Fatal and serious road crashes involving young New Zealand drivers: a latent class clustering approach

The over-representation of young drivers in road crashes remains an important concern worldwide. Cluster analysis has been applied to young driver sub-groups, but its application by analysing crash occurrence is just emerging. We present a classification analysis that advances the field through a holistic overview of crash patterns useful for designing youth-targeted road safety programmes. We compiled a database of 8644 New Zealand crashes from 2002 to 2011 involving at least one 15–24-year-old driver and a fatal or serious injury for at least one road user. We considered crash location, infrastructure characteristics, environmental conditions, demographic characteristics, driving behaviour, and pre-crash manoeuvres. The analysis yielded 15 and 8 latent classes of, respectively, single-vehicle and multi-vehicle crashes, and average posterior probabilities measured the odds of correct classification that revealed how the identified clusters contain mostly crashes of a particular class and all the crashes of that class. The results raised three major safety concerns for young drivers that should be addressed: (1) reckless driving and traffic law violations; (2) inattention, error, and hazard perception problems; and (3) interaction with road geometry and lighting conditions, especially on high-speed open roads and state highways.

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