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Cycling near misses: Their frequency, impact, and prevention

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ABSTRACT

This paper explores cyclists' experiences of non-injury incidents, arguing that these are important for cycling experience and uptake as well as for injury prevention. It discusses different types of non-injury incident collected in a recent survey of UK cyclists. These are everyday occurrences that in some cases have a substantially negative impact on cycling experiences. This article explores the impact of different incident types on people cycling both immediately and in the future. It analyses what near misses tell us about cyclists' experience of problems related to road user behaviour and culture, and infrastructural conditions for cycling. The paper explores what cyclists experiencing near misses think might have prevented them. Based on this and on a comparison with common types of injury incidents, summary recommendations are made for policy and future research.

1. Introduction

This paper discusses findings from a project exploring experiences of cycling near misses. Given policy goals to grow cycling from a low base (Aldred, 2012) near misses are doubly important. Firstly, they may predict types of behaviour and/or road infrastructure that commonly lead to injury. Secondly, they may negatively affect cycling experience and uptake. However, near misses are under-researched in road transport literature and data not routinely collected. The study reported here is the first national UK survey to collect data on cycling near misses allowing the calculation and comparison of per-mile and per-hour rates.

In this survey participants described non-injury incidents happening during a day's cycling, their reactions to these, and factors they thought might have prevented incidents. A previously published article (Aldred and Crosweller, 2015) outlined 'headline' statistics for incident rates and types. This paper discusses in more detail impacts of incidents and how cyclists react to them, including new analysis of qualitative and quantitative data. Covering the impact on cyclists of problematic behaviour and infrastructure, it explores what the UK 'road culture' feels like from a cyclist's perspective.

The paper considers ways of preventing and reducing the most problematic 'near miss' incidents. It draws on cyclists' own views, and on a perspective within which 'behaviour', 'culture', and 'infrastructure' are seen as inter-related. This approach sees driver (and cyclist) behaviour as shaping the impact of infrastructural changes, and conversely, infrastructural changes as having the potential to affect culture and behaviour. More broadly, the paper seeks to demonstrate the utility of an experiential perspective on cycling risk.

2. Literature overview

This paper contributes to literature about cycling risk, through an experientially-focused perspective. Centrally, much literature highlights the apparent discrepancy between 'perceived' and 'real' risks and benefits of cycling. Even in

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low-cycling contexts, much evidence demonstrates pleasurable and positive cycling experiences (e.g. Zander et al., 2013). However, this exists alongside substantial 'fear of cycling' (Horton, 2007; Gamble et al., 2015): the mode is seen as inherently unsafe. This is expressed in policy debates and appraisal tools (Roberts and Coggan, 1994). For example, cost-benefit analysis generally attributes risk of cycle injury to cycling, but this should arguably be attributed to driving (Gössling and Choi, 2015).[1]

However, in UK policy and academic cycling discourse, a view of cycling as risky persists alongside a more recent tradition of focusing on multiple benefits of cycling (Aldred, 2012). An oft-quoted, albeit questionable (Woodcock et al., 2014) statistic suggests health benefits outweigh risks to the individual by 20–1 (Hillman, 1993). The two discourses co-exist, with many people believing cyclists are healthy and fit, yet also dangerous risk-takers (TfL, 2014; Aldred, 2013). This has fed into an association of cycling with some demographic groups (primarily younger professional adult men) and not others (Steinbach et al., 2011).

Why do many lay people think cycling is so dangerous? Are they misinformed? The approach to risk taken here draws on sociological and psychological perspectives, increasingly influential in broader risk analysis (Taylor-Gooby and Zinn, 2006; see e.g. Slovic, 2000). These perspectives do not see divergences between expert and public views about risk as implying the public must be wrong. Indeed, growing evidence suggests people are relatively good at comparing situation-specific cycling risks, their judgements corresponding reasonably well to expert opinion (e.g. Bill et al., 2015; Doorley et al., 2015; Johnson et al., 2014; Sanders, 2013). At the same time, many see on-road cycling in the UK as unacceptably risky (DfT, 2014).

The approach taken here suggests that while risk perceptions are influenced by media and safety campaigns, lived experience – participation, interaction and/or observation – is also crucial. Although at any given time UK cyclists are a small minority, cycling experience is not limited to current cyclists. People increase or decrease cycling from year to year, and move in and out of cycling (TfL, 2014). Many people know a cyclist, even where cycling levels are low,[2] and so may regularly hear about cycling experiences, which can be important in shaping attitudes to transport (Kamargianni et al., 2014). People also draw conclusions about the comfort, status and safety of cycling from observing cyclists (Pooley et al., 2013; Aldred and Woodcock, 2015).

Related local research has indicated the potential importance of near miss incidents in cycling experience. Joshi et al.'s pioneering near miss study in Oxford (2001) found cyclists' experience of near misses was frequent and in line with their higher relative injury risk compared to drivers. More recently, Sanders (2015) study in the San Francisco Bay Area suggests the frequency of near misses leads to a greater impact on perceived danger than injury collisions. Building on such research, this study analyses what are demonstrated to be frequent occurrences in the UK context, considers their impacts and strategies to prevent them. It argues that cycling near misses, as regular events, contribute to perceived cycling risk as understood by current cyclists, and potentially through more indirect processes whereby others hear about or see such incidents.

3. Methods

The study reported here used an online diary method, with ethical approval granted by Westminster University. A convenience sample of people who cycle was recruited. Channels included organisational mailing lists, cycling organisations, leafleting, social media dissemination, and re-contacting previous survey participants. The call to participate was covered in the *London Evening Standard*. Participants were informed that the study focused on cycling near misses and that it should take around 15–20 min to complete. They were asked to nominate in advance a day over a two-week period to record cycle trips and any incidents.

Organisations independently shared information about the project via social media, as tends to happen with online research of this sort. This necessarily reduced control over how the study was described. For example, a tweet was sent on 14th October 2014 by the national organisation *British Cycling*, whose publicity generated several hundred sign-ups:

Are you a cyclist concerned about your safety on the roads? Check out this project and do your bit to help nearmiss.bike.

The recruitment method could introduce bias, if people more prone to near misses sign up. However, given only 2% of trips are by cycle, using more traditional methods to recruit a national sample of cyclists would be difficult and expensive. The study sought to ensure different types of cyclist were represented by using a range of recruitment channels and messages. Another attempt to reduce bias was to remove those reporting many incidents (>10) as potential outliers, with unusually high rates of/awareness of non-injury incidents.

Each diary asked participants to report all cycle trip stages, without exact location details: this might include 'Home to Work', 'Work to Meeting', for example. They were asked for timings of each trip stage, and an estimate of total distance travelled and their confidence of this. Many were reporting a repeated journey (typically, commute) while others used apps such as Strava, so confidence was generally high. Respondents were asked whether any non-injury incidents occurred, and if so, to locate the incident on a Google map. People could leave and return to the survey; often reporting morning trips and any incidents at lunchtime, completing the diary that evening or next morning. We piloted concomitant use of a GPS tracking app

[1] In the UK around four-fifths of deaths and serious injuries reported to the police result from collisions with motor vehicles (Knowles et al., 2009).
[2] For example, half of all Londoners. Source: personal communication from TfL related to London Travel Demand Survey data.