F26.28 Measuring Perceived Safety Stress for Bicyclists at Intersections

Overview

Increasing bicycling activity in urban areas is an important transportation demand management strategy for reducing automobility and addressing sustainability issues such as transportation-related greenhouse gas emissions and greater mobility access. However, persistent safety barriers, evidenced by ever-growing statistics on annual bicyclist fatalities from motorist-involved crashes, continue to detract present cyclists and would-be cyclists who are interested in the health, environment, and economic benefits of using this active travel mode but aware of the inherent safety risks of riding in mixed traffic with motor vehicles. In response, many cities have sought to become more bike-friendly via the design and construction of low-stress, dedicated bike facilities that reduce cyclist-motorist conflicts and hold the potential for motivating more individuals to bike. Yet, to date, efforts to develop a robust, bike-friendly network have focused on segment-level interventions (e.g., bike lanes) rather than initiatives to improve bike safety at intersections, where a significant portion of cyclist-motorist crashes occur.

The main objective of this project is to recognize significant factors attributed to the perceived safety of cyclists at intersections and develop a transferrable, composite metric to assess intersection level of traffic stress. Investigating perceived safety (e.g., level of traffic stress) rather than observed safety (e.g., crashes) can be preferrable in planning bike network improvements given that crashes are rare events which only occur with past cycling activity. Provided this knowledge, an overall goal of this research is to offer active transportation planning practitioners a systematic measure for identifying bike safety performance at intersections and opportunities for designing improvements aimed at promoting more sustainable travel.

What the student will DO and LEARN

Depending on the student researcher's skills and technical proficiencies, they will be able to contribute to various project aspects which include the review of academic studies and professional reports on bicyclist safety and level of traffic stress; collection of tabular and spatial data related to intersection-level of traffic stress components; and participation in project meetings with transportation faculty and researchers.

By performing these duties and potentially others, the student researcher will gain a richer understanding of bicycle transportation planning policies and programs aimed at reducing bicyclist-motorist conflicts and motivating greater low-stress bicycling adoption in urban areas. The student will gain valuable mentorship and experience in literature synthesis, data collection, and spatial analytic techniques such as Geographic Information Systems (GIS) that will help prepare them for graduate studies and future research positions.

Additional benefits

The student researcher will be given significant mentorship by the faculty member and provided with an opportunity to interact with graduate students and other faculty in the NAU community and beyond. The student researcher will have an opportunity to work on-campus in a dedicated research laboratory setting.

Additional qualifications

The student researcher should be self-motivated with good communication skills, demonstrate an interest in transportation planning and/or engineering, and possess a desire to write peer-reviewed

publications. Experience or interest in transportation planning research in addition to a familiarity with
GIS or mapping software is desirable. Student researcher should be detail-oriented and able to leverage critical-thinking skills to applied transportation questions.

Time commitment
6 hrs/week for 30 weeks