Research School for Operations
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Modeling the effects on individual travel behavior due to the introduction of a new subway line in a metropolitan multimodal transport network

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Sustaining accessibility in metropolitan regions begins with an understanding of human mobility. Macro level patterns arise from individual discrete choice: What destination? Which transport mode? What route? A key outstanding challenge is in the treatment of the interdependence of individual decision-makers' choices. Such interdependence can propel or hinder the adoption of repeated choices. Recent developments in information and communication technology (ICT) creates a big-data opportunity to derive mobility patterns yielding novel insights at a transition in the municipality of Amsterdam's infrastructure and spatial development before and after the inauguration of the North-South metro line. It is the aim of the proposed research to study spatio-temporal electronic trace data for improved understanding of the dynamics associated with feedback effects, both positive (agglomeration) and negative (congestion). Using multiple data sources to create an insight into the travel flows, predictions can be made regarding number of movements and distance travelled in the metropolitan region per modality (public transport, private vehicle, bicycle, pedestrian), changes in multi-modal movements, and the resulting effect on travel time and congestion in the metropolitan transport network.