



Original communication

Injury patterns and features of cycling fatalities in South Australia



Kelly Olds ^{a, b}, Roger W. Byard ^{a, b}, Neil E.I. Langlois ^{a, b, *}

^a School of Medical Sciences, The University of Adelaide, Frome Road, Australia

^b Forensic Science SA, Adelaide, SA 5005, Australia

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ABSTRACT

There has been an increase in cycling in Australia. This means that more cyclists are at risk of injuries, which account for a proportion of transport-related fatalities. In this study, all cyclist fatalities from 2002 to 2013 in South Australia where post-mortem examinations were performed were investigated. There were 42 deaths representing 3% of the total road fatalities over the same time. Of this total number of cases, 13 deaths (31%) involved collapse (mostly natural causes from an underlying medical condition) and 29 (69%) resulted from trauma. There were no cases of hyperthermia. Of the decedents 95% were male, and the mean age at death was 47 years. Fatal incidents were more likely to occur during April and November, and on a Monday. However, statistical analysis was not possible due to the small number of cases. Fatalities (traumatic and collapse) predominantly occurred whilst the cyclist was riding (86%). The majority of riding fatalities were as a result of collision with vehicles (81%). Drugs (including alcohol) were detected in two (15%) of the 13 cases of the collapses, and in seven (26%) of the 27 trauma cases tested. In trauma cases, death was most often due to multiple injuries. The most frequent area for injury was the head (found in 90% of traumatic deaths). Despite the increasing numbers of cyclists on South Australian roads over the last decade, death rates have trended downwards suggesting that road safety campaigns and the provision of more dedicated bicycle lanes have had a positive outcome.

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1. Introduction

In recent years, there have been an increasing number of bicyclists in Australia. In South Australia, a state with approximately 1.7 million people,¹ the number of cyclists on an average weekday has almost doubled, with 4821 in 2004 compared to 9569 in 2014.² The number of cyclists over the course of this period showed an average annual increase of 10%.² Whilst the number of cyclists on South Australian roads has increased in the last decade, the incidence of cyclist fatalities has decreased (from 0.1% in 2004 to 0.04% in 2014), indicating improved safety for this group of road users.³ The increasing trend in cycling has been observed particularly in those aged 15 years and above.⁴ Whilst this increase is positive, illustrating that many Australians are trying to be more active, it has also resulted in a larger group of cyclists at risk of transport-related injuries.⁵ Cyclists in Australia still account for one in seven traffic incidents resulting in serious injuries, and about one in 40 events where injuries sustained on the road are fatal.⁶ Whilst cyclists comprise a significant subgroup of serious and lethal

transport-related injury in Australia, there has been a relative lack of studies performed in this area. This study was undertaken to examine the fatal injuries that were incurred by cyclists in South Australia from 2002 to 2013, in order to highlight common findings at post-mortem examination.

2. Materials and methods

Forensic Science South Australia performs all post-mortem examinations for the state of South Australia. All cyclist fatalities in South Australia, where a post-mortem examination was performed between 1 January 2002 and 31 December 2013, were included in this study. Data for all fatalities were collected from medico-legal autopsy reports. Cyclist fatalities were defined as those involving the death of a cyclist either riding or in close temporal proximity to riding a bicycle. Data were then analysed in terms of the day/month/year, the circumstances and causes of death, and the distribution of the injuries (if present).

3. Results

The number of cyclist fatalities that occurred during the period of 2002–2013 in South Australia was 42; of these 40 were

* Corresponding author. Forensic Science SA, 21 Divett Place, Adelaide, SA 5000, Australia.

E-mail address: neil.langlois@sa.gov.au (N.E.I. Langlois).

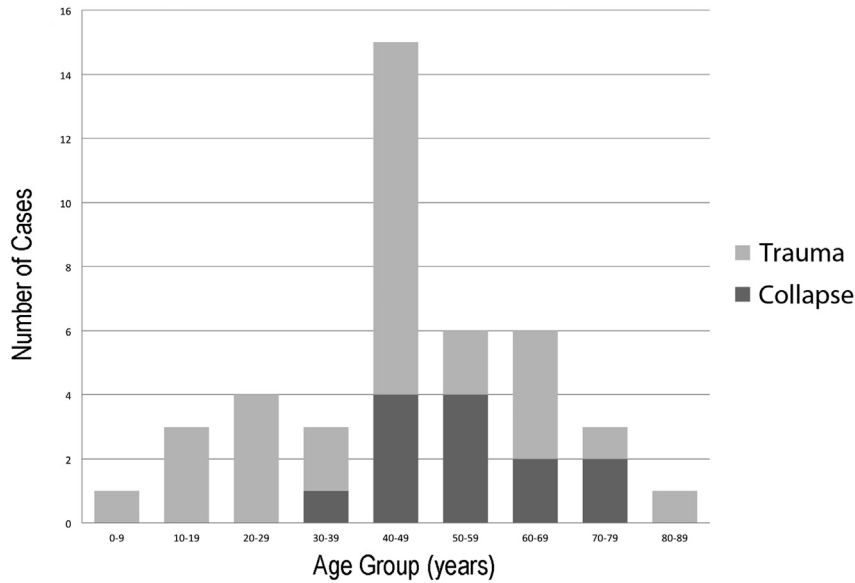


Fig. 1. Age distribution of cyclist fatalities in South Australia over the period of 2002–2013, split for collapse and trauma deaths.

males (95%). The average age at death was 47 years. Of this total number of cases 13 deaths (31%) involved collapse from an underlying medical condition and 29 (69%) resulted from trauma. The 29 deaths due to trauma represented 2% of the total road fatalities over the same time.^{7,8} There were no cases of hyperthermia. The age range of the deaths due to an underlying medical condition was 33–75 years, with an average of 55 years; for the trauma deaths, the distribution was broader and more normally distributed than the collapse deaths, ranging from 5 to 80 years, with a mean age of 43 years (Fig. 1).

3.1. Year

Over the twelve-year period the number of cases annually ranged from two to six. The highest number of incidents was in 2010, with seven cases, compared to an average of 3.5 cases per year (Fig. 2). Trendline analysis showed a decrease in the

instance of both collapse and trauma cases over the study period.

3.2. Month

April and November were the months that had the highest incidence of fatalities, with 6 and 5 cases respectively, compared to the average number of cases per month of 3.5 (Fig. 3). There appeared to be less deaths in the antipodeans' winter months with a higher proportion of collapse deaths compared to spring and autumn.

3.3. Day

Monday was the day of the week in which the most cases occurred.⁹ Saturday had the second-most cases recorded, with 8. There were 7 cases that occurred on a Wednesday. Thursday⁴

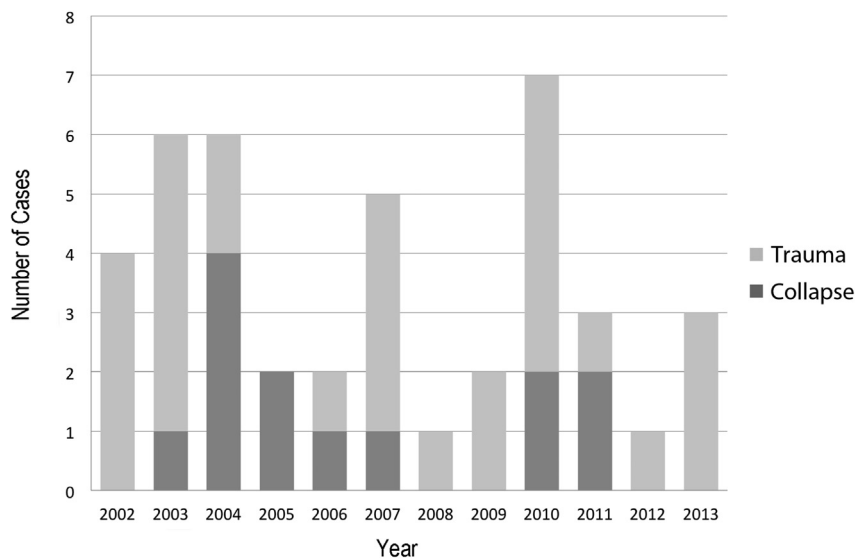


Fig. 2. Yearly incidence of cyclist fatalities in South Australia over the period of 2002–2013, split for collapse and trauma deaths.

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