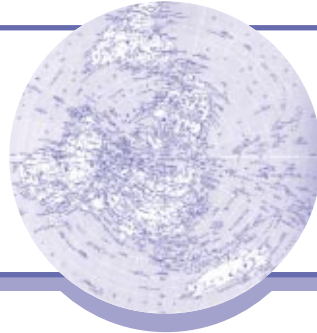


REASSESSMENT OF ROAD ACCIDENT DATA ANALYSIS POLICY IN MINNESOTA

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Why This Research is Needed

Airplane crashes and accidents at nuclear power plants are thoroughly analyzed to determine how they might be prevented. The average person, however, is much more likely to be involved in a car crash, and yet these incidents and their causes do not receive the same scrutiny.

Research Objective

To examine and assess how current crash data are collected in Minnesota in order to discover what more could be learned from already-existing data, what data is missing, and how data might be collected and better used to improve road safety.

Methodology

Researchers Naveh and Marcus began by analyzing crash data from the Minnesota Department of Public Safety's *Minnesota Motor Vehicle Crash Facts*, an annual publication of data from accident reports filed by law enforcement officers. In addition to examining the factors involved in crashes, the researchers analyzed the Minnesota driver's instruction manual to see if what they discovered about the causes of crashes correlated to information in the manual.

In the second part of their research, Naveh and Marcus used data on crashes in Minnesota to learn what factors in a crash are



most important in determining whether injuries or fatalities result. For example, driving on icy roads increases the likelihood of a crash occurring but not of the crash being more severe, because people tend to drive slower on ice. By contrast, not wearing a seat belt will not increase the likelihood that a crash will occur, but will substantially increase the odds of injury or fatality if it does. To examine these factors, the researchers developed two models—one for crashes with fatalities, one for crashes with injuries—and examined the conditions faced and decisions made by drivers.

Research Results

The researchers found that less than one-third of Minnesota's driving manual is devoted to the main causes of crashes as indicated by the data collected and analyzed. The

"If we can study and understand what sort of decisions and reactions are needed in certain conditions, we can improve safety."

—Eitan Naveh, [former] instructor and researcher, Center for the Development of Technological Leadership



researchers also found that it is not always clear who the customers for the data are. Therefore, they recommend improving communication and cooperation among the different organizations that collect and use data, and establishing a sharp and clear definition of customers and users. Additionally, they say that crash data should be communicated in ways that could help ordinary citizens improve their driving ability and avoid crashes.

When examining the factors in a crash that determine whether injuries or fatalities occur, the researchers found that for both models, the most significant condition was rural roads, and the most significant driver decision was not using a seat belt. Overall, the crash data explained the likelihood of fatalities or injuries fairly well, the researchers say. Nonetheless, the data collection process could be improved, perhaps by implementing consistent standards or using technology to improve the accuracy of on-site data collection and to assist in identifying crash locations.

Research Impacts

Naveh and Marcus feel that crash data should be used to initiate learning processes. An overall tightening of the system with improvements in data collection and analysis, and closer ties between the collection and analysis of the data and its use in such programs as driver education, may be able to reduce traffic fatalities and injuries.