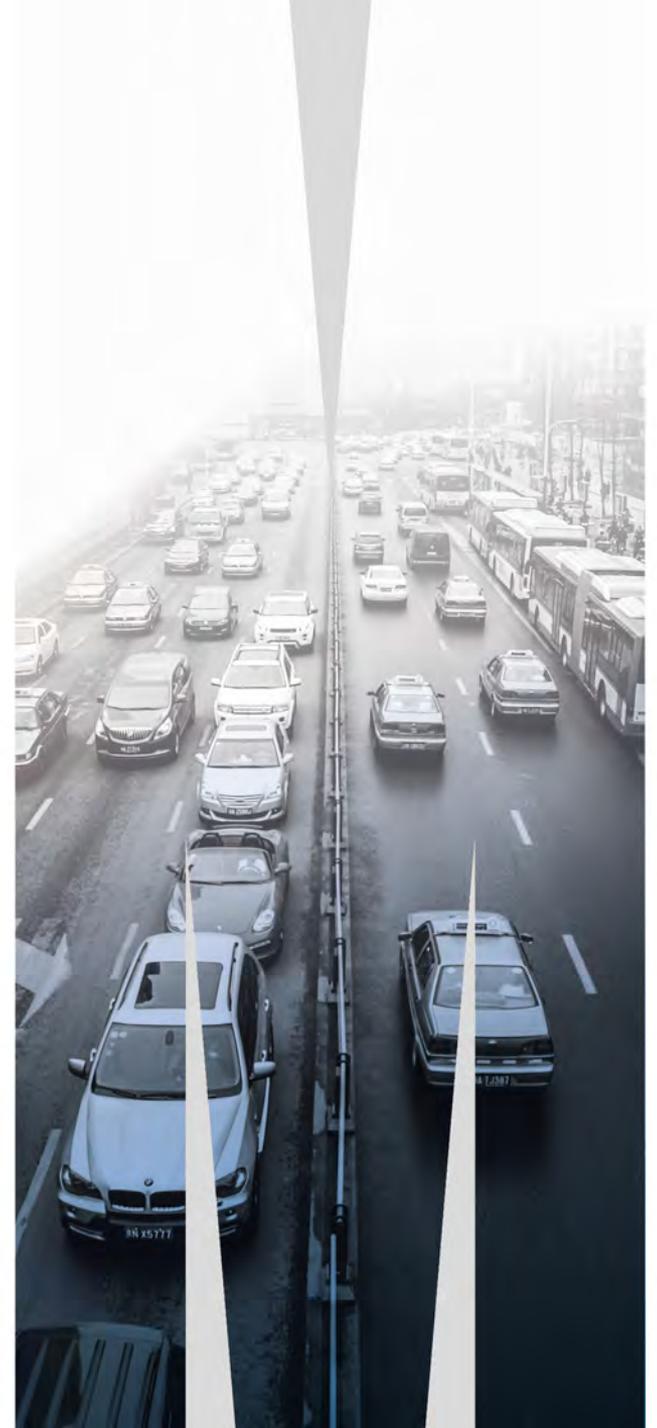


Understanding pedestrian crashes in Victoria

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Background

- Many benefits of increased walking trips
 - Health and well-being
 - Community liveability and social inclusion
 - Environment
- Pedestrians are vulnerable
 - Lack of physical protection
 - Limited capacity to withstand biomechanical forces
 - Most at risk when impacted by a vehicle and at speeds higher than 30-40km/h
- Victoria has the second highest rate of pedestrian injuries per population

Background (2)

- The majority of pedestrian injury research focuses on Police-reported data, and some hospital-based data.
- Limitations of previous studies:
 - Little consideration of pedestrian trauma across a broader spectrum of injury severity.
 - Focus on analysis of incidence with little consideration of exposure measures in order to identify injury risk.
- More robust analyses are therefore required to provide a comprehensive understanding of rates of pedestrian injuries.

Study Aims

- Develop a comprehensive understanding of the issues and factors associated with pedestrian injury across all levels of trauma, with a particular focus on injury resulting from collisions with other road user types.
- Investigate the rates of pedestrian trauma in Victoria using an ecological study design.
- Provide a set of recommendations for policy positions, interventions and further research opportunities to reduce the risk and prevalence of pedestrian road trauma.

Methods

- Literature review
 - Consolidate previous research and understand key issues that have previously been identified.
 - Understand the current state of knowledge regarding effective countermeasures to reduce pedestrian trauma.
- Analyses of multiple injury register datasets
 - Crash data
 - Injury data
 - Death data
 - Exposure measures



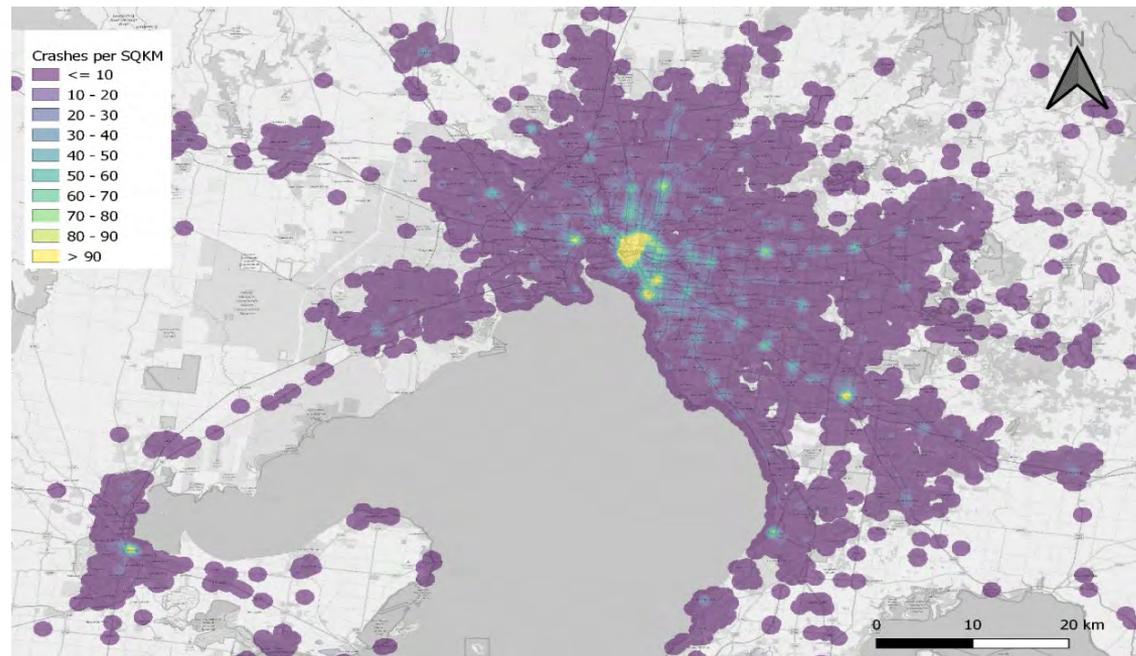
Databases

- Crash data: Victoria Police Accident Records System (VPARS) linked to the Transport Accident Commission (TAC) claims dataset.
 - Linked cases from the dataset extracted for all pedestrian injuries between 2009 and 2018.
- Injury data: Hospital admissions data from the Victorian Injury Surveillance Unit (VISU).
 - ED presentations: Victorian Emergency Minimum Dataset (VEMD).
 - Hospital admissions: Victorian Admitted Episodes Dataset (VAED).
 - All pedestrian cases between 2008 and 2017 were extracted.
- Death data: National Cause of Death Unit Record File (COD URF).
 - All pedestrian-related deaths registered during the period 2008 to 2017 extracted.
- Exposure measures:
 - Victorian Integrated Survey of Travel and Activity (VISTA) (surveys during 2009 and 2014-2016), variables included population, distance travelled, and number of trips.
 - Vehicle registration data (to complement the VPARS data), providing an indication of pedestrian exposure to collision counterparts.
 - ABS population statistics.

Results: Crash data

- A total of 15,092 injuries to a pedestrian, resulting from a crash, were reported to police.
- Males were over-represented (51% of reported cases).
- Young adults were the most prevalent age group (41% of reported cases).
- Adults aged 70 years and older over-represented (15% of cases, & only representing 10.7% of the Victorian population).
- Majority of injuries occurred on the carriageway (34% nearside, 22% farside and 5% emerging.)
- Police reported the driver involved in the crash as offending in 46% of collisions (36% were not offending, 18% unknown).
- A concerning finding was that 15% percent of collisions were coded as Hit/Run.
- Cars were involved in 17.9 pedestrian crashes for every 100,000 registered vehicles in Victoria. By comparison, the crash rates for taxis (728.3), panel vans (204.5) motor scooter or moped (154.7) and buses (99.0) were all much higher.
- Majority of crashes were reported within the Metropolitan Melbourne area (82%), albeit rural and regional Victoria were over-represented when considering population statistics.
- Majority of collisions (75%) occurred in 60km/h or less environments.
 - A significant relationship between speed environment and injury severity was found: fatal and serious injuries more likely on roads with speed limits of 80km/h or above.

Results: Crash data – spatial analysis



- High concentration in Melbourne CBD and extending from Southbank to Carlton.
- Other sizeable clusters in St Kilda, Prahran and Footscray (inner city), and Preston, Dandenong, Frankston and Werribee (outer city).
- Clusters at many major intersections, particularly along major arterial corridors, and in the vicinity of railway stations.
- Outside of Metropolitan Melbourne, the LGAs with the highest proportion of collisions included Geelong, Ballarat, Bendigo, Latrobe and Shepparton.

Results: Injury data

- Injuries:
 - Between 2008 and 2017 there were at least 10,845 hospital admissions and 11,590 emergency department presentations involving an injured pedestrian (averaging more than 2,200 per annum).
 - When considering the types of injuries sustained, the most commonly injured body region was the head, followed by injuries to the knee, lower leg and foot. Across the two datasets, fractures were the most common type of injury, representing 21.3 percent of cases to the ED and 44.5 percent of hospital admissions.
- Deaths:
 - Overall number of deaths has decreased.
 - An average of 56.4 fatal pedestrian injuries were recorded per annum in Victoria.
 - The majority of pedestrians were killed due to being hit by a car (68.4%), followed by heavy transport vehicles or buses (13.1%) and trains (9.2%).
 - Males were over-represented amongst pedestrian fatalities, representing 66.0 percent of reported cases.
 - When controlling for population, there was a positive relationship between age and crash risk, with increasing fatal rates observed as pedestrians age increased.

Results: Incidence rate ratios

- Gender:
 - Adjusting for population, males had a higher relative risk (5%) of crash involvement compared to females (not significant).
 - Adjusting for number of trips and distance, males were at significantly higher risk of injury compared with females, 20% and 14% respectively.
- Age group:
 - Adjusting for population, children (0-15 years) had roughly half the risk of crash involvement, compared with over pedestrians (16-39 years).
 - Adjusting for population, adults aged 70 years and older were increasingly likely to be injured as a pedestrian.
 - When considering distance travelled and number of trips, the relative risk of injury was similar for each population group.
- Risk over time:
 - Time trend analysis indicated that the relative risk of injury across gender and age decreased when considering population, number of trips and trip distance as exposure measures.
 - The lowest rates of reduction were among older pedestrians, when considering population.

Discussion

- Walking is getting safer, with fewer injuries per head of population, however previous progress in reducing the total number of pedestrian injuries has plateaued.
- Older pedestrians, aged 70 years remain at greater risk of injury than younger adults (16-39 years).
- The other subgroup of high injury risk pedestrians identified in this study were young adults, particularly males.
- High risk areas include highly pedestrianised areas with relatively high speed limits.
- Some driver characteristics may contribute to increased pedestrian collision risk including the presence of alcohol and distraction through mobile phone use.
- There was also an alarming number of collisions coded as a hit and run.
 - (it is noted that these data did not provide details on pedestrian behaviour that may have contributed to risk).

Implications of findings

- Opportunities to make real changes that will drive down deaths and serious injuries.
- Pedestrian safety is at the core of providing safe and accessible environments for vulnerable road users.
 - Therefore important that a comprehensive, holistic approach is adopted that includes engineering, legislation, enforcement and behavioural measures (including promotion of active travel).
- Recommendations centre around implementation of Safe System principles.

Recommendations (1)

- Safer speeds and safer roads:
 - Speed limit reductions to 30km/h in areas of high pedestrian activity.
 - Supported with appropriate traffic calming infrastructure.
 - Implementation of Safe System aligned treatments (separation, improved sight distance, provision of safe and accessible walking routes).
- Safer vehicles:
 - Improved uptake and awareness of safer vehicles (utilise existing information and resources, e.g., www.howsafeisyourcar.com.au, www.ancap.com.au, used car safety rating guides).
 - Further development of technologies to assist with detection of pedestrians and crash avoidance.

Recommendations (2)

- Safer Road Users:
 - Support national efforts to promote walking and walkable communities through health promotion campaigns.
 - For drivers: more educational and training programs addressing pedestrian safety and adoption of safer driving practices and enforcement of lawful driving.
 - For older pedestrians: support and promote active travel, smart technologies to provide information, education and training.
 - For children: educational and training programs promoting safe active travel; co-ordination with schools, parents and councils to provide safety around school environments.
 - For young adults: programs addressing alcohol and drug use and walking, alongside measures to manage the road environment around alcohol venues.

Conclusions

- This project sought to provide the clearest possible picture of pedestrian crashes in Victoria given the available information and statistics.
- Encouraging increase in walking amongst Victorians, however, pedestrian trauma remained substantial.
 - We can't be complacent.
 - We have the tools and opportunities to create smart, walkable and liveable communities to support safe walking.
 - Need co-ordinated efforts and investment to implement evidence-based and sustainable measures.

Thank you for your attention!

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