A Joint Route Choice Model for Capturing Preferences of Electric and Conventional Car Drivers - DTU Orbit (07/10/2019)

A Joint Route Choice Model for Capturing Preferences of Electric and Conventional Car Drivers

Battery electric vehicles (BEVs) play an important role in the increasing effort by governments to curtail the pollution from the transport sector and reduce the dependence from fossil fuels of internal combustion engine vehicles (ICEVs). Although traffic assignment models exist for BEVs, the assumption of shortest path search on the basis of time constrained by energy consumption does not have any empirical basis. The current paper presents a revealed preference study of route choice behaviour of drivers participating in a large-scale experiment with BEVs. Observed routes while driving BEVs and ICEVs were map matched and a joint route choice model was specified and estimated to reveal whether the type of vehicle is related to the preference structure. Significantly different parameters for trip length for BEV and ICEV are obtained in the model estimation, indicating a higher sensitivity to the distance travelled when driving BEVs. Moreover, the level of charge of the battery and the travel in the morning peak make drivers less sensitive to distance. The findings from this study suggest the need to revise the cost functions in the literature about traffic assignment with BEVs as these functions should not consider similar parameters regardless of the vehicle type, but instead a higher sensitivity to distance that reflects heterogeneity in driving behaviour with BEVs.

General information
Publication status: Published
Organisations: Transport DTU, Transport Modelling, Department of Management Engineering
Contributors: Jensen, A. F., Rasmussen, T. K., Prato, C. G.
Publication date: 2018
Peer-reviewed: Yes
Event: Abstract from Transportation research Board: 97th Annual Meeting, Washington DC, United States.
URLs:
https://trid.trb.org/view/1495979
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2018 › Research › peer-review