Route choice modelling for cyclists on dense urban networks

Other Conference Item

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The context of the paper: E-bike city

DBAUG Lighthouse/BfE project (7 chairs at ETH; 1 at EPFL)

Can a city giving 50% of its road space to micro mobility work?

- Design (road, urban space, green space)
- Network and parking space reconfiguration
- 3.5D MFD (car, transit, bikes, e-bikes)
- Transit reconfiguration
- Accessibility changes by income, age, gender, location etc.
- Behavioural models/change by income, age, gender, location etc.
- CBA informed by LCA of the mobility tools
The context of the paper: Data/models available

Panel data on current behaviour:

• 2019 MOBIS: 3600 * 8 person-weeks of GPS tracks
• 2020-2022 MOBIS/COVID: 4.7*10^6 person-days of GPS tracks
• 2022-2023 EBIS: about 190k bike-owner person-days of GPS tracks plus SC experiments on infrastructure preferences
• 2022-2023 TimeUse+: 1000 * 4 person-weeks of time-budget, expenditure & GPS tracks

Agent populations and equilibrium demand and flows models

• Calibrated IVT MATSim Zürich+
• Calibrated IVT MATSim Switzerland
• Calibrated SBB MATSim SimbaMobi Switzerland
• Calibrated SBB VISUM model for Switzerland

TRB 2023
The paper

Highlights

- 4500 bike trips in Zürich+ (bike, e-bike)
- 100 participants of the MOBIS/COVID panel
- BFSLE generation of 20+ non-chosen alternatives for each trip
- Mixed logit formulation in value-of-distance-space
- E-bikers perceive gradients as much easier than bikers
- Relative penalties of the infrastructure types
Questions?

- www.ivt.ethz.ch
- ebikecity.baug.ethz.ch
- ivtmobis.ethz.ch/mobis/covid19/
- ivt.ethz.ch/forschung/mobis.html
- www.matsim.org