Reducing pedestrian-vehicle conflict in the central city through improved design

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Abstract

Balancing the diverse safety and usability needs of drivers and pedestrians in a vibrant Central Business District (CBD) is a challenge. This study investigates pedestrian-vehicle interaction behaviour in relation to recent traffic management changes and under different road environments to identify interventions to improve road safety in city centres.

Video footage was used to naturalistically observe 1527 pedestrian crossings in Wellington, New Zealand. Exploratory studies reviewed footage that observed (1) pedestrians over time to explore consistency in crossing behaviours and lead-up behaviours, and (2) pedestrian crossing locations to assist in identifying problem locations (taken from a bus travelling through the CBD). The main study examined footage taken at four fixed sites that were chosen to provide variation in accident and infrastructure characteristics. A range of explanatory factors were measured, including pedestrian characteristics (age, gender, clothing, footwear, headwear and activity), environmental characteristics (road width, roadside infrastructure, crossing type, sight distance), crossing characteristics (tempo to kerb, group size, wait time, crossing speed, partial crossing, and time of day), looking behaviour (prior and during crossing) and compliance characteristics (spatial and temporal compliance). Safety performance was measured by conflict characteristics, including actual conflict, potential or "near miss" conflicts, and evasive vehicle behaviours.

Safety interventions are recommended and discussed based on social marketing interventions, vehicle design interventions, and engineering and design interventions. The findings provide insight into the tools that can be used to improve pedestrian looking, waiting and gap acceptance behaviour, with a focus on design interventions.

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