

How to encourage participation in social routing schemes?

Problem Description

Urban road congestion remains a major challenge, and expanding infrastructure is often costly and impractical. Social routing offers an alternative, where commuters voluntarily take longer 'social' routes on some trips each week to improve overall traffic efficiency.

A simulation framework for Lyon, France, has assessed the long-term impact of such schemes, integrating dynamic traffic assignment and behavioral choice models. Findings suggest that some users opt out due to journey-specific factors and personal attitudes toward altruism.

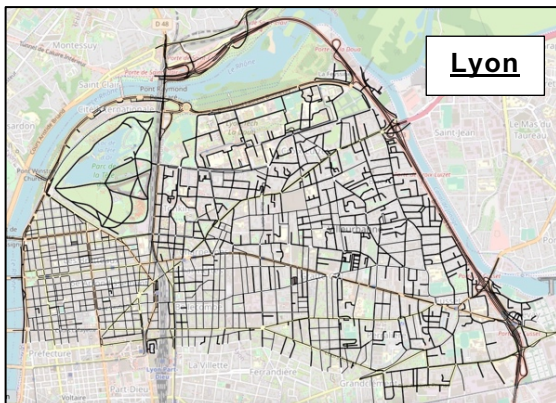


This project will explore strategies to encourage participation among reluctant users. Key questions include:

- **Adaptive Participation Offers** – Can varying the number of days a user is asked to take the longer route make participation more attractive?
- **Temporary Incentives & Nudging** – Can short-term offers encourage enough participation to shift the network toward a better operational state, even after the incentives are removed?

Assignment

- You will adapt an existing model framework (provided in Python) to experiment with strategies for increasing participation in social routing schemes for a case study network in Lyon, France.
- You will interpret simulation results in terms of user characteristics and long-term behavioral shifts, with a focus on their implications for reducing congestion.
- (Potentially) Investigate social day distributions by analyzing how participants spread their social routing days throughout the week.



Candidate

- A motivated student with an interest in traffic management and behavioral modelling.
- This will involve coding in Python, must have proficiency.
- Added bonus: specific knowledge of traffic assignment, discrete choice models.

Information

Scan the QR code for the current research that this project will build on.

If you are interested, get in touch!

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