Capstone 1: Hurricane Evacuee Resource (Title TBD)
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Table of Contents:

Introduction

Project Scope v2:
Create ways to check on neighbors, property, and community
For Gulf Coast hurricane evacuees
In a world where major hurricanes in the Gulf are becoming more widespread
Keeping in mind that many people might be evacuating their homes and communities for the first time
We aim to come up with solutions and prototype one by the end of this capstone
We need to test the assumption that evacuees' primary concerns include the well-being of neighbors, property, and community

Research Objective: Gain a broader understanding of Gulf Coast hurricane evacuees and their primary concerns while evacuated.

Research Questions:
- What trends are we seeing in terms of major hurricane frequency and evacuation rates?
- What factors determine whether Gulf Coast residents stay or evacuate before a storm?
- What are evacuees' main concerns while they are away?
- What alternatives or solutions are currently available to solve this problem?

Personal Statement:
I have lived in New Orleans for a little over 10 years. In that time, I experienced several severe tropical storms and two major hurricanes. After evacuating for the first time ahead of Hurricane Ida, I found my anxiety was higher post-hurricane than the times that I stayed and hunkered down. I felt helpless - I couldn't be there to help my neighbors or check on my house and my community. The national news outlets offered visuals of only the worst damage in my community, which heightened my anxiety. I couldn't rest until I was finally able to check on my neighbors and friends who stayed behind - and they were kind enough to check on my house and the feral cat we had been feeding.

Through this research, I'm hoping to learn more about my fellow Gulf Coast evacuees and their primary concerns in order to create a solution that offers a mental safe haven from the storm.

What trends are we seeing in terms of major hurricane frequency and evacuation rates?

I am leading with this question because it determines the value of the product. It questions the assumption in my project scope: "In a world where major hurricanes in the Gulf are becoming more widespread…"

According to a [2021 study](#) in the AGU's Geophysical Research Letters, "the minimal time between sequential landfalling TC [tropical cyclones] has decreased for most regions since 1979…" The regions they assessed included the East and Gulf Coasts of the United States. They also found that Florida and Louisiana were the states most prone to sequential landfall risk.

This study did not research the effects of sequential landfalls on residents, though I do explore this question further on page 3.

This second [article](#) from AGU notes that TC landfall frequency is not the only factor that is on the rise. "Wave observations since 1980 along the U.S. Atlantic and Gulf coasts indicate that TC-generated wave power in the western North Atlantic has increased significantly since the mid-1990s, both at open ocean and at near-coastal locations." They go on to note that this trend will continue due to the effects of climate change and the rising sea level. This increase in hurricane wave power increases risks to life, property, and the coastline at large.

Note: In my search for hurricane evacuation statistics, I only found approximate numbers from individual storms. I will continue researching these numbers.

What factors determine whether Gulf Coast residents stay or evacuate before a storm?

As someone who has evacuated before a major storm, I need to challenge my personal biases and assumptions. I aim to learn more about the primary factors that lead to the decision to evacuate.

An [article](#) by the International Journal of Environmental Research and Public Health published in 2019 notes the difficulties of accurately determining the "why" behind the decision to evacuate or note. "Predicting evacuation requires assessment of individual decision-making. One model known as the Protective Action Decision Model (PADM) suggests that when individuals are faced with disaster, they make evacuation decisions based on environmental cues, social cues, personal experiences, and evacuation impediments." It goes on to outline environmental cues, including the location of the individuals and their homes, as well as social cues, including herd mentality or evacuation orders.

The note that mobile home residents are significantly more likely to evacuate served as an important reminder that my house is not the universal standard for "home" - which includes a variety of living spaces.

In terms of social cues, the article notes that studies are inconclusive about whether the media or non-media sources "like family, friends, and the government" have more of an influence on the decision to evacuate.

The article also disproves my assumption that socioeconomic factors play a large role in evacuation decisions, as outlined in [Table 2](#).

This [article](#) from the American Meteorological Society explores the links between past hurricane experiences and decisions to evacuate, noting that "people's past experiences with a hazard are important for shaping how they recognize and develop judgments about a future risk, which can influence their responses to the threat." As noted on page 2, the decreasing time between storms in the Gulf means that residents are experiencing tropical hazards on a more frequent basis. Here, we see evidence that past evacuation experience increases risk perceptions, thereby increasing the likelihood of future evacuations.

What are evacuees' main concerns while they are away?

Again, in order to challenge my personal biases and assumptions, I need to learn more about the concerns of my fellow evacuees.

The same [article](#) by the International Journal of Environmental Research and Public Health that outlined some of the factors that impact the decision to evacuate also noted impediments to evacuation. They noted "concerns about property damage, theft, scarcity of resources to finance evacuation, and traffic on evacuation routes." This is helpful framing, as evacuee concerns go far beyond the space and place they evacuated. Solving for those anxieties is just solving one part of the problem.

Going back to the [article](#) from the American Meteorological Society that noted a correlation between past and future evacuations, it did note one factor that decreased evacuation intent. "Respondents' past experience with property damage due to a hurricane decreased response-efficacy perceptions, causing a negative indirect effect on evacuation intentions." The insight I'm gathering here is that property damage is a major concern for evacuees and a factor that might actually keep those same residents from evacuating for future storms.

I found [several](#) [articles](#) that outlined concerns specific to the act of evacuating, including evacuation routes/traffic, transportation, housing, pets, costs, etc. These might be out of scope for this particular project, so I won't go into detail here.

What alternatives or solutions are currently available to solve this problem?

From my research, I have not found a resource that specifically focuses on providing evacuees with updates on neighbors, property, or community after a hurricane.

Nextdoor is probably the closest solution, as it is dedicated to connecting you with your neighbors. They wrote a blog post on how to stay connected and help your neighbors during hurricane season, but the app does not have a function that caters specifically to the needs of evacuees.

Post-hurricane resources for evacuees are generally limited to the following areas:
- Evacuation plans (nola.gov)
- Assistance for disaster survivors (FEMA)
- Advice for returning home after a hurricane (ready.gov) (nola.gov)

There are also a wide variety of local organizations that are committed to helping their communities recover after a storm. I have not found any orgs or local resources focusing specifically on evacuees in the days after a storm.

Final considerations and conclusions

This research helped me narrow down my target audience. I started with the idea that this would be applicable for all evacuees of any natural disaster. However, the impacts of hurricanes vs earthquakes vs tornados vs tsunamis (etc.) were far too broad to tackle with one solution. I recognized the need to solve for a specific problem, so I decided to focus on hurricane evacuees as those storms (literally) hit closer to home. Similarly, as I recognized the limitations of this secondary research and the importance of speaking directly with prospective users, I understood that I needed to narrow down my targeted audience's location to the Gulf Coast. I may decide to limit it even further to Louisiana residents - especially if the solution requires partnerships with city/state institutions or local organizations.

I wish I had been able to spend more time finding stats around hurricane frequency and evacuation rates. But I wonder whether it matters in the long run. Hurricanes aren't going away, and neither are evacuations.

Many articles touted evacuation as a way to avoid/limit post-hurricane mental health issues. I was surprised to find fewer articles outlining the mental health impacts of evacuating. Others delved deeper into the financial burden of evacuation, which offered me the insight that this resource for evacuees would likely need to be free or inexpensive.

One of the biggest challenges I encountered was finding free white papers. It would be great to have access to ResearchGate during this course.