

Impact of Precipitation on Motor Vehicle Fatalities in the Carolinas

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As climate projections continue to predict an increase in extreme rainfall events over the course of the 21st century, this change has substantial implications for public health, with one example being the incidence of fatal motor vehicle accidents associated with precipitation and wet pavement.

Using a high-resolution precipitation estimate, we investigate the relationship between observed precipitation and rate of motor vehicle fatalities across the region, examining variations in time of day, season, and precipitation intensity. By collocating fatal accidents taken from the Fatality Analysis Reporting System (FARS) with radar-derived precipitation rates from the newly-developed National Mosaic and Multisensor Quantitative Precipitation Estimate (NMQ/Q2) reanalysis, we are able to match each fatal accident with precipitation estimates from the time (within five minutes) and location (within 1 km) of the accident. By examining the rate of accidents associated with precipitation, compared with climatological normals of precipitation frequency, we can draw conclusions regarding the impact of precipitation on the frequency of fatal accidents.

Using other information contained within FARS, we are also able to examine the relationship between precipitation and other risk factors such as alcohol impairment, seat belt usage, and excessive speed.