A001 ENGR

Machine learning and statistical evaluation of HAZMAT related crashes in Tennessee

Abstract
This research applies machine learning and statistical modeling to evaluate and assess factors and variables associated with Hazardous materials (HAZMAT) carrying vehicle crashes in Tennessee. Evaluation includes descriptive statistics, development of safety performance functions (SPFs) and algorithms and models developed though machine learning training of the data. The investigated will include the impacts of traffic conditions, control, environmental conditions, geometry among others in relation to HAZMAT crashes. Safety Performance Functions (SPFs) are developed that will be able to predict and examine the relationships between HAZMAT crash incidents and response efficiency. Some of the factors evaluated include lanes, traffic volumes, shoulder and median, speed limit, land use, terrain, weather condition, lighting conditions, time of the day, day of the week and seasons of the year.