



A prospective cohort study on minor accidents involving commuter cyclists in Belgium

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ARTICLE INFO

Article history:

Received 10 May 2011

Received in revised form

14 September 2011

Accepted 27 September 2011

Keywords:

Utilitarian cycling

Incidence

Incidence rate

Prospective study

Exposure

SHAPES

ABSTRACT

The purpose of this study is to gain insight into bicycle accidents. Bicycle accident data and weekly exposure data were prospectively collected for one year to calculate the incidence rate (IR) of bicycle accidents. An accident was included if it occurred during utilitarian cycling, resulting in an acute injury with corporal damage. If an accident occurred, a detailed questionnaire was filled out to collect detailed information about its circumstances and consequences.

A sample of 1087 regular (≥ 2 cycling trips to work a week) adult (40 ± 10 years) cyclists was analyzed. Over the 1-year follow-up period, 20,107 weeks were covered, accumulating 1,474,978 cycled kilometers. Sixty-two participants were involved in 70 bicycle accidents, of which 68 were classified as 'minor'. The overall IR for the 70 accidents was 0.324 per 1000 trips (95% CI 0.248–0.400), 0.896 per 1000 h (95% CI 0.686–1.106) and 0.047 per 1000 km (95% CI 0.036–0.059) of exposure. Brussels-capital region is the region with the highest IR (0.086; 95% CI 0.054–0.118), with a significantly ($P < 0.05$) higher IR compared to Flanders (0.037; 95% CI 0.025–0.050). Injuries were mainly caused by 'slipping' (35%) or 'collision with a car' (19%). The accidents caused abrasions (42%) and bruises (27%) to the lower (45%) and upper limbs (41%). Police, hospital emergency department or insurance companies were involved in only 7%, 10% and 30% of the cases, respectively. It is noteworthy that 37% of the participants indicated that they could have avoided the accident.

In order to decrease the number of accidents, measures should be taken to keep cycling surfaces clean and decrease the number of obstacles on bicycle infrastructure. Roads and intersections need to be built so that the collisions between cars and bicycles are decreased to a minimum. Car drivers and cyclists should pay more attention towards each other. Underreporting of minor bicycle accidents in Belgium is confirmed, and is higher than expected. Reliable accident statistics, taking into account exposure, are needed to decide which road safety measures are the most effective. The 'safety in numbers' principle is also applicable for minor bicycle accidents.

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1. Introduction

Cycling is recognized as an excellent way of being physically active and maintaining good health (Oja et al., 1998, 2011; Hendriksen et al., 2000; de Geus et al., 2008, 2009). Furthermore, increased active transport (walking and cycling) could have a substantial role in meeting targets for urban air quality,

greenhouse-gas emissions, and could result in major public-health benefits (Int Panis et al., 2004; Woodcock et al., 2007).

While cycling brings many personal, environmental and societal benefits, important barriers to cycling exist. These include fear of crime/vandalism, bad weather, social pressure, hills and slopes and long commuting distances (e.g. Pucher et al., 1999; Rietveld and Daniel, 2004; Gatersleben and Appleton, 2007; Parkin et al., 2008). Other important barrier to cycling are concerns about traffic safety, with women fearing accidents more than men (Vuori et al., 1994; Byrnes et al., 1999; Garrard et al., 2008; Tin Tin et al., 2010), lack of adequate infrastructure (Pucher et al., 1999; Parkin et al., 2007; Vandenbulcke et al., 2009) and exposure to air pollution (Int Panis et al., 2010; Jacobs et al., 2010). The balance between risks and

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