

How safe do you feel? - A large-scale survey concerning the subjective safety associated with different kinds of cycling lanes

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[Please note that the abstract of the submitted paper differs from the abstract below.]

Background:

There is ample evidence that adequate cycling infrastructure increases cyclists' safety. It has also been shown that cyclists' safety depends on the specific kind of cycling infrastructure (e.g., cycle tracks or lanes). There is less research on the question to what extent cycling infrastructure affects the feeling of subjective safety. Furthermore, people from different demographic groups and with different cycling styles may differ in their associations of subjective safety with the various aspects of cycling infrastructure. This is an important issue, because subjective safety is likely to affect people's general willingness to use their bike, in particular of those population groups with little cycling experience or affinity. Promoting cycling as a mode of transportation would thus benefit from an enhanced understanding of the effects of different types of cycling infrastructure on subjective safety.

Aim:

We aim to identify the requirements of cycling infrastructure to provide a sufficient level of subjective safety for different demographic and cycling groups. This allows for recommendations regarding best practices in the design of urban cycling infrastructure. It also provides insights into the cognitive and psychological aspects determining risk perception during urban cycling.

Method or methodological issues:

The NGO 'FixMyCity GmbH' created a large set of static images illustrating various kinds of urban cycling situations. These included systematic variations of, for example, the kind of bikeway (e.g., track vs. lane vs. on the road vs. on the sidewalk); the respective sizes of car lanes, bikeways, and space between them; different forms of barriers and color indications of the bike lane; and the displayed traffic volume.

The survey was published in the winter 2019/2020 on the website of 'Der Tagesspiegel', a newspaper based in Berlin City, Germany (see <https://interaktiv.tagesspiegel.de/lab/strassencheck/>). Citizens participated voluntarily by using their own devices (e.g., computers, tablets, or smartphones) at locations of their own discretion. They were first asked to answer a number of demographic and cycling-related questions. Then, they were presented blocks of ten randomly selected images, and asked to rate the perceived level of subjective safety when imagining to cycle at such a location. They could rate as many images as they liked.

Results obtained or expected:

Within two months, about 16,300 people participated in the survey and responded at least to the initial questionnaire. A preliminary inspection of a partial dataset indicated a ratio of men to women of about 2.5 to 1; with an average age of 40-50 years (ranging from below 18 to above 74 years). On average, each participant rated 22 images, including those participants who did not rate any images. The data are currently prepared for statistical analysis. We will conduct linear mixed models to investigate the influences of the various factors concerning cycling infrastructure and demographics on the perceived level of subjective safety.

Conclusions:

This dataset will provide unique insights into the association of subjective safety with different kinds of cycling infrastructure. The dataset's size allows in-depth analysis of demographic factors that need to be considered when designing cycling infrastructure providing adequate an level of subjective safety in large cities.