

Finding the best journey for your parcel – Simulation of B2C distribution in Antwerp

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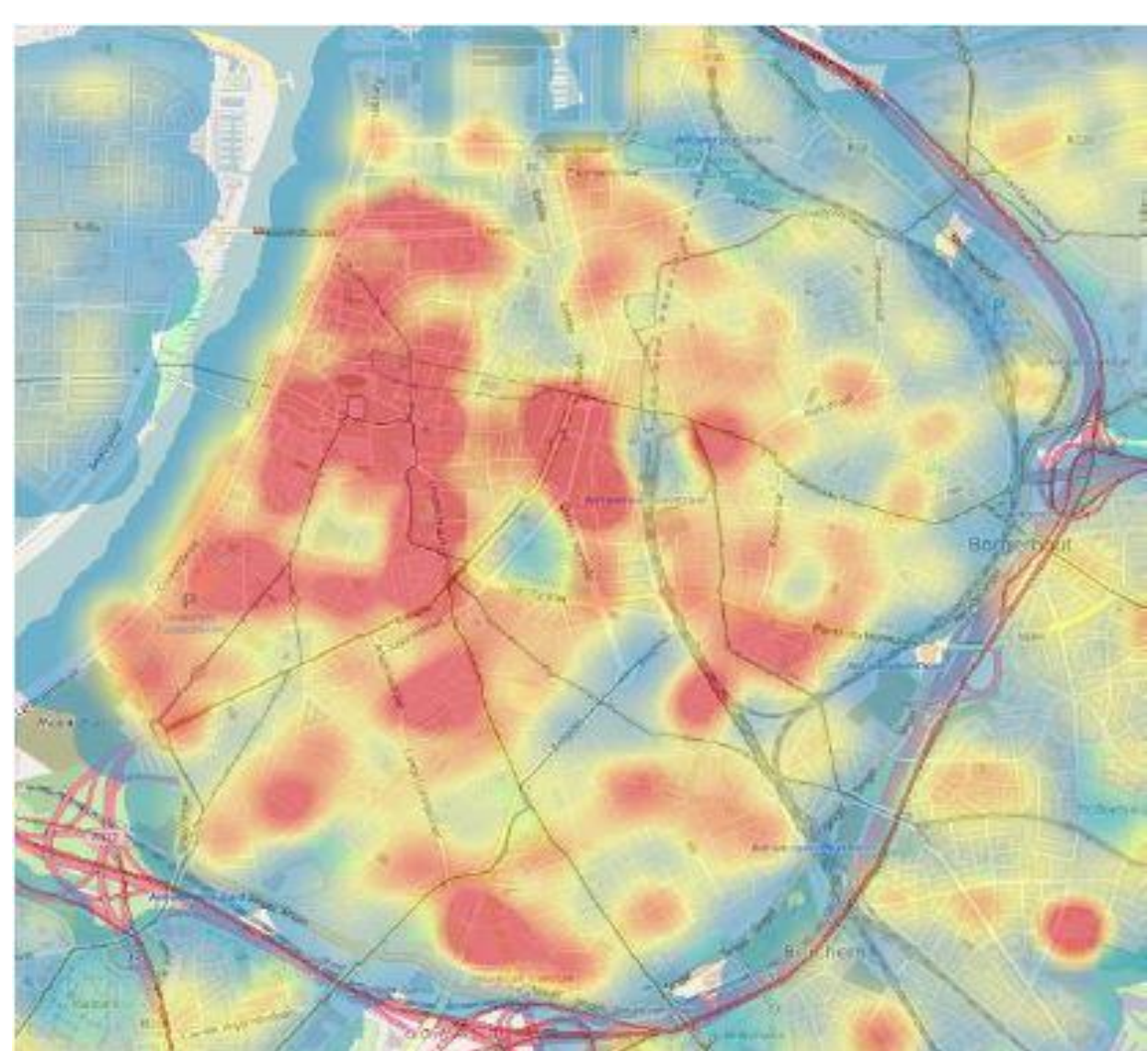
Research question

Distribution activities in cities related to B2C e-commerce account for a significant amount of external costs.

Can **innovative delivery concepts** reduce the **operational** and **external costs**, and thereby satisfy all stakeholders?

We analyse potential **what-if scenarios** in a **quantitative simulation study**.

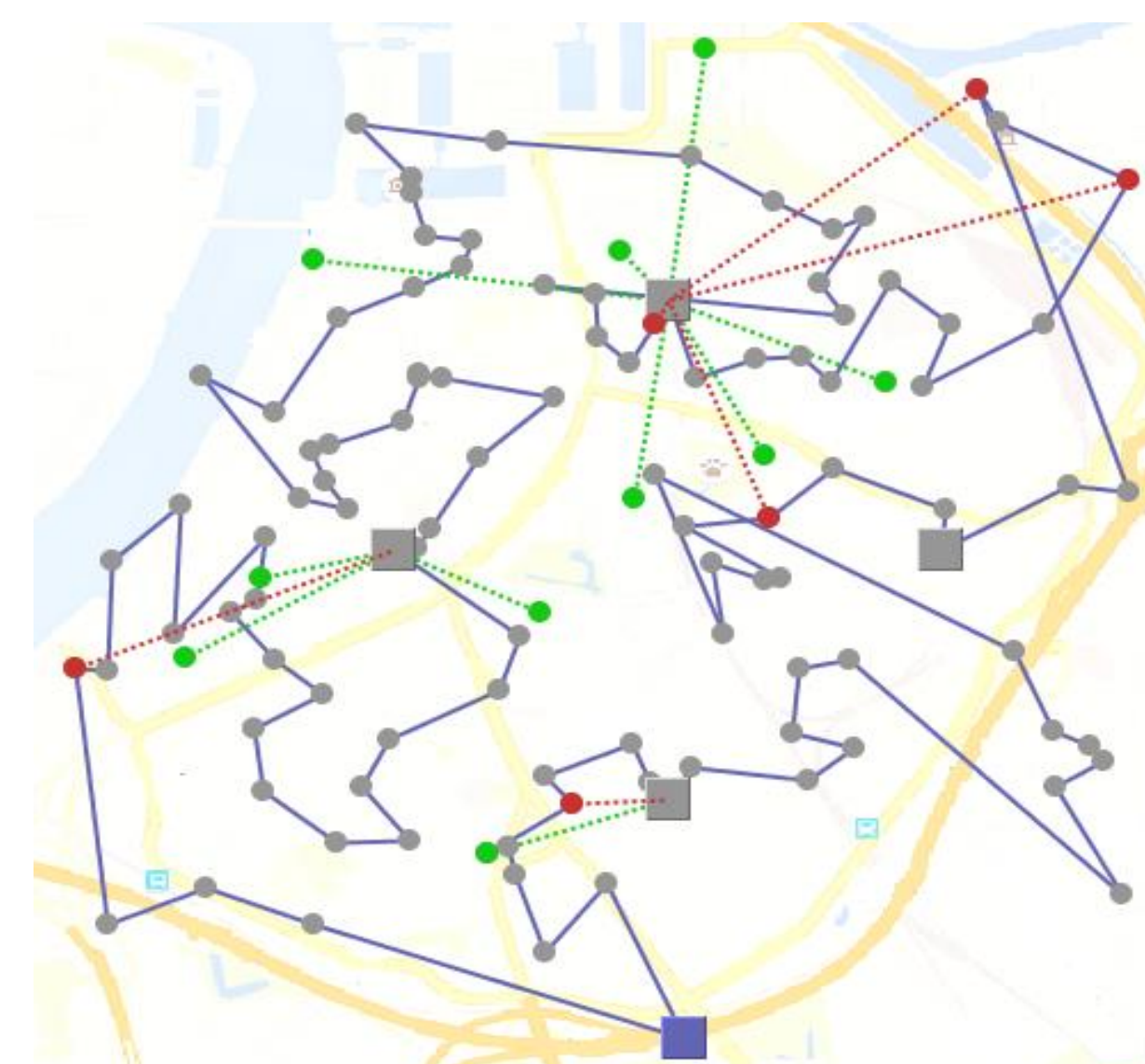
Methodology



We derive demand density from real-world delivery data



We simulate customer demand for several days

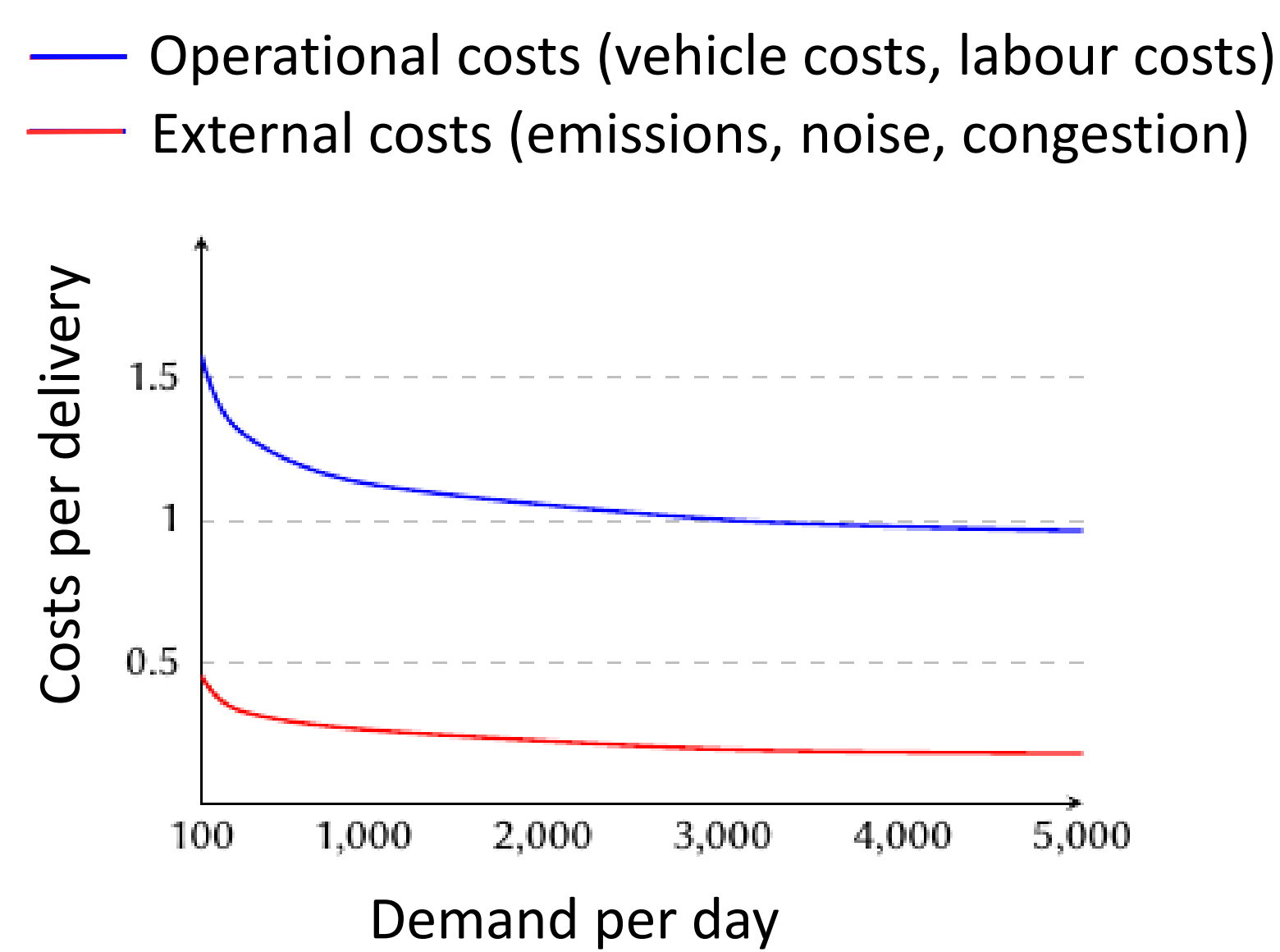


We derive travel times and distances from Open Street Map and compute delivery routes

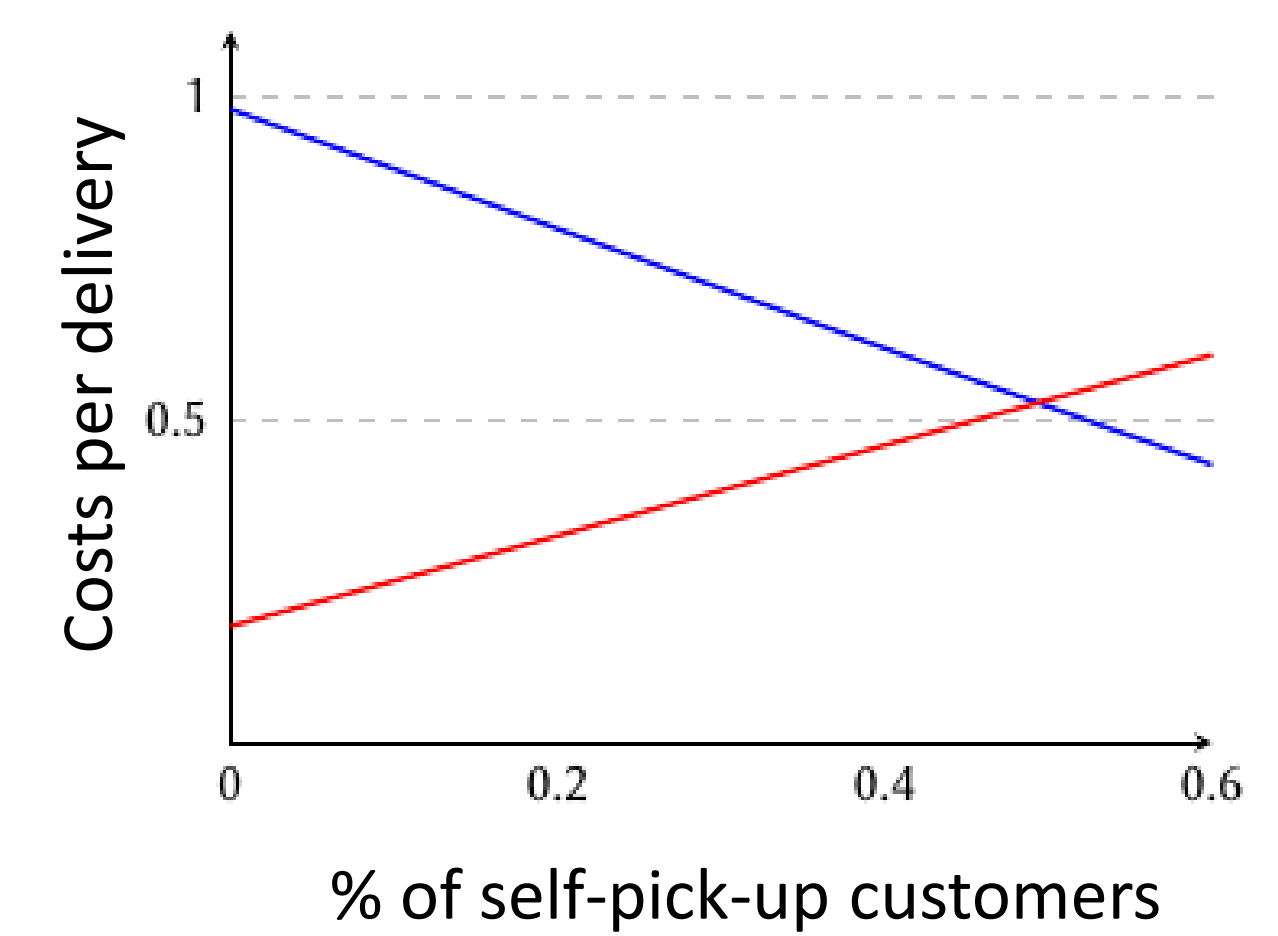
- Customer
- Pick-up-point
- Failed delivery
- Self-pick-up

Results

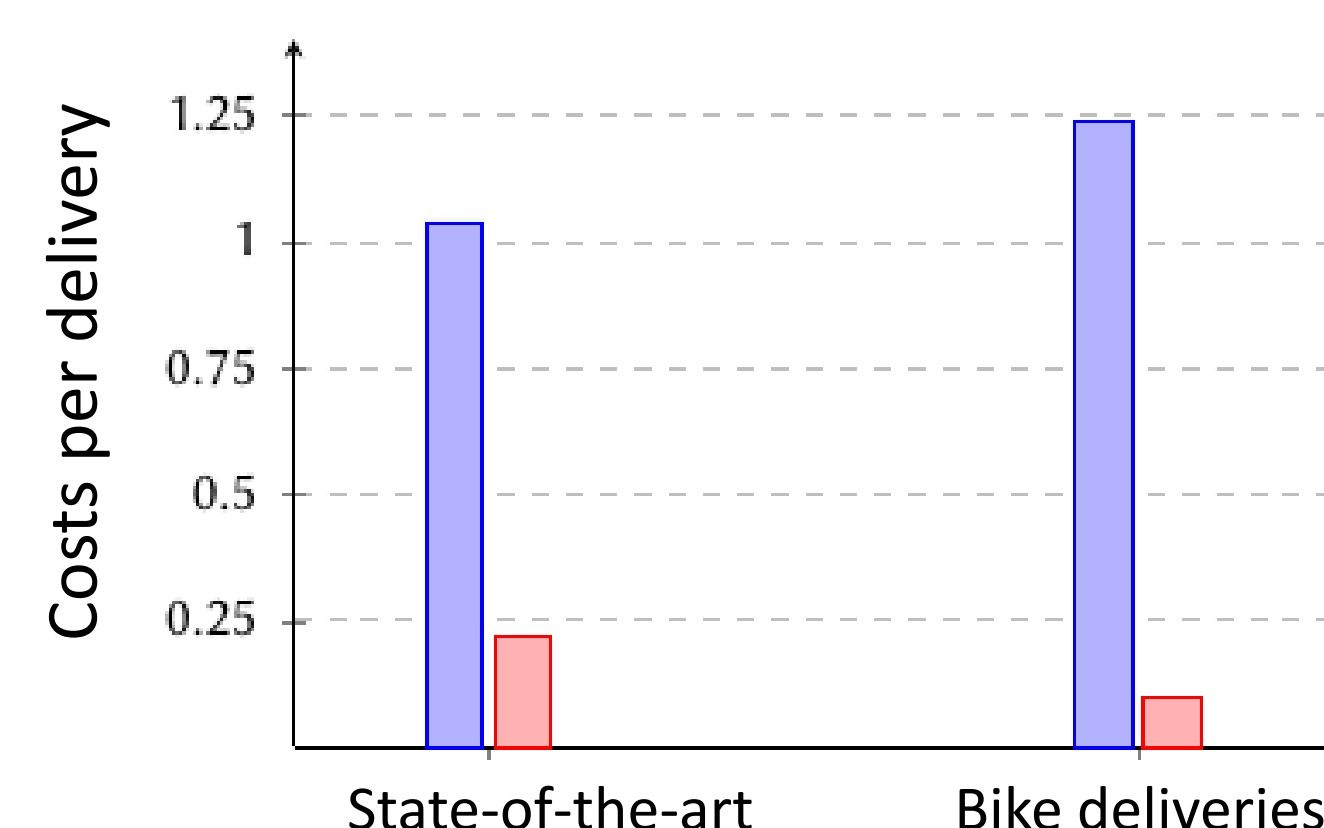
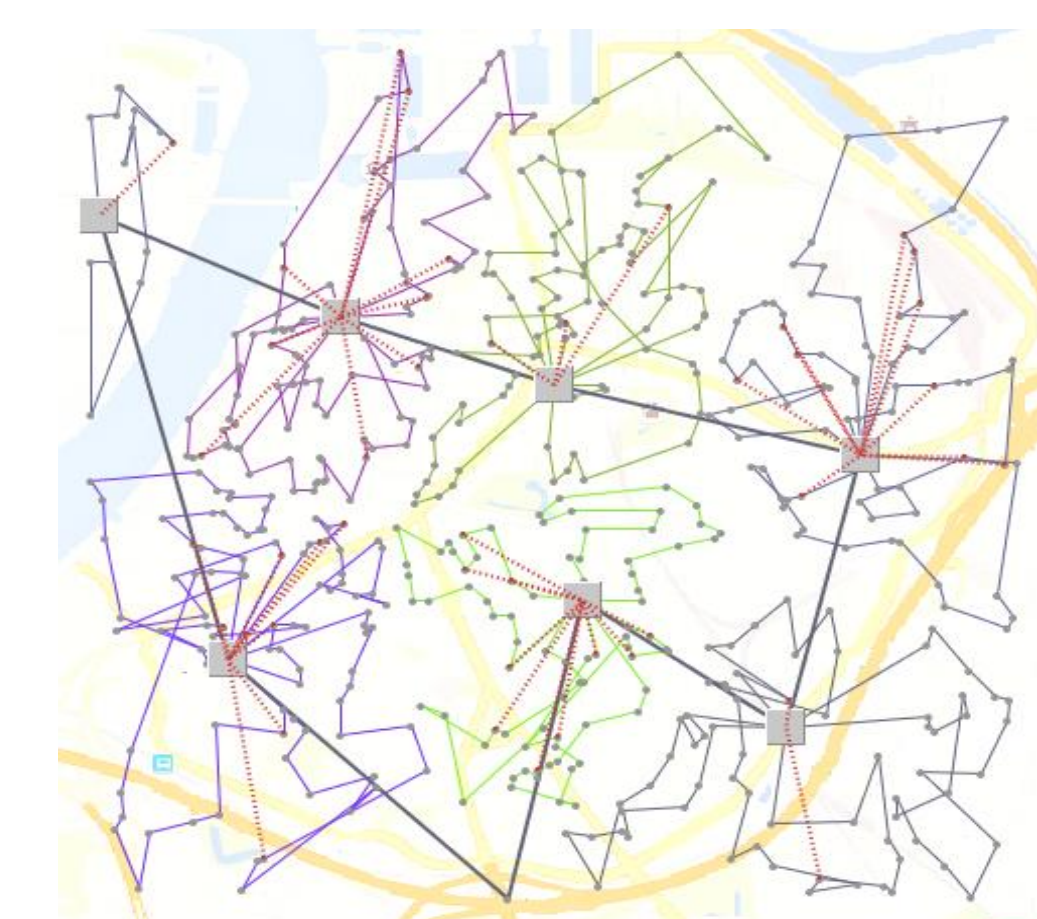
1.) State-of-the-art



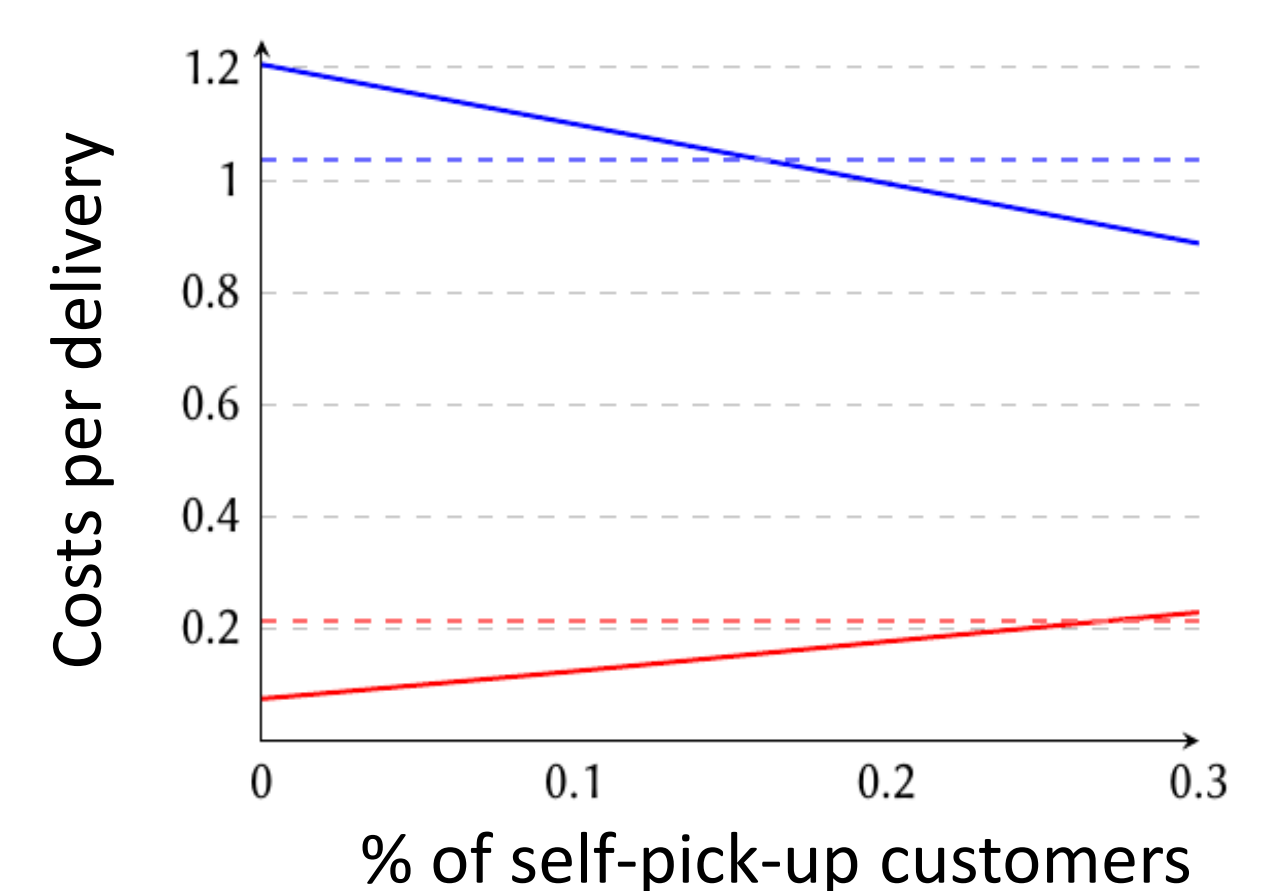
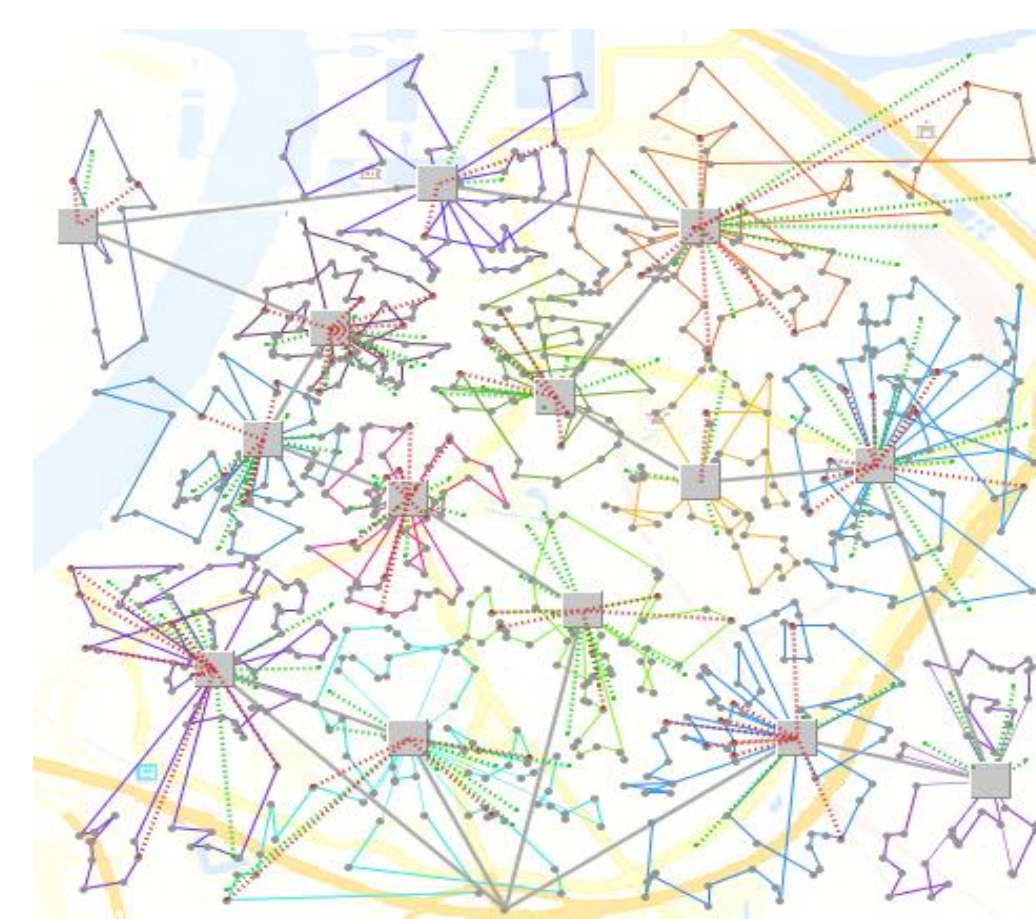
2.) Customer self-pick-up from delivery points



3.) Bike deliveries from delivery points



4.) Bike deliveries & self-pick-up



A combination of self-pick-up and collaborative bike deliveries can decrease both operational and external costs

Incentive for stakeholders to work together on sustainable delivery solutions

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D. Cattaruzza, N. Absi, D. Feillet, and J. González-Feliu, "Vehicle routing problems for city logistics," *EURO J. Transp. Logist.*, pp. 1–29, 2015.

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