

Using ANRAM to Assess the Impacts of Network-Wide Road Safety Interventions: Development and Experience of the SSRIP Planning Tool

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Abstract

VicRoads has developed a program planning tool (the SSRIP Planning Tool) utilising the Australian National Risk Assessment Model (ANRAM). This tool allows planning teams to quickly and easily predict the benefits of broad programs of safety treatments across the State's entire arterial road network. The tool is being used by the Safe System Road Infrastructure Program (SSRIP) to inform the future direction of the program. A number of scenarios have been run to demonstrate the value of the tool.

Background

ANRAM is a tool that enables us to calculate fatal and serious injury crash risk based on road infrastructure, speed, traffic flow and crash history (ARRB, 2018). VicRoads have been using ANRAM at a project level for a number of years using an online tool which has now been adopted by Austroads. In order to utilise the ANRAM model for program level decision making a new tool has been developed. The user is able to filter the road network based on any of the ANRAM input variables, the current ANRAM results and other factors such as VicRoads region. The ANRAM model can then be run on this selection to determine the effect a program of work, for example speed reduction, would have on Fatalities and Serious Injuries.

How the Tool Works

The SSRIP Planning Tool works by leveraging the base-case calculations already performed in the ANRAM tool. Whenever the base-case calculations are run in the ANRAM tool, a mix of the input and result data is copied into the SSRIP Planning Tool database. The user is then able to use a web front-end to select the fields and the values they wish to filter on, and the treatments they wish to perform on that selection. The model is then run only over the filtered sections and the results are sent as a CSV file to the user via email.

Unlike the ANRAM tool, the SSRIP Planning Tool does not allow the modification of individual segments. Due to this, only the selection and treatment inputs need to be captured in the database in order to define the model parameters. This allows the model's source data table to be heavily optimised for reporting, instead of needing to worry about access for transactional data. This optimisation, combined with the need to only report using CSV files and not PDFs, allows the SSRIP Planning Tool to demonstrate significantly higher performance when compared to using the ANRAM tool for the same task. While an ANRAM report for a several hundred kilometre section of road could take many hours to run, the SSRIP Planning Tool will produce a report in a few minutes.

SSRIP Planning Tool Home New Template ANRAM Documentation Help

Edit Template Edit Template

Edit Template Values

Template: "Outer Metro Tactile"

Speed Limit 80km/h ✕ 90km/h ✕

Land Use Drivers Side

Undeveloped areas ✕ Farming and agricultural ✕ Commercial ✕ Not Recorded ✕

Educational ✕ Industrial and manufacturing ✕

Land Use Passengers Side

Undeveloped areas ✕ Farming and agricultural ✕ Commercial ✕ Not Recorded ✕

Educational ✕ Industrial and manufacturing ✕

Curvature Straight or gently curving ✕ Moderate curvature ✕

Road Type rural undivided ✕ urban undivided ✕ urban local ✕

Save & Continue Reset Back

Figure 1. Example SSRIP Planning Tool Template

Applications of the Tool

The SSRIP Planning Tool has been used to investigate the impacts of a range of program and policy options including:

- Changes to speed limits
- Widespread application of Audio Tactile Line Marking
- Pavement condition improvements
- Barrier programs
- Network wide shoulder sealing

The tool's ability to quickly and easily provide a high level assessment of benefits allows users to test ideas which would otherwise be dismissed on nothing more than assumptions

References

Australian Road Research Board (2018). ANRAM | Australian Road Research Board. <https://www.arrb.com.au/anram-1>