

## Safer cycling: An in-depth crash study in Melbourne, Australia

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### Abstract

Despite increasing participation, cyclists remain vulnerable road users. This study aimed to describe crash characteristics and patient outcomes of a sample of cycling crashes occurring in Melbourne, Australia. A structured interview was conducted and in-hospital and long-term outcomes were extracted from the VSTR and VOTOR registries. 186 cyclists participated in the study. Cycling crashes commonly occurred during daylight hours and in clear weather conditions. 72% of crashes occurred on road, of which 22% occurred in dedicated bicycle lanes. While 76% of cases were classified as major trauma, 93% of injured cyclists had returned to work at 6-months post injury.

### Background

Cycling participation is increasing in Australia (Australian Sports Commission, 2010) and is seen as a form of sustainable transport with associated health benefits (Better Health Victoria, 2007). However, cyclists remain vulnerable road users and injury rates are increasing (Henley and Harrison, 2012; Sikic et al., 2009). Efforts to identify factors associated with cycling crashes are needed to inform targeted interventions. The aim of this study was to describe the crash characteristics and patient outcomes of a sample of cycling crashes occurring in Melbourne, Australia.

### Methods

Cycling-related trauma patients were recruited from two adult major trauma centres in Melbourne (The Alfred Hospital and the Royal Melbourne Hospital) during the 2013 calendar year. Patients were invited to participate if they met the following criteria: emergency admission to The Alfred or Royal Melbourne Hospital for >24 hours, admitted for management of a cycling-related injury, and eligible for registration on the Victorian State Trauma Registry (VSTR) or the Victorian Orthopaedic Trauma Outcomes Registry (VOTOR). Enrolled patients completed a structured interview during their hospital stay, which included demographics, details of the crash circumstance, specific risk factors, and events leading to the crash. Injury, in-hospital outcomes and 6 and 12-month post-discharge information was extracted from the VSTR and VOTOR. Descriptive statistics were used to provide an overview of the patient profile, crash circumstances, injury patterns and outcomes.

### Results

186 cyclists (81% male) were enrolled in the study with a median age of 44 years (interquartile range, IQR: 34-54). At the time of the crash, cyclists were commonly riding for recreation, fitness or training (n=95, 51%) or commuting (n=50, 27%). Events generally occurred in clear weather conditions (n=144, 79%) and during daylight hours (n=145, 81%). There were 40 cyclists (22%) whose crashes occurred whilst riding in a bunch.

128 cyclists (72%) had crash events on-road while 50 occurred off-road (28%). Of the on-road crashes, 52% (n=65) involved another road user and 22% (n=25) occurred while the cyclists was riding in a dedicated bicycle lane. The majority of off-road crashes occurred on bicycle paths (n=26, 61%) and were single bicycle crashes (n=40, 82%).

Cyclists commonly sustained isolated upper extremity (n=45, 24%), spinal (n=35, 19%) or isolated lower extremity injuries (n=29, 16%). 76% of cases (n=142) were classified as major trauma. Helmets were worn in 97% of cases. Median hospital length of stay was 3.7 days (IQR: 2.2-6.0). 93% of injured cyclists returned to work at 6 months, and this increased to 96% at 12 months post-injury. Despite this, only 34% (n=56) of participants had complete recovery (Glasgow Outcome Scale-Extended = 8) at 6 months and 46% (n=77) at 12 months post-injury.

### **Conclusions**

In this sample of cycling crashes, events commonly occurred during daylight hours and in clear weather conditions. Approximately one quarter of on-road cycling crashes occurred while the cyclist was riding in a dedicated bicycle lane. Despite the majority of cases being classified as major trauma, nearly all cyclists had returned to work at 6 months post-injury. These data can be used to identify targeted interventions to reduce injury in cyclists.

### **References**

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