HIGH RISK RURAL ROADS SPATIAL MODELLING

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Abstract

In 2011, the High Risk Rural Roads Guide (HRRRG) was published by the New Zealand Transport Agency (NZTA). The HRRRG aims to provide practitioners and policy makers with best practice guidance to identify, target and address key road safety issues on high risk rural roads. A high risk rural road (HRRR) is classified as a road which has a high or medium-high fatal and serious crash rate (personal risk), or high or medium-high crash density (collective risk). A need arose to efficiently and easily identify HRRRs using the criteria and metric calculations outlined in the HRRRG, and present these visually in a map. This was made possible through the development of a spatial model that was developed and is executable in a geographic information system (GIS). Using current crash data, network spatial data including length, speed limits, and traffic volume the HRRR model is able to identify roads of high or medium-high personal risk and/or collective risk. Two variations of the model were developed, one for state highways, and another for the more fragmented local roads network. Both HRRR models have been applied and found to be useful in accurately and efficiently identifying roads which meet the HRRR criteria.

Key Words: Road Safety, High Risk Rural Roads, Collective Risk, Personal Risk, spatial model, GIS, Crashes.