



Research Article

Community Resilience Project: An Exploration of Emergency Weather Preparedness in Mississippi

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Abstract

Historically Black Colleges and Universities have often been at the forefront of emerging movements and social changes. Continuing this tradition Jackson State University has developed Community Resilience Project to address community issues relevant to both the city and the state. The first undertaking of the Community Resilience Project was partnering with the National Weather Service (NWS) and several departments across Jackson State University (JSU) to examine awareness and preparedness about weather emergencies. In June 2020, the Community Resilience Project hosted a town hall to gauge residents' awareness about weather emergencies. Tornadoes, hurricanes, and floods are common in Mississippi; therefore, individuals must be prepared. The purpose of this study was to collect and analyze demographics to develop themes regarding weather emergencies. The participants were 87 Mississippi residents. Participants were issued the demographic survey before the town hall. Frequency analyses were conducted on the responses found several themes. Most respondents, 59.8%, feel prepared for a weather emergency, however, 51.7% denied having an emergency preparedness plan. Participants were also asked do they felt prepared for an emergency since the pandemic began. Most respondents reported the same or increased levels of preparedness. Findings showcase the importance of not only the Community Resilience Project but also the need for community collaborations. The strength of a community is quantified by its ability to build and maintain bonds for all its citizens' well-being and advancement. Jackson State's Community Resilience Project has taken an inimitable role in providing services, resources, and support to its local and state communities.

Keywords

Community, Disaster Psychology, Emergency, Emergency Management, Preparedness, Resilience, Weather

1. Introduction

Mississippi is historically known for poor outcomes on nearly all socioeconomic status measures, health, and educa-

tion. These indicators alone do not encompass the intricacy, nuance, and resilience of Mississippi and its citizens. Located

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in the Deep South, the state of Mississippi is named after the iconic Mississippi River, bordered by the Gulf of Mexico, and neighbor to states with similar histories. What is so iconic, yet conflictual, about Mississippi is its ability to maintain a nearly infallible culture through centuries of social, geographic, and political change. Mississippi's ability to preserve culture and tradition while also spearheading change is so influential that the American landscape trajectory would be different without it.

Mississippi is in a geographically exciting location. Bordered by iconic bodies of water and the low trailing hills of the lower Appalachian Mountains, Mississippi's geographic makeup is vulnerable to various weather phenomena [4, 6, 12, 17]. Namely, floods, tornados, and hurricanes are the recurring major weather events that cause cataclysmic damage. The yearly flooding of the Mississippi, Pearl, and Big Black Rivers, to name a few, incur millions of dollars in damages. From approximately December to November, Mississippians cycle through river floods, tornados, and hurricane seasons. With overlapping seasons, Mississippians experience a near-constant onslaught of weather emergencies that demand extensive preparation and rebuilding.

Home to seven Historically Black Colleges and Universities (HBCUs), Mississippi's educational landscape has been influenced tremendously by the state's majority population [10]. Two of those HCBU institutions are in the capital city of Jackson. Tougaloo College and Jackson State University have been on the inception of civil rights, social, and academic advancements and continue to do so [3, 14, 8]. From the library and lunch counter sit-ins in 1961 and 1963 to the murder of two Jackson State students in 1970, Mississippi HBCUs continuously take the roads less traveled in an effort for the greatest good. That spirit of generativity and spearheading change has continually morphed to reflect the current needs of Mississippians. The state of Mississippi needs programs catered to its unique landscape and distinctive atmosphere, both geographically and culturally. Programs and resources implemented elsewhere are not easily replicated in Mississippi; thus, specific research and interventions must be developed.

Jackson State University is an immeasurable resource to its respective community. Jackson State is not just a college situated in Downtown Jackson and nestled amidst several of the city's most socioeconomically challenged neighborhoods [19]. An employer for hundreds across the metro Jackson Area and home to educational centers ranging from early childhood to college, Jackson State's reach spans the cast of its net. Far-reaching and steadily striving for more, the University's impact is intentionally beyond its gates.

Jackson State University's interdisciplinary team of researchers, housed in the departments of Civil & Environmental Engineering and Industrial Systems & Technology (Emergency Management Technology concentration), Psychology, and Journalism and Media Studies developed the Community Resilience Project. A collaborative creation, the Community Resilience Project, involves experts from, disci-

plines in Emergency Management Technology, Psychology, Journalism and Media Studies, Meteorology and Atmospheric Science, Computer Science, and Public Safety. The inclusion of each discipline is vital due to the multifaceted development and maintenance of resilience. Through funding from the U. S. Department of Homeland Security: Center for Coastal Resilience, the Community Resilience Project was developed to address the disaster needs of Mississippi residents.

Resilience comes from the Latin word *resiliere*, meaning "to jump or bounce back" [1, 9]. Resiliency is not a constant; it exists on a continuum that varies vastly from person to person and between circumstances [15, 16, 18]. Resilience is a concept very often used about individuals who have overcome hardships and obstacles, and it is often the characteristic synonymous with individuals who have survived the unbelievable [1]. Freiberg [7] characterized resilience as "a multifaceted process by which individuals or groups exhibit the ability to draw the best from the environment in which they find themselves" [p. 365]. Drawing from the environment is the basis of the Center for Community Resilience.

The purpose of the current study was to examine the creation of the Community Resilience Project at Jackson State University, intending to address community issues relevant to both the city and the state. The first venture of the Center for Community Resilience was partnering with the National Weather Service, and several departments across Jackson State University to examine participants' awareness, understanding, and attitudes about weather emergencies. The project's goals were to 1) examine community awareness of weather emergencies, 2) assess the needs of local and state communities regarding these weather events, and 3) develop intervention strategies for future weather events.

2. Methods

2.1. Participants

Participants included 87 community members from across Mississippi recruited through radio and television advertisements and social media posts. The participants were asked to take a brief demographic questionnaire via Google Forms, before they participated in the first town hall meeting hosted on Zoom. The questionnaire included demographic questions as well as items regarding past weather disasters and perceived levels of preparedness. This initial meeting had approximately 50 participants. The questionnaire was designed to inquire about participants' knowledge of Mississippi's weather patterns and their weather preparedness.

2.2. Measures

Demographic Questionnaire. The demographic questionnaire consisted of questions regarding age, race, income level, and education. Also included were questions about severe weather events, weather emergency preparedness,

and the impact of past severe weather events. Items were answered on a variety of scales, such as “yes” or “no” and ranged from “poorly” to “very well.” The questionnaire contained 20 total items. Items 1- 6 were *selected for one response* question that asked about information such as income, household size, and race. Item 7 was also a *select-on-response* question that inquired about perceived weather emergency preparedness, and items 8 and 9 selected *all that apply* questions that asked which weather emergencies respondents were familiar with. Items 10-16 were *true or false* questions regarding respondents’ weather emergency preparedness plans. An item specifically asked respondents about how their mental health has been affected by severe weather events. Lastly, items 18-20 asked about the impact of the COVID-19 pandemic on respondents’ emergency preparedness levels and plans.

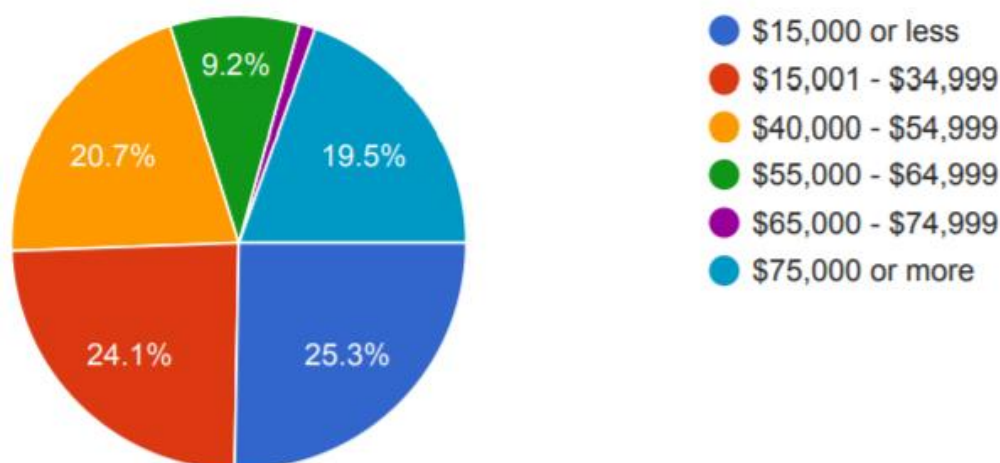
2.3. Procedure

Between June 1 and 30, 2020, the Center for Community Resilience held several town hall meetings to increase knowledge and awareness about weather emergencies. Members of the community were recruited to participate in a town hall meeting. Recruitment was done by “word of mouth,” social media, listserv, local churches, and community-based organizations. It was held virtually due to COVID-19. COVID-19 has had a dramatic impact on Mississippians, particularly in minority and underserved communities. Cases in Mississippi have been multiplying “exponentially” since March 2020 [11]. As of July 9, 2020, the state’s five largest hospitals had no available Intensive Care Unit (ICU) beds [5]. Maxed-out services across an already poorly resourced state

disproportionately affect Black people as (they) are four times more likely to die from COVID-19 [2]. The town halls provided the Center for Community Resilience team a platform to provide critical information about weather preparedness and receive feedback from community members about their weather preparedness needs and challenges. Before attending the town hall meeting, participants were sent a Google Forms link to respond to the demographic questionnaire. Upon completion of the questionnaire, participants’ responses were saved and stored securely. Following the questionnaire, participants were emailed the Google Meets link for the Center for Community Resilience town hall. As an incentive, the first 50 participants (received) a gift card of \$25.00.

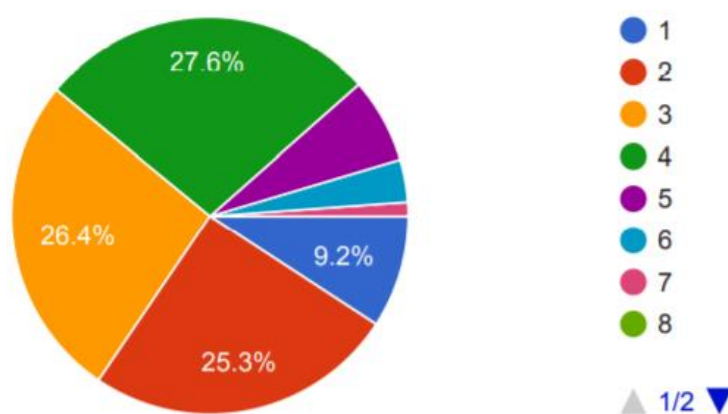
3. Results

Residents throughout the state of Mississippi were invited to participate in the town halls. Criteria for inclusion in the town hall meetings: 1) must be 18 years or older and 2) register to be included in town (need to add to, to clarify). The majority of participants 80.5% ($n = 70$) were from the Capital Region, 64.4% held bachelor’s degrees ($n = 56$), and identified as 92.0% Black or African American ($n = 80$). The annual income of participants ranged widely (see Figure 1). Most participants, 79.3%, reported having between two and four people in their households ($n = 69$) (see Figure 2). Participants endorsed that the following events were common in their respective areas: flooding, hurricanes, tornadoes, thunderstorms, extreme heat, and hail. They stated that they had experienced at least one of the specified severe weather events (see Figure 3).



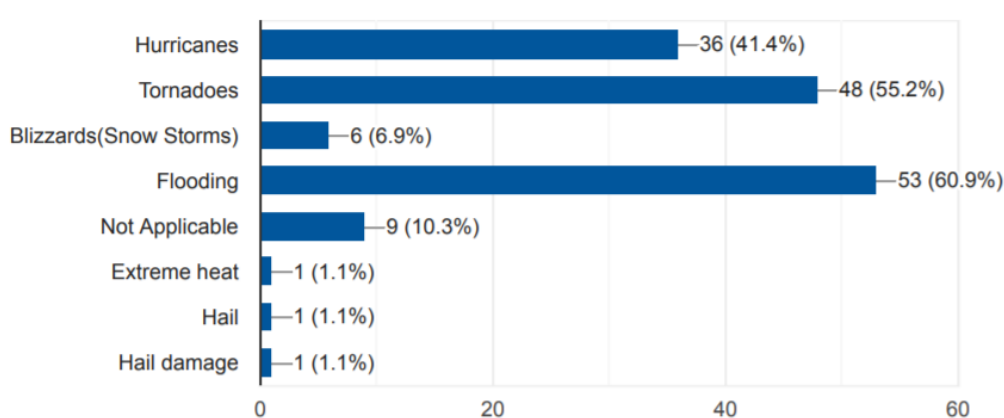
Note. The pie chart displays the percentages of participants who reported annual incomes.

Figure 1. Distribution of Annual Income Ranges.



Note. The pie chart displays the percentages of the reported number of members in participants household

Figure 2. Distribution of Number of Members in Household.

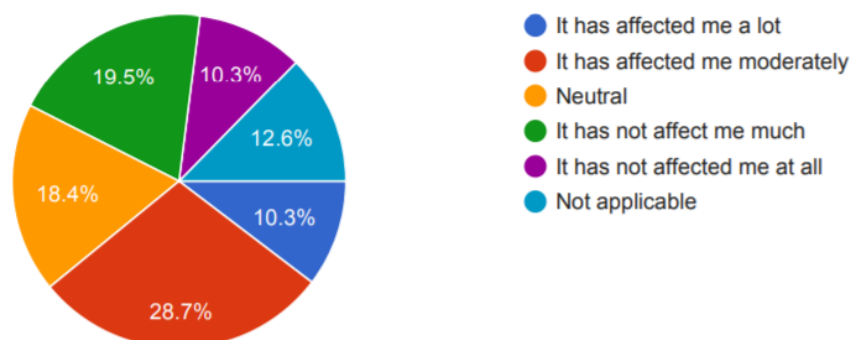


Note. The graph shows what severe weather experiences participants have experienced.

Figure 3. Types of Severe Weather Events Experienced by Participants.

When asked about preparation for weather emergencies, 59.8% ($n = 52$) of participants reported that they did feel prepared. Contrarily to most participants, 51.7% have a household emergency preparedness plan. Although specific plans were absent from most respondents' households, most of them reported having emergency medical supply kits (64.4%, $n = 56$), an emergency supply of their medications

(58.6%, $n = 51$), reliable transportation (in the event of a necessary evacuation) (85.1%, $n = 74$), and a \$500 emergency fund (70.1%, $n = 61$). Despite citing preparedness in other areas, little over half, 54.9% ($n = 46$) of participants denied having an emergency 7-day supply of non-perishable food. Participants reported a range of impacts when asked how previous severe weather events have affected them (see Figure 4).



Note. The pie chart displays the percentages of participants who reported impacts from severe weather events.

Figure 4. Distribution of Severe Weather Event Impact.

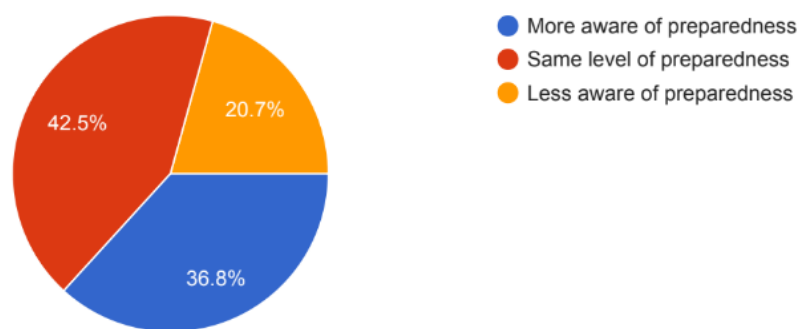


Figure 5. Distribution of Perceived Emergency Preparedness.

Note. The pie chart displays the percentages of participants who reported feelings of overall emergency preparedness since the onset of the COVID-19 pandemic.

Regarding the current COVID-19 pandemic, respondents were asked if they felt prepared, to which nearly 60% ($n = 50$) denied feeling prepared. Subsequently, respondents were asked how they view their overall level of emergency preparedness. Many participants reported the same level of preparedness (42.5%, $n = 37$) or an increased level of preparedness (36.8%, $n = 32$) (see Figure 5). The final question posed to participants was what precautions they would typically take but may avoid during COVID-19. The most prevalent theme of the responses centered around avoiding public settings (e.g., shelters) during a severe weather event.

4. Discussion

This study examined the inaugural undertaking of Jackson State University's Community Resilience Project. The center partnered with the National Weather Service, National Oceanic and Atmospheric Administration (NOAA), and several departments across Jackson State University. Through town hall meetings and a demographic questionnaire, the study gathered Mississippi residents' attitudes and levels of preparedness regarding severe weather emergencies.

Throughout contemporary history, Mississippi has been consistently viewed as limited in areas of progress and equality. While this stereotype is not validated, there are continuous advances made to change the status quo. Recently, one of those changes has been the Community Resilience Project development at Jackson State University. The project goal aims to assist the State of Mississippi in creating education, training, and preparedness for weather-related disasters, with a specific emphasis on the needs of underserved communities.

Following the deadly Easter 2020 tornados and burgeoning hurricane season, the need for discussions about community preparedness is ever-present. The National Hurricane Center projected the 2020 Hurricane season to be the strongest on record [13]. Given the damage sustained across Mississippi from the severe thunderstorms and tornados on Easter, communities needed a platform to learn how to be best prepared.

Simultaneously the town hall meetings were essential for the communities to express to the Community Resilience Project panel ways to better assist in community weather preparedness. For example, several community members reported that they did not receive emergency alert messages from the National Weather Service before the Easter tornados. This statement illustrated a shortcoming of the current alert systems in place and gave the idea of expanding their reach in the future.

The participants were invited to several online town hall meetings during June 2020. Before those meetings, participants were given links to fill out a demographic questionnaire gauging their attitudes and preparedness for weather emergencies. The questionnaire contained 20 items, one of which was a qualitative question regarding changes in their typical weather preparedness plans due to COVID-19. Results found that most participants were Black or African American who possessed a Bachelor's degree and lived in the Capital Region of Mississippi. Regarding weather preparedness initiatives, most respondents reported feeling prepared for a severe weather emergency, yet over half of respondents also denied having a specific emergency plan. However, the absence of a specific plan does not constitute the absence of preparation. Most participants reported having emergency medical supply kits, a supply of essential prescription medications, at least \$500 in an emergency fund, and reliable transportation. Participants also reported experiencing at least one severe weather emergency, such as hurricanes, floods, tornados, and extreme heat. Participants who experienced a severe weather emergency reported a wide range of responses about how, if at all, that event impacted them.

5. Conclusion

In conclusion, these results showcase the importance of not only the Community Resilience Project but also the need for community collaborations. The strength of a community is quantified by its ability to build and maintain bonds for all its citizens' well-being and advancement. Jackson State's

Community Resilience Project has taken on an inimitable role in providing services, resources, and support to its local and state communities. Having more people know how and where to access disaster information and how to respond to the information would be one of the most tremendous benefits. Educating and saving lives using a multidisciplinary team approach is the ultimate goal of the project.

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Abbreviations

HBCU	Historically Black Colleges and Universities
JSU	Jackson State University
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service

Author Contributions

Ce'Ne Harris: Conceptualization, Data curation, Investigation, Formal Analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing

Jessica Murphy: Conceptualization, Formal Analysis, Funding acquisition, Investigation, Project administration, Resources, Supervision, Validation, Writing – review & editing

Dawn McLin: Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Validation, Writing – original draft

Yalanda Barner: Resources, Validation, Visualization, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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