

Morbidity & Mortality of Texas Tornado Outbreaks

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IRB Number: IRB2017-0507

ABSTRACT

Tornadoes, due in part to limits in forecasting and warning, are a significant cause of disaster-related morbidity and mortality in the United States. Texas has experienced the highest number of tornado related fatalities in the last century. An improved understanding of the role of tornado outbreaks (informally defined as a grouping of six or more tornadoes) in morbidity and mortality is necessary in order to mitigate future casualties. However, outbreak severity, though long studied, has not been formally standardized.

Utilizing the Fujita Scale as a severity measure, we examined the impact major tornadoes have in outbreaks and outbreak-related morbidity and mortality rates. Among tornado outbreaks in Texas between 1980 and 2009, there was a statistically significant relationship between the inclusion of a major tornado in an outbreak and higher numbers of injuries and fatalities. This finding has important implications for improving forecasting, warning, and preparation to shelter in place, which is critical during an outbreak continuing a major tornado to reduce morbidity and mortality.

Keywords Tornado hazards, Outbreaks, Tornado classification, Fatalities and injuries, Fujita scale, Severity