Streamlining the development of effective road safety programmes

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Abstract

The Northland Programming Tool was developed for the Northland Transport Alliance and was named as a finalist for the 2019 New Zealand *3M Traffic Safety Innovation Award*. The tool assists practitioners with identifying the appropriate intervention to install on a selected corridor or intersection. It allows these projects to be added to a programme and then assists with the prioritisation of projects within a programme. Prioritisation is done based on the available budget and a user defined metric, such as the highest death and serious injuries savings per kilometer of road network. This paper also explores the opportunities for further developing the tool.

Introduction

The Northland Programming Tool was developed as an enhancement to the The Northland Transportation Alliance Risk Mapping Application[1] (presented at ACRS, 2018). The tool seeks to streamline the development of road safety programmes by collating risk data, integrating guidance and providing comparisons between interventions and projects in an easy to use web-application.

Project development

To build a road safety programme; users first need to populate projects. This is done by reviewing the risk profile on the network to identify a corridor or intersections to investigate further. Once a corridor or intersection has been selected, a list of recommended interventions is then available for the practitioner to review. The interventions are populated based on an automated process which considers road attributes, crash history, speed environment and alignment with guidance[2]. The practitioner is then able to apply their local knowledge to identify which interventions are worthy of consideration.

By entering in cost estimates for these potential interventions, the tool shows the user the relative benefits of each intervention, including the anticipated annual death and serious injury (DSi) savings and benefit cost ratios (BCR)'s. The cumulative benefits and BCR can also be calculated if multiple interventions are proposed e.g. wide centreline and audio tactile profiled edge line markings.

Once a practitioner has selected the intervention(s) for this corridor/intersection, this project can then be added to a programme.

Programme Prioritisation

One other challenge faced by road controlling authorities (RCA's) is that while there are many projects that may have merit in completing, all programmes are constrained by the available funding.

The Northland Programming tool assists practitioners with this by filtering out projects based on the available budget for the programme and a user defined metric for prioritisation. The metrics included in the tool for the NTA include ranking projects based on:

- BCR

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[1]Ford et al. (2018)

[2] Guidance incorporated in the tool included the New Zealand Transport Agencies *High Risk Intersection's Guide* and *High Risk Rural Road Guide*

- DSi saved per kilometre of road network
- DSi saved per vehicle kilometres travelled
- DSi saved per dollar spent

Next steps

The Northland Programming tool offers a number of opportunities for further development to better assist road safety programming. At present the tool only incorporates input from New Zealand guidance however, this could be expanded to include Austroads and other sources of international best practice. The tool could also assist with project reviews, by building in an automatic calculation of actual crash reductions vs. projected crash reductions after a project has been completed.

Conversely, the tool could also be amended to assist central/state government funding approvals. In this scenario, the tool would review projects to compare whether the proposed intervention(s) are appropriate in magnitude for the scale of the issue and whether they would likely address the crash risk.

References

Ford, Durdin and Harris (2018) Streamlining road safety risk mapping and intervention programming on local networks: The Northland Transportation Alliance Risk Mapping Application, viewed February 2019, (http://acrs.org.au/files/papers/arsc/2018/JACRS-D-18-00218-Ford.pdf)

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