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Urban & Environmental Engineering

LEMA

Calibration of MATSim in the District of Liège (Belgium) using Mobile Phone-based OD-matrices: Preliminary Results

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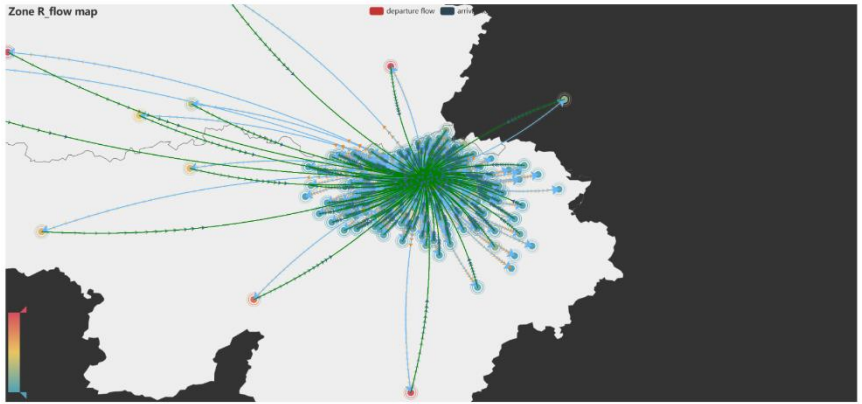
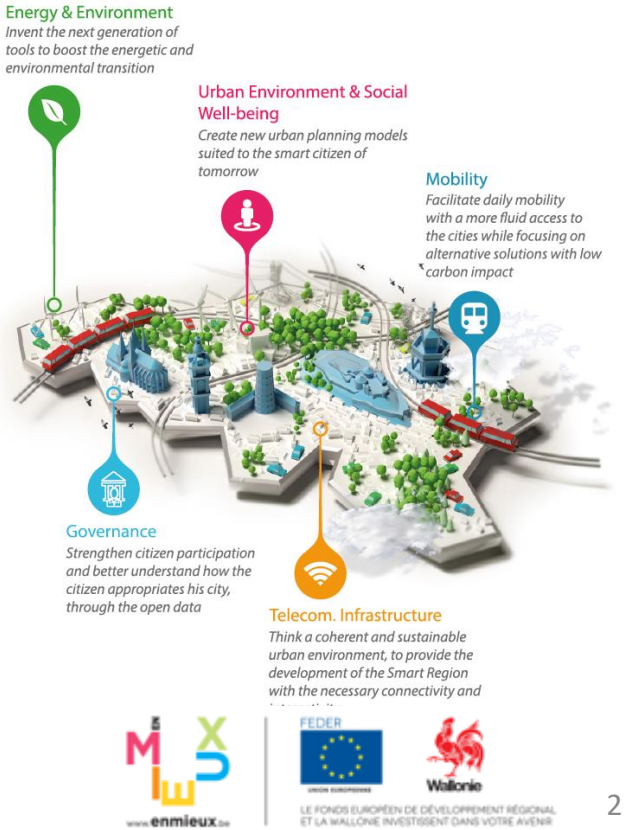
OVERVIEW

- ✓ Data
- ✓ Methods
- ✓ Progress
- ✓ Outlook





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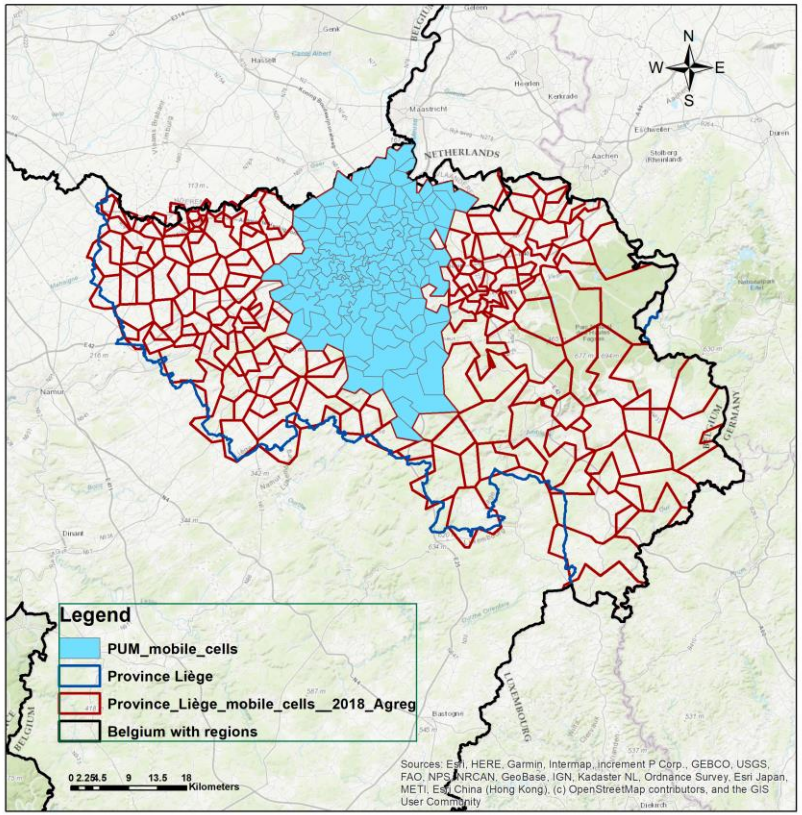
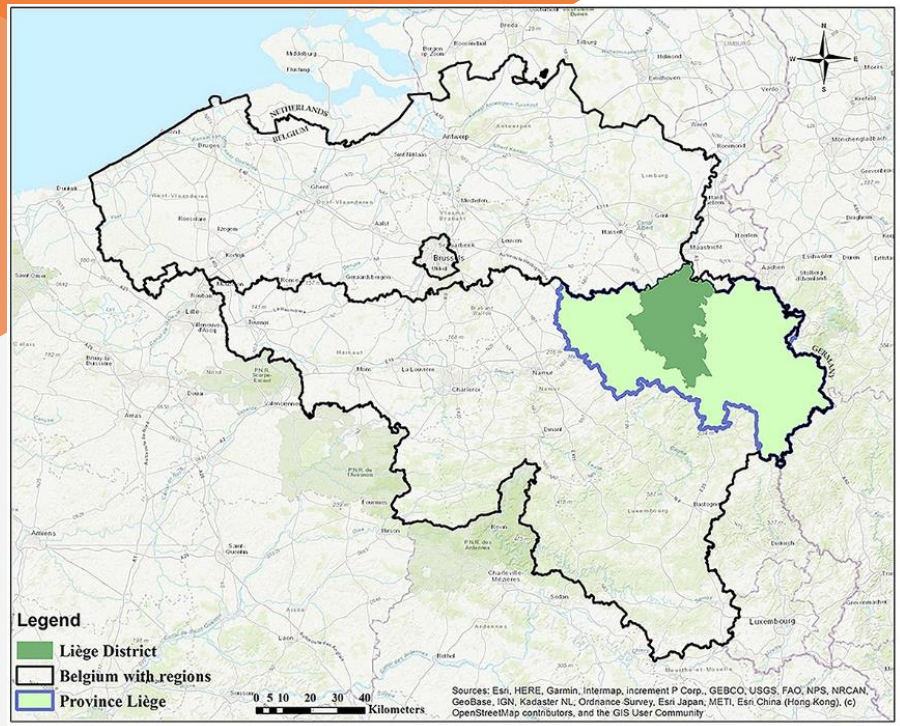
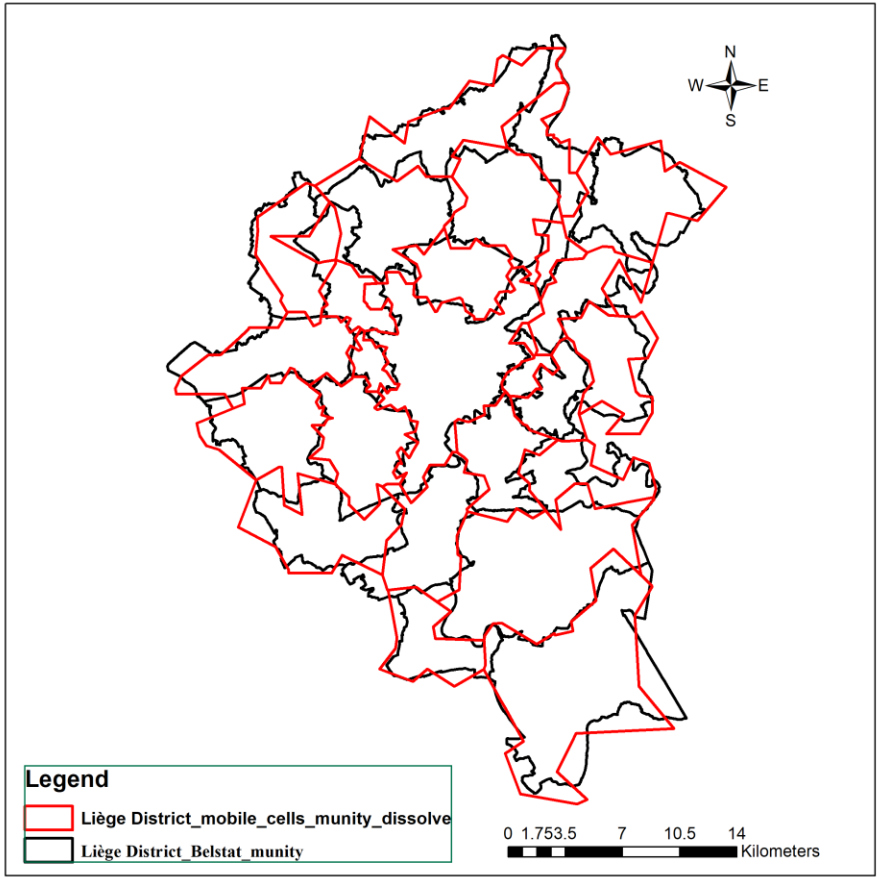
1. Data



Data	Spatial resolution of the finest granularity	Geographical Scale	Timeframe
BELDAM (census 2011)	Household postal code	Belgium	2011
Mobile phone data	Sub-commune	Province of Liège in Belgium	15.01.2018 - 08.02.2018, 23.02.2018 - 18.03.2018
STATBEL Population distribution	Statistical sectors	Belgium	2018
STATBEL Population 1km2 grid	100m by 100m grid	Belgium	2016

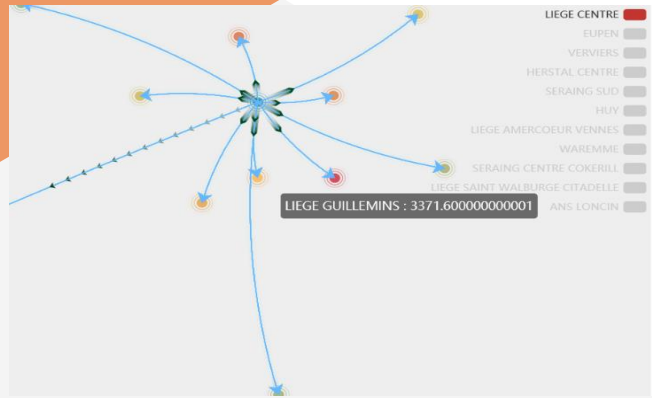
1.1 Research area– Liège District

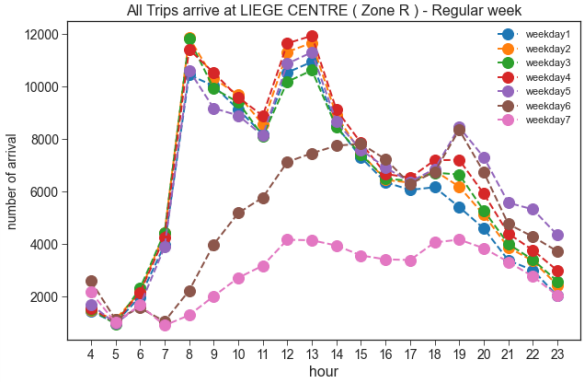


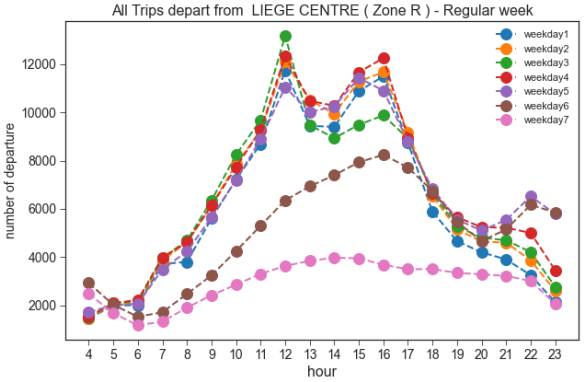


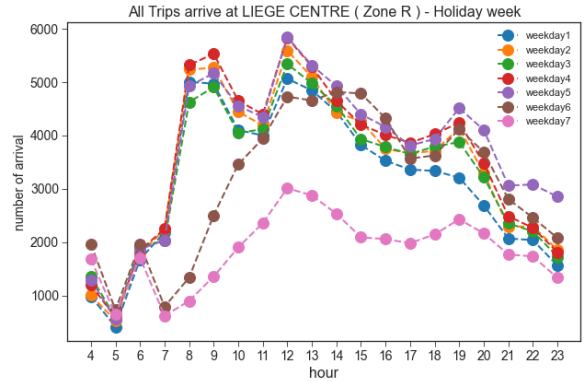
1.2 Mobile Phone Zones – OD matrices

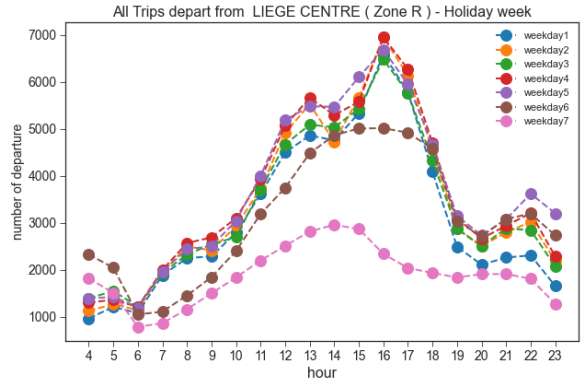
- 24-h number of trips for each pair of origin–destination zones



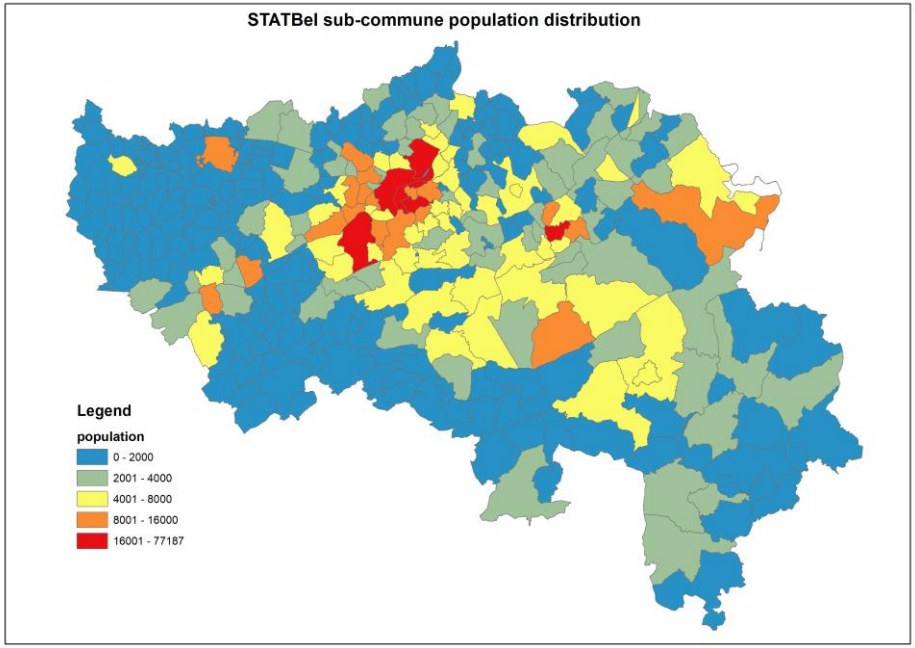


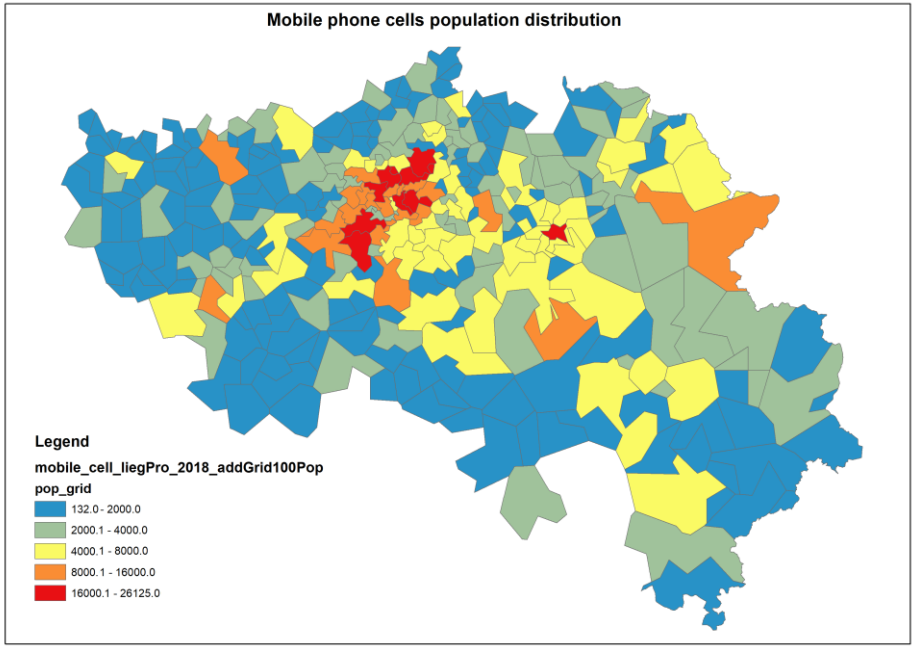






1.3 Mobile Phone Cells – population aggregation

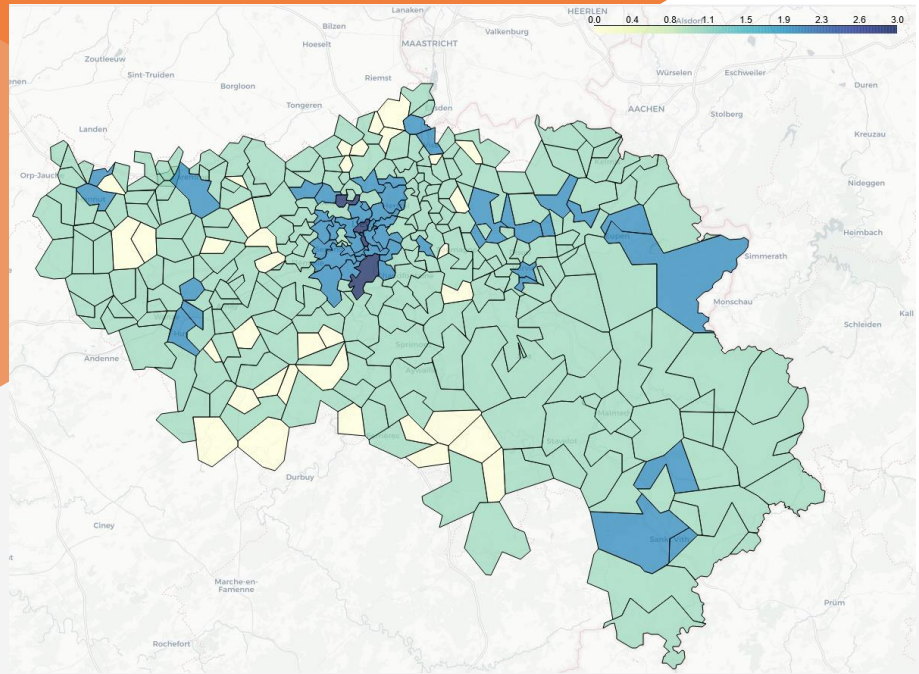




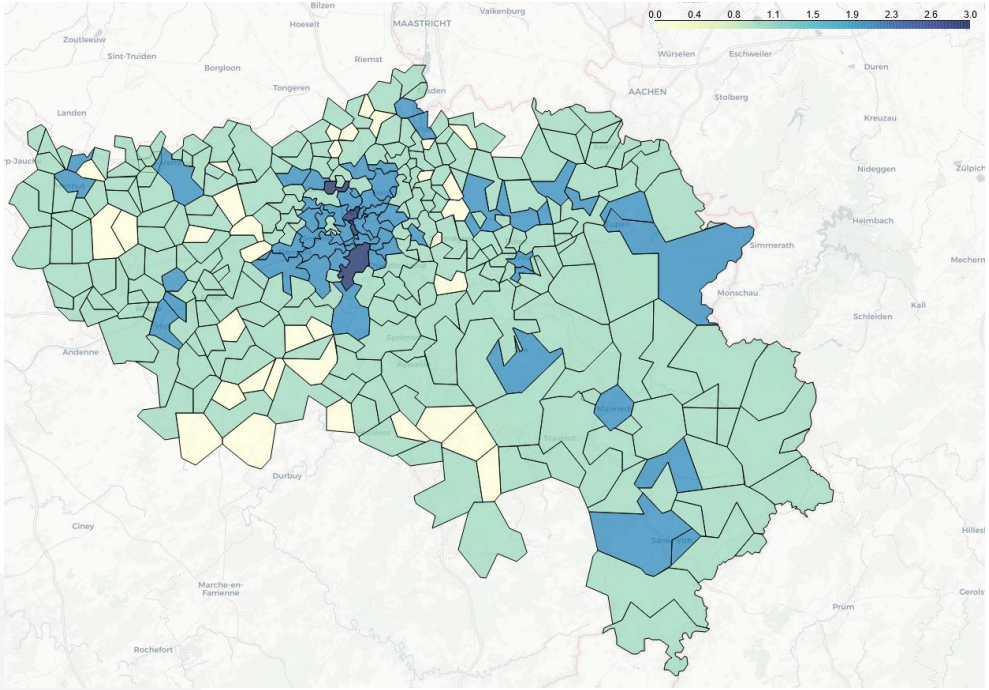
360 sub-communes

310 mobile phone zones

1.4 Mobile Phone Cells – mean nrof_trip per ind.



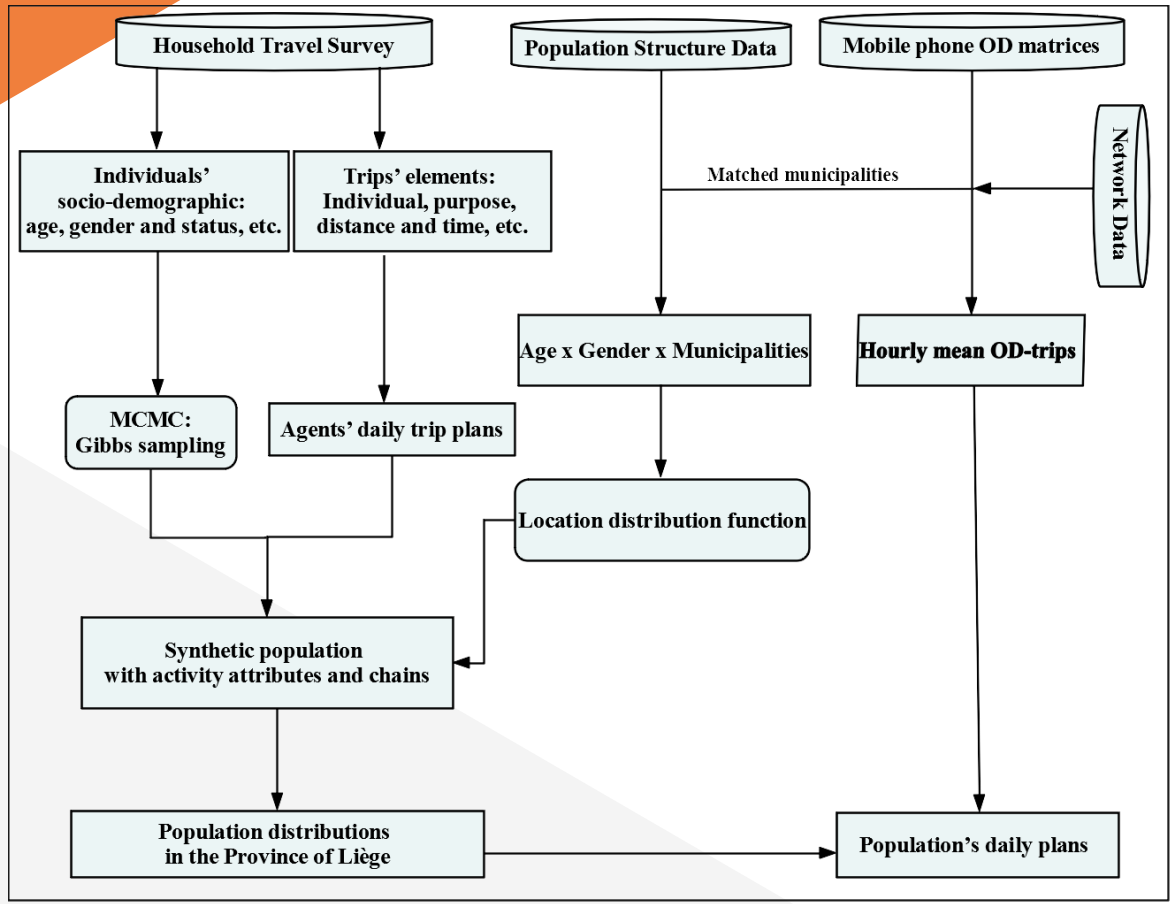
Daily total mean number of trips arrival/inhabitants
Regular week



Daily total mean number of trips departure/inhabitants
Regular week

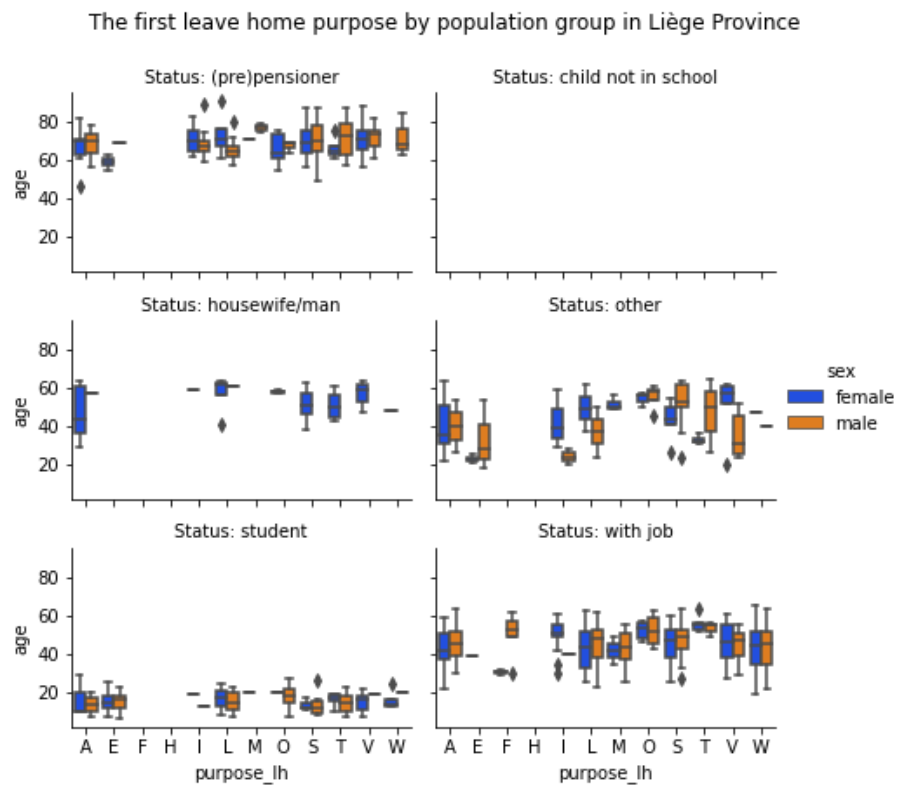
2. Methods

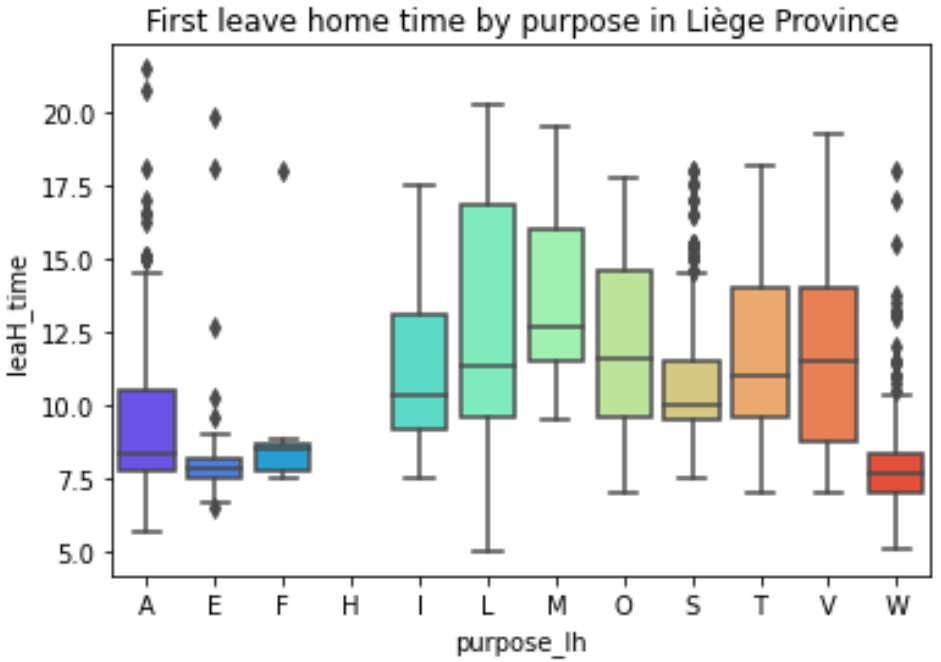
- a synthetic population augmented with home-based daily activity chains has been prepared



2.1 Travel survey

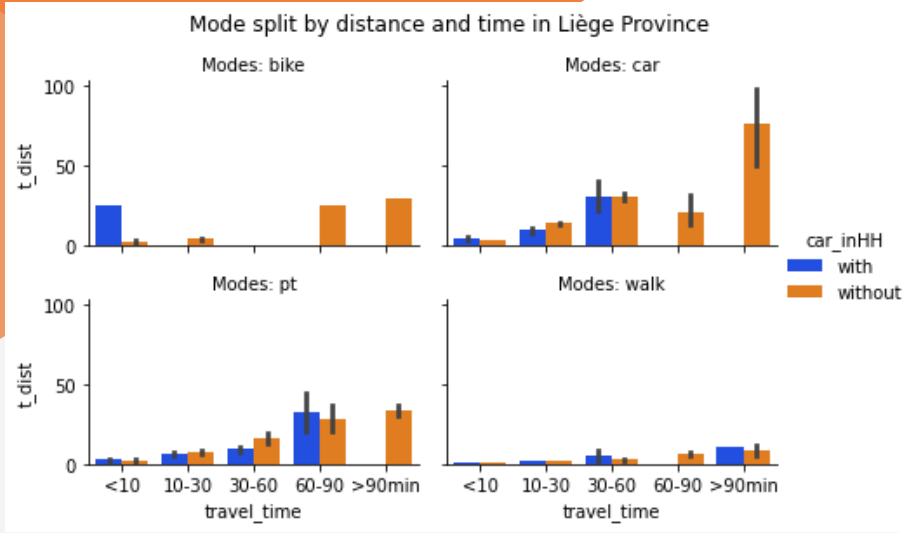
- First leave home activity and time

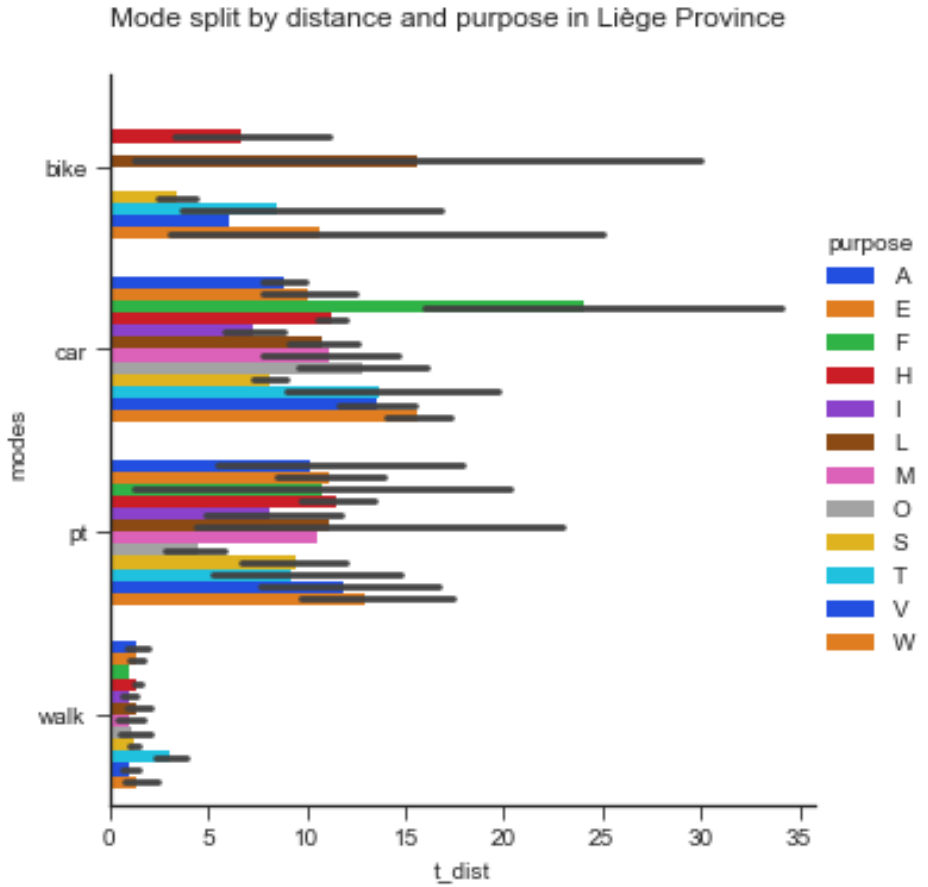




2.1 Travel survey

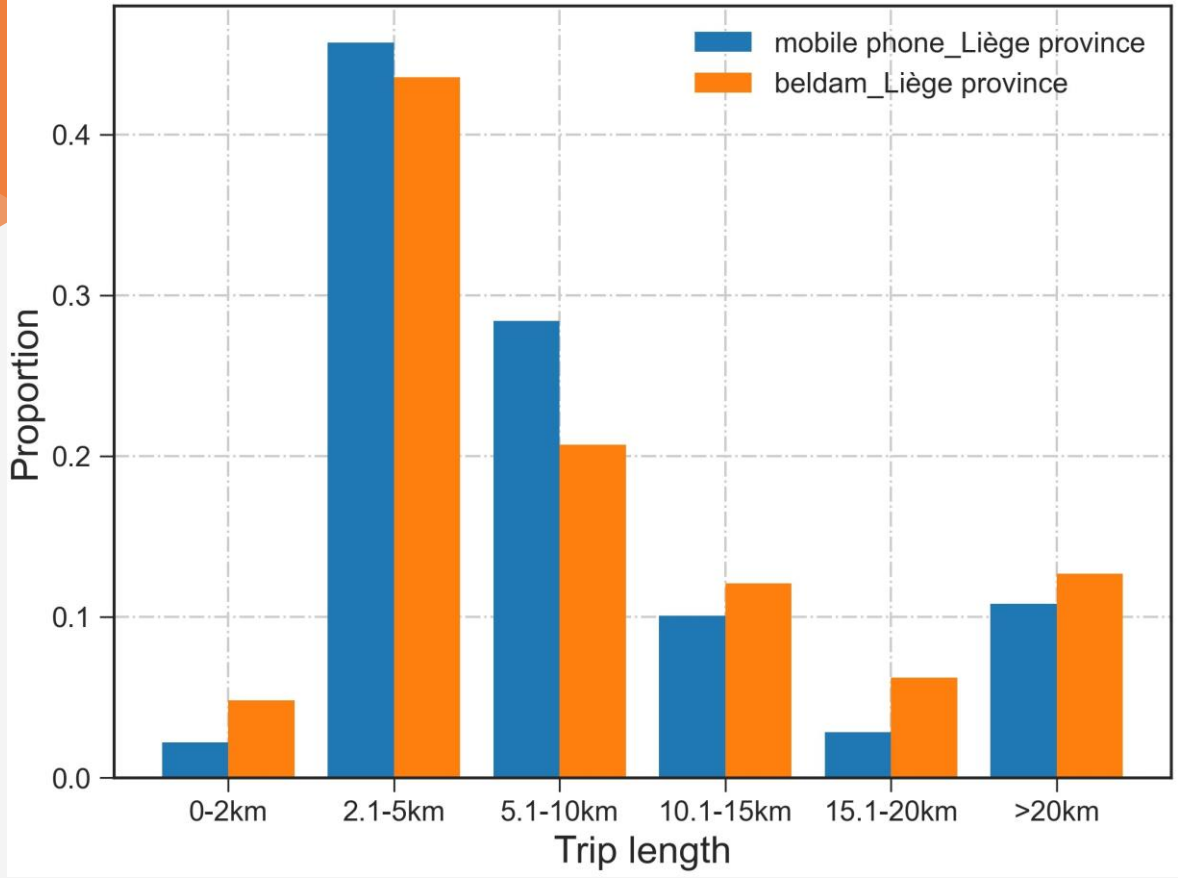
- Mode choice





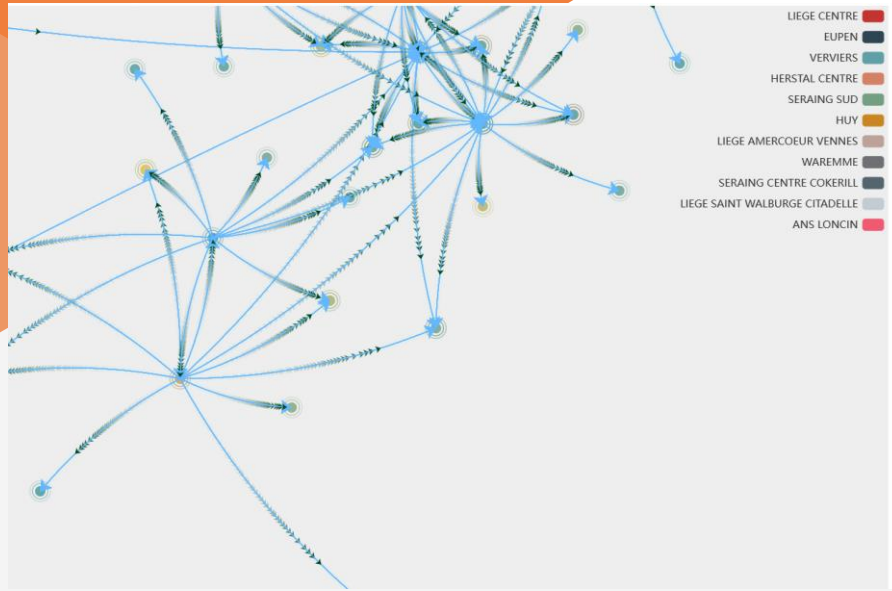
2.2 Travel survey and Mobile phone-OD matrices

- Trip length distributions



3. Mobile phone-OD matrices to distribute trip

- Known: at which day which o'clock number of trips happened within Municipalities or between Municipalities



Starting point: go through mobile od-trips origin by origin using population's current location as the reference

origin	destination	weekday_nr	epoch	hour_nr	nrof_trip
62003	62003	1	06:00:00	6	815
62003	62003	1	07:00:00	7	614
62003	62003	1	08:00:00	8	174
62003	62003	1	09:00:00	9	618

Index	age	gender	status	licence	car_inHH	munity_nr	munity	sequence	leaH_time
3	0	1	1	0	1	408	62063	HLH	7.66667
4	3	1	3	1	1	404	62032	HWH	7.16667
5	0	0	1	0	1	412	62099	HEH	8.33333

Complete daily travel plans

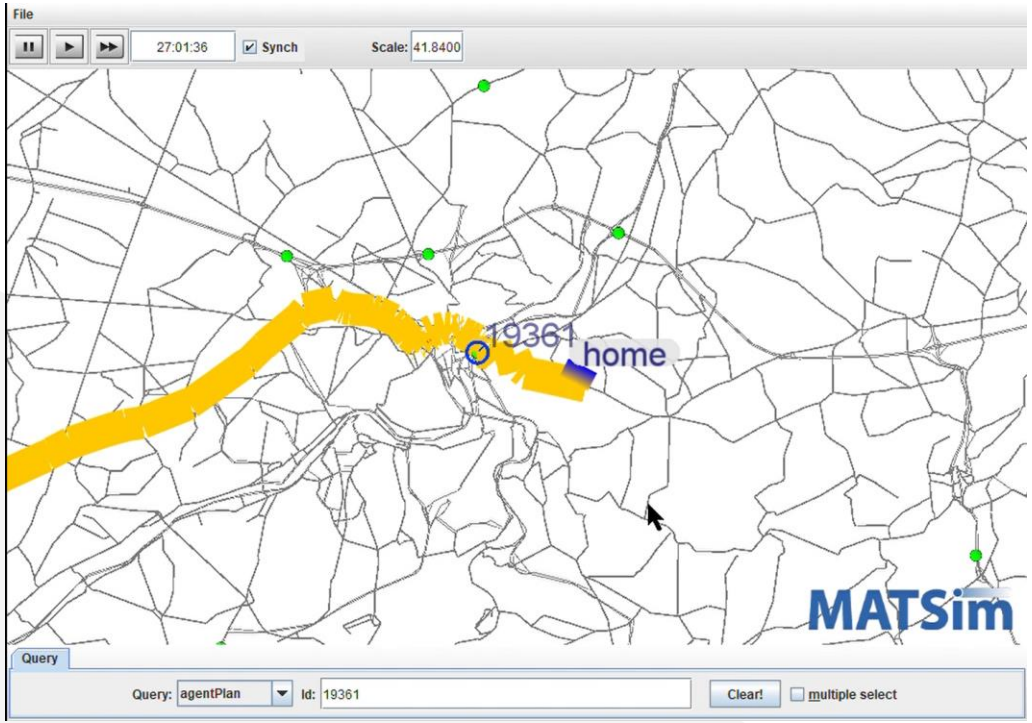
- Nrof_trips per mode in OD matrix
- Mean activity duration
- Travel cost matrix per mode and car_ownship

3. MATSim (Multi-Agent Transport Simulation).

The objective is create agents' daily activity plans as an initial demand for MATSim

Inputs:

- A config file
- A population file
- A network

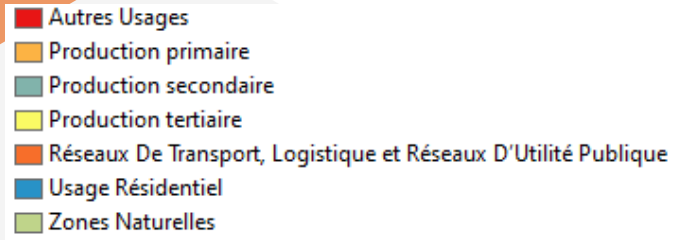


4. Outlook

1). Improve the trip distribution using mobile phone data

2). Extend the length of activity sequence

3). Feed land use features and matrix of commutes to the smart location choice



Thank you!

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