

High risk intersections: making sense of safe systems in practice

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Abstract

The Safer Journeys strategy is based on the safe systems approach and we are expected to implement it in practice. What does this mean for the decisions we make every day about how we design and manage safety at intersections? The safe system approach refocuses us on reducing deaths and serious casualties. This presents several challenges:

Due to low numbers the recent history of fatal and serious crashes is a poor predictor of future crashes. We risk chasing random small crash clusters around the network.

There is no database of intersection volumes and characteristics so a risk assessment approach like KiwiRAP is not presently feasible.

Available crash prediction models only predict injury crashes and do not predict injury severity.

Published crash reduction factors for countermeasures rarely differentiate by crash severity.

New Zealand has published a high risk intersections guide that starts to address these issues. At the heart of the guide is the assessment of risk – especially identifying those locations where there is a heightened risk of fatal and serious (F&S) crashes. Because there is typically insufficient F&S crash data, a method of using all injury crashes and typical severities of different crash types to estimate F&S crash risk was developed and tested. It was found to be more accurate at predicting future F&S crashes. By adding exposure data we can compare observed and predicted crash rates, to estimate the potential for safety improvements at each intersection called the Level of Safety Service (LOSS). This is used to prioritise intersections for detailed investigation. All this results in more attention to pedestrian and cyclist casualties in urban areas, reducing crossing and turning crashes between vehicles and highlighting the benefits of roundabout solutions.

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