**Application of a Nationwide Transport Model for Aotearoa New Zealand**

Ministry of Transport & Arup

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The Ministry of Transport’s remit covers a range of transport policy concerns including wellbeing, equity, fair access to transport, sustainability, supply chain and resilience, and livable cities. To understand potential impacts of policy on both the country’s people and its transport system, MoT has iniated the development of a nationwide activity and agent-based model of New Zealand’s transport behaviour, named Monty. Monty is one of the first models of its kind globally and New Zeland has become leading player with its development.

Our presentation covers methods and results for different initial test applications using Monty. We present findings on congestion charging and road-use charging based on vehicle type, and an investigation into the manner and extent to which the agents of different regions are able to respond to increase in the cost of private car usage. Such knowledge will provide insight and guidance on how Aotearoa New Zealand can best meet its goal of reducing vehicle kilometres travelled by twenty percent by the year 2035.

Additionally, we will compare the impacts of a variety of large-scale infrastructure initiatives around Auckland (AHWC and ALR). The agent-based model characteristics allow for valuable insights into individual groups of people. Monty finds answers to questions such as who is disadvantaged and/or better off after a policy change or infrastructure investment. The equity impacts of change are particularly important in New Zealand as with a relatively small population there is little excess revenue to support mitigation across the demographic.

Each application has different methodological requirements in terms of agent plan synthesis, network generation, simulation configuration, and calibration. The analysis yields valuable information of not only the state of the network and the experience of the network-users, but also the particulars of those users that benefit or suffer as a consequence of the policy interventions.