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Predicting Disaster Causing Hurricanes

The research undertaken within this study tested the ability to use the modeling principles of predicting emergency requests for the dynamic deployment of ambulances to predict when a disaster causing hurricane might occur. The study collected data from the Center for Research on Epidemiology of Disasters' (CRED) International Disaster Database and the Federal Emergency Management Agency (FEMA), which resulted in two separate data sets to test within the study. The models tested both the 24-year average and 24-year peak average methods to determine which International Organization for Standardization (ISO) week and its standard deviation have the highest probability a disaster causing hurricane makes landfall. Testing found that the 24-year average performed better than the 24-year peak average with a combined forecast success rate of 76 percent, where the 24-year peak average had a combined forecast success rate of 74 percent. The results showed that a predictable correlation exists, allowing the possible forecasting of disaster causing hurricanes, which could allow emergency managers, decision-makers and community stakeholders to know when the highest probability for a hurricane disaster to occur, which can result in improved hazard mitigation, increased community resilience and aid emergency planning.

Presentation Theme: The presentation theme and its connection to emergency management are that statistical models can be used to forecast the highest

probability that adverse events may occur. The statistical model theme is seen within the study, which highlights the current hurricane season that has a six-month timeframe, which can result in anticipation fatigue because of the long duration. The hurricane season's long duration can also result in logistical difficulties from an extended timeframe and commitment of resources. The research conducted showed that the highest probability for hurricane disasters can be narrowed down significantly, while still reinforcing the need for an all-hazards plan to ensure that resilience and hazard mitigation is met for the outlier events that occurred early or late in the hurricane season. By adding quantitative tools such as those used within the research conducted at additional tools for emergency planning and hazard mitigation, and using these tools, emergency management can increase resilience dividend within the country and foster Additional research into more advanced forecasting techniques and tools.

Collaborators, Advisor(s) and Department(s) that assisted with this research:

Michael Flynn Rega- Principle Author

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