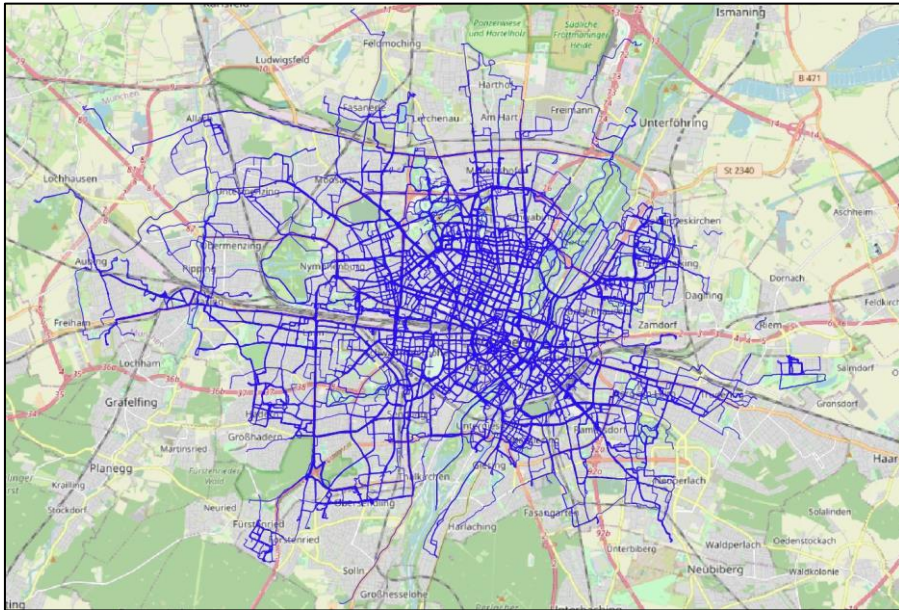# Route Choice Behavior of Bicyclists based on Objective and Subjective Data Analyses

Master's Thesis of Helena Krumbacher

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To promote cycling in an urban environment, cities must know the needs and preferences of bicyclists. In this thesis, route choice behavior of bicyclists in Munich, Germany was analyzed to extend the knowledge on this topic, especially for German cities. Using a mixed method approach, the analysis of approx. 5000 GPS-based cycling trajectories was combined with a short survey.

The trajectory analysis consisted of the comparison of the factors listed below for the original trajectories and a recommended and a shortest alternative route generated by openrouteservice.org.

The survey investigated the preferred type of cycling infrastructure and additionally aimed to quantify the influence of an intersection with traffic lights by asking which delay bicyclists would accept to avoid it.
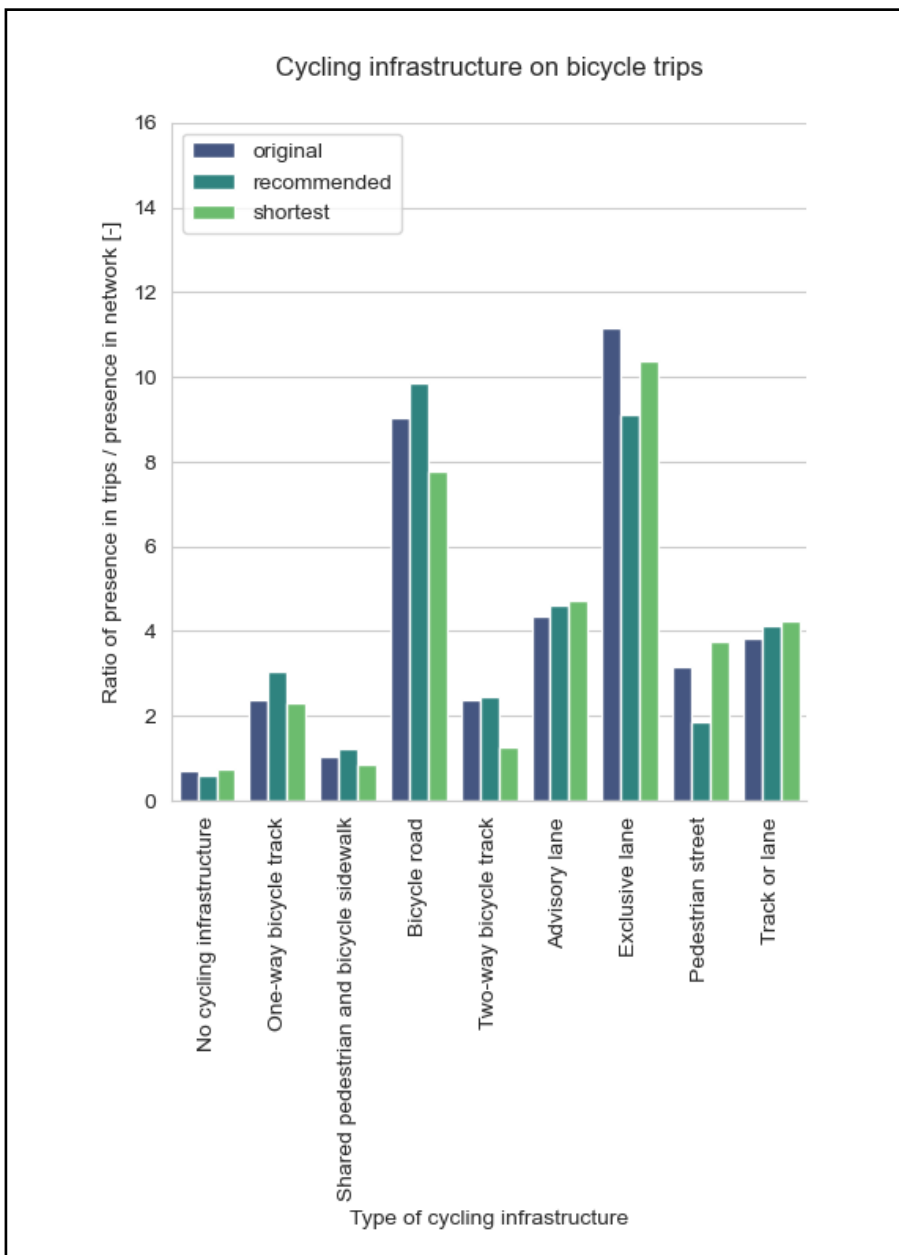
Factors contributing to route choice that were evaluated in the data analysis:

- Travel time
- Slope
- Surface material
- Street lighting
- Presence and type of cycling infrastructure
- Traffic flow of motorized individual traffic
- Speed of motorized individual traffic
- Intersections with traffic lights

The results show that while minimizing travel time is a key objective for bicyclists, other factors contribute to route choice too, as anticipated. The presence of cycling infrastructure was confirmed to be an important factor. Street lighting and lower traffic flows were preferred.

The impact of slopes and surface materials could not be determined, as Munich has a relatively flat topography and most of the infrastructure is made up of asphalt. The speed of motorized individual traffic did not seem to have a significant impact on route choice.

Interactions between factors were not considered, which should be included in future research. Additionally, the influence of the lane width, parking, cycling traffic flow and other types of intersections would be interesting to analyze.

January 2024

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