

AAA Foundation for Traffic Safety

FACT SHEET

Motor Vehicle Crashes, Injuries, and Deaths in Relation to Weather Conditions, United States, 2010 -2014

Background

- This study investigated the number of motor vehicle crashes, injuries, and deaths that occurred in the United States in years 2010-2014 in relation to weather conditions and roadway surface conditions.
- Nationwide, an average of 1,179,253 police-reported crashes, 425,103 injuries, and 5,137 deaths occurred annually in crashes that occurred in adverse weather and/or roadway surface conditions during the study period.
 - Representing 21% of all crashes, 18.5% of all injuries, and 15.6% of all fatalities during the 5-year study period.

Methods

- The data examined were a representative sample of all police-reported crashes that occur on public roads nationwide and from a census of all fatal crashes nationwide.
 - NHTSA's National Automotive Sampling System General Estimates System (GES, 2015) and Fatality Analysis Reporting System (FARS, 2015)
- Outcome measures examined in this study were the annual average number of police-reported crashes, number of people injured, number of people killed, and rates of injuries and deaths per 1,000 crashes in relation to weather conditions and roadway surface conditions present at the time of the crash.
 - Weather conditions investigated were: rain, snow, sleet, fog, and clear (no adverse conditions)
 - Roadway surface conditions examined were: dry, wet, snow, ice, and other
- Data were analyzed in relation to region and season, given the natural variation in the prevalence of various weather conditions by season of year and region of the country.
 - Northeast (PA, NJ, NY, NH, VT, RI, MA, ME, CT)
 - Midwest (OH, IN, IL, MI, WI, MN, ND, SD, NE, IA, MO, KS)
 - South (MD, DE, DC, WV, VA, KY, TN, NC, SC, GA, FL, AL, MS, LA, AR, OK, TX)
 - West (MT, ID, WA, OR, CA, NV, NM, AZ, UT, CO, WY, AK, HI)

(continued)



Key Findings

- Conditions present in the greatest proportion of crashes was rain (9.2%)
 - Snow (3.4%), sleet (0.6%), fog (0.4%), and other conditions (0.2%) were much less common
- Most crashes occurred on dry roads (79.3%), 14.2% occurred on wet roads, 3.0% occurred on snow-covered roads, 2.6% on roads with ice, and 0.9% in other conditions.
- Adverse weather conditions were present in 18.3% of all crashes in the Midwest and 16.8% of crashes in the Northeast
 - Only present in 11.6% of crashes in the South and 8.8% of crashes in the West
- Regional and seasonal variation was extensive
 - An average of 21% of all crashes (all seasons, all regions) occurred in adverse weather conditions, the proportion ranged from 5.7% of crashes in the West in the summer to 57.8% in the Midwest in the winter.
- Crashes on interstate highways were slightly more likely than crashes on other types of roads to occur under adverse weather conditions (18.6% vs. 13.4%) and on wet roads (17.2% vs. 14.0%).
- Crashes that occurred in fog resulted in 17.3 fatalities per 1,000 crashes, significantly more than any other weather condition.
 - 155% more fatalities per crash than crashes that occurred in clear weather after adjustment for other factors associated with crash severity.

Annual Average Number and Proportion of Crashes, Injuries, and Deaths that Occurred in Adverse Weather or Roadway Surface Conditions, by Season, United States, 2010 - 2014

	Spring	Summer	Fall	Winter	All Seasons
<i>Number (%) in adverse conditions</i>					
Crashes	223,140 (16.7)	152,077 (11.5)	259,940 (17.5)	544,097 (36.9)	1,179,253 (21.0)
<i>Number (%) in adverse conditions</i>					
Injuries	86,966 (15.3)	67,247 (11.6)	100,924 (16.8)	169,965 (30.9)	425,109 (18.5)
<i>Number (%) in adverse conditions</i>					
Deaths	1,076 (13.5)	777 (8.6)	1,252 (14.2)	2,032 (28.2)	5,137 (15.6)

Data: General Estimates System & Fatality Analysis Reporting System: National Highway Traffic Safety Administration (2015). Crashes were counted as occurring in adverse weather or roadway surface conditions if weather conditions

For more information on this study and the AAA Foundation's other traffic safety research and materials, please visit AAAFoundation.org.

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