Public transit accessibility: measurements and perspectives

Measurement

Accessibility of public transit is unequal

- The accessibility of a location measures the ease of reaching surrounding opportunities
- Open data (GTFS) allow to measure its distribution in an urban area
- We can quantify inequality via the Gini index

Multimodal solution 1

Integrating public transit and carpooling

- Synchronize carpooling routes to transit schedules
- Increase of travel opportunities for users
- Reduction of car dependency
- Preliminary study in Portland: carpooling routes are integrated into GTFS data

Multimodal solution 2

Adaptive transit

- Optimally combining traditional public transit (fixed lines) and demand-responsive transit
- Analytic model (continuous approximation)
- Interior-point method for resolution

Projects

Multimodal Transit for Accessibility and Sustainability (MuTAS), ANR JCJC, 2022-26
Data-Driven Models of Multi-Modal Transit (2D3MT), BayFrance, 2022-23
AI for more accessible cities (AI-4-MAC), HÊParis, 2023-24
Ride-sharing for Transit, Intercom, 2021

Publications

Badeanlou, Amirhesam, Araldo, Andrea, M. Diana, and V. Gauthier. “Scoring transit lines based on accessibility distribution equity: An open-data based approach”. In: TRB 2023

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