

Planning for motorcycling – A strategy to manage motorcycle risk on the West Coast of New Zealand

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Abstract

The relative scarcity of motorcycle crashes can result in limited sample size on which to base decisions. This can lead to use of limited or outdated historic information and over focussing of effort on random incidents and locations. By reviewing motorcycle crash records, site features, rider feedback and asset management data it is possible to identify combinations of common underlying risk characteristics for route screening. By interrogating route-wide asset data, a risk-based treatment strategy comprising of a combination of reactive and proactive locations and treatments were determined.

Strategic context

Nationally between 2008-2017 there were 481 deaths and 4387 serious injuries involving motorcycles & mopeds. Deaths and serious injuries involving motorcyclists in New Zealand are disproportionate to the distance travelled, with the risk of being killed or seriously injured around 18 times higher than that of car drivers¹. Motorcyclist safety is identified as a core road safety focus in the NZ Government's Safer Journeys Action Plan².

Project Background

SH6 is a scenic route on the west coast of New Zealand's South Island which includes mountainous and coastal terrain making it an attractive touring route for motorcyclists. The route is characterised by its curvilinear alignment, limited shoulder width, poor sight distance and unforgiving roadsides which include steep drop offs and rock walls. During the period 2008-2017 there were 102 crashes recorded of which 8 were fatal and 42 were serious on the 536km study length. Of these just 14% had a previous injury crash recorded at the same location within the previous 5 years. This means that by solely focusing on discreet crash locations using traditional crash density or blackspot mapping, underlying infrastructure risks may not be identified.

Methodology

Detailed review of motorcycle crash records, site features, rider feedback and asset management data were analysed to identify common characteristics featuring at crash sites. Review of the crash data showed almost half of the motorcycle crashes involved cornering in 100km/h speed zones and of these 64% occurred on curves with 45% occurring on moderate & severe curves. Common issues identified included surface condition (surface flushing, loose material/rockfall on the road, surface water, rutting and surface changes in the braking zone), poor forward sight distance and limited or no sealed shoulder.

Information from the Road Asset Maintenance & Management database was interrogated to identify features which were related to the risks identified. Overall 6 underlying characteristics were determined that featured highly in the data that had a high correlation with motorcycle crashes on SH6. These were mapped in GIS to enable spatial review of the various risk data. By interrogating network data, further locations were determined that exhibited common risks and could be reconciled into tangible route lengths for further evaluation and site inspection.

A programme of works was prepared which included remedial measures at sites and route sections with deficiencies. This included sites with both a history of crashes, and also at sites designated as having an elevated high potential for future motorcycle crashes based on the risk mapping.

Conclusion

The use of asset management data can be effectively used to supplement crash data and be used to proactively identify sites and routes with a high potential risk of motorcycle crashes. These in turn can be used to develop a programme of sites for further investigation. The resultant risk mapping can be used to inform the overarching motorcycle safety strategy and improvement projects, raise awareness of network risks and influence incremental improvements that can be administered through routine maintenance activities.

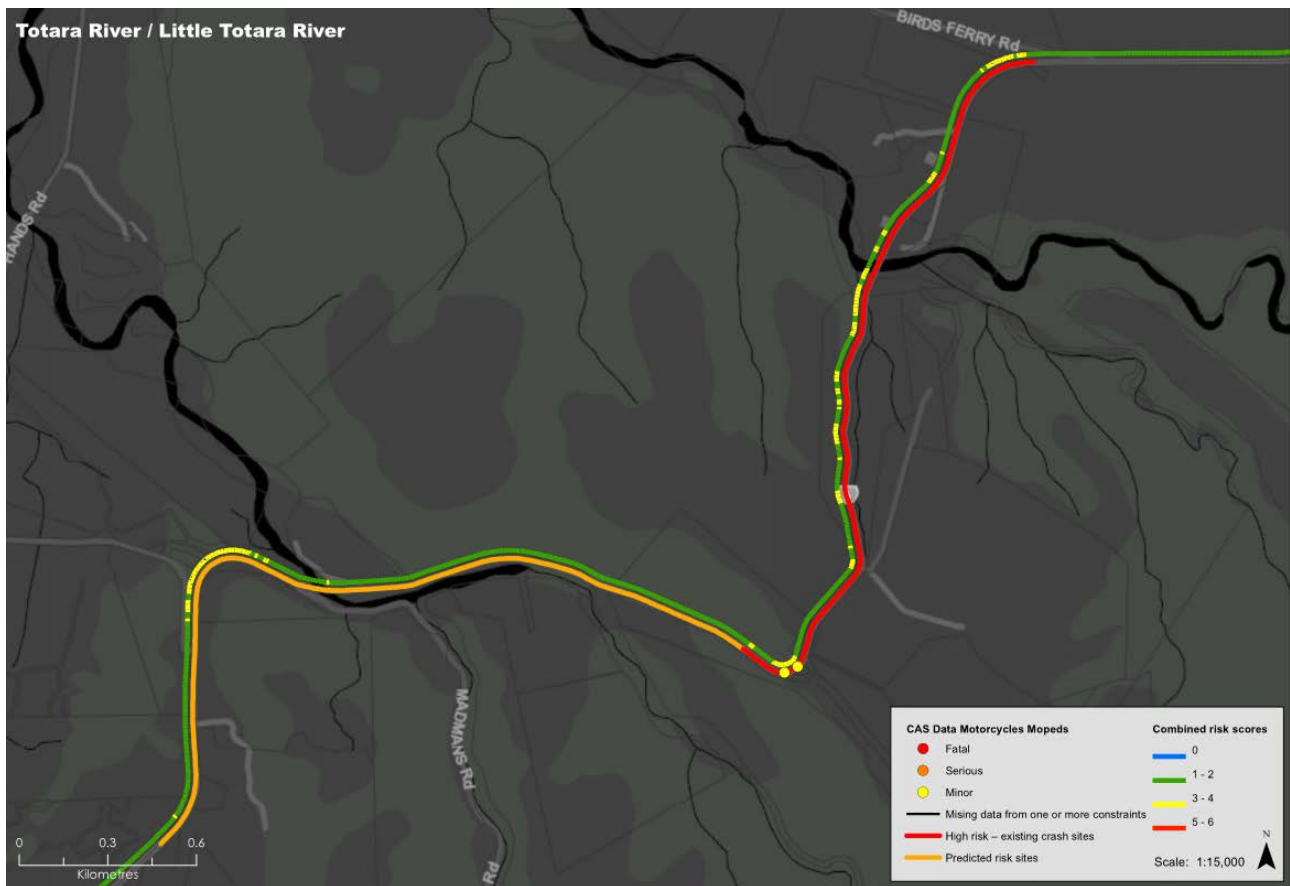


Figure 1. Motorcycle Risk Rating Mapping

References

1. <https://msac.org.nz/assets/Uploads/pdf/NZTA-Safer-journeys-motorcyclists-web.pdf>
2. <https://www.saferjourneys.govt.nz/assets/Safer-journeys-files/Safer-Journey-Action-Plan-2016-2020.pdf>