Politecnico di Torino
Department of Environment, Land and Infrastructure Engineering

DIATI

UNDERSTANDING CHARGING DURATION PATTERNS OF ELECTRIC VEHICLE USERS: EVIDENCE FROM AN AUSTRALIAN FIELD STUDY

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MEETING ROOM DIATI ENTRANCE 3 — 1ST FLOOR

In this study, we examine the charging location and duration choices made by Australian electric vehicle owners over a one-week period. To do so, we employ a multivariate multiple discrete-grouped extreme value (MDGEV) model (Bhat et al., 2020) that allows the simultaneous evaluation of where and for how long vehicles are charged across multiple locations, while also capturing potential correlation effects among charging sites. Further, state dependent variables are incorporated into the specification to capture habit persistence effects, whereby past charging choices influence subsequent decisions. The empirical findings indicate that solar panel ownership increases the likelihood of home charging but is associated with shorter charging durations compared with households without photovoltaic access. Residing in major cities is found to be linked to a greater reliance on non-home charging, confirming the prolonged challenges faced by electric vehicle owners in densely populated urban areas. Habit persistence is estimated to play a key role in the charging-decision making process, with EV owners exhibiting routine behaviour when selecting the facility for their next charging activities. The estimated results are next used to investigate how charging duration patterns change under the universal adoption of solar panels and flexible electricity plans, revealing that both policies will impact the rate and duration of charging across locations.

BIO

Andrea Pellegrini holds a Master of Science in Statistics with honours from the University of Bologna and a PhD in Economics from the University of Lugano. He joined the Institute of Transport and Logistics Studies at the University of Sydney as the Neil Smith Lecturer in Sustainable Mobility and Accessibility in March 2023. Prior to this appointment, he was a lecturer at the Business School of the University of Technology Sydney (UTS). Andrea is an expert in the programming and estimation of advanced choice models, microeconometric models, and spatial econometric frameworks.
His research agenda focuses on electric vehicle adoption, charging behaviour and community preferences for low-emission transport alternatives.