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A topological route choice model for metro

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This article presents a route choice model for public transit networks that incorporates variables related to network topology, complementing those found in traditional models based on service levels (travel time, cost, transfers, etc.) and users' socioeconomic and demographic characteristics (income level, trip purpose, etc.). The topological variables represent concepts such as the directness of the chosen route and user knowledge of the network. For both of these factors, the necessary data is endogenous to the modelling process and can be quantified without the need for information-gathering beyond what is normally required for building route choice models. Other novel variables in the proposed formulation capture notions of user comfort such as vehicle occupancy rates and certain physical characteristics of network stations. We conclude that these new variables significantly improve the explanatory and predictive ability of existing route choice specifications.

Keywords: Route choice, Network topology, Angular cost, Perceptions, Model specification

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