IDENTIFYING TRENDS IN RESPONSES TO HURRICANE AND CLIMATE CHANGE COMMUNICATION TOOLS

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BACKGROUND

The southeastern United States has been identified as a region with high physical and social vulnerability to climate change and coastal hazards such as hurricanes and floods (Emrich & Cutter, 2011). The effects of these hazards are only expected to increase over time under climate change, so it is vital that the risk information is adequately communicated to the public so that they can make effective, informed decisions to mitigate these risks (Shao *et al.* 2017). In finding those aspects of information such as warning messages and graphics that the public responds most to, those methods can be utilized when communicating vital information to vulnerable coastal populations in the future.

METHODS

Three surveys were distributed to members of the public in Mobile, Alabama, Savannah, Georgia, and Houston, Texas in the summer of 2021. These surveys focused on hurricane risk perceptions and behaviors, with each survey including an experimental section regarding a topic unique to each survey. In Mobile, respondents were asked about their concern and probable actions in response to different hurricane descriptions. In Savannah, respondents were asked about their concern and probable actions in response to different hurricane track forecast graphics. In Houston, respondents were asked about their interpretation and concern regarding graphics depicting long-term changes in tropical cyclone/hurricane trends of frequency and storm surge. The data were first analyzed using pair-wise t-tests, and later using structural equation modeling with response to the provided descriptions or graphics as the latent factor, as shown in Figure 1.

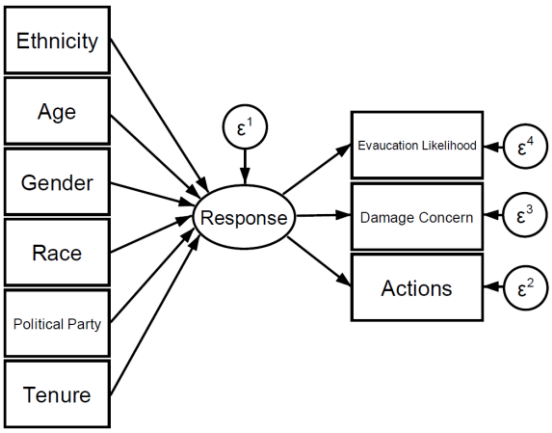

Figure 1 - Example Structural Equation Model for Mobile, Alabama.

FINDINGS

In Mobile, it was discovered that, in general, individuals were more likely to exhibit concern for and evacuate in response to a hypothetical hurricane when provided with wind speed and Saffir-Simpson category information rather than storm surge. This pattern was also observed among older rather than younger respondents and female rather than male respondents. However, the opposite was observed for members of racial and ethnic minorities compared to white individuals. In Savannah, it was discovered that, in general, individuals shown a map with the Cone of Uncertainty without a median line were more likely to evacuate and adopt short-term mitigation actions in response in addition to being more likely to accurately interpret the information provided by that map. Further, when provided the cone by itself, female respondents rather than male respondents were more likely to respond in addition to those with longer tenure in Savannah. Individuals who had lived in Savannah longer were also more likely to respond when provided the median line by itself. In Houston, individuals were significantly more likely to perceive long-term change in graphics portraying annual increases in hurricane frequency rather than general storm frequency. In addition, they were more likely to perceive a decrease in this trend when shown hurricane storm surge rather than general tropical storm surge. In both cases, individuals perceived a stronger change in the portrayed direction of the trend when shown hurricanes. This can be in part attributed to differences in graphical design when communicating trends related to climate change (Rahmstorf *et al.* 2007). Further, younger individuals and those who have longer tenure in Houston were more likely to respond to graphs portraying tropical cyclone surge. Meanwhile, members of racial minorities and Democrats were more likely to respond to major hurricane surge than white individuals and Republicans. These findings are significant and provide valuable information in identifying the best tools and practices to use when disseminating hurricane warning information to coastal areas, particularly when attempting to increase public response to incoming hurricanes.

REFERENCES

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