Efficiency of choice set generation methods for bicycle routes - DTU Orbit (30/12/2018)

Efficiency of choice set generation methods for bicycle routes

The current study analyses the efficiency of choice set generation methods for bicycle routes and proposes the extension of cost functions to bicycle-oriented factors not limited to distance and time. Three choice set generation methods for route choice were examined in their ability to generate relevant and heterogeneous routes: doubly stochastic generation function, breadth first search on link elimination, and branch & bound algorithm. Efficiency of the methods was evaluated for a high-resolution network by comparing the performances with four multi-attribute cost functions accounting for scenic routes, dedicated cycle lanes, and road type. Data consisted of 778 bicycle trips traced by GPS and carried out by 139 persons living in the Greater Copenhagen Area, in Denmark. Results suggest that both the breadth first search on link elimination and the doubly stochastic generation function generated realistic routes, while the former outperformed in computation cost and the latter produced more heterogeneous routes.

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