

# Modelling Commercial Vehicles Parking Choice in Congested Urban Areas

**Giacomo Dalla Chiara, PhD**

Research Associate  
Urban Freight Lab  
University of Washington

**Abstract:** Understanding factors that drive the parking choice of commercial vehicles at delivery stops can help enhance logistic operations and the management of existing freight parking infrastructure, mitigating illegal parking and ultimately reducing traffic congestion. In this paper, we focus on this decision-making process at large urban freight traffic generators, such as retail malls and transit terminals that attract a large share of urban commercial vehicle traffic.

Currently, the literature on parking behaviour modelling has mostly focused on passenger vehicle parking behaviour. This paper presents a discrete choice model for commercial vehicle parking choice in urban areas. The model parameters are estimated using detailed data on real commercial vehicle parking choices collected at large urban retail malls in Singapore.

The model analyses the effect of several variables on parking behaviour of commercial vehicle drivers, including the presence of congestion and queueing, attitude towards illegal parking and pricing. The model is validated against real data and used within a discrete-event simulation to test the economic and environmental impact of several parking measures, including pricing strategies and parking enforcement.

This work is in collaboration with Prof Lynette Cheah (SUTD, Singapore), Prof. Carlos Lima Azevedo (DTU, Denmark) and Prof. Moshe Ben-Akiva (MIT, US).

**Bio:** Giacomo Dalla Chiara is a Research Associate at the Urban Freight Lab, University of Washington.

Giacomo is a presidential graduate fellow at the Singapore University of Technology and Design, where he received his PhD in Engineering Systems in 2018. He collaborates with the Singapore-MIT Alliance for Research and Technology (SMART) Future Urban Mobility group (Singapore) and the MIT Intelligent Transportation System Lab (US) in the development of parking simulation models for freight vehicles in SimMobility, an agent-based simulation platform for future urban mobility scenarios. In 2017 he was a visiting scholar at the Civil and Environmental Engineering Department of MIT. He received a M.Sc. in Statistics from ETH Zürich (Switzerland) and a bachelor's degree in Economics from LUISS University (Italy).

Giacomo's research interests are primarily in the areas of transport economics, statistical methods applied to urban mobility data and policy impact assessment.