Crash Experience—What Makes Low-Volume Roads Different and What Can Be Done About It

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ABSTRACT

Emphasis given to safety on roads in recent years has led to the rise of the concept “safety culture,” which can briefly be defined as promoting safe driving and riding in the common sense within the community. However, low-volume rural roads have been paid less attention than they actually deserve in this context. It has been determined that very low-volume rural roads have relatively higher crash rates than high-speed freeways and other high-volume highways in the state of Iowa. Besides, a higher crash rate than many other states has been observed on secondary low-volume rural roads of Iowa. Since traffic crash modeling is a helpful tool for assessing risk factors and design issues in roadway travel, the aforementioned roads were part of a research project to create a system-level generalized model in order to investigate the underlying reasons. By utilizing the statewide crash data, this model attempted to find the trends in frequency, rate, and severity with respect to crash, driver, and/or roadway variables that would be the best predictors of crashes. Before running the statewide model, candidate sites were identified to establish a better, more comprehensive understanding of crash factors and circumstances. After gaining a clearer understanding of the factors contributing to the severity of crashes by looking at these candidate sites, a further study was done at the driver/vehicle level. The candidate sites were determined based on a decision considering crash rates and densities by counties, particular high-crash locations, and other characteristics such as larger growth rate and very low population density. Video analysis was also utilized and cross-comparison tables were prepared to examine the proportions of various crash characteristics across roads with different volumes and surface type.

Key words: crash rate—low-volume rural roads—safety culture