

Crash data show road safety measures must improve

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By analyzing the trends and locations of crashes in the Greater Melbourne Area during a 15-year period, from 2006 to 2020, Dr. Ali Soltani, from the Flinders Health and Medical Research Institute at Flinders University, and his research colleagues have determined the places where crashes were most prevalent and reasons contributing to high crash rates in those areas. [The study](#) is published in *Transport Policy*.

A Tweedie model was developed to examine the intricate interaction between [crash](#) frequency and potential contributing factors such as socio-demographics, road transport infrastructure and the built environment. A clustering analysis identified road crash risk ratings among different local government areas in Melbourne, offering useful insights into [road safety](#) initiatives and prioritization.

"Road safety has been a policy priority in Australia for decades but the rate of road transport injuries is not declining," says Dr. Solanti, noting that hospitalization rates over the past nine years have increased, with no decline in "high threat to life" hospitalizations.

"While the Australian Federal Government and State Governments have introduced policies and initiatives including road safety campaigns, [infrastructure improvements](#), speed restrictions and graded licensing process—along with imposing [safety regulations](#) for vehicles sold in Australia, as well as sanctions and repercussions for reckless driving—we still see that traffic crashes remain alarmingly high."

Dr. Solanti says investigating road crash temporal and spatial patterns are essential to build better prevention strategies that target high-crash times and areas, distribute resources more efficiently, improve emergency response times, and assess road safety initiatives.

"Analyzing the space-time data may improve Victorian policy and support evidence-based actions for a safer, more resilient transportation infrastructure," says Dr. Solanti.

A comprehensive strategy is now required to address the built environment's effect on road traffic crashes. "Special land use activities such as commercial and parkland can affect road safety, and knowing how built environment variables contribute to crashes can help building safer roads and minimize injuries and deaths."

To mitigate road crash frequencies in Melbourne, the researchers say a critical measure involves implementing lower speed limits in local streets with a priority to calm alarming speed problems in Central Melbourne and its inner urban suburbs.

This study investigated crash patterns in several [geographic regions](#) to identify disparities and commonalities in crash incidence—vital facts for policymakers when distributing resources for road safety measures.

Importantly, data modeling also allowed the researchers to make confident predictions of crash frequency for the next 15 years.

"It is anticipated that downtown Melbourne will continue to be the primary location for crash hotspots, while the inner suburbs are expected to have a decrease in the occurrence of crashes, thereby enhancing safety levels," says Dr. Solanti.

The mountainous Cardinia and Yarra Ranges regions situated in the eastern part of Melbourne are anticipated to see a heightened incidence of vehicular crashes—along with several western suburbs, Melton, Hume, Moorabool, and Brimbank, and a growing trend of increasing crash frequency in beach towns located either in the western region (Wyndham and Greater Geelong), or in the eastern region, including

Frankston, Mornington Peninsula and French-Elizabeth-Sandstone Island.

More information: Ali Soltani et al, Space-time analysis of accident frequency and the role of built environment in mitigation, *Transport Policy* (2024). [DOI: 10.1016/j.tranpol.2024.02.006](https://doi.org/10.1016/j.tranpol.2024.02.006)

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