

Estimating Route Choice Models from Stochastically Generated Choice Sets on Large-Scale Networks Correcting for Unequal Sampling Probability - DTU Orbit (09/11/2017)

Estimating Route Choice Models from Stochastically Generated Choice Sets on Large-Scale Networks Correcting for Unequal Sampling Probability: Correcting for Unequal Sampling Probability

Route choice is one of the most complex decision-making contexts to represent mathematically, and the most frequently used approach to model route choice consists of generating alternative routes and modeling the preferences of utility-maximizing travelers. The main drawback of this approach is the dependency of the parameter estimates from the choice set generation technique. Bias introduced in model estimation has been corrected only for the random walk algorithm, which has problematic applicability to large-scale networks. This study proposes a correction term for the sampling probability of routes extracted with stochastic route generation. The term is easily applicable to large-scale networks and various environments, given its dependence only on a random number generator and the Dijkstra shortest path algorithm. The implementation for revealed preferences data, which consist of actual route choices collected in Cagliari, Italy, shows the feasibility of generating routes stochastically in a high-resolution network and calculating the correction factor. The model estimation with and without correction illustrates how the correction not only improves the goodness of fit but also turns illogical signs for parameter estimates to logical signs.

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