

Visualization of Mobility

Big Data Matters 3

The Need for Timely Official Statistics

Martijn Tennekes (CBS)
Marko Roos (CBS)
Min Chen (University of Oxford)
Milena Suarez Castillo (Insee)



Mobility



Commuting



Tourism



Leisure

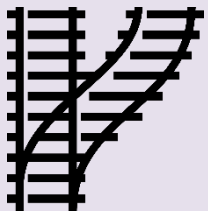


Shopping



Migration

Why is it important to analyse mobility?



Infrastructure planning



Emergency services



Pandemic management

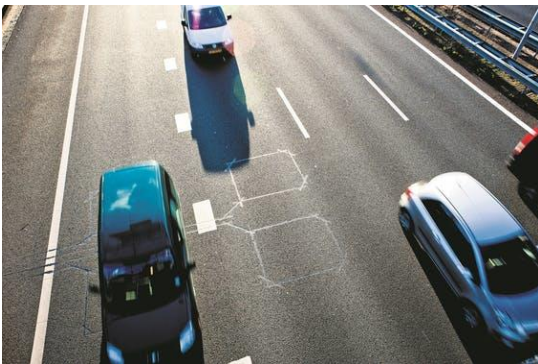


Big Data sources to analyse mobility

- Public transport check-in data



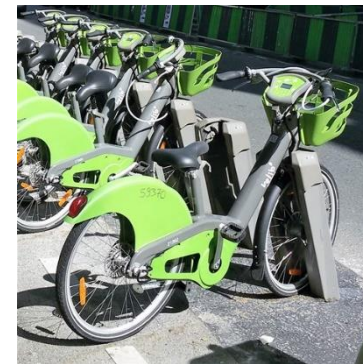
- Vehicle count data



- Mobile network operator data



- Bike sharing data



- ... etc.

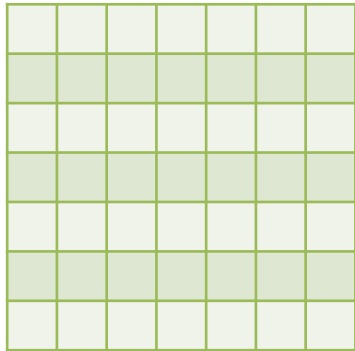
Flow map



Work
municipality (355)



Home
municipality (355)

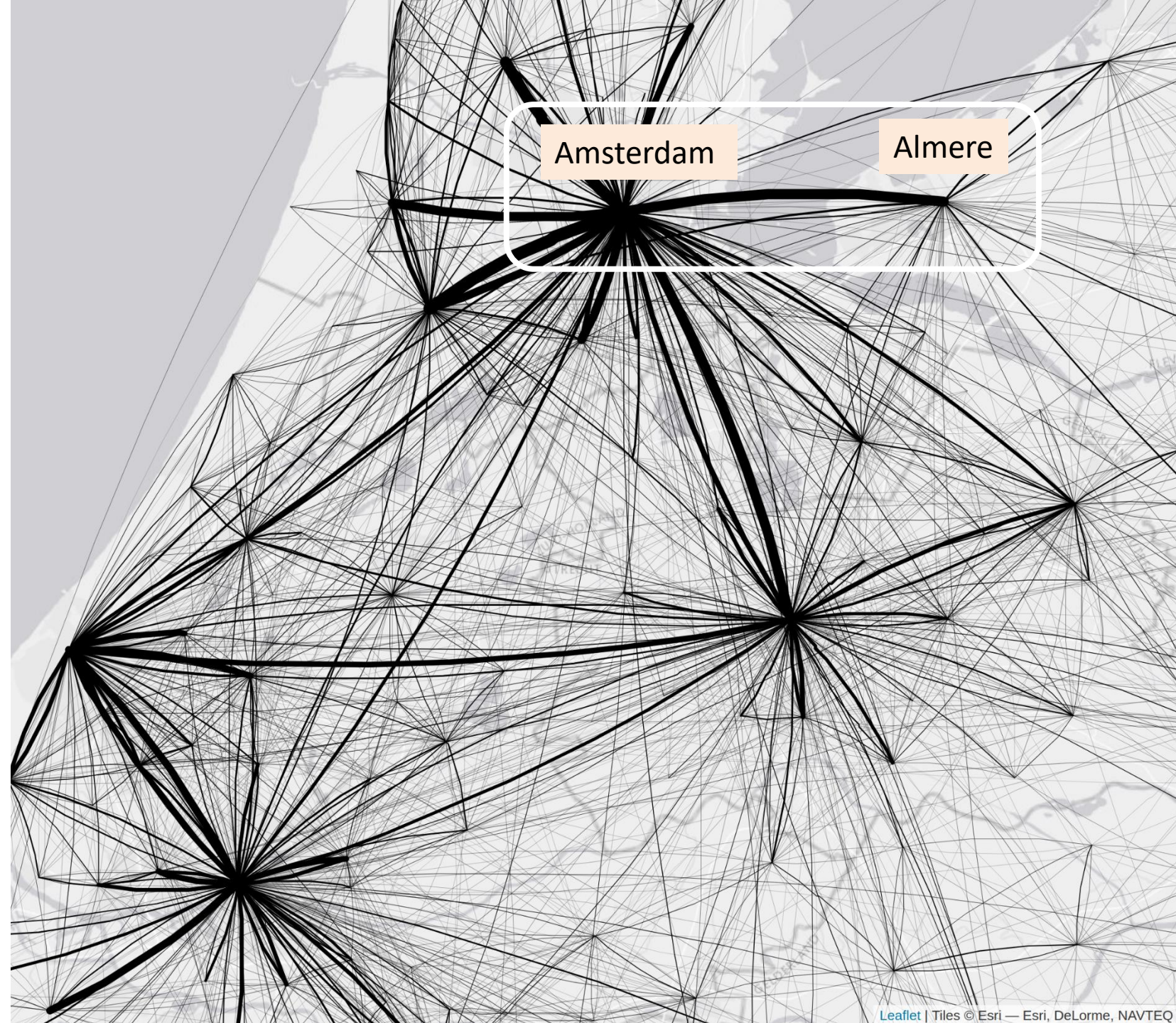


Direction/curvature indicates "go to work"

Amsterdam



Almere

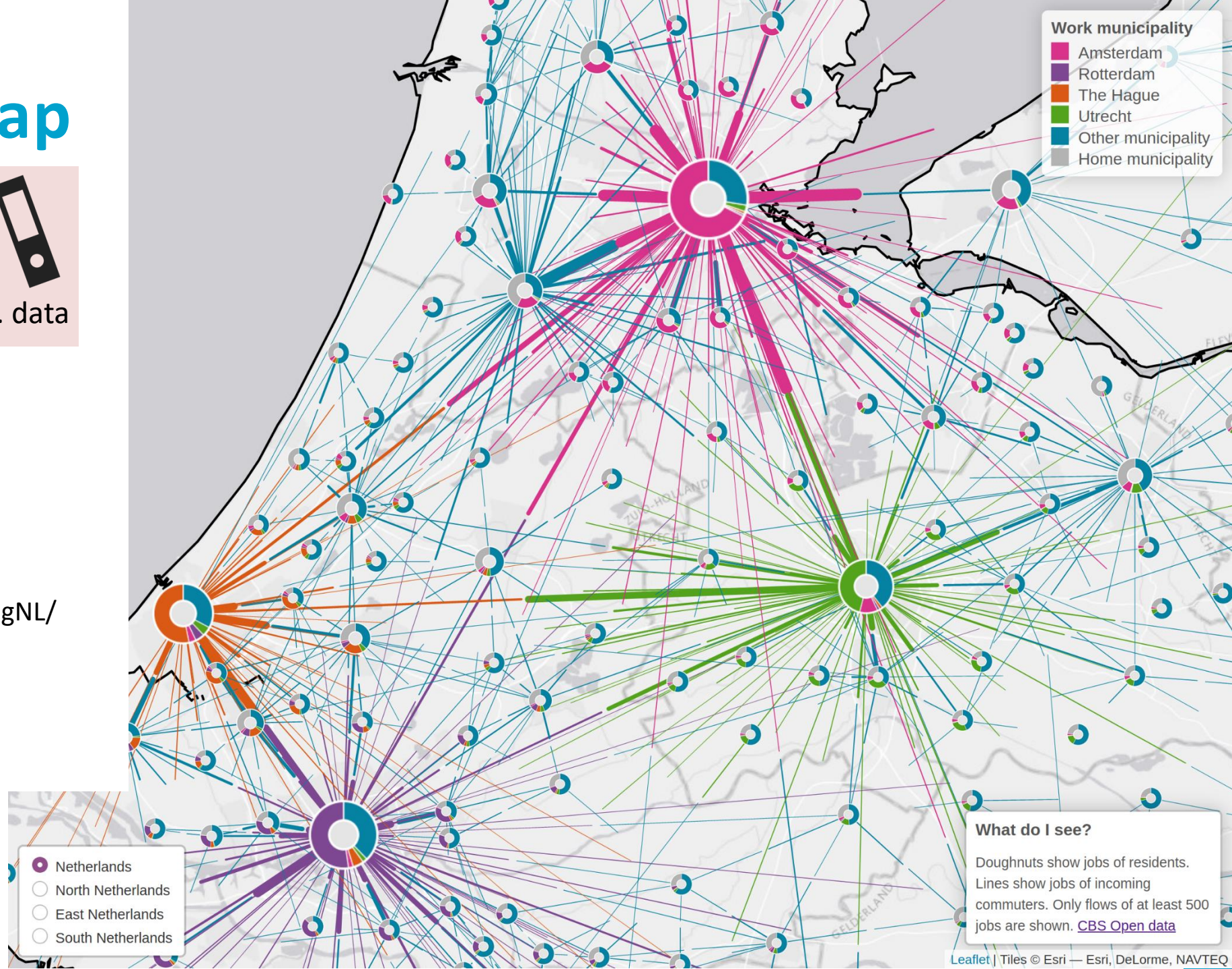


Doughnut map



<https://dashboards.cbs.nl/v1/commutingNL/>

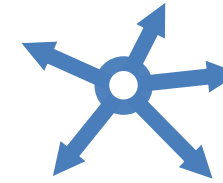
“Less is More” principle
By drawing *less* information,
more information is perceived



Doughnut map

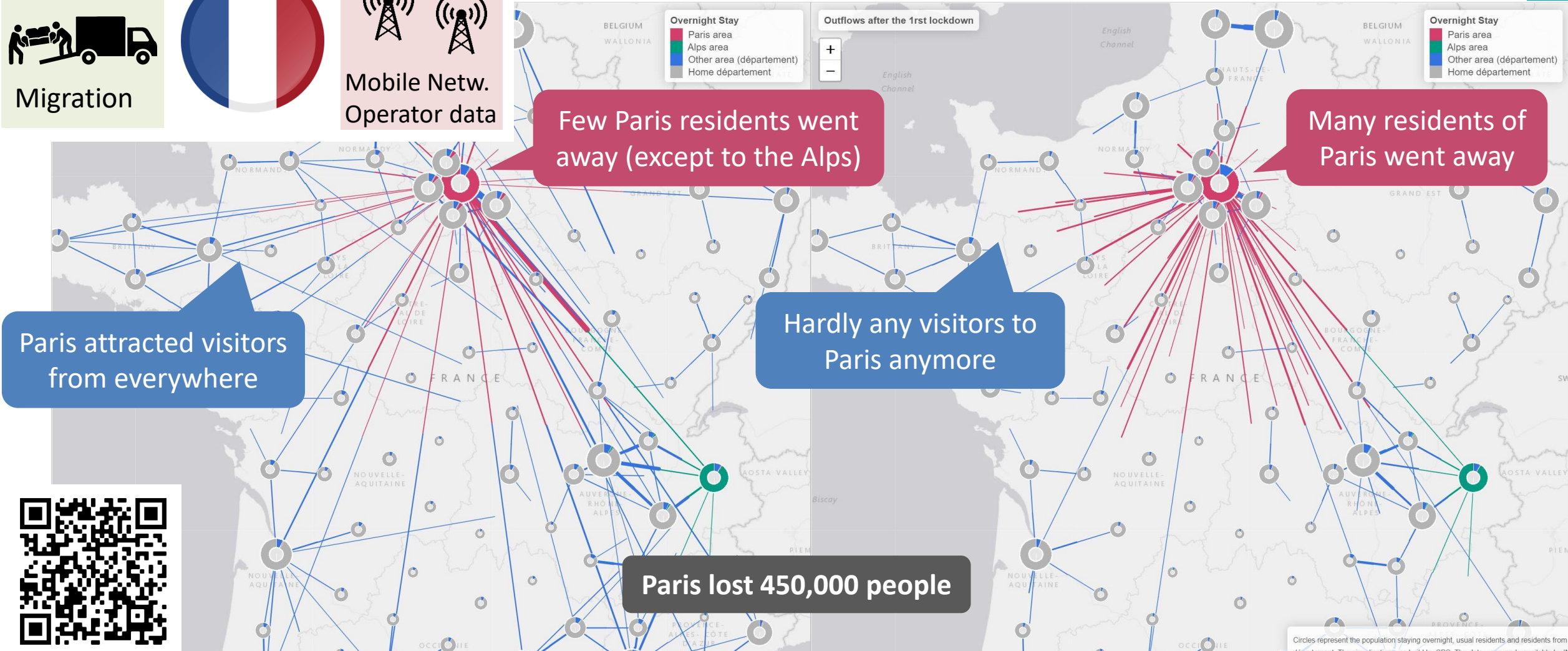
Where did residents stay overnight?

Lines indicate outflow



Before the 1st lockdown

After the 1st lockdown



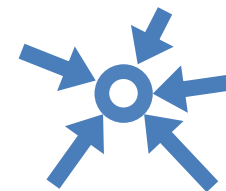
https://inseefrlab.github.io/lockdown-maps-R/outflows_EN.html

Circles represent the population staying overnight, usual residents and residents from other départements. The visualisation was built by CBS. The data were made available by INSEE. To Inflows vers Version Française. They were statistically adjusted and combined from anonymous counts provided by three MNOs (Bouygues telecom, SFR, Orange), see Galiana et al. (2020). Leaflet | Tiles © Esri — Esri, DeLorme, NAVTECH

Doughnut map

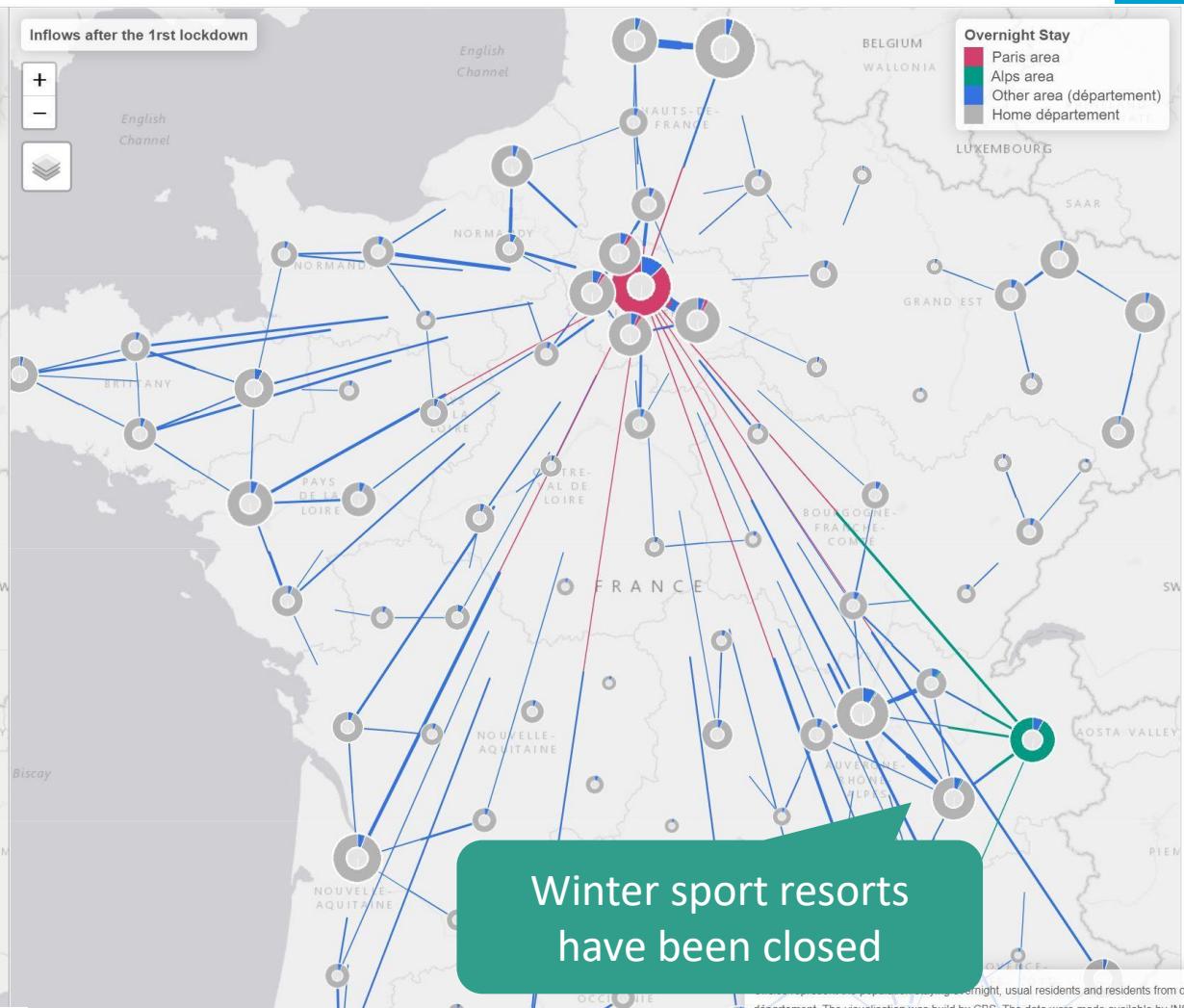
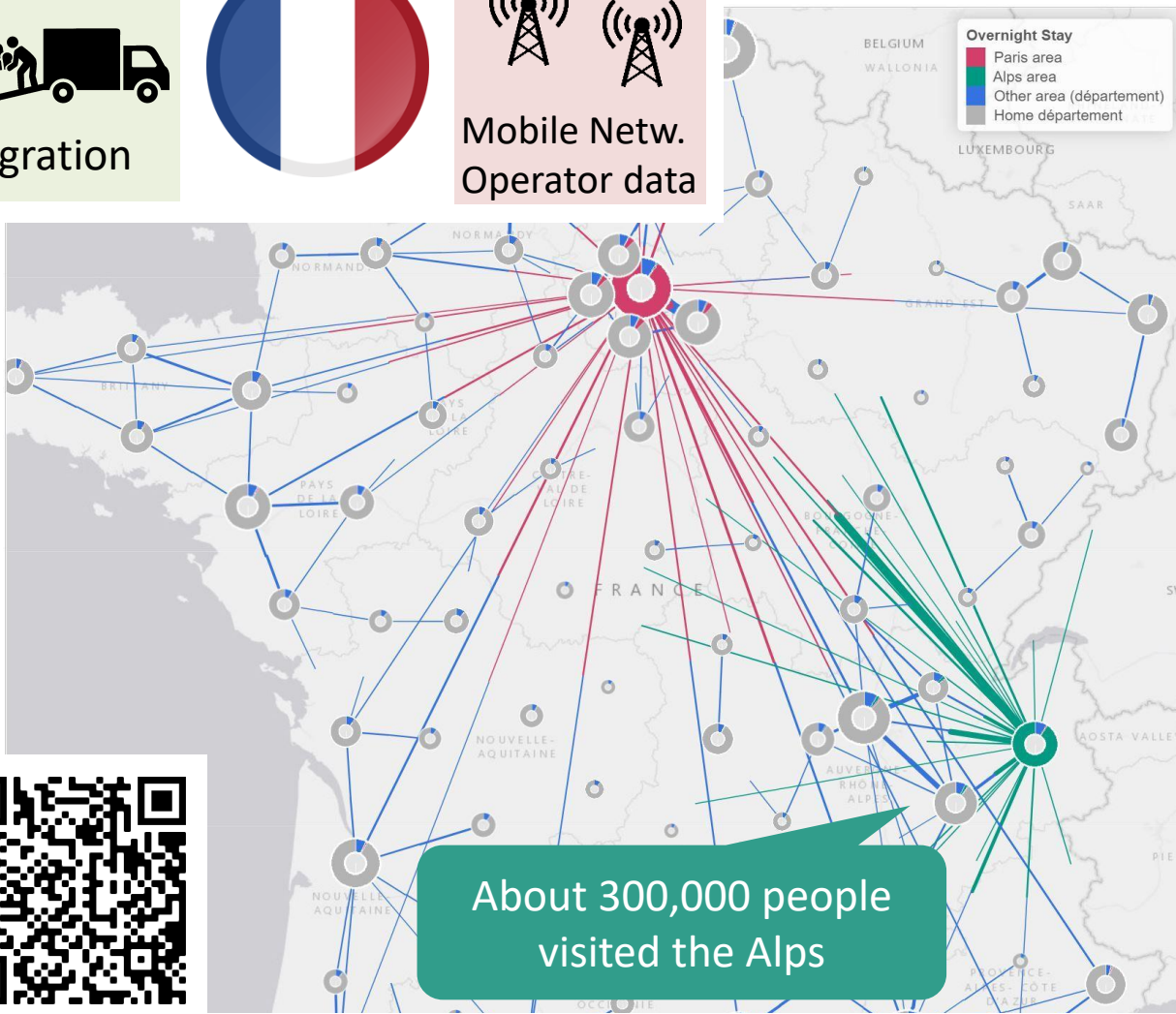
Where did residents stay overnight?

Lines indicate inflow



Before the 1st lockdown

After the 1st lockdown



https://inseefrlab.github.io/lockdown-maps-R/inflows_EN.html

The visualization was built by CBS. The data were made available by INSEE. They were statistically adjusted and combined from anonymous counts provided by three MNOs (Bouygues telecom, SFR, Orange), see [Galiana et al. \(2020\)](#).
Leaflet | Tiles © Esri — Esri, DeLorme, NAVTEQ

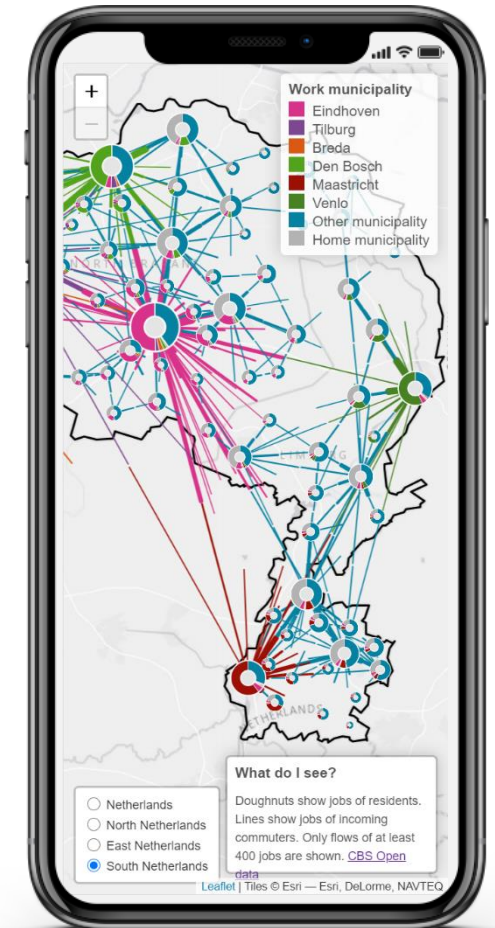
Summary

- Mobility studies are important for infrastructure, emergency services and pandemic management.
- Big 'timely' data sources are needed to monitor mobility.
- Visualization methods, such as the doughnut map, help policy-makers to understand mobility.



https://inseeFrLab.github.io/lockdown-maps-R/outflows_EN.html

Open source: <https://github.com/InseeFrLab/lockdown-maps-R>



<https://dashboards.cbs.nl/v1/commutingNL/>