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Exploring Susceptibility of Shared Mobility in Urban Space

Shubham Jain¹, Nicole Ronald², Russell Thompson¹, Ronny Kutadinata¹, Stephan Winter¹

¹ Department of Infrastructure Engineering, The University of Melbourne, Parkville, VIC, Australia

² Department of Computer Science, Swinburne University of Technology, VIC, Australia

Introduction

Motivation

- Shared transportation providing door-to-door services on demand, although not an unknown element in urban mobility, has started gaining more presence recently
- To find opportunities of implementation, a pre-estimation of demand pattern is required

Problem

- Due to ambivalence regarding features and level of service of these modes among newly targeted users, a service-specific survey may not be useful
- Also, changing socio-economic demography, family structures, travel behaviour and their spatial variation in a city affect demand of these services

Solution

- Inputs from review of usage pattern of some of the existing collaborative transport services in different regions of the world and analysis of socio-economic demography and current trip characteristics data from already existing, self-completed household travel survey (viz. Victorian Integrated Survey of Travel and Activity (VISTA) in Melbourne) can be used to predict usage pattern, eliminating requirement of a service-specific survey

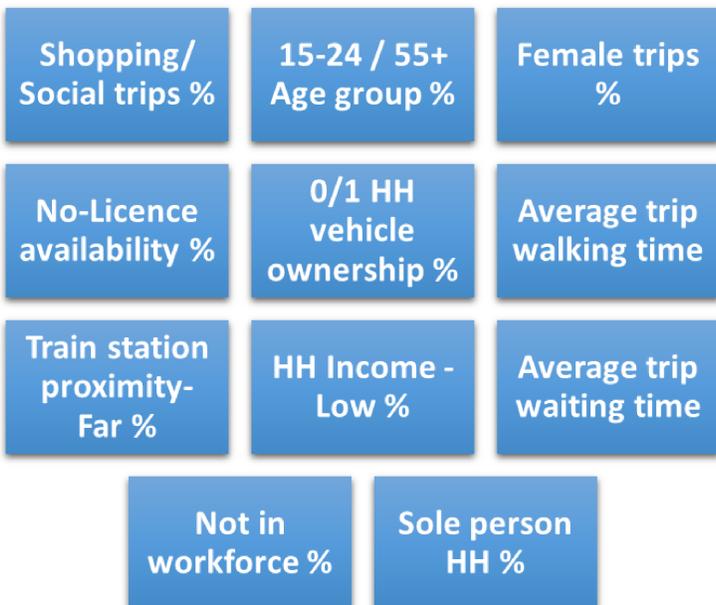
Approach

Greater Melbourne is divided into 40 census regions as trip origins

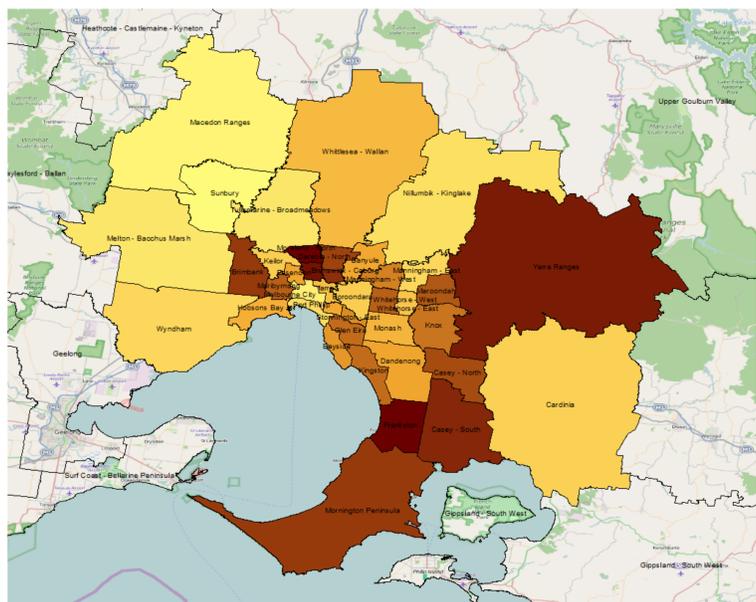
Parameters favouring use of shared mobility are identified from literature review and calculated from VISTA for each region: The higher the value, the higher is the susceptibility to use shared mobility

Values of parameters are standardized and then averaged for each region to explore overall susceptibility to use shared mobility

Parameters favouring use of shared mobility



Results: Susceptibility of shared mobility in Greater Melbourne

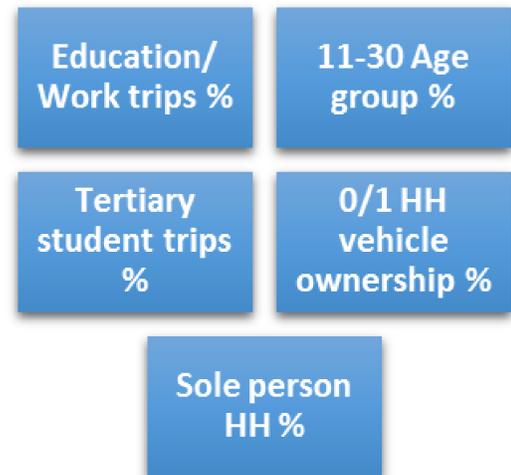


Lowest Susceptibility Highest Susceptibility

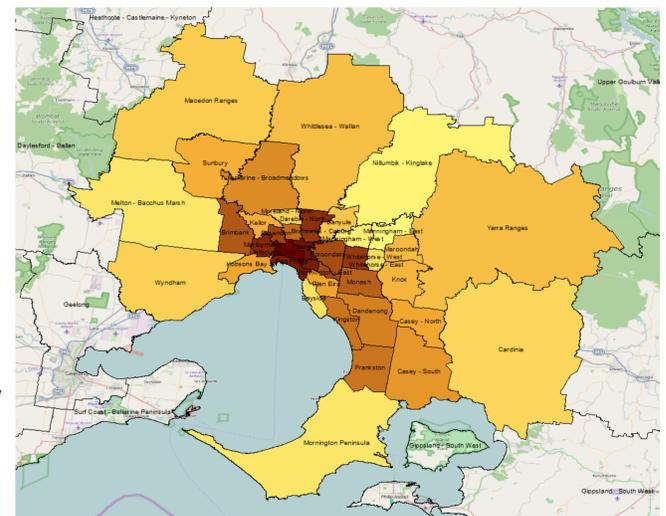
Validating the Methodology

Similar exercise is performed for an existing mode such as 'Public Transport' (using its own set of parameters), and results are compared with known usage pattern of that mode from VISTA

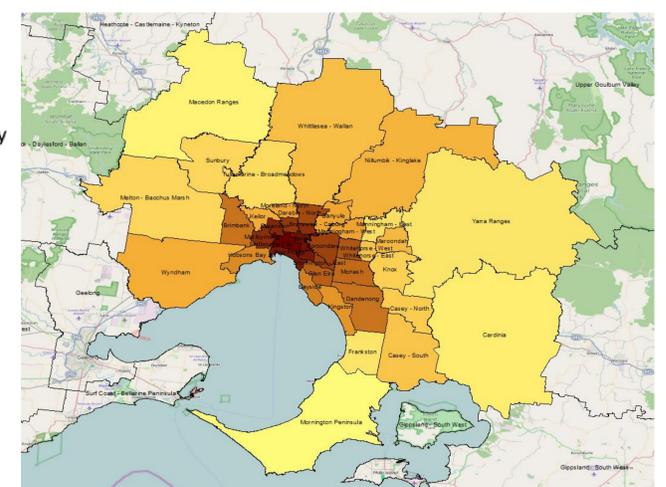
Parameters favouring use of public transport



Predicted susceptibility of public transport



Existing usage pattern of public transport



It can be seen that predicted and existing usage pattern of public transport is matching considerably, which validates this methodology.

Conclusions and Future Work

- Analysis of socio-economic demography and existing trip characteristics of the population can be used to predict spatial demand pattern of a proposed transport mode in a target city
- Requirement of a service-specific preference/adaptation survey can be eliminated by gaining usage pattern insights from existing similar services elsewhere
- Highly correlated parameters are needed to be identified, also predicted usage pattern of public transport can be correlated statistically with shared mobility and existing public transport to get better insights

Contacts

Shubham Jain, MPhil candidate
sjain1@student.unimelb.edu.au



Research partners



Research team

Intelligent Mobility on Demand (iMoD)
<http://imod-au.info/>