Compounding Disasters in Gulf Coast Communities, 2020–2021: Impacts, Findings, and Lessons Learned in Jefferson Davis and Marion Counties, Mississippi

Jennifer Trivedi
University of Delaware
INTRODUCTION

This work explores disasters that affected Jefferson Davis and Marion counties, Mississippi, in 2020 and 2021 as part of an effort to better understand compounding disasters in the Gulf Coast region. As described by the Gulf Health and Resilience Board of the Gulf Research Program division of the National Academies of Sciences, Engineering, and Medicine, the larger project to which this paper contributes is designed to study “the impacts of multiple, compounding disasters” in the region during that time, as well as to “provide findings on what factors enabled or could enable communities to successfully plan for, respond to, recover from, and mitigate the impacts of multiple, compounding disasters” (NASEM, n.d.). Understanding the ways these two counties and the people who live there were affected by, coped with, and moved through these disasters as concurrent processes, rather than static or momentary events (affected by what came before and what continued after), is important for understanding the larger impacts, history, and future of compounding disasters in Gulf Coast communities.

In the United States, since COVID-19 spread nationwide, other disasters have become compounding disasters as they have overlapped in time and space with COVID-19, leaving emergency managers, government officials, businesses, and residents to respond to COVID-19 and other disasters simultaneously—a situation complicated by local cultural, historical, political, and economic contexts. Compounding disasters in the United States transform the responses to one or multiple disasters to suit the needs of the other(s) or to plan to do so, a pattern that echoes international assessments and adaptations. Compounding disasters here are those wherein “two or more disasters occur simultaneously, such as a hurricane and a pandemic,” leaving less time to respond or recover from any of the disasters involved and simultaneously taxing resources (Knox et al., 2022, p. 1). As Wells et al. (2022) describe, such compounding disasters “co-occur such that they concurrently affect interdependent critical infrastructure systems, thereby presenting multiplicative risks to the interconnected systems and population” and thus can place a “greater burden on individual and interconnected networks when compared to a singular threat occurring in isolation” (para. 8). While compounding disasters have long existed, the duration and scope of the COVID-19 pandemic drew additional attention both to them and to the challenges of addressing them (Tozier de la Poterie et al., 2021, p. 374).
In short, a more complicated effect is at work, rather than just an additive one. For example, when floodwaters rose in April 2020, it was not simply more water being added onto existing waterways—it was water being pushed into a system that had been pushed beyond its limits already in January and February 2020. This did not simply cause flooding; it caused flooding that called for social and business networks to be activated when official warning systems were insufficient. A tornado hit in an area that had already been working to offer support to other nearby areas that had also recently been hit by a tornado in the midst of a pandemic, putting responders and local residents at risk of contracting a virus, leaving officials to encourage additional precautionary measures to minimize pandemic risk while simultaneously minimizing flood and tornado risk and supporting response to both disasters, all while individuals prioritized assisting others as best they could, making decisions about who to help and how, even if it meant increasing risk for one hazard to help reduce risk from another.

Methods and Approach

To better fill out the picture of compounding disasters in Jefferson Davis and Marion counties, this paper pulls from a range of sources. These include reports and documents from federal and state emergency management agencies, the National Weather Service (NWS), the National Oceanic and Atmospheric Administration (NOAA), and NOAA’s National Centers for Environmental Information, which discuss specific disasters and overall annual perspectives. Sources also include reports about areas and populations, compiled from such sources as the American Community Survey (ACS) and U.S. Census Bureau, as well as from such groups as Mississippi State University (MSU) Extension Offices and those involved in aid distribution inside and outside of disasters (e.g., local food pantries). There are also articles from media sources at national, state, and local levels, with a heavy emphasis on local-level media, given its more direct focus on these specific rural counties. National media includes sources such as the American Broadcasting Company, Columbia Broadcasting System, and Public Broadcasting System, as well as online-only sources, such as The Conversation. State media sources include the Clarion Ledger and Mississippi Free Press. There are also local media outlets from both counties, including The Columbian-Progress, from Marion County, and The Prentiss Headlight, from Jefferson Davis County.
Shearer (2020) describes how “the COVID-19 outbreak has been a major national news story, dominating news consumption and prompting frequent presidential press conferences. But it is also an important local news story, with many Americans depending on their local media outlets for information about the outbreak” (para. 1). According to a Pew Research Center survey in April 2020, 61 percent of Americans said they were following local and national news equally for news about COVID-19, while 23 said they were actually paying more attention to local news (Shearer, 2020). Among American adults, 46 percent “named local news outlets as a major news source for COVID-19 news—more than the share who named several other groups,” adding to other local sources including state and local elected officials (named by 36% of adults); friends, family, and neighbors (16 percent); community newsletters or LISTSERVs (8 percent) (Shearer, 2020, para. 3). In total, “64 percent of U.S. adults named at least one of these local information sources as a major source for coronavirus news” (Shearer, 2020, para. 3). In a later survey, American adults also described seeing local news as “more credible sources of COVID-19 information than the news media in general”; 50 percent said their local news media “get the facts right about the COVID-19 outbreak all or most of the time” compared with 44 percent saying this of the news media in general (Shearer, 2020, para. 4). Black Americans were “more likely than other adults to turn to local news organizations and to trust them to get the facts right about COVID-19” (Shearer, 2020, para. 5).

Facebook pages for various key groups were also explored, including those for school districts in both counties and for local groups dedicated to disaster response. As Graham et al. (2015) describe, “social media enable local governments to communicate important government information, extend government services, and garner feedback and ideas about government operations with citizens,” benefits that “offer particular potential and opportunities for governments to communicate with citizens during times of crises” (p. 386). As of 2013, 70 percent of rural online adults used social networking sites (Graham et al., 2015, p. 392) and as of 2021, 69 percent of American adults said they used Facebook (Auxier and Anderson, 2021). However, it is important to acknowledge that these two counties have lower broadband access rates than Mississippi or the United States as a whole, as is discussed later in this paper, and it is not clear how many of these posts, while shared, reached local residents specifically.

Each of these sources were read for information related to these disasters and areas, including where compounding disasters were occurring. These sources were viewed largely as
qualitative, not quantitative, and were thus not statistically analyzed. Some numerical data, predominantly from U.S. Census and ACS results were compared where applicable across local, state, and national datasets to give some sense of how these local counties looked in comparison to the state of Mississippi or the United States as a whole.

As Bowen notes, document analysis can be used as a stand-alone method, “particularly applicable to qualitative case studies”; however, he also states that “researchers should look at documents with a critical eye and be cautious” as “documents should not be treated as necessarily precise, accurate, or complete recordings of events that have occurred” (2009, p. 33). Given such cautions, it was important to look at a variety of types of sources that come from a range of authors. In addition, while large-scale state and national reports on disasters are helpful for getting information about the disasters themselves, they often lack details and information about smaller and more rural communities, which is more readily available in local media sources. The balance of sources paints a more complete picture of disaster impacts in such areas, although it does not reveal quite as complete a picture as such methods as long-term ethnography throughout the period in question might have.

**COVID-19 and Compounding Disasters**

Beginning in 2020, COVID-19 has had an impact not only on Jefferson Davis and Marion counties in Mississippi, but also on the larger Gulf Coast region and the United States. Further, it has brought into question the nature of compounding disasters in general. In the United States, other disasters have become compounding disasters as they overlapped and intersected with COVID-19, leaving emergency managers, government officials, businesses, and people responding to multiple disasters simultaneously—a situation complicated by local cultural, historical, political, and economic contexts (e.g., García et al., 2020; Shultz et al., 2022; Walton et al., 2021). Compounding disasters have caused the transformation of responses to one or both to suit the needs of the other or to plan to do so (e.g., Mostafavi, 2020; Pei et al., 2020; Shultz et al., 2020), a pattern that echoes international assessments and adaptations (e.g., IFRC, 2020; Ishiwatari et al., 2020; Lux, 2020; Potutan and Arakida, 2021).
AREA CONTEXT

The Gulf Coast and Mississippi

The Gulf Coast spans Texas, Louisiana, Mississippi, Alabama, and Florida. Browne (2008) describes the region’s complex ecosystems and people, full of vibrant and enmeshed environments and large families rooted to place. Adding to this is the fact that “the Gulf Coast hurricane season is long—spanning half the year, from June 1 through November 30” (Browne, 2008, p. 7). The region is often affected by large-scale disasters. Mississippi is in the area having experienced “the highest frequency and highest cost from billion-dollar disaster events,” including the U.S. South, Central, and Southeast regions (NOAA NCEI, 2023a, para. 3).

Mississippi is the third wettest state in the country (MEMA, 2020b, p. 3-147), indicating the high amount of water present in the area’s environment. While many people associate the Gulf Coast’s waters with the narrow strip of Mississippi that borders the Mississippi Sound and the Gulf of Mexico, the state is full of rivers, tributaries, creeks, and more, along with frequent rainfall and humid air. Mississippi also has “5.2 million acres of high-risk flood zones” in a state of 30,999,040 acres, meaning about 17 percent of the state is in high risk flood zones (MEMA, 2020b, p. 3-71; U.S. News and World Report, 2023). Such conditions are fed by and contribute to some of the hazards and disasters the state deals with, such as flooding, hurricanes, and severe storms. It is important to remember that such effects are not limited to the coastline itself in the Gulf Coast region, but reach further inland as well.

Across the Gulf Coast region, with few exceptions, the population has “increased at a rate slower than the U.S. average, or even decreased” (NASEM, 2018, p. 20). The people in the area have “somewhat greater ethnic diversity and larger income disparities” than other parts of the United States (NASEM, 2018, p. 20). The area has populations that are more likely to be older, Black or African American, have a lower median household income, or be in poverty—factors that are often associated with higher rates of social vulnerability, which can be defined as “a measure of both the sensitivity of a population to natural hazards and its ability to respond to and recover from the impacts of hazards” (NASEM, 2018, p. 20; Cutter and Finch, 2008, p. 2301).

In some ways, Mississippi has a population distinct from much of the United States. While its age breakdown has comparable percentages of people under the ages of 5 and 18, over the age of 65, and women, it has a higher percentage of Black residents (38.0 percent versus 13.6
percent nationally) and lower percentages of other racial and ethnic groups (White, Asian, Hispanic or Latino, and Indigenous) (see Appendix 2 of this paper) (U.S. Census Bureau, 2023a,b). It has a smaller population of residents born outside of the United States (2.3 percent versus 13.6 percent) and of residents who speak a language other than English in the home (3.9 percent versus 21.7 percent) (U.S. Census Bureau, 2023a,b). It is also, overall, poorer than the United States as a whole, with a lower median income ($49,111 versus $69,021), lower per capita income ($26,807 versus $37,638), and higher poverty rate (19.4 percent versus 11.6 percent) (U.S. Census Bureau, 2023a,b). Overall, the state’s economy is driven primarily by health care and social assistance, manufacturing, and retail trade (MEMA, 2020b, p. 1-13). The state is mostly rural, with 63 percent of the state’s population classified as such, where 86.4 percent of Census-designated places are in areas with fewer than 2,500 people (MEMA, 2020b, p. 1-9).

Such statistics matter, particularly when dealing with disasters, such as COVID-19, that have significant health implications. As Jack (2007) wrote, “poverty and health status are interrelated, and their effects on each other are often bidirectional: poverty leads to poor health and poor health leads to poverty” (para. 1). He adds that “poverty affects a community’s ability to support capital improvements; to build and maintain schools; to provide health care services; and to provide policing, social, and sanitation services” (Jack, 2007, para, 5). This also feeds into larger disaster response and recovery situations. As Underhill (2009) notes, “research has shown that disasters negatively impact the economic situation of the affected population, causing many to experience economic loss” and adds that “following a disaster, it is common for people to incur significant debt in an effort to fix salvageable items or replace those that have been destroyed” (p. 62). She adds, “Mounting disaster expenses may exacerbate people’s already vulnerable economic situation, making it difficult for some to keep up with pre-existing bills and newly emergent expenses” (Underhill, 2009, p. 62). These exacerbating issues become particularly important to consider in areas with lower incomes, higher poverty, and unemployment issues.

**Jefferson Davis County**

Jefferson Davis County had 11,158 residents in 2021, a drop of approximately 1.5 percent from April 1, 2020, to July 1, 2021 (U.S. Census Bureau, 2023c). There are hints of a
much larger ongoing population drop in U.S. Census data: in 2010, for example, the county’s population per square mile was 30.6, while in 2020 it was 27.7, even though the size of the county only increased by 0.01 square miles (408.44 to 408.45) (U.S. Census Bureau, 2023c).

Of the residents in the county, the majority are Black or African American (59.6 percent); 38.7 percent are White; 2.0 percent or fewer are one of the following: Hispanic or Latino, Asian, American Indian or Alaskan Native, Native Hawaiian or Other Pacific Islander, or two or more races (U.S. Census Bureau, 2023c). From 2017 to 2021, 0.5 percent of local residents were considered “foreign born” and just 0.3 percent over the age of 5 years old spoke a language other than English at home (U.S. Census Bureau, 2023c). Among local residents, 52.6 percent are women—a slightly higher percentage than in the state or nation as a whole (U.S. Census Bureau, 2023a,b,c). Overall, 5.1 percent of residents are under the age of 5, 19.8 percent under age 18, and 24.0 percent are over age 65 (U.S. Census Bureau, 2023c). This varies from state and national percentages, skewing the local population older (U.S. Census Bureau, 2023a,b). Among local residents under age 65, 13.7 percent have a disability, while 15.2 percent of this same group lack health insurance (U.S. Census Bureau, 2023c).

There were 5,662 housing units in the county in July 2021, 81.9 percent of which were owner occupied, with a median value of $85,600 from 2017 to 2021 (U.S. Census Bureau, 2023c). A range of home types are represented here: 74.5 percent of homes were single-unit detached homes as of 2021, 23.1 percent were mobile homes or similar, and just 2.4 percent were homes in multiunit buildings (ACS, 2021a). While the percentage of mobile homes was higher in 2020 (25.1 percent), it was lower in 2019 (21.3 percent), indicating this may be a space of ongoing fluctuation (ACS, 2020a, 2019a). Within these homes, Jefferson Davis County has an average of 2.62 persons per household, 93.1 percent of whom are living in the same house they were living in a year ago, as of 2017–2021 (U.S. Census Bureau, 2023c).

In Jefferson Davis County, 84.4 percent of those age 25 or older is a high school graduate or higher, approaching the state level of 85.6 percent (the national level is slightly higher, at 88.9 percent) (U.S. Census Bureau, 2023a,b,c). However, just 13.7 percent of the county’s residents have a bachelor’s degree or higher, compared with 23.2 percent at the state level and 33.7 percent at the national level (U.S. Census Bureau, 2023a,b,c). This points to a pattern of local residents finishing high school but not continuing on to more advanced degrees.
The median household income (in 2021 dollars) is $34,771, while the per capita income is $20,782, which are below comparable state levels ($49,111 and $26,807, respectively) and well below national levels ($69,021 and $37,638, respectively) (U.S. Census Bureau, 2023a,b,c). Among the county’s population, 25.2 percent live in poverty, more than double the national rate of 11.6 percent (U.S. Census Bureau, 2023b,c). Research by the Mississippi State Extension Office describes how this median household income varies widely by race. In 2020, median household income for White residents of Jefferson Davis County was $48,714, while for Black residents it was $27,292 (Barefield et al., 2022a). The poverty rate follows a similar pattern—in 2020, White residents of the county had a poverty rate of 15.1 percent; Black residents had a poverty rate of 27.6 percent; and residents of other racial groups had a poverty rate of 14.6 percent (Barefield et al., 2022a).

Moreover, from 2019 to 2020 employment dropped by 53.9 percent, then another 4.1 percent from 2020 to 2021 (U.S. Census Bureau, 2023c,e). The U.S. Census describes this calculation as “computed by subtracting the previous year’s employment figure from the current year employment figure; this result is then divided by the previous year’s employment figure to obtain the percentage change,” looking at the county’s overall employment (U.S. Census Bureau, 2023g, para. 3). Such lowered rates are problematic in the context of disasters especially. As Underhill notes, “job loss and long-term unemployment were two additional factors that contributed to people’s increased economic insecurity” after other disasters, such as Hurricane Katrina (2009, p. 74).

The MSU Extension Office, in its County Economic Profile, points to a range of industries declining in the area “compared to the nation,” including agriculture, forestry, fishing, and hunting; mining, quarrying, and oil and gas extraction; construction and management of companies/enterprises; and arts, entertainment, and recreation (Barefield et al., 2022b). At the same time far fewer industries are emerging or “growing compared to the nation” (although even these are “not necessarily largely concentrated in the county”), including manufacturing and transportation/warehousing (Barefield et al., 2022b, p. 1). Such shifts are also in line with larger patterns in rural work: “while U.S. rural people work in manufacturing at higher rates than urban ones do, the rate dropped between 2001 and 2015 (from 25 percent to 20 percent of all jobs in rural counties)” as “rural manufacturing jobs have mostly [been] replaced by jobs in the service
sector” (Paul, 2022, p. 103). The top employment sector, as of 2021, was the local government (Barefield et al., 2022b).

Taken together, these data describe a local county that is majority Black, American born, and English speaking. They are majority home-owning and mostly continue to live in the same homes, even through the compounding disasters of 2020–2021. They have at least a high school education, but far fewer go on to a 4-year college degree; the county overall has a high poverty and lower income level, raising potential concerns about economic security when dealing with multiple disasters simultaneously, particularly in light of the massive employment drop from 2019 to 2020. Jefferson Davis County is also noted by the Mississippi Emergency Management Agency (MEMA) as being one of the state’s top 20 counties in social vulnerability to environmental hazards, with a Social Vulnerability Index (SVI) score of 2.48 and a national percentile ranking of 85.70 percent, indicating “where the county’s SoVI 42 score ranks in comparison with the rest of the nation” (MEMA, 2020b, p. 3-367).

The SVI was developed as a way to produce a composite score for different counties across the United States as a “relative measure of the overall social vulnerability of each county” (Cutter et al., 2003, p. 254). Originally intended as an “additive model, thereby making no a priori assumption about the importance of each factor in the overall sum,” other researchers have noted that there are potential problems with the use—or misuse—of the term if not engaged with carefully (Cutter et al., 2003, p. 254; Marino and Faas, 2020). As Marino and Faas (2020) noted, “there is a growing discomfort that categorizing the ‘vulnerable’ acts to flatten and simplify diverse communities, as well as discursively nullify the everywhere-visible ‘resilience,’ toughness, and genius that exists in communities, and subsets of communities, that are habitually exposed to risk,” a call for careful consideration of local variation (p. 33). Importantly, social vulnerability is socially constructed (Williams, 2009).

Marion County

As of July 1, 2021, Marion County had approximately 24,271 residents, a drop of 0.7 percent from April 1, 2020 (U.S. Census Bureau, 2023d). But, as with Jefferson Davis County, this seems indicative of a larger context of an ongoing population decline. In 2010 the county’s population per square mile was 49.9, while in 2020 it was 45.1, despite an increase in land area of just 0.01 (542.39 square miles versus 542.38 square miles) (U.S. Census Bureau, 2023d).
Of Marion County residents, 66.3 percent are White, 31.6 percent are Black or African American, and 1.8 percent or fewer are one of the following: Hispanic or Latino, Asian, American Indian or Alaskan Native, Native Hawaiian or Other Pacific Islander, or two or more races (U.S. Census Bureau, 2023d). From 2017 to 2021, 0.9 percent of the county’s residents were foreign-born persons, with 2.2 percent speaking a language other than English in the home after age 5, pointing to a significantly higher non-English-speaking population than Jefferson Davis County, but not as high as the state or nation (U.S. Census Bureau, 2023a,b,d). Of Marion County’s population, 51.1 percent are women (U.S. Census Bureau, 2023d); 5.1 percent are under age 5, 23.2 percent are under age 18, and 18.8 percent are over age 65—numbers more in line with state and national averages (U.S. Census Bureau, 2023a,b,d). Of residents under age 65, 15.8 percent have a disability and 16.3 percent lack health insurance (U.S. Census Bureau, 2023d).

Of the 11,145 housing units in Marion County, 79.0 percent were owner occupied, with a median value of $94,000 (U.S. Census Bureau, 2023d). As of 2021, 68.5 percent of occupied housing units were single-unit detached homes, 23.9 percent were mobile homes or similar, and 6.9 percent were multiunit buildings (ACS, 2021b). However, this percentage of mobile homes seems to be declining slowly but steadily year to year, from 26.0 percent in 2019 to 25.0 percent in 2020 (ACS, 2019b, 2020b). Marion County has an average of 2.6 persons per household, 92.2 percent of whom are living in the same house they were living in a year ago (U.S. Census Bureau, 2023d). The county also home to 1,098 veterans—approximately 9.74 percent of the residents, which is almost double the rate in Jefferson Davis County, the state of Mississippi, or the United States (U.S. Census Bureau, 2023a,b,c,d).

In Marion County, 83.6 percent of those age 25 or older are high school graduates or higher, but just 11.3 percent have a bachelor’s degree or higher (U.S. Census Bureau, 2023d). Like Jefferson Davis County, this points to a slightly lower rate of high school graduation compared with state and national levels, but a much lower rate of 4-year college degrees (U.S. Census Bureau, 2023a,b,c,d). The median household income is $34,386, and the per capita income is $21,840, with 22.9 percent of the population living in poverty; this points to lower income and higher poverty than in the state as a whole and especially in the nation (U.S. Census Bureau, 2023a,b,d). However, from 2019 to 2020 employment in the county increased 2.3 percent, doing so again (also by 2.3 percent) from 2020 to 2021 (U.S. Census Bureau, 2023d,f).
Taken together, this Census data describe a local county whose population is majority White, U.S.-born, and English speaking. Residents are majority home-owning and mostly continue to live in those same homes, even through the compounding disasters of 2020–2021. They have at least a high school education, but the county overall has high poverty and low income levels, raising potential concerns about economic security when dealing with compounding disasters, although this is also distinct from the issues in Jefferson Davis County, given the slightly growing employment opportunities from 2019 to 2020.

Jefferson Davis and Marion Counties

Marion County’s population is approximately twice that of Jefferson Davis County, despite the county not being double the land mass, resulting in a denser population (45.1 people per square mile in Marion County 2020 compared with 27.7 in Jefferson Davis) (U.S. Census Bureau, 2023c,d). Despite this, both counties are rural with very few incorporated areas or municipalities (Prentiss and Bassfield in Jefferson Davis, Columbia in Marion) (SMPDD, 2008, p. 3). Both counties have a range of unincorporated communities.

Jefferson Davis and Marion counties split two regions of Mississippi, the Pine Belt and the South Central Hills, with Jefferson Davis being more of an even split and Marion being more in the Pine Belt (MEMA, 2020a, p. 1-4). The Pine Belt is known for acidic soil, hardwood trees, “rolling hills,” and “steep-sided ridges and valleys” (MEMA, 2020a, p. 1-5). The South Central Hills have sandy loam and “rolling hills with broad valleys” (MEMA, 2020b, p. 1-5). Each county has an agricultural presence that includes beef farming, including cattle farms that cross multiple county lines (MEMA, 2020b, p. 3-230; Veal, 2020). And more than half of each county’s land area is “contained within commercial forests”: 55 percent in Jefferson Davis County and 60 percent in Marion County (SMPDD, 2008, p. 3).

Each county has an average annual temperature in the mid-60s and a similar average rainfall: 59 inches in Jefferson Davis and 64 inches in Marion, with most of that rain falling between November to July (SMPDD, 2008, p. 4), echoing the whole state’s wet climate. The Pearl River flows through Marion County, further raising potential flood risks there (NWS Jackson, MS, 2020a).

Among the biggest differences between the counties are their racial demographics. While both have very small percentages of Asian, Indigenous, and Hispanic and Latino populations, the
Black and White populations of the two counties are distinct from one another, with Jefferson Davis County being majority Black and Marion County being majority White. Jefferson Davis County’s population also skews older, with 24.0 percent over age 65 and 19.8 percent under age 18—Marion County’s rates are inverted, with 18.8 percent over age 65 and 23.2 percent under age 18 (U.S. Census Bureau, 2023c,d).

In both counties, median home values are lower than state and national levels with $85,600 being the median home value from 2017-2021 for Jefferson Davis County, $94,000 for Marion County, $133,000 for Mississippi, and $244,900 for the U.S. However, both counties have higher owner-occupied housing rates compared with state and national levels. 81.9 percent of housing in Jefferson Davis County is owner-occupied, along with 79.0 percent in Marion County, 68.9 percent in Mississippi, and 64.6 percent in the U.S. (U.S. Census Bureau, 2023a,b,c,d). Such numbers point to lower financially valued homes that are nevertheless occupied by owners at high rates, which may indicate that more affordable homes are in areas with lower incomes and in areas where people stay in such homes, a pattern that is present in other areas of Mississippi; it may even be tied to multigenerational home ownership (see also Trivedi, 2020). However, this also raises potential issues with the ability to find new affordable housing when disasters, especially multiple disasters occur, as there is generally a lack of non-owner-occupied housing.

With this, too, there are some distinctions of what types of housing are present, which may also contribute to rates of home ownership. While both counties have a majority of nonmobile, single-unit homes, Marion County has a higher number and percentage of multiunit buildings providing housing (i.e., apartments), and they have bigger apartment complexes. Beginning in 2021, Jefferson Davis County had just one structure with 10 or more units, but Marion County had 276 (ACS, 2021a,b). Costs also vary for rentals—median rent in Marion County in 2021 was $605, while in Jefferson Davis County it was $655 (ACS 2021c,d).

In both counties, while over 80 percent of households have a computer (81.2 percent in Jefferson Davis and 84.6 percent in Marion), fewer households had a broadband internet subscription from 2017 to 2021, with just 62.6 percent of Jefferson Davis County households having one and 66.3 percent of Marion Counties having one (U.S. Census Bureau, 2023c,d). In comparison, at the state level 88.4 percent of households have a computer and 93.1 percent do at the national level, while 78.0 percent have broadband internet subscriptions at the state level and
87.0 percent have one at the national level (U.S. Census Bureau, 2023a,b). Such numbers point to the digital divide and raise questions of accessibility of schoolwork, work-from-home, and telehealth options in disasters such as COVID-19, as well as questions of the accessibility of disaster-aid enrollment and scam-avoidance systems in general. While such enrollment processes are available via phone or paper, information is increasingly distributed online. Moreover, it points to a distinct digital divide issue that is potentially more pronounced in these counties than even the state of Mississippi when compared with the United States. Such concerns were reflected early on in educator’s discussions of the potential impacts of the COVID-19 pandemic on students and early planning; for example, Columbia (in Marion County) Superintendent Jason Harris noted that their district was “planning to provide paper copies to students who don’t have internet access,” specifically in light of the fact that while 75 percent of families said they had internet access, this seemingly left a quarter of students without it (Smith, 2020a).

This rurality is further underscored by the fact that both counties had mean travel times for work of more than 35 minutes, with a history of people commuting to work in nearby cities (SMPDD, 2008, p. 19; U.S. Census Bureau, 2023c,d). While the U.S. Census Bureau had demonstrated that the average American commute was increasing, hitting a new high of 27.6 minutes in 2019 (Burd et al., 2021, para. 1), the commute times in both counties were even longer. This also raises questions of what public transportation may be available for such commutes, as many rural areas lack robust transit options, such as reliable bus and/or train transportation, and further complications can arise depending on how transportation options are classified for those with specific needs, such as specialized transportation services focused on people who are elderly or have disabilities (Stommes and Brown, 2002).

Socially and culturally, religion appears to be an important part of both counties. In discussions of disasters in both counties, churches played a role in disaster response and recovery, as well as in people’s daily lives, a pattern that follows other research on disasters in Mississippi (see Amundson, 2020a; Bassfield, MS Tornado Relief Efforts, 2020a; Beveridge, 2020; Ciurczak, 2020; The Columbian-Progress, 2020a; Pittman, 2020a; Trivedi, 2020). The U.S. Census no longer collects data on religious affiliation “on a mandatory basis,” but there are other sources of information for religious organizations and locations in the area, such as the Association of Religion Data Archives (ARDA 2020a,b ; U.S. Census Bureau, n.d.). As of 2020, there are as many as 40 faith congregations in Jefferson Davis County (ARDA, 2020a) and 98 in
Marion County (ARDA, 2020b). Each county has one Catholic church; Jefferson Davis County has one Jehovah’s Witnesses Kingdom Hall; and Marion County has one church for the Church of Jesus Christ of Latter-Day Saints (historically known as “Mormon” or “LDS”). Both counties also list adherents of the Bahá’í faith and Marion County lists one Islamic mosque, indicating that the data and local population includes non-Christian denominations. The remaining churches in both counties are from a range of Protestant denominations, including various traditions of Baptists, Methodists, Pentecostals, and more (ARDA, 2020a,b).

Looking at the congregants represented in these congregations, the Association of Religion Data Archives (ARDA) lists approximately 18,970 congregants in Marion County in 2020, around 78 percent of the population at the time (ARDA, 2020b). In Jefferson Davis County, ARDA lists around 5,799 congregants, or about 51 percent of the population at the time (ARDA, 2020a). Put in a larger context, they note approximately 59.4 percent of the total state of Mississippi’s population as being adherents of various religious groups (ARDA, 2020c) and 48.6 percent of the U.S. population (ARDA, 2020d). The 2020 U.S. Religion Census, from which these data are gathered, uses central data offices for some groups, but also “special studies for groups without central data offices” (ARDA, 2020e, para. 3). It is, however, also important to note that this search may miss some individuals, especially those who attend a congregation outside of their county or online, or who do not identify their religious beliefs with a specific congregation or faith addressed in the survey. Despite these potential issues, these data give some insight into the scale and range of religious congregations in each of the counties considered here and how they situate relative to the state and nation.

HISTORIC DISASTERS AND DISASTER CONTEXT

The State of Mississippi Standard Mitigation Plan, last updated fully in 2018 (with an additional dam safety piece added in 2020), identifies a series of key hazards as “widely significant” in the state, including high risk levels of tornadoes, dam/levee failures, hurricanes/tropical cyclones, and floods; moderate risk levels of wildfires, drought/extreme heat, and extreme winter weather; and low risk levels of earthquakes, climate change/sea level rise, and cyberterrorism (MEMA, 2020b, section 1, page 1 and section 3, page 14). The plan makes note of severe storms, but did not rank them as having a low, moderate, or high risk level as “they do not typically cause a statewide impact, require a state response, and would be mitigated
at the local level” (MEMA 2020b, p. 3-14). However, as storms in 2020 and 2021 would bear witness, some such storms do necessitate a larger-scale response, and residents can be left feeling forgotten when their areas do not receive assistance in what they see as a timely manner.

Of note in this plan is its reference to the state’s historic plans, as the 2007 plan “cited the completion of a State of Mississippi Enhanced Hazard Mitigation Plan,” that that it “was later determined that the State would be unable to complete the requirements of maintaining an enhanced plan due to its limited resources” (MEMA, 2020b, p. 1-1). Such notes point to larger economic and structural problems that raise questions about the context of historic disaster and state-level response or assistance, even outside of the complexities of compounding disasters.

Statewide, Hurricane Katrina is often pointed to as one of the worst disasters to have hit in recent memory. While the brunt of the storm affected the Gulf Coast counties, the entire state was affected to varying degrees, and many counties qualified for assistance from the Federal Emergency Management Agency (FEMA) (see MEMA, 2020b, pp. 1-10, 3-100; Trivedi 2020, p. 103). However, many other disasters throughout history have also left their mark; these include other massive hurricanes (e.g., Hurricane Camille in 1969), floods (e.g., Great Mississippi River Flood of 1927), or tornado outbreaks (e.g., outbreak on February 21–22, 1971). On average, about 45.1 tornadoes affected the state annually from 1991 to 2015; Mississippi is the tenth most active tornado state in the country, and it has an average of less than one fatality, but more than two injuries, per tornado (MEMA, 2020b, pp. 3-24, 3-25). Moreover, as MEMA notes, “tornadoes are not as easily spotted in Mississippi as they are in the Midwest where flat land and few trees make tornadoes more visible” (MEMA, 2020b, p. 3-25), a particularly complex issue in regions like the Pine Belt and South Central Hills areas where Jefferson Davis and Marion Counties are, which have more hills and trees. As if to demonstrate this, while neither Marion nor Jefferson Davis Counties are on MEMA’s list of “Top 10 Tornado Counties” from 1950 to 2017, Marion County is shown in two of the nine demonstration photos used of the aftermath of tornado damage (MEMA, 2020b, pp. 3-26–3-29).

MEMA’s discussion of tornado planning also points to a history of compounding disasters, including in the counties discussed here. In its discussion of the January 20–21, 2017 tornadoes, it discusses the Enhanced Fujita Scale 3 (EF-3) tornado that moved across Lamar and Forrest counties alongside hail, other smaller tornadoes, and other wind damage across south Mississippi and nearby areas. However, MEMA also points out that, in all of this, “heavy rainfall
resulted in flash flooding in parts of Forrest, Marion, Jones, and Jefferson counties” (MEMA, 2020b, p. 3-33). Similar events occurred on February 10–22, 2013 (MEMA, 2020b, p. 3-37) and December 23–24, 2014 (MEMA, 2020b, p. 3-35).

Jefferson Davis and Marion counties have complex disaster histories. Both counties are considered by MEMA to be “medium-risk Gulf Coast counties” which can “receive the effects of high winds, rain damage, severe storms, and flooding” from hurricanes despite being further inland (MEMA, 2020b, p. 3-99; see also Mongold et al., 2021, for more discussion on this issue in general). Both have been affected by a series of tropical storms and hurricanes: Hurricane Georges (1998); Tropical Storm Bill (2003); Hurricane Ivan (2004); Hurricane Katrina (2005); Hurricane Rita (2005); Tropical Storm Gustav (2008); and Tropical Storm Isaac (2012) (MEMA, 2020b). Some storms affected one county more than the other—for example, Hurricane Camille (1965) affected Marion County and Hurricane Dennis affected Jefferson Davis County. Such lists clearly indicate the potential for and impact of compounding disasters, looking at years such as 2004–2005, when the counties dealt with the effects of four hurricanes alone, even outside of other disasters.

Both counties were affected by droughts in May–July 2007 (although effects are noted as beginning in Jefferson Davis County in April) and November 2016. Just Marion County was affected in October 2015 by another drought (MEMA, 2020b, pp. 3-250–3-254). And when considering extreme temperatures, both counties were affected in August 2010 as part of a larger heat wave that killed five people (MEMA, 2020b, p. 3-255).

On the other side of such weather extremes, when considering winter storm events, Jefferson Davis County was affected by nine winter storms from 1996 to 2017, causing $1,141,000 in property damage, but a reported $0 in crop damage (MEMA, 2020b, p. 3-265). Marion County was affected by six such events, causing $305,000 in total property damage and $0 in total crop damage (MEMA, 2020b, p. 3-265). When looking at larger cold-related events, both counties were affected by heavy snow and a winter storm in December 2017, the winter storms in January 2014 (which included sleet, heavy snow, and winter weather), and the cold and windchill in January 2010 (MEMA, 2020b, pp. 3-268–3-271). Only Jefferson Davis County was noted specifically as being affected by the January 2017 events (which included sleet, winter weather, and ice storm), as well as by the January 2013 ice storm and the significant historical snowstorm of January 2003 (MEMA, 2020b pp. 3-268–3-271, 3-282).
From 1950 to 2017, Marion County experienced at least 37, and Jefferson Davis County at least 24, known tornadoes (MEMA, 2020b, p. 3-51). In Marion, these tornadoes caused approximately $28,876,000 in reported property damage, while in Jefferson Davis the total reached approximately $3,826,000 (MEMA, 2020b, p. 3-62). From February 10 through February 22, 2013, a series of storm systems moved throughout the southeast, causing storms and tornadoes in many areas, including a tornado in Marion County (MEMA, 2020b, p. 3-37). On December 23–24, 2014, a storm system moved across parts of southern Mississippi, producing multiple tornadoes and killing five people, including three in Marion County (MEMA, 2020b, p. 3-35). One of these tornadoes was an EF-3 tornado that “touched down just east of the Pearl River just South of Columbia” and proceeded to move through the county (Amundson, 2020b; NWS Jackson MS, n.d.). In its wake, the tornado left a range of damage and destruction, including “numerous businesses, homes, mobile homes, a National Guard building and power poles and lines,” as well as “extensive tree damage” (NWS Jackson MS, n.d., para. 2). Several people were killed or injured in the storm systems across the state, including victims in Marion County (Breslin, 2014). On January 20–21, 2017, a storm system spawned EF-0 to EF-3 tornadoes and flash flooding in a range of areas, including in Marion County (MEMA, 2020b, p. 3-33).

MEMA also makes a point to consider the potential risk of dam and levee failure, alongside other risks of floods. Jefferson Davis County and Marion County each contain two dams in the high hazard class and Jefferson Davis County has an additional 20 in the low hazard class, while Marion County had an additional 12 there (MEMA, 2020b, p. 3-88). As of MEMA’s fiscal year 2020 report, in Jefferson Davis County, three dams needed further inspection and three were unclassified, while in Marion County seven needed further inspection, while one was unclassified (MEMA, 2020b, p. 3-90). Such issues point to a historic need for more inspections and more information on potential hazards.

Both counties are also in the Pearl River Basin, associated with a range of rivers and tributaries, including the Pearl, Strong, and Yockanookany rivers (MEMA, 2020b, p. 3-152). It is worth noting that the Pearl River is affected by tidal flooding specifically (MEMA, 2020b, pp. 3-146–3-147). The state is not only prone to riverine and coastal flooding, but also to flash flooding (MEMA, 2020b, pp. 3-146–3-147). Further complicating historic disasters and compounding disaster examples, when Hurricane Katrina made landfall, Jefferson Davis and
Marion counties were hit by flash flooding (MEMA, 2020b, p. 3-157). From January 1950 to October 2017, Jefferson Davis was affected by 15 flooding events, causing a total of $3,860,000 in property damage (MEMA, 2020b, p. 3-161). Marion was affected by 50 such events, totaling $24,797,000 in property damage (MEMA, 2020b, p. 3-161). Neither county saw any reported deaths or injuries (MEMA, 2020b, p. 3-161). More recently, when considering repetitive loss in these areas, Jefferson Davis saw zero repetitive or severe repetitive losses across 2009, 2011, and 2016 and zero flood claims, alongside three National Flood Insurance Program (NFIP) communities and zero mitigated properties. However, Marion saw a total of 288 repetitive loss flood claims and 73 severe repetitive loss claims with two NFIP communities and ten mitigated properties (MEMA, 2020b, p. 3-187).

Many such large-scale events have been hurricanes; the way they move through this region matters. As MEMA notes, “hurricanes that move northeast across the Louisiana Delta or move inland between Mobile, Alabama and Panama City, Florida, usually are less damaging because these storms are located on the ‘weak side’ of the storm” (MEMA, 2020b, p. 3-99), whereas storms that move onto the Louisiana–Mississippi border can, as did Hurricane Katrina, leave Mississippi facing the strongest right-front quadrant of the storm (Trivedi, 2020). In addition, as MEMA notes, “even if a hurricane/tropical storm does not make landfall, the Mississippi Gulf Coast can suffer the damaging effects of high tide, rain, and wind from hurricanes/tropical storms that move in from the Gulf of Mexico” (MEMA, 2020b, p. 3-99). Although Jefferson Davis and Marion counties are inland, it is important not to dismiss the risk of these hazards, as such events can affect inland communities (see Mongold et al., 2021) and as MEMA categorizes these counties as “medium-risk Gulf Coast counties” (MEMA, 2020b, p. 3-99). Such effects can also trigger compounding disasters, leaving communities dealing simultaneously with the effects of and recovery from flooding, severe storms, and tornadoes, for example.

These patterns of historic disasters and key hazards point to the types of most frequent hazards and disasters in the state—hurricanes, floods, and tornadoes, along with associated severe storms. Historically, MEMA and other agencies have focused on mitigation, preparedness, response, and recovery efforts related to these. For example, the NWS, Mississippi Civil Defense and Emergency Management Association, and MEMA had supported the NWS StormReady program statewide, with a presence in Marion County as a whole, as well as in the
The state and MEMA have also supported such efforts as “A Safe Place to Go” (supporting and promoting safe rooms in homes) and weather radio distribution, although some of these programs have seemingly been discontinued because of funding issues (MEMA, 2020b, p. 2-21). Other programs, such as the FEMA 361 and community safe room programs, had not reached Jefferson Davis and Marion counties as of 2020 (MEMA, 2020b, p. 3-100).

Despite all of these complexities, the National Risk Index (NRI) lists Marion County’s risk as “relatively moderate” (a score of 14.90 out of 100) and Jefferson Davis County’s risk as “relatively low” (9.24/100) and their expected annual losses are listed as “relatively low” (15.95/100) and “very low” (8.76/100), respectively (NRI, 2023). In contrast, their social vulnerability rates are higher, listed as “relatively high” (48.13/100) and “relatively moderate” (40.80/100), respectively, and their community resilience scores are both “relatively low” (52.73/100 and 50.45/100, respectively) (NRI, 2023). The NRI itself notes that “low risk is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience” or “Risk Index = Expected Annual Loss x Social Vulnerability ÷ Community Resilience” (NRI, 2023, para. 1,12. __). The county’s risks are not identical (see Appendix 3 for specific numbers) (NRI, 2023). In the “relatively moderate” rating for Hazard Type Risk Index, the highest rating for either county in that category, both counties face hurricanes and tornadoes, but Jefferson Davis County faces heat waves and landslides, while Marion County faces lightning and riverine flooding (NRI, 2023). When it comes to expected annual losses, Marion County has a “relatively high” rating for hurricanes, while Jefferson Davis County’s is rated “relatively moderate.” Jefferson Davis County has no other “relatively moderate” ratings, although Marion County has three, for lightning, riverine flooding, and tornadoes (NRI, 2023).

FEMA explains that “a community’s score is represented by its percentile ranking among all other communities at the same level for Risk, Expected Annual Loss, Social Vulnerability and Community Resilience” (FEMA, 2023a, para. 2). It defines social vulnerability as “the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood”; its Social Vulnerability score and rating are representative “of a community’s social vulnerability compared to all other communities at the same level” (FEMA, 2023b, para. 1,2). They define community resilience as “the ability of a community to prepare for anticipated natural hazards, adapt to changing
conditions, and withstand and recover rapidly from disruptions” (FEMA, 2023c, para. 1). This is particularly of note in compounding disasters, where the ability to adapt to changing conditions and recover rapidly from disruptions may be challenged by additional disasters that manifest during that response and recovery period, further complicating efforts to adapt and respond. And as there are higher issues and problems with social vulnerability particularly, complexities may grow even more complex with compounding disasters. For example, a problem with low income may escalate quickly when money must be stretched across response and recovery for multiple disasters instead of one. FEMA directly notes that the NRI does not explicitly consider or account for a wide range of issues, including: “dependencies between hazard types or interrelated hazards”; “secondary hazard types”; “previous, ongoing, or future natural hazard mitigation efforts”; “changes in a community over time”; or more (FEMA, 2023d, para. 38).

**Gulf Coast and Mississippi Disasters in 2020 and 2021**

In 2020 and 2021, the Gulf Coast states combined faced a total of 32 billion-dollar disasters, including 1 drought, 1 flood, 1 winter storm, 11 tropical cyclones, and 18 severe storms, reaching a total cost of $138.9 billion (NOAA NCEI, 2023b). Of these, the most expensive category by far was tropical cyclones, accounting for $100.3 billion of the total costs; second behind them was the single winter storm at $22.5 billion (NOAA NCEI, 2023b). This seems to be an indicator not only of the extreme cost of large-scale events, but also that infrastructure is unprepared to deal with such events.

Mississippi was affected by at least part of nine of these events in 2020 and 2021, a 24-month period, in addition to the ongoing COVID-19 pandemic (NOAA NCEI, 2023c). Of course, the impact of these billion-dollar disasters is not limited to Mississippi alone and other states were sometimes hit harder by specific events, but the frequency of events of this scale affected not only the region, but Mississippi specifically. These effects are worth considering, particularly when looking at the potential impacts of compounding disasters. The state quite often found itself dealing with various phases of multiple disasters simultaneously, and many of these disasters were significant, meaning that resources were spread across larger areas and multiple states.

Beyond billion-dollar disasters, a range of decisions was made for federal declarations of disasters that affected the state. The seven federally declared major disasters included Severe
Storms, Tornadoes, Straight-line Winds, and Flooding on January 10–11, 2020 (Disaster Declaration [DR]-4478-MS); Severe Storms, Flooding, and Mudslides on February 10–18, 2020 (DR-4538-MS); Severe Storms, Tornadoes, Straight-line Winds, and Flooding on April 12, 2020 (DR-4536-MS) (also known as the “Easter Storms”); Severe Storms, Tornadoes, Straight-line Winds, and Flooding on April 22–23, 2020 (DR-4551-MS); Hurricane Zeta on October 28–29, 2020 (DR-4576-MS); Severe Winter Storms on February 11–19, 2021 (DR-4598-MS); and Hurricane Ida on August 28–September 1, 2021 (DR-4626-MS) (FEMA, 2020a,b,c,d,e,f, 2021a,b). Each of these were federally declared disasters in different capacities across the region, although they did not reach the billion-dollar threshold. These, combined with the billion-dollar disasters, allowed for different types of federal aid in the state, such as public assistance and individual assistance. Public assistance is “dedicated to [easing] the burden of recovering after a major disaster. From cleaning debris, rebuilding structures or repairing baseball fields,” while individual assistance is designed to meet unmet needs for individuals and families (MEMA, 2020a, pp. 21–22).

Overarching the federally declared disasters in 2020 and 2021 in Mississippi, as in many places in the United States, was the COVID-19 pandemic. In March 2020, as cases across the United States were being discussed, local media in Marion County linked the pandemic to the history of the 1918 flu pandemic and its impact on Mississippi, as well as the responses to polio, as historic examples to learn from (Salter, 2020a,b). In the same period, local media discussed cutbacks to the state-level health department that left it “less equipped to battle the coronavirus pandemic,” according to Mississippi Public Health Association (MPHA) executive director Buddy Daughdrill; he continued, “The system is not in place that we need” (Mitchell, 2020, para. 2). Between 2012 and 2019, the department had lost more than 500 employees, declining from 2,358 to 1,812 (Mitchell, 2020). Further complicating this were the potential effects on rural areas.

Hart et al. (2005) note that

physicians who practice in smaller and more remote rural towns practice in a medical care delivery system characterized by financially vulnerable medical organizations, small populations, long distances to specialists and tertiary hospitals, longer practice hours, lack of collegial support, limited access to advanced technologies, and relatively high fixed costs per delivered service, [a combined context that] creates especially difficult circumstances
for rural providers and populations. (p. 1150, emphasis added)

These increased difficulties may be further exacerbated in long-term situations, such as pandemics, especially when those circumstances are further complicated by compounding disasters. Such periods not only put additional strain on already limited resources and personnel in the moment, but also may cause a cascading effect, resulting in fewer available funds, resources, or personnel for subsequent events, shaped by used resources, burnout, and hospital closures. Such issues are especially critical in rural contexts. Employee burnout is an issue to which “rural medical providers may be particularly susceptible” (Terry and Woo, 2021, p. 197). Rural hospitals are also closing at increasing rates across the United States, further limiting access to care (Germack et al., 2019; Holmes et al., 2006; Kaufman et al., 2015; Trivedi, 2021).

In 2020–2021, closures had affected “most” of the MPHA regional offices, “local health clinics across the state,” and five rural hospitals across the state, all while the state pushed for telehealth options, although “many areas still lack broadband access” (Mitchell, 2020, paras. 4 and 5). Later in the pandemic, in September 2021, state lawmakers would consider expanding telemedicine even further in Mississippi, particularly related to state employees’ insurance plans, with broad commentary on the benefits of and need for telehealth (Wilson, 2021a). However, such discussions came in the larger context of a state with rural populations whose broadband access lagged behind the rest of the state and nation (U.S. Census Bureau, 2023a,b,c,d).

The first case of COVID-19 in the state was reported on March 11, 2020, with the first case in Marion County coming on March 23 (MEMA, 2020a, p. 5; Pittman, 2020b). On March 14, Mississippi governor Tate Reeves declared a state of emergency, and then on April 1 he officially “requested a major disaster declaration due to the Coronavirus Disease 2019 (COVID-19) pandemic beginning on January 20, 2020, and continuing” (DR-4528-MS) (MEMA, 2020a, p. 5; see also MEMA, 2020b). This “continuing” piece of the declaration would cover a significant period, alongside other federal declarations, such as that of a national emergency, covering all of 2020 and 2021 and encompassing this period of compounding disasters for the state. The entire national emergency would not be officially declared over until April 11, 2023 (Miller, 2023).
In response to the pandemic declaration, MEMA activated the State Emergency Operations Center to Level 1, “a designation used only for events like Hurricane Katrina” (MEMA, 2020a, p. 5).

While most state agencies transitioned to telework, MEMA, the Mississippi State Department of Health (MSDH), the Mississippi National Guard (MSNG), and the Governor’s Office maintained on-site personnel from March 14 until May 14, 2020, when “Governor Reeves ordered all state employees to return to work” (MEMA, 2020a, p. 6). The move back to in-office work for everyone in May required personal protective equipment (PPE), provided by MEMA, as part of a larger rollout of PPE statewide, both in general to the public (with MEMA, MSNG, and local emergency management offices distributing more than 7 million masks) and in specific times and spaces, such as to government officials or in disaster contexts (discussed later) (MEMA, 2020a, p. 6).

In the midst of COVID-19, the governor also instituted a statewide burn ban, with no exceptions (WJTV, 2020). A Mississippi Forest Commission state forester, Russell Bozeman, noted that the “COVID-19 pandemic has put significant strain on Mississippi’s Emergency Medical Services professionals, particularly the state’s rural volunteer fire departments” (WJTV, 2020). This is a particularly important note for rural and heavily forested counties, such as Jefferson Davis and Marion, which rely on volunteer fire departments. Bozeman said, “The current amount of wildfire is not normally a need for concern. . . . However, the smoke from these fires creates problems for anyone with respiratory issues and increases our firefighter’s chances of exposure when they respond” (WJTV, 2020). Thus, even outside of specific disasters, the concern existed for compounding issues.

By September 2021, Mississippi had “surpassed New Jersey as the state with the highest rate of COVID-19 deaths in the U.S., with roughly 1 of every 320 Mississippians having succumbed to the coronavirus” (The Prentiss Headlight, 2021a). The state was, at this point, seeing more than 2,500 cases per day in a state with a population of 3 million and “one of the worst vaccination rates in the country” (The Prentiss Headlight, 2021a). As Stribling (2021a) wrote, “the direct result of a disastrous month that . . . pushed [the state’s] healthcare system to the brink of collapse.” At the same time, the state was “also leading the nation in the use of monoclonal antibody treatments,” a point that prompted state health officials to further encourage vaccination (Stribling, 2021a).
COVID-19 had a widespread effect on the state’s children specifically. Results from the 2021 Mississippi Academic Assessment Program showed that students’ proficiency decreased for the first time since 2016, despite having reached a high point in 2019 (MDE, 2022, p. 5). The potential for such a slide was noted incredibly early on in the pandemic, with Columbia (Marion County) superintendent Jason Harris describing in March 2020, as local media described, that the district’s goal was “to stop a ‘summer’ slide during the anticipated closure” (Smith, 2020a). In other words, local schools anticipated students losing some knowledge during closures already and were hoping to minimize the impact even as the pandemic began.

As the Mississippi Department of Education describes, student scores are 1 being minimal, 2 being basic, 3 being passing, 4 being proficient, and 5 being advanced (MDE, 2022, p. 4). From 2018–2019 to 2020–2021 the percentage of students scoring at Level 4 or higher (i.e., showing proficiency) in mathematics dropped from 47.4 percent to 35.1 percent (MDE, 2022, p. 6). Over the same time period, in English language arts, the percentage of students scoring at a Level 4 or higher dropped from 41.6 percent to 34.9 percent (MDE, 2022, p. 6). Science, a new assessment in 2018–2019, also saw a drop in proficiency, with students at Level 4 or higher dropping from 55.3 percent to 50.0 percent (MDE, 2022, p. 6). The drops were largest in grades 7 and 4 in mathematics and grades 4 and 3 in English language arts (MDE, 2022, p. 7). Students taking end-of-course assessments also had lower passing rates. In algebra I, the percentage of students passing in 2018–2019 was 87.1 percent, but this dropped to 73.5 percent in 2020–2021 (MDE, 2022, p. 8). In English II, the percentage of students passing dropped from 76.4 percent to 60.9 percent, in biology from 78.3 percent to 73.7 percent, and in U.S. history from 79.0 percent to 73.7 percent (MDE, 2022, p. 8).

**Distinctions and Similarities Between Jefferson Davis and Marion Counties**

Disaster declarations for Hurricane Ida (DR-4626-MS) encompassed both counties (although with access to different levels of public assistance, Jefferson Davis receiving categories A–G and Marion category B), as did emergency declarations that opened up category B public assistance in both counties for Hurricane Marco and Tropical Storm Laura (Emergency Declaration [EM]-3539-MS), Hurricane Sally (EM-3544-MS), and Hurricane Delta (EM-3548-MS) (FEMA, 2020g,h,i, 2021c). The only hurricane to not receive a declaration for the area was not declared for either: Hurricane Zeta (DR-4576-MS). Neither area received a declaration for
the severe storms in January 2020 (DR-4478-MS), as federal declarations were for areas further north in the state.

For other severe weather, the declarations varied. Jefferson Davis County received declarations for the Severe Storms, Tornadoes, Straight-line Winds, and Flooding on April 12, 2020 (DR-4536-MS) (“Easter Storms”), the Severe Storms, Tornadoes, Straight-line Winds, and Flooding on April 22–23, 2020 (DR-4551-MS), and the Severe Winter Storms on February 11–19, 2021 (DR-4598-MS), while Marion County did not. This qualified Jefferson Davis for individual and public assistance (categories A–G) in the first April storms, and for public assistance (A–G) in the second April storms and February winter storms (categories for debris removal, emergency protective measures, roads and bridges, water control facilities, buildings and equipment, utilities, parks, recreational facilities, and other) (FEMA, 2020j,k,l; 2021c).

With the first set of April storms, tornadoes were reported at 4:45 PM heading towards Jefferson Davis County; by 5:15 PM “possible fatalities” had been reported in the area (The Science Times, 2020). This would be updated to 4 deaths in the county, out of the 14 deaths across the state (Kay, 2020). One tornado that ended near Bassfield was ultimately declared an EF-4, as was another tornado that started near Bassfield (NWS Jackson MS, 2020b). This second tornado is noted as the third-widest tornado in the NOAA tornado database, at 2.25 miles wide (NWS Jackson MS, 2020b). A third tornado moved through central Jefferson Davis County and was declared an EF-3 (NWS Jackson MS, 2020b).

With the first April 2020 storm system, the NWS “issued its highest level of tornado alert, a tornado emergency, for parts of . . . Jefferson Davis” county (Chinchar et al., 2020, para. 18). In the aftermath, multiple different disaster centers opened across the state, but as of media reports on May 12, none of these were in Jefferson Davis County (Fowler, 2020). For the February 2021 winter storms, Jefferson Davis was one of 31 Mississippi counties (along with the Mississippi Band of Choctaw Indians) that qualified for aid, although Marion County did not (Rowe, 2021).

Marion County received a declaration for the Severe Storms, Flooding, and Mudslides on February 10–18, 2020 (DR-4538-MS), while Jefferson Davis County did not. This qualified the county for public assistance (categories A–G) (FEMA, 2020m). As the NWS Jackson office described, the storms began “after a very wet January” which, while not a disaster in the area, further complicated the flooding situation as “it all came to a peak about midway through the
month after one particularly heavy rain system,” revealing the additional complexities of compounding disasters moving beyond clearly defined disasters (NWS Jackson MS, 2020a). While “normally, these rivers can handle that much rainfall without causing too much flooding,” in this specific circumstance, “after the wet January and early February . . . this system caused the rivers to rise to near record heights,” the first time the river had reached these points in more than 35 years for many areas (NWS Jackson MS, 2020a). This included the sixth-highest crest height for the Pearl River in Columbia in Marion County on February 23 (NWS Jackson, MS, 2020a).

It is, however, important to put this in a larger historical context; as the NWS Jackson office noted, “with nearly the same outflows, the river stage was almost 3 feet lower in 2020 than what occurred in 1983,” a pattern tied to several theories, including a transformation of the riverbed during that time and differences in tree and grass growth in land between levees in Jackson (NWS Jackson MS, 2020a).

While not explicitly tied to disasters, Columbia (in Marion County) had completed a one-to-one initiative several years in advance of these disasters “that provided every student with a laptop,” thereby better facilitating homebound schoolwork. As Superintendent Jason Harris said when commended by Board Member Rene Dungan for starting the program, he “never anticipated it would be used in this way” (Smith, 2020a).

**Impacts on Jefferson Davis and Marion Counties**

*Aftermaths of 2019*

One of the complicating issues with disasters and compounding disasters is that they do not have neat end points. In December 2019 large tornado and storm outbreaks affected the region. An EF-2 tornado and an EF-1 tornado affected Marion County, damaging, among other things, a range of local businesses and the Columbia-Marion County Public Library, leaving it looking for a temporary location (WDAM, 2019a; *The Columbian-Progress*, 2020b). An EF-2 tornado was also reported in Jefferson Davis County (Jackson, 2019; WJTV, 2019). Then-governor Phil Bryant declared a state of emergency for the affected areas (WDAM, 2019b). Recovery for the area in general and the library space specifically bled into 2020, with roof
repairs beginning on the old building while work simultaneously “ceased at the temporary location downtown due to the coronavirus” (Amundson, 2020c).

All three of the late 2019 tornadoes were part of a record-breaking year, with 115 confirmed tornadoes affecting Mississippi that year, breaking the previous record of 109 set in 2008 (since record keeping began in 1950) (Jackson, 2020). Twenty-four of these tornadoes affected the state in December (Jackson, 2020), setting up a particularly complex transition into 2020. Such disasters are also a reminder that with compounding disasters in particular, disasters are processes rather than events. There are rarely neat start and stop times, but instead long-term space and time scales that bleed into how people and spaces are affected, even outside of chronological time frames, such as specific years.

COVID-19 Pandemic

As with the state as a whole, the COVID-19 pandemic overarched the entirety of disasters in 2020 and 2021 for Jefferson Davis and Marion counties. In Marion, local media opinion pieces cited the rurality of the state as a boon during a global pandemic, while also citing growing technology and science as benefits in advancing knowledge of and response to the disease, as well as religious faith as a system to carry through in difficult times, a clear link to personal and local cultural beliefs (Emmerich, 2020).

In mid- to late-March, both counties extended spring break in schools to figure out how to navigate the situation in school systems as students returned, and they put quarantine and travel self-report restrictions in place for students and teachers as they returned (Amundson, 2020d). At the same time, businesses in the local area began to restrict store access, while simultaneously they began to struggle to keep products, especially such items as disinfectants and toilet paper, on shelves and began to feel the effects of the lost business (Amundson, 2020e; Mississippi Today, 2020).

While a statewide shelter-in-place would not formally begin until April 3, other practices, such as suspending hospital and nursing home visits, restricting access to various businesses and spaces, public school closures, and more, began in March (Amundson, 2020e; Judin and Pittman, 2021). Ultimately, as the pandemic progressed, even the Prentiss annual Christmas parade was canceled in 2020 and 2021, although officials replaced it with a special tour around town by Santa Claus (Cochran, 2021a).
At the start of the pandemic, churches were identified as spaces where vulnerable people might gather (Amundson, 2020a). This led local medical personnel to recommend that churches use local radios and the internet to have services remotely, avoiding in-person risk (Amundson, 2020a). Their eventual reopening was allowed by the state government, but this came with limits, such as ensuring space for social distancing, avoiding “services that involve passing an offering plate or communion cup,” encouraging mask wearing (not mandating), screening “leadership and staff for COVID-19 symptoms,” and asking sites to “consider holding separate services for the elderly and those with pre-existing health conditions” (Ellison, 2020, para. 1). When houses of worship reopened later some outbreaks did happen, emphasizing the importance of this initial caution (Pittman, 2020a).

Later that year, in December 2020, MSDH recommended “that churches suspend all in-person worship services” (Cook, 2020, para. 1). In media discussion of the recommendations, one pastor described how their church had many members attending online and others socially distancing and being encouraged to wear masks and use hand sanitizer, saying, “We feel like we’re following the right protocol to keep our people safe when they worship here” (Cook, 2020, para. 9). In March 2021, MSDH issued guidance again, noting that “to prevent the spread of COVID-19 and to protect the vulnerable, the safest options continue to be virtual or outdoor services” (Sun Herald, 2021). As media coverage from the local and state levels described, these recommendations came at times that were particularly busy for many Christian denominations, which are quite prevalent in the state (Cook, 2020; Sun Herald, 2021).

There were also, as in many places, differences in when COVID-19 manifested. At the very start of April 2020, for example, just 4 of Mississippi’s 82 counties still had no detected cases of COVID-19, Jefferson Davis among them (Judin and Pittman, 2021). By the end of the month, however, the county had 12 cases and 1 death (Cochran, 2020a). These cases also affected mostly Black residents (8 of the 12). By this point already, the county emergency management agency director, Jocelyn Ragsdale, was describing the situation as a spike in cases. Moreover, in a critical link to the compounding disaster situation, she was also already noting that “this could be attributed to the Easter storms after which we all became relaxed during the crisis” (Cochran, 2020a).

In this context, Ragsdale also emphasized that “shelter-in-place is the only way to halt a spike. Please continue to practice social distancing and protect yourself by wearing a mask and
gloves, as well as using hand sanitizer. We need to do everything we can to protect our citizens and stop the spread of this virus in our county” (Cochran, 2020a). At this point, nonessential businesses remained closed, per the governor’s orders (Cochran, 2020a).

In March 2021, Governor Reeves lifted county mask mandates and business restrictions, commenting that “today, I signed what I expect will be one of my last executive orders regarding COVID-19” (Cochran, 2021b). However, restrictions remained in place for schools (Cochran, 2021b). Jefferson Davis County said it would follow the changing orders, but Jefferson Davis County board president Bobby Rushing added that “we strongly recommend still wearing the masks in county buildings” (Cochran, 2021b). That month also saw vaccine accessibility open up in Jefferson Davis County to a range of groups, including: “teachers, staff and employees in K-12, preschool or childcare settings, law enforcement, public safety, fire services and emergency management officials”; healthcare workers including “nurses, physicians, emergency medical services, technicians, pharmacists, dietary and food staff, environmental services staff and others”; “long-term care facility residents and staff”; “EMT/paramedics, paid or unpaid”; adults over the of 50; and adults between the ages of 18 and 49 who have “a chronic health condition that may put them at higher risk from COVID-19” (Cochran, 2021c).

Vaccines were initially available at the Jefferson Davis Community Hospital, but by August were available at the Jefferson Davis Rural Health Clinic (Cochran, 2021c,d). Despite this expanding vaccine access, by the end of August 2021, cases and deaths would climb in the county (Cochran, 2021d). After not posting for over a year to its Facebook page, the Jefferson Davis Community News (2021) group simply posted, “Please get vaccinated, the Covid-19 virus is killing so many people. The hospitals are overwhelmed.”

In September 2021, the local hospital, Jefferson Davis Community Hospital, was offering monoclonal antibody infusions to eligible patients with COVID-19 (Cochran, 2021d). In September, a COVID-19-specific clinic opened in the county in Prentiss, the Prentiss Primary Care Covid Care Clinic, in a local shopping center for COVID-19 testing and administering monoclonal antibodies (Cochran, 2021e). Dr. Jaishankar Jagadeesan (also known as Dr. J) described how “we wanted to offer the community quality care after hours, so they don’t have to drive to Magee, Columbia or Hattiesburg. . . . We recognize that the ER is a valuable resource to the community and should be used for emergencies. We will be there for patients’ urgent needs, not the emergent ones” (Cochran, 2021e). The comment reflects several important pieces of
information related to both COVID-19 specifically and disasters in general in the area. First, it reveals the lack of resources in the area, given the limited opportunities for medical care in Jefferson Davis County—driving to another area or going to the emergency room. Second, and relatedly, it reveals the rurality of the area.

Throughout 2020 and 2021, as was true of areas across the United States, numbers of cases, responses to the situation, and rates of responses (e.g., vaccinations), ebbed and flowed in both counties. Initial peaks in cases in Marion County, relative to local rates, first appeared in July 2020 (with daily averages around 14–15), then again in December 2020 (daily averages around 20–22), and January 2021 (daily averages around 24–25) (The New York Times, 2023a). A much larger spike followed in August 2021 (with daily averages reaching 33–34) and another much larger spike in January 2022 (when daily averages peaked at 78) (The New York Times, 2023a). The pattern is not identical in Jefferson Davis County, with less of a pattern of peaks and valleys until 2021, when the patterns do align more closely: a significant spike happened in August 2021 (daily average around 12–14), followed by another much larger spike in January 2021 (daily averages around 30–32) (The New York Times, 2023b). Numbers of cases were discussed in local media, with regular updates for the counts of cases and deaths among the general population and people in long-term facilities, as were specific variants in the state and local areas; such discussions were found in The Prentiss Headlight and The Columbian-Progress (e.g., see Cochran, 2021f,g; Stribling, 2021b). By September 2021, the state of Mississippi had the highest rate of COVID-19 deaths in the United States (The Prentiss Headlight, 2021a).

Larger issues tied to COVID-19 and schooling had local impacts. Governor Reeves issued an executive order (1458) requiring school districts to “immediately begin working with the Mississippi Department of Education to develop and implement distancing learning or other instructional means to achieve completion of essential grade-level instruction,” followed by another executive order (1460) closing public schools statewide “effective immediately” in March 2020 (Judin and Pittman, 2021). By this point already county schools had begun sharing discussions of hand sanitizer and general sanitation planning (Amundson, 2020f).

The counties’ school district Facebook pages paint a real-time picture of how this pivot happened in the counties. Jefferson Davis County’s page, for example, shifts from January 2020 announcements that the 29th would an early-release day and announcements of meet and greets with the superintendent with flyers featuring clipart of a handshake (JDCSD, 2020a,b) to a
barrage of notices about Reeves’ order, COVID-19 information, and home and virtual learning instructions (JDCSD, 2020c,d,e). In April announcements began about delivery and pick-up options for Trunk and Go Meals (JDCSD, 2020f). Similarly, in Marion County, the page shifts from discussions of the school’s overall positive status (MCSD, 2019) to discussions of COVID-19 plans with pivots online when needed and plans for free meals for students (MCSD, 2021a,b). Announcements about what was happening with public and private school systems were also shared through the local media (Amundson, 2020a).

Once schools returned to in-person learning in Jefferson Davis County, sanitation was more frequent, students were kept in classrooms while teachers were rotated between classrooms, and students—still masked—were allowed a “mask break outside, only when socially distanced” (Cochran, 2021h). Such heightened precautions were commonplace by this point, as businesses had reopened with heightened sanitation; spacing; and medical precautions such as temperature checks, masking, and more. A range of precautions in schools had been discussed in meetings and media prior to reopening (Cochran, 2020b, 2021i). Jefferson Davis Community Hospital administrator Alania Cedillo described a wellness center reopening: “We are committed to ensuring the wellness of our community, our members and our employees during this time” (Cochran, 2020b).

Other seemingly normal functions of government and daily life were also affected. Election commissioners in Jefferson Davis County implemented safety measures in the fall of 2020, requiring voters to show ID to enter polling precincts and telling local media that “a poll manager may ask the voter to step back six feet and briefly lower his/her covering so the poll manager can identify the voter in accordance with the Mississippi voter I.D. laws and administrative rules” but still encouraging mask wearing (Cochran, 2020c). Machines were cleaned after voting, social distancing was enforced, and absentee ballot options were expanded (Cochran, 2020c).

February 2020 Storms

Neither county received a federal declaration for storms that moved through the area in January 2020; local media described the situation bluntly, saying that the area, and Marion County specifically, had dodged a bullet (Amundson, 2020g). However, the area was nevertheless ultimately affected by them. LeComte (2021) stated:
A very wet January, featuring 10-15 inches of rain across northern and central Mississippi followed by more heavy rains in February, set the stage for historic flooding. An especially wet system that deluged central Mississippi, with 5-10 inches of rain from February 10-13 raised the Pearl River near Jackson to its highest level since 1983 on February 17. (p. 15)

Marion County was included in the major disaster declaration for the February storms, although Jefferson Davis County was not. But as is made clear by LeComte’s description, the February floods built on a wet January and, in turn, set in motion future flooding later in the year. Further storms throughout the South in March would further contribute to the problem, even though neither county was a part of official federal declarations in that month.

In unincorporated areas of Marion County, such as Morgantown, “residents were already growing concerned” as floodwaters rose; one noted, “I have nowhere to move” (Smith and Amundson, 2020 paras. 6 and 7). Such discussions point to a lack of options with evacuations, patterns that have been demonstrated in research to reduce or delay evacuations (for more discussion of evacuation issues, see Baker 1991; Tierney, Lindell, and Perry 2001; Sorensen and Vogt Sorensen 2007; Trivedi 2020; Kawasaki et al. 2021; Mongold et al. 2021; Trivedi and Wachtendorf 2023).

As the Pearl River crested at 25.6 feet, “nearly nine feet above the flood stage and the highest recorded level since 1983,” the county recorded lost homes and businesses (Campbell, 2021). The flooding disrupted access to emergency services and necessitated individual outreach to people and households. Throughout Marion County, “low lying lands and roads” were “covered by flood water,” including some roads that needed to be closed and leading to the disruption of medical responses, as ambulances were “hindered” by water over roadways (Amundson, 2020h).

People also formed relationships between disasters as they associated them with one another over time and space. With the February storms, local officials and media contextualized the events in terms of previous events, discussing how “the anticipated crest of 24.9 this weekend would be well below the record of 27.8 in 1979, when city officials cut the U.S. 98 Bypass to allow floodwaters to flow south away from the city rather than into downtown
businesses” (Smith, 2020b). They simultaneously contextualized it relative to current numbers and spaces, citing both the potential number of addresses that could flood in Marion County (385) and citing specific locations and street names (Smith, 2020b).

April 2020 Storms

Even when people retreated to shelters to stay safe from tornadoes, COVID-19 remained an issue. This was one direct form of compounding disaster as people coped with responding to both simultaneously, but it also set up more complex issues, such as how using resources for one left limited resources for the other, how one could make the other worse, and how systems people were using to respond to one thus became available for the other.

April featured multiple deadly storm outbreaks, with the first to severely impact this area happening on April 12–13, 2020, Easter Sunday weekend. Two EF-4 tornadoes, among a range of others, hit southern Mississippi (LeComte, 2021, p. 18). Multiple tornadoes would tear through Jefferson Davis County (NWS Jackson MS, 2020b). As one “ripped out the brick foundation of a local bar,” four residents were killed (Vicory and Rowe, 2021, para. 11). Other local residents were injured (Cochran, 2020d). The four would be remembered, among other ways, with a plaque with their names on it at Bassfield City Hall (Cochran, 2021k). At the ceremony unveiling the plaque, Ragsdale noted, “those far and near can say what they will or may about Jefferson Davis County, but we are one” (Cochran, 2021k).

About 100 homes were damaged or destroyed (Beveridge, 2020). Eighty people were displaced in Jefferson Davis County (Cochran, 2020e). The tornadoes also destroyed the John Thompson Complex sports facilities in Bassfield, home to the Jefferson Davis County High School softball and baseball teams (Cochran, 2020f). Forty roads were closed because of debris and 40 because of damage, and multiple power lines were down (The Columbian-Progress, 2020c). In the rural area, other local residents lost farm animals and associated housing (Cochran, 2020e; NWS Jackson MS, 2020b).

Later that year, in December, in the town of Bassfield, local residents worked to deal with tornado recovery, on top of COVID-19 and their daily lives, as well as a planned 125th town anniversary celebration (Beveridge, 2020). As one said, “I put up a sign to let everyone know what we were doing for the anniversary and when we were going to do it, and just about a week later I had to take that sign down and put up a sign for tornado relief. . . . With COVID on top of
that, things have gone by the wayside” (Beveridge, 2020, para.10). The town looked to bury a
time capsule instead of hosting a celebration (Beveridge, 2020). By the next year, Ragsdale
called the rebuilding process “mixed” and noted that the storms were “the worst weather
experience she has ever experienced in her 16-year history in emergency management” (Vicory
and Rowe, 2021, para. 12).

Both Jefferson Davis and Marion counties were among those affected by widespread
damage on nonindustrial private forestland (Office of Cindy Hyde-Smith, 2020). The impact
across eight affected counties was estimated to be about 12,998 acres of nonindustrial private
forestland, whose potential economic impact was estimated at $14,908,596 (MFC, 2020). This
includes a total of 2,221 acres damaged in Jefferson Davis County, valued at $1,962,036, and 52
acres in Marion County, valued at $52,236 (MFC, 2020).

In the aftermath of the Easter Storms, additional storm systems rolled across the state.
Marion County fell under tornado watches on April 19 and was hit by a tornado (Amundson,
2020i). That night, one person died in the county (The Columbian-Progress, 2020a). Twenty
homes in Marion County were destroyed, as well as the Southwest Marion Volunteer Fire
Department station (Campbell, 2021; The Columbian-Progress, 2020a). Twenty roads had to be
closed to clear debris (The Columbian-Progress, 2020a). That same day, the county saw its first
COVID-19 death (Campbell, 2021). About 8,000 remained without power the next day, most of
them in the Pearl River Valley area, including Marion County (The Columbian-Progress,
2020a).

Compounding the issue with the tornado in Marion County was the larger storm system it
was a part of, which caused heavy rainfall (6 inches in a very short time) in areas such as
downtown Columbia, resulting in flooding in several buildings, specifically along Main and
Second streets (Campbell, 2021). As Columbia mayor Justin McKenzie described, “it was such a
torrential downpour at one time that the storm drains weren’t built to contain that type of rainfall.
. . . It just completely inundated all of our systems. . . . The city and downtown store owners
were prepared for high winds, hail and potentially a tornado, but nobody expected the exorbitant
rainfall,” and if they had expected the rain “they would’ve been on standby with their water
pump” (Campbell, 2021). Once it began, downtown business owners shared information about it
with others via a group chat (Campbell, 2021). At the same time, the Columbia Fire Department
Station 2 was flooding, with water “pouring down from the ceiling, behind the walls and everywhere really” (Campbell, 2020b).

Each set of April storms would be part of separate billion-dollar disasters that spread across larger regions, such as the Gulf Coast region and Southeastern United States. Moreover, these tornadoes are also part of a larger pattern of changing disasters and tornadoes, specifically in Mississippi. As Williams (2023) described, “on average, Mississippi experienced 33 tornadoes per year from 1950 through 2020. In the past five years, however, that average has increased to 86 tornadoes per year, according to the National Weather Service in Jackson” (para. 3). In 2020, the State of Mississippi had 82 reported tornadoes and in 2021, it had 60 (Williams, 2023). Christopher Rainey, a meterologist who works with the National Weather Service in Jackson, Mississippi, described how “the reason for Mississippi seeing more tornadoes now is due to the significant change in the climate and atmosphere” and “although the weather is constantly changing, it’s hard to predict what will occur in the future specifically” (Williams, 2023, para. 7). As Cook and Harrison (2002) added, “climate change is the ‘ultimate risk’, a compounding factor”; these authors discussed future flooding, but their comments are relevant for tornadoes and other disasters (p. 102). Importantly, this is also reflected in local and regional residents’ discussions and perceptions of these events. One Pearl River Valley Electric Power Association lineman described to the local media how “we’ve had little tornadoes but never nothing like this,” adding that “you see the stuff that happens on TV in Oklahoma, Texas, Arkansas and places like that but not really down here in the South. But it did” (Campbell, 2020c). Transformations of larger tornadic behavior reveal not only the potential for increasing risks of the hazard in Mississippi, but also the increasing chances of these overlaying and interacting with other hazards and disasters, creating more complex realities of compounding disasters. By August 2020, Columbia in Marion County had three separate local emergencies in place—the Pearl River Flooding, the coronavirus, and the April 19 tornado and related flash flooding (Amundson, 2020j).

June 2020 Tropical Storms and Hurricanes

Although the county would not receive an emergency declaration for it, there were discussions around threats from rain and potential flooding related to Tropical Storm Cristobal in June 2020, with particular concern focused on the flood-prone Columbia downtown area in
Marion County (Amundson, 2020l). As police chief Michael Kelly described, “it appears to be a major rain event for us. . . . The good news is it doesn’t look like something we haven’t already dealt with this year already” (Amundson, 2020l). Local media added that “Marion County so far in 2020 has dealt with tornados, flooding, a pandemic, protests, and now a potential tropical storm” (Amundson, 2020m).

Mississippi would have emergency declarations for Hurricane Marco and Tropical Storm Laura (EM-3539-MS), Hurricane Sally (EM-3544-MS), and Hurricane Delta (EM-3548-MS). Each would come with public assistance in category B to help with debris removal. With Tropical Storm/Hurricane Laura, the local media discussion looked at risks for winds, flooding and tornadoes, while Hurricane Marco was expected to bring a few inches of rain (Amundson, 2020n). In general, Marco caused “minor damage due to flooding” and rain (Beven and Berg, 2021, p. 5). Hurricane Laura was more powerful as it made landfall, hitting Louisiana before moving into Arkansas, Missouri, and Kentucky (Pasch et al., 2021). It did cause some EF-0 tornadoes in Mississippi, Alabama, and Tennessee, but “none of the tornadoes caused deaths or injuries” (Pasch et al., 2021, p. 8).

After making landfall in Louisiana, Hurricane Delta weakened over Mississippi (Cangialosi and Berg, 2021, p. 3). In this process, the storm brought rain, wind, and one tornado to the state (Cangialosi and Berg, 2021, pp. 6–7). But even in advance of the storm, local media was discussing how the area of Marion and Jefferson Davis counties would be “spared” the full brunt of the storm (Amundson, 2020o). And, ultimately, Hurricane “Sally’s impacts were limited to portions of coastal Mississippi, mainly the result of storm surge as well as some gusty winds” (Berg and Reinhart, 2021, p. 12).

Given the more inland location of the counties, it is unsurprising that the focus in these discussions is not on storm surge, but there is a clear consideration of tornadoes alongside wind, rain, and flooding risk, a pattern that makes sense given the repeated and growing frequency of tornado impacts in the area. There were, in some cases, needs for funds to help clean up debris from what was essentially storm activity, but the larger-scale destruction that came with such events as the April tornadoes seems to have been avoided in these tropical storms and hurricanes. The busy season tied into larger predictions about it being an active season, with a transition to a La Niña period (LeComte, 2021, p. 18). But these storms received less local attention than the
April storms and tornadoes had, seemingly having less of a direct impact on the counties and less of a compounding effect with COVID-19.

_February 2021 Winter Storms_

Officially, with federal declarations, Jefferson Davis County qualified as being affected by the winter storms of February 2021 while Marion County did not. Many local residents lost power, and roads became dangerous because of ice (Cochran, 2021). City and county government offices and services (such as garbage pick-up) were closed while crews dealt with restoring power and clearing roads (Cochran, 2021). Loss of power due to storm damage was further complicated by high demand, leading Entergy Mississippi to ask customers to reduce their electricity usage voluntarily (Cochran, 2021). As Entergy spokeswoman Mara Hartmann noted, “this is a proactive means to keep us from having to do periods . . . where people go without power. . . . There is a massive demand right now across the southern U.S. Everyone is trying to stay warm and is using electricity” (Cochran, 2021). Local media clarified that “the request does not apply to the elderly or those with health concerns” but also that “it was unclear how long the conservation measures were to be in place” (Cochran, 2021).

Even given these complications, Mississippi Department of Transportation engineer Mark Holley described how he had “never seen such an event” and that “some might say we were not prepared. But in reality, we were more prepared than we have ever been” (Ganucheau, 2021a, para. 3). Governor Reeves described how the storms were “unlike a hurricane or tornado, where the event comes furiously and then ends, this has been a slow-moving disaster. . . . We have been in response mode, not recovery, constantly. There has not been a significant break in the freeze—it just keeps coming” (Ganucheau, 2021a, para. 7). These combined perspectives point to the fact that, while prepared for the storm at the state level, its slow movement and ongoing status complicated the situation along with the fact that such hazards are less common for Mississippi, although not unheard of: “while they are not common occurrences like severe thunderstorms and tornadoes, we must still be prepared” (MEMA, 2023, para. 1).

In Jefferson Davis County, local schools closed for staff initially, although they had already been closed for students and teachers for President’s Day. This closure was extended after weather conditions and power outages continued, ultimately reopening with hybrid
operations several days later (JDCSD, 2021a,b). Nationally, since the start of COVID-19, much has been made about the ability to pivot to online school options in other disasters, such as winter weather, although this remains a more difficult prospect in areas with lower internet accessibility.

*July 2021 Heat Warning*

Although it was not explicitly named a disaster in some of the same ways other hazards and processes discussed here were, in July 2021 a major heat advisory was issued for a number of counties in Mississippi, including both Jefferson Davis and Marion (Szymanowska, 2021a). The NWS’s Jackson office warned of heat indices between 105 and 115 degrees Fahrenheit, resulting in cautions for people to “drink plenty of fluids, stay indoors in air conditioned areas, stay out of the sun and check on relatives and neighbors to avoid heat-related illnesses” (Szymanowska, 2021a,b, para. 6).

It is important to acknowledge the potential intersections of heat waves with other disasters, particularly COVID-19. People who are considered especially at risk to COVID-19 are also often vulnerable to heat-related illnesses (Bose-O’Reilly et al., 2021). For another, some of the recommendations for protection against each of these issues can sometimes be incompatible (most directly where use of protective clothing or gear for COVID-19 can be contraindicated for use in high heat situations) (Morabito et al., 2020; Bose-O’Reilly et al., 2021; Shi et al., 2021). In addition, some international research has revealed that this can impact both people’s perceptions of both disasters (with fewer people seeing COVID-19 as more concerning than heatwaves) and people’s behavior (with people reducing mask-wearing behavior) (Ban et al., 2021).

*August 2021 Hurricane Ida*

As Hurricane Ida approached the state, MSDH’s director of health protection Jim Craig “urged people going to shelters and to other places to continue to wear masks and take other precautions to try to prevent the spread of COVID-19” in an echo of the April 2020 tornado response (Ganucheau, 2021c). Mississippi Governor Tate Reeves issued a state of emergency in advance of the storm with, as state media described, “the prospects of the storm were made worse by most Mississippi hospitals already being full with COVID-19 patients” (Ganucheau, 2021c, para. 10). As national media discussed the situation (Treisman, 2021):
Hospitals generally try to discharge as many patients and staff as possible before hurricanes. Louisiana’s overcrowded facilities couldn’t fully evacuate, however, because so many of their patients are in intensive care units, as NPR [National Public Radio] member station WWNO reported.

In southern Mississippi, which is also in the storm’s direct path, health officials have been diverting critical care patients to hospitals in the northern part of the state. Federal care teams—which were already responding to the COVID-19 surge in Louisiana and Mississippi—will assist in that effort, Mississippi Gov. Tate Reeves said. (para. 3 and 4)

Such overlaps in disasters created more complex problems, leaving facilities unable to fully evacuate but also leaving full facilities unable to take in new patients injured in storms, thus creating a new crisis of care.

Hurricane Ida’s landfall overlapped too with a spike in COVID-19 cases in both Jefferson Davis and Marion counties. Despite vaccine availability, researchers have pointed to a combination of the “highly transmissible SARS-CoV-2 Delta variant” and low vaccination rates in states like Mississippi affecting virus spread (Shultz et al., 2022, p. 1). In the region, “hurricane coast states were easing restrictions as they promoted their open-for-business, tourism-based economies” (Shultz et al., 2022, p. 2). While this was not the dominant economic force in Jefferson Davis or Marion counties, their COVID-19 policies were affected by the state’s approach. Further compounding these overlapping issues was the fact that MSDH closed all COVID-19 testing and vaccination sites statewide, alongside all MSDH offices, county health departments, and centers for WIC1 in advance of the storm (MSDH, 2021).

With Hurricane Ida, both counties qualified under the federal declaration. While local media noted that “models predicted Marion County would receive substantial damage,” the hurricane actually “caused minor damage” in the area (Amundson, 2021b). Throughout parts of the state as a whole, however, power outages occurred, tied to strong winds (Ganucheau, 2021c). Rainfalls and tornadoes were also problems throughout the state, although the tornadoes were limited to those rated at the EF-0 or EF-1 scale (Beven et al., 2022).

Jefferson Davis’s County Board of Supervisors, the town of Prentiss, and the town of Bassfield all declared a state of emergency ahead of Hurricane Ida (Cochran, 2021j). In Jefferson

---

1 WIC stands for the Special Supplemental Nutrition Program for Women, Infants, and Children.
Davis, local schools closed because of the storm, reopening first virtually before resuming classes in person with mandatory masks (JDCSD, 2021c,d). In Marion, schools also closed for the threat of the storm (MCSD, 2021c). Again, this pattern points to part of the process of compounding disasters, with movement between navigating the risks of a hurricane and related issues such as additional winds and rains, flooding, and tornadoes leading to school closures, and the process of returning to school being navigated with online learning (now more practiced over a year into the pandemic) and an in-person return requiring new restrictions such as mask wearing.

**Preparedness and Response Efforts**

Jefferson Davis County is home to Jefferson Davis Community Hospital in Prentiss, which, as of July 31, 2020, had 20 hospital beds available (Statesman Journal, 2023a). Marion County is home to Marion General Hospital in Columbia, which at that same time had 38 beds (Statesman Journal, 2023b). At the start of the pandemic, it did not have a ventilator (Amundson, 2020a). These numbers point to a relative lack of facilities, a complicated prospect in a pandemic when many areas struggled with hospital capacity, especially surge capacity. This lack of facilities can also raise issues when providing treatment to those hurt to varying degrees in other disasters, reflected in reports in other disasters of victims being transported to hospitals in other counties (e.g., see Cochran, 2020e). While not unheard of, particularly for care of types or degrees, it also reinforces the lack of local and immediate capacity for such treatment. In addition, in terms of immediate disaster response needs, both counties rely on volunteer fire departments (SMPDD, 2008).

In mid-March 2020, meetings with officials and emergency personnel from both Marion and Jefferson Davis counties and local cities discussed a wide range of issues related to preparedness for the virus (Amundson, 2020p). At one meeting, Dr. Bert Beisel pointed to, as local media described, the “major concern” of “overwhelming the medical system with everyone getting sick at the same time” (Amundson, 2020p), a particularly critical point in an area with limited hospital resources. He and other experts discussed the potential for contagion in general but also how the local heat and humidity might affect the spread, noting that at the time everyone was learning from ongoing outbreaks in a range of countries (Amundson, 2020p). Superintendents of both county’s school districts said they would issue status updates once a
week, with Beisel adding that “with all of the information flooding in, it would keep people from being overwhelmed” (Amundson, 2020p).

Marion County emergency management director Aaron Greer spoke at the meeting (Amundson, 2020d):

[The] most important thing is to wash your hands or use an alcohol-based hand sanitizer. If you have any symptoms, just stay home. In addition to hand washing, don’t touch your face, one of those things we all have a tendency to do. As for alcohol sanitizer, it needs to be at least 60 percent alcohol. If it is less than 60 percent, it is not effective.

He emphasized this further to first responders specifically, telling them, as the article explained, “to not be part of the problem” and to self-quarantine if they thought they were exposed, adding a specific layer of potential preparedness and response into how first responders addressed the disaster and potential response to others (Amundson, 2020d). Other officials at the state level also pointed to the complexities of navigating multiple disasters simultaneously, even further into the pandemic. As Craig noted when Hurricane Ida made landfall in 2021, “we are better prepared today than we were for Hurricane Katrina 16 years ago, but this time we are dealing with a major pandemic” (Ganucheau, 2021c, p. ___).

While state-level mandates were in place for parts of the pandemic, local mandates also led to variation. Beginning in April, the Jefferson Davis County Board of Supervisors had a local-level order in place that stipulated (Cochran, 2020g)

social distancing of at least six feet and no gathering of 10 people or more must be practiced. All personal care and grooming businesses, including but not limited to, barber shops, beauty salons, spas, massage parlors, exercise studios, fitness centers and facilities, gyms and other similar businesses shall close. All places of public amusement and recreation facilities, whether indoors or outdoors, including but not limited to parks, libraries, children’s party or play facilities shall close. All restaurants, with or without drive-in or drive through services, may only provide take-out, pick-up, delivery or drive-through services. There shall not be inside or outside dining or available sitting areas for the public. During COVID-19, shopping for essentials should not be a family activity. It is recommended that children under 16 years of age shall not enter a public business. A citywide curfew will be in effect from 11 p.m. until 5 a.m. This does not apply for those traveling the area to and from employment. All essential businesses are encouraged to follow CDC [Centers for Disease Control
and Prevention] guidelines.

The board added that violations of these policies, beyond the governor’s state mandates, would be a misdemeanor offense and could be punished with a fine of up to $500 (Cochran, 2020g). Private companies also instituted their own plans related to preparedness and response across the state and region (Mississippi Today, 2020). In other disasters, some local governments, such as the city of Prentiss, also used curfews to help shape response and recovery, such as after the Easter Sunday storms to allow for the clearing of downed trees and power lines, noting that they would assess the curfew daily to see if it needed to be extended (Cochran, 2021m). Such efforts point to regular evaluations and reevaluations by local authorities, communicated with the public in different mediums, about policies in different disasters, even if they were specifically local or varied from state-level requirements.

In other disasters that emerged during the pandemic, local schools were sites for people to drop off or pick up donations, but Ragsdale emphasized that “social distancing practices will be enforced” (Dixon, 2020, p. __). Local officials like Ragsdale also spread the word after disasters like the April tornadoes in media coverage to remind local residents about how to get weather warnings in emergencies more broadly (Cochran, 2020d). Local residents and business owners shared information via their own networks, such as group chat systems that were preestablished before disasters and not specific to disasters (Campbell, 2020a).

In advance of Hurricane Ida, Ragsdale called an emergency meeting with all town, county, and emergency officials, reminding people that for “the first 72 hours everyone is on their own. . . . That gives us time to get everything lined up and get people in here for assistance” (Cochran, 2021j). At that time, point of distribution sites were preestablished, noted to the public as including a range of locations at local schools, fire departments, voting precinct sites, and community centers (Cochran, 2021j). Shelters were open for those who needed them, also often at similar sites, run by the Jefferson Davis County Department of Human Services with assistance from the Red Cross (Cochran, 2021j). As local media reported, in light of the still ongoing pandemic, “once the shelters are open, temperatures will be taken and those with Covid symptoms will be isolated” (Cochran, 2021j).

Different entities, including government and private groups, gathered and redistributed different resources after disasters as well, although public sources sometimes varied in terms of
what was or was not being accepted in terms of such parameters as physical donations or financial donations, pointing to potential problems with what was donated (Cochran, 2020e; Dixon, 2020). Some companies also took steps such as increased sanitation, restricted access, work-from-home options, and tracking the situation to shift response, especially as needed early on in COVID-19 (Mississippi Today, 2020).

Contextually, it is also worth noting that research has shown that increasingly (Gajewski et al., 2011)

there has been increasing disillusionment with “big government” responses to social needs. . . . Critics argued that local institutions were best suited to make decisions about the delivery and content of social services. As a result, NGOs [nongovernmental organizations] and FBOs [faith-based organizations] are an increasingly significant mechanism for enlisting the resources of civil society and to serve as a conduit for government funding. (p. 290-1)

Moreover, they add, “although NGOs and FBOs may be sensitive and flexible, they may lack resources, coordination, accountability, and equity” (Gajewski et al., 2011, p. 392). In their work post-Katrina, Gajewski et al. (2011) identified problems such as a lack of integration between NGOs, FBOs, and local disaster plans; the need to avoid both unmet needs and duplication of services; and the need for support for local organizations by the federal government, including frameworks for collaboration and stronger efforts focused on long-term recovery.

Despite all of this, disaster preparedness and response efforts also had other problems. These problems were often directly due to the hazards themselves impacting officials, emergency responders, resources, and more. For example, in the April 2020 storms, the Columbia Fire Department’s location “on Evergreen Street lost power and had its generator kick in only for the generator to stop working minutes later” and “with no power, the electric doors wouldn’t open so the firefighters had to get on top of the truck and manually pull the doors open” (Campbell, 2020a). Compounding this issue was the fact that another station, the one on Pearl Street, suffered wind damage and “was forced to take precautionary measures at the station before heading downtown to assist” (Campbell, 2020a).
Aid Options for Local Residents and Political Structures

There was a significant amount of information sharing throughout the disasters in 2020 and 2021. People organized and shared relief efforts on their own through social media platforms, such as Facebook, with pages like “Bassfield, MS Tornado Relief Efforts” (2020b). Posts on the page include information about how and what to share, but also pieces that reflect the compounding disaster situation with COVID-19, such as how people were having to stay socially distanced while they waited for food at distribution centers (Bassfield, MS Tornado Relief Efforts, 2020c). As tornado relief and recovery progressed, these sites also began sharing information about COVID-19 testing (Bassfield, MS Tornado Relief Efforts, 2020d). The Jefferson Davis County Mississippi State Extension Service also created a list of tornado resources for people affected when the storms hit, which included resources related to forestry, agricultural damage assessments, self-reporting to MEMA, the Farm Service Agency assistance, MSU Extension Service information and resources, and FEMA assistance (Cochran, 2020h).

The school district Facebook pages in both Jefferson Davis and Marion counties shared information about resources available in the area. For example, locations where food resources could be found were announced on school pages quite frequently, sometimes clearly related to one disaster, sometimes seemingly related to multiple disasters, and sometimes seemingly just routine care. These included a broad range of options: local restaurants and organizations sharing food and hot meals after flooding (JDCSD, 2020g); updates about larger-scale local programs intended to continue over the summer (JDCSD, 2020h); approval of larger aid programs, such as Meals-to-You, in which residents needed to enroll (JDCSD, 2020i); regular intervals of the availability of free milk made possible by donations through private companies (Borden’s) and charities (Save the Children), with distribution happening at a range of different schools over time (JDCSD, 2020j); and free symmer lunch availability at local schools (MCSD, 2021a). Such food options were particularly critical as other routine food resources were temporarily unable to function during some disasters like the pandemic, such as when the Marion County Food Pantry had to “temporarily suspend all operations amid concerns over the coronavirus” in March and April of 2020 (Campbell, 2020d):

It is with great sadness and sorrow that we announce that we are temporarily suspending operations for the food pantry. We are concerned not only with the well being of those that we serve but also of our many volunteers. . . .
Again we are very sorry for having to make this decision but it was one we felt was necessary.

Other nonschool sites were also used as food distribution sites in other disasters during COVID-19. Some churches became distribution sites for boxes of fresh produce and milk for those who needed it in the month after the Easter tornadoes, with boxes available from the U.S. Department of Agriculture (USDA) (Bassfield, MS Tornado Relief Efforts, 2020e). Such distributions continued when resources were available, shared on the page alongside information about mask distribution, once again reinforcing the fact that the area was dealing with multiple phases of multiple disasters simultaneously (Bassfield, MS Tornado Relief Efforts, 2020b).

The school distribution system was also used to share information in general about community mask distribution, with additional information about how they would only be distributed as long as they lasted and the limited number of masks received (JDCSD, 2020k). Mask distribution happened at different points in the county as numbers climbed during the COVID-19 pandemic (Cochran, 2020i). Other officials, such as Bassfield city clerk Kim Mason, described more routine logistical complications that were part of disaster response even outside of compounding events or a pandemic, but which nevertheless continued for local governments in such moments (Broom, 2020a):

> We’re trying to get our locations together where people can donate things for the community. . . . Right now they’re writing down their needs—food, clothes, shelter and tarps. Here, we’re giving out tarps and water as long as supplies last. We’re hoping to have perishable foods. We’ll have a clothes location that is separate. None of the perishable foods will be at City Hall. We’ll have a separate location for food and clothing. (para. 2 and 3)

When the Jefferson Davis County High School donation center closed in May 2020 after the Easter storms, Ragsdale collaborated with Recover, Rebuild, Restore Southeast Mississippi (R3SM) who would also collaborate with the Pine Belt Foundation to “start the long-term recovery process for the county” (Cochran, 2020h). R3SM “coordinates restoration, rebuilding and disaster recovery services to low-income families and individuals living in Mississippi’s Pinebelt”; the Pinebelt Foundation is a 501(c)(3) nonprofit organization “designed to receive gifts to support nonprofit organizations or charitable causes in the Pine Belt” (Cochran, 2020h); see also The Pinebelt Foundation, 2018). The organizations will work to “establish a local long-
term recovery committee composed of volunteers” with a fund “established specifically for disaster recovery following the 2020 tornadoes” (Cochran, 2020h).

R3SM describes three key aspects of what they do as (1) disaster services; (2) affordable housing; and (3) workforce development and training (R3SM, 2021). In their discussion of disaster services, they note that “the Disaster Services program coordinates restoration, rebuilding and recovery services to low-income families and individuals living in Mississippi’s Pine Belt region” (R3SM, 2021). They specifically note that this work includes “assisting eligible residents [...] by delivering high-quality case management while focusing on the processes of assessment, planning, advocacy, linking and monitoring” (R3SM, 2021). This demonstrates both the comprehensive and holistic approach they take to disaster recovery, as well as how the other two components fit into their larger approach, given that the affordable housing program was “created to decrease the gap in safe and appropriate housing for low-income families and individuals, including the elderly and working poor” and the workforce development and training program was developed (R3SM, 2021)

to build knowledge and skills in the areas of building, design, life skills and community services for low-income individuals, creating a prepared, productive and sustainable workforce that will contribute to the improvement of the Pine Belt’s economic and community health, as well as provide a critical resource to support the needs of R3SM’s long term disaster and economic crisis recovery efforts.

This indicates an awareness of the complexities in long-term recovery and their linkages to pre-disaster and post-disaster community problems and daily life experiences.

Local government spaces, such as the Bassfield City Hall in Jefferson Davis County, were also used as assistance staging areas, such after the Easter Storms in mid-April 2020 (Cochran, 2020e). Beyond this, local government officials and agencies also served as a system through which federal aid information or paperwork was shared. For example, early in the COVID-19 pandemic, Marion County emergency director Aaron Greer shared with small businesses that he was able to distribute forms to small businesses who needed to apply to the Small Business Administration (SBA) for aid with lost revenue (Amundson, 2020a). The forms were also available online, through the Marion County Development Partnership, along with other links that businesses might find useful when working from home or in the pandemic in
Ragsdale shared through local media that residents with damage from the early April storms should come to Bassfield City Hall or self-report damages online (Dixon, 2020).

There were also state and federal government-driven aid options available to people, bringing together different levels of government in the process. Early in the pandemic some Mississippi workers became eligible to file for unemployment benefits “based on guidance from the U.S. Department of Labor and Gov. Tate Reeves, the Mississippi Department of Employment Security” modified “existing rules to allow workers to file a claim for unemployment benefits” based on a range of factors, including people who were quarantined, as instructed by medical professionals or government agencies; diagnosed with COVID-19; caring for immediate family members with COVID-19; and/or “laid off or sent home without pay for an extended period by their employers due to COVID-19 concerns” (The Columbian-Progress, 2020d).

The food pantry of Jefferson Davis County’s annual reports reflects changing needs for food assistance during the pandemic. Their 2018 report shows that 20 percent of Jefferson Davis County residents used their services, along with 44.6 percent school aged children in specific aid programs (Food Pantry of Jeff Davis County, 2018, p. 1). By 2020 these numbers were 25 percent for adults and over 50 percent for school children (Food Pantry of Jeff Davis County, 2020, p. 3). In 2021, the percentages for adults had stayed the same, although the percentages for children had dropped to 36 percent (Food Pantry of Jeff Davis County, 2021). In 2020 in their “pack-a-lunch distributions,” the pantry distributed 2,000 lunches and 489 snack bags, “served to children during the JDC library summer feeding program” (Food Pantry of Jeff Davis County, 2020, p. 3). They distributed nearly as many lunches in 2021 as well and tripled the distribution of snack packs, as well as adding a fourth food distribution site (Food Pantry of Jeff Davis County, 2021, p. 4).

Contextually, 2021 was complicated by the fact that the pantry’s “food costs skyrocketed” (Food Pantry of Jeff Davis County, 2021, p. 2). At the same time, they added “healthy snacks three days a week for all students at Dirks-Anderson Elementary School” (Food Pantry of Jeff Davis County, 2021, p. 8). Such complications seem tied to the larger economic issues of the pandemic, but also to interwoven issues of high poverty rates, rising unemployment, and general financial issues, drawing attention to how disasters and compounding disasters do
not only compound each other, but also compound preexisting issues. These issues were widespread, even outside of these counties, as “grocery store food prices increased by 3.5 percent, on average, from 2019 to 2020. For context, the 20-year historical level of retail food price inflation is 2 percent per year—meaning the 2020 increase was 75 percent above average” (Chelius and MacLachlan, 2021). And the impact of these increases were broad: “Prices for every major food-at-home category except fresh fruits increased in 2020” (Chelius and MacLachlan, 2021, para. 2).

It is also not unusual that local organizations emerge from such disasters and continue to help the area—it has happened elsewhere in Mississippi in other disasters and in this area, as with Hearts of Hope after the 2014 tornado in Marion County (Amundson, 2020q). Ensuring that these organizations—which are being used and will continue to be used, especially in compounding disasters—are well resourced, well coordinated, accountable to emergency management systems, and providing resources equitably in counties with varied and vulnerable populations is critical to robust and effective long-term response. This is not an unpredictable response. Similar patterns have emerged with distrust of larger outside organizations, frustration with the red tape and paperwork involved in the large federal system, and a focus and reliance on local and regional aid and other organizations with preexisting ties in the communities (see Trivedi, 2020). There are still gaps in this work—most clearly, emergency management plans from the local county level that may address some of these concerns have been considered. Obtaining those documents to see what has been addressed is an important step for future research.

**VARIATIONS BY HOUSING TYPE**

**Hazard Impact**

Given the disparate population sizes, it is perhaps unsurprising that, as of July 1, 2021, Marion County had more housing units than Jefferson Davis County, but both had remarkably high percentages of owner-occupied housing—81.9 percent in Jefferson Davis County, 79.0 percent in Marion County—both higher than the state rate of 68.9 percent or the national rate of 64.6 percent. Most homes in both counties were single-family detached homes, but both also had significant rates of mobile homes—23.1 percent in Jefferson Davis County and 23.9 percent in
Marion County, as of 2021—both rates down slightly from 2020 numbers (25.1 percent and 25.0 percent, respectively). It is important to pay attention to these housing rates for several reasons.

First, people’s experiences as predisaster homeowners have been complicated by disaster situations that leave them shifting from not owing rent or mortgage payments for multigenerationally owned homes or owing lower amounts for mortgages to owing higher amounts for rents or newly constructed homes after disasters (Trivedi, 2020). Second, with high rates of mobile home ownership, there are additional risks in disasters.

Nonmobile homes were damaged by tornadoes, as reflected in descriptions of debris-covered slabs in local media reports (Amundson, 2020r; The Columbian-Progress, 2020a). Local residents who were in these homes when the tornadoes hit described sheltering in bathrooms as debris came in (Amundson, 2020r). In one tornado, a “cinder block small business building was destroyed, with much of the slab swept clean” (leading to four fatalities) and in another building “the foundation of a wood frame and metal roof cabin was swept clean” (NWS Jackson MS, 2020b, para. 35). Tornadoes caused various degrees of roof damage to a range of different homes; heavy damage causing “most of the walls of an apparently abandoned home” to collapse; and “varying degrees of damage . . . to dozens of structures,” including a church “made of cinderblocks [that] was leveled” (NWS Jackson MS, 2020b, para. 44 and 45).

Mobile buildings, however, fared worse more consistently, with reports of the tornado destroying multiple mobile homes, including depictions of one having “the undercarriage wrapped around the small set of trees that remained standing down wind” (NWS Jackson MS, 2020b, para. 35). Residents described the impact specifically on mobile homes as being particularly bad. In Carson (Jefferson Davis County), one local resident described seeing mobile homes on their sides and described how “this is twice as worse than Katrina” (Amundson, 2020r, para. 7). Even such homes that were not destroyed could be severely damaged. As another local resident described, a tree limb “came through” his mobile home and “blew out the back door” (Amundson, 2020r, para. 9). A third tornado that hit the county destroyed multiple mobile homes (NWS Jackson MS, 2020b).

These discussions demonstrate the variation in impacts based on housing type and hazard. While mobile homes make up a smaller percentage of homes in these two counties than other forms of single-family homes, they are a not insignificant portion—about a quarter of local housing. And they are incredibly vulnerable to such hazards as tornadoes. While nonmobile
housing was also destroyed, researchers have spoken publicly on the different risks involved in each. Auburn University engineering professor David Roueche explained that “why we see such a disparity in fatalities and serious injuries between mobile homes and permanent homes is the way they fail,” adding, as the media article described, that “permanent homes fail from the top down in a tornado. Often, the roof sheathing comes off first, followed by the roof structure, trusses and then rafters. The walls may then collapse”; whole mobile homes “typically begin to fail underneath the home” (Gabriel, 2023, para. 5 and 6). All this combined means that people in mobile homes are anywhere from 10 to 20 times more likely to be killed in their homes during a tornado (Gabriel, 2023; NPR, 2019).

**Impact on Preparedness and Planning**

Discussions about housing types link into larger conversations of compounding disasters, as people discuss being at home or staying at home because they were social distancing because of COVID-19 (Amundson, 2020r). As Croskery et al. (2021) describe, “when there are two perceived threats ongoing concurrently, it provides an emergency management and risk management challenge” (p. 967). Research has found that “there was a significant number of individuals who would choose to not utilize a public shelter during COVID-19 when they would have previously” in hurricane evacuation decision making (Collins et al., 2021, p. E836). In research on tornado sheltering and the pandemic, “there was a general - but not unanimous - viewpoint that the immediate tornado risk took precedent over the pandemic” (Croskery et al., 2021, p. 967). In other words, the hazard and disaster type mattered in terms of perceived risk relative to the risk of the pandemic. People made decisions about their risk from the various hazards at hand and made different decisions depending on the different hazards involved, even when one of the hazards involved was a pandemic. Such literature points to the importance of understanding local and personal risk perception, underscored in spaces like Jefferson Davis and Marion counties.

Broader research has shown that housing type can affect people’s preparedness and planning. Thinking about different housing types differently in preparedness and planning is important, as “mobile homes are particularly susceptible to damage from high winds and are generally less resilient in disasters” than nonmobile housing forms (Kusenbach et al., 2010, p. 81). Kusenbach et al.’s (2010) work demonstrates that many mobile home residents “are
underprepared for storm threats and lack adequate evacuation planning,” leading to a call for how “further research needs to address the clearly nuanced reasons for differential evacuation behaviors among mobile home park residents” (p. 90). However, it also indicates a potential need for more consideration and communication of such residents and their different needs in emergency management, preparedness, and planning efforts.

In the aftermath of Hurricane Katrina, the state of Mississippi worked towards planning for housing recovery, leading to the Mississippi Alternative Housing Program and alternative options for short- and long-term housing in disaster recovery periods (Hagerty Consulting, 2023; Trivedi, 2020). While this preplanning for disaster recovery is not based on predisaster housing type, such efforts do point to an understanding of the variation of housing types by cultural need and risk, with the cottages more readily matching pre-Katrina coastal housing styles, while also being more hazard resistant (Trivedi, 2020).

**Impact on Response and Recovery**

Local and regional organizations have been on the ground helping replace housing, sometimes by type, as needed. For example, three families who lost their mobile homes in the April 19 Marion County tornado had their homes replaced by Columbia Strong (Campbell, 2021). Columbia Strong is a nonprofit organization specifically dedicated to providing recovery services for individuals and families affected by disasters in Columbia, Mississippi (Great Nonprofits, 2023).

At the state level, MEMA’s Mississippi Disaster Housing Task Force has shared information efforts to replace homes for people who owned a mobile or single-family home in specific disasters (MEMA, n.d.a). This first listed program clearly focuses on homeowners versus renters, but also specifies particular housing types as part of the disaster response and recovery process: mobile homes or single-family homes. The larger discussion they offer does also point to other options for assistance, including loans and grants for repairs to single-family homes from various agencies, guides for rebuilding, and mortgage assistance and insurance of various forms (MEMA, n.d. a). There are also additional programs further down the page, with information targeted at temporary or permanent mobile homes for use for housing or business in response and recovery periods.
However, there is information about other programs on the page, including information about a Multifamily Housing Priority Access, a Housing Trust Fund Program to “assist with the development of affordable rental housing units serving housing with a maximum income of 30 percent AMI”, program waivers for programs through the U.S. Department of Housing and Urban Development (HUD), public housing voucher information, and assistance for unhoused or homeless individuals or families (MEMA, n.d.a). Overall, however, much of the information is focused on homeowners of various forms, a pattern that follows response to other disasters in other parts of the state (see Trivedi, 2020). What rental help is available is often limited in different ways. For example, the HUD website on Disaster Relief and Emergency Assistance for Mississippi has a link that redirects to “HUD-funded rental assistance,” one of only two links on the page focused on rental assistance, alongside “search available rental housing—FEMA Housing Portal” (HUD, n.d.a). The “HUD-funded rental assistance” page lists two broad categories of rental assistance: (1) subsidized apartments for low-income tenants and (2) public housing and housing choice vouchers (Section 8 housing) (HUD, n.d.b). Other rental assistance programs, such as the Multi-family Housing Rental Assistance Program through USDA, are also focused on helping low-income tenants (USDA, n.d.).

The link “search available rental housing—FEMA Housing Portal” routes to FEMA’s page on “Assistance for Housing and Other Needs” (FEMA, 2023e). This site clarified that FEMA can provide a range of types of assistance under FEMA’s Individuals and Households Program, which itself is broken down by housing type. Homeowners and renters may be eligible for financial assistance or “a temporary housing unit, if approved for the disaster, when you are not able to use rental assistance due to a lack of available housing resources” (FEMA, 2023e, para. 5). This response can, however, raise additional problems. By moving both previous homeowners and renters into what may already be a market of limited rental units, strain may be put on the system, potentially driving up costs and/or limiting access for existing renters (see Trivedi, 2020, for further discussions of this issue in other Mississippi disasters). In addition, both homeowners and renters may be eligible for “money for temporary housing while you are unable to live in your home, such as rental assistance or reimbursement for hotel costs” (FEMA, 2023e, para. 5).

Homeowners specifically may be eligible for additional forms of aid, including financial assistance towards making a home “safe to live in” if it is a “household’s primary residence” and
can include things like “privately-owned access routes, such as driveways, roads, or bridges” or “money for specific hazard mitigation measures to help eligible homeowners repair or build stronger, more durable homes” (FEMA, 2023e, para. 5).

**SHORT- TO LONG-TERM RECOVERY**

Longer-term in the recovery process, the Jefferson Davis County School District was about to get insurance funds (“just under $300,000”) to repair sports facilities destroyed in the Easter Sunday tornadoes, enough to “get the facility repaired and usable again,” according to the county engineer Les Dungan (Cochran, 2021n). But this also spurred discussion of whether this was a moment to transform the facilities more broadly. As Dugan noted, “a comprehensive plan to bring [the] facility up to a much higher standard would be an option, but it is also an option that is going to cost money” (Cochran, 2021n). Others involved in the process added their thoughts: Student support services director Jason McLeod noted that “our investments now determine our success. If we don’t invest properly, all of the communities around us are going to start getting all the activities that were previously here” (Cochran, 2021n). District 1 supervisor Corky Holliman noted that “we would like to work with the school and build something we could all be proud of and get maximum usage out of and now is the time to do it since we are starting over” (Cochran, 2021n). District 3 supervisor Demarrio Booth noted that “we will do the first phase, then if we need to come back with something different, we can have it laid out and planned out like it needs to be” (Cochran, 2021n). These discussions reveal the larger context in which the disasters and recovery took place. Clearly rebuilding what had been lost was a top priority, but residents were also thinking carefully about how such resources could be rebuilt in a way that would be useful in the future versus replacing exactly what had been lost.

Returning to schools after the initial COVID-19 period prompted clear commentary from school officials about short- versus long-term needs. Jefferson Davis County superintendent Ike Haynes described the return on September 1, 2021 (Cochran, 2021h):

The virtual process has allowed us to safely take a step back and decrease our positive COVID numbers, quarantined numbers and care for the teachers and students that were stricken with the virus. . . . Let’s face it regardless of how we instruct our children, it must be rigorous, equitable, accessible and relevant. The only way to accomplish those goals is through in-person learning. . . . I want to be clear and straight. Our schools are the safest place
for our students to be day-to-day not only from a community spread perspective, but also from a teaching and learning perspective. . . . It may take years for the threat of COVID-19 to be removed from our lives, but this is our only chance to educate our boys and girls.

Such discussions demonstrate the issues at hand not only in compounding disasters, but also between short- and long-term disasters, with efforts to balance varied needs and risks at different levels of life, culture, and government.

As Ragsdale described a year after the April 2020 tornadoes: “Recovery is still an ongoing process. . . . It’s a long process. It’s going to take several years. Some families have rebuilt. Some are still trying to figure out a way” (Vicory and Rowe, 2021, para. 13). People’s experiences with recovery, particularly with comparisons to much larger-scale disasters such as Hurricane Katrina, can shape their perceptions of how long the process will last. As nearby Jones County deputy coroner Ernest Hollingsworth described, “It was the total destruction that struck me. . . . It was like Katrina but on a smaller scale—in terms of total devastation, nothing left” (Vicory and Rowe, 2021, para. 5). Comments like these also emphasize the importance of local perceptions and contexts in considering disasters—while the April tornadoes, for example, received relatively minimal national attention, they had a massive impact at the local level.

The state of Mississippi also uses Long-Term Recovery Committees (LTRCs), each “a cooperative body made up of representatives from community faith-based groups, local organizations, and other organizations working to assist individuals and families as they recover from disaster” (MEMA, n.d.b, para. 1). As MEMA describes, “each LTRC is unique and reflects local needs, available resources, cultural diversity, leadership style, and community support” but “can use the state’s Disaster Assistance Repair Program,” enabling them to “withdraw up to $250,000 to purchase building materials only,” as the committee itself is responsible for labor (MEMA, n.d.b, para. 1). In the aftermath of the April 2020 tornado, an LTRC formed involving “representatives from the Mississippi Emergency Management Agency, The Pine Belt Foundation and R3SM,” making funds “available on a case-by-case basis,” while also seeking donations and volunteers to be able to do more (Robertson, 2020, para. 2 and 3). As executive director for R3SM, Mavis Creagh stated, “some people might not have been able to recover on their own and the majority of the people that we assist are elderly or disabled or they’re small children in the household and when a storm or disaster happens, what do you do?,” adding
“we’re thankful to everybody who has stood up, that has partnered for the community and we’re just very thankful and grateful and we want to see them recovered and better than ever” (Robertson, 2020, para. 5).

With each of these threads, there are clear undercurrents: short-term immediate needs balanced against long-term needs and wants; funding and assistance to recover and rebuild from the impact of a hazard and disaster, balanced against the need and desire to improve what is available for local residents and what will happen next; local perceptions and ideas balanced against outside and big-picture, top-down views; the direct effects of a disaster balanced against and in context of larger issues in an area that may or may not be seen as related to those disasters. Each of these issues take on different scales of time and space, but clearly root disaster response and recovery in long-term time frames and broader social, cultural, political, and economic parameters. Each also points to the deeper need to consider disasters, and especially compounding disasters, as part of ongoing processes in particular local and regional contexts. Even large-scale disasters, such as COVID-19 or large storm systems that move across a quarter of the United States, still, ultimately, affect people and places on a very individual and local scale. Considering responses to them and planning long-term recovery must consider those scales.

**COMPOUNDING DISASTERS**

**Compounding Effects in Jefferson Davis and Marion Counties**

In both counties, there was a clear overlap of disasters across time and space. The clearest example of this is when COVID-19 continued during such events as the April tornadoes or other disasters. But other hazards and disasters outside of COVID-19 both overlapped in time and space and had cascading effects in the counties. For example, in both counties, local residents and officials found themselves simultaneously responding to a local April tornado and offering assistance to the other county. Such efforts are an example of how within both counties there was also a strong emphasis on the local, referring here not only to within the county itself but also to the local region (and thus including the other county). In some ways these patterns reflect efforts to describe environmental or economic regions, but perhaps what comes closest to a clear sense
of what this means is with local disaster recovery groups like R3SM, where local recovery efforts are rooted in the people and place around the area.

There were also, however, distinct differences involved in some of the ways in which disasters compounded. In part this is because of the different geographies and populations of the different counties. Just as no two hazards are identical, so too, no two populations, no two geographies, no two environments are identical. These nuanced differences of who and where these places are inevitably led to differences in the lived experiences of compounding disasters and how they played out—who was affected, how they were affected, and their depictions of their experiences. There is not always an explicit pattern to such efforts, although there are some pieces: Marion County’s river plays a role in its being more flood prone; Jefferson Davis County’s population has a higher percentage of Black residents, while Marion County’s has a higher percentage of White residents—these play a role in local leadership, state leadership, national leadership, and realities and perceptions of disaster aid, response, recovery, and more; Jefferson Davis’s school district makes more use of its social media to spread information about disaster aid options might make a difference in how people were aware of such options in the face of compounding events rather than just isolated ones (further research will be needed).

**Overlaps Between Disaster Preparedness, Response, and Recovery**

When tornadoes went through Jefferson Davis County in April 2020 during the COVID-19 pandemic, there were concerns about the conflicts between potential risks from COVID-19 and the storms and tornadoes occurring. In immediate response, “the threat from the storms coincided with the dangers from the ongoing coronavirus pandemic. Officials in Mississippi said most county safe rooms were equipped with hand sanitizers and advised to still wear masks in the rooms” (Chinchar et al., 2020). MEMA spokeswoman Malary White noted encouragement for people to “social distance as best as possible while inside the safe room,” something reflected in people’s accounts from what was happening in different shelters across the state (Chinchar et al., 2020). Here, preparedness and response for one event overlapped with response to another.

In longer-term sheltering efforts, such questions also emerged. The Southeast Mississippi chapter of the American Red Cross responded to provide shelters for people who needed them, but after talking to the executive director, John McFarland, “the COVID-19 crisis means making traditional shelters available will be a last resort” (Munz, 2020). McFarland clarified that “what
we’re doing if (residents) have no place else to go, we’re putting them in hotels. . . . If (the counties) have to open shelters, we’ll open them. But because of the COVID-19 crisis, spacing becomes an issue. It’s a unique challenge for us” (Munz, 2020). He also clarified some of the steps the Red Cross had in place, even pre-pandemic, for running shelters during a pandemic, and put into place: “At first, it was a matter of increasing spacing at shelters and making sure everybody had masks, gloves and wiping down every surface anybody touches immediately. . . . As we talked about it some more, we said, ‘All right, what we really need to do is not use shelters if at all possible and wherever we can, let’s move people into hotels’” (Munz, 2020). In the context of COVID-19 specifically he further clarified that (Munz, 2020):

we can’t just take them and drop them off [...]. We’ll still have to manage them. Still make sure people have masks. We’ll be delivering food to each room. We have a long list of new protocols we have to follow. This is the first time we’re having to exercise that plan. It may not be perfect. It’s complicated. We’re talking about several hundred homes. We’re hoping the majority won’t require shelter, but those that do, we’re already in the process of moving them into hotels or motels. As we go through the coming days and get eyes on a lot more of these homes, we’ll have to decide what to do next.

Here response in the short- and long-term for one disaster became more complicated, overlapping with ongoing response for another disaster and leading to an ongoing series of transformations, adapting as needed to both simultaneously.

On a statewide level, these compounding disasters also led to people violating recommendations for one disaster in their attempt to respond to another. As one local media article described, “despite Gov. Tate Reeves’ shelter-in-place order, Wendy Slay of Jones County just couldn’t help herself. Several communities in her county were hit hard by Sunday’s tornadoes and she wanted to help” (Ciurczak, 2020). Such efforts and feelings are somewhat contradictory—they go against what emergency managers and officials may want or need for response, particularly in compounding disasters with risks of increased exposure, but they also reveal deep personal local networks that serve as support networks.

Such issues were also complicated by the potential need for medical assistance during a pandemic. As was noted in another region during Hurricane Ida, April LaFontaine of Gulfport Memorial Hospital said that people “want to do the right thing and want to do the neighborly thing and help their neighbors clean up” adding that “but if people have COVID, or suspect they
have COVID, the more neighborly thing to do is not share the love in that manner,” also noting that hospitals were “full before the hurricane, and we’re still full now” (Dinatale and Stribling, 2021). Here there were efforts to preemptively dissuade people from helping with response and recovery in one disaster to mitigate higher response needs in another.

In their research on the issue, Shultz et al. (2022) further described the situation during and after Hurricane Ida across the region, and specifically in Louisiana and Mississippi:

Medical wards had been converted to COVID-19 units to accommodate the surge and there were essentially no available ICU beds at any hospitals. Hurricane Ida's devastation added to these strained healthcare systems. Hurricane damage and power outages forced healthcare facilities to evacuate patients, shift to generator power, or both. The situation was most precarious for COVID-19 patients requiring mechanical ventilation or oxygen. Evacuation of COVID-19 inpatients had to be performed swiftly while ensuring that infection control measures were taken to prevent spread of the highly transmissible SARS-CoV-2 Delta variant that was predominant nationwide. (p. 1)

Further complicating this, here and in general, was the fact that “hurricane population protection rests on gathering people together,” while “in contrast, COVID-19 population protection rests on keeping people apart” (Shultz et al., 2022, p. 2). Inherently, for multiple disasters at work in the region during these years—hurricanes, floods, tornadoes, COVID-19—steps in preparedness, response, and recovery were contraindicated. In some cases, this could be worked around with enough resources to do things like put individuals and families in separate hotels rather than a shared shelter. But without additional resources, such efforts became a last resort.

Relief efforts also became a space where the two counties assisted one another when one was more severely affected than the other. For example, when Jefferson Davis County and other nearby areas were far more severely affected by the Easter Sunday tornadoes in 2020, there were efforts in Marion County to “help out its neighbors” with donation drives (Amundson, 2020s). Supplies and volunteer efforts were focused on helping those who needed it in Jefferson Davis and other counties. When a tornado struck Marion County later the same month, what was left from the supplies and the system already in place were refocused as a new distribution center for people in the county who needed it (Amundson, 2020i). Through all of this together, “the employees working at the distribution center are those who have seen their primary responsibilities paused by the coronavirus, such as school resource officers and municipal court
workers” (Amundsun, 2020i). Here, the very existence of one disaster facilitated additional response to another.

LARGER CONTEXTS IN MISSISSIPPI AND THE GULF COAST

Tying Disasters Affecting Both Counties to Larger Contexts

As rates of and responses to COVID-19 changed, some decision making happened at the local level, but some happened at the state level, leading to clear connections between the counties, state, and region. For example, for extensive periods, rather than being strictly county-level decisions or one uniform state-level decision, mask mandates were issued via executive order by Governor Tate Reeves for different counties, with counties being added to or removed from the orders and shared publicly via those orders, press conferences, and media coverage (e.g., see Broom, 2020b). These executive orders specified that counties were “identified as regions that are at higher risk for transmission of COVID-19” and thus need “additional jurisdictional specific measures . . . to disrupt the spread of the COVID-19 virus within those Counties to address and further limit person to person contact and other health and safety measures” (Office of the Governor, 2020a, p. 2).

Various subsequent executive orders changed this list of counties at different times or extended the duration of the order (e.g., see Executive Order No. 1494, Office of the Governor, 2020b). Other executive orders during the same time period modified the state’s regulations in other ways—for example, allowing various spaces to reopen or remain open at various capacities (see Executive Order No. 1496, Office of the Governor, 2020c). On March 2, 2021, Governor Reeves signed Executive Order No. 1549, which meant that these preceding executive orders were “rescinded and shall stand repealed,” effective as of 5:00 PM local time on March 3, 2021 (Office of the Governor, 2021a, p.1). The new order encouraged face coverings “while in public spaces whenever it is not possible to maintain social distancing from persons not in the same household” but did not require them except in specific circumstances, such as in schools (Office of the Governor, 2021a, p. 2).
Feeling Forgotten

There is a history of residents in Mississippi affected by disasters feeling forgotten, fearing being forgotten, and being forgotten by various outside groups (Alfonseca, 2021; CBS Mornings, 2023; Trivedi, 2020; The Vicksburg Post, 2019; Zhu, 2019). This continued in the 2020 and 2021 disasters. In the aftermath of the early April 2020 storms, for example, people saw irregular patterns in aid approval and distribution. As of mid-May 2020, only three of the counties had begun receiving the promised public assistance, including Jefferson Davis County, enabling them to begin removing debris, while other counties waited. At Governor Reeves’ request, FEMA had expedited the initial assistance for those counties and expanded what was initially allowed with comments to the media noting that other requests were still under review (Oehrli, 2020). Such patterns and responses left residents in the larger affected areas frustrated with the government’s response and feeling forgotten (Oehrli, 2020).

Even in counties where people began receiving the promised public assistance, such as Jefferson Davis, residents felt forgotten at some points; these feelings were compounded by larger personal and local losses. One local resident whose home had been destroyed described her situation (Broom, 2020c):

“I lost everything I have,” Flowers said. “My brother lost everything he has. My son lost everything and nobody has come down here to see what we need. My friends took up enough money for me to stay in a hotel for five days, but what am I going to do after that? I can’t go live with any of my family because they all lost their houses.” As she talked about the grim situation she faces and voiced frustrations over what she views as a lack of response from the state to help her and others in the county, a loud crash came from inside her home as more of the structure gave way. “We need help, now,” Flowers said. “I done lost everything I had. They need to come to Jeff Davis County and think of us like they do everyone else” (para. 20 to 23).

Such stories illustrate how people’s experiences of feeling forgotten are not simply a product of whether their county meets federal standards for disaster aid or not but come from a more emotional, social, cultural, and experiential space—how they perceive and live the process of the disaster, how others respond to it, and how they feel seen or unseen in the aftermath of the event. Such feelings may not be universal within a county or group; however, recognizing that some
people feel forgotten in the aftermath of a disaster is critical to understanding their responses and needs.

**Social and Cultural Contexts**

In a move reflecting the local social and cultural value many place on such sports as American football, Governor Reeves re instituted a statewide mask mandate in August 2020, including for school children, with the comment that “I want to see college football. The best way for that to occur is for us all to realize that wearing a mask, as irritating as that can be, and I promise I hate it more than anyone watching today, is critical” (Judin and Pittman, 2021; see also Trivedi, 2017, for a larger discussion).

Early in the pandemic, there was a demonstrable differential impact of COVID-19 on different populations in the state. On April 8, 2020, the Mississippi State Department of Health (MSDH) released more detailed demographic information on the pandemic, noting that while Black residents of the state were about 38 percent of the population, they made up 52 percent of all COVID-19 cases and 71 percent of COVID-19 deaths. In contrast, White residents made up about 59 percent of the state’s population, 35 percent of cases, and 29 percent of deaths (Judin and Pittman, 2021). A few weeks later, women were dying more than men, with MSDH data later showing that Black women are “most significantly affected” (Judin and Pittman, 2021). Later in the pandemic these numbers would invert, with White residents having a higher percentage of cases and deaths (Judin and Pittman, 2021). Mississippi State health officer Dr. Thomas Dobbs commented to the Mississippi Free Press that he believes the inversion was tied to discussions with specific groups: “We’ve worked to make sure the Black community understands where the risks are. Big parts of the white community, especially in areas that are not heavily affected, have not been as compliant and engaged in masking and social distancing, so I think that makes a big difference” (Judin and Pittman, 2021). Local officials in Jefferson Davis County, such as District 3 supervisor Demarrio Booth and Jefferson Davis County emergency management agency director Jocelyn Ragsdale, worked with efforts to distribute masks to residents (Cochran, 2020). This meant it was not a purely top-down outsider-in effort, but one supported and driven by local leaders in the county.

Racial disparities also emerged as vaccine rollouts began, with January 2021 numbers showing that Black residents across the state made up just 15 percent of vaccine dose recipients
It took until March for that number to reach 38 percent, equivalent to the percentage of Black residents in the state (Judin and Pittman, 2021). Broader research has investigated racial (and ethnic) differences in vaccine uptake and other COVID-19 mitigation and response steps, tied to historical and cultural patterns of inequity and structural violence (see Bogan et al., 2022; Jimenez et al., 2021; Webber et al., 2022).

**Local versus State versus Federal**

Varied forms of aid and assistance emerged in responses to different disasters in Jefferson Davis and Marion counties, drawing distinctions between local, state, federal, and other forms of aid, but also showing how various levels of government engaged with other aid services.

Local-level government offices and officials worked to distribute information about and actual physical aid after disasters. For example, local school systems shared information about community mask distribution, with additional information about how they would be distributed only as long as they lasted and the limited number of masks received (JDCSD, 2020k). Local government spaces, such as Bassfield City Hall in Jefferson Davis County, were used as assistance staging areas, such as after the Easter Storms in mid-April 2020 (Cochran, 2020e).

The federal government also offered aid and shared information about it in different ways. State officials served as intermediaries and information sources, sharing information about disaster aid opportunities available to residents and businesses. For example, U.S. senator Cindy Hyde-Smith of Mississippi drew attention to aid options available to residents from the USDA, including the USDA Livestock Indemnity Program; the USDA Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program; the USDA Emergency Conservation Program; and the USDA Emergency Forest Restoration Program (Office of Cindy Hyde-Smith, 2020). Two things are also important about these comments and announcements: First, while Jefferson Davis County received a federal disaster declaration, Marion County did not. However, Marion County had seen forest damage as well, per the Mississippi Forestry Commission, making it part of the larger impact (Office of Cindy Hyde-Smith, 2020). Second, Senator Hyde-Smith herself emphasized that “this damage adds to the hardship associated with COVID-19, low prices, trade disputes, among others,” contextualizing the compounding nature of the events (Office of Cindy Hyde-Smith, 2020).
Some federal aid options were layered across various disasters—including another USDA program, Farmers to Families, which had begun to help farming families during the COVID-19 pandemic but turned to also help them during the April tornadoes—showing the ways in which aid efforts were also compounded (Beveridge, 2020). USDA had also provided assistance to “agricultural producers who are certified organic or transitioning to organic” during the pandemic, funded through the Coronavirus Aid, Relief, and Economic Security (CARES) Act (The Prentiss Headlight, 2021b). For residents and business owners in both counties affected by Hurricane Ida, the Internal Revenue Service (IRS) announced tax relief options that included postponing “certain tax-filing and tax-payment deadlines,” although specific payments tied to previously extended returns were still due (IRS, 2021a,b). Similar announcements appeared for other disasters, such as the April tornadoes (IRS, 2020).

A wide range of nongovernmental organizations was on the ground in the aftermath of the disasters, including larger organizations often involved in disaster response, such as Samaritan’s Purse, the United Methodist Committee on Relief, and the Salvation Army. The Red Cross placed people in hotels rather than traditional shelters because of COVID-19. The Salvation Army distributed food to those in need and provided daily food at the Jefferson Davis County High School (Cochran, 2020e; Dixon, 2020). Other outside organizations also got involved. Members of the Louisiana Cajun Navy had joined relief efforts, although it is worth noting that such responses can cover a variety of scales and responders (Bassfield, MS Tornado Relief Efforts, 2020f). Smaller-scale disaster organizations, such as New Life Disaster Relief, also came into the area (Bassfield, MS Tornado Relief Efforts, 2020g).

But, as is not uncommon after disasters, more local organizations also worked to get involved in distributing aid. These were often specific to disaster and location. For example, after the early April storms (Easter Weekend), Extra Table, “Hattiesburg restaurateur Robert St. John’s non-profit organization, which provides healthy foods to food pantries, will be setting up a pop-up grill as well as delivering food to displaced and low-income residents in tornado areas” (Ciurczak, 2020). Other local businesses in the counties, such as Bassfield Depot, fed people in the area as well (Dixon, 2020).

Local faith-based organizations were also involved in a variety of ways, including a range of churches of different denominations providing resources, such as lunch for community members and volunteers (e.g., see Ciurczak, 2020). Local churches were also involved in other
relief efforts, working to coordinate donations from across the state and the United States and ensure they were distributed appropriately (Beveridge, 2020). Some of these efforts were extensive over time, including L. L. Blount Memorial United Methodist’s work; in April, the church began distributing food, clothing, furniture, and other supplies to those affected by the tornadoes and continued in December (Beveridge, 2020). Some churches even began, over time, specializing in specific areas of aid (Beveridge, 2020). For example, L. L. Roberts Methodist Church served as a MEMA disaster assistance center, spanning efforts between local churches and state agencies (Bassfield, MS Tornado Relief Efforts, 2020a).

Local churches and companies sometimes collaborated. For example, Jones Companies (a local private equity company) fed workers trying to clear debris after the April tornado that affected Marion County, but did so at a local church, Hurricane Creek Baptist Church (The Columbian-Progress, 2020a). In the February 2021 winter storms, the Vine Church opened a shelter where “different organizations helped hand out hot food, gloves, blankets and hats to combat the bitter cold” (Amundson, 2021a).

In both counties, local public schools served as systems for distributing a range of aid options to residents. These were not always directly school-administered aid, such as school lunch programs. Instead, a range of other donated options were distributed to school children in need and their families with COVID-19 and other disasters. Marion County Schools began sharing information about grab-and-go meals in March 2020, and Jefferson Davis County Schools began sharing information about Trunk and Go meal delivery and pick-up options on their Facebook page in April 2020 (JDCSD, 2020f; MCSD, 2020a).

Political Issues at Different Levels of Government

One of the overarching issues that linked various levels was the interweaving nature of economic impacts of disasters and political responses to those impacts. For example, COVID-19 quickly demonstrated a massive economic impact on people through such issues as changes to employment opportunities (Mississippi Today, 2020). There were clear federal-level responses implemented quickly, with congressional efforts to establish a relief bill to be signed into law by then-president Donald Trump (Mississippi Today, 2020).

There was also a range of transformations in terms of what was open or closed. When government offices closed with a state mandate in March, it placed limitations on in-person
access to unemployment offices but kept access by phone or the internet open (The Columbian-Progress, 2020e). Driver’s licenses and ID cards could be renewed in some ways, but testing for new versions was not always available (The Columbian-Progress, 2020e). Utility companies were not allowed to disconnect services, specifically in response to the COVID-19 pandemic, including water, sewer, electricity, and gas, tied to Governor Reeves’ declaration of a state of emergency. However, customers would “still owe on outstanding bills and for services provided over the 60-day period” (The Columbian-Progress, 2020e). Courts at all levels modified the way they operated, including numbers of people allowed in, where witnesses could come from, jury summons, and drug testing (The Columbian-Progress, 2020e).

Longer term, when it was determined that “a 2016 state law that provides $100,000 death benefits to first responders who die in the line of duty . . . does not allow payments to families of responders who die from COVID-19,” it resulted in “an outcry from Mississippi law enforcement and others, as numerous first responders have died from the pandemic,” particularly in light of the fact that federal laws were changed in 2020 to allow for such payments and state house speaker Philip Gunn “said a simple change to wording in the law would allow” for the payments (Pender, 2021).

Governor Reeves issued Executive Order No. 1470 in April 2020, shutting down elective surgeries to preserve resources that would “be depleted by surgeries and procedures that are not medically necessary to correct a serious medical condition or to preserve the life of a patient, contrary to recommendations from the President’s Coronavirus Task Force, the CDC, the U.S. Surgeon General, and the Centers for Medicare and Medicaid Services” and “would hinder efforts to cope with the COVID-19 disaster” (Office of the Governor, 2020d, para. 6 and 7). However, in a larger national political discussion, the order drew criticisms that it restricted abortion access in the state, drawing comments from the president and CEO of Planned Parenthood Southeast and comments to involved lawyers from U.S. district court judge Carlton W. Reeves (of no relation to Governor Reeves), although abortion access continued in the state (Pittman, 2020c).

Later that month, Reeves announced other changes in COVID-19 responses, allowing for businesses to reopen with limited capacity (Pittman, 2020d). With this came comments regarding the larger pandemic, noting that “this disease has not hit every American fairly, and the economic damage has not hit every American fairly,” adding that “Wall Street and Hollywood
will be fine. Mississippi small businesses and workers are not. That’s who has been asked to shoulder the country’s burden. It’s not fair, and it’s not right. We are starting to reopen our economy” (Pittman, 2020d). He described the changes as “not a light switch that only goes on and off. It’s a dimmer. . . . We can take measured steps to make life better” (Pittman, 2020d).

The state had a variety of mask mandates at different levels issued and rescinded throughout 2020 and 2021, even as public health researchers and medical professionals questioned the moves (Côtè et al., 2021; Pittman, 2020e). However, largely after the initial statewide order was lifted, mask mandates operated on a county-by-county level, even when at times half the counties in the country were covered simultaneously by county-level mask mandates (Pittman, 2020e). Medical experts sent a letter to Governor Reeves in fall 2020, noting that (Henderson, 2020, see paragraphs 1 and 4 of the letter itself included in the tweet cited):

> the COVID-19 crisis continues to plague our state. Sadly, Mississippi’s healthcare system is again overwhelmed by COVID-19, just as it was this summer. The data shows that the statewide mask mandate you instituted on August 4 worked well, and we are asking you to institute it again.

They added that:

> the upcoming winter is going to be difficult for Mississippians. We know that wearing masks will help us continuously to grow our economy, allow kids to remain in school, parents to go to work, and most importantly, protect all Mississippians from this deadly virus. Physicians across Mississippi ask that you reinstitute a statewide mask mandate.

Reeves responded publicly to related questions in a press conference, noting that “we are all making decisions based upon an ever-changing environment” and that “there is no one thing I as a leader or that we as Mississippians can do to make this go away” (Pittman, 2020e). Medical professionals countered that COVID-19 rates had dropped after Reeves had instituted a mask mandate over the summer (Pittman, 2020e). Despite these fluctuating mandates, he also continued to wear a mask and advocate for mask wearing, with comments such as “if you go out in public, wear a mask. Please. Wear a mask” (Pittman, 2020f). The masks themselves sometimes became a political messaging system, with Reeves pictured in bright red masks that read “Make America Great Again,” a Trump campaign slogan (Pittman, 2020f).
State medical officials also sometimes expressed frustration with decision making regarding COVID-19 response and related outcomes, as when Dobbs stated (Pittman, 2020f):

We do know masks work. . . . Not only do we have evidence pre-COVID, but we have improving evidence about how it works collectively. . . . Why in the world does Taiwan, a country of 23 million people, only have a few hundred cases and a handful of deaths and a roaring economy? . . . It’s because they’re wearing a mask and they’re not having social gatherings and they’re staying away from one another other than when they’re working.

He also added “We’ve chosen the wrong path. . . . It didn’t have to be this way” (Pittman, 2020f). Dobbs had been named chair of the Mississippi Coronavirus Preparedness and Response Planning Steering Committee by Reeves in early March 2020 (Judin and Pittman, 2021).

Throughout the summer of 2020, at a state level, there was an ongoing simultaneous pattern of Reeves reopening spaces across the state, Dobbs predicting higher rates and increasingly difficult medical care access, COVID-19 numbers rising, and Reeves extending additional liability protections for hospital and health care professionals (Judin and Pittman, 2021). The political undertones to such conflicts are underscored for some by Reeves’ appearances at large political events without a mask (Judin and Pittman, 2021).

Criticisms also flew back and forth after President Joseph Biden’s election and particularly after he characterized loosening of mask and other restrictions as “Neanderthal thinking,” which Reeves would comment on, including in ways to promote decreasing COVID-19 numbers and vaccinations with tweets that noted “Neanderthals 1” to “Biden 0” and “get a shot and live your life Mississippi!,” while also noting that “data doesn’t play politics. Sometimes POTUS Biden does” (Judin and Pittman, 2021; Reeves, 2021a,b).

When the November 2020 election loomed in the pandemic, Secretary of State Michael Watson said that there were no plans to require masking at polling stations, noting that “no one can be forced to wear a mask to vote. That is unconstitutional,” although provisions were made for people to be allowed to vote curbside (Pittman, 2020g).

With other disasters, state officials spoke openly regarding the specific impacts of disasters on the counties. For example, after the Easter Storms in mid-April 2020, Governor Reeves toured the area and met with local officials, commenting that (Cochran, 2020e):
I am here to offer a special thank you to all of the people from Jefferson Davis County and the surrounding area. . . . These storms that hit Mississippi on Easter Sunday, two of which came right through Jefferson Davis County, were devastating. We have lost some fantastic Mississippians and we also lost an awful lot of property. What I want everyone here to know is that even though we got knocked down and took a tremendous punch in the mouth, we are going to get back up and come back bigger, better and stronger.

While local officials were more likely in media comments to link together compounding disasters, Reeves did not do so, but he had numerically fewer comments on this specific area overall.

**Economics**

As of 2021, per the MSU Extension Office, Marion County currently had 5.3 percent unemployment with a median household income of $34,286 (Barefield et al., 2023a). While unemployment was comparable with that of the state (5.5 percent), median household income was below the state’s level, which was $49,111, and the nation’s level, which was $69,021 (Barefield et al., 2023a). At the time of writing, unemployment for Jefferson Davis County was 7.7 percent, while median household income was $34,771 (Barefield et al., 2023b). In Marion County, the poverty rate was 22.9 percent, while it was 25.2 percent in Jefferson Davis County, compared with 19.2 percent in Mississippi as a whole and 12.8 percent in the United States as a whole (Barefield et al., 2023a,b). In short, median household income was lower for Jefferson Davis and Marion counties than it was for the state (or the nation), while poverty rates were higher—even twice or nearly twice as high as the nation. Thus, even as unemployment settles at a rate more comparable to the state, economic issues remain.

Jefferson Davis County lists local government as a “top employment sector,” followed by specialty trade contracting and crop production (Barefield et al., 2023b). Marion County lists heavy and civil engineering construction, local government, and then food services and drinking places (Barefield et al., 2023a). Thus, both counties have strong employment with local government, although it remains likely that many people commute out of these counties for work. As of 2020, Marion County had approximately 576 firms within the county, which employed 7,732 people at a combined annual payroll of $369,728 (Barefield et al., 2023c). Meanwhile Jefferson Davis County had just 127 firms, employing 1,228 people for an annual
payroll of $60,868 (Barefield et al., 2023d). Generally, “firms are identified by the unique Employer Identification Number (EIN) issued by the IRS” in various data calculations (BLS, 2005).

**COVID-19’S IMPACT ON PREPAREDNESS, RESPONSE, AND RECOVERY**

In July 2020, Governor Reeves and MEMA put into motion the Mississippi Emergency Relief Program to manage and distribute the nearly $70 million that MEMA received from the CARES Act via the Mississippi Legislature’s House Bill 1799 and Senate Bill 3047 (MEMA, 2020a, p. 4). Of this, $68 million was claimed by counties and municipalities, and the remainder was “returned to the State Legislature” (MEMA, 2020a, p. 4). Some CARES funding also supported the purchase of a climate-controlled warehouse to store PPE appropriately, given the hot and humid climate (MEMA, 2020a, pp. 4–5). The new State Emergency Logistical Operations Center in Byram, Mississippi, has both warehouse space and administrative office space (MEMA, 2021, pp. 3–4).

In addition, there were complexities in response across levels of government and disasters. In its annual report, MEMA noted how compounding disasters changed disaster response to the April 2020 tornadoes incredibly early on in the American pandemic response (MEMA, 2020a):

Because of the pandemic, Disaster Assistance Centers were established and run completely by MEMA staff and disaster reservists following the April record-breaking tornado outbreaks. Opening these assistance centers is typically a joint effort between state and federal partners, but the pandemic changed that response. MEMA, with the help of the United Methodist Committee on Relief, opened nine Disaster Assistance Centers in Clarke, Covington, Grenada, Jasper, Jefferson Davis, Jones, Lawrence, Panola, and Walthall counties. These assistance centers aided those that were unable to apply for federal assistance online or by phone. (p. 6)

The pandemic also transformed tornado response in other ways. PPE was a significant factor, not only in terms of who needed it, but also in terms of how it was distributed. As MEMA explains, “extra pandemic safety precautions were made by the staff,” ensuring that first responders and others were appropriately equipped not only for tornado response efforts, but also for pandemic safety (MEMA, 2020a, p. 6). MEMA staff were split in their efforts, “not only assisting local
EMA [emergency management agency] directors during a tornado response but effortsing PPE deliveries to established point of distribution (POD) sites” and simultaneously working with the MSNG in continuing “PPE deliveries to hospitals and long-term care facilities” (MEMA, 2020a, p. 6).

COVID-19 also transformed the people working within this system—quite literally—and the scale at which they worked. MEMA notes that it hired 51 new people in fiscal year 2020, and its employees worked 9,627 hours of overtime during the pandemic between March and June 2020. They also used 114 reservists on 224 missions over 9 disasters total, with 105 of these missions and 67 reservists responding to COVID-19, including 47 new reservists (MEMA, 2020a, p. 26). These reservists worked a range of jobs from distributing PPE at PODs, assisting in back-to-school planning and decontamination, delivering tests from mobile sites in Jackson, and more (MEMA, 2020a, pp. 26–27). By fiscal year 2021, MEMA was continuing work on COVID-19 and other disasters with 195 employees and 57 reservists (MEMA, 2021, p. 3).

Through the American Rescue Act, Marion County was “expected to receive $4.7 Million in federal COVID-19 relief” (Walker, 2021a). As chancery clerk Elisha Moree described, “we’re really hoping to be able to use it on roads and bridges because that’s what we need the money for most” (Walker, 2021a). While not explicitly tied to other disasters, such infrastructure work could be seen as tied to longer-term disaster preparedness and recovery work, particularly given the compounding effects of multiple disasters over recent years and general wear and tear on infrastructure. Unfortunately, in a complication between various levels of government, their perceptions, and their responses to funding and disasters, Mississippi lieutenant governor Delbert Hoseman “has said the money could not be used for roads and bridges, saying a future bill will address roads and bridges” (Walker, 2021a). Given this, Moree discussed using the funds for such expenses as washers and dryers in the regional jail facility in the 3 years they have to spend the money (Walker, 2021a).

**FACTORS FOR THE FUTURE**

**Physical Options and Potential Complications**

The winter storms in February 2021 brought forward infrastructure discussions related to how infrastructure and utilities functioned and how various systems communicated between one
another. Such discussions were focused not only on the local area or even the state, but on the larger region as well. As northern district commissioner Brandon Presley described, “our state was forced to take the same share of forced outages spread across the region as other states, although Mississippi utilities performed well and produced 800 more megawatts of power than was needed during this time” (Wilson, 2021b). This impact, alongside the aftermath of Hurricane Laura in the region, prompted political questions of whether and how Entergy, an energy company in the state, and the state itself should continue as part of the Midcontinent Independent System Operator, “a non-profit RTO [regional transmission organization] that delivers electricity to 15 states and the Canadian province of Manitoba” (Wilson, 2021b). Such questions, rooted in disaster response, also tie into larger ideas about political and economic connections and interdependence between states, regions, and nations. Ultimately, there is a need to balance daily power needs and costs alongside those that emerge in disasters.

One important step moving forward is continuing efforts to expand broadband access in both counties. The levels remain low in both, an issue that created problems in terms of online schooling options for students in the COVID-19 pandemic and when schools relied on the same option in the aftermath of other disasters, leaving some students using pen and paper to keep up with schooling or finding internet outside of the home. Lower broadband access created problems as rural health care options declined and officials and companies pushed for people to rely on telehealth options instead. While efforts to increase broadband access—such as planning from the Mississippi Public Service Commission for using the Federal Communications Commission’s Connect America fund (Wilson, 2021c)—are in progress, additional efforts both to improve access and to ensure it works in the aftermath of disasters are important if government agencies and private-sector organizations expect people to use it for schooling, medical care, and/or access to information such as disaster recovery–related paperwork or finding information about potential recovery-related scams.

Discussions to increase reliance on internet-accessible schooling or telehealth in Jefferson Davis and Marion counties need to take into account rural populations whose broadband access lags behind the rest of the state and nation (U.S. Census Bureau, 2023a,b,c,d). It is also important to consider that broadband access issues often overlap with specific groups, as a *Mississippi Free Press* article on the larger issue described: “Americans living without broadband are disproportionately low-income, non-white and residents of rural areas” who also
“generally lack equal access to banking, education, health care, housing and other areas” as “the absence of broadband is often the result of decades of systemic problems compounding on each other,” including being linked in some cases to redlining (Jackson, 2021).

Specific areas within the counties were already beginning steps towards mitigation during periods of compounding disasters, even unrelated to ongoing events. Columbia (Marion County) was beginning to take bids for the first phase of improving downtown storm sewers, a process targeted at “relieving the risk of flash flooding” the same month as severe storms hit in the area, which was discussed in clear context relative to downtown area flooding triggered by severe storms and a tornado hitting the area (Amundson, 2020k; Campbell, 2020a). The city had already received a half a million dollars from the state to support the first phase of work, which they hoped would help alleviate flooding issues (Campbell, 2020a).

**Physical Housing Types and Planning**

Given the discussion and impacts of tornadoes in the area, particularly their impact on mobile homes and the widespread use of mobile homes in the counties, planning for this specific housing type is crucial. While both the NWS and FEMA “recommend that mobile home residents evacuate to a nearby sturdier structure when tornado threats arise,” “less than 30 percent of mobile home residents evacuate their homes during tornado events despite their expressed willingness to flee” (Strader et al., 2019, para. 1; see also Schmidlin et al., 2009).

Further complicating the situation are the “distances and travel times from mobile homes to shelters,” which “are significantly greater than that of permanent homes to shelters” (Strader et al., 2019, para. 1). Most mobile home residents in studies such as Schmidlin et al. (2009) who did seek shelter, got into a vehicle to drive to the shelter, and many who sought shelter did so in places that “offered little if any reduction of risk over the mobile home” (pp. 195, 198). In addition, “people often wait to take action until the threat from the tornado is confirmed or seems imminent, but by then there may not be enough time to reach shelter” (Schmidlin et al., 2009, p. 198). This is particularly problematic given the much higher risk of fatality in a mobile home, compared with a permanent home, in a tornado (Sutter and Simmons, 2010, p. 125). It is important to consider that this may be driven in part by the fact there has been a “growth of mobile homes in tornado prone states,” which also “suggests that the problem will get worse in the future” (Sutter and Simmons, 2010, p. 127).
Such work illustrates the need for planning based on housing type that accommodates these shelter and first responder needs, while also accounting for the lack of evacuation and/or timely evacuation. As Roueche describes (NPR, 2019):

Yes, we would love everyone to have an official FEMA-certified tornado shelter available to them. But the fact of the matter is most of these people in these rural settings live, you know, 20 miles from the nearest designated shelter. And in these communities where people are scattered like that, how do you provide a shelter that’s within a close enough distance that, in a moment’s notice, they can go there when they’re so scattered? So it’s a big challenge.

Roueche points to the need to improve anchoring of mobile homes and enforcement of that anchoring, making it harder “for the winds to be able to just lift up that entire structure and toss it, roll it” (NPR, 2019).

Social and Cultural Networks and Potential Complications

In advance of the February 2021 winter storms, alongside information about how to use tools such as space heaters safely and where to get additional aid, local officials also reinforced the warning: “Don’t forget to check on your elderly neighbors” (Amundson, 2021c). In the aftermath of the storm, the governor echoed these sentiments, but more broadly: “Please check on neighbors” was the second instruction after “please stay home” in a Tweet sent out the next morning (Ganucheau, 2021b). Such warnings point to the social and cultural networks already in use in disaster preparedness and response, ones echoed in other disasters in stories of people going to check on others. There is a particular focus in such discussions on checking on or helping people seen as especially vulnerable, at risk, or affected disproportionately by the disasters, reinforcing an idea of understanding the local and personal contexts of such parameters rather than a presumed definition of universal vulnerability. There is discussion here of checking on people who may be vulnerable, but also those who are in one’s social networks and nearby—and thus safely accessible. Calls for such efforts are echoed in the literature, including the literature on compounding disasters affecting the state, but in ways that also tie them to the importance of their being well communicated (Shultz et al., 2022):

Motivating protective actions that will save lives—COVID-19 and influenza
vaccination, maintaining a family emergency plan, heeding evacuation warnings, and planning for the needs of disabled or medically vulnerable family members—relies upon well-constructed crisis and emergency risk communication messaging. Crafting effective communications has never been more challenging, given the ubiquitous nature of social media and the frequently changing COVID-19 recommendations. Communications grounded on emergency management principles and population health science hold the greatest promise for safeguarding communities during disasters and extreme events. (p. 4)

Local school districts communicated the results of awards and aid efforts being distributed through the schools related to specific disasters, but these seem intermittent. Making such efforts as food and milk access more stable, particularly in counties with large needs, may be worthwhile, allowing residents to redirect resources to other needs. Similar patterns exist with information planning, to help ensure that local and other government officials are plugged into already existing local systems, such as main street business chat systems, that have emerged organically. Instead of having top-down systems take over these communication networks, having officials work with existing systems and gain information from them may work better as an alternative. This is not about replacing what exists now, but rather ensuring that existing systems that people trust are better supported and are well enmeshed in larger official systems.

Economic Options and Potential Complications

There are also larger problems, such as the one discussed in local media in Marion County that occurred in December 2020, when “the Marion County Board of Supervisors approved a $1.125 million loan to replenish funds spent earlier in the year for the cleanup and removal of storm debris. The application to Marion County declared a victim by FEMA of a natural disaster was submitted late, leaving the county on the hook for the entire cost. Had it been declared a natural disaster, FEMA would have covered 75 percent of the expenses, MEMA 12.5 percent and the county 12.5 percent” (Campbell, 2021). Such issues also point to potential needs to extend periods of submitting paperwork and developing more robust support networks for completing aid paperwork for smaller and rural communities, in order to ensure that aid efforts that should qualify can be completed and do not fail because of timing or paperwork errors. These efforts may be extended to individuals more robustly, as well as in a variety of ways, using existing trusted networks such as public libraries, school systems, houses of worship, and other community groups.
More specifically, ensuring that connections between local-, state-, and national-level organizations and governments are in place before disasters begin and are ongoing over the long term is an important step toward improving aid distribution and mitigating the need for rapid distribution to ensure that resources are available when needed. The value of larger fundings in a state that has many rural and lower-income communities becomes clear with efforts such as the Emergency Management Preparedness Grant, which allowed for increased funding, which, in turn, ensured that “all 82 counties now have active emergency management programs” (MEMA, 2020b, p. 2-25).

In addition, while the current hospital and medical system is small and has faced moments of being stretched thin by COVID-19 and compounding disasters, economic and other potential complications moving forward further heighten the problem. A recent report from the Center for Healthcare Quality and Payment Reform (CHQPR) (2023) reveals that Mississippi currently has 74 rural hospitals, 47 of which have “losses on services” and 27 of which are currently “at risk of closing,” including 20 “at immediate risk” (p. 2). Per CHQPR (2023), “the primary reason hundreds of rural hospitals are at risk of closing is that private insurance plans are paying them less than what it costs to deliver services to patients” (p. 3). To prevent such closures, “significant changes must be made in both the amounts and method of payment for rural hospital services” (CHQPR, 2023, p. 3).

**Relationships Between These Options**

Improving computer and broadband access fits neatly into improving disaster response plans in terms of sheltering in place, completing aid paperwork online, accessing resources online to avoid scams, using telehealth options when local physical health care infrastructure resources are lacking, and working and schooling from home. While some—not all—of this disaster information and aid also exists on paper or via phone (e.g., see Smith, 2020c), that is becoming less common. Many people in small towns, cities, and rural areas do still use landlines or phones that rely on minutes rather than smartphones or phones with unlimited minutes or data, putting additional restrictions on accessing information via phone as well.

Broadband access fits into improving access to a wider array of education and training, as well as job opportunities that potentially mitigate rising local unemployment rates. While not a guarantee against unemployment, broadband access may help reduce it, improving income and
poverty rates, which may help with economic issues in general, benefiting people more broadly in their efforts related to disaster mitigation, preparedness, relief, and recovery efforts.

This is part of a larger discussion of infrastructure and utility needs in the area. Comments from local officials, both in investigating the impacts and aftermath of disasters and in their desires for how to spend funding if they had any option, reveal their focus and community’s needs centered on infrastructure improvements. In late 2021, Congress passed an infrastructure deal, unrelated to the specific disasters discussed here, that would result in Mississippi receiving approximately $4.46 billion in 5 years (Mississippi Today, 2021). This has resulted in transformations to local infrastructure in some areas, including roads and bridges (see, e.g., The Columbian-Progress, 2023). It is worth noting that these efforts seemingly come from larger political discussions rather than local requests or voices being heard in relation to disaster planning, response, or recovery per se.

Larger issues also remain with economic needs in the area, tied to larger shared needs, such as infrastructure, and potentially to more individual and household needs, such as income and secure housing. While some of the risks involved in these more personal issues are in some ways offset by social networks that are reinforced by local and state officials, local residents, and local organizations, larger support and resources to further support these needs could also be beneficial for individuals, households, and the larger counties. Incorporating both of these threads into planning, response, and recovery may make for a more robust system that helps reduce various forms of potential vulnerability and risk, which is particularly important in light of compounding disasters. As Thomas et al. (2020) describe:

Health inequity, social vulnerability, and environmental justice emanate from parallel streams of inquiry. While perhaps not informing one another as frequently as they could, all denote how placed-based socioeconomic conditions and larger social structural forces produce inequities that manifest in differential health and/or disaster outcomes. Local community decision-making, like individual agency, is constrained and influenced by these larger forces. Progressing towards equity and reducing risk for all necessitates changing these systems along with facilitating adaptation and resilience at the local, household, and individual levels. When cascading events occur, inequity (unfair, avoidable differences) worsens. Poor governance is magnified, corruption or cultural exclusion intensifies, and the already uneven distribution of health or health resources is further amplified. (p. 2)
Beyond this is the demonstrated need for systemic support for issues such as infrastructure repairs guided by local perception, for support for rural hospitals remaining open for local community access in the face of compounding disasters, for long-term relationship building between practitioners and local residents, and for support for resources such as broadband that facilitate daily needs and benefits such as work from home and education access in and out of disasters.

CONCLUSION

While there was a range of compounding disasters in 2020 and 2021 in Jefferson Davis and Marion counties in Mississippi, a few key issues emerged. These included existing issues that predated all of these disasters—critical issues such as poverty and a lack of resources. Although such issues were not caused exclusively by disasters, they could be exacerbated by them (see plunging employment rates in Jefferson Davis County as COVID-19 began). As Few et al. (2020) noted:

There is an entrenched tendency amongst governments and aid agencies to regard hazards as singular events with clear start and end dates. This tends to arise from a deeply embedded project mentality that determines fund flows, reporting structures, and ultimately, governance. In the case of disasters, however, such mentality translates into a risk reduction strategy that focuses only on the tip of the problem, while disregarding longer-term challenges. There is a real danger that this could happen with COVID-19 as governments everywhere are showing fatigue at the seemingly endless crisis. (p. 5)

Such efforts are deeply complicated, as these long-term challenges are extended over time and overlaid with a variety of new challenges in people’s daily lived experiences and other disasters, compounding not only the circumstances with which people and officials find themselves coping, but also how they must respond to events and what they can bring to bear in such responses.

Responding to disasters, especially multiple disasters, often became a patchwork affair of bringing together aid from a variety of spaces, ranging from small local churches to the federal government. While such efforts are not uncommon in the aftermath of disasters, navigating such efforts in small rural communities can further underscore a reliance on local networks and support. Moreover, in navigating compounding disasters, part of the response often becomes
either negotiating how to repurpose aid or reinforcing the value of one aid source during another
disaster (see USDA food resources during COVID-19 becoming important during other
disasters) or how to make aid for one disaster work in the context of another (see grab-and-go
food distribution after tornadoes during COVID-19). However, both are often seemingly worked
out via informal networks or under the auspices of being about one disaster as people use them
for both. While there was some national aid available, it was not always available in both
counties, and it was not always available to individuals versus to the public sector.

Overall, a range of issues is important to consider in approaching preparedness, response,
and recovery with disasters in the region, especially in the long term, and emerges from the data
thus far. Specifically related to the disasters is the pattern that the disasters which are declared at
the federal level and seen as the most impactful nationally are not always a one-to-one
correlation with those that are the most impactful at the local level—see Hurricane Ida versus the
April tornadoes, for example. This is particularly true when compounding events are included, as
COVID-19 both complicated response to the April tornadoes, adding additional layers of needs
in response and planning, and raised additional needs moving out of recovery, as people were
unable or unwilling to abide by both sets of disaster-response guidance —such as when people
focused on helping each other in the aftermath of the tornado without focusing on the pandemic,
thus risking exposure to COVID-19. There may be times when people prioritize one disaster
over the other, rather than trying to deal with both simultaneously. When dealing long term with
compounding disasters in this context, many of the recommendations also dovetail into broader
issues that exist outside of disasters.

References

Alfonseca, K. 2021. Impoverished communities pay for worsening impacts of climate change:

occupied housing units: Jefferson Davis County. U.S. Census Bureau. Accessed February


http://extension.msstate.edu/sites/default/files/publications/supportfiles/jeffersondavis_poverty_presentation_profile.pdf

https://extension.msstate.edu/content/jefferson-davis-economic-profile


https://extension.msstate.edu/sites/default/files/marion_county_economic_presentation.pdf

https://www.facebook.com/permalink.php?story_fbid=pfbid0iuHDXJHd7MW8cYnxViPCLRXPC9RcPe1gontYokxLvjKmx1bEYKLtaQ8bG2ZX9tL2l&id=113328820339630


Bassfield, MS Tornado Relief Efforts. 2020c. *I went to Bassfield, MS to make a food donation.* Facebook, April 15. Accessed March 20, 2023.
https://www.facebook.com/permalink.php?story_fbid=pfbid02Epr8VLB6biyqEHAYfkKQVFNEp8p91pK7Ck4uaWjBKmDhmNPCHUBBjcmr7Nvve7Ul&id=113328820339630

Bassfield, MS Tornado Relief Efforts. 2020e. *In order to help families who are struggling to keep food on the table right now, LL Roberts Memorial United Methodist Church in Bassfield (the little church that could) will be giving out boxes of fresh produce and milk to individuals and families in need of assistance.* Facebook, May 22. Accessed March 20, 2023.


Bassfield, MS Tornado Relief Efforts. 2020g. *The New Life Disaster Relief team showed up and showed out in Bassfield on Wednesday!* Facebook, April 24. Accessed March 20, 2023.


https://www.nhc.noaa.gov/data/tcr/AL262020_Delta.pdf

https://www.youtube.com/watch?v=ALQWSA89Uvw


Ciurczak, E. 2020. Here’s how you can help Mississippi families recover from tornadoes.  


https://www.prentissheadline.com/2020/07/01/m-l-arrington-wellness-center-back-open-to-the-public/

https://www.prentissheadline.com/2020/10/28/covid-brings-changes-to-voting-precincts/


https://www.prentissheadline.com/2020/04/17/everythings-gone/


87


https://www.prentissheadlight.com/2021/06/09/54965/


FEMA. 2023e. *Assistance for housing and other needs*. Accessed March 16, 2024. [https://www.fema.gov/assistance/individual/housing](https://www.fema.gov/assistance/individual/housing)


JDCSD (Jefferson Davis County School District ). 2020a. *Reminder: Wednesday, January 29th, will be an early release day for students*. Facebook, January 23. Accessed March 20, 2023. [https://www.facebook.com/JeffDavisCoSD/posts/pfbid028fcqHkxb2YoAq3pC6VjnG7N e4a7KvXguEsPauXcN8C77qixoQcq1Sfi8AAAQEtgJ](https://www.facebook.com/JeffDavisCoSD/posts/pfbid028fcqHkxb2YoAq3pC6VjnG7Ne4a7KvXguEsPauXcN8C77qixoQcq1Sfi8AAAQEtgJ)

JDCSD. 2020b. *Meet & greet*. Facebook, January 13. Accessed March 20, 2023. [https://www.facebook.com/JeffDavisCoSD/posts/pfbid0wTi4nStgTbC13mk9RXZAG1gHFaDgp5ibjZwoAt2Ca28Wx2d2YXaqxMoG9HVxpwLKi](https://www.facebook.com/JeffDavisCoSD/posts/pfbid0wTi4nStgTbC13mk9RXZAG1gHFaDgp5ibjZwoAt2Ca28Wx2d2YXaqxMoG9HVxpwLKi)

JDCSD. 2020c. *Governor Tate Reeves has closed all Mississippi schools through April 17, 2020*. Facebook, March 19. Accessed March 20, 2023. [https://www.facebook.com/JeffDavisCoSD/posts/pfbid02ZByGwJdL7aSNQ7zBMZxve2dPHFzgRiv2yXmpAGRrNC7gDV6wdNE5rhuD6ubPr61xl](https://www.facebook.com/JeffDavisCoSD/posts/pfbid02ZByGwJdL7aSNQ7zBMZxve2dPHFzgRiv2yXmpAGRrNC7gDV6wdNE5rhuD6ubPr61xl)

JDCSD. 2020d. *The CDC defines social distancing as it applies to COVID-19 as “remaining out of congregate settings, avoiding mass gatherings, and maintaining distance (approximately 6 feet or 2 meters) from others when possible.”* Facebook, March 23. Accessed March 20, 2023. [https://www.facebook.com/JeffDavisCoSD/posts/pfbid02bgEjd2dcVNWQPePD7r?7yeK dwqiPY7aBWuoNJDAYXSbScehsijBVbR3mr6jQBFBal](https://www.facebook.com/JeffDavisCoSD/posts/pfbid02bgEjd2dcVNWQPePD7r?7yeKdwqiPY7aBWuoNJDAYXSbScehsijBVbR3mr6jQBFBal)
https://www.facebook.com/JeffDavisCoSD/posts/pfbid0J76AkxLxNgT9UupBHtKog5fD
LediSQsLSNkipg6pNj1Hjeji6TbfqN4ibvKjwAZ4kl

https://www.facebook.com/JeffDavisCoSD/posts/pfbid0o9sdrH12Vb6LTYkXx1MdNkb8
UWpw7Tz4nSrLdhWS8UjEiLUTbo7miDjxcMzpCXoU!

JDCSD. 2020g. All those affected by recent storms are invited by BHS graduates and friends to stop by Harper’s Fish House on Graves Keys Rd for a hot meal and sweet drink today beginning at 4:00 p.m. Facebook, April 25. Accessed March 20, 2023.
https://www.facebook.com/JeffDavisCoSD/posts/pfbid02Aqknzc3BTQ2weYB7MHAXq
1er7Wabc5vTKHQHbLP9X6TrQdmYWnfLzYn9pBbNZDg7l

https://www.facebook.com/JeffDavisCoSD/posts/pfbid02opyErqwHFoFhRvzMWUxfA
KNdPUnzXWosKwDVr1dyInAEyUKF7fxDiScP7KjRxgbNI

https://www.facebook.com/JeffDavisCoSD/posts/pfbid02h8jBZ8DP4kEKvZzRg4Qg1T2
QLKh9DAriKlwqvlvZV6c6RvXKHEyVzVbUvqr6j2!

JDCSD. 2020j. JDCSD will be providing free whole and 2% milk donated from Borden’s and Save the Children today, Tuesday, June 16th, from 9:00-11:00 at J.E. Johnson Elementary School and the Vo-tech Center while supplies last. Facebook, June 16. Accessed March 20, 2023.
https://www.facebook.com/JeffDavisCoSD/posts/pfbid0ufrHAwn7REiIMEigKpwywU7
6YTUEeq3oGZsUCujCzcDLkg4N3yVvpFmup2Hz8tp9ml

https://www.facebook.com/JeffDavisCoSD/posts/pfbid0JiN5yBV4QDbuhXpAjoc5M85
rw7KFxfrWPmaWvgVTRtcmAPs3zyTBntJbvdvHl!

https://www.facebook.com/JeffDavisCoSD/posts/pfbid036DRfOqPrrmLwnYoytUMRoTJ
UZBWXLWHNKRAKF1kBbgDC7KpPX9QUH1nY91PtvVBl

JDCSD. 2021b. UPDATE: Due to updates from MEMA, and concerns for students and staff traveling in unsafe conditions, the decision has been made to close all offices and schools in the JDCSD on Thursday, February 18th, and Friday, February 19th. Facebook, February 17. Accessed March 20, 2023.
Due to the threat of hazardous weather conditions and power outages from Hurricane Ida, all Jefferson Davis County School District campuses will be closed Monday, August 30, 2021. Facebook, August 27. Accessed March 20, 2023.


MCSD. 2021b. *The Marion County School Board of Trustees has made the difficult decision to temporarily transition to virtual learning at West Marion Primary due to COVID-19 (Delta Variant) on August 23rd for 14 days.* Facebook, August 20. Accessed March 17, 2024. https://www.facebook.com/MarionK12/posts/pfbid02LunPXH11AVPge7dfJnMRyB1kJ3jeCzGzntEMporD9PAwxpWn85pF4GKHCP2YxkDfl

MCSD. 2021c. Due to the potential threat of Tropical Storm Ida, all Marion County School District schools and facilities will be closed on Monday, August 30, 2021 and will reopen on Tuesday, August 31, 2021. Facebook, August 27. Accessed March 17, 2024. https://www.facebook.com/MarionK12/posts/pfbid033SXkPhfrKVGP6PFfadvVWJHkdQRnPa9P83rD4XrpBJiU4BeZzN88hvYR8b3b6aGw1


MSDH (Mississippi Department of Health). 2021. *All MSDH COVID-19 testing and vaccination sites statewide will be closed on Monday, Aug 30, as well as MSDH offices, county health departments and WIC centers. Testing and vaccination sites in central and southern counties will be closed Tuesday, with further closures possible.* Twitter, August 29. Accessed April 12, 2023. https://twitter.com/msdh/status/1432084458287648770

https://www.msema.org/long-term-recovery-committees/


https://www.msema.org/preparedness-2/winter-weather/


https://www.mississippifreepress.org/7014/after-big-thanksgiving-dinners-plan-small-christmas-funerals-health-experts-warn


https://www.prentissheadlight.com/2021/09/17/mississippi-now-has-countrys-highest-rate-for-covid-deaths


U.S. Census Bureau. n.d. *Does the Census Bureau have data for religion?* Accessed May 30, 2023. [https://ask.census.gov/prweb/PRServletCustom/app/ECORRAsk2_/YACFBFyorFRlz_FoGtVvDRUGg1Uzu5Mn*/!STANDARD? pzuiactionzzz=CXtpbn0rTEpMeGRYG1vS0tqTF AwAENmZWpVm1NNWEMzZ3p5aFpnWUxzVmw0TjJndno5ZkJPc24xNWYvCtNhVVjWk5Z*](https://ask.census.gov/prweb/PRServletCustom/app/ECORRAsk2_/YACFBFyorFRlz_FoGtVvDRUGg1Uzu5Mn*/!STANDARD? pzuiactionzzz=CXtpbn0rTEpMeGRYG1vS0tqTF AwAENmZWpVm1NNWEMzZ3p5aFpnWUxzVmw0TjJndno5ZkJPc24xNWYvCtNhVVjWk5Z*)


Annex A

Acronyms and Initialisms Appearing in This Paper

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS</td>
<td>American Community Survey</td>
</tr>
<tr>
<td>ARDA</td>
<td>The Association of Religion Data Archives</td>
</tr>
<tr>
<td>CARES</td>
<td>Coronavirus Aid, Relief, and Economic Security (Act)</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>CHQPR</td>
<td>Center for Healthcare Quality and Payment Reform</td>
</tr>
<tr>
<td>DR</td>
<td>Disaster Declaration</td>
</tr>
<tr>
<td>EF</td>
<td>Enhanced Fujita (Scale)</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>FBO</td>
<td>Faith-Based Organization</td>
</tr>
<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>HUD</td>
<td>U.S. Department of Housing and Urban Development</td>
</tr>
<tr>
<td>IRS</td>
<td>Internal Revenue Service</td>
</tr>
<tr>
<td>LTRC</td>
<td>Long-Term Recovery Committees</td>
</tr>
<tr>
<td>MEMA</td>
<td>Mississippi Emergency Management Agency</td>
</tr>
<tr>
<td>MPHA</td>
<td>Mississippi Public Health Association</td>
</tr>
<tr>
<td>MSDH</td>
<td>Mississippi State Department of Health</td>
</tr>
<tr>
<td>MSNG</td>
<td>Mississippi National Guard</td>
</tr>
<tr>
<td>MSU</td>
<td>Mississippi State University</td>
</tr>
<tr>
<td>NFIP</td>
<td>National Flood Insurance Program</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>NRI</td>
<td>National Risk Index</td>
</tr>
<tr>
<td>NWS</td>
<td>National Weather Service</td>
</tr>
<tr>
<td>POD</td>
<td>point of distribution</td>
</tr>
<tr>
<td>PPE</td>
<td>personal protective equipment</td>
</tr>
<tr>
<td>R3SM</td>
<td>Recover, Rebuild, Restore Southeast Mississippi</td>
</tr>
<tr>
<td>SBA</td>
<td>Small Business Administration</td>
</tr>
<tr>
<td>SVI</td>
<td>Social Vulnerability Index</td>
</tr>
<tr>
<td>USDA</td>
<td>U.S. Department of Agriculture</td>
</tr>
</tbody>
</table>

**Annex B**

**Additional Demographic Data in Comparison**

**ANNEX TABLE B-1** Demographic and Census Data for Jefferson Davis and Marion Counties in Mississippi, the State of Mississippi, and the United States
<table>
<thead>
<tr>
<th>Category</th>
<th>Date or Year</th>
<th>Jefferson Davis County</th>
<th>Marion County</th>
<th>Mississippi</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>July 1, 2021</td>
<td>11,158</td>
<td>24,271</td>
<td>2,949,586</td>
<td>332,031,554</td>
</tr>
<tr>
<td>Total Population Change</td>
<td>April 1, 2020 to July 1, 2021</td>
<td>-1.5%</td>
<td>-0.7%</td>
<td>-0.4%</td>
<td>+0.2%</td>
</tr>
<tr>
<td>Persons Under Age 5</td>
<td>April 1, 2020</td>
<td>5.1%</td>
<td>5.8%</td>
<td>6.0%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Persons Under Age 18</td>
<td>April 1, 2020</td>
<td>19.8%</td>
<td>23.2%</td>
<td>23.5%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Persons Over Age 65</td>
<td>April 1, 2020</td>
<td>24.0%</td>
<td>18.8%</td>
<td>16.8%</td>
<td>16.8%</td>
</tr>
<tr>
<td>Female Persons</td>
<td>April 1, 2020</td>
<td>52.6%</td>
<td>51.1%</td>
<td>51.3%</td>
<td>50.5%</td>
</tr>
<tr>
<td>White</td>
<td>April 1, 2020</td>
<td>38.7%</td>
<td>66.3%</td>
<td>58.8%</td>
<td>75.8%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>April 1, 2020</td>
<td>59.6%</td>
<td>31.6%</td>
<td>38.0%</td>
<td>13.6%</td>
</tr>
<tr>
<td>American Indian and/or Alaskan Native</td>
<td>April 1, 2020</td>
<td>0.3%</td>
<td>0.3%</td>
<td>0.6%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>April 1, 2020</td>
<td>0.3%</td>
<td>0.4%</td>
<td>1.1%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Native Hawaiian and/or Other Pacific Islander</td>
<td>April 1, 2020</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Two or More Races</td>
<td>April 1, 2020</td>
<td>1.0%</td>
<td>1.3%</td>
<td>1.4%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>April 1, 2020</td>
<td>2.0%</td>
<td>1.8%</td>
<td>3.5%</td>
<td>18.9%</td>
</tr>
<tr>
<td>Veterans</td>
<td>2017–2021</td>
<td>564</td>
<td>1,098</td>
<td>159,142</td>
<td>17,431,290</td>
</tr>
<tr>
<td>Veterans, Percentage Calculated</td>
<td>Based on 2017-2021 data.</td>
<td>5.05%</td>
<td>9.74%</td>
<td>5.40%</td>
<td>5.25%</td>
</tr>
<tr>
<td>Foreign-Born Persons</td>
<td>2017–2021</td>
<td>0.5%</td>
<td>0.9%</td>
<td>2.3%</td>
<td>13.6%</td>
</tr>
<tr>
<td>Housing Units</td>
<td>July 1, 2021</td>
<td>5,662</td>
<td>11,145</td>
<td>1,332,050</td>
<td>142,153,010</td>
</tr>
<tr>
<td>Owner-Occupied Housing Unit Rate</td>
<td>2017–2021</td>
<td>81.9%</td>
<td>79.0%</td>
<td>68.9%</td>
<td>64.6%</td>
</tr>
<tr>
<td>Metric</td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-----------</td>
<td>------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Median Value, Owner-Occupied Housing Units</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Value, Owner-Occupied Housing Units</td>
<td>$85,600</td>
<td>$94,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Median Selected Monthly Costs with Mortgage</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Selected Monthly Costs with Mortgage</td>
<td>$947</td>
<td>$1,093</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Median Selected Monthly Costs without Mortgage</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Selected Monthly Costs without Mortgage</td>
<td>$420</td>
<td>$347</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Median Gross Rent</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Gross Rent</td>
<td>$655</td>
<td>$605</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Building Permits</strong></td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Permits</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Households</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Households</td>
<td>4,305</td>
<td>9,175</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Persons per Household</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persons per Household</td>
<td>2.62</td>
<td>2.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Persons Over Age 1, Living in Same House as 1 Year Ago</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persons Over Age 1, Living in Same House as 1 Year Ago</td>
<td>93.1%</td>
<td>92.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Language Other than English Spoken at Home, Persons Over Age 5</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language Other than English Spoken at Home, Persons Over Age 5</td>
<td>0.3%</td>
<td>2.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Households with Computer</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Households with Computer</td>
<td>81.2%</td>
<td>84.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Households with Broadband Internet Subscription</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Households with Broadband Internet Subscription</td>
<td>62.6%</td>
<td>66.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High School Graduate or Higher, Persons Over Age 25</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Graduate or Higher, Persons Over Age 25</td>
<td>84.4%</td>
<td>83.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bachelor’s Degree or Higher, Persons Over Age 25</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree or Higher, Persons Over Age 25</td>
<td>13.9%</td>
<td>11.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Persons Under Age 65 with a Disability</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persons Under Age 65 with a Disability</td>
<td>13.7%</td>
<td>15.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Persons Under Age 65</strong></td>
<td>2017–2021</td>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persons Under Age 65</td>
<td>15.2%</td>
<td>16.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>without Health Insurance</td>
<td>2017–2021</td>
<td>52.3%</td>
<td>48.6%</td>
<td>56.8%</td>
<td>63.1%</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Persons Age 16 or Over in Civilian Labor Force</td>
<td>2017–2021</td>
<td>52.3%</td>
<td>48.6%</td>
<td>56.8%</td>
<td>63.1%</td>
</tr>
<tr>
<td>Mean Travel Time to Work in Minutes</td>
<td>2017–2021</td>
<td>35.3</td>
<td>37.0</td>
<td>25.4</td>
<td>26.8</td>
</tr>
<tr>
<td>Median Household Income (2021 Dollars)</td>
<td>2017–2021</td>
<td>$34,771</td>
<td>$34,286</td>
<td>$49,111</td>
<td>$69,021</td>
</tr>
<tr>
<td>Per Capita Income</td>
<td>2017-2021</td>
<td>$20,782</td>
<td>$21,840</td>
<td>$26,807</td>
<td>$37,638</td>
</tr>
<tr>
<td>Persons in Poverty</td>
<td>April 1, 2020</td>
<td>25.2%</td>
<td>22.9%</td>
<td>19.4%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Total Employment Change</td>
<td>2019–2020</td>
<td>−53.9%</td>
<td>2.3%</td>
<td>−0.9%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Population Per Square Mile</td>
<td>2020</td>
<td>27.7</td>
<td>45.1</td>
<td>63.1</td>
<td>93.8</td>
</tr>
<tr>
<td>Population Per Square Mile</td>
<td>2010</td>
<td>30.6</td>
<td>49.9</td>
<td>63.2</td>
<td>87.4</td>
</tr>
<tr>
<td>Land Area in Square Miles</td>
<td>2020</td>
<td>408.45</td>
<td>542.39</td>
<td>46,923.96</td>
<td>3,533,038.28</td>
</tr>
<tr>
<td>Land Area in Square Miles</td>
<td>2010</td>
<td>408.44</td>
<td>542.38</td>
<td>46,923.27</td>
<td>3,531,905.43</td>
</tr>
</tbody>
</table>

SOURCES: U.S. Census, 2023a,b,c,d.

Annex C

Additional National Risk Index Data in Comparison

ANNEX TABLE C-1 Hazard Type Risk Index Data for Jefferson Davis and Marion Counties in Mississippi

<table>
<thead>
<tr>
<th>Numerical Scores Out of 100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jefferson Davis County</strong></td>
</tr>
<tr>
<td><strong>Numerical Score</strong></td>
</tr>
</tbody>
</table>

110
<table>
<thead>
<tr>
<th>Event</th>
<th>Rating 1</th>
<th>Event Category</th>
<th>Rating 2</th>
<th>Event Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>9.24</td>
<td>Relatively Low</td>
<td>14.90</td>
<td>Relatively Moderate</td>
</tr>
<tr>
<td>Avalanche</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Coastal Flooding</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cold Wave</td>
<td>0.00</td>
<td>No Rating</td>
<td>0.00</td>
<td>No Rating</td>
</tr>
<tr>
<td>Drought</td>
<td>8.08</td>
<td>Relatively Low</td>
<td>6.41</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Earthquake</td>
<td>1.49</td>
<td>Very Low</td>
<td>1.93</td>
<td>Very Low</td>
</tr>
<tr>
<td>Hail</td>
<td>10.77</td>
<td>Relatively Low</td>
<td>11.94</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Heat Wave</td>
<td>10.65</td>
<td>Relatively Moderate</td>
<td>8.55</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Hurricane</td>
<td>13.17</td>
<td>Relatively Moderate</td>
<td>20.56</td>
<td>Relatively Moderate</td>
</tr>
<tr>
<td>Ice Storm</td>
<td>14.87</td>
<td>Relatively Low</td>
<td>7.56</td>
<td>Very Low</td>
</tr>
<tr>
<td>Landslide</td>
<td>14.32</td>
<td>Relatively Moderate</td>
<td>12.24</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Lightning</td>
<td>12.26</td>
<td>Relatively Low</td>
<td>16.84</td>
<td>Relatively Moderate</td>
</tr>
<tr>
<td>Riverine Flooding</td>
<td>7.81</td>
<td>Relatively Low</td>
<td>17.73</td>
<td>Relatively Moderate</td>
</tr>
<tr>
<td>Strong Wind</td>
<td>14.04</td>
<td>Relatively Low</td>
<td>13.10</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Tornado</td>
<td>16.88</td>
<td>Relatively Moderate</td>
<td>22.32</td>
<td>Relatively Moderate</td>
</tr>
<tr>
<td>Tsunami</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Volcanic Activity</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Wildfire</td>
<td>5.06</td>
<td>Very Low</td>
<td>9.16</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Winter Weather</td>
<td>11.75</td>
<td>Relatively Low</td>
<td>12.98</td>
<td>Relatively Low</td>
</tr>
</tbody>
</table>
ANNEX TABLE C-2 Expected Annual Loss Data for Jefferson Davis and Marion Counties in Mississippi

<table>
<thead>
<tr>
<th></th>
<th>Jefferson Davis County</th>
<th>Marion County</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Numerical Scores Out of 100</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Numerical Score</strong></td>
<td><strong>Rating</strong></td>
</tr>
<tr>
<td>Overall</td>
<td>8.76</td>
<td>Very Low</td>
</tr>
<tr>
<td>Avalanche</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Coastal Flooding</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cold Wave</td>
<td>0.00</td>
<td>No Expected Annual Losses</td>
</tr>
<tr>
<td>Drought</td>
<td>6.30</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Earthquake</td>
<td>1.41</td>
<td>Very Low</td>
</tr>
<tr>
<td>Hail</td>
<td>9.56</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Heat Wave</td>
<td>9.64</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Hurricane</td>
<td>10.75</td>
<td>Relatively Moderate</td>
</tr>
<tr>
<td>Ice Storm</td>
<td>15.72</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Landslide</td>
<td>14.89</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Lightning</td>
<td>14.98</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Riverine Flooding</td>
<td>6.38</td>
<td>Very Low</td>
</tr>
<tr>
<td>Strong Wind</td>
<td>19.77</td>
<td>Relatively Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disaster Type</th>
<th>Jefferson Davis County</th>
<th>Marion County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tornado</td>
<td>13.78</td>
<td>20.56</td>
</tr>
<tr>
<td>Tsunami</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Volcanic Activity</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Wildfire</td>
<td>4.13</td>
<td>8.43</td>
</tr>
<tr>
<td>Winter Weather</td>
<td>11.94</td>
<td>14.89</td>
</tr>
</tbody>
</table>


**ANNEX TABLE C-3** Social Vulnerability Data for Jefferson Davis and Marion Counties

<table>
<thead>
<tr>
<th></th>
<th>Jefferson Davis County</th>
<th>Marion County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerical Scores Out of 100</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>48.13</td>
<td>40.80</td>
</tr>
</tbody>
</table>


**ANNEX TABLE C-4** Community Resilience Data in Jefferson Davis and Marion Counties

<table>
<thead>
<tr>
<th></th>
<th>Jefferson Davis County</th>
<th>Marion County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerical Scores Out of 100</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>52.73</td>
<td>50.45</td>
</tr>
</tbody>
</table>