County Disaster Core would need to complete all organization of response, donations, volunteers, and coordination of any external support that arrives in a disaster. Interviewees felt that emergency management had successfully met these challenges thus far, and likely would not need assistance in the future. An emergency management respondent expressed this responsibility, explaining how he goes directly to higher jurisdictions for assistance rather than the local community organizations:

> When all the commodities start coming in, the public knows where to go to get it. When our Points of Distribution go up, we would request food and water from the state. It's usually here within 24 to 48 hours. Like I said, we don't have a stockpile ahead of time, so there's nothing we can do there. We would just try our best to get everything in. We try to have folks prepare for 72 hours. Hopefully it will not take that long to get stuff into our county from the state.

Lack of Organizational Capacity Equals Lack of Networking

Second, the small size and capacity of the organizations in Dixie County was a reason for the limited involvement with emergency management. Dixie County churches and nonprofits could support their own members with small routine emergencies, such as helping a church parishioner with medical bills or providing housing for one family in need. A large-scale disaster was perceived as outside their ability, though they would still try to do what they could. As

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mentioned above, one of the two church leaders interviewed said their membership was 100, with only about 30 actively involved in the church. The other church included in the sample was even smaller, with 25 regular attendees at church services and about 40 total members. As this church leader explained:

> It's a very small church. The congregation gives very liberally, very generously. If there's a need like that, we help. We have helped with some overseas projects, with Haiti and with other things, and we've sent in the past funds to other areas of the U.S. where we thought that there would be a need for some assistance.

In other words, because organizations are small and their involvement with disaster is viewed as a form of charity, incorporation into disaster response was viewed as a burden to them. One church interviewee expressed this perception concisely, "I don't know that you could call on churches, particularly small churches like ours, to have a large role in disaster relief."

Lack of Knowledge Equals Lack of Networking

Finally, similar to the discussion from Leon County organizations that were not members of the Big Bend COAD, the lack of connection to a *disaster-specific* network left these Emergent Exterior organizations in Dixie County unsure of what they could offer to emergency management or how their organization would benefit from a stronger connection. This lack of understanding what they could offer meant that they did not seek out networking opportunities.

The churches and nonprofit in my Dixie County sample provided food, clothing, and financial donations to the poor population of Dixie County. One church distributed food boxes once per week to over 80 families; the nonprofit offered bread and clothing and pays electric bills for those in need. These organizations would consider offering these same services in a disaster, but they were tentative about what they could do, as described by the nonprofit employee, "What we do here is, we give out food, we give out clothing, we give out bread and things like that. It's so very hard to say what we would do, because we haven't had a hurricane in

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a long time, one that drove everybody into town." The organizations indicated their desire to assist if necessary but with uncertainty about how, as one church interviewee stated, "If there was a need, we would get our facilities open, at least as a shelter. I don't know what we would do about feeding them all. Maybe the Red Cross would come in and help provide some food. If we had any, we would give it to them."

In this section, I reviewed disaster social capital in Dixie County, which is centralized among governmental agencies with little to no disaster-specific relationships to non-governmental organizations besides the American Red Cross. The structure, operation, and effects of this type of organizational social capital varied widely from that in Leon County. Actually the emergent nature of social capital in Dixie County is more similar to the understanding of community collective efficacy, which I turn to next in Chapter Seven.

CHAPTER SEVEN

DISASTER-SPECIFIC COLLECTIVE EFFICACY:

PERSPECTIVES FROM ORGANIZATIONAL REPRESENTATIVES

In this chapter, I present how organizational representatives perceived the ability of their community to come together for disaster situations. The goal is to refine discussion of collective efficacy from the standpoint of those who work in community organizations important to disaster resilience. I define collective efficacy as the ability of groups of people working together to respond to a particular collective need, which in turn produces collective benefits—in this case, for disaster resilience (Benight 2004; Sampson 2012).

To address this topic, in this chapter I answer the question: How do organizational representatives understand and describe the collective efficacy for disaster situations in their respective communities? This question is important theoretically because collective efficacy is theorized as important to community disaster resilience, yet, the literature lacks consistency in how the concept is conceptualized or measured (Cutter, Burton, and Emrich 2010; Norris et al. 2008). The academic tradition of collective efficacy, in non-disaster situations, crosses the boundary between individual and community analyses (Putnam 2001; Sampson and Raudenbush 1997), which allows me to enhance my focus on connecting these two levels of analysis in community disaster resilience research. Furthermore, organizational representatives work daily on community projects that address a variety of concerns for the populace and have the standpoint to provide novel insight into these community-level processes specific to their community.

In fact, my interviews with organizational representatives who represented different sectors (i.e., emergency management, government, nonprofit, social service, religious) provided information on collective efficacy that differed from that garnered from individual residents described in Chapter Five. Specifically, organizational representatives offered insight into both levels of analysis, in which organizational respondents discussed individual citizens' capacity for collective action as well as the larger structural aspects of collective processes in these two counties. Because these interviewees had insights into these structural concerns, they were better able to more fully articulate the factors that may support and/or constrain this ability.

I organize the data in this chapter around these two broad themes. First, organizational representatives described what attributes of their communities *support* the potential for disaster-specific collective efficacy. These include both attributes of the residents and attributes of the organizations. Second, interviewees described what *constrains* potential collective efficacy, among their residents and among institutions, including the economic context, disaster experience, and social divisions in the community. Together these identify disaster collective efficacy as a belief, a willingness to intervene, and a capacity to meet shared goals. Table 7.1 provides a summary of these themes identified in the interviews.

Table 7.1. Organizational Representatives Perceptions of Supports and Constraints to Disaster-specific Collective Efficacy

Supporting Attributes	Constraining Attributes

1. Culture:
     Southern, small towns
	1. Economic context:
	     Reduced number of volunteers

2. Population attributes:
     Place attachment
     Education
	Reduced individual and organizational preparedness
	     Reduced institutional capacity to organize residents

3. Community participation:
     Volunteering
     Civic participation
	2. Lack of recent disaster experience:
	     Reduced individual and organizational preparedness
	     Lack of large event to promote mass collective response

4. Institutional capacity for volunteer management	3. Lack of awareness of social vulnerability
5. Institutions fostering trust	

Supporting Disaster-Specific Collective Efficacy: Individual and Community Attributes

Organizational interviewees in Dixie and Leon County both expressed that the individual residents in their respective communities were important to disaster resilience, as Jana, the volunteer coordinator from VolunteerLEON stated, "It's ordinary, everyday people, beyond government and beyond first responders, that make it work." She along with most interviewees felt that in their communities, both within Dixie and Leon, individuals would "come together" in response to a disaster. I grouped the data around five themes that indicate received support for potential disaster collective efficacy: 1) culture of Southern, small towns, 2) population attributes, 3) community participation, 4) organizational capacity to organize physical and human resources for collective action, and 5) organizational capacity to generate trust and a sense of community among the populace.

Southern, Small Towns and Disaster-Specific Collective Efficacy

Organizational representatives from both case study counties provided similar evidence of latent disaster-specific collective efficacy that individual residents did; specifically, both groups highlighted how Southern, small town people "know each other" and have "close relationships." This finding supports the literature that describes how homogenous culture affects collective efficacy for disaster resilience, especially for rural communities (Sundet and Mermelstein 1997). Jana, the volunteer coordinator for Leon County, worked daily on community volunteer activities ranging from organizing community gardens to assisting with low-income housing repairs. The following quote from her is an example of how interviewees used the cultural story of the Southern, small town to explain their perceptions of Tallahassee and Leon County's collective efficacy:

> Tallahassee is a unique community. Florida is like any other state, because people come from [everywhere]—I'm from New York. When I lived in St. Petersburg,

people were from Michigan, Ohio. But here [in Leon County], they're Southerners. They know each other, and they talk to each other. It's a very unique, a great community spirit. This is a unique community in that they do pull together.

Respondents asserted that because the residents "know one another" that they will "help each other out," as the above quote demonstrates. Mirroring the results from the individual-level analyses presented in Chapter Five, none of the organizational respondents in Leon County felt that their area was "urban" even though their county is home to the state capitol and nearly 275,000 residents. Instead, it was the way of life in the community that led the organizational representatives to attest that Leon County respondents would pull together. Gene, a representative from a disaster-related organization, supported this view of Leon County and Tallahassee while comparing this area to other areas that may lack the same supportive citizenry:

I think any community can be strong when it comes to rallying together to fix something like a disaster. But I feel like in Tallahassee, if there was a disaster here, I have no doubt that people would be there to help each other. I've met a lot of people in Tallahassee where there's no doubt they would donate time, lumber, nails, paint. By all means, I think this community would be great. It's sad to say, but some communities, it takes a disaster for them to realize how close they can be. I moved here from [another county]. [When you would] walk down the street there, people would keep to themselves. It's hard to say what it would take for that [other] community to come together to fix a disaster.

Similarly, in Dixie County, organizational interviewees recounted the attributes of Southern, small towns that foster close relationships and, ostensibly, benefit collective efficacy. Dixie County interviewees added "rural" as another descriptor (i.e., small, rural, Southern town) that further reinforced this belief in the residents of the county. As a governmental interviewee explained:

Just like in the Storm of the Century [in 1993], people's homes were damaged and everything else, [but] they went out and helped their neighbor. Once they found out that their family was safe and to whatever degree their home was damaged, they went and helped their neighbor and made sure everything was OK there. The same thing with the recovery, if we were to have a storm, the community's going

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to stick together…. We are a small rural community, and everybody's going to try to help everybody else.

When asked to elaborate about rural individuals pulling together, this respondent continued, "Quite often, small communities recognize that they're going to have to pull together, possibly even more than big cities do." Another Dixie County governmental interviewee echoed this view:

> But like I said, the biggest thing is, everybody's going to help everybody else in a small community like we are. I say that we'll do good during a storm for the purpose of everybody helping. You don't see it on a day-to-day use because everybody is so busy, but when the mill is shut and you're not working, you're going to get people to help everybody.

While most organizational interviewees expressed these sentiments about their respective county, there were a couple negative cases. In particular, one woman who works for a small low-income housing nonprofit had experienced how different parts of the community benefit more or less from collective action. Her organization, which was not connected with Leon County's disaster network, operated in a majority poor, African American neighborhood where the convenience stores had security bars over the windows and broken-down cars littered the streets. She laughed while telling me that many people in the community referred to this area as "the hood," or a "ghetto." She felt that the people in the small town of Tallahassee had no idea what a real "hood" in a large urban center would be like. Yet, while she disagreed with the stereotypical image of this neighborhood, she acknowledged how this perception had real consequences for the residents in terms of benefiting from collective action in the county. She expressed this concern by contrasting her wealthy neighborhood with this one:

> My family had a tree that went across our driveway during one of those storms, I'm thinking, "Yeah, but, if we hadn't been in one of the neighborhoods of affluence, or where there was money, I don't think that tree would have gotten removed quite as quickly." I see that a lot in this town. It's sad. The power outages on my side of town are much shorter in duration than on the other side of

town. So I can't help but think some of those [disaster] services would be the same way. I don't know that for a fact, and I would hate to insinuate that that would be the case. However, I know I got a drug-dealing house right there [referring to the house behind her office], and everybody knows it. I can't help but think that if I reported that in my neighborhood it would have been shut down a long time ago. There's a lot of that still: "That's not our side of town."

She explained that she had reported that house several times to the police, but had seen no action. This she felt was partially due to racial tensions in Leon County that affected the "coming together" of the community, "The rebel flag is flown with pride in many places around here, still. Put up in Christmas lights on their fences. Mm-hmm. Yup. If you're in town at the right time, you can still see a KKK demonstration up on the Capitol steps."

This description of variation among neighborhoods and the potential for racial and economic divisions affecting collective efficacy resonates with the few negative cases presented in Chapter Five from individual residents. As the reader will recall, a few interviewees felt that racism would limit collective support in a disaster, and Etta, the African American woman who lived in a poor section of town, concurred that her neighborhood was frequently ignored by community services.

Population Attributes and Disaster-Specific Collective Efficacy

Beyond this cultural story, organizational representatives highlighted various population attributes that they believed would also support collective efficacy. In particular, respondents from both Counties discussed the tenure in the community of residents and "sense of community" which are often indicative of place attachment, while Leon County organizational representatives also highlighted the high level of education of the population.

Place attachment. Organizational representatives in both counties drew upon descriptions of place attachment to support their belief in their community's latent disaster-specific collective efficacy. They often described place attachment using such phrases as "community spirit" or

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through simple reference to length of resident tenure. While place attachment has a number of

characteristics from cognitive to emotional to social (Hidalgo and Hernandez 2001; Riger and

Lavrakas 1981), the importance for my research is how some form of attachment to a community

affects the likelihood of individuals contributing their personal time and resources to community

projects (Brown, Perkins, and Brown 2003; Sampson, Morenoff, and Gannon-Rowley 2002). My

results indicate that organizational representatives saw place attachment as contributing to

collective efficacy generally, but specific to the disaster aspect of my research, the interviewees

also attributed place attachment, specifically tenure in the community, as contributing to

knowledge and familiarity with disasters and the local environment (an addition to the current

academic literature on place attachment and resilience). This disaster experience was viewed as

uniquely beneficial to collective efficacy because individuals who are prepared for an event can

more quickly assure the safety of their family and property and then move on to support others

with disaster-specific needs. As mentioned previously by a Dixie County government employee,

"Once they found out that their family was safe and to whatever degree their home was

damaged, they went and helped their neighbor and made sure everything was OK there."

A Leon County emergency management representative emphasized the importance of

place attachment, which he described as "sense of community." He drew upon a comparison to

his previous position in a different county that had a large number of incoming retirees from

other states:

> I was the director in [another county in] Florida. We had a very high retirement
> population, like 30 percent of the population of the county was retirees. You don't
> have the same sense of community there as you might have here. We have a lot of
> people that work with the state government or the university that live in
> surrounding counties. Odds are they know somebody in coastal Wakulla who
> have to evacuate, and there are pretty good odds that they have a friend or
> coworker or relative that lives in Tallahassee that they can stay with, whereas the
> opposite is true in [my last county]. Generally [retirees] know the people that live

in their condominium complex and that's probably it. They don't have those lifelong friends because [they have not] grown up in the area.

Respondents in Dixie County similarly saw the role of place attachment in affecting collective efficacy directly by encouraging a community spirit. For example, a Dixie County emergency management representative described how the older local population is willing to contribute to emergency planning and how this population is less of a "worry" to their department than those who own second homes in the area and avoid community events and outreach activities:

> The full-time residents will sit down and talk with you all day long. The ones you're worried about, the ones that aren't here all the time, are just here for the weekend or a couple weeks out of the year, usually when storm season is really active is when they're here, and they are out on the boats fishing, doing other things. They don't really want to be bothered with going to events. They come down here to get away from that stuff. So they just drive around the bayou.…

This quote, like many others in my data, shows how organizational representatives perceived the tenure in community to contribute to place attachment through participation in local events, including disaster-related events.

Education. The education level of the community population was another population attribute that interviewees emphasized as potentially contributing to disaster-specific collective efficacy. However, only respondents in Leon County discussed this attribute. This is perhaps not surprising in light of the fact that 41 percent of the Leon County population has a college degree compared to only six percent in Dixie County. Again, education, like place attachment, was believed to affect collective efficacy in two ways: people with more education are more likely to participate in collective action and they are more likely to know how to prepare and respond to a disaster. Jason, an interviewee from a Leon County disaster-related organization, described how the relatively high level of advanced education in Leon County translated to more financial and

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social resources, which in turn fostered individual preparedness and higher levels of participation in community life. His quote is illustrative of this process described by most Leon County interviewees:

> With this being a highly educated community, we like to think that [the population] would have some kind of plan in place. We know of some populations that they don't, but for the majority—we like to think that with it being so populated with the different community colleges, the universities, that [the people] are profound in having something in place or some kind of way to bounce back, whether it's financially or able to help a neighbor or able to help different organizations provide help during a disaster or any emergency.

Likewise, other interviewees in Leon County asserted a similar view that high levels of education would facilitate individual preparedness. For instance, a respondent from a religious institution said that the community would "come together" in a disaster, "because of the universities, I think we have one of the higher levels of education in the state in this community. People are generally less likely to disregard something and say, 'That's not going to happen here.' They recognize that there is a potential for it to happen."

Community Participation and Disaster-Specific Collective Efficacy

While interviewees used place attachment (and education in Leon County) to explain potential participation in collective activities, they also offered actual examples of community participation separate from their discussion of place attachment. This distinction highlights that found in the literature: that attachment to place, often measured by tenure in community, is correlated to collective efficacy, but not collective efficacy itself. The examples of community participation provided below—volunteerism and civic participation—are often used as direct proxies of collective efficacy (Putnam 2001). Both Dixie and Leon County interviewees discussed these attributes, although Leon County representatives were able to provide more examples of civic participation because more community events regularly occur.

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Volunteering. Formal volunteering is one way that individuals in a community participate in collective action. Many organizational interviewees used their experiences with community volunteers (in disaster situations and in general) to support their belief in the community's disaster-specific collective efficacy, as expressed by one Leon County emergency management interviewee:

> And like I say, everybody has an asset, everybody can do something, if it's simply check on your neighbor, walk your neighborhood. During that year where we had all those hurricanes crisscrossing our state, volunteers were going door-to-door to people who were insulin-dependent, people who were oxygen-dependent.

Dixie County, in particular, relies heavily upon volunteers for both governmental and nongovernmental programming. Governmental representatives in this study expressed pride in the volunteer core, even though they acknowledged that relying on volunteers meant that staffing fluctuated and was not guaranteed during a disaster. As a government representative explained, many aspects related to emergency response were dependent upon volunteer labor, which he saw as an important example of the county's residents' willingness to "come together" in a disaster situation:

> Under emergency services, which handles fire, EMS (Emergency Medical Services), and emergency management, there are four paid firefighters in the county. All the rest of them are volunteer. We have about 80 to 85 on the books for volunteers. We rely heavily on volunteers in our county, not only for wildfires, but for other items such as when we do have a natural disaster, a hurricane, tornado, or anything like that, for running our PODs, points of distribution.

Many of the nongovernmental organizations represented in this study were dependent upon volunteers for their organizational mission. This experience with volunteers for routine community projects supported their perspective that volunteers could be redirected during a disaster. For example, a representative from a social service organization described his surprise at the volunteers available in Leon County. "We have a community garden out there. There were

a lot of people that showed up for that, because it was something for the community…. But the turnout, we were expecting, like, 20 people. We had almost 200 people that day!" In Dixie County, each nongovernmental organization I interviewed described how they were operated almost entirely by volunteers, and they expected these individuals to volunteer during disasters.

Civic participation. Often, civic participation is used as a proxy for collective efficacy and measured through voter turn-out or participation at community and political events (Putnam 2001). These measures have been applied to disaster resilience measures (Cutter, Burton, and Emrich 2010). Civic participation describes a different type of collective action than volunteerism. Whereas volunteerism describes a formal relationship between an individual and an organization in which the volunteer provides free labor at the organization's direction, civic participation is more spontaneous and ephemeral, often infrequent or only connected with regular, large scale events (such as participating in a city council meeting, or attending a political rally). Interviewees from Leon County, in particular, were able to describe high rates of civic participation, beyond volunteerism, as supporting latent disaster-specific collective efficacy.

Leon County interviewees recounted several examples of civic participation in disaster planning, specifically. In 2008, Hurricane Fay flooded a small geographic area, leaving one neighborhood completely isolated from the rest of the county. Kim, a representative from an organization that provides food during disasters, explained that this disaster spurred planning and incorporation of public voice into the plans:

> The areas that were severely impacted during Fay, I could see the resilience. "This cannot happen again. We're going to bounce back. These people live here. This is our community." So they really did a lot of work. They had town hall meetings. They were constantly publicizing and taking [the plans] into the impacted area, asking the citizens, "This is what we propose. How do you want this to happen?" And individuals were at the point where they were really receptive to receiving the education and giving feedback.

When asked about the community coming together in a disaster situation, a government planning official from Leon County concurred that public participation in civic events was evidence of the County's collective efficacy. She used an example of public participation in a recent disaster planning session:

> We had a surprisingly good community turnout when we did the public presentation [of the disaster recovery plan]. We announced it and promoted it and I was like, "Gosh, if we get 10 people I'll be impressed." And we got 50 people, more than that. We had good questions, and I was real pleased! And then I've gone to a couple of other different events. I went to Weatherfest, and I'm doing a hurricane season kickoff thing where I'm promoting it again, "Here it is on the website, it's not too late to look at it and comment and at least be knowledgeable about it." So I've been impressed with the number of people who have actually been interested in the community about the whole process.

In Dixie County, these types of public events were fewer and farther between; in fact, only one interviewee in Dixie County discussed public events. A government representative described doing disaster outreach twice a year at a public event, and he lamented the lack of public participation. But the constraint, he explained, was a lack of gathering space in the County to hold a larger public event, not the public's unwillingness to participate:

> Two times a year we do an EMS event here at the office where you can meet your EMS providers, a local helicopter company that does air transport for us, and all emergency service vehicles will come out here, just to meet your public safety. And we'll pass out hurricane and disaster event information there, too. Not as big a turnout as we would like because of the fact that we don't have large gathering areas in our county, such as a large grocery store, shopping centers, or anything like that.

He continued to explain that the closest large gathering area is located in a neighboring county, nearly 20 miles away, and was certain that if they had a larger space greater community participation would happen.

Institutional Capacity and Organizing for Disaster-Specific Collective Efficacy

For the above aspects of the community to contribute to collective efficacy to their fullest extent, interviewees described how institutions need to coordinate these helpful community residents. Interviewee perspectives on the potential for disaster-specific collective efficacy were intertwined with the institutional capacity of each county. Because of their ability to describe structural aspects of the community, this aspect of collective efficacy was discussed with greater frequency by organizational interviewees than any of those presented thus far. Importantly, representative interviewees pointed out how specific key institutions affected collective efficacy, rather than offering a tally of all the institutions, as is common in disaster resilience studies (e.g., Sherrieb, Norris, and Galea 2010). As a representative of a Leon County organization working with vulnerable populations across the Florida Panhandle explained, the key institutions for affecting collective processes vary across communities: "In [another Florida] County, the faith-based community is a huge resource…. In [a different county], there's not as a connected faith-based community, so the school system and the community college were the greatest strengths in the community." Leon County interviewees identified the key institutions as nongovernment organizations, educational institutions, and the state government offices, while Dixie County interviewees discussed the role of local government and local churches.

Key institutions identified are able to organize volunteers and emergent collective efficacy. As research following disasters has highlighted, the mismanagement of volunteers who were prevented from assisting with search and rescue or provide other assistance can become a second disaster, where frustrated good Samaritans become mixed in with disaster survivors and community needs remain unmet (Lowe and Fothergill 2003). Community institutions have the human and physical resources and expertise to develop and guide this type of collective action in

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their communities. For example, these institutions can activate their already large volunteer pools

for disaster tasks. As the following quotes indicate, Leon County interviewees saw the state

government as offering a large pool of spontaneous disaster volunteers:

> Well, I think in general, Florida responds really well to disasters. I think we have a lot of volunteers. I used to work at the Department of Agriculture, and we had a whole slew of people that worked in the emergency center. As soon as there was an emergency, they were volunteers in the emergency center. They were trained…. So I think there's a lot of responsiveness by the community.

> The other big benefit for us is, since we're out of the state Capitol, most of your state agencies are headquartered here, and we passed the Disaster Leave Act, where if you're a state employee, you can be granted up to two weeks a year administrative leave to respond to disaster, and a lot of our state employees have taken advantage of that. So where other people might be having trouble recruiting volunteers to man their shelters or points of distribution or whatever, we seem to have a pretty deep pool of volunteers.

Beyond these sources of volunteers specifically for disaster situations, faith-based

organizations and other institutions with large pools of volunteers were perceived as contributing

to collective efficacy by offering their general volunteer bases to disaster needs. Religious

representatives, like Jeff the coordinator of one religious institution's local governing board,

described how their faith communities would be activated to offer money and time to support the

whole community in a disaster:

> It's a relatively small community, a fairly tightknit community [of our faith]. I suspect there might be a little bit tighter support network in terms of individual or family needs after such an event. There are a lot of intermingled close friendships, and I suspect people would be stepping up to help each other in that regard. We haven't had to do it before, but I also have some confidence in our community that if the [Religious Institution] said, "We need these services, we need these funds," whatever, that we could probably raise them to help out both in terms of [our faith's] interest in the community for the recovery effort and helping the general community as well. Some of the programs that we provide funds to here would probably be considered general community programs. So I would suspect we'd continue to do that in a disaster recovery situation as well.

As expressed by a representative from a Leon County disaster-related nonprofit, this generosity of religious institutions was an asset for the community, "We have a generous community in the sense that the religious groups around here really step up and provide services and meals. I imagine that they would really step up to the plate and fill the gaps that the government doesn't [in disaster situations]." Another interviewee from Leon County who represented the elderly population described how the staff and volunteers of the nongovernmental organizations in their community were dedicated to supporting their organizational mission and clients:

> It's the typical thing. You've got a bunch of caring people here who want to help out their clients, and the danger of leaving their environment and trying to get to some place with their clients in a disaster, I do the same type of thing. The power is out, you hop in the car. There may be fallen trees, there may be fallen power lines, but you've got to get in there and be sure the power's on [at your agency], the food's not spoiling in the freezer, you've got communications established.

As the reader will recall from Chapter Six, the ability of religious institutions to transfer routine activities in the community into spontaneous response following a disaster were also important in Dixie County as explained by a public health representative:

> [The faith-based community] always show up as a great resource in the aftermath to basically feed, do whatever needs to be done. They're a great resource. You don't even have to ask for it. They're going to show up and help. I wouldn't say they're part of a formal plan, because anything you get from them is just out of the goodness of their heart, but you can always count on them to show up.

Interviewees underscored how these few key effective and engaged institutions in a community were required to awaken the potential of those volunteers. As one emergency management professional explained, the management and organization of all the individuals who want to pull together and help can be difficult. The Volunteer Reception Center in the Leon County meets this challenge and is incorporated into emergency response plans, "Organizations needing volunteers are putting in their requests, and those volunteers that meet that need are sent

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to those organizations. To me, that is probably one of the most valuable components… because

people want to help. You need to provide them a mechanism for helping." Thus, these

institutions had the expertise regarding how to manage volunteers, and one exemplar of the

centrality of institutions to volunteers is VolunteerLEON in Leon County. As the respondent

emphasized, their main mission to coordinate volunteers in the county, creates an institution that

has the expertise to doing this in disaster situations as well, and this type of volunteer

management was viewed as fostering ownership among the community members to collective

action projects:

> In volunteer management, there used to be this sense of, we're going to go into
> what we term a "marginalized community." We're going to say, "Your problem is
> this." We're going to get citizens, volunteers to come in, and we're going to
> parachute in and save the day. That's traditionally what we did. Now, we're doing
> asset-based volunteer management. In other words, we will go in, we would talk
> to their community leaders. It could be Millie sitting on her front porch who
> knows what time you go to work, what time you come home, and when your kids
> are not at school when they should be. They're the informal leaders. Then there's
> the formal leaders in the neighborhood. We'd get them all together and talk to
> them about, "What is it that you see are your assets? What would you like to do in
> your community that we could help you with technical assistance?

> People are more than willing to serve. But you've got to be organized, and you
> have to show that you have a strong foundation and that when you come in you're
> prepared to receive them, they feel good about their service, it's mission-
> driven…. That is more long-term sustainability and long-term success.

In another example, an interviewee in Leon County working for an organization that

supports individuals with disabilities described the volunteer pool of the local Red Cross Chapter

as supporting potential disaster-specific collective efficacy. This organization had experience

training and organizing disaster volunteers, important to collective efficacy in disaster situations,

as she indicated, "The Red Cross has done a good job soliciting and training volunteers. They

have a good core of people who can provide individual and neighborhood assistance. They can

call on them and they just pop out of the woodwork." Thus, institutions through institutional

capacity to provide volunteers and manage volunteers were both perceived as supporting the disaster-specific collective efficacy of each County.

Institutional Capacity, Trust, and Disaster-Specific Collective Efficacy

A final component that supported disaster-specific collective efficacy identified by organizational interviewees was trust in these local institutions. As highlighted by research on community processes, levels of general and specific trust in others in the community can foster collective efficacy (Fukuyama 1995). Interviewees, perceived institutions as fostering both trust in emergency management and in other community institutions. This ostensibly, then, encourages individuals to work together or to "stick together" for the benefit of their community.

For example, the centrality of religious institutions in Dixie County is quickly assessed from a simple drive through the area. Next to the driveway leading to the Dixie County Emergency Management Operations Center stands a 20 foot tall Christian cross built out large round wood logs. Two slightly shorter crosses flank the large central cross. When approaching the driveway entrance, these crosses cover the flashing red sign for the local Emergency Operations Center (EOC), blocking one's view of the time and temperature. It should not be surprising that when I asked what fostered resilience in Dixie County and how would one characterize the ability of the community to come together in a disaster, the emergency management representative identified the presence of religious institutions as important. He explained that the faithful in Dixie County belong to formal institutions that foster trust and sense of community, elaborating that, "This is a large faith-based county. I would say 85 percent of our residents go to some church or another. That's what's going to help our county, everybody sticking together."

The organizational interviewees from both counties emphasized that the general public

had a great amount of trust in local officials. They believed this trust would then foster the

public's willingness to participate in disaster response situations because they would "know" that

the larger social system would continue to function as expected. For example, in Dixie County,

an emergency management representative saw this trust as a two-way street—their trust in their

community members' knowledge and the reciprocal trust directed toward the local agencies:

> When the Weather Service gives us, "You're going to have this much storm
> surge," we will go down and talk to the older population that's been here a while
> that know the seas and say, "All right, this is what we're being told, what do you
> think?" Some of them say they're right on target, or they're dead wrong. "If we're
> going to get that, we should have this much water, and we've only got this much
> water right now." When I say they were dead wrong, that's what I'm talking
> about. And we take that into consideration, and our population, our residents do
> know that….

In Leon County, an emergency management representative similarly described the trust

of the community in their local officials, citing a local University professor's survey research

within the County:

> I would peg it [trust] at fairly high. I've been here a very long time. I have a good
> working relationship with many of our agencies, we have the support of our local
> county commission, and I think, and [the professor's] studies have shown this,
> that people generally will respond to directions from local officials when they're
> in an emergency situation. We're thinking trust would be fairly high and we'd
> have a good response.

Leon County officials also cited public response at community events as evidence of the trust

and belief that the community institutions would respond effectively to a disaster situation:

> I get a sense that the local community feels that their government is there for
> them. They have several citizen advisory committees that participate in growth
> management and land use; they really engage the public on a lot of different
> levels. So they already have this established relationship with the public, and they
> invite the public into the process. And I think because they've done that, not just
> on the emergency management side, but on the land use side, because they've
> made the process so transparent and participatory, they've built this relationship
> of trust.

Of course, not all institutions operated equally in terms of their involvement in the larger community or their ability to foster trust. One concern among interviewees was that during a disaster, some of these institutions would help only their own membership. For example, an interviewee from a faith-based disaster service organization in Leon County likened some local churches to corporations that may be more focused on their own needs than those of the broader community:

> I think any community can be strong when it comes to rallying together to fix something like a disaster. But I feel like in Tallahassee, if there was a disaster here, I have no doubt that people would be there to help each other. But I also feel that there would be businesses in Tallahassee, corporate businesses, that would not cough up a dime to help because they're all about profit. And there's so many churches, but when it comes time to helping people, a lot of churches are not into that. They're in it for a profit for the church so they can build a new building. It's never, "Let's get $25,000 together so we can build a separate building just for public food service."

In Dixie County, the interviewee from a nonprofit that offers food, water, used clothing, and money to cover rent and utilities to area residents explained how their funding comes from private donations, a regional food bank, and the local churches who donate money monthly or yearly. As she listed each church in the area that contributes to her organization, she expressed surprise and disappointment when she realized that only a few churches from one denomination actually give money. The rest of the churches, she stated, manage their own food and clothing banks, some open to the public, but some only for church members.

Constraints to Disaster-Specific Collective Efficacy: Economic, Experience, and Social

Divisions

Organizational representatives' ability to offer insight to broader community processes also adds to the understanding of constraints to disaster-specific collective. Three types of constraints arose in the interview data that have cross-cutting effects at both individual and

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organizational levels: 1) economic context, 2) lack of recent disaster experience, and 3) lack of awareness of social vulnerabilities.

Economic Context and Disaster-Specific Collective Efficacy

Interviewees depicted the larger economic context as affecting the ability of individuals and organizations to respond to a disaster. And they are right. Research shows that economic context in a community is correlated with collective efficacy, though it does not fully predict collective efficacy (Sampson 2012). In 2012, when these interviews were conducted, the U.S. was still experiencing the effects of the Great Recession with high unemployment and stagnant wages. Like the nation as a whole, both Leon County and Dixie County were affected by this larger economic context. The economic circumstances had shifted dramatically in the community and were of central importance during my research, as is evident in the following quote from a Leon County representative who organized funding for many local nonprofits:

> We ask our community every year to rank those focus areas. What is the most important focus area in our community? For the first time in a very long time last year, it changed. It had always been children's services. Last year it changed to basic needs. People thought that folks in our community needed more assistance in making sure they could stay in their homes or that they needed food, those kinds of things.

Organizational interviewees described how fewer resources limited both the ability of individuals to prepare for events and their time and resources to contribute to collective action. They also explained how the economic context limited the ability of organizations to do volunteer management and organize activities that contributed to trust and a lively collective life. Together, then, economic context was viewed as a constraint on all opportunities discussed in this chapter except for the supportive culture of Southern, small town residents. The public health representative from Dixie County linked resources to the desire to rebuild after a disaster, which is the ultimate theoretical reason of including collective efficacy in resilience models:

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I would say [Dixie County] is resilient in spirit, but maybe not in resources. Because there's very little work opportunity here, very little housing. If it were wiped out, frankly I think most people would just pick up and leave. There would be no reason for them to stay except that they have family here. So I say they have a resilient spirit, and I've seen that in the things that they've done, but the ability to really recuperate and recover? Maybe to the level they are now. It may be the breaking point for some people and they would say, "I just can't continue to stay"… They're tough people, but even the tough, how much can they take?

Based on this economic context, interviewees felt that volunteering, disaster preparedness, and organizing collection action were constrained.

Financial constraints on volunteering. More specifically, economic context affected the potential for volunteers to help during disasters. As a Dixie County government interviewee explained, the retired and the unemployed make up substantial portions of volunteer roles. With the recession, more people were compelled to continue working or to find new work to help meet basic needs and thus had less time to volunteer: "With the economy the way it is, our volunteer status with the Red Cross is getting very limited. A lot of people are working now instead of being retired. They had to go back into the working field." Other interviewees echoed these concerns, stating how their volunteer pools were shrinking in this economy.

Financial constraints on disaster preparedness. Furthermore, representatives also asserted that the economic context had an indirect influence on collective efficacy, through limiting individual and organizational preparedness. As the VolunteerLEON representative explained, for individuals to be involved in collective action, they need to ensure that their households are safe, "And the first part of this connection is making sure that your family is set up and taken care of. You can't help us [the community organizations] if you don't have yourself at least taken care of for the first 72 hours." Sarah, a representative working with people with disabilities highlighted how the recession meant that more individuals in the community were unable to afford to stock resources for the recommended 72 hour period, "People are looking at,

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'I'm just trying to make it through the day. I'm not worried about six months from now. I've just

got to make it through today.' It's a very hard sell, being prepared." A representative who

worked with Leon County's poor, elderly population gave a recent example to support this

concern, "They have to have adequate water and food. I delivered meals a couple weeks ago to a

guy in a trailer. I opened up his refrigerator to put the meal in, there was not a drop of food. He

had a couple cans on the counter. There was nothing there. Obviously that person is not

prepared, in an inadequate dwelling and obviously couldn't last."

At the organizational level, the effect of the scarce resource environment on

organizational capacity was discussed by nearly every organizational representative that I

interviewed. Many of these organizations lacked stockpiles of resources for a disaster. They also

had overburdened staff members who had little time for activities to foster collective efficacy.

An interviewee from a Leon County organization that works with individuals with disabilities

explained the crosscutting issue of the economic context to address individual and organizational

collective abilities:

> We have more consumers than we know what to do with. Disaster planning is the
> last thing they care about. They would like a roof over their head. They would
> like food for their children. They would like their medication so they can stay
> healthy. They don't care about the day after tomorrow. They're just trying to get
> through today. So attempting to do disaster preparedness for people who are
> struggling as hard as the majority of the people we're seeing just is an uphill
> battle, it truly is.

Another representative from a Leon County organization serving vulnerable populations

described how their available disaster preparedness assistance to individuals could not meet the

needs of the population:

> Another effort that we got was an emergency bag that had flashlights and little
> radios and jugs to fill with water and stuff like that, things that were useful, that
> everybody ought to have. We had maybe 150 of those. We've got 400 clients [on
> one program], another several hundred in the in-home services, and then we've

got 350 senior volunteers who themselves are over 55, low-income, to be eligible to participate in that program. It didn't scratch the surface of giving assistance to people.

Two organizations in my sample were specifically hampered by the economic context in relation to disaster situations—they both needed generators to perform their roles during disaster response. One of these organizations, 2-1-1 in Leon County, did not have access to a generator to operate their phone lines in the event of a disaster, which would affect their ability to disseminate emergency information:

> So people and everybody needs financial resources. Right now we're trying to find either a grant or a long-term fund so we can buy a $40,000 generator, because we don't have a generator. So if the power goes out, right now, 2-1-1 is on a primary restoration power line. We should be one of the first agencies that are up and have power. That's great, but we would prefer to have a full backup generator to operate the phones and all that. That's one of those wish list type of things. During a disaster, it all depends on if there's power, if there's people, basically, how severe it is.

Financial constraints on organizing collective efficacy. The tough economic context also led to more limited funding for staff to directly engage in collective efficacy development. For example, Carlos, who operated the disaster consulting agency, described the challenges organizations face in trying to foster disaster-specific collective action projects:

> The idea is to combine funds, because a lot of that funding has dwindled over the years, to combine funds and see if we can work with the overarching agencies for the Department of Health and federal Health and Human Services to get them to understand that it's really difficult for a local community, little neighborhoods, they want them to conduct a full-scale exercise, to practice collective response, to do all these things. [In my view,] just that they go out and have a community leader that will knock on doors and that they have a chain saw team is excellent.

The organizations were also searching for funding to assess and extend current projects that focus on collective action between organizations and their communities. As a Leon County interviewee from an organization that works with persons with disabilities explained, coordinating and networking, like that discussed in Chapter Six, requires funding for staff time,

meeting locations, and travel reimbursement. Sarah is an executive at a social service

organization for individuals with disabilities in Leon County. She coordinates services across

seven counties in the Panhandle of Florida, ranging from Leon County with the State Capitol to

rural regions she described as having "more cattle than people." Her quote below emphasizes a

change in their funding that eliminated money for continuing networking and promotion of

collective action on disaster and disability planning:

> The State of Florida Department of Health gave us the opportunity with a
> $10,000 grant to do the first large conference [on emergency planning and
> disaster management for people with disabilities] here in Leon County. About
> 100 people came, [we got] positive feedback, and then I was told by Department
> of Health the next year, "Great, now go find another county and do it again." So
> I connected with [rural] Madison County. We had about 60, 65 people come to
> the campus, did the same kind of format of an all-day information-sharing,
> people working in groups, developing their plans…. The next year, I started the
> whole thing all over again [in another county]. What we really want to do now,
> and we just don't have the resources, the funding, or the personnel, is to follow
> up on those [conference] communities. The relationships that they built at the
> table should survive the training and become part of that local disaster network.
> But we don't have the means to follow up with those communities and see what
> kind of impact the training is having on them and their emergency management
> network.
>
> Instead, Department of Health this year didn't want to do conferences anymore,
> so they challenged us with a grant that they will reimburse me for every
> individual [client] that I talk to. But we are a different organization than we were
> five or six years ago. The staff here is extremely overworked. Their salaries
> haven't changed in four years….

Disaster Experience and Disaster-Specific Collective Efficacy

In addition to the dire economic context, interviewees also discussed a lack of disaster

experience as another constraint shaping potential collective efficacy. Organizational

representatives felt that the collective activities in a disaster were different than everyday

projects collective efficacy normally addressed. For this reason, the interviewees felt that doing

this type of collective efficacy effectively and efficiently required disaster-specific experience.

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Organizational interviewees believed that recent disaster experience, still fresh in residents' and

organizations' collective memory, affected both preparedness and the ability to effectively

coordinate collective efficacy, which is supported by the literature on disaster preparedness and

risk perception (Trumbo et al. 2011).

In Leon County, the most recent disaster that affected the community was nearly 28 years

before these interviews occurred. Interviewees felt that the lack of an experience with a more

recent, large-scale disaster actually reduced the likelihood of individuals and organizations

stockpiling the needed resources and also keeping their disaster response skills up-to-date. Ted, a

representative from an organization working with a vulnerable population expressed this worry:

> With the clients and families, it's because memories are short and everybody
> thinks it's not going to happen to us. It's hard to get them to have a written plan
> and to stock up homes. Through the last five years, in three years we sent home
> three days worth of meals, freeze dried packaged meals, condensed milk, that
> kind of stuff, an emergency box with clear directions. "Put this in a cabinet. Save
> it for when the power goes out and you really need it. Don't open it right away."
> Next day they're eating the crackers. "Oh, this is good stuff!" Getting them to
> comprehend that this is to be saved for emergencies, that it's a shelf-stable meal,
> that's hard.

The end result, the interviewees believed, was that the community would be less

prepared to "come together" effectively during a disaster situation. An emergency management

representative explained this concern, "When you talk to south Floridians, it's a different thing,

because they've done it, and they've done it as recently as seven years ago. So this community,

when you ask folks, "Were you here in 1984 [during Hurricane Kate]?"… You don't get too

many "yes" answers. But I think they'd still come together…." He continued explaining that

individuals and organizations would definitely show up for collective action projects, but the

response could be slower or less effective.

Recent large disasters allow for the attention to disaster concerns across the whole community in ways that small events do not, as one interviewee explained, "And that's the other thing worth mentioning. I think people are much more likely to respond if you have a Katrina or an Andrew out there than if you have one of these small storms that barely [reach] tropical storm [status]." Because of their scale and scope, larger events call forth collective action from many different individuals and organizations. As a faith-based interviewee explained, larger events and thus larger emergency response efforts compelled more emergent collaboration between different organizations:

> At the last big hurricane, we pulled together and did a lot of kind of ad hoc ministry with people who were displaced by Hurricane Katrina. We formed an ad hoc group of clergy, who went to the Red Cross center and did a lot of ministry with them. We also formed a kind of ad hoc group called Neighbor to Neighbor, to try to house people in homes. We got this big database of people who were willing to accept people into their homes. A little of that happened, but mostly it turned out to be helping people get into apartments and that kind of thing. We collected quite a lot of money from the congregations, and spent all that on disaster relief.

In Dixie County, interviewees also saw disaster experience as important for individuals to understand what to do to respond to disaster. A Dixie County governmental representative underscored this effect of experience:

> Practice. And like I say, it was unfortunate that we had the practice, but it was good because it sharpened our skills at the same time. If you'd asked me two years ago, I feel it was sharper than I do now. Because we haven't had anything. I can pull it together, but when you're having to constantly do that, it keeps you sharp. It keeps you on your toes.

As another government representative explained, regular small events helped individuals practice what to do, "Our coastal communities have been through storm surges. Folks along the river, it floods every couple years, so they're familiar. They watch the river. If it starts coming up, they know they've got to get their stuff out and get it higher." These small events also helped

the organizations practice their response capacity, but no large disaster had impacted the entire

County as a whole in recent memory, which was growing concern among professionals:

> Truthfully, our community in particular has done it time and time again with the hurricane piece, the flooding piece, storm of the century, flood of the century, hurricanes, four hurricanes in '04… It's traditionally known as being a poor, underserved whatever, but I think that overall, like I said, the resources to do the job are phenomenal there…. But that's one of my fears, that as time goes by and we don't do it, the workforce changes, people leave, we're losing a lot of knowledge going out the door in terms of people retiring. Even here, you can say to the staff, "You know we're going to have to do? We're going to have to be at the Emergency Operations Center. We're going to have to do a special needs shelter." And they think they know what you mean, but they don't know what you mean.

In both Counties, lack of a recent, more destructive disaster left the impression that

individuals and organizations had a false sense of safety. Echoing this theme, a Leon County

emergency management representative said, "So I think people are kind of aware, but you've

still got those people out in the community who say, 'Hurricanes can't here because of the shape

of the coast,' which is a bunch of hooey."

This worry that in the absence of a disaster event, organizations would begin to reduce

their preparedness actions was confirmed in some of my interviews. For example, a religious

organization representative explained that since the active 2005 season, her church had put away

all of their disaster materials and she had to search for several hours to find their disaster manual

and plans to discuss during our interview. She then expressed gratitude for reminding her to

review, update, and discuss their volunteer and organizational processes for disaster.

Awareness of Social Vulnerabilities and Disaster-Specific Collective Efficacy

The final constraint discussed by many Leon County interviewees is specifically related

to concerns about the socially vulnerable in the community. While all organizational

representatives presented at least some evidence that the people in their community would help

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each other, interviewees acknowledged that not everyone in their communities would be equally supportive of others. This lack of support was presented as a lack of awareness of the dramatic needs existing in the community, needs that would be made worse by a disaster. As these interviewees believed, collective efficacy can only occur when individuals are aware of the need so they can respond to it. Leon County interviewees who worked with those living in poverty observed that cracks remained in the community's ability to respond to all residents' needs.

Interviewees, especially in Leon County, were cognizant of the severe need that some portions of their population would have in a disaster. As a Leon County emergency management respondent confirmed, there were different populations in the community that would need additional support from the community during a disaster, "Usually if people have insurance, they generally have a lot of resources. They have someone to go stay with, or savings. So they can deal with [a disaster] better than someone who already had issues, already didn't have a car, already was on the verge of losing their home."

As another Leon County government interviewee explained, the ability for individuals to be resilient on their own was unequal, and it was important for the organizations to instill a sense of trust in the collective ability of the community to support those most in need:

> There's two groups of people, people who are going to handle everything by themselves, they're going to hunker down and fend for themselves, they've got their three or four days of water, the generator, they'll be fine. The other people might evacuate or they might not have those resources, they don't have a generator, they can't afford to buy a week's worth of food ahead of time. I'm hoping that we instill enough confidence in people that if they are in that situation, they can call us and we can relay them to the people that do have food or tell them where the shelters are, where the water is.

Social service interviewees were uniquely positioned to discuss the difficulties that some portions of their population regularly faced—not just during disasters—with issues such as

maintaining shelter, food, and medical care, as noted by Scott, an interviewee representing the

homeless population in Leon County:

> That's a change from 2006 and 2007, when we were doing disaster preparedness
> and thinking, "Let's make sure all of our resources are put together and we can
> respond and we can do it well." Now we're at a point where people are struggling.
> To come back to my original thing, the homeless thing is huge, and I don't know
> how you help those people prepare. Their disaster is right now.

Another interviewee who worked for a social service organization in Leon County further

emphasized this concern:

> So our clients already have these problems going on. It seems like they have a
> great survival instinct in being able to do without much. That's not to say they
> don't want or need more resources. So in some ways, how would a natural
> disaster impact them? It would severely limit their survivability in a situation like
> that. It would make a current situation that is not good worse.

> These vulnerable populations were the central focus of emergency management and other

government programming. For example, a Leon County employee whose work focused

primarily on post-disaster recovery confirmed that those most in need were the focus of many

plans, "Because it appears that our plan is dedicated in that direction [of low and moderate

income]. We're assuming insured and [those receiving FEMA] aid won't need our help." Yet,

some interviewees, primarily those from social service organizations, felt there was limited

knowledge of how dire these needs were. For example, some interviewees felt that the extent of

poverty in Leon County was misunderstood by other residents, as noted by this respondent:

> What would worry me is that not everybody is cognizant or aware of the need of
> those who have the least. You can look at New Orleans and Katrina and the
> various factors that contributed to a shutdown of the response. There are a number
> of different factors that lead to the issue of not getting people evacuated from
> Katrina. Should we really need to have an evacuation in our community, I do not
> know if we're truly prepared or understand how to go about doing what is
> necessary there. I think poverty is one thing. That would be my concern.

Another representative from an organization working with low-income individuals elaborated on this issue explaining that lack of understanding of the level of need for some members of the community may limit the collective response necessary for many vulnerable groups:

> I think the overall feel is that people are generous in this community to helping others. There's not a lot of deep pockets, but there's many caring, helping people. I do think, as a lot of communities are, I think people that have don't realize how many truly don't have [enough resources]. So I cannot help but think that there's just some things that might impede, but I think people would come together.

These questions about different parts of the community and differential need imply that some individuals and neighborhoods may be left out of collective processes at the county level, which is consistent with the literature on disaster response (Dyson 2006; Fothergill and Peek 2004). This potential disparity highlights the need for organized and institutional response that recognizes and identifies these areas of concern and can plan for the needs of these areas (Berke et al. 2010).

CHAPTER EIGHT

CONCLUSION: THE PRACTICE OF COMMUNITY DISASTER RESILIENCE

Throughout this dissertation, I have used two concepts, social capital and collective efficacy, across two levels of analysis, individual and community, to develop further methodological and theoretical insights into the topic of community disaster resilience. Chapter One introduced my research interests and questions. In Chapter Two, I reviewed the disaster resilience, social capital, and collective efficacy literature. Chapter Three detailed my survey and interview research methods. Chapters Four and Five explored social capital and collective efficacy based on the perceptions of individual residents of Dixie and Leon Counties, Florida. Then, I analyzed social capital and collective efficacy from the perspective of organizational representatives in Chapter Six and Seven. This research addresses the overarching questions in this dissertation: How does social capital and collective efficacy affect individual and community disaster resilience and how do these aspects of resilience incorporate concerns for those most social vulnerable to disasters?

My research shows how the understanding and measurement of resilience and the interplay between individual and community levels of analysis is affected by distinguishing *disaster-specific* social capital and collective efficacy from routine (i.e., non-disaster) conceptualizations of each. Both social capital and collective efficacy theorists argue that these concepts should be rooted in particular contexts (Portes 1998; Sampson 2012). I concur, and I found that both concepts should be described and measured relative to the needs of disaster mitigation, preparedness, response, and recovery. In this concluding chapter, I revisit the broad

focus of my dissertation, and weave together the conceptual and methodological implications of the research within my discussion of disaster-specific social capital and collective efficacy. I begin with social capital at the individual level, then discuss collective efficacy across both levels, and then move to social capital at the community level. I, then, discuss limitations and future research, and I close with a brief statement linking individual and community levels of analysis for disaster resilience.

<div align="center">Disaster Social Capital: Studying Individual Networks</div>

Disaster social capital is defined as the financial and nonfinancial resources available in durable social networks that can be activated to assist individuals in the mitigation, preparedness, response, or recovery from a disaster. Using a name generator—a novel approach to disaster social network data collection—my results highlighted four main findings which affect the conceptualization and measurement of individual disaster social capital.

First, respondents' disaster-specific social networks are limited in size. Many respondents perceived a small number of individuals in their social networks as able to assist in disaster situations, and this result differed based on the resource transferring through the network. Specifically, financial networks were about half the size of nonfinancial networks, implying that transforming social capital into economic capital for disaster situations was perceived as difficult by study participants. Leon County respondents reported larger financial networks, and living below150% of the poverty line, being over 65 years old, living with a disability, or being female negatively affected financial network size.

Using social vulnerability theory, different explanations about these results emerge. For some respondents, savings and insurance would cover disaster financial needs, as remarked by one interviewee, friends and family could assist with nonfinancial "annoyance kind of things,"

like broken windows or wet carpet. For other respondents though, they perceived a lack of financial resources available in their social networks. As the reader may recall from Chapter Four, a Dixie County respondent remarked that her friends "don't have two nickels to rub together." These results indicate that individuals who have personal economic resources may not perceive social capital as necessary for some types of disaster assistance, but for others social capital may not meet the financial needs created by a disaster. Methodologically, these results highlight the importance of specifying the resources available from social ties, not just the existence of ties, and also to identify how individuals determine to activate certain ties for which resources. Future research should incorporate measures of network members' economic capacity to fully understand the resources available through social capital, and establish how that varies by social vulnerability indicators and will impact disaster resilience.

Second, family ties and geographically localized ties are prominent in disaster social capital networks. Family is the first connection that people would turn to for both financial and nonfinancial disaster assistance. The large amount of family in these networks results in extreme racial and, likely, economic homophily of disaster social capital. For understanding social vulnerability's relationship to resilience, these results indicate that individuals without family may be at a disadvantage in disaster social capital, and individuals from low-income families may have more difficulty accessing financial assistance from their social ties. Methodologically, routine measures of social capital that do not gather family information may miss important aspects of disaster social capital.

The prominence of geographically local ties in individuals' disaster social capital networks implies the potential for large-scale disasters to disrupt these networks, as was seen in Hurricane Katrina. Thus, the consequences of that storm should not be assumed to be unique to

either that disaster or those communities. Many individuals, in rural and urban areas alike, believe they will rely on local friends, neighbors, and family for disaster assistance, as they do for routine emergencies. Methodologically, these results show how social capital composition can be captured in network-based measures. Future network-based research should use name generators to gather disaster-specific and routine social networks (such as discussion networks) to more fully understand how the data compares and contrasts (McPherson, Smith-Lovin, and Cook 2001). Future research should also further research the effect of geography on social networks that become especially important in disaster situations.

Third, my results indicate that the disaster social capital data produced through quantitative and qualitative methods differ. The quantitative name generator gathered existing relationships that could be activated in disaster situations, which were mostly family, close neighbors, and friends. Methodologically, it provided detailed information on network size, composition, and resources available. The name generator was less likely to elicit weaker ties, such as less well-known neighbors or acquaintances, even though support from these individuals was often expected to emerge following a disaster. This finding came to light when comparing the survey and interview data. Interviewees often discussed more individuals than what they listed in the name generators, such as Kyle from Leon County who talked about the neighbors he would offer assistance to when he included only family in the survey name generator.

Conceptually, this point goes to the distinction between social capital and collective efficacy in disasters, in which social capital is defined as existing social ties and the resources available through them, whereas collective efficacy describes more emergent collective action from people the respondents may or may not know well before the event. My results point to how individuals differentiate these two forms of social support, and how the use of different

measures can distinguish between these concepts. Disaster resilience research should similarly separate emergent collective efficacy and specific use of social capital for disaster needs. Methodologically, resilience researchers should carefully consider how data collection procedures influences the information captured.

Fourth, formal social capital was limited among my study participants, and when it did exist, informal social capital took priority in disasters. Only half of survey respondents indicated that they had any formal social capital ties and even fewer felt that these would be useful during a disaster. In fact, only one interviewee had benefitted from formal social capital for disaster resources, and this was a disabled man who lived in a government-subsidized community operated by a local nonprofit. His ties to formal institutions were much more evident than most individuals who were members of one church or volunteered for one nonprofit. Methodological, these results raise questions about using indicators of formal social capital, like church membership, for disaster-specific social capital. Future research should focus on how formal social capital affects resilience.

<div align="center">Disaster Collective Efficacy: What is it?</div>

Disaster collective efficacy is defined as the ability of a group of individuals to work collectively to address disaster mitigation, preparedness, response, and recovery that will affect the collective group's disaster resilience. The individual and community level perceptions of collective efficacy are more comparable than the social capital results. At the individual level of analysis, residents perceived disaster collective efficacy from three community attributes: 1) individual friendliness, using the cultural story of small, Southern towns, 2) neighborhood properties, and 3) organizational disaster response capacity. Organizational representatives also highlighted friendliness and organizational capacity, but they also added aspects of these

individuals and organizations that promote or constrain disaster collective efficacy. Particularly, they described the tenure and education of community residents and the presence of volunteers and routine collective action as positive evidence of disaster collective efficacy, as well as the poor economic context, lack of disaster experience, and lack of knowledge about vulnerability as negatively affecting disaster collective efficacy.

My results from both the individual- and community-level data show that collective efficacy is fundamentally different from social capital; and resilience researchers should clearly define each concept before incorporating them into resilience models. To elaborate, I discuss four overarching implications of my research on disaster collective efficacy for resilience: 1) emergent and expected nature of collective efficacy in a disaster aftermath, 2) collective efficacy and level of analysis, 3) collective efficacy and the role of community organizations and 4) disaster collective efficacy as belief in social cohesion and capacity and willingness to participate in collective action.

First, because disasters were perceived as extraordinary situations, most participants in this study expected various collective processes to occur in a disaster, with or without proof of their existence in daily life. For example, routine friendliness was expected to expand in disaster situations to anyone in need, and even those respondents who did not perceive overwhelming friendliness in their communities expressed tentative belief that a disaster would overcome at least some of the daily social divisions. As Debra from Leon County remarked, the sudden needs created by a disaster can generate collective efficacy that was previously lacking:

> I think that if there is a strong community it's going to lead to a faster recovery, a more efficient recovery, but I don't preclude recovery like my old neighborhood in Miami. I don't think there was that much of a sense of community [in Miami] and yet after Hurricane Andrew there became one.

Because individuals assume a disaster will bring out the best of their fellow citizens, they perceived greater potential for collective efficacy to occur. These expectations are supported by the disaster literature that highlights emergent collective processes in the immediate response period of a disaster (Fischer 2008; Quarantelli and Dynes 1977).

Methodologically, this point provides insight into the higher scores and reliability of Benight's (2004) Disaster Collective Efficacy index from the survey than the routine collective efficacy measures such as Sampson and Raudenbush (1997) or the measures drawn from Putnam (2001) or Harvard's Social Capital Survey (2006). Overall, routine collective efficacy measures may underestimate potential disaster collective efficacy because individuals believe that a disaster will generate more collective assistance than normal circumstances. Yet, as long-term recovery begins, heightened collective efficacy may decline to levels expected from routine collective efficacy measures. Future longitudinal studies of collective efficacy before the event and throughout the recovery period could address these issues.

Second, understanding collective efficacy at the neighborhood level is important to disaster resilience, which supports the academic literature (Dynes 2005). Often individuals referenced the households closest to them, whether those were within one city block or separated by acres of forest or farmland along the same dirt road. Supportive neighbors could foster resilience at the neighborhood level. But the negative cases presented in Chapters Five and Seven indicate that neighborhoods, *for better or worse*, provide a context for perceptions of collective efficacy and these perceptions affected individuals' determination of whether they would participate in collective action in their neighborhood. These results show that neighbors may not fully support all individuals in their neighborhood, as in Dixie County where many individuals preferred their privacy and avoided their neighbors, or as in Leon County where

crime and violence limited neighborliness in some areas. Thus, collective efficacy at the

neighborhood level cannot be assumed to fully support all individuals and targeted programs are

necessary for supporting vulnerable neighborhoods and populations.

Methodologically, county-level measures of this aspect of resilience will naturally

smooth over important distinctions because disaster collective efficacy that focuses on

individuals working together varies at very small geographic units. One method for incorporating

neighborhoods into disaster resilience measures at a higher geographic scale is to include

measures of neighborhood associations as indicators of neighborhood collective efficacy, which

were perceived as important in Leon County. However, counting neighborhood associations

would underestimate the "neighborhoods" in rural areas, like Dixie County. Otherwise, more

intensive measures of collective efficacy at small scales, such as those completed in the Project

on Human Development in Chicago Neighborhoods (Sampson 2012), would be needed to

accurately capture distinctions at smaller geographic scale scales.

Third, residents and organizational representatives alike discussed the importance of

formal disaster response—from government to local churches—on their effect on disaster

collective efficacy. As organizers of donations, assistance, and volunteers, formal organizations

create the space for disaster collective efficacy to occur. Without these organizations,

interviewees were unsure how collective action would be directed. Some respondents even

suggested that if, like in Hurricane Katrina, these institutions fail, they could not predict how

individuals in the area would respond or assist each other. As a wealthy Leon County woman

described, large disasters require organizational capacity:

> To be able to assist people outside your neighborhood, you can do it when it's a
> single small event, like a burning house. A friend of mine ours, their house burned
> down, they didn't have insurance, sure, we wrote a check to help, that kind of
> thing. When it's a massive disaster, like Hurricane Katrina, there's no way you

could write a check effectively to thousands of homeowners that have been devastated, and that's' when I think the national organizations, like Red Cross, FEMA, you know, public or private, whatever resources go into it. And you know, your tax dollars pay for the federal stuff and your charity contributions go for the Red Cross' and things like that.

These questions mark a fundamental conceptual difference from collective efficacy in routine situations where, as Sampson and Raudenbush (1997) highlight, individuals practice daily informal control, for example, over children in their neighborhood. Assumptions of formal response also likely influenced the higher levels of agreement on the Disaster Collective Efficacy index than on the other collective efficacy indices in the survey. Methodologically, these results indicate that disaster collective efficacy measures should distinguish between individuals' collective efficacy (such as neighbors assisting each other) and that supported by organizations.

This point also raises the concern about measuring resilience in rural and urban areas. In the survey, residents held similar perceptions of collective efficacy. Whether they were from Leon or Dixie County, respondents felt that their fellow residents would be supportive and their institutions available for effective response. Most residents and many organizational representatives believed in the ability of local emergency management, higher jurisdiction's emergency management, and well-known nongovernmental disaster response organizations to coordinate collective action. Other local organizations were also expected to support these organizations as necessary. In Dixie County particularly, disaster response organizations located outside the county were expected to arrive and assist, as Diana from Dixie County highlighted when she discussed calling FEMA immediately after a disaster impact or as Sheila who discussed donating to the American Red Cross after a flood in Dixie County. Because these areas have fewer of these organizations overall, regional organizations become key carriers of

potential collective efficacy. This result indicates the need for conceptualizing disaster collective

efficacy as both local and extra-local.

Yet in terms of institutional capacity to support collective efficacy, organizations differ in

their support of collective action that affects the community *as a whole*. For example, many

governmental and nongovernment disaster programs work only with those religious institutions

that offer a service to the broader community. For resilience this distinction has important

implications. Some organizations may extend their support to everyone in the community, which

creates a larger resilience net. Extending assistance to the whole community could incorporate

isolated individuals and distribute resources for the benefits of most if not all community

members. In contrast, organizations that assist only their own clients or members could support

resilience for those individuals, but these benefits may not expand to the larger community. This

manner of collective efficacy would overlook isolated individuals who are not connected with a

community organization (nearly half of the survey participants in this study). Methodologically,

these results point to the potentially greater effect of organizations that provide services to the

whole community on overall community resilience than organizations that provide services only

to their members. Resilience research needs to distinguish between these types of organizations

in aggregate resilience measures.

Fourth and finally, the disaster collective efficacy discussion from the community

organizations in Chapter Seven highlighted the difficulty for community representatives to

distinguish between structural capacities in their communities and the shared belief that members

of their community can work together for a shared goal, as collective efficacy is defined by

Benight (2004). Sampson and Raudenbush (1997) put forth that collective efficacy included

social cohesion and willingness to intervene on behalf of the collective. The story of small,

Southern towns can be viewed as evidence of social cohesion. All other discussion of collective efficacy, though, related to the capacity and willingness of their community members to effectively perform collective action, including what aids in their willingness to intervene (e.g., desire to volunteer) and what strengthens their efficacy while intervening (e.g., capacity of organizations to manage volunteers).

These results preliminarily indicate that there are three components of disaster collective efficacy: social cohesion, willingness to intervene, and capacity to address goals. Social cohesion measurements could include data on norms and values, in the Putnam (2001) tradition, or through survey research drawn from Sampson and Raudenbush (1997). Willingness to intervene can also be drawn from Sampson and Raudenbush or from data on volunteering and participation in community life. Capacity to address disaster resilience goals relates greatly to organizational and community processes, such as organizational donation and volunteer capacity. Measures of this could include volunteer management organizations active in the community, charitable donations, as well as the disaster-specific collective efficacy capacity including data on disaster-specific volunteers, donations, and disaster volunteer management capacity.

While the practice of disaster social capital in a community can affect the capacity to collaborate effectively, social capital, defined as resources available in social networks, is different from social cohesion, willingness to intervene, and capacity to support collective acton. Just as norms and trust affect social capital, but are not social capital (Bourdieu 1985), collective efficacy and social capital can affect each other but are distinct phenomenon.

Disaster Social Capital: Community-level Networks

Disaster social capital for organizations is defined as a network of community organizations who meet to work on community-level disaster resilience with mitigation,

preparedness, response, and recovery planning. Because these networks focus on a potential, but somewhat unpredictable, external shock that will affect the network members, the community at large, and the network itself, these networks are unique from other organizational networks. My research with the Big Bend COAD in Leon County and the organizations in Dixie County provided insights into these less commonly studied organizational networks.

In this section, I describe the "practice of disaster social capital" as it differs between the two case study counties. This practice designates the structure and interaction of organizational networks that address disaster concerns, and the word "practice" is used to incorporate the importance of the interpretative context of these networks and focus on the process of social capital and not just the existence of organizations active in a community (Schensul et al. 1999). This emphasis on practice also furthers my focus on resilience as a capacity not a static property of a community. Without a disaster occurring during my dissertation research, I can neither confirm nor deny the exact effects of these networks on resilience, but I can compare and contrast the way that social capital is practiced for disaster resilience, highlighting three important concerns for each county: structure of pre-event disaster social capital, organizational capacity, and regional disaster networks.

First, pre-event relationships are viewed as important to disaster resilience, which supports the academic literature (Kapucu 2006a; Kapucu 2006b). As the public health representative from Dixie County explained, strong relationships among those in the Disaster Core are central to disaster resilience:

> The good thing about Dixie County is there's a very good working relationship between the health department and emergency operations and services. The beauty of a small community is that they do come together in an emergency, and you're not having to build those relationships only in times of emergency because you're working with these people year-round on all kinds of stuff.

While Leon and Dixie County differ greatly in population size, demographic composition, and economy, one of the most noticeable differences is the organizational activity in each county. The fewer organizations operating in rural areas like Dixie County commonly leads to the assumption that these areas have less community social capital than urban counties, and thus less resilience. The benefits for Leon County disaster resilience expressed in this dissertation relate to the *practice* of social capital or the degree to which organizations of various sectors are involved in a formalized, disaster social capital network not just the presence of more organizations. Just as the composition, such as percent family versus neighbor, affected individual resilience described in Chapter Four, the composition of disaster social capital networks at the organizational level affects potential disaster resilience for these two cases.

In both counties, the centrality of emergency management to disaster social capital is similar with the Disaster Core in each county made up of the main disaster-related organizations of that county. Outside of this Core, disaster social capital differs dramatically. I describe Leon County as practicing *active disaster social capital*, meaning that organizational ties to discuss disaster-specific concerns are actively sought and supported with a variety of sectors through formal mechanisms, such as the Big Bend COAD. In contrast, Dixie County operates *assumed disaster social capital*, in which most ties to organizations in the county are *assumed* to emerge when needed following a disaster (see Figures 8.1 for comparison). Further, the assumed nature of social capital in Dixie County makes their practice of social capital more closely resemble latent collective efficacy.

As elaborated in Chapter Six, the incorporation of outside organizations into the Leon County active disaster social capital network created indirect benefits for disaster resilience by sharing knowledge about disasters and the capacity of organizations involved. This knowledge

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sharing was perceived to improve emergency response, organizational survival, communication

of population needs and capacities, and public outreach, especially to vulnerable populations. In

contrast, interviewees from organizations in both Leon and Dixie County who lacked ties to

disaster organizations expressed a similar lack of familiarity with county disaster planning,

uncertainty about their internal disaster plans, and lack of planning for what to do to support their

constituents beyond their usual assistance. Thus, the benefits for resilience from active disaster

social capital are above and beyond that represented by the number of organizations in a

community.

Assumed Disaster Social Capital, Dixie County   Active Disaster Social Capital, Leon County
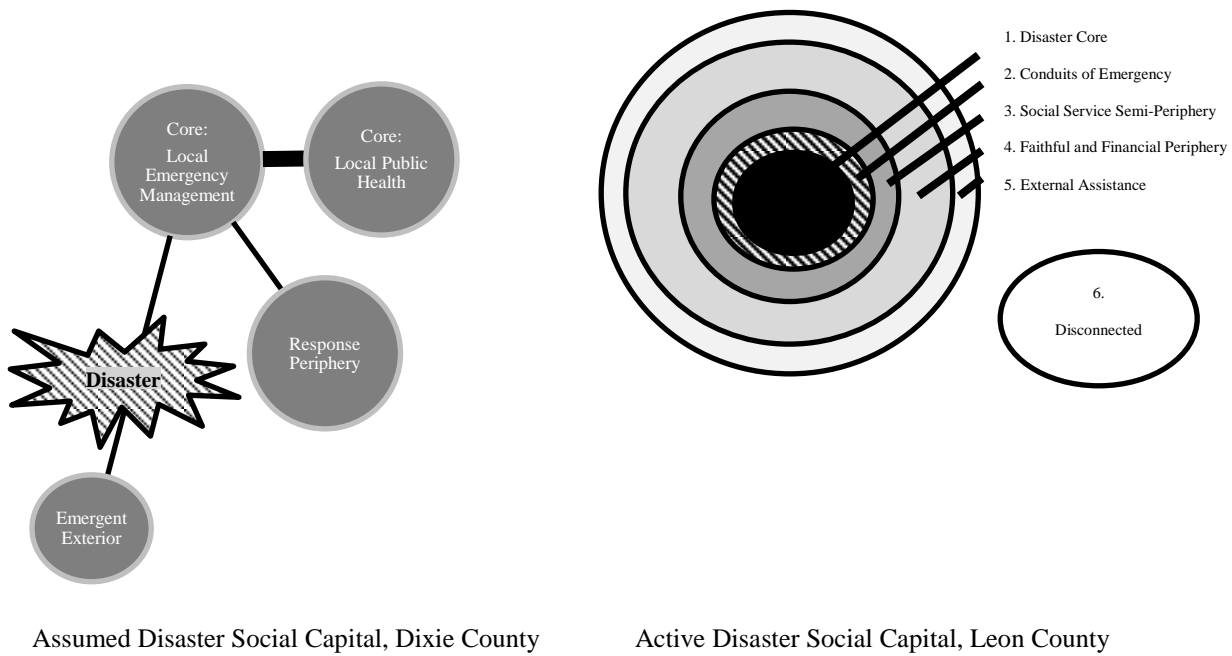
Figure 8.1. Assumed versus Active Disaster Social Capital

As a VolunteerLEON representative from Leon County explained, getting participation

in the COAD is difficult because many organizations, "don't think they need to be at the table

until the last minute, or maybe don't find the value in it, or just don't know about it. That's

probably the biggest thing, getting the participation." Leon County and Dixie County

representatives faced similar assumptions from non-disaster organizations, who often did not

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understand their role in a disaster network. But active disaster social capital in Leon County offered a way for incorporating these organizations, whereas in Dixie County, emergency management accepted the view that other organizations were not needed pre-event.

These findings illustrate how involvement in active disaster social capital helps incorporate disaster into the everyday fabric of organizational activity. Furthermore, the inclusion of organizations that support vulnerable individuals into an active disaster social capital network shows how individual resilience can be addressed through community-level initiatives. Methodologically, these results question using counts of organizations present in a county as a proxy of social capital (Cutter, Burton, and Emrich 2010; Sherrieb, Norris, and Galea 2010), and indicate that measuring the *quality* of organizational relationships is vital for understanding community disaster resilience.

Second, a comparison between the counties was that both areas face constraints on organizational capacity; many nongovernmental organizations operated with limited funds and few, if any, full-time employees. In Dixie County, the local organizations are very small. For example, the nonprofit interviewed in Dixie County had one full-time staff member, who sometimes foregoes her paycheck when the organization is low on funding. The other two workers are volunteers. Many churches in Dixie County lacked staff to answer the phones during the week and many even lacked telephone answering machines. Some were operated solely by one Pastor and his or her family. Rural researchers have noted that in many rural areas, organizational capacity, human resources, and physical resources are low and declining (Flora and Flora 2012). This affects the capacity of these organizations to be involved in organizational networks, to do disaster preparedness, and to have resources to respond to events. As was acknowledged in Dixie County, the organizations would offer their "last piece of bread" to help

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others in the community, but emergency management tried to avoid asking them for that last

piece.

The organizations in Leon County have more capacity, though it is still limited. As

expressed by one organization in Leon County not involved in the COAD, their 1.5 full time

employees could barely maintain their ordinary services:

> Not until you mentioned it, no. [Disaster planning] has never been, no. I mean,
> you're challenging mean. I'm like, wow, this is a big hole in our service
> provisions. I have 1.5 FTE (full-time equivalent employees) here. That includes
> me. So I would say needs would be financial, and then staffing. We're run by a
> volunteer board of directors.

Leon County interviewees connected through the COAD stated that practicing active

disaster social capital requires time and money to conduct meetings and exercises, maintain

communication, and incorporate the disaster knowledge into organizational practice, such as

developing internal plans and doing disaster preparedness activities with clients or members. As

a Leon County government interviewee described, there is an extra commitment required for an

active disaster social capital network, "We'll have meetings, but you've got paperwork, you've

got your own plans to do. We go to a lot of meetings, like, I had two meetings today, and

working with the people I would deal with. But it'd be nice to be a little closer to them on a

regular basis. But it's all about time."

While organizations in both communities were facing constraints on time and money,

many in Leon County saw how disaster-specific networking was an overall benefit to their

organizations and community. As respondents discussed, coordination created through

participation in the network helped them streamline resources and target their limited resources

to specific concerns. Thus, the active disaster social capital was seen as a way to address needs in

fiscally difficult times. Future research should continue to explore how network involvement affects organizations' capacities to meet disaster needs.

Third, the disaster resilience discussion focuses largely on local communities, and many scholars and emergency management organizations argue that disasters are "local" first and foremost (Wilbanks 2009). But disasters rarely are contained within one jurisdictional unit, and even when they are, external resources from neighboring communities, states, and the federal government affect the disaster resilience of a community. This implication means that communities are not islands and calls for a need to evaluate the regional aspects of community disaster resilience.

Leon County is the central county in their eight county region, and because of the county's size and resources, Leon County emergency management opens shelters and supports populations from the outlying counties. On the one hand, because of their centrality in the region, Leon County has more resources that are perceived as "local" resources. They are able to share responsibility between these partners and were able to express their belief that they are attempting to be able to function without external support for as long as possible after a disaster. As Jana from VolunteerLEON described, they are aiming for at least ten days of providing for themselves before state or federal resources arrive. On the other hand, Leon County supports the resilience of neighboring counties that will use its shelters and organizational services. While able to support their own residents, larger disasters that affect many of their region's counties could overwhelm their own resilience.

In contrast, Dixie County's emphasis on governmental response and position on the edge of a regional service area meant that most of their support is external. For example, a governmental representative described how quickly these external governmental resources

commonly arrive, "We would request food and water from the state. It's usually here within 24 to 48 hours." These results indicate that Dixie County's resilience may benefit from the capacity of their neighboring counties. Overall, these results point to the complication of defining "local" and "community" in disaster situations when many resources are located at regional, state, or even federal levels.

When considering the role of region in community disaster resilience, my results indicate that trust of neighboring counties' community organizations should be considered. Local organizations garnered more trust in disaster situations. The Big Bend COAD members who work with the outlying counties in their region described how they were perceived as outsiders:

> Being in Tallahassee, we have the opportunity of having all of the resources here, and the more rural counties, they really rely on that emergency management, and every emergency manager is going to deal with the disaster or the situation a little different…. They were a little more hesitant to have some of the more unfamiliar COAD members come in. And then in the rural counties, sometimes they definitely have a system set up where you cannot be the outsider "coming in telling me how to operate my county."

As Leon County representatives described, getting participation from organizations in neighboring counties was difficult as was fostering trust with the public of lesser known organizations. Methodologically, these results imply the need for careful consideration of how regional resources affect resilience, and which organizational resources can more easily cross jurisdictional boundaries.

<center>Limitations</center>

As with all research, a few limitations exist. First, the case methodology means the results may or may not be transferable to other counties in Florida or the United States. Some of the results are, indeed, unique to the local context, such as the specific key institutions or the cultural story residents use to support their perceptions of collective efficacy. Because other

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areas of the United States face many of the same concerns as Leon and Dixie Counties, such as economic recession, regular but infrequent large-scale disasters, organizational constraints, and social inequality, among others, the broad results of this research may apply to other communities. For example, how community-level disaster social capital is structured and operated in one of my cases may speak to the experience of other communities, and the benefits of active organizational disaster social capital identified here may be found in other cases.

Second, the sample size for the survey was small, even though the response rate corresponded to rates among similar surveys. Further, while demographically representative, the sample is skewed toward older and White respondents which may limit the generalizability of the findings. I used caution throughout when discussing potential inferences found in my data, and future research should incorporate larger population samples to allow for more extensive statistical analysis and test my individual-level results.

Third, at the community-level, I was unable to interview all organizations in each county. As such, I was unable to complete a full description of the network of organizations in either case. In spite of using the best research methods to recruit participants, some organizations were unavailable or unwilling to be interviewed for this project. Though I believe the data from my sample provide a close representation of reality and the central disaster-related organizations were included for each case, future research should attempt to gather information from all organizations in a community to perform more elaborate social network analysis.

Fourth, I focused on natural disasters, and interviewees frequently discussed hurricanes and floods. Other types of disasters (e.g., oil spills, chemical releases, or explosions) may affect the interactional patterns researched in this dissertation differently than natural disasters. For example, past studies have shown that technological disasters have negative impacts on the

sociocultural fabric, such as causing a "corrosive community" where litigation divides the population (Freudenburg 1997). These greater effects of technological disasters on social relationships require research on social capital and collective efficacy in those circumstances. Future research could engage these questions for resilience following technological disasters, and see how the type of external shock—natural or technological—affects the relationship between social capital or collective efficacy and disaster resilience (Ritchie and Gill 2007).

Fifth, doing disaster research before an event is difficult but informative. Even in hurricane-prone Florida, participants described their *intentions* for activating social capital in a disaster and their *perceptions of potential* collective efficacy. These perceptions and intentions may or may not be congruent with what they would actually do in a disaster, and all interviewees, whether they had been through a disaster before or not, expressed hesitation when discussing what social ties they would activate in a disaster. My results reflect their perceptions at the time of data collection, but post-event data is needed to see how these perceptions mesh with disaster reality. Disaster resilience research calls for understanding community attributes pre-event, and my research shows the feasibility and limitations of doing this type of work. Future research using longitudinal data, before and after a disaster is necessary to fully elaborate the resilience concept.

<center>Linking Disaster Vulnerability and Resilience</center>

Social vulnerability and disaster resilience have been theorized in two contradictory manners—as opposites (two ends of the same spectrum) or as independent, but partially correlated concepts (Manyena 2006). If vulnerability and resilience are merely opposites, then they must relate to a higher order concept, just as, for example, strong and weak are opposite ends on the spectrum of strength. As of yet, scholars have not propositioned what this higher

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order concept is. Other scholars see resilience as a contributor to vulnerability, such as Alwang, Siegel, and Jorgensen (2001) who described vulnerability as the sum of resilience and risk. This proposition implies that vulnerability and adaptive capacity are independent, which is often untrue. For example, Chapter Four showed that socially vulnerable individuals may lack social capital ties that can assist with the financial needs of disaster, which indicates that they more likely need governmental financial assistance to bounce back from a disaster. Understanding the linkages between components of resilience is the most important next step in conceptualizing and operationalizing disaster resilience.

In this dissertation, I have addressed two components of disaster resilience, social capital and collective efficacy, that are often beyond what a social vulnerability analysis would incorporate. My results indicate that disaster resilience is independent of vulnerability, and that vulnerability does not always contribute to resilience in a consistent manner. Incorporating interaction-based aspects of individual and community life, such as these, help expand resilience to its full conceptual potential. To elaborate and depict how vulnerability and resilience relate consider Figure 8.2 below.

Social vulnerability and resilience each span a spectrum from low to high and individuals and communities could fall in a variety of places along each spectrum. Figure 8.2 shows the two spectrums of vulnerability and resilience, and four simplified categories of individuals or communities. This schematic includes two categories that correspond to the proposition that vulnerability and resilience are opposites. Systems that are highly vulnerable and have less resilience (Box 2 in Figure 8.2) would be those of most concern in a disaster situation, and could easily be expected to have difficulty recovering from even small disasters. Conversely, systems that are less vulnerable and have high resilience (Box 3 in Figure 8.2) would be of the

least concern in a disaster, and would be predicted to recover more easily than other categories to increasingly larger disasters. The other two categories (Boxes 1 and 4 in Figure 8.2) represent how resilience and vulnerability are not always opposites, and systems can have both vulnerability and resilience or lack both. These two categories represent systems in which disaster outcomes are less predictable, i.e., resilience may counteract vulnerability to allow for disaster recovery depending upon the impact of the event. These four are simplified categories, and many individuals and communities will fall somewhere along these spectrums.
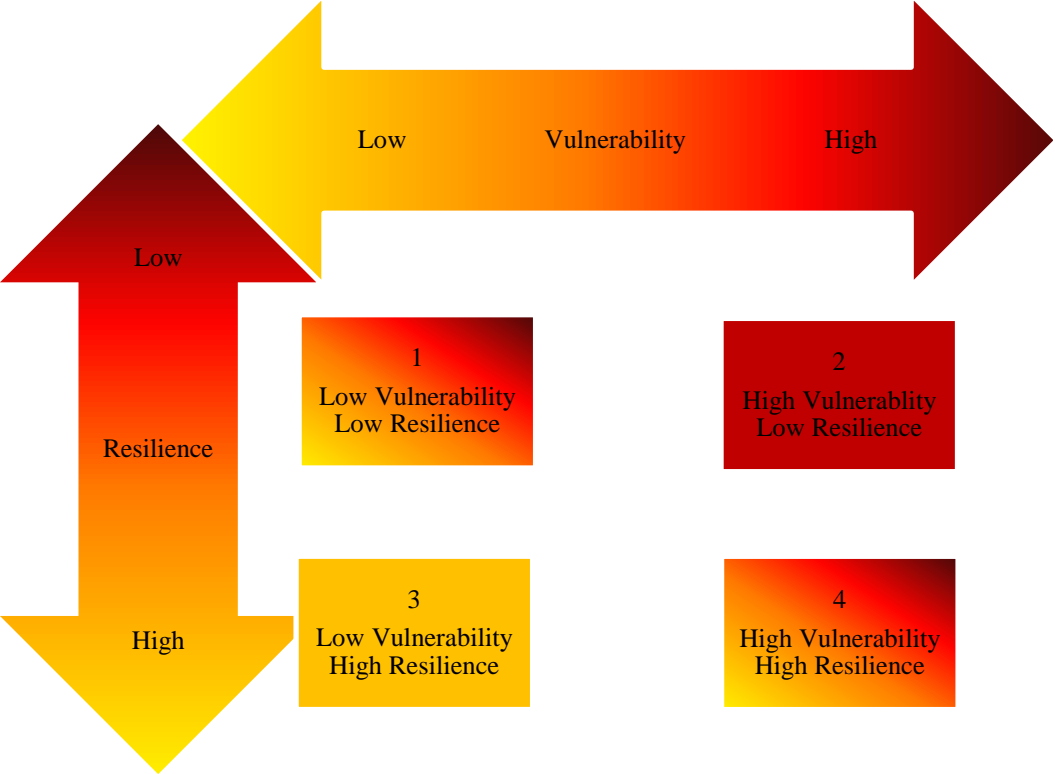
Figure 8.2. Spectrums of Social Vulnerability and Disaster Resilience

Most importantly, by conceptualizing resilience and vulnerability as independent as in Figure 8.2, the disaster outcome for a system can be affected in two manners: 1) reducing vulnerability or 2) increasing resilience. One manner to increase resilience, as described in this dissertation, is to target social capital and collective efficacy, and focus these two processes on

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disaster-specific concerns. For example, while neither Dixie nor Leon County emergency management personnel can directly affect the poverty rates in their communities (which are indicators of social vulnerability), they can practice disaster-specific social capital with organizations and individuals working with those living in poverty to build their resilience as discussed in Chapter Six. Community organizations and national and federal disaster organizations can actively target these interactive practices along with other proposed components of resilience, such as infrastructure, institutional, and communication.

This conceptualization of resilience as independent of vulnerability incorporates sociological theory related to collective efficacy and social capital. Namely, disaster social capital and collective efficacy can be affected by social vulnerability but they also contribute independently to resilience, just as social capital and collective efficacy theorists (Bourdieu 1985a; Sampson, Morenoff, and Gannon-Rowley 2002) found that these processes are often correlated but still independent of economic attributes such as financial capital or presence of disadvantaged populations.

Returning to the definition of resilience, my findings point to the importance of processes to our understanding of disaster resilience, and underscore resilience defined as a *capacity* that is maintained (or not) rather than a static quality of a system. Disaster-specific social capital and collective efficacy provide a method for further understanding how individuals and communities decide to return to the same state or some version of a "new normal" that is different than the previous state. Thus, future research can investigate how social capital and collective efficacy both promote a return to pre-event state or are used to change the system.

Linking Individual and Community Disaster Resilience

Disaster resilience identifies the capacity of a system to adapt to an external impact through mitigation, preparedness, response, and recovery in a way that results in one of multiple potential states and maintains the basic functioning features of the system. This process involves resilience for individuals, groups, and formal institutions, and active practice from the community on disaster-specific concerns. In this dissertation, I investigated how social capital and collective efficacy, two interactional components of resilience, can connect individual and community level understandings of resilience in disaster-specific contexts. My results point to the need for resilience researchers to carefully conceptualize individuals and communities and their interplay.

Sampson (2012: 355) argued that neighborhoods and communities have been lost in much of today's scholarship, stating that often researchers assume that "Individuals autonomously select and decide, so that neighborhoods—and, by implication, much of the social world—are merely outgrowths of an individual process of selection." He further argued that, "The theoretically important point is that neighborhood, community, and other collective phenomena demand their own measurement logic and are not stand-ins for individual-level traits" (2012: 360). As I have shown throughout this dissertation, resilience measures commonly fall into this trap Sampson identified and reduce "community" to a tally of local organizations, rate of two-parent families, number of homes with hazard insurance, etc. By doing so, these measures disregard the theoretical power of the "community" in community disaster resilience, and how communities shape and are shaped by the individuals interacting within their geographic boundaries. In disaster resilience, we must be careful about how we operationalize resilience and what implications that may have for the practice of resilience in communities.

Interviewees throughout this study walked this fine line between, first, doing all they could within their economic and social constraints to care for themselves and their organizations, and, second, accepting that some aspects of a disaster will be beyond individual control and ultimately a collective risk for the community. Unfortunately, the common story by politicians, professionals, and even citizens alike is one calling for individuals to take more personal responsibility for disaster resilience. I even heard disaster professionals who were well versed in social vulnerability and the constraints to individual resilience lament the fact that some people just "won't prepare." This focus on individuals generates a different form of disaster resilience than that which focuses on communities *as a whole*.

For example, Sarah, the representative from a Leon County organization working with persons with disabilities, described how resilience focused on individuals differs from resilience focused on community. As she noted, for a few years Florida supported representatives of her organization to travel to communities, find the key institutions, and engage them in a workshop about the issues related to disasters and persons with disabilities. In 2012, state funding changed, and the small stipend her organization received to do this networking was eliminated. Instead, her organization was funded *per disabled individual* that her staff helped complete a large disaster preparedness packet. In the first three months of this new funding, she had only completed *three* individual packets of the several hundred she told the state she would complete. She emphasized some of her difficulties with what seems like a simple and straightforward way to increase resilience through a focus on individuals.

> About four weeks ago, we had a mental health support group, people with significant mental illnesses. I did the training with them. Great discussion the first time, I gave 'em the stuff and said, "Come back, I'll meet with you next week, we'll finish it up." They didn't do it. They didn't have the paperwork, they didn't remember, they didn't come back. It was scattered. You can't be successful doing it one time, because people really have to think about it and go home and look and

get their information if you're going to really help them. Between one week and the next, for these folks, that's a struggle. That's a real struggle…. I'll present this Wednesday to the group of women with disabilities that have been victims of crime. I'm going to go talk [at their support group] about disaster preparedness. Tell me, how hard is this going to be? How hard is this going to be?!

This story from Sarah highlights the questions that this dissertation addressed: How do we understand and implement disaster resilience that promotes resilience for all members of a community, and how do individual and community levels of resilience relate? Her story shows how the level at which disaster resilience is conceptualized can result in very different practices of resilience. A community can use the lever of "community" to support networking and interaction in a manner that attempts to incorporate social vulnerability throughout local organizations' disaster planning and discussion. This can create a resilience net to catch those residents whose individual resilience is compromised while empowering local communities— their organizations and individuals—to collaborate for disaster resilience. More and more research in routine community concerns, such as poverty or homelessness, is showing the importance of understanding interactions in communities that affect collective outcomes (e.g., Flora and Flora 2012). To understand the effects of these community mechanisms for disaster resilience and how to employ FEMA's "Whole Community" effectively, social scientists need measures specific to the community level of analysis, as Sampson (2012) suggested and I highlighted, as well as specific to disaster concerns, as illustrated throughout this dissertation.

Otherwise, communities can continue to encourage each individual resident be resilient on their own, knowing that inequality, poverty, disability, and many other issues are a much greater daily risk to his or her livelihood than the regular, but often rare disaster. By taking social capital and collective efficacy as the interactive components of resilience to task, I have illuminated some aspects of this relationship between individuals, their communities, and

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resilience, and some components of communities needed in resilience measures. By using social

capital and collective efficacy as they are rooted in their sociological tradition, I have shown that

we can discuss vulnerability and resilience across both individual and community levels of

analysis, and understand the interplay of these concerns for disaster resilience.

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APPENDIX A

LEON COUNTY CENSUS TRACT SELECTION

2000 Census Tract	Pop.	Minority Percent	Median Income	Poverty Percent	Elderly Percent	Children Percent	Female Householder Percent	Renters Percent	Household Size	Total Score
3.01	1,526	34.8%	$41,550	21.4%	15.3%	13.8%	10.2%	44.2%	1.9	1
4	2,940	91.7%	$16,875	37.3%	3.9%	7.0%	13.5%	69.0%	1.9	4
10.01	2,324	84.2%	$15,268	52.2%	6.2%	41.4%	45.7%	80.2%	2.7	7
19	7,070	71.1%	$18,105	35.3%	5.6%	26.8%	19.4%	63.5%	2.3	6
21.02	7,557	37.2%	$17,660	45.4%	3.9%	9.5%	10.2%	74.0%	2.1	4
22.04	7,172	15.6%	$43,224	11.4%	10.5%	21.1%	10.7%	40.7%	2.4	1

2000 Census was used to maintain consistency with available sampling geography.

Shaded boxes indicate scored as high socially vulnerability on that variable.

APPENDIX B

SURVEY COVER LETTER AND INSTRUMENT

Department of Sociology
Fort Collins, Colorado 80523-1784
Office phone: (970) 491-7164
michelle.lueck@colostate.edu
www.colostate.edu/Depts/Sociology

Name
Address

Dear [Name],

I am writing to you about my graduate student research project titled "Community Disaster Resilience" that will look at how people prepare for and respond to hurricanes. I would like to invite you or any other adult member of your household to join in this study. Your household was selected randomly from a public directory for this invitation. Details about the research project are provided below.

Project leader: Michelle Lueck, graduate student, Department of Sociology, Colorado State University
Advisor: Lori Peek, Associate Professor, Department of Sociology, Colorado State University

Why am I being invited to participate in this study? I am asking a sample of people who live in Leon and Dixie Counties of Florida to participate. You should be a year-round resident in order to be in this study. If you only reside in a coastal residence for part of the year, you should not respond.

What is the purpose of the study? This study will gather information about how people assist each other in preparation for and in response to hurricanes. It also looks to understand perceptions of different communities' ability to prepare for and respond to hurricanes.

What am I asked to do? Enclosed is a survey that takes about 15 minutes to complete. To participate, please complete the survey and return it to me in the self-addressed stamped envelope provided. There are no risks or discomforts to you from being in this study. Your participation in this research is voluntary, and you may quit at any time.

Are there any benefits from participating in this study? There are no direct benefits or compensation to you from being in this study. I hope that the results of the study will provide more general benefits to people living in hurricane-prone areas. The information I will gather will hopefully be of use to emergency planners and those who provide hurricane warning and evacuation information.

Who will see the information that I give? Only I will see the survey data. Your responses will be combined with information from other people taking part in the study. When I write about the study to share it with other researchers I will write about the combined information we have gathered. You will never be identified in any materials. Your information will be kept private.
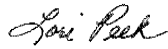
What if I have questions? You can contact me, Michelle Lueck, with any questions about the study at 970-491-7164 or Michelle.Lueck@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655.

I hope you will join me in this research effort! Thank you so much for your time, I greatly appreciate it!

Sincerely,

Michelle Lueck Lori Peek, Ph.D.
Graduate Student Associate Professor

Questions? Contact:
Michelle Lueck
(970) 491-7164
michelle.lueck@colostate.edu

Return survey in enclosed envelope to:
Michelle Lueck
Department of Sociology
Colorado State University
Fort Collins, CO 80523-1784

Thank you for completing this questionnaire for my graduate school research project. **Any adult member of the household may fill out the questionnaire.**

The questions on the following pages cover a range of topics. These include information about your household, your attitudes and concerns about the risk of hurricanes, your hurricane evacuation history, and how well you feel your community is prepared for a hurricane. The results of this study will help me to understand a wide variety of issues that coastal residents face concerning hurricanes.

As you complete the questionnaire, please answer the questions to the best of your knowledge. When questions ask for your opinion, answer based on your initial reaction. There are no correct or incorrect answers. Thank you again for your time and for sharing your thoughts!

First, I would like to ask a few questions about you and your household.

Is the address this survey was delivered to your year-round home? ❑ Yes   ❑ No

In what type of housing are you currently living? Check one:
❑ Single-family home   ❑ Mobile home   ❑ Condo or Townhome   ❑ Apartment
❑ Other:_____

Is your present housing rented or owned by a member(s) of the household?
❑ Rented   ❑ Owned   ❑ Other:_____

How many years have you lived in this county? _____

How many years have you lived within about 40 miles of the coast? _____

How many persons currently live in your household (including yourself)? _____
Of these, how many are children, age 18 or under? _____
Of these, how many are age 65 or over? _____

How many immediate or extended family members reside in your community? Do **not** count those who live in your household. _____

How many cars, trucks, vans, or other vehicles are kept at home for use by members of your household?____

Are you registered to vote?   ❑ Yes ❑ No
          Did you vote in the 2008 National Election? ❑ Yes ❑ No

How many social organizations do you or members of your family belong to or volunteer with? This may include neighborhood associations, fraternal organizations or clubs, religious organizations, etc. _____

If you or members of your family are involved in social organizations, how many of these organizations would be able to help **your household** in a hurricane?_____

The following questions ask about your *lifetime experience* with hurricanes. I know it may be difficult to be precise with these answers. Please provide your best estimate.
How many times you have experienced a hurricane of any strength, from Category 1 through 5?_____
How many times have you *evacuated* (left your home to stay elsewhere) due to a hurricane? _____

I would like to ask you about people in your life who could help you during or following a hurricane.

How many individuals do you know that you could rely on for <u>financial help</u>, if needed, during or following a hurricane? _____

How many individuals do you know that you could rely on for <u>non-financial help</u> during or following a hurricane landfall, such as help with repairs, clean-up, childcare, etc.? _____

Now, of those people you counted above, please think of the top people you would turn to first for assistance after a hurricane. Please fill out the chart below, listing some of their traits.

Person	Relationship (parent, sibling, friend, neighbor, etc.)	Age	Gender	Race	Location (City, State)	Help they could provide (check all that apply)	Have they helped you <u>in past hurricanes?</u>	Have you helped them <u>in past hurricanes?</u>
1			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
2			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
3			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
4			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
5			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
6			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
7			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other: _____		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No
8			❑ Female ❑ Male	❑ White ❑ Latino/a ❑ Black ❑ Asian ❑ Other:		❑ Financial ❑ Non-financial	❑ Financial ❑ Non-financial ❑ No	❑ Financial ❑ Non-financial ❑ No

Who would you turn to for <u>financial help</u> during or following a hurricane in your area? Check all that apply:

❑ Family inside your community   ❑ Neighbors   ❑ Organization you belong to (church, club, non-profit, etc.)
❑ Friends inside your community   ❑ Co-workers   ❑ Organization you <u>do not</u> belong to
❑ Family outside your community   ❑ Government   ❑ Would not need financial help
❑ Friends outside your community   ❑ No one   ❑ Other:_____

Who would you turn to **first** for <u>financial help</u> during or following a hurricane in your area? Check **one**:

❑ Family inside your community   ❑ Neighbors   ❑ Organization you belong to (church, club, non-profit, etc.)
❑ Friends inside your community   ❑ Co-workers   ❑ Organization you <u>do not</u> belong to
❑ Family outside your community   ❑ Government   ❑ Would not need financial help

❑ Friends outside your community   ❑ No one   ❑ Other:_____

Who would you turn to for <u>non-financial help</u> during or following a hurricane in your area? Check all that apply:

❑ Family inside your community   ❑ Neighbors   ❑ Organization you belong to (church, club, non-profit, etc.)
❑ Friends inside your community   ❑ Co-workers   ❑ Organization you <u>do not</u> belong to
❑ Family outside your community   ❑ Government   ❑ Would not need financial help
❑ Friends outside your community   ❑ No one   ❑ Other:_____

Who would you turn to **first** for <u>non-financial help</u> during or following a hurricane in your area? Check **one**:

❑ Family inside your community   ❑ Neighbors   ❑ Organization you belong to (church, club, non-profit, etc.)
❑ Friends inside your community   ❑ Co-workers   ❑ Organization you <u>do not</u> belong to
❑ Family outside your community   ❑ Government   ❑ Would not need financial help
❑ Friends outside your community   ❑ No one   ❑ Other:_____

During a typical month in the past year…	basically everyday	a few times a week	a few times a month	once a month	not at all
How often did you talk with any of your neighbors?	❑	❑	❑	❑	❑
How often did you talk with friends and family who <u>live in</u> your community?	❑	❑	❑	❑	❑
How often did you talk with friends and family who <u>live outside</u> your community?	❑	❑	❑	❑	❑

One common concern about hurricane evacuation involves locating shelter during the storm.

Please tell us about your experience with emergency shelters and other options you may have for sheltering.

Have you stayed in an emergency public shelter during an evacuation?   ❑ Yes   ❑ No   ❑ Never evacuated
Have you stayed in a hotel or motel during an evacuation?   ❑ Yes   ❑ No   ❑ Never evacuated
Have you stayed with family or friends during an evacuation?   ❑ Yes   ❑ No   ❑ Never evacuated

In the event of a hurricane evacuation, do you currently have family or friends outside the area you could stay with until allowed to return to your home?   ❑ Yes   ❑ No

If yes, how long could you stay? Check one:
     ❑ 1-2 days   ❑ 3-6 days   ❑ 1 week   ❑ 2-3 weeks   ❑ 1 month   ❑ more than 1 month

If yes, about how far would you travel to stay with family or friends during evacuation? Check one:
     ❑ Less than 30 miles   ❑ 30-60 miles   ❑ 61-100 miles   ❑ more than 100 miles

Are there individuals, living outside your home but near you, that you would assist during an evacuation?
     ❑ Yes   ❑ No

Are there individuals, living outside your home but near you, who have physical, mental, or emotional conditions that you would need to consider when making evacuation plans?   ❑ Yes   ❑ No

Emergency planning officials are concerned about households in which one or more persons have a disability. Please indicate who, if anyone, in your household has a disability.
Do you have a disability? ❑ Yes   ❑ No
If yes, what type of disability? Check all that apply:
❑ Physical or mobility   ❑ Hearing   ❑ Vision   ❑ Cognitive or learning   ❑ Other:_____

How many other members of your household have a disability? _____

275

If applicable, please indicate the types of disability other household members have. Check all that apply:
❑ Physical or mobility ❑ Hearing ❑ Vision ❑ Cognitive or learning ❑ Other:_____

If no one in your household has a disability, please skip to the next page.

> If there are persons in your household with disabilities**,** have you, or anyone in your household, signed up for a registry identifying someone with special needs for emergency situations?
> ❑ Yes ❑ No ❑ Never heard of this
>
> Do any of these person(s) with a disability need the assistance of another person for everyday tasks, such as getting dressed, eating, walking, etc? ❑ Yes ❑ No
>
> *If yes*, does this person(s) have a primary caregiver who regularly provides this assistance (i.e., a family member, friend, or paid professional)? ❑ Yes ❑ No
>
> *If yes*, does this person(s) have a second individual caregiver who could assist in the event that primary caregiver is unavailable? ❑ Yes ❑ No
>
> *If yes* (*on either above*)**,** will this caregiver be available to provide assistance during a hurricane with evacuation, sheltering in place, or moving to an emergency shelter? ❑ Yes ❑ No ❑ Don't know

Who are the <u>primary</u> people you would want to get in touch with as you prepared for a hurricane in your area? Check **one**:
❑ Those persons living with you ❑ Neighbors ❑ Organization you belong to (church,
❑ Family inside your community ❑ Co-workers club, non-profit, etc.)
❑ Friends inside your community ❑ Government ❑ Organization you <u>do not</u> belong to
❑ Family outside your community ❑ No one ❑ Don't know
❑ Friends outside your community ❑ Other:_____

The following questions ask about your community or neighborhood. Some of these questions ask for your general opinion, while others ask about your views of your community in the event of a hurricane. Please answer based on your initial reaction. If you live in an urban area, consider your neighborhood as the immediate surrounding area. If you live in a suburban area, your neighborhood might be a subdivision. If you live in a rural area your neighborhood may extend over many miles.

	strongly disagree	disagree	neutral	agree	strongly agree
People around here *are willing* to help their neighbors.	❑	❑	❑	❑	❑
People in this neighborhood *don't get along* with each other.	❑	❑	❑	❑	❑
People in this neighborhood *can be trusted*.	❑	❑	❑	❑	❑
This is a *close-knit* neighborhood.	❑	❑	❑	❑	❑
People in this neighborhood *don't share* similar values.	❑	❑	❑	❑	❑

	strongly disagree	disagree	neutral	agree	strongly agree
Overall, I rate my community as a safe place.	❑	❑	❑	❑	❑
In the next 5 years, my community will get <u>worse</u> as a place to live.	❑	❑	❑	❑	❑
People like me can have an impact in making my community a better place to live.	❑	❑	❑	❑	❑
If public officials asked everyone to conserve water or electricity because of some emergency, people in my community would <u>not</u> cooperate.	❑	❑	❑	❑	❑
I would like to move out of this community.	❑	❑	❑	❑	❑

This next question set asks about your opinion on your community's ability recover following a hurricane or other disaster.

	strongly disagree	disagree	neutral	agree	strongly agree
My community would distribute resources (labor, money, food) effectively following a disaster.	❑	❑	❑	❑	❑
People in my community will work well with each other during disaster recovery.	❑	❑	❑	❑	❑
Organizations and individuals are ready to respond to the community's needs following a disaster.	❑	❑	❑	❑	❑
Supporting those in greatest need after a disaster would be a priority for my community.	❑	❑	❑	❑	❑
My community could work toward common recovery goals following a disaster.	❑	❑	❑	❑	❑

How satisfied are you with the preparations of your local government for potential hurricane landfalls? Check one:
❑ Very unsatisfied ❑ Unsatisfied ❑ Neutral ❑ Satisfied ❑ Very satisfied

Finally, these are a few additional questions about yourself and your household. These questions are very similar to those asked on the U.S. Census and are important to allow me to compare the study participants to the entire community. *Remember, your responses are strictly confidential.*

What year were you were born in: _____

What is your gender? ❑ Female ❑ Male

What is your race? Check <u>all</u> that apply:
  ❑ White ❑ African American or Black ❑ American Indian or Native American
  ❑ Asian ❑ Native Hawaiian or Pacific Islander ❑ Other:_____

Are you of Hispanic or Latino origin? ❑ Yes ❑ No

What language(s) is spoken in your home? Check <u>all</u> that apply: ❑ English ❑ Spanish ❑ Other(s):_____

What is your relationship status?
❑ Married ❑ Living with partner, not married ❑ Single, never married
❑ Widowed ❑ Separated or divorced

How is the primary wage earner in your household employed? Check one: ❑ Not employed
❑ Full time ❑ Part time ❑ Multiple part time jobs ❑ Retired ❑ Other: _____

How is the primary wage earner in your household paid? Check one:
❑ Salaried ❑ Hourly ❑ Retirement ❑ Not employed ❑ Other:_____

Are you the primary wage earner in your household? ❑ Yes   ❑ No

How many other wage earners are there in your household, not counting the primary wage earner? _____

What was your household's approximate before tax income last year? Check one:		
❑ Less than $15,000	❑ Between $45,000 and $60,000	❑ Between $100,000 and $130,000
❑ Between $15,000 and $30,000	❑ Between $60,000 and $75,000	❑ Between $130,000 and $160,000
❑ Between $30,000 and $45,000	❑ Between $75,000 and $100,000	❑ Greater than $160,000

What is the highest level of education you have completed? Check one:

❑ Less than high school	❑ Some college/technical school	❑ Undergraduate degree
❑ High school or GED	❑ Technical school completion	❑ Graduate or professional degree

The ability of households to recover from a disaster like a hurricane is often affected by the financial resources and insurance available. These financial resources include savings, investments, retirement accounts, property (homes, land, vehicles), and other sources of funds that could be tapped in an emergency. Roughly, about what would you estimate to be your household's financial available resources? Check one:

❑ Less than $2,000	❑ Between $10,000 and $25,000	❑ Between $100,000 and $200,000
❑ Between $2,000 and $5,000	❑ Between $25,000 and $50,000	❑ Between $200,000 and $300,000
❑ Between $5,000 and $10,000	❑ Between $50,000 and $100,000	❑ Greater than $300,000

Please indicate what type of property damage insurance you have, as applicable. Check all that apply.

❑ Homeowners	❑ Flood (all causes)	❑ Relocation support (temporary housing, etc.)
❑ Renter's	❑ Hurricane (wind only)	❑ Damage mitigation (mold, etc.)
❑ None	❑ Other:_____	

INTERVIEW INVITATION: I will be contacting some of the study participants to talk in person and more in depth about their experiences with hurricanes. **These participants who chose to talk with me will be reimbursed $10 for their time.** If you are interested in being interviewed, please provide your phone number and E-mail address (if available). I will contact you shortly after I receive this survey to describe more about the interview.

❑ Yes, please: Phone:_____   E-mail:_____

❑ No, thanks

Thank you for your time and participation!

INDIVIDUAL RECRUITMENT MATERIALS, COVER LETTER, AND INTERVIEW GUIDE

Interview Recruitment Materials

Message: If no one answers the phone, leave <u>one</u> message:

Hi, this is Michelle Lueck from Colorado State University. I am calling regarding the community disaster resilience survey you recently completed. I wanted to talk with you very briefly regarding the interview portion of the research that you expressed interest in. It is [X:XX a.m./p.m.] right now. I will try to call back until I reach you. If you receive this message and would prefer to contact me, I am available at 218-791-8621. Thanks in advance for your time.

Contact w/ Respondent:
Hi _____, this is Michelle Lueck from Colorado State University. I am calling regarding the community disaster resilience survey you recently completed. You expressed interest in being interviewed as well for this project. How are you doing today?

I am very grateful for your interest and I am calling today to briefly talk about the interview part of the study and see if we can schedule a time to meet for the interview. Do you have a few minutes now, or should I call back at another time? [Take time to call back, if necessary]:

Great, thanks. I am gathering more in-depth information about some of the topics covered in the survey. I would like to talk with you more about your perception of your community's preparedness as well as your individual and household preparedness activities and your feelings about potential disaster response and recovery. I think the interview will last about 45 minutes to an hour, but I'll make sure and be respectful and only use whatever time you have available. Does this interview sound like something you would like to do?

Great, I will be in your area between <u>March 5 and 11 (Tallahassee)/ March 12 and 17 (Dixie)</u>. [If March doesn't work, I'll be back in May]. We can meet wherever is convenient for you, whether that be your home or a public location like a restaurant or library. Would you like to set a day and time to meet? And is there a specific place you would like to meet?

TIME: PLACE:

Thank you so much for being willing to talk with me. I will give you a call again the day before _____ to confirm for myself. Do you have any questions about the study or the interview? Before we hang up, I wanted to confirm that this is your preferred number [repeat number that you just dialed]. Do you other numbers that you would prefer I call?
Thank you again for agreeing to participate and I look forward to meeting you soon!

Interview Cover Letter

Colorado State University

Knowledge to Go Places

Department of Sociology
Fort Collins, Colorado 80523-1784
Office Phone: (970) 491-7164
Cell Phone: (218)-791-8621
michelle.lueck@colostate.edu
www.colostate.edu/Depts/Sociology

Thank you for your interest in being interviewed as part of my graduate student research study entitled: Community Disaster Resilience. The purposes of this study are to understand how people and their communities prepare for and respond to disasters. I would like to talk how people communicate and prepare for these events with others that they know.

This interview will take approximately 30 - 45 minutes of your time. Your participation in this research is voluntary. If you decide to participate now, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled. Your responses in the interview will be kept confidential. You have the right to refuse to answer any question(s) for any reason. This interview will recorded with a digital voice recorder. I will only record the interview with your permission.

You will receive $10 for participating in the interview. The information gathered will help me further understand hurricane preparedness and recovery in your community. You do not face any risks for participating nor are there any costs to participate.

If you have questions about the study, you can contact me, Michelle Lueck, at the contact information listed above. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Colorado State University's Human Research Administrator at 970-491-1655.

Thank you again for your time and participation in my study.

Sincerely,

Michelle Lueck   Lori Peek, Ph.D.
Graduate Student   Associate Professor

Individual Interview Guide

1. Disaster experience

2. Event today

>   If an event were to happen today,

>>   How do you think you would fair?

>>   What would you need to respond?

>>   To recover?

3. Social networks

>   Who would you turn to in case of an event?

>>   Reason?

>>   Non-disaster?

>>   Discussed?

4. Organizations

>   Involvement – normal life, disaster help?

5. Whole community in disaster

>   Thinking about the community as a whole,

>>   How do you think it would fair?

>>   What about this community would help it?

>>   What about this community may make disaster recovery more difficult?

>>   How do you think people would respond?

>>   Do you think the community would come together?

>>>   Who? How?

6. Place attachment

>   Thinking in general about the community,

>>   What are your favorite parts?

>>   What are you least favorite?

7. Social networks everyday

>   Thinking about everyday life,

>>   Who are the people most important to you? Sheet

SNOWBALL SAMPLING

ORGANIZATIONAL RECRUITMENT MATERIALS, COVER LETTER, AND INTERVIEW

GUIDES

Organizational Interview Recruitment Materials

Hi [Name],

I am a graduate student from Colorado State University and I am researching community disaster resilience for my dissertation. I have been conducting surveys and will be conducting interviews with individuals in Leon and Dixie counties about their hurricane preparedness and capacities to recovery if an event were to occur in your area. I am looking to gather a full picture of hurricane preparedness in these two counties, and would like to interview individuals from various organizations involved in emergency preparedness activities. I recently spoke with [X] and they mentioned your work in this area.

 One aspect I am particularly interested in is how emergency management organizations work with other public and nonprofit organizations to prepare and respond to disaster. I am in town this week and some of next week, and if you have about 45 minutes, I would love to be able to set an appointment to chat with you in person. If you feel someone else at your organization would be better able to speak about this, please feel free to direct me to him or her. If time is short now, I will also be back in May and would love to chat with you then.

Thanks so much in advance for your time and for considering my request. If you have any questions or would like more information, please let me know, my cell phone number is below.

Thanks again,
Michelle Lueck

Ph.D. Candidate and Research Assistant
Center for Disaster and Risk Analysis and
Department of Sociology
Colorado State University
A-009 Clark Building
Fort Collins, CO 80523-1784
970-491-7164 office
218-791-8621 cell
michelle.lueck@colostate.edu
disaster.colostate.edu

Organizational Interview Cover Letter

I would like to ask you some questions about your organization's role in disaster preparedness and response. This will take about 45 minutes to an hour.

Before we proceed, I wanted to remind you that all of your answers will be kept confidential, and your name and your organization's name will not be used in any reports that come out of this study. Also, you do not have to answer all of the questions. Please just let me know if you want to skip anything I ask. And if you have questions at any point during our conversation, please don't hesitate to ask me.

I would like to audio record this discussion, so that I can listen more closely and not have to be writing notes the whole time. Would it be okay for me to record our discussion?

[Yes/Great, let's get started.]

[No/I completely understand, but I want to reassure you that the only reason I am taping these interviews is because it is so difficult to write your responses down while talking to you—plus, I have trouble reading my own handwriting! (haha) And just so you know, the information from this interview is confidential, the files will be password protected on my computer and I am the only one who will have access to them. Also, the resulting interview transcripts will have all identifying information removed from them. So, would it be okay if I recorded our conversation?]

[Yes/Thank you so much. Let's get started.]

[No/Okay, no problem. I will take notes the best I can. Here we go…]

Emergency Management Organization Interview Guide

1. **Mission**	Activities you engage in?	
First, will you describe what your organization does in terms of disaster preparedness, response, and/or recovery activities?	Populations you serve? Geographic area you serve?	
2. **Engaging others**	Different parts of the community?	
How does your organization engage the community in disaster preparedness?	*Individuals? Different pops? Vulnerable pops?* *Community Organizations? Faith-based? Non-profits? Other government organizations?* *Schools? Private sector or businesses?*	
4. **Collaboration** Does your organization specifically work with other organizations or groups to carry out your mission? (Examples, How collaborate, <u>Names of other orgs,</u> <u>Organizations that are missing</u> <u>from collaboration,</u> Effect of collaboration on organizational mission)	Can you tell me a little what those collaborations look like? - Examples when you have *given* or *received* assistance? Frequency of contact? Getting started? *organizational policy or individual initiative?* List specific organizations? (Public organizations? Non-profit? Faith-based? Private sector? the state? the feds?) Are there organizations that you wish you would collaborate with more? What affects collaboration? Makes it work well or go poorly? *Challenges? Benefits?* Affected achieving your mission? Different from ways your organization operated previously?	
5. **Community Capacity** Now, thinking about your community [*hand gesture*] as a	*Economic resources? Social resources? Organizational resources?*	

whole, what capacities do you see that would be beneficial during a disaster response and recovery?	*Individual citizen attitudes, values, resources?* Do you have a database or some other tool that you use to find these different resources?	
6. **Community Needs** Is there anything about your community that really worries you when thinking about effectively responding to a disaster?	*Money? Hazards exposure? Infrastructure?* *Vulnerable populations?* Most central needs?	
7. **Community Trust** What is your perception of the trust in your community related to disaster management?	How does trust affect your mission? *Trust from other organizations?* *Public trust?*	
8. **Disaster Resilience** Finally, I wanted to ask you about the hot topic of "community disaster resilience." Would you describe your community as resilient? How so?	What affects your community's resilience? *How do you understand your community's resilience?*	

Thank you so much for your time. It has been great speaking with you today. If I have questions as I move forward, would you mind if I contacted you again for quick follow-up? Thanks so much.

General Organization Interview Guide

1. **Mission**	Some of the activities you engage in?	
First, Can you describe some about what your organization's role in the community?	What populations you serve?	
	What geographic area you serve?	
[*add details applicable to that organization*]	Types of contact? Frequency of contact?	
2. **Effect of disaster**	What do you see as their needs during disaster?	
What effect would a disaster have on the population your serve?	How are these needs are met by current disaster planning in your community? *(other orgs role)*	
	What would improve this population's ability to recover from disaster?	
3. **Disaster and organizational role**	Do you reach out to your population about preparedness activities? How so?	
Does your organization incorporate disaster preparedness or response/ recovery into your organizational operations?	*How has your population responded to the disaster information you provide?*	
	If a disaster were to occur, what does your organization do in terms of the populations you serve?	
[*Yes, see probes. No see next question*]	Has your organization responded to disaster that affected population you serve in the past?	
	How do reach your population? How are they included in organizational disaster plans?	
	Are these roles official? In documented processes? Are there undocumented ways in which your organization assists in disaster?	
Has your organization considered incorporating disaster materials in your organizational operations? How so?	What role do you think your organization could play in terms of disaster?	
	What constraints are there to this?	
	time, money, knowledge	

	What would help you integrate disaster into your organization?	
4. **Disaster role challenges/benefits** What are the effects of incorporating disaster into your organizational operations?	What challenges do you face in assisting with disaster activities? What benefits have occurred from including disaster in organizational operations?	
4. **Collaboration** Does your organization specifically work with other organizations or groups in relation to disaster? (Examples, How collaborate, Names of other orgs, Organizations that are missing from collaboration, Effect of collaboration on organizational mission)	Can you tell me a little what those collaborations look like? - Examples when you have *given* or *received* assistance? How often are you in contact? How do these collaborations get started? *Are these collaborations based in organizational policy or through individual initiative?* What specific organizations do you work with? (Public organizations? Non-profit? Faith-based? Private sector? the state? the feds?) Are there organizations that you wish you would collaborate with more? What affects collaboration? Makes it work well or go poorly? *What challenges do you face in collaboration?* *What are the benefits of collaboration?* Has collaboration changed your approach to preparing your community for disasters? Affect response or recovery from disaster? Is this type of collaboration or outreach different from ways your organization operated? How so?	
5. **Community Capacity** Now, thinking about your	*Economic resources? Social resources? Organizational resources?*	

community [*hand gesture*] as a whole, what capacities do you see that would be beneficial during a disaster response and recovery?	*Individual citizen attitudes, values, resources?*	
6. **Community Needs** Is there anything about your community that really worries you when thinking about effectively responding to a disaster?	*Money? Vulnerable populations?* What do you see as the most central needs of your community related to disaster response and recovery?	
7. **Community Trust** What is your perception of the trust in your community related to disaster management?	How does trust affect your role in the community? The trust that other organizations place in you or the community to respond to disaster? That the public has in you and their community?	
8. **Disaster Resilience** Finally, I wanted to ask you about the hot topic of "community disaster resilience." Would you describe your community as resilient? How so?	What do you think affects your community's resilience to disaster? *How do you understand your community's resilience?* What is key to improving resilience of your community as a whole and the population you serve specifically?	

Thank you so much for your time. It has been great speaking with you today. If I have questions as I move forward, would you mind if I contacted you again for quick follow-up? Thanks so much.