Abstract:
The personal and societal benefits of bicycle mobility are numerous and well known. Quantitative estimates of the influence of bicycle trip characteristics and the features of other modes of transportation on the choice to travel by bicycle are imperative in predicting the outcome of bicycle transportation policies and measures. However, little quantitative research has been carried out to investigate these factors. In a step towards providing these quantitative estimates, a methodology for a two-phase stated choice experiment investigating mode choice behaviour based on reference scenarios is presented. Revealed choice data is collected in a first phase using a newly developed time-use travel diary, in which respondents note their activities and trips from one day. The trip information collected in the time-use-travel diaries is used to create individualized reference scenarios. Three alternatives, the car, a generalized public transportation alternative including the bus, tram, U-Bahn and S-Bahn, and the bicycle are investigated. The attributes included in the stated choice experiment are the travel time, parking fee and an all-inclusive driving cost for the car alternative, the access time, ride time and fare for the public transportation option, and the
travel time, percentage of travel time on dedicated bicycle infrastructure and the availability of secure parking at the destination for the bicycle option. Pivoted attribute levels are selected based on the findings of previous research and a heterogeneous/homogeneous efficient experimental design is constructed. The sample is segmented based on the mode of transportation reported in the time-use travel diary. The methodology used proves to be useful and statistically relevant. However, the two-phase survey instrument is found to be cumbersome and work intensive. Recommendations for improvement include the development of an online version of the paper and pencil time-use-travel diary as well as automating the coding and the estimation of the attributes of non-selected alternatives. The attributes and attribute levels included in the experimental design appear to reflect the choice behaviour of the car and public transportation users but not bicyclists.

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