

Perceiving objective cycling safety

Summary

We are facing a paradigm shift towards transport diversity. Cycling belongs to it. Safety is one main barrier to cycling, mostly related to the lack of proper infrastructure. For that, we need to rethink cities and build appropriate infrastructures to make cycling safer and more attractive. However, cycling infrastructures' objective safety might not be perceived the same way by cyclists. If the infrastructure is not safe and cyclists think they are safe, they are at risk. By exploring the relationship between cyclists' objective and subjective safety, the project will determine indicators that detect locations where they misperceive risk exposure. Ultimately, this research aims to propose cost-effective objective-safety interventions that can correct risk exposure's subjective perception. Besides compiling potential corrective interventions, the research proposes a computer-assisted procedure for the respective Cost-Benefit Analysis to generate a cost-benefit ratio and rank them. The research aims to fill a gap in the existing literature apropos when subjective safety does not match objective safety and vice versa, increasing cyclists to be at high risk without perceiving it, or avoiding safer routes, justifying interventions in the cycling network.

We need to know how to plan and design cycling infrastructures better to improve the cycling mode's attractiveness and safety. State of the art also unveils that we do not know which and how objective safety interventions effectively leverage subjective perception. Besides that, we do not know how to assess the cost-effectiveness and acceptability of these interventions. Four main research questions arose from the literature review: (i) Where and when accidents or quasi-accidents occur in the cycling network? (ii) Which indicators can detect inconsistent perception of objective risk by cyclists and non-cyclists? (iii) What is the cost-effectiveness of cycling infrastructures' correction measures and their acceptability by citizens and institutions? (iv) When do cyclists and non-cyclists correct their inaccurate safety perception after the interventions in the cycling infrastructures or after training and awareness improvements?

The research's main objective is to contribute to cycling safety by identifying where cyclists might misperceive their risk exposure and propose adequate, cost-effective corrective interventions. We propose a computer-assisted procedure to calculate the cost-benefit ratio of corrective measures with CBA and rank them to support decision-making.

Keywords

Sustainable urban mobility, urban cycling, objective safety, safety perception, cost-benefit analysis, software.



Example of an objective safety measure in the Lisbon cycling network.



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