

Influence of safety perception on willingness to cycle in every season – Results of a questionnaire study in Germany

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Background: The bicycle, as a mode of transport, has seen increased acceptance in recent years. Nevertheless, various studies have outlined that, compared to summer months, cycling frequencies are often significantly lower in winter when weather conditions are colder and surfaces are often wet and snowy. The winter road maintenance service in many cities is still mainly oriented towards car traffic and often does not address the requirements of cyclists to get around safely and comfortably in urban traffic during harsh weather conditions. The studies on winter road maintenance in car traffic can therefore only be applied partly to cycling and its specific needs. Described in literature the main influencing factors for winter cycling are: weather, surface conditions, trip purpose, distance, safety perception as well as peer group, moderated by personal factors.

Aim: In this study we want to concentrate on the surface conditions and their link to cyclist's safety perception as we assume that this factor has a high impact. The aim of the study is to find out if, and how, the safety perception of different surface conditions influences the willingness to cycle during winter. We want to explore which personal factors influence winter cycling; their importance; and the evaluation of different surface conditions' safety from the users' perspective. Since it is assumed that personal aspects such as experience and risk awareness have an effect on safety perception, the moderation of these factors on safety perception is also quantified.

Method: Based on the literature analyses we extract the main winter weather and surface conditions – depending on the winter road maintenance service. We conduct a nationwide online survey (n = 1'000) in Germany at the end of winter 2019/2020. Participants of this survey are asked to indicate how likely they are to cycle in winter under surface conditions, like snowfall, wetness, foliage, new snow, packed snow, slush or ice. They are also asked under which reasons they feel unsafe when riding their bike in winter (e.g. weather, own cycling skills, lack of equipment/fitting of the bicycle, condition of the cycle tracks/roads and how safe they feel in general when cycling in winter).

Results expected: We will present results primarily on the assessment of, and satisfaction with, cycling infrastructure conditions in the winter months. With these results we can categorise the preference for different winter maintenance services from the users' perspective. These measures can contribute to a higher winter cycling rate as they influence positive safety perception and therefore the willingness to cycle all year round.

Conclusion: There are good reasons why more people should bike all year round: the bicycle is a cost-effective mode of transportation, which helps people to stay active, contributes to a more sustainable transportation system, and improves the quality of living. With these results we want to understand what kind of encouragement as well as mandatory infrastructural conditions cyclists actually need during times with less favourable weather conditions, also comparing all-weather or winter cyclists and non-users of bicycles in winter. This then could help to increase the number of year round cyclists, e.g. when municipalities include this in their cycle traffic planning.