



Impact of Past Hazards on Preparedness, Response, and Equity in Hays County

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Background

- Severe weather events pose a significant threat to public health and safety.
- These hazards cause hundreds of deaths and injuries each year and result in billions of dollars in economic damages across the United States.
- The severity of future climate scenarios is alarming, showing likely increases in the frequency, timing, intensity, and duration of these occurrences.
- Given society's increasing exposure to high-consequence storm events, there is a need for an improved understanding of the factors that influence individuals' preparedness and protective actions behaviors during severe weather events.

Research Objective

The impacts of climate change are already being felt in communities across the United States, with Texas disproportionately affected—leading the nation in cumulative disaster costs. This study examines how prior flood experience and sociodemographic factors influence preparedness and protective behaviors following a severe weather event using Hays County, TX as a case study.

Hays County

- Hays County is among the fastest-growing counties in the United States.
- Located within Central Texas's "Flash Flood Alley"
- The county is intersected by several major waterways.
- The combination of hilly terrain, shallow soils, and intense rainfall often creates ideal conditions for flash floods.

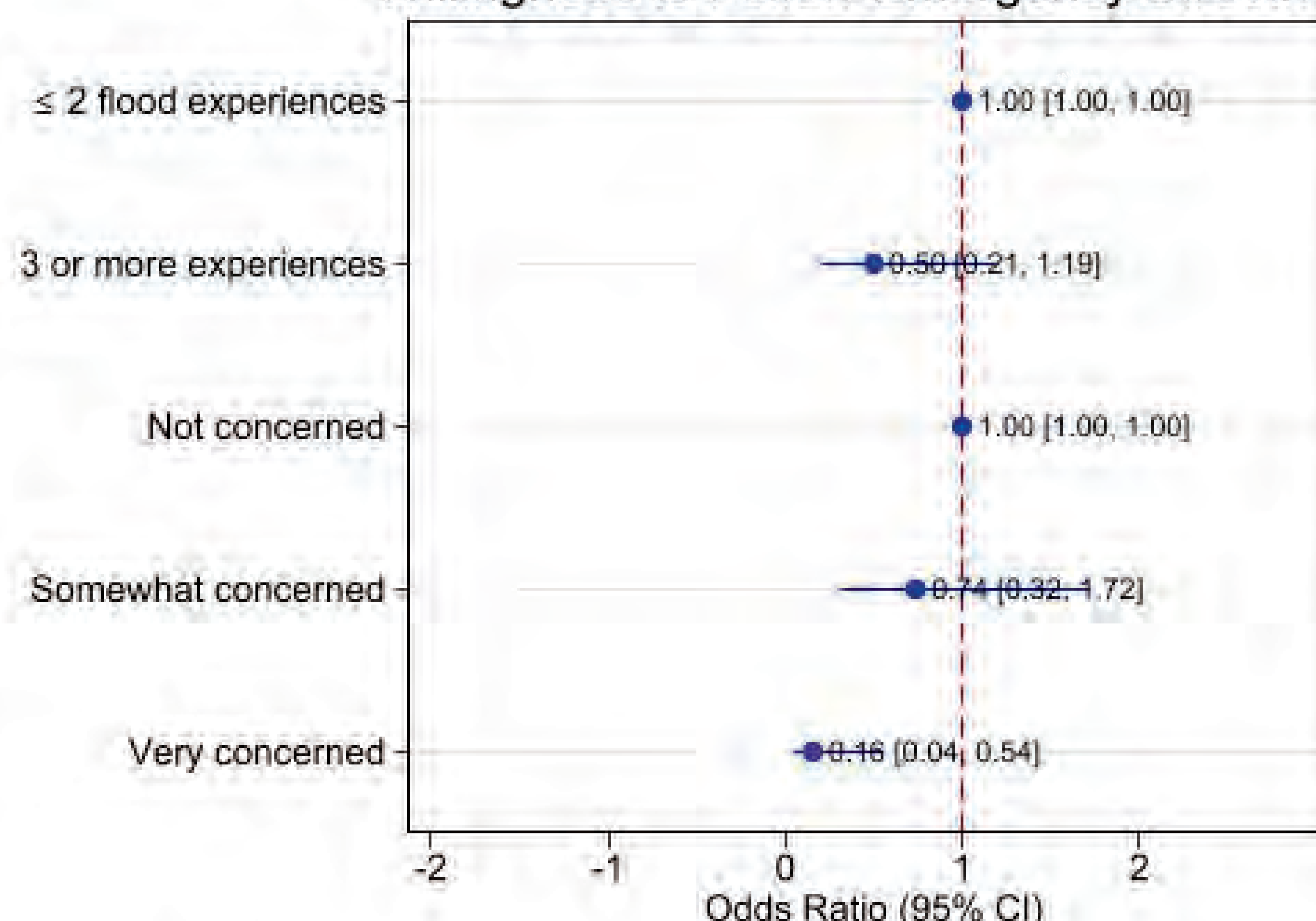
Memorial Day Flood

- May 23-24, 2015
- Intense rainfall triggered widespread flash flooding, prompting numerous high-water rescues and resulting in the loss of 13 lives.
- Flooding from the Blanco and San Marcos rivers caused significant destruction.
 - 400 homes destroyed
 - \$12 million in damages

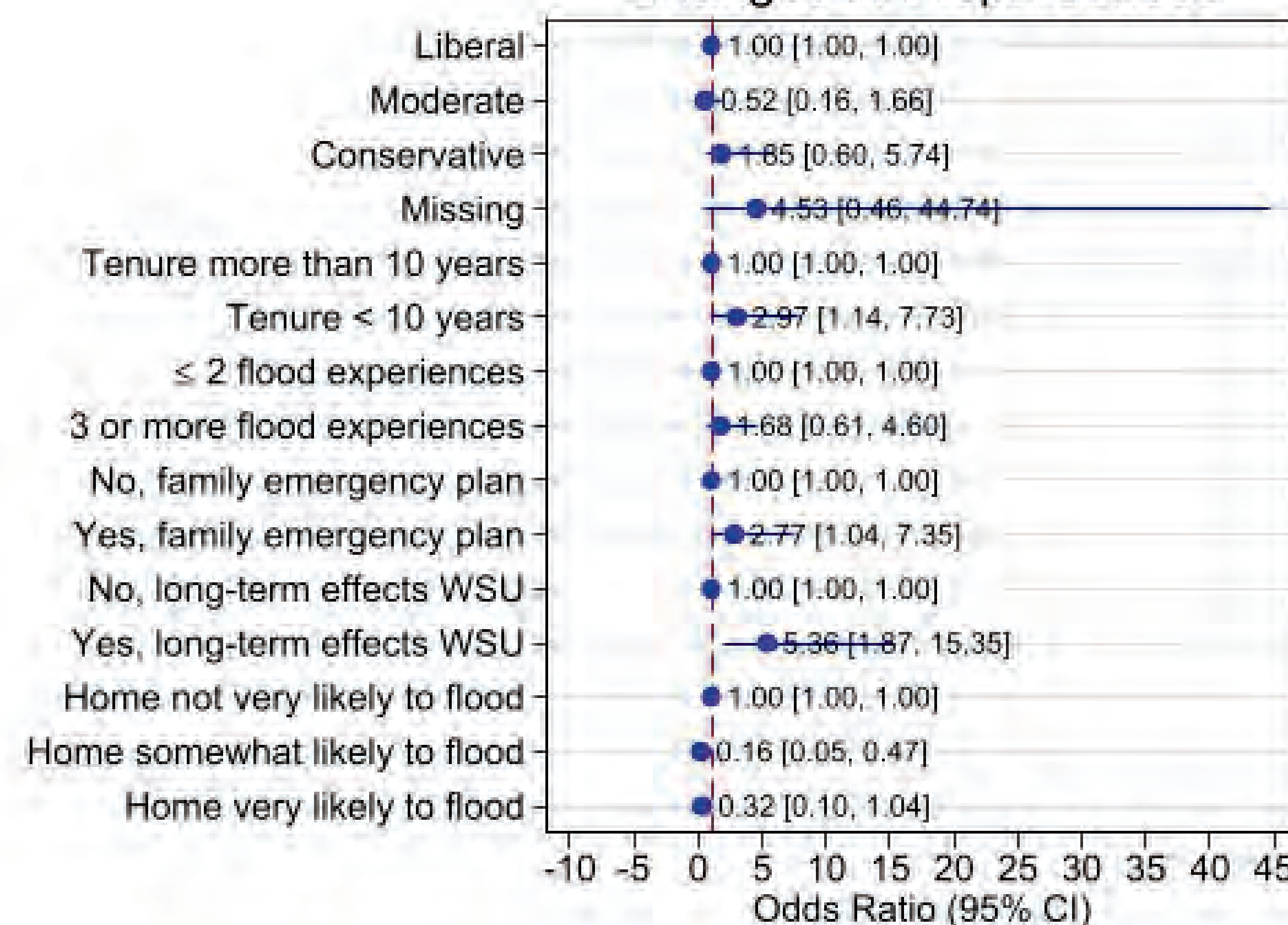
Winter Storm Uri

- February 11 and 20, 2021
- A series of winter storms characterized by prolonged freezing temperatures, heavy snow, sleet, and freezing rain.
- Governor Greg Abbott declared a state of disaster in all 254 counties.
- Millions of Texans lost power during the storm and experienced disruptions in water service.

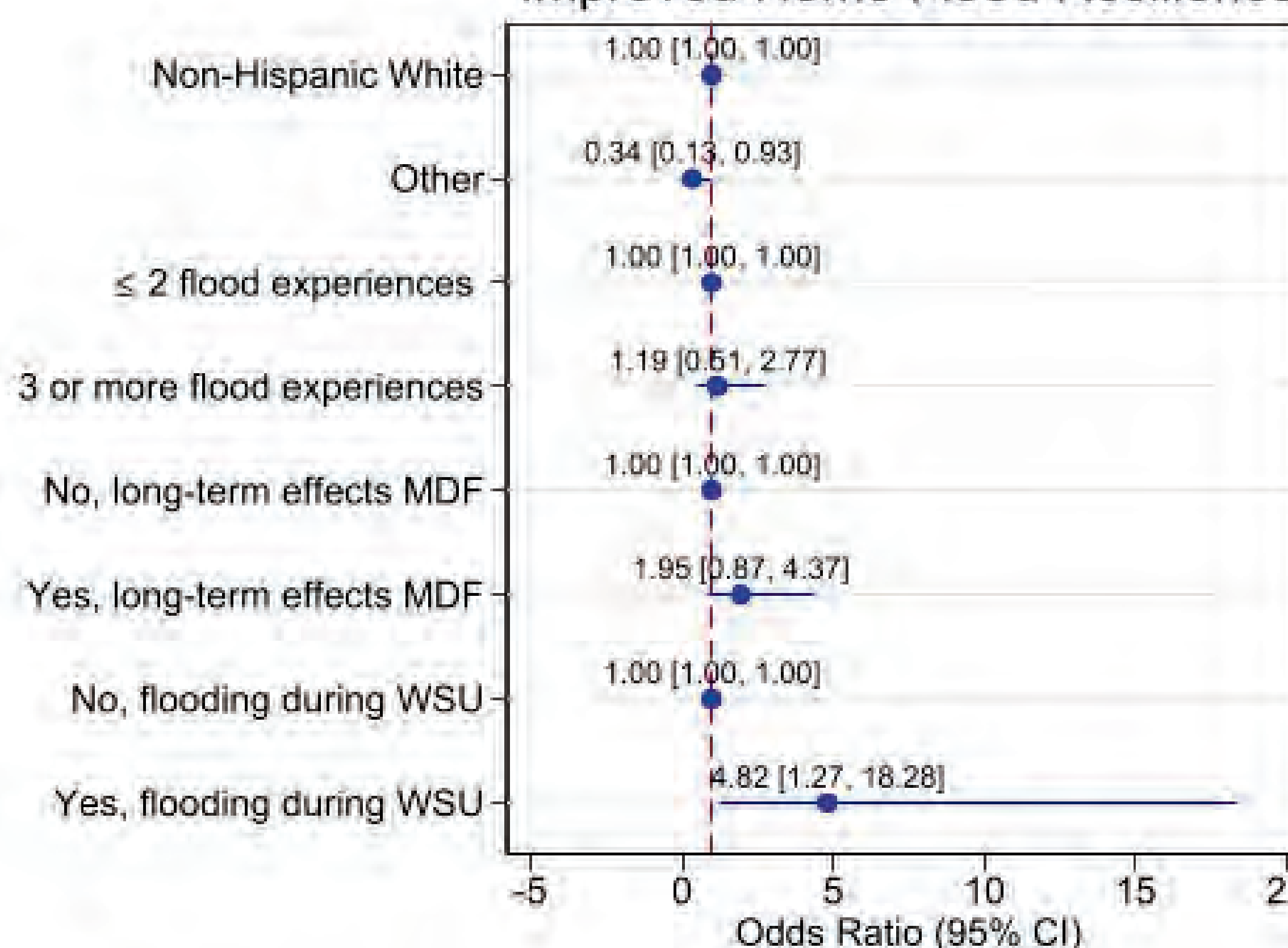
Willingness to Follow Emergency Directives



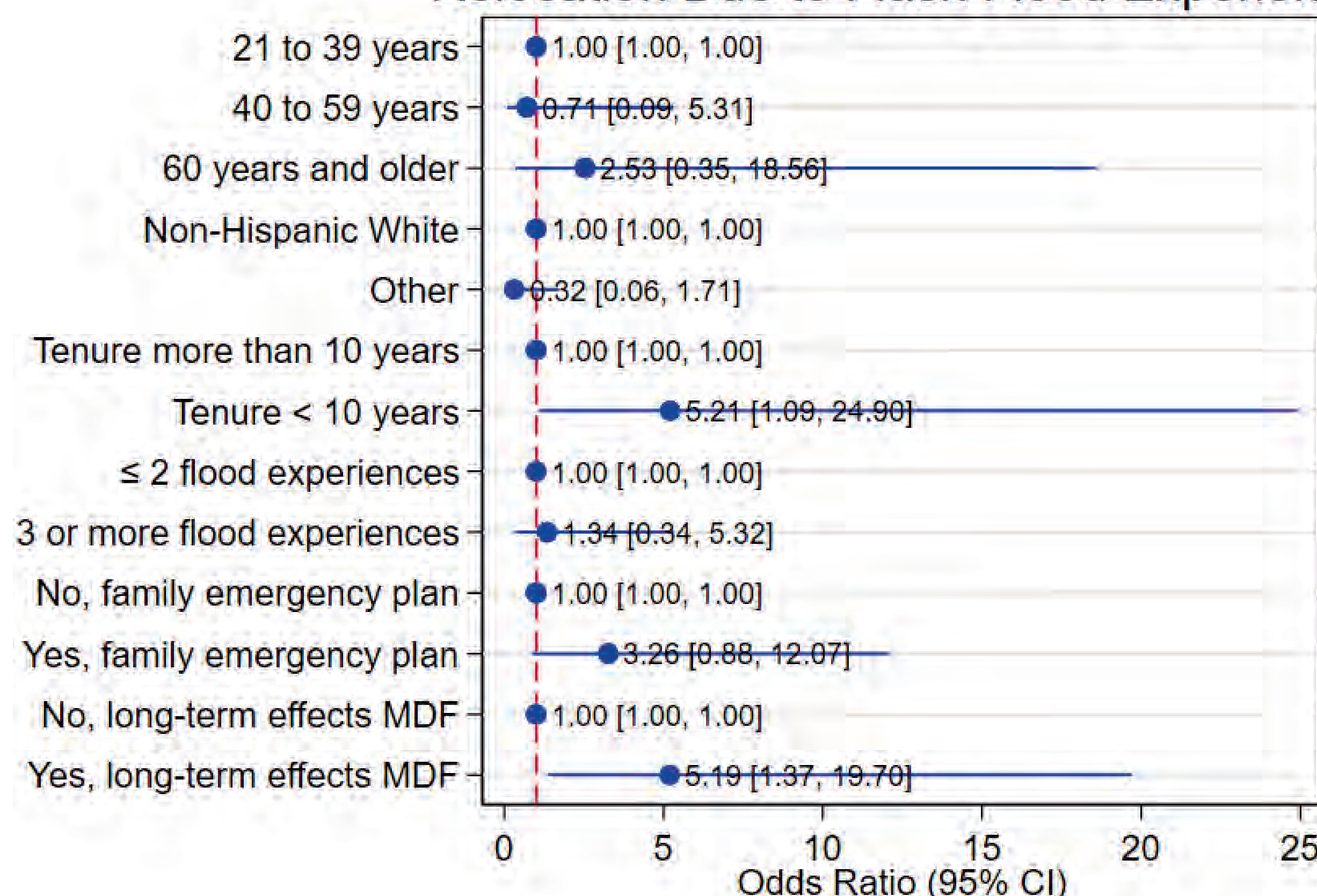
Changes in Preparedness



Improved Home Flood Resilience



Relocation Due to Flash Flood Experience



Winter Storm Uri Cont.

- Low-income communities of color were disproportionately impacted by the storm.
- 200 fatalities attributed to the storm.
- Early estimates of the storm's economic impact suggest financial losses between \$80-130 billion.

Methods

- A Community Assessment for Public Health Emergency Response (CASPER) to collect survey data.
- In-person interviews were conducted by teams of Texas A&M University School of Public Health students and faculty.
- Descriptive statistics and binary logistic regression models conducted using STATA version 16.

Results

- Collected 128 completed surveys
- Participants were majority:
 - Non-Hispanic White (66.41%)
 - Women (53.13%)
 - Middle age [Median: 54 (IQR 42, 68)]
- Nearly all participants had experienced a flood event.
- No significant association was found between the number of previous flood experiences and adherence to evacuation orders, changes to preparedness, or the implementation of mitigation measures.
- Changes in preparedness were notably influenced by tenure in the home and the presence of a family plan.
- Individuals who had lived in their homes less than 10 years were three times more likely to make preparedness changes.
- Participants of color were 66% less likely than white participants to make upgrades aimed at enhancing flood resilience.
- Having a family plan was associated with a greater likelihood of undertaking further mitigation measures, including decisions to move.

Discussion & Conclusion

- Findings related to preparedness being linked to tenure and family emergency planning and racial disparities regarding mitigation practices are consistent with other hazard and environmental justice literature.
- The finding that direct experience alone does not lead to protective behaviors aligns with previous research.
- Study findings underscore the need for:
 - Targeted preparedness outreach for recent movers and households without family emergency plans.
 - Embedding equity into hazard mitigation programs to address racial disparities in flood resilience.
 - Going beyond experience-based assumptions by using tailored education, storytelling, and community engagement to promote preparedness across all populations.