What is Transport Adequacy?
Quantifying Experienced Transport Poverty in the Netherlands

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Research Questions
• How can transport adequacy, defined as the subjective assessment of the quality and sufficiency of one’s transport options, be measured via a quantitative survey tool?
• How does transport adequacy differ by gender, capabilities, residential location and socio-economic status, and what does this imply for transport inequalities?

Theoretical background and objective
Equity is receiving increasing attention in transportation studies. To assess equity as an aggregate outcome, assessment of individuals’ levels of accessibility and inclusion is necessary. Such analyses have traditionally been based on notions of car dependency (e.g. Kenyon et al., 2002) and on the broader concept of transport poverty (Lucas, 2012). Lucas’ conceptualization states that transport poverty may arise when transport disadvantage comes together with social disadvantage. System level causes of transport poverty include a lack of transport options being available, the costs of transport (either of car ownership or public transport) and excessive travel times needed to access remote destinations. In addition, exposure to noise, pollution, fear of harassment and traffic unsafety during travel may create barriers to travel. Finally, lack of personal skills (such as ICT skills, command of local language, cognitive skills) may limit the use of transportation. While these causes of transport poverty are well documented, insight is lacking in the prevalence and extent of transport poverty in populations.

This study
Focuses on transport adequacy as an indicator of quality of and access to transport options and the associated outcomes. Other than transport poverty, which is a binary state, transport adequacy is a quantitative indicator, measured on a continuous scale, based on subjective assessments of citizens. It encompasses travel options/limitations, travel experience, access to destinations and life outcomes.

The Transport Adequacy scale
Based on Lucas et al. (2016), respondents are asked to express their agreement with nine statements covering travel limitations, travel experience, access to destinations and life outcomes. The transport adequacy score is the sum of the item scores.

Data and methods
A survey was held in 2021 among inhabitants of Rotterdam and Utrecht. One sub-sample (n=654) was taken from low-income, vulnerable populations. Another sub-sample (n=424) was taken from a higher income population segment having at least a drivers license. Apart from the transport adequacy scale, the survey asked details about people’s mobility context and socio-economic situation.

Results
Transport adequacy is markedly lower for people without access to a car, with physical limitations (using a mobility aid) and with a non-western migration background. However, a regression analysis on the transport adequacy score indicates that also parking options for car and bicycle, access to public transport, ownership of an e-bike, membership of a bikesharing scheme, income and gender have a significant impact on transport adequacy.

Conclusion
The transport adequacy scale functions well to quantify perceived access to and sufficiency of transport options, to identify factors contributing to transport adequacy and to identify groups at risk of transport inadequacy. We aim to test the scale in more different geographical contexts and apply it in longitudinal studies to monitor trends in transport adequacy and in-/exclusion.