

## **Impact of urban infrastructure design on hazard search while riding an e-scooter in urban settings: a virtual reality study with eye-tracking.**

While previous literature provides evidence of the impact of infrastructure design on perception of safety and comfort, little has been done to explore what is the influence on the road hazard search and what are the behavioural implications. Particularly, newly emerged micro-mobility modes such as electric scooters require more attention. Although they gain popularity as a transport mode, especially in the urban centres, there is a lacking consensus on their place within both, urban road infrastructure and with respect to traffic regulations. Therefore, a better understanding of the impact of different road architecture on hazard search patterns and the resulting behaviour, will assist policymakers in more informed-decision making to provide safe, user-oriented solutions (Fruin, 1971). This thesis will employ virtual reality and eye-tracking to explore the impact of different urban architecture eg. different levels of separation from general traffic (no separation from road traffic – riding on the pavement – riding on a painted bicycle lane) on visual search pattern and behavioural responses.

This thesis will require analysis of VR output and eye-tracking data using R programming language, therefore previous knowledge of R software is essential. Moreover, there is a potential to conduct discrete choice analysis, hence it is beneficial although not mandatory.

Fruin, J. J. (1971). *Designing for pedestrians: A level-of-service concept* (No. HS-011 999).

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*This topic can potentially serve two students who will share the collected data, where one will focus purely on the impact of the infrastructure while the other could explore if riding location influences the saliency of certain types of hazard eg. pedestrians vs cars.*