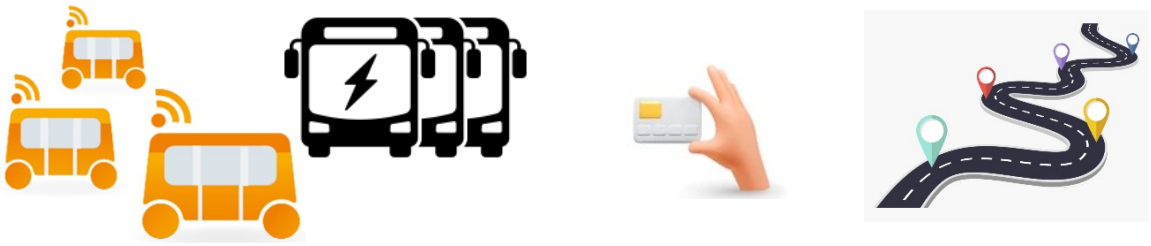
Welfare maximization for a multi-modal transport system



Problem description

The aim of many transport pricing schemes is to consider the point of view of public authorities in managing a multimodal transport system and decrease various negative externalities such as green-house gas emissions, air pollutants and congestion.

Although appealing in theory, road pricing is highly controversial and lacks public support in practice. It is often perceived to be another tax, and its distributional effects always raise major concerns. Quantity-based counterparts appear to be more amenable to public acceptance than road pricing. Mobility credit scheme is an appealing alternative for road pricing.

In a typical setting, eligible travellers are identified and allocated a certain number of credits; credits are used to gain access to certain transportation facilities. The credit-based mobility management schemes can be divided into two types, that is, whether credits can be traded among travellers or not. The focus of this study will be on the non-tradable credits.

Assignment

In this project, you will compare mobility credit policies and their impact on service level. The project will involve the following steps:

- Identifying the actors in a multimodal transport system.
- Incorporating the behavioural aspect in an agent-based simulation framework assuming that VOT of modes are known.
- Testing different mobility credit scenarios and measuring its impact on service level.
- Outline likely scenarios and possible policy pathways

Candidate

- Should have: coding skills in Python or similar and knowledge on simulation.
- Good to have: behavioural modelling, operations research.

Research group

Smart Public Transport Lab and the Sustainable Urban Multi-modal Mobility

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