

Knowing where to Start: The New Zealand Approach to Developing Road Safety Infrastructure Programmes

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Abstract

Identifying locations that have the potential to yield significant reductions in road trauma is the first and most critical aspect in developing road safety investment programmes (RSIP). The New Zealand Transport Agency has developed a strategic approach to identifying high-benefit opportunities that moves away from a focus on sites with High Collective Risk alone. This strategic approach helps avoid a perennial problem of identifying locations with an apparent safety problem, but little potential for improvement without transformational change. Analysis indicate the approach is a more reliable way to develop RSIP and to realise the benefits they are designed to achieve.

State Highway Gap Analysis Approach

The New Zealand Transport Agency has adopted a 'Gap Analysis' approach to understanding risk across the entire State Highway network using GIS analysis techniques and a variety of risk metrics within SafetyNET (Durdin & Janssen, 2012). All 'high-risk' locations are identified before excluding locations where improvements are programmed to take place. The remaining high-risk locations are then prioritised based on reactive measures of current safety performance using fatal and serious crash density, and estimated deaths and serious injuries (DSi) per km (Brodie et al.), as well as a proactive Star Rating measure. The prioritised sites are then analysed for potential countermeasures either by the Safe Roads Alliance, or by the regional State Highway offices.

The strategic approach to identifying and prioritising high-risk sites is helping the New Zealand Transport Agency deliver a more targeted RSIP across the State Highway network that is expected to outperform traditional site-by-site analysis approaches in terms of road trauma reduction.

Local Authority RSIP Proposal

Since 2010, the New Zealand Transport Agency and their Safer Journeys partners have commissioned the development of a number assessment tools and techniques that move away from traditional methods of identifying high-risk locations. Reliance on total crash numbers and the social cost of crashes are replaced with approaches that are based around risk and the likelihood of death and serious casualties occurring in the future.

These evidence-based risk assessment techniques have been encapsulated in the suite of "High-Risk" guides and recognised as the best practice methods for determining 'high crash risk' within the Strategic Fit component of project and programme funding assessment profiles.

The outputs of these assessments have been used to identify approximately 4,000 km of high-risk roads managed by Local Authorities, which account for 36% of all fatal and serious crashes on local roads over the past 5 years, yet only represent 5% of that network by length. The New Zealand Transport Agency is developing a RSIP proposal formulated from these high-risk roads.

Because the roads managed by local authorities are complex and exhibit a broader range of characteristics than the State Highway network, a different approach is used to prioritise high-risk locations within the RSIP proposal. Here, high-risk locations are prioritised based on the potential for improvement using Personal Risk and Level of Safety Service (LoSS) metrics rather than applying a risk reduction factor to Collective Risk. The RSIP is then populated based on estimated DSi

reduction per \$100 million spend. The approach is considered a more reliable and cost effective way for developing RSIP to realise the benefits they are designed to achieve.

Selecting Countermeasures

Whilst identifying the locations is the first and most important step, identifying the appropriate level of intervention becomes the next. Nirvana would have us implement a fully Safe System compliant infrastructure solutions, however in many instances this may not be practical, nor affordable or publically acceptable. Hence a pragmatic approach has been developed with a mix of traditional and Safe System solutions.

This paper will be of interest to everyone involved in the development and delivery of RSIP.

References

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