Passenger Behaviour during Planned Public Transport Disruptions

Problem description

Urban public transport systems in many cities worldwide are increasingly being confronted with infrastructure maintenance and improvements works. These so called 'planned disruptions' can last for a longer period of time, ranging from a weekend up to several months. It is therefore important to understand the behavioural response of public transport passengers in the event of planned disruptions. How do passengers adjust their route choice? Which percentage shifts to using another mode, or decides to cancel the trip and work from home instead? How does the availability of ride-hailing services such as *Uber* influence this behavioural response? Whilst most scientific research currently focuses on unplanned disruptions, the area of *planned* disruptions is relatively unexplored. There are several open questions. For example, how does the passenger response change over time, or to which extent is this influenced by the duration of the disruption? Are there any systematic behavioural changes even when the public transport service is recovered?

Objectives and assignment

The objective of this master thesis project is to analyse and/or predict the behavioural response of public transport passengers during and after various stages of longer-lasting, planned disruptions. For example, the assignment can be an empirical analysis of disruptions impacts on passenger flow distribution and mode choice, or to predict passenger adaptation during and after long-lasting closures. The assignment could also focus on estimating and comparing passenger route and mode choice models for future closures. For example, the performance of classical MNL models can be compared against mixed logit models and various machine learning approaches, to assess the suitability of different models for this purpose. The assignment can be based on analysing smart card data, fusion of these with other data sources, designing choice experiments, estimating choice models or a combination hereof.

Candidate background

T&P or TIL Students who have knowledge and interest in public transport operations, data analysis, demand modelling and choice modelling. Some experience in programming (e.g. Python, R) and estimating (Stated / Revealed Preference) discrete choice models is desired.

Research group

Transport & Planning Department
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Information

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Smart Public Transport

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