


# How Individuals Hypothetically and Realistically Respond to Media Messages About Severe Weather

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## ABSTRACT

This study sought to measure how risk perception and behavior intention of residents in coastal counties in Southern Alabama, Mississippi, and Northern Florida may have changed before and after Hurricane Michael in October 2018. The aim of this research project was to compare individual responses to impending disasters before the hurricane and compare them to responses in areas hit by the storm. The authors used an experiment to examine how visual cues and media messages were interpreted by residents and their reported influence on an individual's risk perception and decision-making in the situation. With roughly 1,030 respondents, results indicated that live video was most likely to motivate respondents to prepare activities after the storm, which was in the opposite direction of those respondents answering before the hurricane struck. The authors hope the findings of this study can help broadcasters better target their messages as they move forward.

## KEYWORDS

Behavioral Intention, Broadcast Media, Disaster Preparedness, Hurricane Michael, Risk Perception

## 1. INTRODUCTION

Between May 15 and November 30 each year, U.S. residents and tourists along the Gulf of Mexico and Atlantic Ocean brace themselves for the potential of a hurricane or tropical storm. Hurricane season is among the most dangerous weather-related timeframes in the United States, especially for those on the Southeast and Eastern seaboard. On October 10, 2018, the Florida-Alabama coast was struck by Hurricane Michael, a Category 5 hurricane. According to the Saffir-Simpson hurricane wind scale, hurricanes can range from Category 1 to 5 on the scale, with one being the weakest and five being the strongest (National Hurricane Center, 2018). Michael's path went through southeastern United States and traveled up the coast as far as the Chesapeake Bay. Specifically Michael struck the Florida panhandle, the first Category 5 hurricane to hit that area; it still caused 45 deaths and roughly \$25 billion in property damages (NCEI, 2019).

These circumstances provide a unique opportunity to look at how individuals along the southeastern coast perceive and prepare for a hurricane—both before and after a large-scale storm has

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arrived. Particularly, we are interested in how exposure to a recent hurricane may influence their risk perceptions and preparatory activities. We examined the role of prior experience and the optimism bias in determining the likelihood to take action if a hurricane is forecast for the area, after significant weather has just passed. Thus, the current study focused on exploring various visual news messages within the context of a real-life disaster setting. With the swift development of media technology in the contemporary era, this research allows us to determine how views change over time after a large-scale disaster affects their area. Specifically, we examined various subpopulations, such as gender, race and educational differences. These subpopulations are often referred to as socially vulnerable populations (Cutter, Ash, & Emrich, 2003).

Our study included an experiment with three visual simulations to warn individuals about a hypothetical hurricane. The intention was to test whether individuals respond differently to media messages that include a “cone of uncertainty,” live video of hurricanes or a text-based warnings, and whether the experience of a recent event may alter their views. There were two data collection periods—both before and following Hurricane Michael. Therefore, we were able to capture viewpoints during a static time period and immediately after respondents experienced a major hurricane. This opportunity allowed us a window into seeing what factors enacted change in respondents’ intentions to both gather information and engage in preparatory activities for a major storm. Given the timeliness of the data, this study should provide significantly useful information for broadcast meteorologists. The data reflect accurate situations that media practitioners can use when formulating the types of messages that they disseminate to the public during the time of a hurricane.

## **2. LITERATURE REVIEW**

When reviewing scholarship about disaster preparedness, the key factors of influence focus on previous disaster experience, higher trust in authority, greater perception of risk and consequences, smaller family size, and being geographically closer to an evacuation zone. All of which generally increase the likelihood for an individual to evacuate (Dash, 2002; Stein, Duenas-Orsorio, & Subramanian, 2010; Wachinger, Renn, Begg, & Huhlick, 2013). However, while individuals may suggest their likelihood to evacuate if large storm presents itself in a hypothetical scenario, the effectiveness of evacuation warnings may not be that influential on people’s actual choices when severe weather hits (Baker, 1991). For example, Ruch and Schumann (1997) predicted an 89% evacuation rate in the Texas area, but in fact, only 29% of the population actually evacuated when Hurricane Bret struck Texas in 1999 (Prater, Wenger, & Grady, 2000).

Other scholars have said that an individual’s ability to do an on-site evaluation of the situation can influence people’s tendency to evacuate (Lindell and Perry, 2004). For example, Perry, Lindell, and Tierney (2001) believed that the level of information seeking, regardless of source, is a predictor of decision-making in severe weather. Similarly, Kellens, Zaalbery, and Maeyer (2011) suggested that longer-term residents generally have more disaster knowledge about their home areas than temporary residents. Generally, the scholars state that long-time residents are less likely to evacuate during severe weather, suggesting that how long someone lives in a community is an indicator of one’s decreasing likelihood to evacuate. These scholars also found that family size and makeup (such as families without young children or elderly members) were more likely to leave hazardous areas (Kellens, Zaalbery, & Maeyer, 2011; Trumbo et al, 2011).

Further, prior research on evacuation generally treats it as a dichotomous variable, looking only at whether someone would choose to evacuate or choose to stay in the hazardous area (e.g. Dash & Gladwin, 2007). However, scholars such as Kang, Lindell and Prater (2007) and Armstrong, Hou and Towery (2019) argued that individuals may take preparatory action when severe weather is imminent other than evacuating the hazardous area. Following work by Lindell, Lu and Prater (2005) during Hurricane Lili, these authors listed six specific activities that may be part of the disaster evacuation process (Kang, Lindell, & Prater, 2007), including, “prepare to leave work, travel work to home,

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