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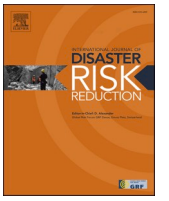

BRIDGE Builders – Leadership and social capital in disaster recovery governance

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ABSTRACT

Rural disaster recovery governance focuses on the actions that governments take to address the immediate economic, environmental, and infrastructure needs of communities, but does not consider the structural limitations of rural communities, or the transformational power of community leadership. Applying knowledge of community leadership, governance, and social capital in a rural community where social relationships and local-level leadership are central to external interactions provides space to understand the challenges, opportunities, and limitations of disaster recovery governance and leadership systems. To do this, we conduct a secondary thematic analysis of 30 interviews of 32 disaster recovery leaders in Robeson County, NC (USA) following the compound disasters of hurricanes Matthew (2016) and Florence (2018). Participants describe a recovery landscape that relies on Community Organizers - non-titular rural community members who emerge in response to communities' immediate recovery and resource needs. Social capital acts as a resource for Community Organizers as they work to fill the relational and recognition barriers presented by isolation from overextended rural governments. Community Organizers utilize linking and bridging social capital between Decision-Makers and communities to influence transformational change that engenders trans-scaler social capital to create successful recovery outcomes that adequately represent the needs, values, and norms of rural communities. Community-level leaders can serve as a bridge between communities and Decision-Makers, generating effective outcomes that foster collaboration and reciprocity for the next storm.

1. Introduction

Disaster recovery in rural and socially vulnerable communities presents a unique challenge to governments, as conventional recovery solutions can perpetuate existing structural inequities and degrade community autonomy [1,2]. Governance solutions that rely

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on top-down decision-making neglect the needs and values of socially vulnerable communities, which often differ from those of larger, metropolitan communities. Rural and socially vulnerable communities require strong, recognizable leaders who are deeply committed to their needs, values, and success. Despite its documented significance to sustainable rural development [3–6], community-level leadership remains a poorly understood component of the disaster recovery process and the development of climate change resilience in rural communities.

In disaster research, the recovery phase is often described as a long-term process that offers opportunities for communities to redevelop and build back social, political, economic, and infrastructure systems in a way that increases resilience for the subsequent disaster [7,8]. Recovery outcomes - the positive, negative, or neutral results of the actions of citizen, government, and non-profit actors during the recovery phase - that neglect socially vulnerable communities can disproportionately benefit communities that already have access to power, resources, and social opportunities and reinforce perceptions of inequitable and ineffective governance [9–11]. Existing studies have described effective governance of the disaster recovery phase as a "learning exercise" for leadership based on informed expectations to develop safe and sustainable outcomes for an individual community and the distribution of these outcomes for participants over time [11,12]. While often assumed to have a causal relationship to governance, leadership implies a higher level of cohesion and trust between the governing body and the governed [3]; in contrast to the hierarchical nature of monocentric governance [13,14]. As such, local-level leaders acknowledge pre-existing structural and systemic inequities by collaborating with and incorporating the experiences of individual communities into goal-setting and decision-making [15].

In this study, we conduct a secondary analysis of interview transcripts of self- and resident-identified 'leaders' in a rural community to understand the significance of local-level leadership during the disaster recovery phase. We first identify the types of leaders present in the disaster recovery system and their roles within the system. Community leaders identify the characteristics of the post-climate disaster recovery system, the leadership needs of residents during the recovery phase, and barriers to sustainable disaster recovery and climate resilience. We argue that social capital development and relationship-building with local-level leaders create avenues to improve communication, transparency, efficacy, and efficiency in disaster response and recovery.

This study furthers understanding of community-level leadership, its role in disaster recovery, and its implication in disaster recovery governance.

1.1. Disaster recovery challenges in rural communities

Communities facing disaster often rely on their local governments, community organizations, and non-governmental organizations (NGOs) to function as advocates for their interests and to help them acquire the financial, assistance, or knowledge resources needed to recover from climate-related disasters. While efforts have been made to prioritize rural vulnerabilities in disaster recovery and resilience, these mechanisms often focus on building individual and community-level resilience by encouraging residents to adapt to the conventions and culture of state and federal policy. Studies show that these policy interventions often lack cultural relevance in ways that degrade local resilience and reinforce exclusion and distrust in government [5,16]. Efforts to increase resilience must acknowledge a community's perception of their position within the human-environmental system and account for their respective realities and need for a change of circumstance to avoid imbalances of power in the future [11,17–19].

1.2. Governance and leadership

To tackle recovery in rural communities we must first clearly understand/distinguish concepts of governance and leadership, and how they can be used to transform the recovery system. The terms leadership and governance are often used interchangeably or causally, but this is not necessarily the case in practice, especially in traditionally neglected communities [3,15]. Typically, when discussing the relationship between a governing body and the governed, studies refer to a monocentric governance system in which a central authority or governing body is responsible for the policy decisions in a given jurisdiction [20,21]. In monocentric governance systems, entities and organizations influence the behavior of other participating actors through steering and top-down control [13,14]. Steering dictates the direction of governance decisions, with those in positions of institutional power determining the goals of communities, leaving the governed to follow suit [22]. In this model of governance, residents do not have any relationship with the individuals who represent them, and decisions are made without consulting affected communities. Monocentric governance operates under the assumption that the function of the government is to solve communities' problems and that communities are incapable of making informed decisions for and governing themselves [14]. By using this approach to disaster recovery, monocentric governance may restrict the autonomy of low-income communities, altering the socio-political dynamics of communities that have been historically oppressed [5,13].

Polycentric governance systems attempt to address the limitations of monocentric systems by assembling multiple entities at multiple scales outside of the hierarchical governing system to engage in decision-making [20]. Polycentric systems are considered more attractive because they allow for increased dissemination of policy information across multiple actors and self-regulation within the governance system, but both systems are unsuccessful in adequately addressing the effects of power within the governance system. Underlying imbalances of power undercut the goals of the polycentric system, as those with hierarchical power continue to steer the directionality of goal setting and implementation and can potentially lead to structural inequities as biases and resource injustices in practice [21,23].

The concept of leadership is ambiguous and challenging to adequately define and separate from governance because individuals have varying levels of investment and commitment to the broader community [15]. Moreover, leadership cannot be characterized by a single set of behaviors, a titular or societal position, or set of initiatives [3,15]. Leadership has been broadly defined as the process by which a leader - either as an individual or an organization - creates an achievable set of mutually established goals and actions through the mobilization of a larger group or community [3,15,24]. In this definition, leadership implies a greater level of social cohesion

between the governing body and the governed, as the responsibility of decision-making does not rest on the leader(s) alone, but rather as a reciprocal event in which the leader and their followers are mutually affected by the outcomes of the process. Leadership, as a process, emphasizes the importance of relationship-building as a means of achieving mutually established and beneficial societal and recovery outcomes [3].

There is limited understanding of the role leadership plays in rural disaster recovery. This gap in knowledge may be attributed to the fact that much of the research exploring recovery decision-making and collaborative action focus on the actions governments take or the policy implementation processes rather than the qualities of individual leaders and the way they engage with their communities [3,9,11,25]. Typically, governance in disaster recovery focuses on providing solutions that address short-term needs quickly, return to normal business operations, and rebuild infrastructure [26]. Government officials are forced to address immediate recovery needs in an effective and efficient manner, while also maintaining the foresight to avoid exacerbating the long-term societal needs of socially vulnerable communities [9,17,27].

1.3. Social capital and rural leadership

Leadership in rural communities is not typically rooted in the traditional hierarchical relationships of monocentric governance; instead, leadership is present on all levels of society [5,28]. Research shows that through social participation and relationship building, rural leaders can achieve a high level of community agreement in decision-making, encouraging increased long-term resilience and community cohesion [5,6,15,29]. The development of social capital between local and state governments and communities can result in an increased sense of trustworthiness and security from government entities, increased quality of governance, and increased community civic engagement [30–32].

Social capital refers to features of social organization such as trust, norms, and networks that can improve societal outcomes by facilitating coordinated actions [24]. Social capital relies not only on the physical connection of individuals, but the quality of these relationships, and the ways that they are nurtured over time [32]. Attempts to measure social capital have been challenging and often rely on the investigation of vertical and horizontal relationships within and between groups [32,33]. Three types of social capital have been identified as important for the networks among, across, and beyond communities [31,33,34]. These are referred to as bonding, bridging, and linking social capital.

Bonding social capital describes the connections between people with similar outlooks, goals, and mindsets within communities. These types of relationships are typically found within close-knit communities and are defined by the level of similarity within a group's demographic characteristics, attitudes, and availability of resources and information within the community [31,34]. While beneficial to creating community and culture, bonding social capital has strong internal bonds that often exclude outsiders, which presents a potential barrier to the development of bridging and linking social capital [33].

Bridging social capital describes the capacity of groups and individuals to make connections with those who may have different views or backgrounds across communities. These horizontal connections have the potential to lead to the establishment of new platforms and organizations that represent large numbers of individuals and groups [31,34]. There is greater diversity across viewpoints, histories, and desires which can lead to successful collective action - especially if there is a shared goal among groups [33].

Linking social capital describes the ability of groups and individuals to engage in vertical relationships with external agencies or organizations, either to participate in policy development or to utilize available resources [32]. These are relationships that reach across hierarchical boundaries and allow for communication between communities and the governments that serve them. Trust and cohesion between governments and the communities they serve reduce the social costs associated with interaction and increase the efficiency of the governance process as social, political, and financial resources that would be used to monitor the efficiency and effectiveness of governance are replaced by the trust and assurance that government actors will adequately represent the needs of community members [31,35].

In rural communities, social participation and leadership are driven by place attachment and social capital and are not always indicated by a titular position [3,36]. Rural community members often derive a sense of belonging, identity, and self-worth from the places they call home, and community-level leaders are motivated to respond to emergent needs out of a sense of pride and responsibility for the well-being of their communities [36].

Climate-related disasters create a critical junction to evaluate the bounds of vertical and horizontal social capital, creating opportunities for either social isolation and the dismantling of community bonds or the promotion of social cohesion [33]. Social capital in emergency management and disaster recovery does not necessarily translate into successful community resilience; there is a significant need for community-level leadership for the development of long-term recovery [11,37].

There is a significant basis for the study of social capital and community leadership within the context of disaster recovery [11,33]. Applying knowledge of community leadership, governance, and social capital in a rural community where social relationships and local-level leadership are central to external interactions provides space to understand the challenges, opportunities, and limitations of disaster recovery governance and leadership systems. Studying the interactions and manifestation of rural disaster recovery leadership has profound implications for how state and national recovery policies might best enact programs and policies to support resilience. By assessing the needs of community-level leaders, it is possible to use the shared experience of a climate disaster to increase long-term resilience and build stronger communities [3].

1.4. Study site

The socio-political landscape in North Carolina is changing as a result of the devastation caused by Hurricanes Matthew and Florence. The state-wide change in priority to climate-related recovery and resilience was marked by a 2018 Executive Order by the state Governor to commit North Carolina to the climate goals of the 2016 Paris Climate Agreement [38,39]. An understanding of the

local disaster leadership system - the actions and relationships of the various actors in a single community - and the extent that it is independent of elements of traditional disaster recovery governance is critical to ensuring that the North Carolina state government and other resiliency-focused agencies are improving their capacity to work with communities negotiating recovery and resilience from a position of disadvantage or misalignment with existing policy implementation practices.

This paper relies on a case study of the post-disaster conditions of Robeson County, North Carolina (USA). Much of the Robeson County land area rests within a 100-year flood plain of the Lumber River basin. Socially, the county population is predominantly rural - with over 60% of residents living in areas that meet the US Census Bureau criteria for rurality [40]. Robeson County has been designated by the US Department of Agriculture (USDA) as a place of persistent poverty [41] and designated by the North Carolina Department of Commerce as a Tier 1 county - ranking lowest in the state in terms of property tax base and median household income, and among the lowest in population growth and average unemployment rate [42]. The population of Robeson County is also one of the most racially diverse in the United States - composed of about 40% Native American, 24% African American, 26% White American, and about 9% Hispanic/Latinx community [40,43]. In 2016 and 2018, extreme inland flooding generated by Hurricanes Matthew and Florence led to unprecedented levels of social, economic, and agricultural disruption throughout the county [43–46].

1.5. Study objectives

The compound disasters created by Hurricane Matthew (2016) and Florence (2018) allow for an investigation of the intersection of governance and community leadership in rural disaster recovery. With this in mind, we seek to address three research objectives:

1. Characterize the disaster recovery leadership system in Robeson County, NC following flood disasters in 2016 and 2018 to understand whether it is distinct from recovery governance.
2. Identify desirable actions, relationships, resources, and contextual issues that are unaddressed by the current disaster recovery leadership system.
3. Identify the perceived barriers to successful disaster recovery leadership.

2. Methods

2.1. Secondary analysis of interview data

To develop a rich understanding of rural disaster recovery leadership and governance systems, we capture diverse views through in-depth interviews with disaster recovery social actors working to reduce obstacles to future disaster recovery and transform the socio-political landscape of Robeson County. In-depth interviews provided the space for disaster recovery actors to discuss the disaster recovery process in the context of leadership and governance to evaluate efforts made to promote recovery and enable transitions toward resilience.

In-depth interviews used in this study represent a secondary analysis of a larger data corpus generated as part of an ongoing transdisciplinary project under the name Project to Building Resilience by Innovating through Diverse Group Engagement (Project BRIDGE; described in Bray et al. [44]). Interviews took place from December 3, 2019 through September 1, 2020. The subset of interviews used in this study is referred to as the BRIDGE Builder dataset. Participatory workshops conducted for the Project BRIDGE community experts found that residents who identify themselves as hurricane survivors believe Robeson County could benefit from research that seeks to (1) provide agency to those who are left out of the government process; (2) give residents a voice and recognize their importance; (3) promote healing; and (4) learn from Robeson residents [44]. This research seeks to address benefits 1 and 2 by highlighting the voices of community-level leaders engaging in grassroots resilience and recovery work.

Secondary analysis of the Project BRIDGE interview dataset allows for the exploration of emergent issues that appear significant but were not addressed by the parent study [47]. Secondary analysis of qualitative data has become a popularized approach as international policies of data sharing and retention have expanded to acknowledge and legitimize qualitative methodologies [48,49]. Analyzing interview data for concealed or secondary themes maximizes the utility of data and provides additional context to the phenomena under study [47]. Parent project researchers ensured that secondary researchers were sensitized to the conditions and sociopolitical context of the study site and data collection prior to analysis, and Project BRIDGE researchers acted as secondary coders to the BRIDGE Builder dataset [48]. Project BRIDGE interview data was sufficiently coded with internal identifiers to increase confidentiality and research participants were asked to sign video and voice consent for the public release of their statement. Protocols used in this study were approved by the Institutional Review Board.

2.2. BRIDGE Builder inclusion criteria

The BRIDGE Builder data set includes responses to 30 semi-structured interviews across 32 disaster recovery actors (two interviews included two participants). Participants for this study were identified through purposive sampling and participant referrals [50]. These referrals helped to identify community actors actively working in community disaster recovery. The referral and sampling process was designed to capture those involved in governance, community leadership, or both. The BRIDGE Builder subset included individuals who either identified themselves as community or titular leaders - decision-makers/members of government or community leaders - or who were identified by fellow residents or survivors as community leaders during the post-disaster recovery phase.

The interview participants capture a broad range of disaster recovery actors that include city and county government officials, city and town mayors, religious leaders, non-profit managers, first responders, emergency managers, and city council members from multiple cities. The inclusion of participants across sectors that includes both formal and informal leaders allows us to assess leadership separately from formal governance while enabling participant triangulation and a more inclusive view of strengths, limitations, and

constraints affecting the evolution of the current recovery leadership system.

BRIDGE Builder participants represent county government (9.4%), city government (25%), non-governmental organizations (9.4%), religious leaders (6.3%), local businesses (6.3%), K-12 and University (28.1%), and Other (9.4%) from 6 cities across Robeson County. One participant was retired at the time of their interview.

BRIDGE Builder participants ranged from ages 18 to over 70.35.5% of participants identify as Black, 29% as Native American, and 22.6% as White European. Additionally, a few participants identified with the following races and ethnicities: (a) White and Jewish, (b) Chinese American, (c) White and Latinx, and (d) African American and Native American. Of the 32 interview participants included in this set, 27 identified as hurricane survivors.

Self-perceptions of community leaders about the state of the disaster recovery landscape were confirmed and triangulated by resident and survivor interviews from Project BRIDGE [44] as well as findings from the National Institute of Standards and Technology (NIST) interdisciplinary investigation of disaster recovery in Lumberton, Robeson County [10,45,51] These interviews confirm patterns of ineffective and inefficient government recovery decisions and government actions unaligned with resident needs and desires and the success of grassroots recovery efforts [10,45].

2.3. Transcript analysis

This study uses a thematic analysis approach to analyze qualitative interview data [52–54]. Thematic analysis is an increasingly utilized method for identifying, analyzing, and interpreting patterns of meaning - or themes - within qualitative data [53]. Inductive thematic coding analysis allows researchers to identify latent themes across all interviews [53].

A subset of the interview questions used in Project BRIDGE was chosen to highlight disaster response from various disaster recovery actors and the nature of the disaster recovery leadership system. Interview questions used for this analysis include (1) After each hurricane, how did the community respond? (2) Who are the leaders in the community who can really make a difference? Who drives change? (3) What kinds of things have local, state, and federal government agencies done to help? (4) Overall, what do you hope will happen to this area in the future? (5) What will it take to get from what you expect to see to what you would like to see? The semi-structured interviewing strategy accommodated data exploration and the range of experiences various actors have had with disaster recovery leadership and governance [55,56].

We used NVivo 12 Pro (12.6.1.970 (64-bit)) to analyze verbatim transcripts, interpret and describe relationships between key themes, identify emerging patterns, and visualize the connections within the coding framework. Responses to the questions analyzed in this paper were an average of 6.5 pages and 2264 words (min 3 pages, 1043 words; max 13 pages, 5911 words).

Open coding allows themes related to expressions of leadership to emerge organically from interview transcripts [50,54]. Axial coding strategies were used to organize codes, and constant comparison allowed us to align common themes with existing research relevant to disaster recovery leadership and rural climate resilience [54].

Conceptual modeling was used to describe relationships between the research objectives and the data findings as well as the overall relationships between identified themes as presented by the data. This process was led by the lead researcher, completing regular checks with others on the research team to ensure codes were responsive to the data and informed by existing theory. A coding manual that included detailed definitions and exemplar text for each code to ensure consistency in coding methodology (Appendix A).

Several actions were taken throughout the research process to ensure the trustworthiness of the BRIDGE Builder sample and resulting dataset [52,57,58]. To ensure a credible data analysis approach, we completed field notes during data collection, and regular memos during the codebook development process to document data items significant to the leadership system and emerging impressions that may form the basis of themes across the data set [52]. Changes to the analytic approach were documented in the audit trail and reflexive journaling was completed by the lead researcher and shared with team members [59]. To enhance credibility, the BRIDGE Builder dataset was reviewed by a secondary coder [60,61] Code meaning saturation was achieved after an average of 19.3 interviews [59,62].

The final codebook identified four key elements of the disaster recovery leadership system: (1) Actions, (2) Relationships, (3) Recognition, and (4) Resources - categorized as parent nodes in NVivo 12 Pro. Definitions with exemplar text from interviews can be found in Appendix A.

2.4. Statement of reflexivity

The community specialist data collection team consisted of one male-presenting and four female-presenting members from 20 to 60 years of age. Community specialist team members' racial and ethnic identifications included Lumbee Indian-Black, white, white-Latina, and Chinese American. One or more team members had previous experience in community organizing, trauma counseling, interviewing in Spanish, and collecting oral histories. All had direct experience with damage and displacement due to Hurricane Matthew and Hurricane Florence and lived in Robeson County at the time they were hired. The research team that supported recruitment, data collection, data processing, and data analysis relevant to this paper includes four female-presenting team members including one faculty member, two Ph.D. students involved from project inception, and one M.S. student who joined the project in 2020. University team members' racial and ethnic identifications include white, white-Latina, and Black. They ranged in age from 22 to 39 years old at the inception of the project. Two have had direct experience with damage and displacement due to a hurricane. None were displaced by Hurricane Matthew or Hurricane Florence. One or more team members have prior experience with community engagement and theory related to social-ecological resilience, environmental justice, and indigenous governance. One researcher had experience working with the state government and participated in the development of the North Carolina Climate Risk Assessment and Resilience Plan.

3. Results and discussion

Thematic analysis revealed the opportunities, barriers, and constraints to effective community-level leadership in disaster recovery and the implications for successful long-term recovery and resilience. Findings revealed participant perceptions of the relationship between local leadership networks, community leadership needs, and potential barriers to disaster recovery and environmental equity. Together, these findings begin to uncover the extent to which community-level leaders can influence transformational change in socially vulnerable communities that engenders ideas of climate change resilience and promotes social capital across scales through disaster recovery.

3.1. Actors in disaster recovery

To understand the nature of the disaster recovery leadership system, we must first understand the role of each actor as described by fellow participants. Actors engaged in the disaster recovery leadership system were classified as either Activists (53.0%), Decision-Makers (34.3%), or Community Organizers (12.5%).

Activists are the individuals within the community who have an expressed interest in specific societal and recovery outcomes and participate in local recovery initiatives. These individuals did not participate directly in organizing behaviors that facilitate long-term change, but they did support and contribute their time and resources to the larger goals and objectives of the community through volunteerism.

Community Organizers are recognizable community members who utilize existing knowledge and relationships with community members to support immediate and facilitate long-term recovery efforts. Community Organizers can leverage their relationships with communities to achieve successful recovery outcomes. These relationships arise as a consequence of bridging social capital - living, working, and suffering together within the same environment provides Community Organizers with greater empathy and understanding for the communities they represent. These individuals advocated for the well-being of their communities by working collaboratively with community-based organizations such as churches, or individuals such as local and county commissioners, to make appeals to state and county governments for the needs of their community. Community Organizers are more connected with and provide access to the needs, goals, and values of communities, which can inform decision-making and planning efforts.

Decision-Makers are described as individuals who are titularly responsible to guide and support recovery efforts. Participants state that there is a perception of disconnectedness between these individuals and the communities they serve and express a desire for collaboration. Because Decision-Makers are not always enmeshed with the norms of communities, they must learn to effectively collaborate with Community Organizers and Activists to be successful in disaster recovery efforts.

3.2. Characteristics of post-disaster leadership and governance systems

Analysis of interview data revealed four emergent themes in the Robeson County disaster recovery system: Actions, Relationships, Recognition, and Resources. Notable subthemes are identified as child codes under their respective parent codes (Fig. 1). Detailed definitions with exemplar text from interviews can be found in Appendix A.

Actions refers to the current or desirable behavioral aspects of disaster recovery leadership as identified by interview participants. Child codes arose as participants described community perceptions of local and institutional recovery efforts. Actions can be directly related to governance and decision-making, but it is important to note that those participating in community leadership can also

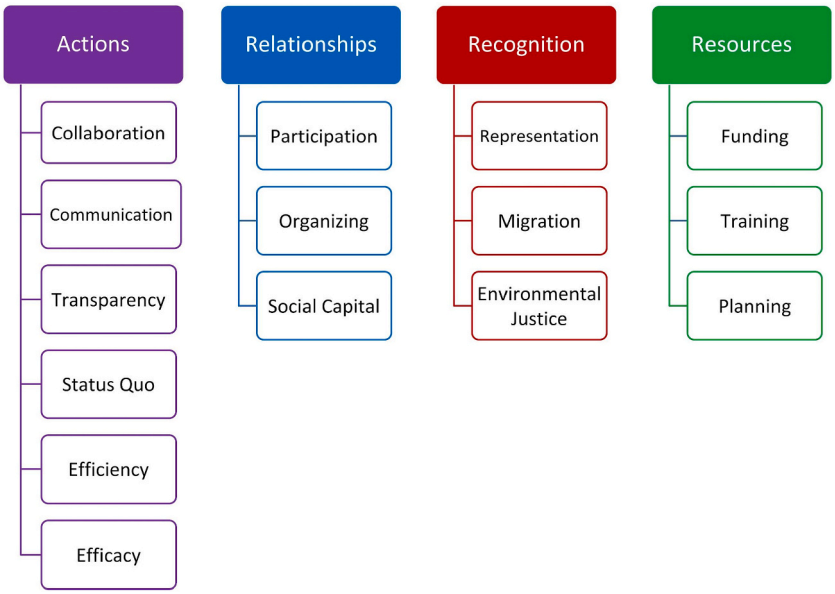

Fig. 1. Themes and sub-themes used to explore the disaster recovery leadership system.

engage in these behaviors. Participants described actions such as increased communication, transparency, efficacy, and efficiency as those which are lacking in community interactions with Decision-Makers.

Participants noted the importance of developing meaningful **relationships** with communities as a means of achieving desirable outcomes in disaster recovery. Interview participants overwhelmingly asserted that the development and maintenance of social capital between leaders and the communities they serve is paramount to successful disaster recovery. Relations of trust also inspire cooperation and reciprocity between community members and the leaders and institutions that serve them [3,15].

The theme of **recognition** refers to the tenets of recognitional justice - the acknowledgment, respect, and legitimization of the historic cultural, political, and socioeconomic differences of groups [63]. The recognition of historic and systemic challenges and inequities that face vulnerable and underrepresented communities is amplified by the physical and environmental devastation introduced by a flooding event. Participants stated that the low-income and communities of color in Robeson County feel that their needs are not being adequately addressed in the decision-making process, leading to perceptions of inefficacy and distrust. Some interview participants attributed this inefficacy to the lack of representation of their groups or municipalities in governmental institutions - community members feel they do not have a relationship with Decision-Makers because they do not identify with the socio-political issues relevant to communities.

Resources refers to the materials, funding, technical assistance, and/or training necessary to facilitate successful recovery outcomes. All participants credited the lack of resources as a significant barrier to achieving successful long-term recovery and building resilience for future storms. Nearly all participants acknowledged the need for additional financial assistance to support local grassroots recovery efforts and the creation of community-level resilience and recovery planning efforts - particularly those led by Community Organizers. To achieve these goals, Community Organizers state the need for technical training and community climate recovery education.

Relationships between co-occurring themes and subthemes among interviews display the interconnectedness of the broader themes of the disaster recovery leadership system. Analyzing the connections between themes allows us to understand the interdependence of the various components of the leadership system and their effect on the success of disaster recovery leadership and governance. Relationships between themes and subthemes can be seen in Fig. 2. Subthemes were enlarged based on interview frequency to display relevance across all leaders. Code frequency and relationships between sub-themes were used to answer the overall objectives of this study.

3.3. Characteristics of the current Robeson County disaster recovery leadership system

The first research objective explores the manifestation of the local leadership system after Hurricane Matthew and Florence. The leadership system is described as the relationships and interactions between and among leaders of all scales with communities and the effectiveness of their respective outcomes. Our findings suggest that social capital is built and maintained by individuals rather than organizations. This reinforces survivor-focused recovery rather than jurisdictionally-focused recovery efforts.

Over half of community interview transcripts attributed successful disaster recovery outcomes to the emergence of Community Organizers during recovery. Interview findings revealed that these informal local-level leaders were perceived as "the backbone of the community" during disaster recovery (Interview 28 - Activist); while Decision-Makers were viewed as "figureheads", disengaged from the needs and values of communities. Decision-makers were unable to meet the needs of residents during the recovery phase in the same manner as Community Organizers, who have higher levels of communication and established social capital with residents.

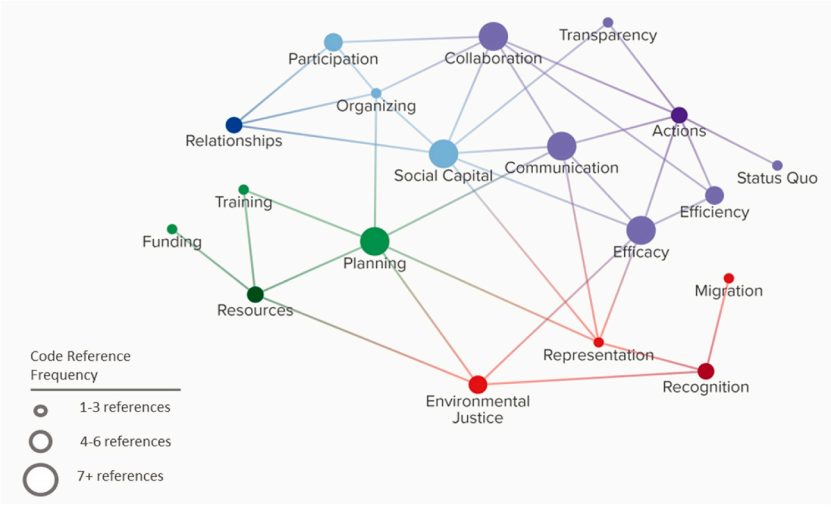

Fig. 2. Relationships between themes and subthemes of Robeson County disaster recovery leadership. Dot color indicates code family. Dot size indicates code reference frequency across all interviews.

> "A lot of times people from communities that attend church or they stand out as far as doing positive things in the community are really the leaders. They're the leaders even more than the elected officials. A lot of times the elected official is a figurehead … They're not really the backbone of what is really going on. It's the people behind them that are pushing for certain issues and certain things to get done. And so, you always have your, your unnamed or unmarked leader in the community that impacts because that person either helps a person morally or they help a person financially or, or instructionally, you know, in that way." (Interview 23- Activist)

Recognizable Community Organizers with high levels of social capital emerged as a consequence of shared experiences of trauma and the identification of recovery needs within the community. Participants often stated that Community Organizers were adept at forming relationships that rely on bridging social capital to generate effective recovery outcomes. Communication and collaboration are implicit in social capital, as Community Organizers must effectively work alongside and incorporate the needs of communities to establish trust and accountability [31,32,35]. Social capital is essential to successful community organizing; Community Organizers are trusted within the communities they serve because they are members of the community themselves. These individuals became fixtures in the leadership system amid distrust and perceptions of inefficiency in institutional leadership and were able to generate successful local-level recovery efforts as a result of their relationships with community members.

> "They [Volunteers] are the heartbeat of it all. And especially for small communities, such as ours, you have our manager–we don't have a big staff. So having the volunteers and to be able to rely on that was, was fantastic." (Interview 4- Decision-Maker).

Participants shared a sense of abandonment and to align response efforts to the recovery needs that urgently affect isolation from institutional support during the aftermath of each storm, stating that while Decision-Makers were able to incorporate lessons learned from the previous storm, those actions were largely inefficient; only addressing the superficial needs of communities, while neglecting larger resource and leadership needs of the community. Assistance provided by Decision-Makers was perceived to be insufficient and unhelpful in the context of disaster impacts. Activists shared a need for increased communication from Decision-Makers to align response efforts to the recovery needs that are more urgently affecting communities.

> "… you know, they [County Government] bought food, but food that they couldn't prepare because they were without power. Roads were closed down; stores were closed down …" (Interview 2 - Community Organizer)

> "Yeah, I don't see any presence of them [County Government] in our town. I had to put a message on Facebook and say, "Where are you? We need you. We're working. We cold, we wet. You know, we need your help." And then he comes, a county manager—I mean a commissioner—passing out toothbrushes and stuff. 'We need you. We need more than just passing out toothbrushes.'" (Interview 9 - Activist)

Meanwhile, participants describe an increase in social capital and cohesion as community members and survivors shared resources and support that was perceived as steadfast, efficient, and effective in meeting the direct needs of community members. Over half of the participants observed that in the immediate aftermath of the flooding event, there was a cohesive effect creating bridging social capital aligned with a shared experience of disaster-related trauma. Communities with strong bonding social capital were able to overcome traditionally exclusionary habits of segregation by race, ethnicity, and class to address immediate disaster recovery needs.

> "… there was not a day that went by that we didn't have somebody [in the community] knocking on our doors, wanting to give us and begging us to take [prepared] food and everything … it was not just our community here, but it was all the communities coming together, so it was people, we didn't know, as well as those near and dear" (Interview 5 - Activist)

> "This community is willing to stand up in, in a time of crises and reach over boundary lines. Um, they didn't care about race or anything else, they're just willing to help their fellow neighbor, even 30 miles down the road, you know, recover from a storm." (Interview 16 - Decision-Maker)

As Community Organizers emerged, they became de facto recovery caseworkers and brokers of resilience: these individuals were able to leverage existing relationships and social capital in their communities during the disaster recovery phase to address the short and long-term social and biophysical dilemmas affecting residents and survivors. Community Organizers are uniquely qualified to recognize environmental injustice concerns because they are in regular and consistent contact with the residents of impacted and socially vulnerable communities. Through their local-level work and advocacy, Community Organizers were able to step in and serve communities in areas where local and county governments lacked.

3.4. Unfulfilled characteristics of the governance system

The second research objective attempts to identify desirable actions and contextual issues that are unaddressed by the current disaster recovery governance system. Governance, in this case, is described as the vertical actions taken by titular governmental actors which are disseminated down to communities. This section focuses on factors interview participants perceived as essential gaps preventing holistic and robust disaster recovery and, ultimately, hindering the development of. long-term community resilience.

A quarter of BRIDGE Builder interviews discussed the need for a recognizable, trustworthy Decision-Maker presence during immediate storm recovery to adequately assess and meet the needs of communities during the decision-making process. Study participants overwhelmingly (80%) indicate that social capital is one of the most valuable resources in rural disaster recovery leadership. Relationships and the development of social capital create avenues for communication, transparency, and accountability between leaders and communities. Many participants stated that the development of social capital and open lines of communication between

Decision-Makers and Community Organizers can increase the efficacy of decision-making, resource distribution, and recovery efforts.

> "I think you lead best by knowing what people think, feel, are doing. By understanding what's happening. In order to do that, you've got to be out there. And you don't need to just be out there with the folks that you've always been out there with." (Interview 12 - Activist)

> "Because then you will have-, then you will know what actually needs to be put in place. Uh, you can't just say, oh, well, this needs to be put in place because you really don't know unless you get out in the community and ask the people, what do they think?" (Interview 32 - Activist)

Participants expressed the need for inter-institutional collaboration in the disaster recovery process as well as collaboration with affected communities. 20% of participants contribute institutional inefficiencies to a lack of vertical (i.e. state to county to municipality to community) and horizontal (i.e. municipality to municipality) collaboration.

> "We have to respond to the need. And action happens better in groups. The more people—and it starts with—usually, not the lower tier, but the higher tier and feed it down to the lower—and feed it down to the lower tier, so it takes our leaders to come forth and say, 'Listen. This is what's happening. This is what we can do.'" (Interview 26 - Activist)

> "… when you have that type of [between county and local governments] collaboration, it's amazing the resources that you bring together and are able to use for our citizens." (Interview 16 - Decision-Maker)

Activists and Community Organizers described the need for communication and transparency in the recovery process as community members feel disengaged and uninformed of the decisions being made on their behalf. Inefficiencies in decision-making and implementation contribute to a greater perception of ineffective leadership, as the immediate recovery needs of communities rely on fast, reliable outcomes. Participants noted that a lack of vertical communication between community members and Decision-Makers led to a lack of circulation of climate and recovery-relevant information. Others described a culture of inefficiency in recovery decision-making stemming from a lack of communication, noting redundancies between municipalities and resource waste during policy implementation. This lack of communication reinforced the cycle of distrust among leaders. This hinders the development of social capital and contributes to perceptions of inefficacy and inefficacy in local decision-making.

> "People you think should know don't know. And they don't know who to ask. So, how were we supposed to find out? And, you know, that's frustrating for people …" (Interview 12 - Activist)

> "And I'm just gonna say that manager was just—he was bringing people in that we didn't need. You had people here to work. Your workers could work. You had your town employees to do the things that we're supposed to have done, like moving tree limbs and cleaning and making the roads safe. You had that. Well, he brought people in to do that. That was a lot of money that we wasted in that …" (Interview 9 - Decision-Maker)

> "… because I think sometimes we duplicate [recovery actions], and there's no way to check that. So we don't stretch our resources as far as they could be." (Interview 4 - Decision-Maker)

Respondents attributed the lack of collaboration to an inability of the current disaster recovery system to create and sustain authentic relationships between Decision-Makers and survivors. This was expressed in two ways: ambivalent levels of faith that formal leaders are able to identify and fill community needs that stray beyond an organization's explicit mission and the need for those guiding disaster recovery to identify, amplify, and provide resources to movement-oriented Community Organizers.

Others expressed the need for Decision-Maker presence in communities with a focus on the meaningful inclusion of socially vulnerable communities. These individuals would like to see an active presence of Decision-Makers in especially vulnerable communities, adequately communicating and providing communities with a voice in the decisions that affect them.

> "And then we need to involve the residents of these impacted communities as equal partners in the disaster response and recovery process." (Interview 12 - Activist)

These findings suggest that the current disaster recovery system in Robeson County struggles from relational gaps between communities and Decision-Makers. These gaps limit (1) efforts toward solidarity and participation in communities, (2) trustworthy advocacy by institutional actors, and (3) efforts to identify and amplify the knowledge of Community-Organizers and survivors whose deep work within communities could transform the credibility and effectiveness of Decision-Makers' actions.

3.5. Barriers to effective rural disaster recovery leadership

The third objective of this study identifies the barriers that prevent the implementation of effective disaster recovery processes which would enable disaster recovery and cultivate community resilience.

> Interview participants described the under-representation and misrecognition of socially vulnerable communities as a barrier to effective decision-making, as the needs of these communities are not being adequately considered in the decision-making process. Responses indicated that the misrecognition of communities and the issues that affect them in state and federal practices and policies undermine community resilience and hinder the development of social capital. Moreover, the implementation of recovery initiatives without the consideration of socially vulnerable communities can reinforce the physical, social, and economic factors that hinder their ability to build resilience in the first place [17].

> "So, if they go in and they don't say anything about our needs in the community, then they're not going to be met because that's our only voice in there. So, um, do I think that they've [city government] been doing their job well? Um, the evidence is saying no." (Interview 33 - Activist)

The misrecognition of socially vulnerable populations perpetuates cycles of distrust between historically neglected communities and their Decision-Makers. Because Decision-Makers do not have an active and recognizable presence in socially vulnerable communities, the voices of these communities are often stifled and underrepresented in county-wide mitigation and recovery efforts. Supporting and acknowledging group differentiation in resource distribution provides recognitional justice in the decision-making process and ensures increased social capital, efficiency, and efficacy in disaster recovery. Furthermore, socially vulnerable communities consider disaster recovery and resilience policies as an extension of a government that once actively sought to ignore their personhood [16]. One participant describes the disproportionate representation of socially vulnerable communities here:

> "I would be naïve to say that race doesn't play a part in the decision-making process. I think that the worst part of that is not wanting to speak on it. And, and not saying there is equity. Right? You know, is there equality? You know, are all voices heard? No. We know that in the study of politics, what is power, you know, deciding who gets what, when, where, how. And so race does play a part in that." (Interview 4 - Decision-Maker)

Participants acknowledged the limitations and constraints of the rural local government, stating that Robeson County is a "poor county" with a "small staff" that may be unable to provide the same quality of care and resources as larger metropolitan areas. Often, city and county employees are asked to serve in multiple roles year-round, so when a climate disaster occurs, city and county staff are asked to take on roles and responsibilities they are not necessarily prepared for or qualified to do. Because of this, recovery outcomes may prove inefficient or ineffective, as government officials and newly appointed "coordinators" do not have sufficient training in disaster management.

> "… It's so much going on for the little—and I'm not making excuses; this is just real talk—but the little staff that we're working with, it's just almost overwhelming, to say the least." (Interview 23 - Decision-Maker)

> "And also … I'm a new employee at DSS [Robeson County Department of Social Services] and I just happened to land in the shelter a coordinator, and I didn't get to go through that training, [a] handbook would help me though" (Interview 17 - Decision-Maker)

Finally, respondents referred to economically and environmentally motivated out-migration as prevailing concerns that were exacerbated by disaster experiences. One participant noted that the out-migration of active community members hinders the formation of Community Organizers to advocate for and work with communities.

> "And if no one stays or there's a lack of participation of being engaged, then when our seasoned citizens transition, who's going to carry on?" (Interview 4 - Decision-Maker)

Evidence demonstrates that these barriers can be broadly characterized as relational and recognition barriers. Relational barriers indicate the obstacles to the development of social capital and access to the benefits that leadership relationships bring. The persistence of relational barriers breeds resentment and distrust between leaders and community members. The recognition of historic and systemic challenges and inequities that face vulnerable and underrepresented communities is amplified by the physical and environmental devastation introduced by a flooding event and can hinder the successful implementation of disaster recovery efforts. Relational and recognition barriers can undermine the success of disaster recovery efforts, reduce capacity, and prevent "getting [resources] to the right hands for the people that really need it" (Interview 32 - Activist).

4. Conclusion

The results of this study illustrate the importance of emergent community-level leadership in resource distribution, community building, advocacy, and the development of local disaster recovery and resilience initiatives in rural communities. When considered separately from governance, community-level leadership breaks down barriers of power and allows for the reciprocal exchange of knowledge and resources for the development of effective solutions which support recovery efforts and increase local capacity for resilience. Relational leadership paired with the top-down resource distribution and policy dissemination of governance allows for successful and holistic disaster recovery that fosters reciprocity, community-building, and resilience.

We find that social capital between leaders and the communities they serve is essential to the overall success of the disaster recovery system. In the context of rural disaster recovery, Community Organizers serve as a dual catalyst for community-level disaster recovery by leveraging social capital with communities and with Decision-Makers to achieve effective recovery outcomes. This paper lends support to studies that argue social capital as a relational tool is self-reinforcing, as successful recovery outcomes yield increased trust and collaboration between communities and leaders [11,33].

Community Organizers utilize bridging social capital with communities to achieve successful community-level outcomes and direct recovery efforts that create effective and meaningful change while recognizing community values. Bridging social capital between Community Organizers and their followers creates opportunities for collective action and bargaining, providing support and resources where institutions may fail [18,20,33]. Community Organizers, as members of the communities they serve, are able to represent the needs of and advocate for overall community well-being as the outcomes of recovery decision-making directly affect the leaders themselves. It is particularly important to assess the needs of rural communities and provide community-level leaders with the

resources (technical, funding, educational, etc.) necessary to recover from immediate threats and develop long-term resilience strategies that can be integrated into the rural socio-political landscape [26].

The development of linking social capital between Community Organizers and Decision-Makers creates a non-linear exchange of knowledge, resources, and social capital which fosters communication and trust within communities, demonstrated in Fig. 3. Trust in the individuals who represent one's needs in the decision-making process has the added benefit of increasing reciprocity between community members, local leaders, and institutional leaders. Those in leadership roles are able to provide resources, technical knowledge, and represent community needs, and communities are in turn able to provide leadership with metrics of success and local knowledge to inform decision-making. By collaborating with Community Organizers in traditionally underrepresented communities, Decision-Makers can create solutions that acknowledge and incorporate local and ancestral knowledge, values, and norms into the recovery process, encouraging sustainable recovery practices within communities. This mutual exchange of knowledge and resources makes Community Organizers an essential element of both Leadership and Governance systems.

By taking a monocentric, top-down approach to disaster recovery, governments silence the voices of Community Organizers and activists on the ground who are enmeshed in community issues and needs [5,21]. Transformation of the rural disaster recovery socio-political landscape requires an adjustment and understanding of social capital and community-level leadership to promote effective and successful disaster recovery outcomes [25,64,65]. Future research should take knowledge of community-level leadership and social capital and apply it in the context of community resilience planning efforts.

In contrast to top-down climate recovery governance, the inclusion of reciprocal leadership allows for institutional learning over time and long-term collaboration between communities and Decision-Makers by making Community Organizers equal partners in the recovery process. Active participation of rural community leaders entrusts community members to steer the decision-making process in a way that represents their direct needs and promotes community strength and autonomy [22]. Decision-Makers must work collaboratively and develop deeper relational ties with Community Organizers to identify recovery needs and formulate solutions that strengthen social capital, empower communities, and build resilience. In rural disaster recovery, community-level leaders can bridge communities and Decision-Makers, generating effective decision-making that fosters collaboration and reciprocity for the next storm.

4.1. Study Limitations

One of the limitations of this study is the fact that only a subset of the original Project BRIDGE dataset was used. While the entirety of the Project BRIDGE interview dataset is worthy of complete analysis, resident and survivor interviews were outside the scope of our study, which focused solely on the issue of disaster governance and leadership. We were, however, able to use resident and survivor interview transcripts conducted during Project BRIDGE [44,56] as well as Lumberton NIST studies [10,45,51] to confirm patterns in participant attitudes toward disaster recovery leadership and governance.

Another limitation of this subset is the representation of community leaders from a limited number of cities in Robeson County. Because the original Project BRIDGE sampling did not specifically target community leaders, representatives from Robeson County may be missing from this analysis. Further studies of community leadership in Robeson County should conduct broad sampling across the county.

The interviews included in this study were conducted in person prior to the 2020 COVID-19 pandemic. While the socio-political landscape of Robeson County may have changed with the effects of the pandemic, we retain the relevance of our findings and the need for inclusive leadership practices in rural disaster recovery.

Further work in rural disaster recovery leadership must apply the principles of social capital in the development of a participatory framework for the meaningful inclusion of community leadership in disaster recovery decision-making.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Tira L. Beckham reports financial support was provided by U.S. Geological Survey Southeast Climate Adaptation Science

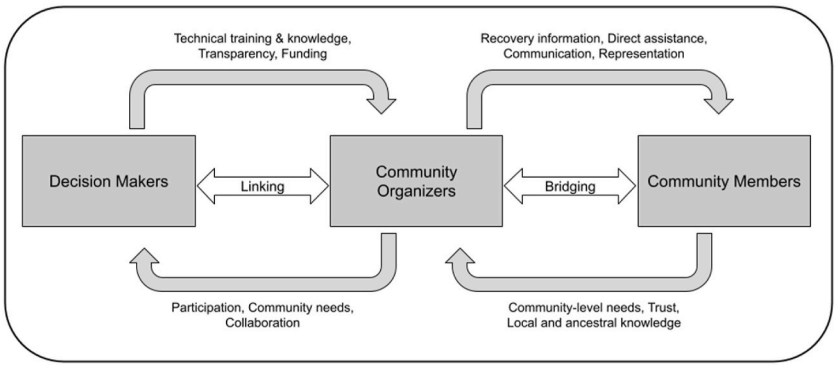

Fig. 3. Reciprocal exchange of knowledge and resources via Community Organizers utilizing linking and bridging social capital with Decision-Makers and communities.

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Data availability

Data will be made available on request.

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Appendix A - Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.ijdrr.2023.103942.

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