Where do I dwell where do I live: understanding territories and mobility

Jacques Lévy, *Geographer, member of the Chôros research rhizome - Vautrin Lud 2018 Prize*

Jean Coldefy, *Chairman of the Scientific Council of France Mobilités, advisor to the Chairman of Transdev*

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Mobility stakes

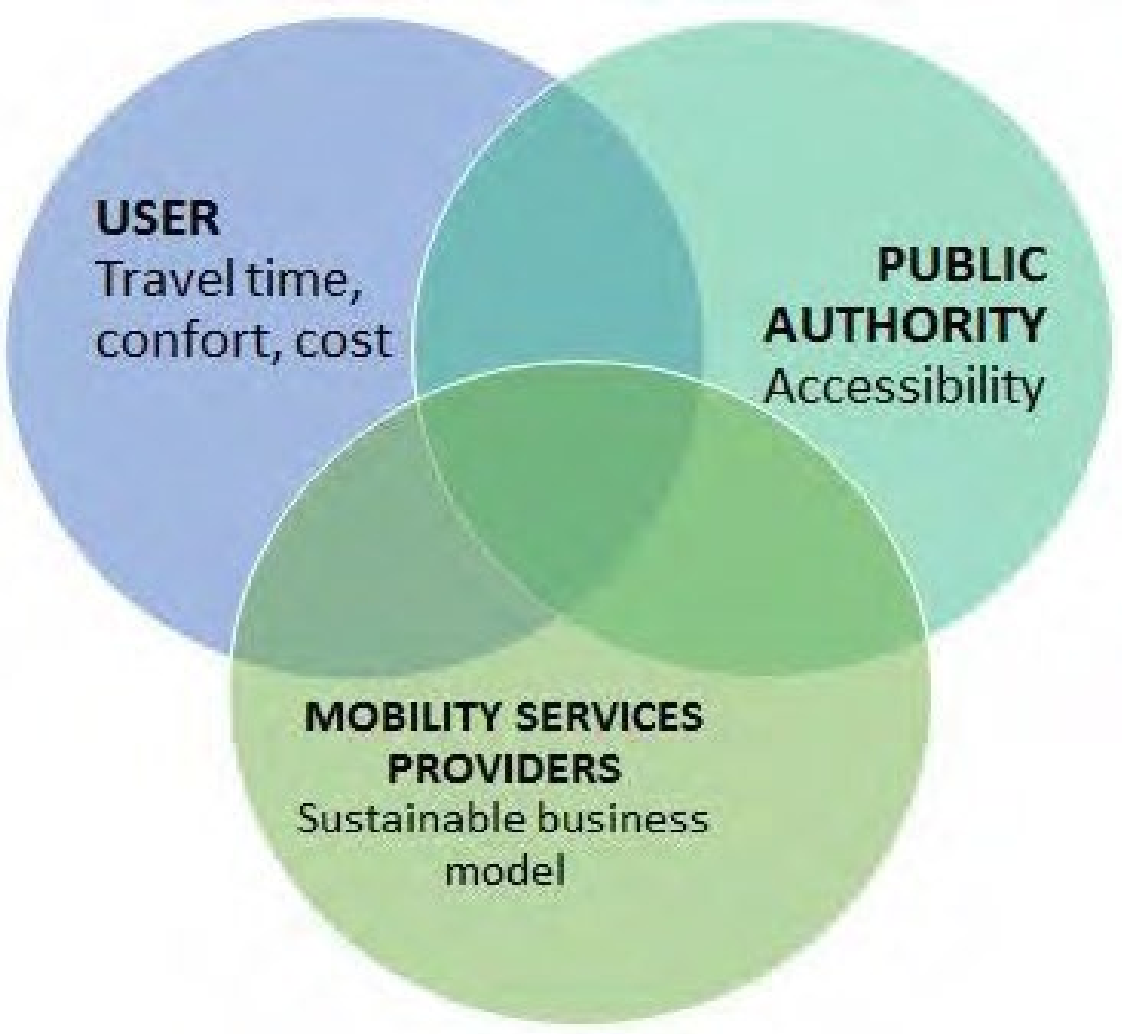
Carbon

Equity

Efficiency

€

Mobility: players objectives and common goods



Mobility policy objectives: Ensuring accessibility for all

Two scarce private resources: time and money

Three scarce public resources, common goods

- **The CO_2 emissions quota to stay below 1.5°**
- **Public space in the city**
- **Public funds**

➔ **Ensuring accessibility for all**

while minimizing impact on the commons,

with sustainable business models

Inhabited France: Data and indicators

Massive mobile network data unlike surveys and other digital data

- Massive mobile network data, unlike surveys and other digital data
- Number of people present in 50,000 IRIS zones, within 30 minutes or by the hour
- Cross-referenced with overnight zones Departments and nationalities
- Unlike OD Orange data, this data is at the level of the IRIS zone, so it is much more accurate, and the flows are reconstructed using specific processes, without including freight-related flows.

The 50 000 IRIS zones

Zonage IRIS 2011, France Métropolitaine et Corse

Inhabitant year = full-time equivalent of presence in a place

To be compared with the resident population measured by INSEE: we measure areas that are more activity-oriented and more residence-oriented (attractiveness index).

Five key areas for understanding territories

Attractivity	Rhythms	Pre/Post covid	Flows	Urban areas

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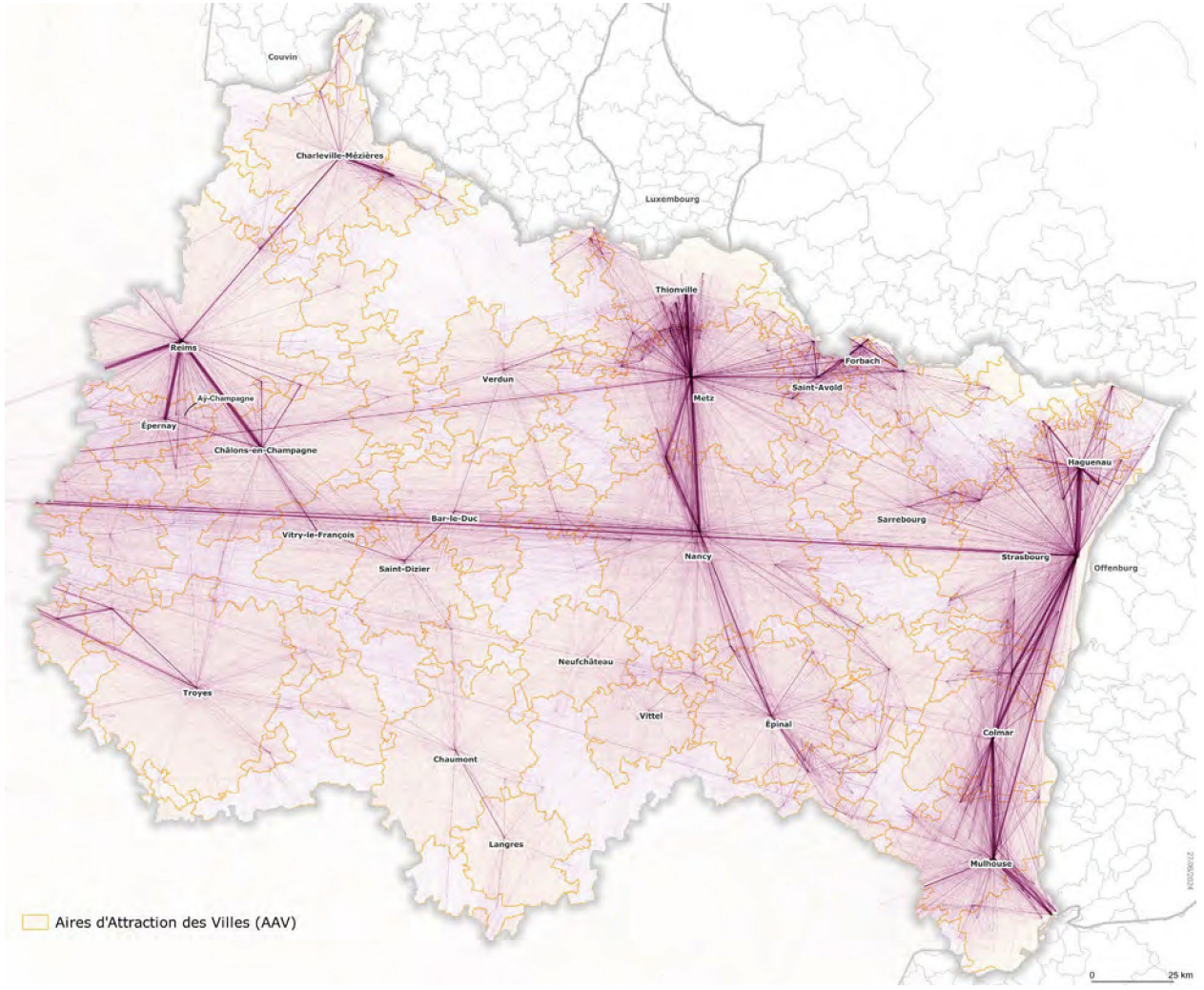
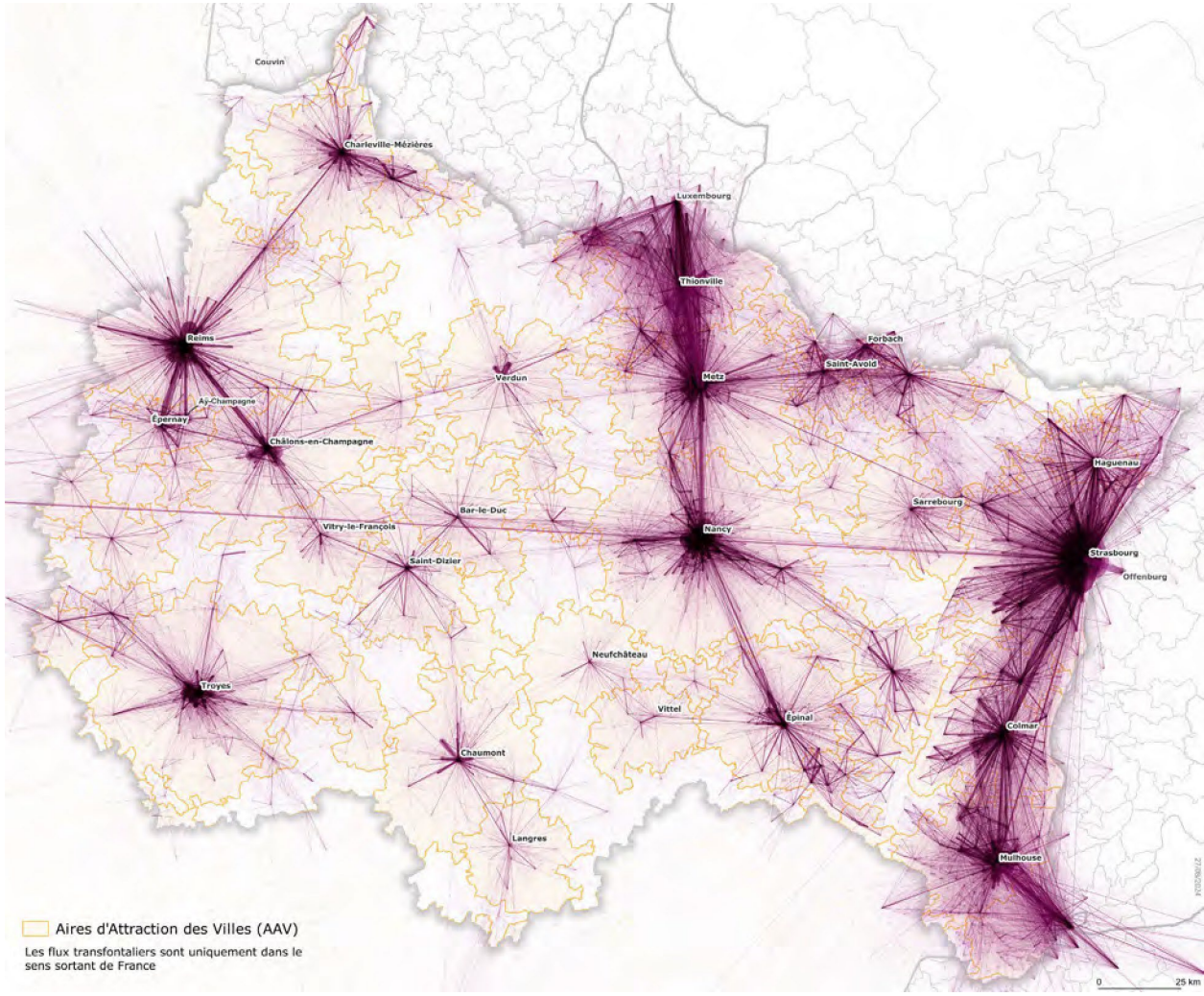
Actual flows Working days versus INSEE flows / Nov-Dec 2023

- Les mobilités

INSEE data H/W



Actual flows, Mobile data



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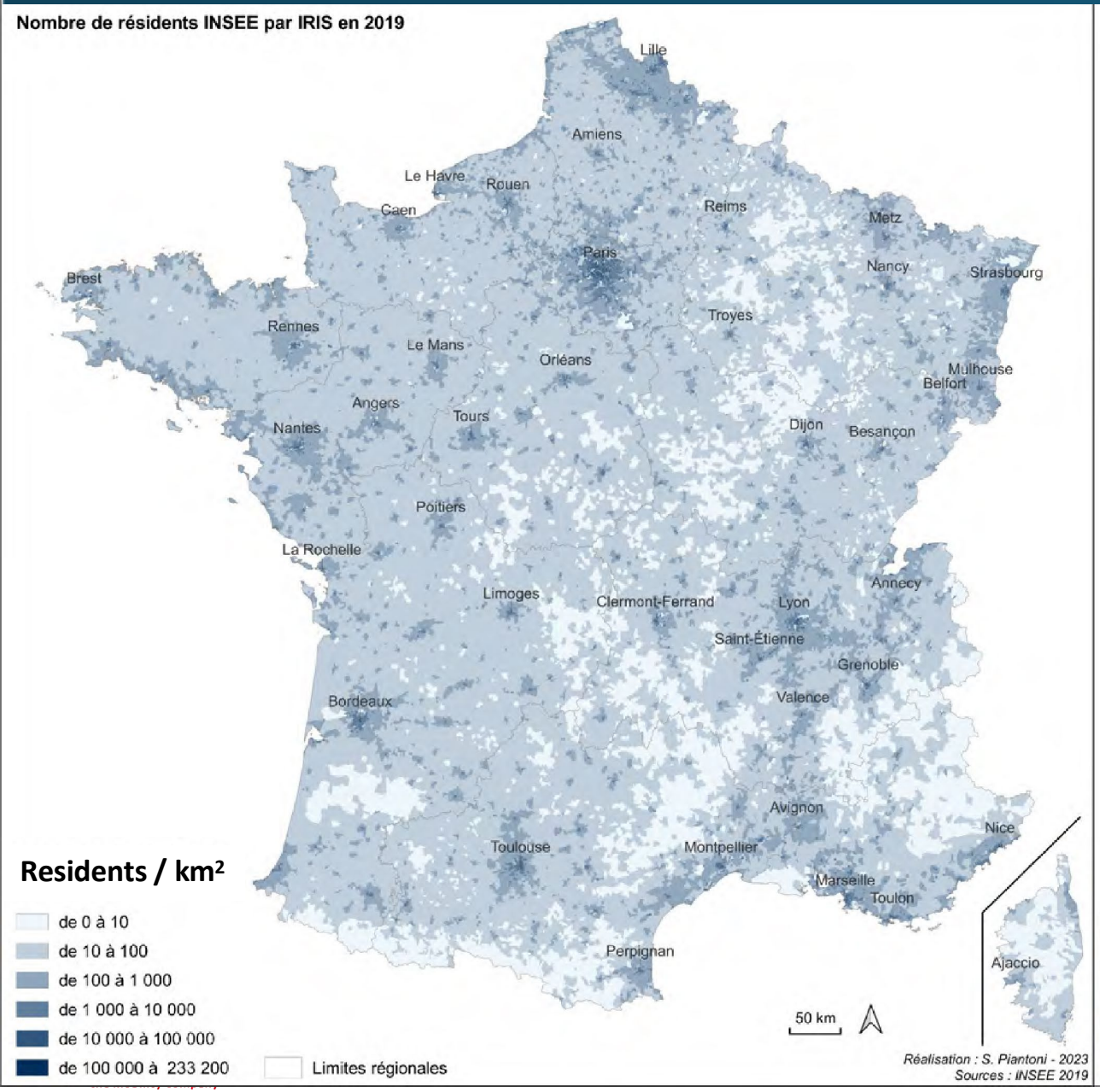
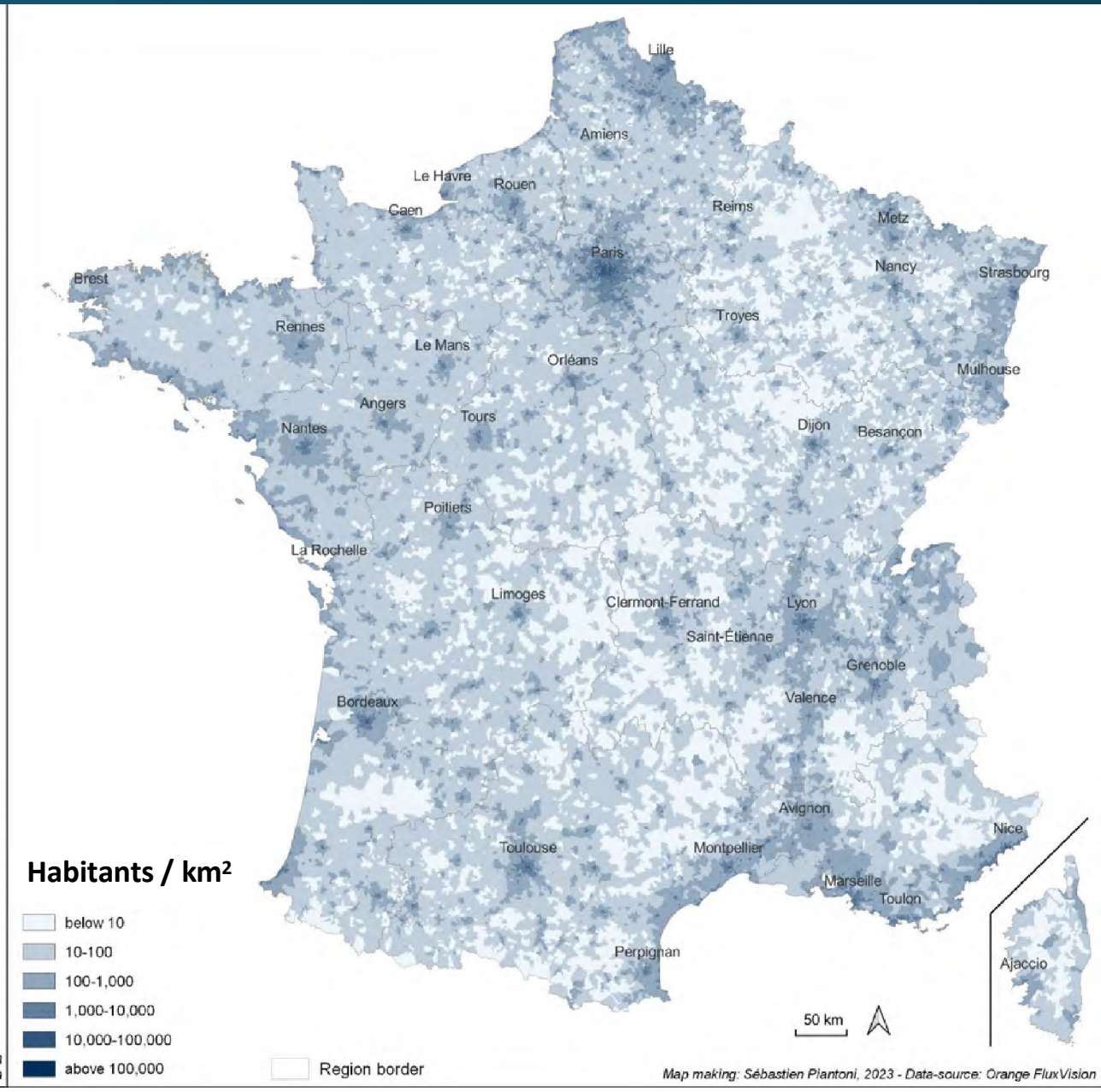
The weight of large urban areas and tourist zones + a diagonal of emptiness that's wider than you might think





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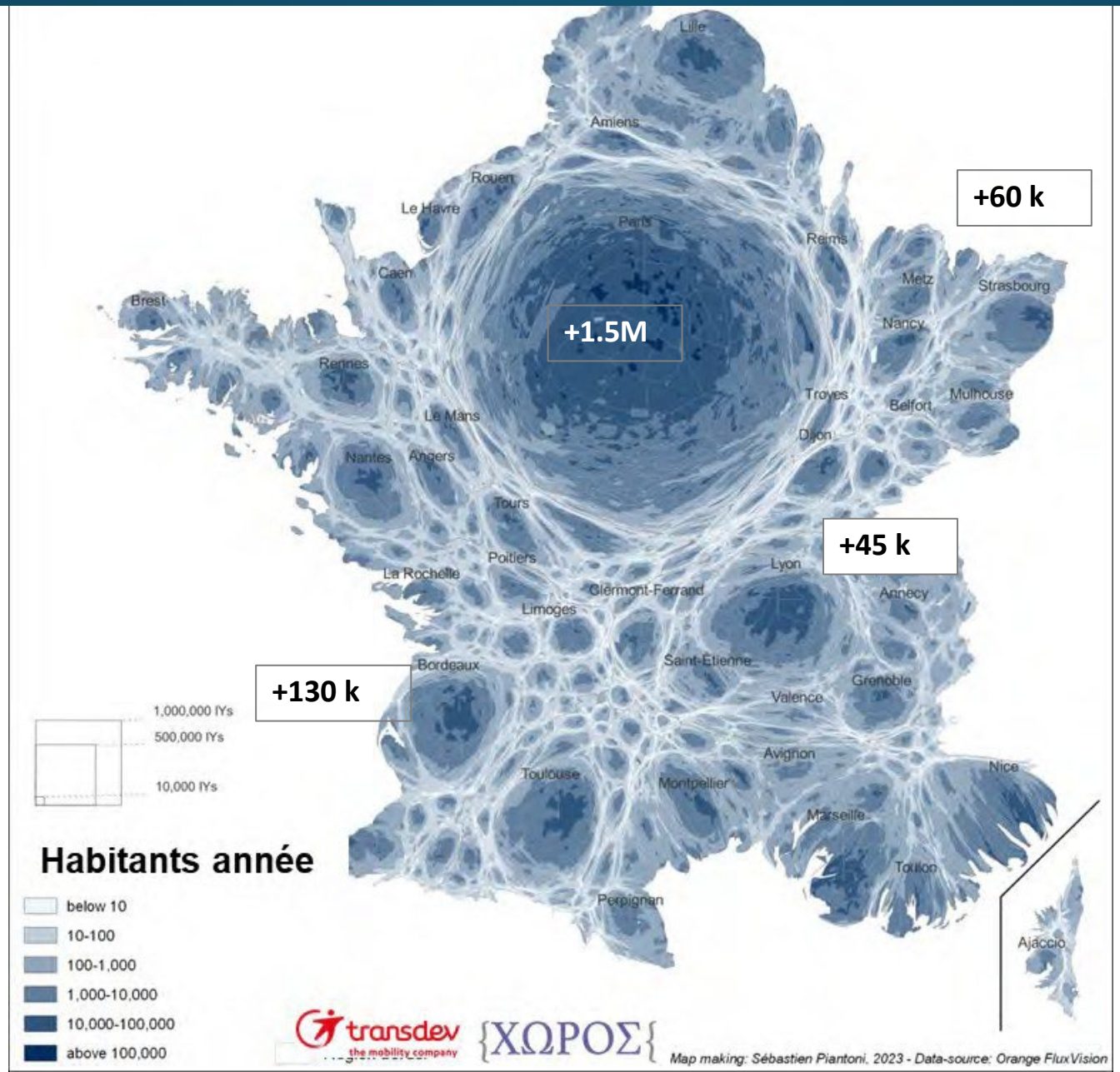
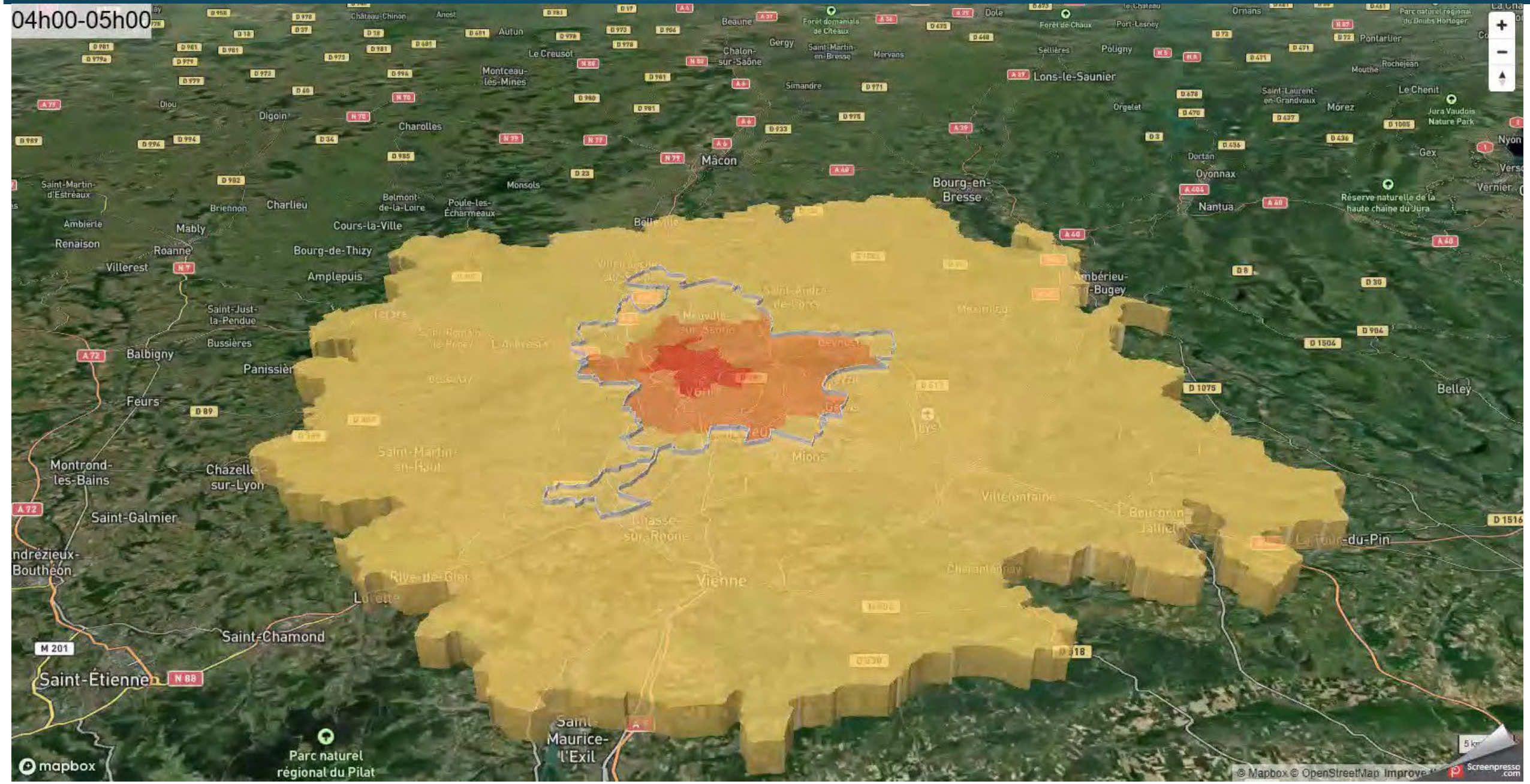
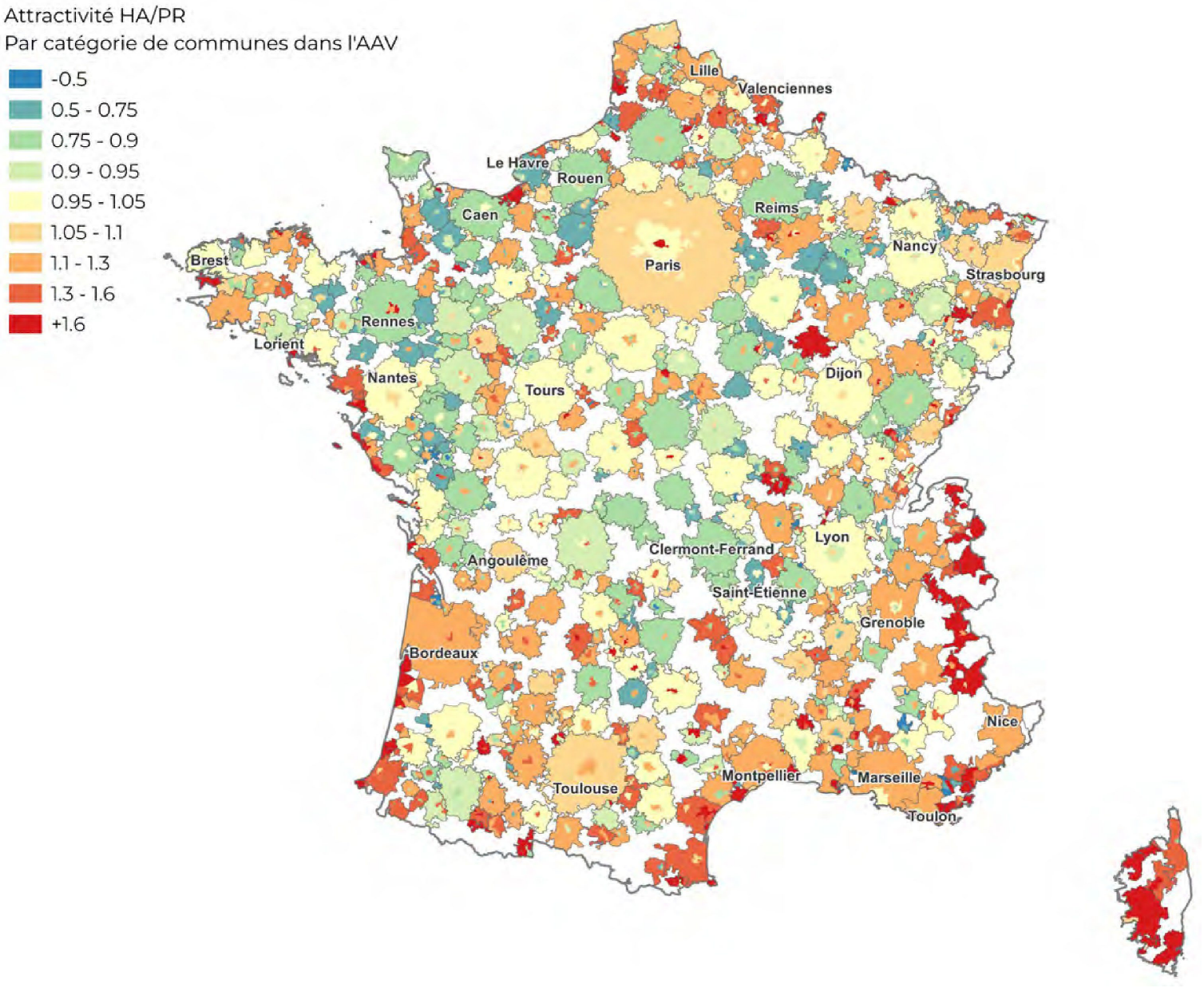


The Lyon urban area daily rhythm



Attractiveness index : inhabitant / resident
A wide variety of situations, size is not everything



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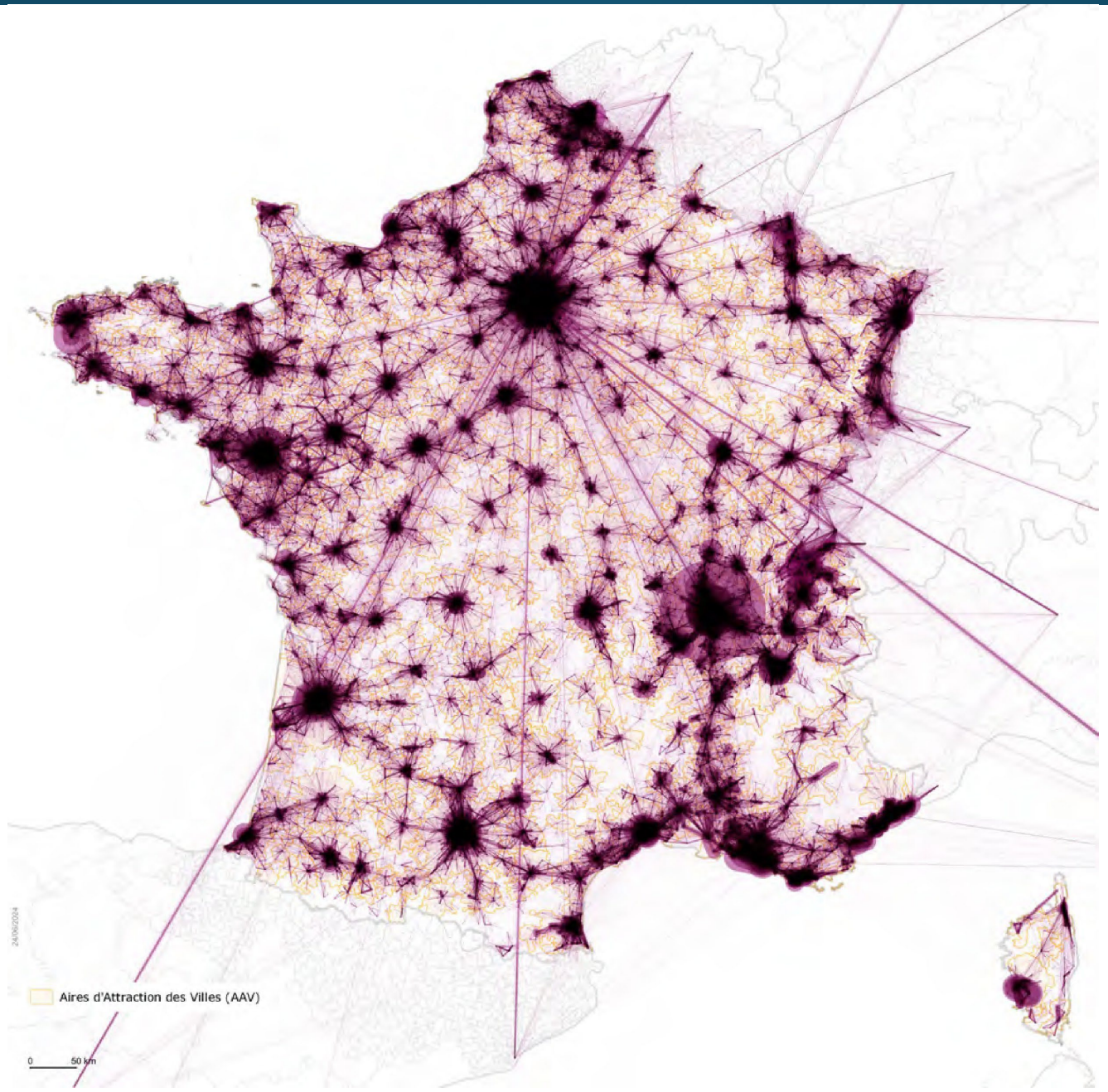
Flow on working days in November - December 2023



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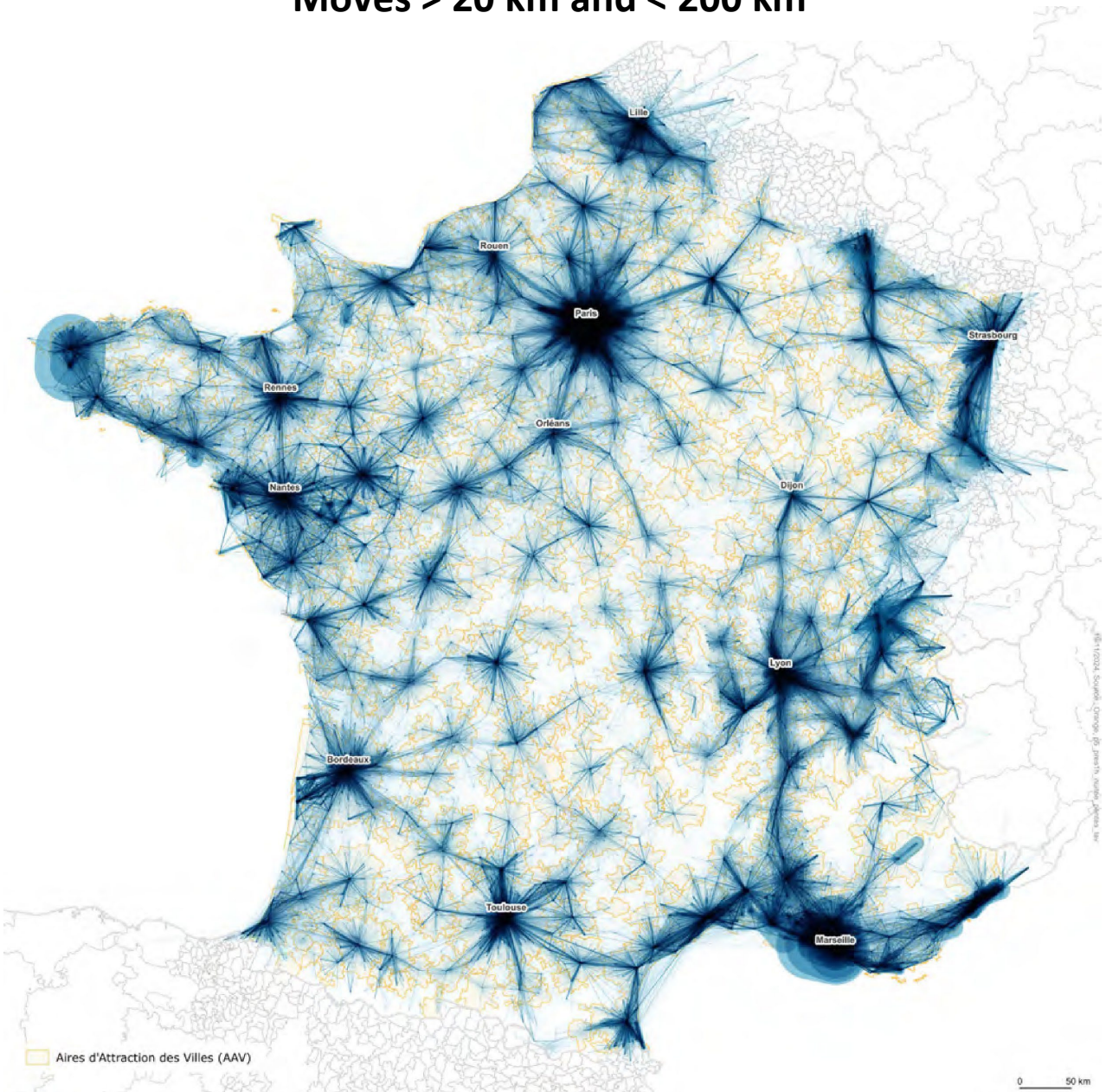
Mobility request on a working day in November 2023

Moves > 20 km and < 200 km



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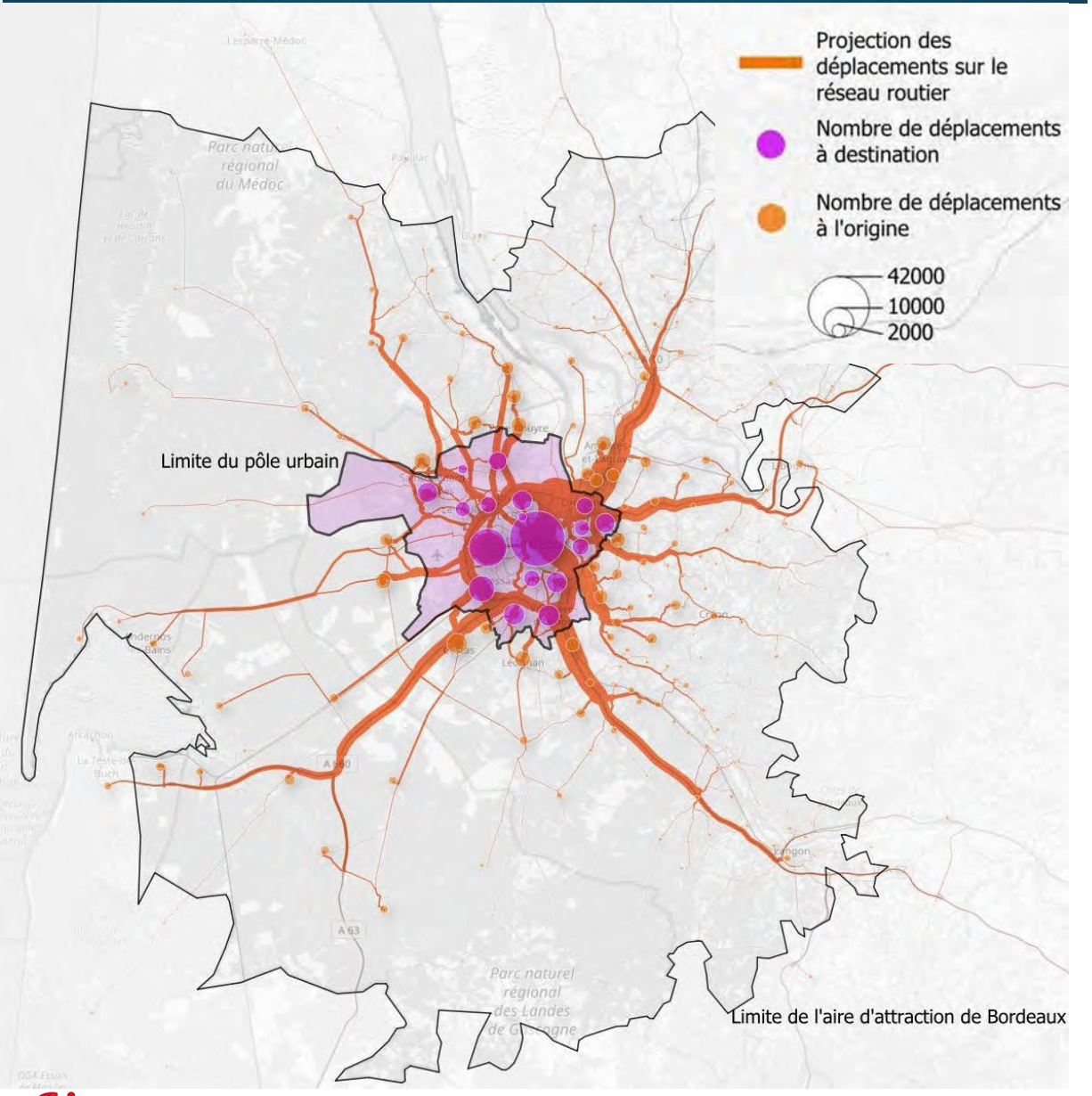
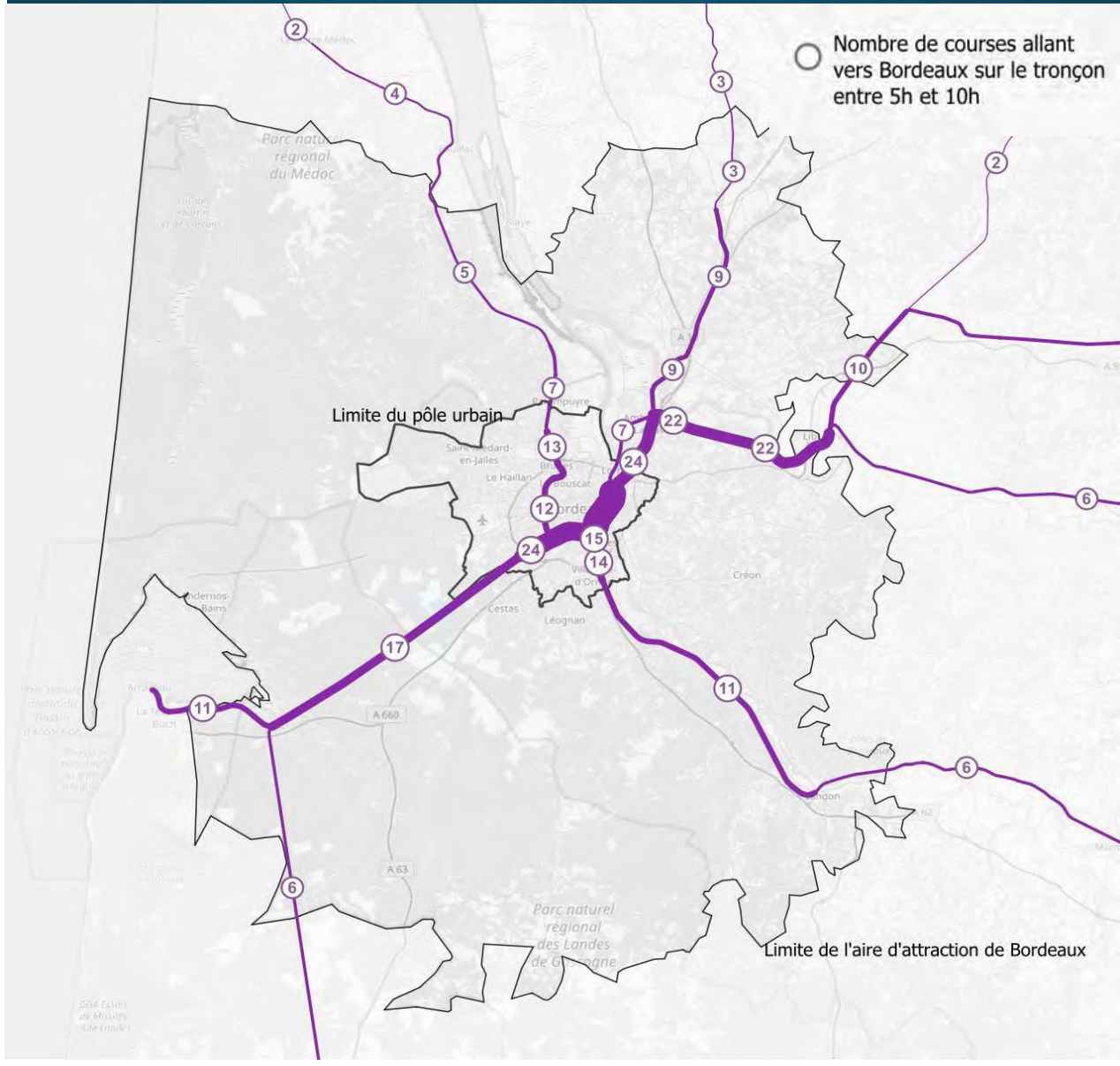
Demand for travel to the Bordeaux metropolitan area: 134,000 journeys (5 am to 10 am)



Train service from the suburbs to the city: 14,600 seats (5 am to 10 am)



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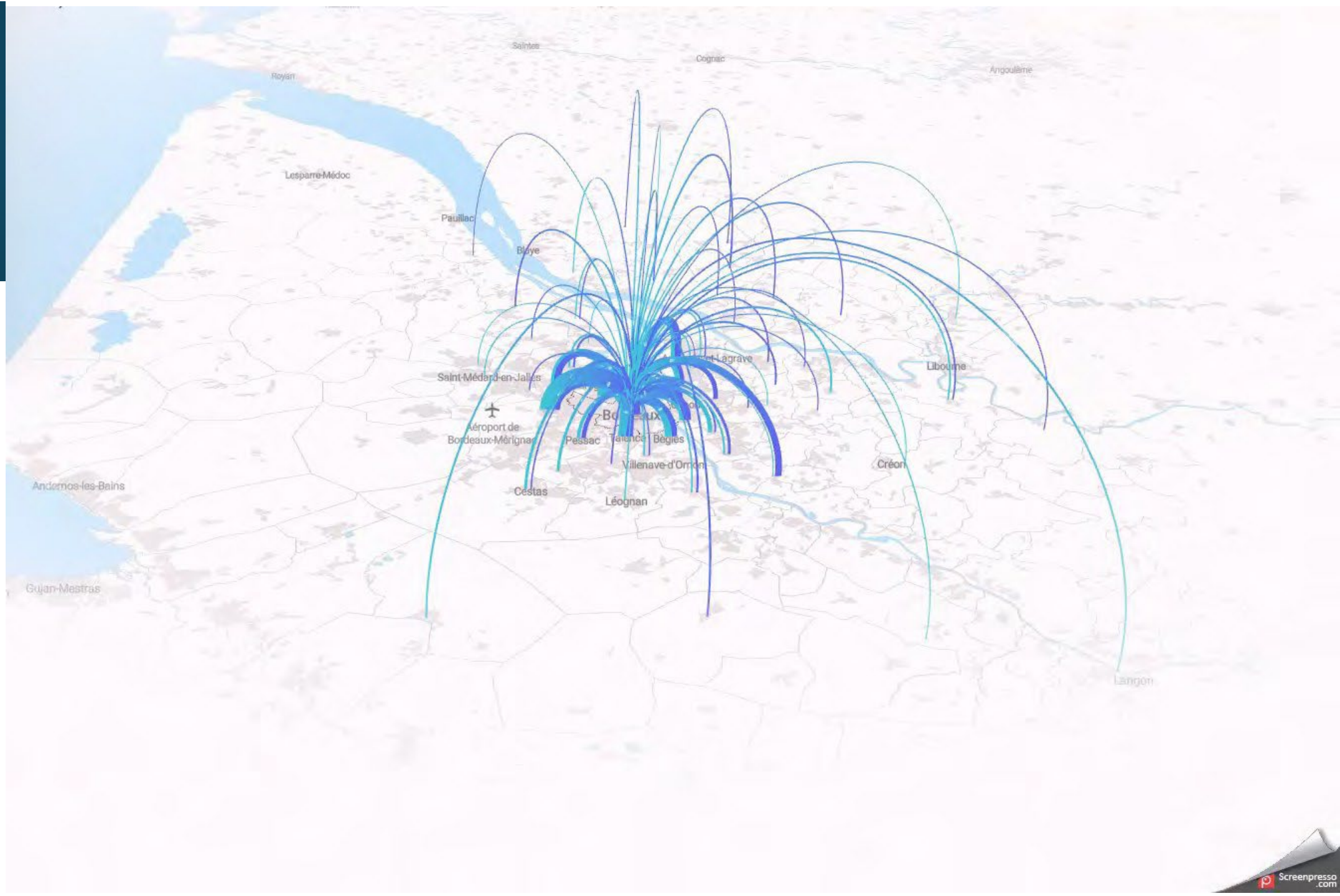

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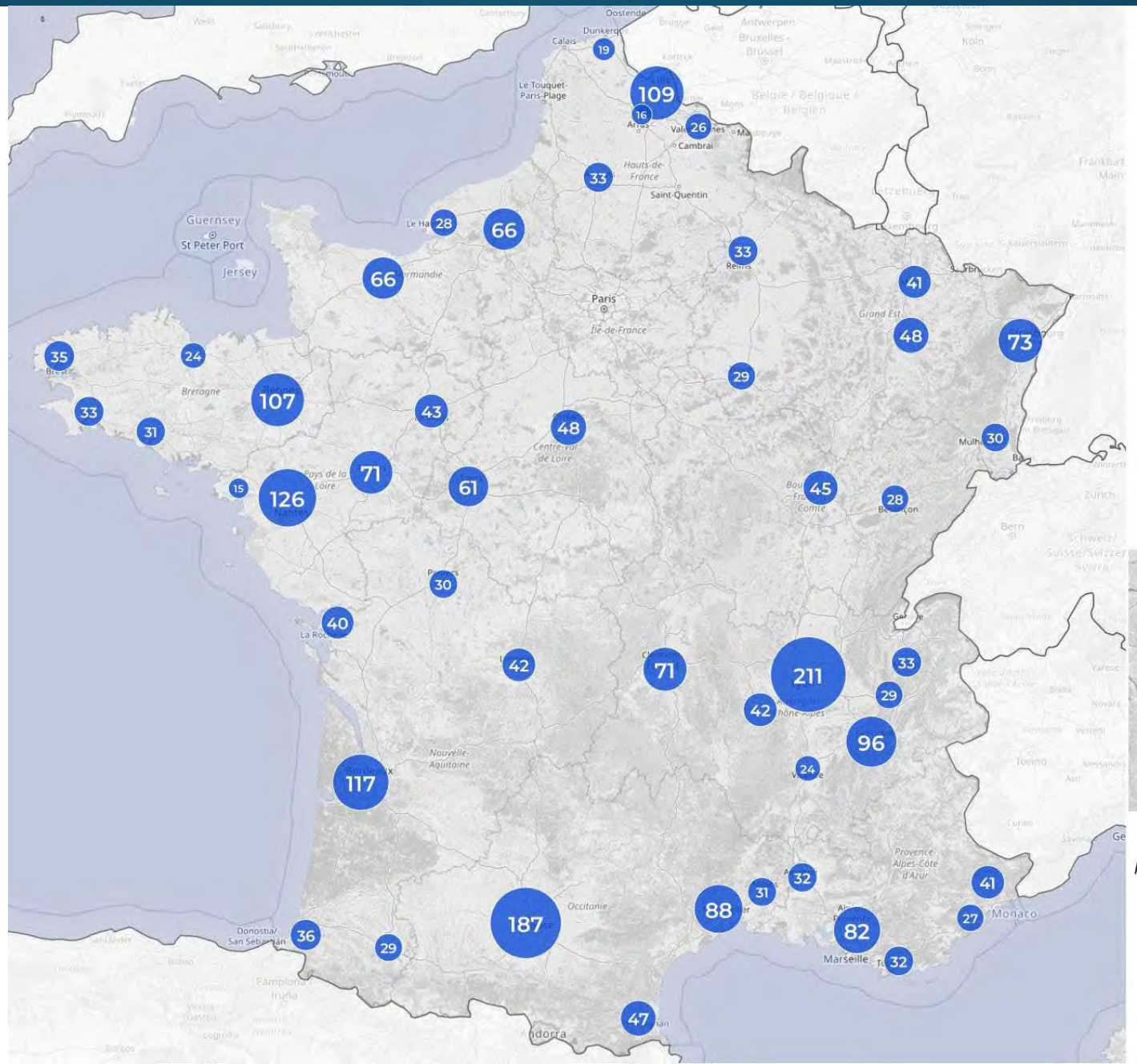
Demand for travel from the suburbs to urban centres between 5 a.m. and 10 a.m.

For urban areas with more than 200,000 residents
A working day in November 2023

An underestimate of around 15% (GDPR)



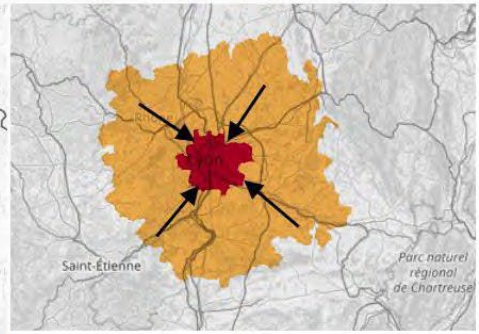
Nombre de personne entrante dans le pôle urbain des 53 principales AAV

Légende

Nombre de flux
211 000
50 000
10 000

Clé de lecture

A Lyon 211 000 personnes rentrent dans le **pôle urbain** depuis la **couronne** de l'aire d'attraction entre 5h et 10h



Date des données

Moyenne des mardis entre les vacances de la Toussaint et les vacances de Noël. Les fluxs observés sont ceux compris entre 5h et 10h

0 100 200 km

Production : Transdev
Sources : Insee, Orange

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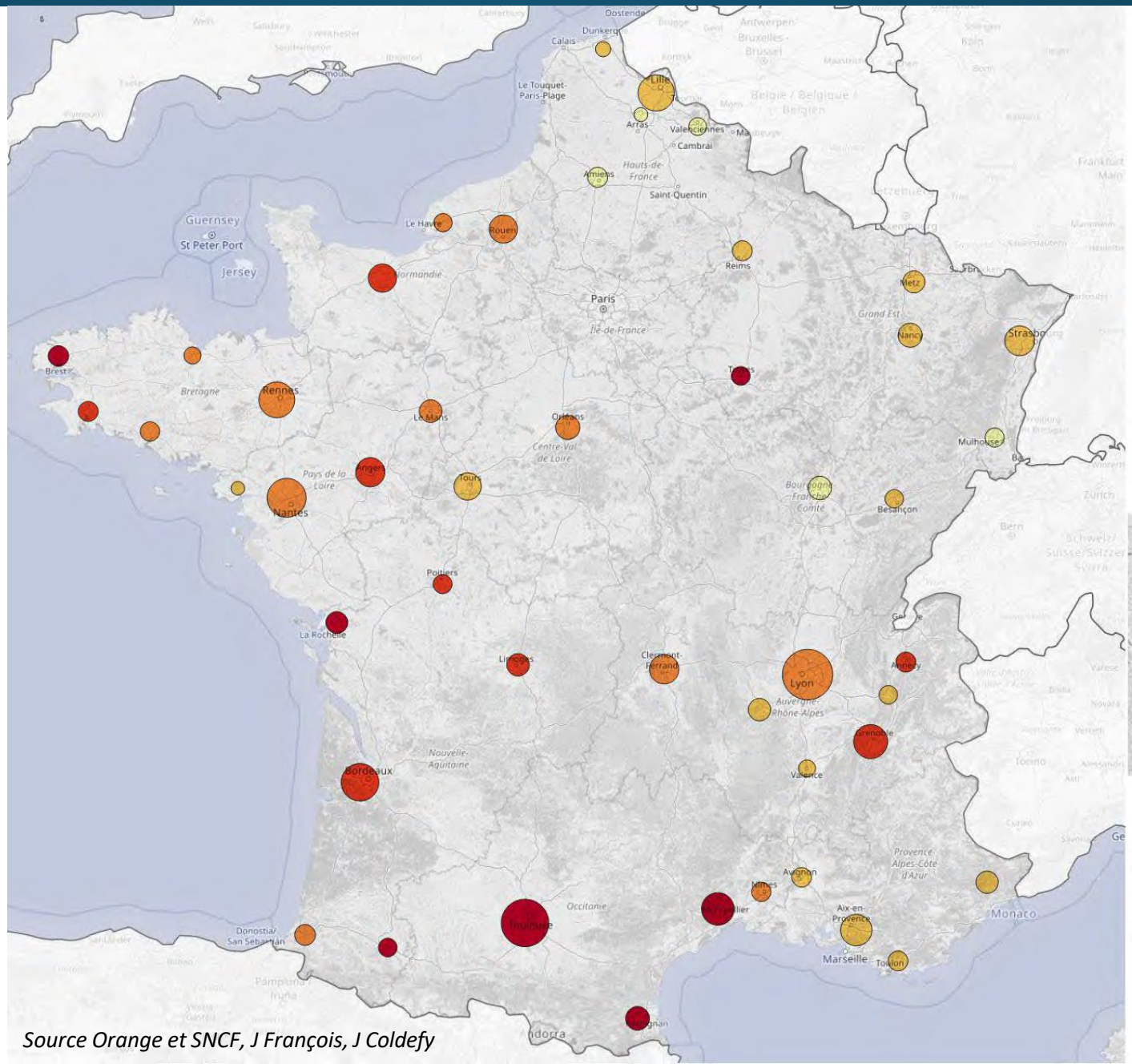
A lack of alternatives to the car for getting to urban centres

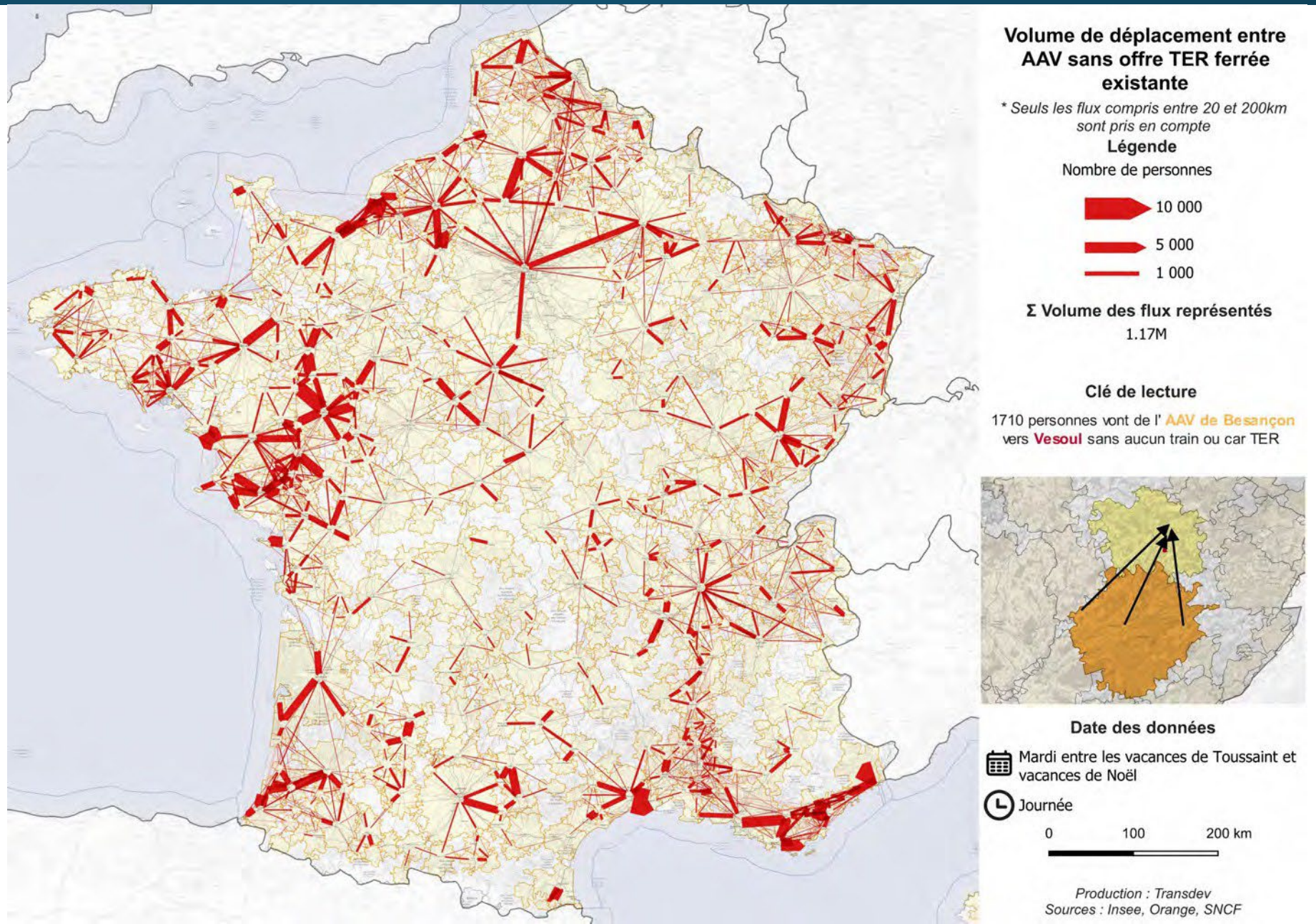
Train demand / supply ratio on a working day in Nov 2023

On average 5 times more demand than supply



Source Orange et SNCF, J François, J Coldefy

Links between urban areas without trains between 5am and 10am, November 2023



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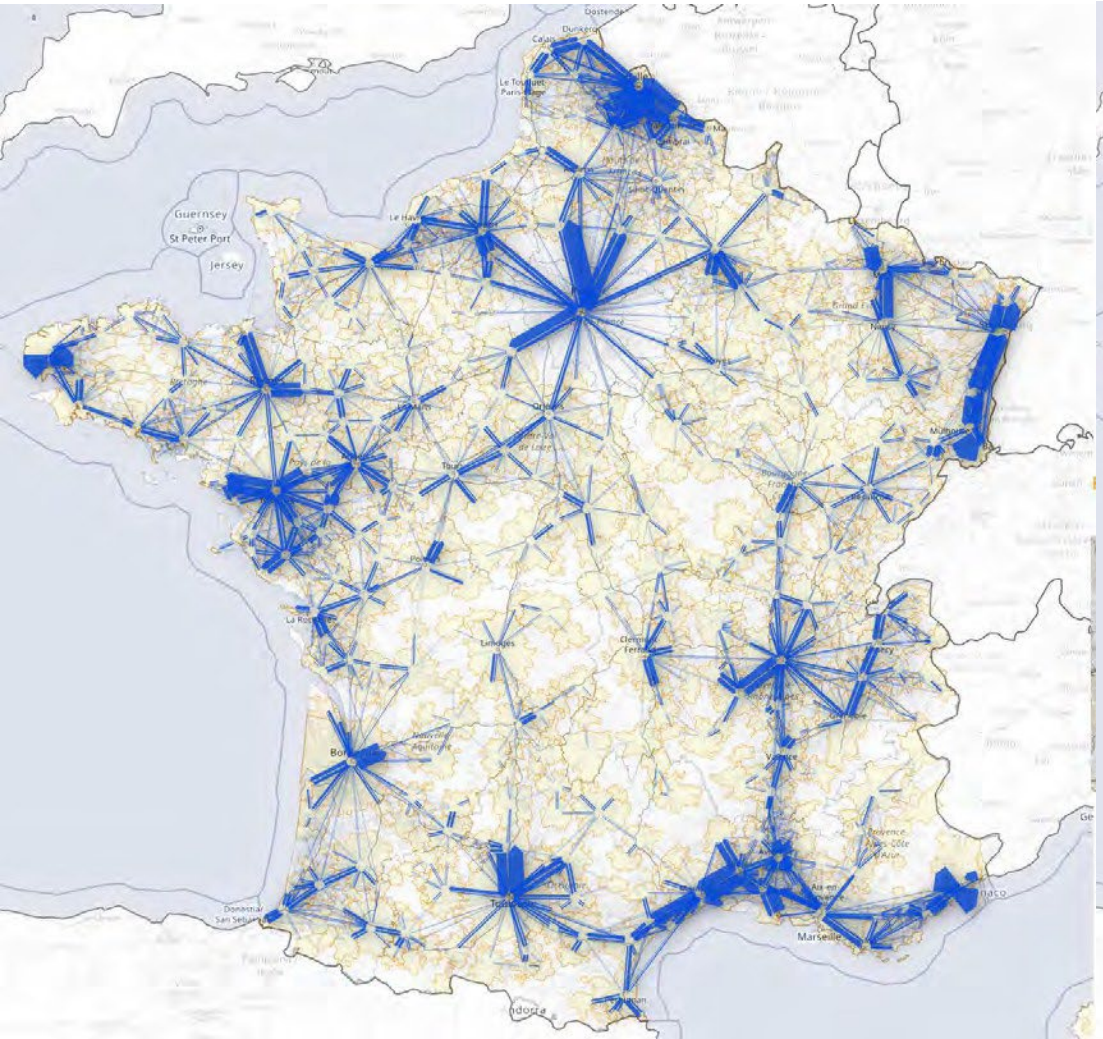
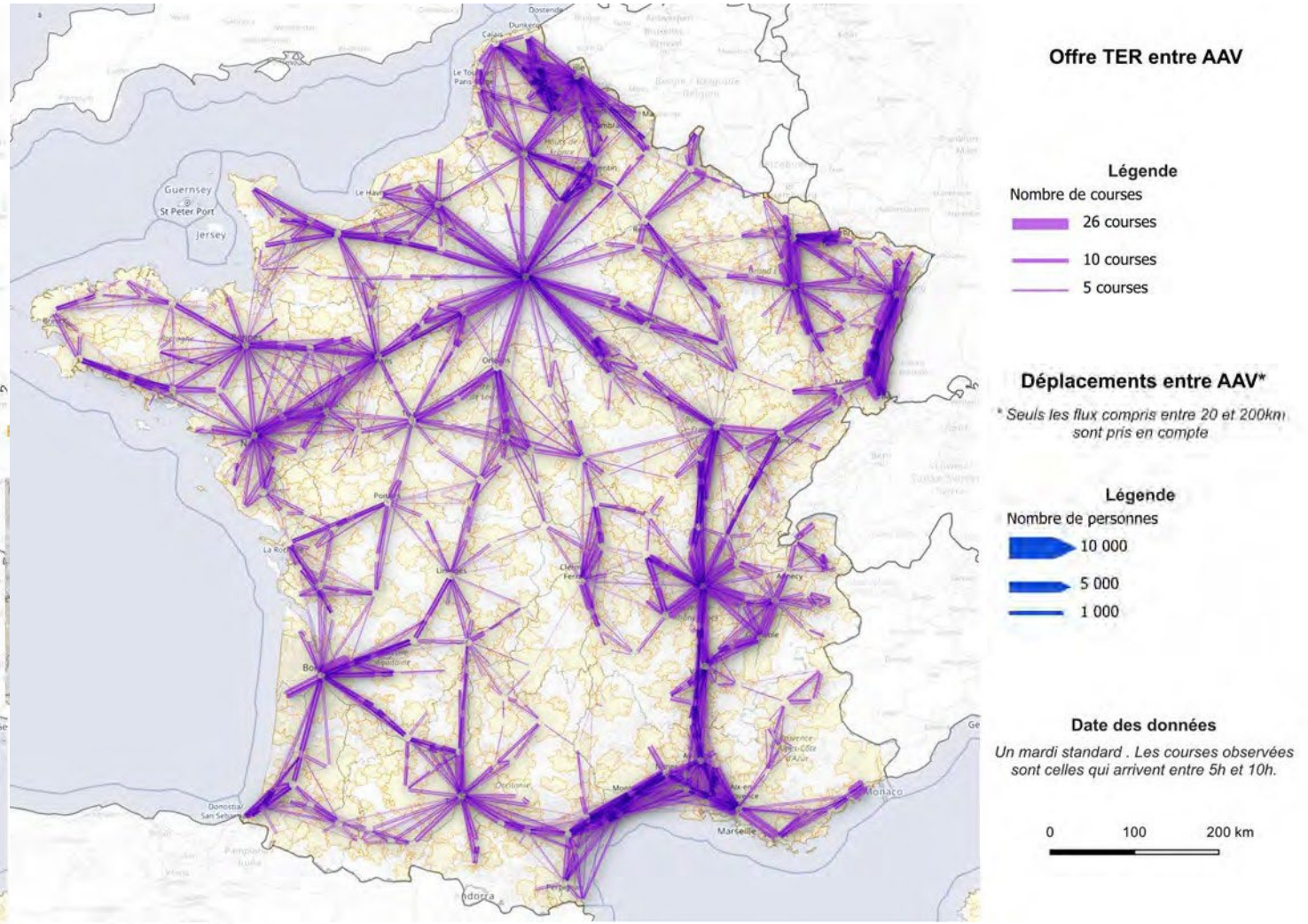
Demand and supply of local trains between urban areas (Nov 2023, 5 am to 10 am)

Flows > 20 km and < 200 km between urban areas



Local trains supply between urban areas



Another piece of geography

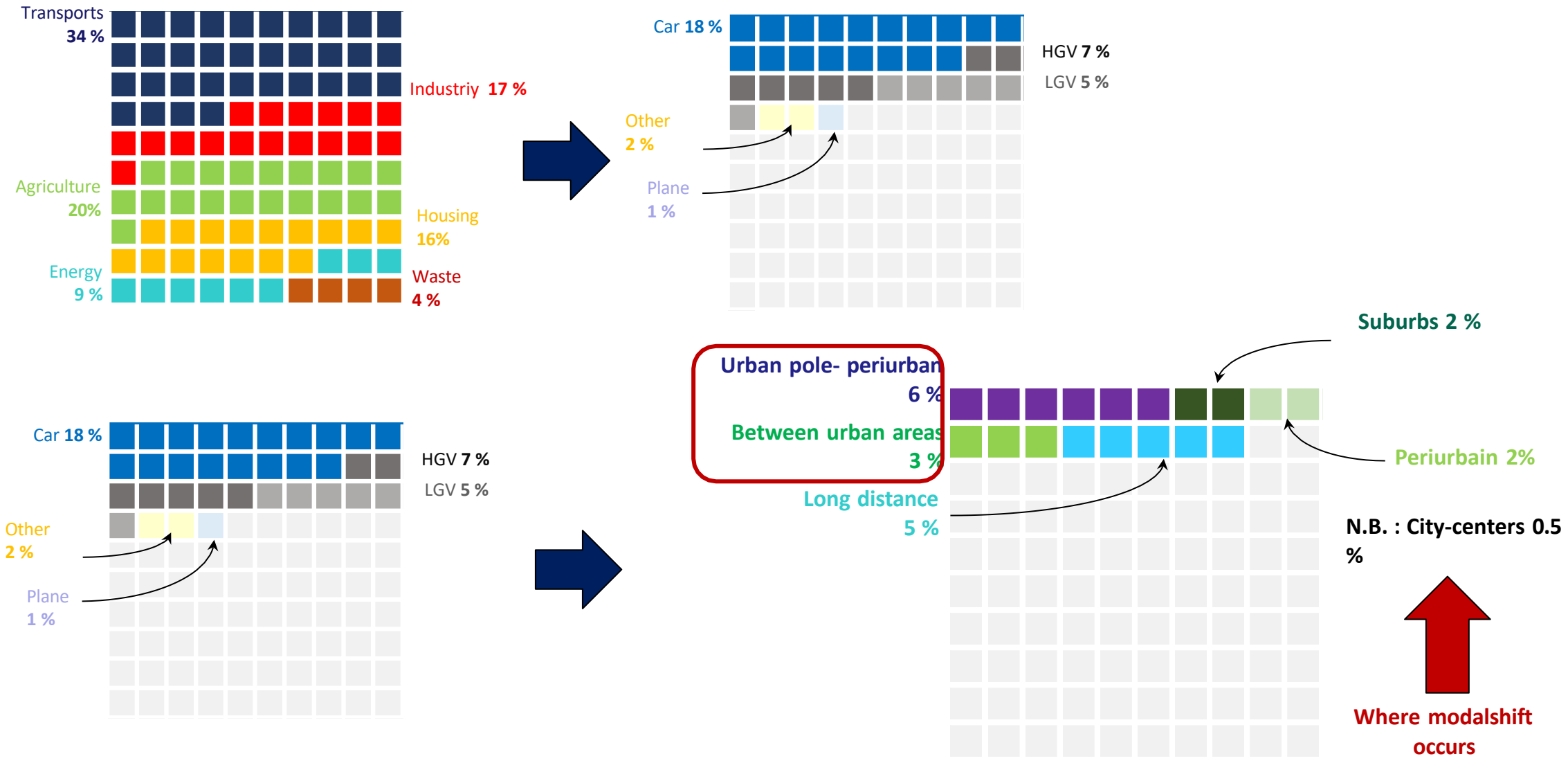
Données INSEE, J Coldefy

Economical influence areas of cities / urban areas	Population				
	City Center	Suburb	Periurban	Outside urban areas	Total
Paris Area	3%	13%	4%	❷	20%
> 700 000 inhbts (except Paris)	5%	5%	9%		20%
From 200 000 to 700 000 inhts	7%	4%	13%		24%
From 50 000 to 200 000 inhbts	6%	1%	11%		18%
< 50 000 inhbts	6%	1%	6%		12%
Municipalities outside urban areas				7% ❶	7%
Total	28%	23%	43%	7%	100%

Source Kantar 2023, J Coldefy

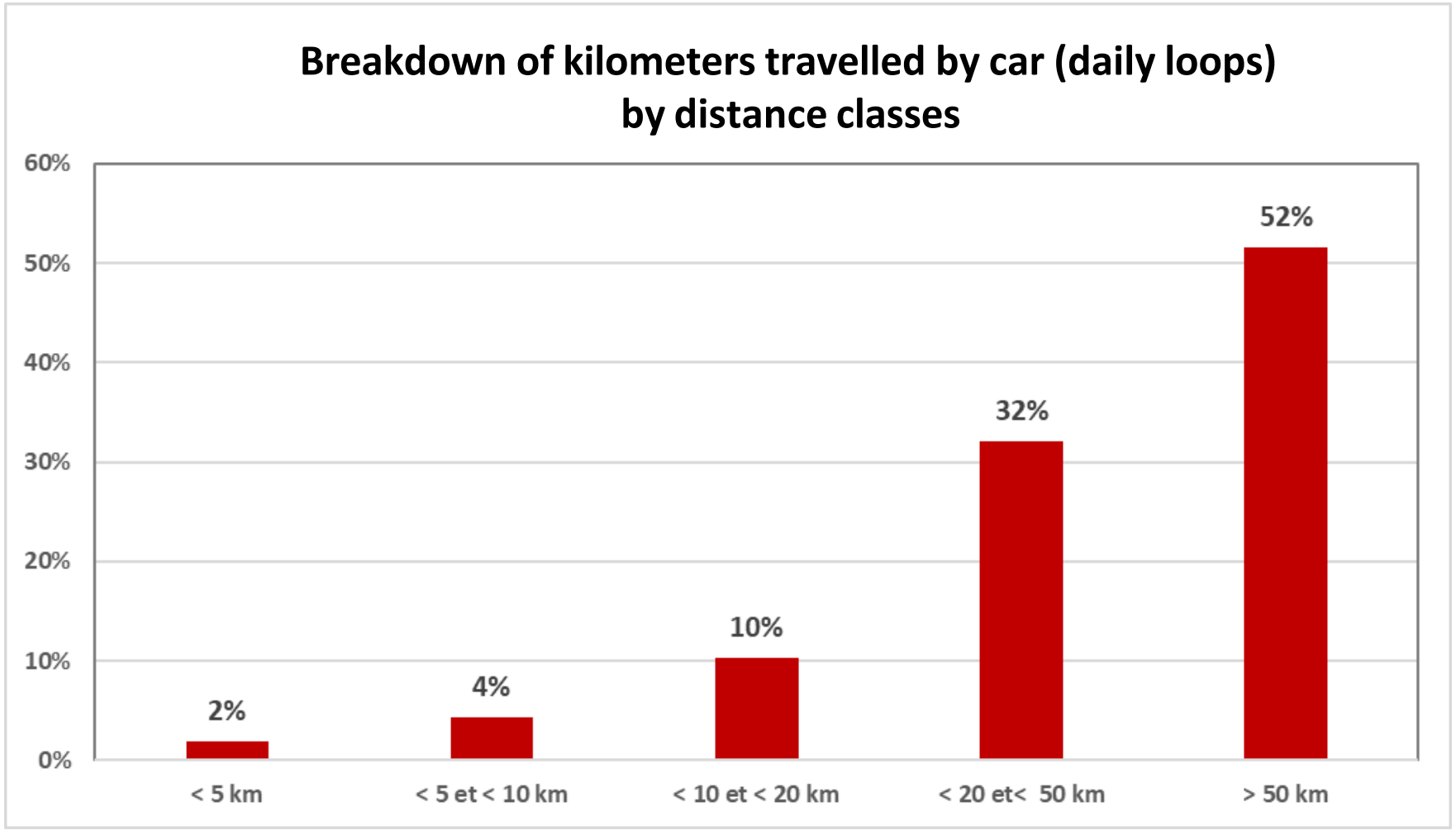
	Annual km in average by car per household			
	City Center	Suburb	Periurban	Outside urban areas
Paris Area	3 250	8 852	20 232	
> 700 000 inhbts (except Paris)	7 557	10 529	16 277	
From 200 000 to 700 000 inhts	8 251	11 314	18 398	
From 50 000 to 200 000 inhbts	10 342	12 310	17 184	
< 50 000 inhbts	13 521	14 699	19 831	
Municipalities outside urban areas				18 349

Suburban-agglomeration links and links between urban centres account for almost half of car emissions



Source CITEPA 2023 + EMP2019 + Thèse B Conti, , J Coldefy

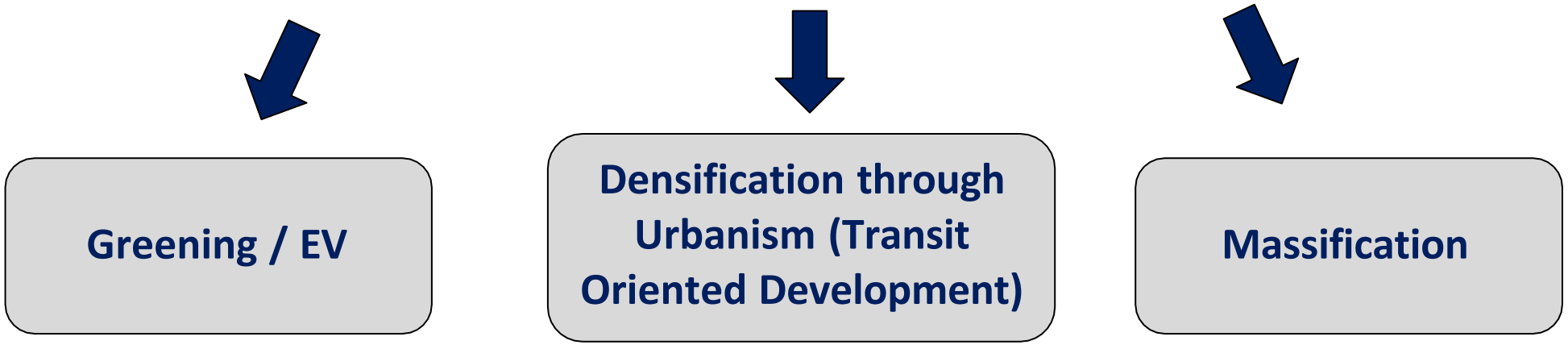
The vast majority of daily car journeys are made up of long journeys



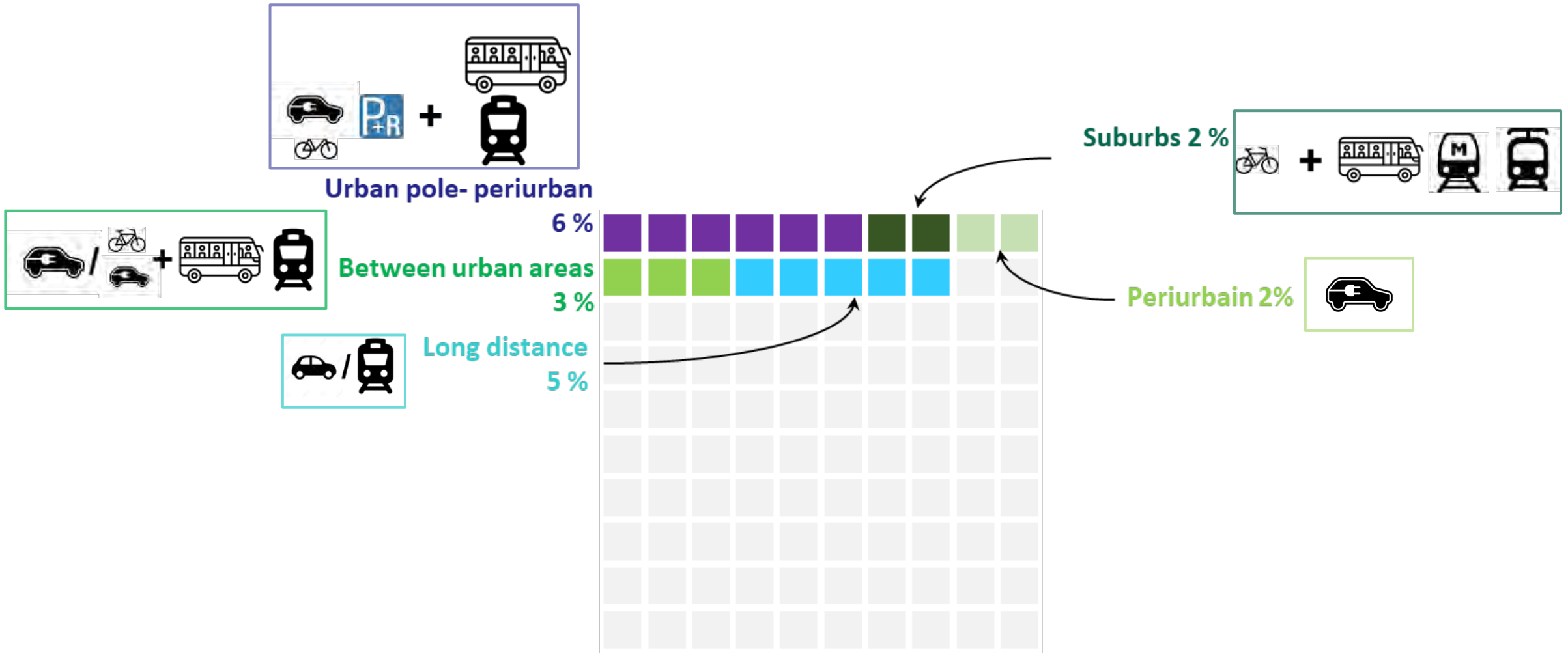
Source EMP 2019, traitement J Coldefy M Bordas

The 3 levers for mobility decarbonisation

Emissions = Unit emissions x Km traveled x Filling rate

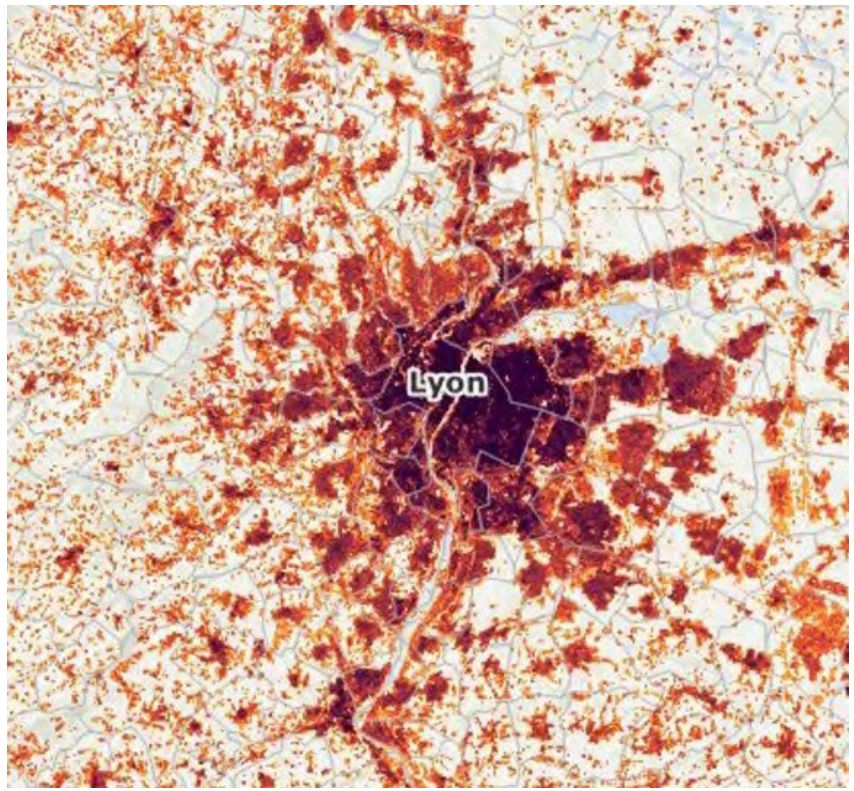


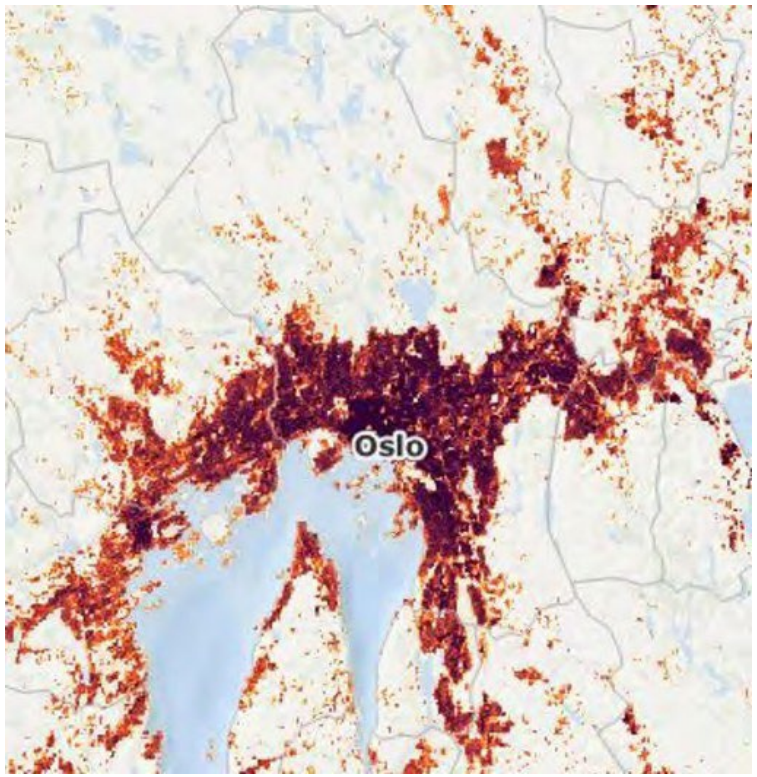
MASSIFICATION through modal shift + GREENING: solutions for different territories

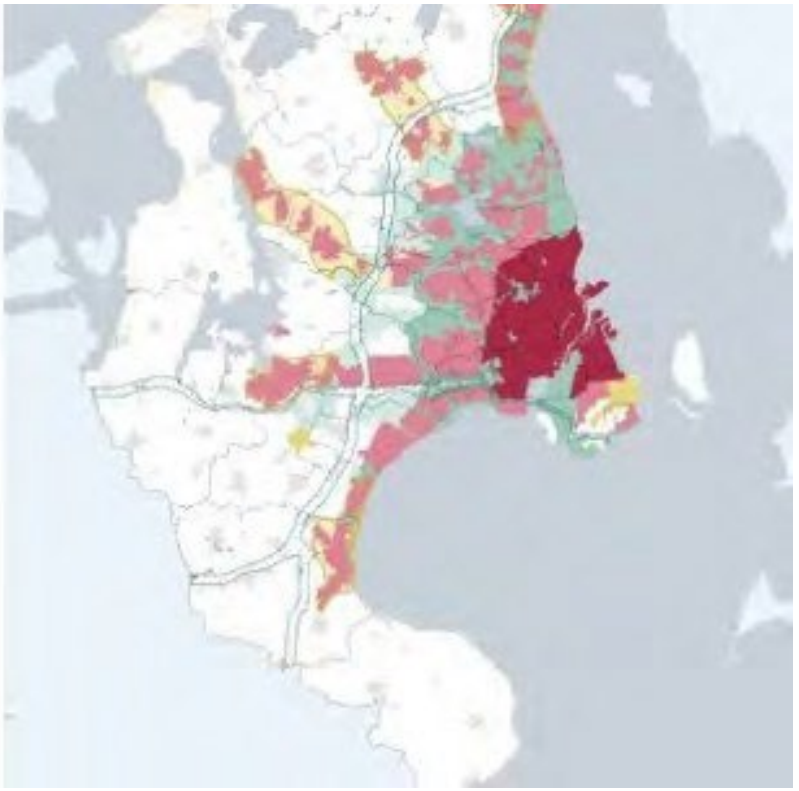


➔ **A modal shift of 50% on links between suburbs and urban centers would reduce the modal share of the car (per pass.km) from 80% to 65%.**

DENSIFY around PT poles







100
250
1 000
2 500
5 000
10 000
> 10 0000

Habitants par km²

Glove fingers urbanisme (Copenhague)

A piece of economy / PT: Three requirements to be met

Matching supply and demand

➔Where demand is <, =, > supply
➔By how much,
➔When (months, days, hours)

Putting the right tool
at the right place at the right time

Economic efficiency

€

€ / Passenger / year
€ / passenger.km

Environnemental efficiency

Tons of CO2 avoided
€ / t CO2 avoided

Towards a desirable futur

« Politicians have to make trade-offs between efficiency, freedom and fairness. The capitalists failed by favouring the first two to the detriment of fairness, and the communists sacrificed the first two for fairness. ».

JM Keynes

➔Decarbonisation will only succeed if we combine the three elements

Thanks for your attention !

Jean Coldefy
Advisor of Transdev President and CEO
Geonexio scientific advisor
Président of the scientific committee of French Mobilities