

HOW DAILY MOBILITY DATA IS COLLECTED AND USED TO DECARBONIZE TRANSPORT?



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World Bank
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Cerema

THE MAIN SOURCE FOR THIS PRESENTATION

Publication by Cerema in October 2022

4th edition since the 80's

Download it (in French...) here:

<https://doc.cerema.fr/Default/doc/SYRACUSE/584812/mobilites-du-quotidien-comprendre-les-annees-2010-2020-pour-mieux-apprehender-demain>

Les
références

MOBILITÉS
DU QUOTIDIEN

Comprendre les années 2010-2020
pour mieux appréhender demain



DAILY MOBILITY KNOWLEDGE IN CEREMA

- 5 fields of expertise in the Mobility Area :
 - Public space and street design
 - **Knowledge**, Modeling and Assessment
 - Policies and Services
 - Intelligent Transport System & Traffic regulation
 - Road Safety



Data & surveys: the Cerema methodology

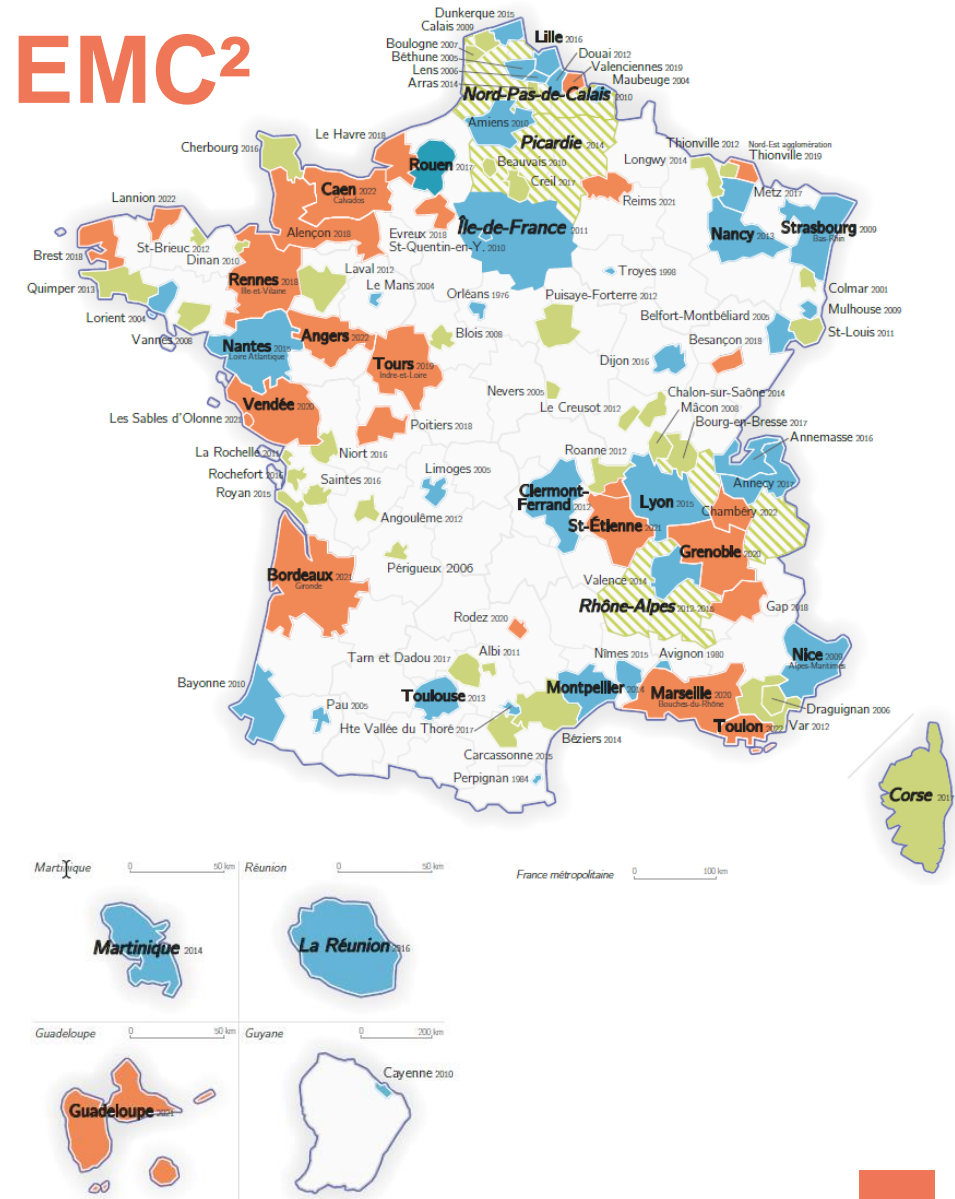


DATA & SURVEYS

- How to get data?
 - Using existing mobility data (traffic counters, public transport ticket validations...)
 - Using big data (mobile phones location, social media data...)
 - Conducting surveys to get specific data
- Cerema created a methodology: EMC²

DATA & SURVEYS: A FOCUS ON EMC²

- EMC²: Mobility Survey by Cerema
- Local household travel surveys conducted for almost 50 years...
- Methodology created and maintained by Cerema
- Almost all major cities in France are using it
- Data are comparable geographically and historically
- Also used in French overseas territories

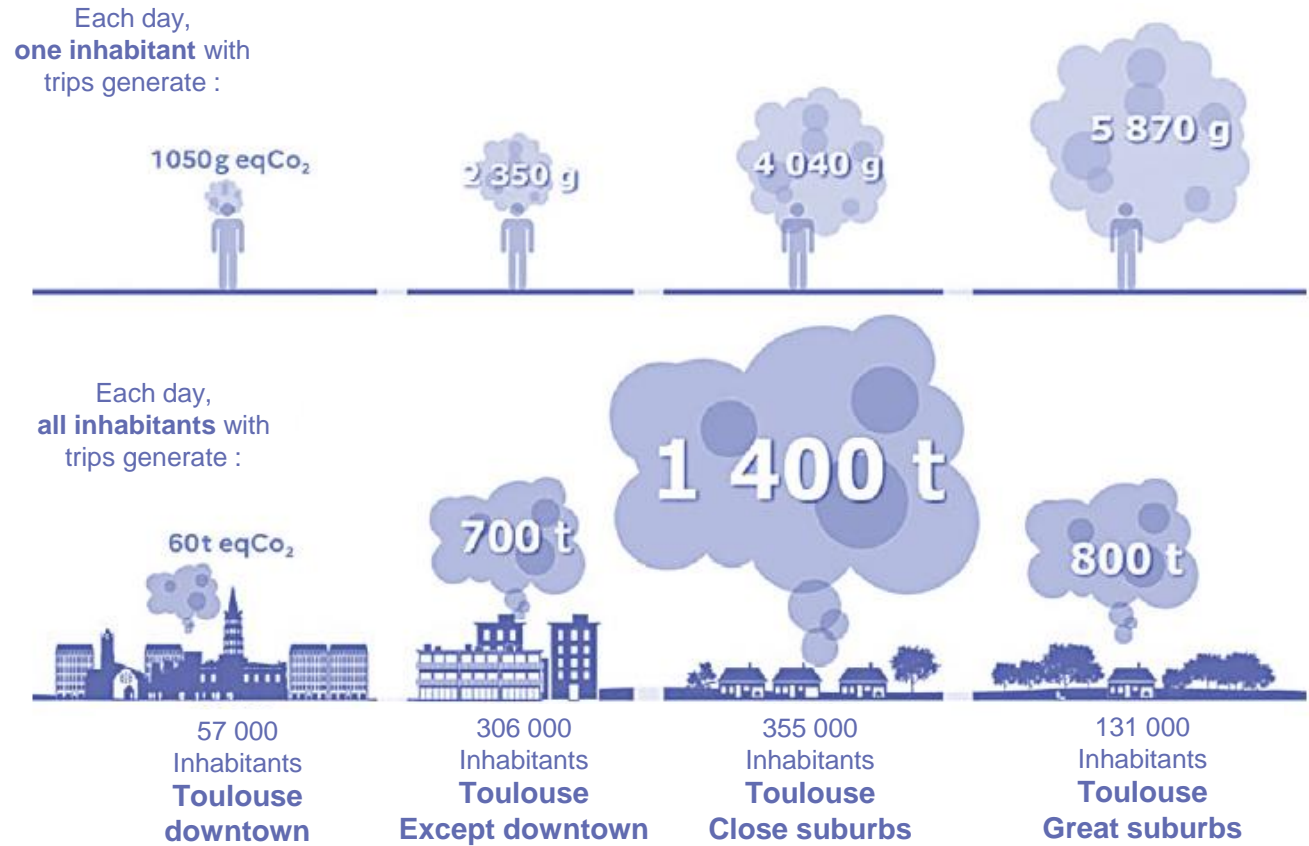


DATA & SURVEYS: A FOCUS ON EMC²

- Collecting trips made by 1% of inhabitants (5 y.o. and +) on a specific week day, by phone or face to face
- All modes and all purposes concerned
- Great attention to the sampling, to the non-responses and to the weighting
- Information on energy consumption, carbon emission and pollution are available for each trip
- It can be used in any country if adapted to local context

ENERGY & POLLUTION DATA IN EMC²

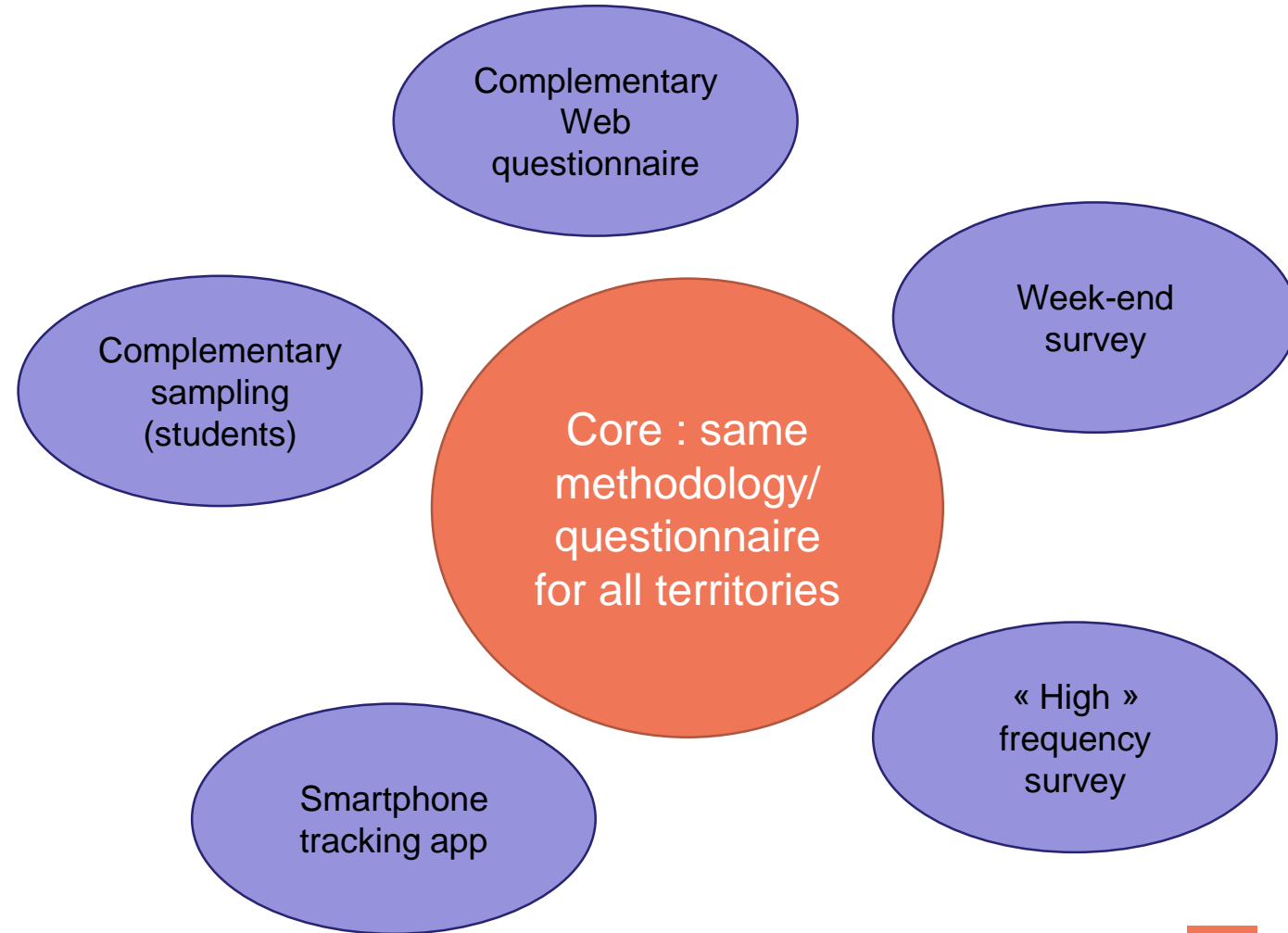
- In EMC², we add information for each trip:
 - Energy consumed
 - Local pollution (nitrogen oxides, fine particles...)
 - Global pollution (GHG)
- We can identify the **trips / the persons / the places** with the **greatest potential of decarbonization**



GHG emissions regarding the place of living
Source : Analysis of Toulouse EMC² 2013 by Toulouse urbanism agency, 2015

DATA & SURVEYS: A FOCUS ON EMC²

- Recent evolutions of the EMC² methodology: 2018
- Objective: cheaper but still useful and comparable, with options to get more data



Main results for 2010-2020



BRT EXPANSION INCREASED RIDERSHIP

- High level of service in public transport is achieved in France mainly by developing Bus Rapid Transit (BRT) or tramway
- About 100 BRT lines in France in 35 cities, including overseas... mainly opened during the 2010's
- 86 tramway lines in 31 cities



BRT in Nouméa,
New Caledonia (South Pacific Ocean island)

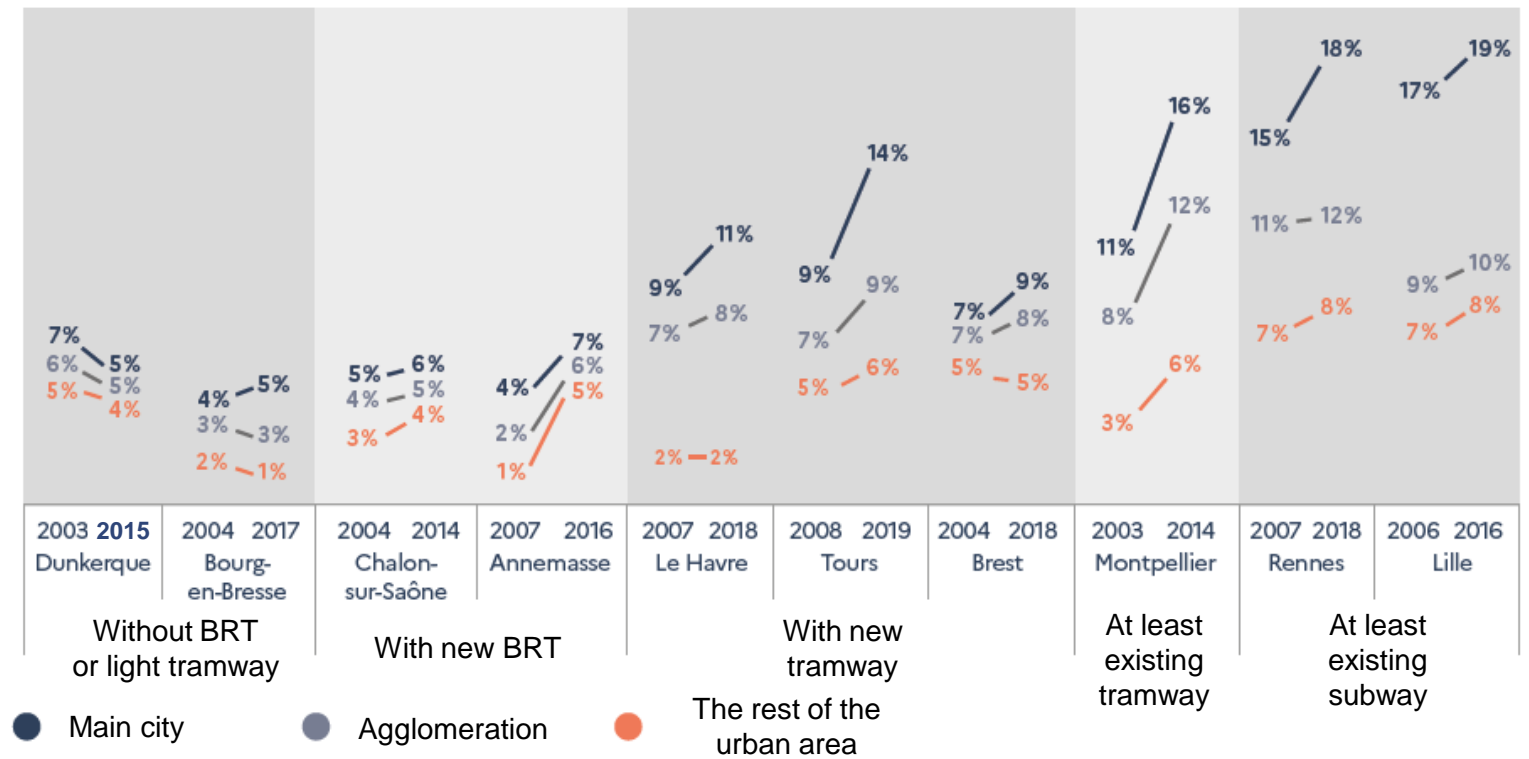


BRT in Martinique, Caribbean

BRT EXPANSION INCREASED RIDERSHIP

Urban public transport modal share evolution in a few French cities
Source : EMC²

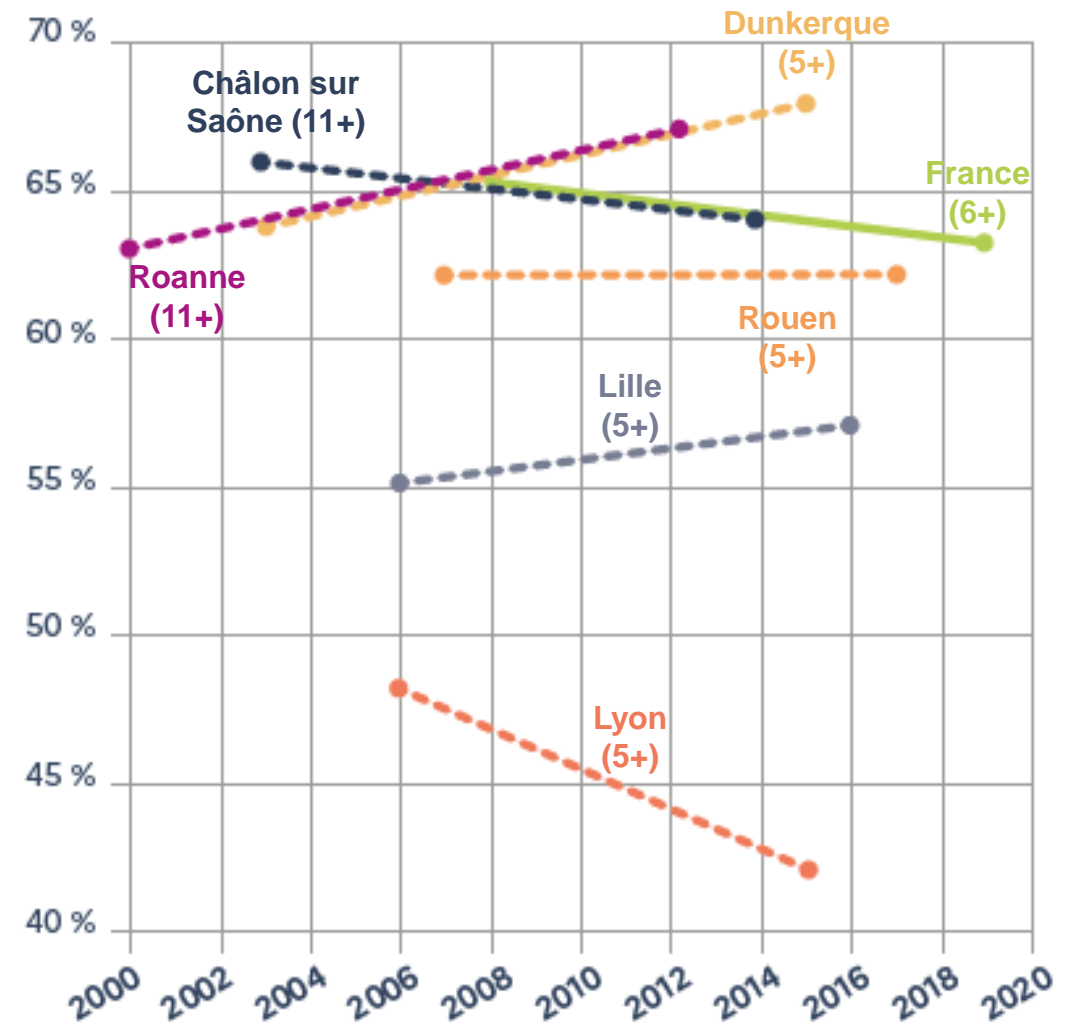
- BRT & trams enabled to increase PT modal share not only town centers



CARS ARE NOT DEAD

- The decrease in the use of cars didn't happen everywhere...
- The modal share is huge... the share of daily kilometers travelled is bigger.
In major cities :
 - Modal share : 55%
 - Kilometers travelled share : 70%

Car modal share evolution on several territories
Sources : EMC² & national HTS 2008-2019



MOTORBIKES : 1 VEHICLE, 2 USES

- In the Paris area : mainly 25 to 49 y.o. users, with high income
- Elsewhere : mainly 14-17 y.o. users and unemployed adults.

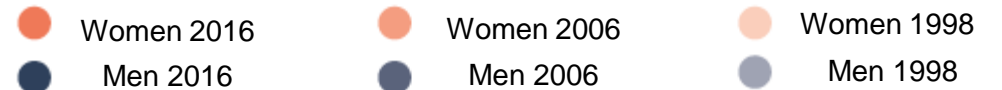
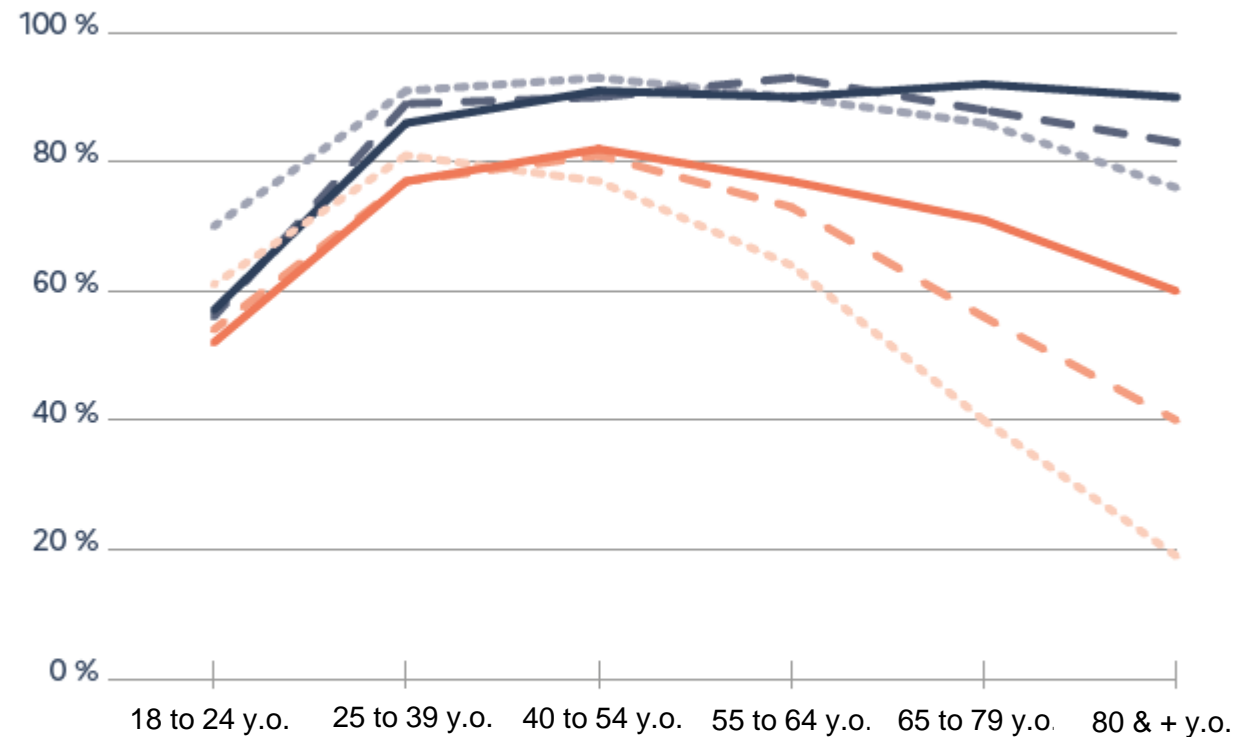


- A common point : the use is decreasing nationwide (3 to 2% of modal share between 2008 and 2019)

GENDER ISSUES

- Men make longer trips, in distance and time... using more car and bike
- Women devote more time to children and household related trips... walking and using PT more than men

Driving license owner rates by gender and age
Source : Lille Metropolitan Area EMC² - 1998 to 2016



BIKE INCREASES AND DECREASES

- Bikes are everywhere in city centers, but the modal share is struggling... why ??

• Adults



Youngs



• City Center



Great suburbs



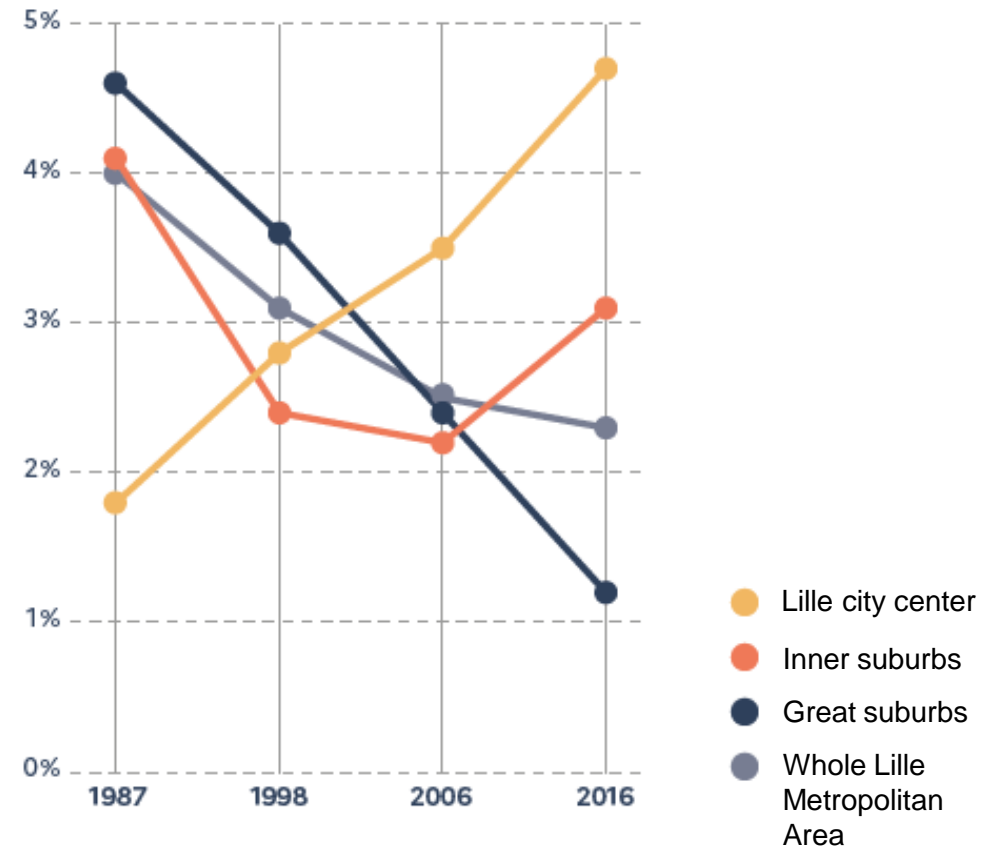
• High income



Low income



Proportion of bike users regarding their place of living
Sources : EMC² of the Lille Metropolitan Area 1987 to 2016

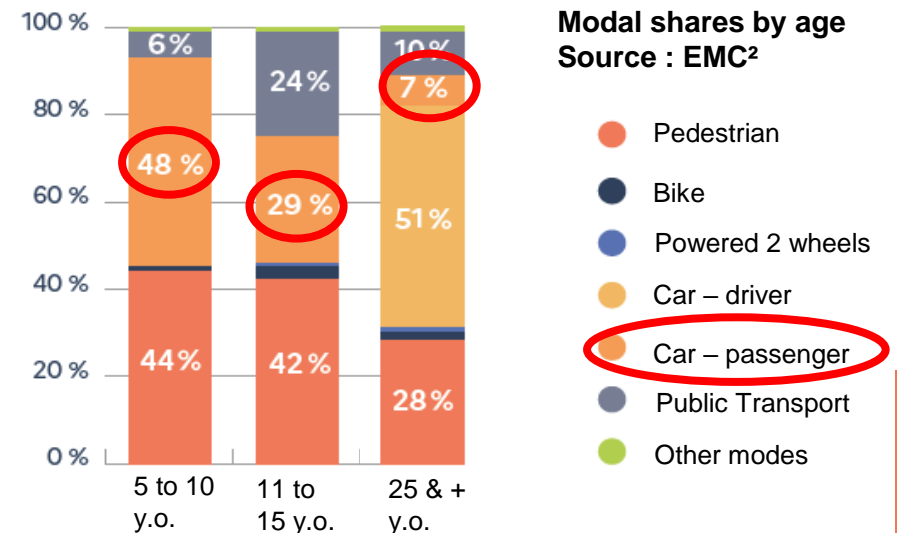


CARPOOLING: KIDS, NOT COLLEAGUES

- Carpooling seems a good way to reduce the impacts of transport...
- But it's not working well
- And passengers are generally... our kids!

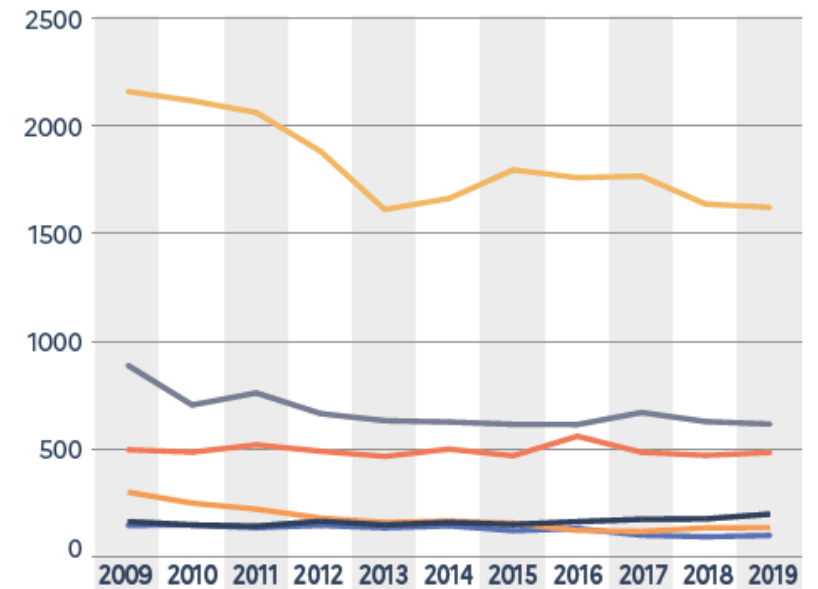
Traveled distances inside Lyon Metropolitan Area regarding the transport mode (in millions of passenger.km)
Sources : EMC² Lyon 2006 and 2015

Transport mode	2006	2015	Évolution
		(same perimeter)	
Car – passenger	5,7	5,4	- 5 %
Car – solo driver	18,9	22,1	+ 17 %
Car – Driver with passenger(s)	4,9	5,1	+ 4 %
Public Transport	6,0	8,4	+ 39 %
Other modes (walking, biking...)	1,3	1,5	+ 14 %
Total	36,8	42,4	+ 15 %

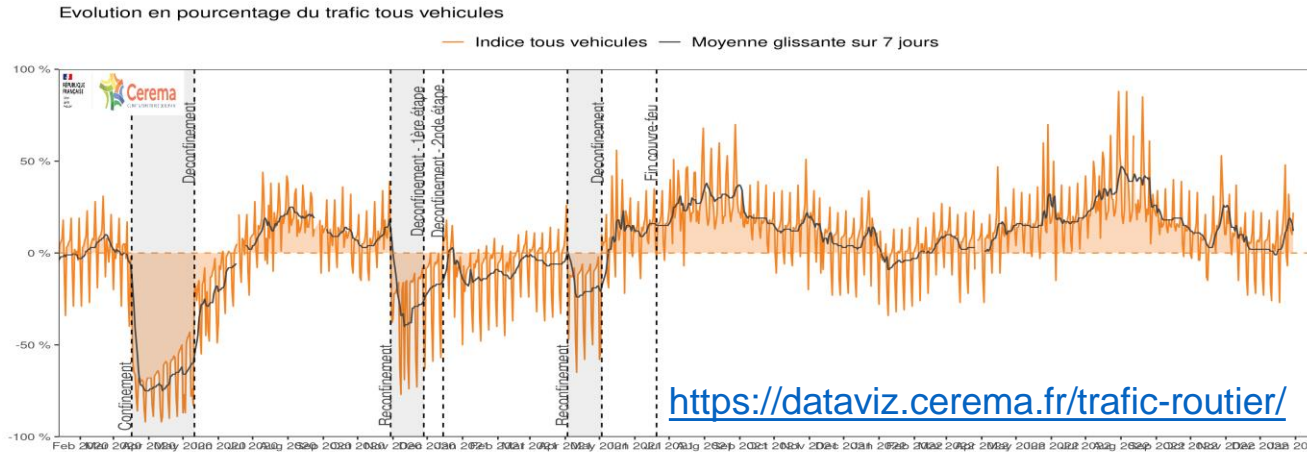


IMPROVEMENT IN ROAD SAFETY

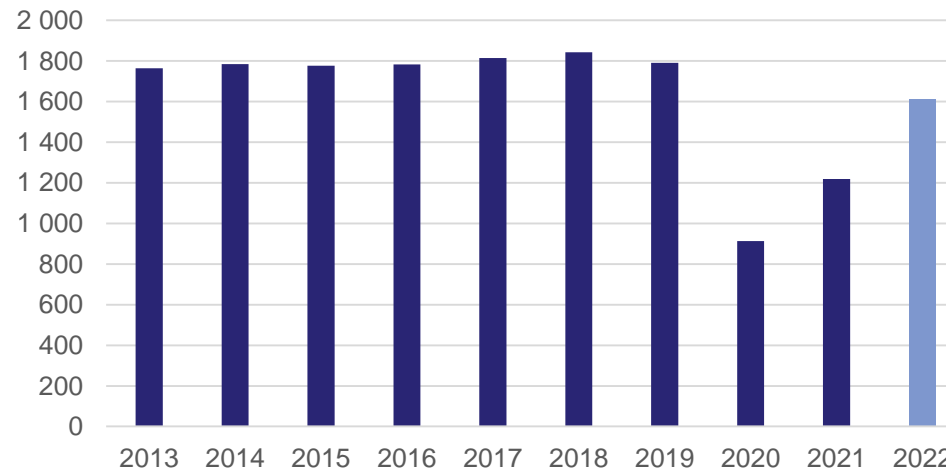
- Decrease of deaths during the decade : -19% (2019/2010), mainly among car drivers. That's about 51,5 killed for 1 million inhabitants in 2019.
- Major new measures implemented during the decade :
 - Systematic narcotic tests
 - Lower alcohol limit for young drivers
 - Reduction of speed limit in countryside : 90 => 80 km/h



COVID CRISIS: A BOOST TO INDIVIDUAL MODES



Train+Metro Frequentation in Paris Area (million of trips)

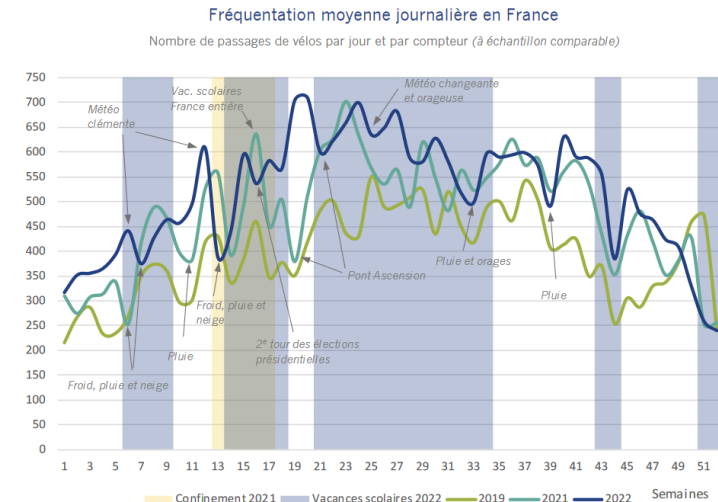


<https://data.ratp.fr/>

2019/2022 :

+31%

Source



COVID CRISIS: A BOOST TO INDIVIDUAL MODES

- Unsolved questions...
 - Will people go back to public transport like before ?
 - What impact of teleworking on commuting ?
 - Can (e-)bike become a massively used transport option ?

How we use data to decarbonize



ENVIRONMENTAL CHALLENGES

- The Transport greenhouse gases emissions are a combination of 5 factors...

$$\text{Transport GHG emissions} = \text{Demand for transport} \times \text{Modal shares} \times \text{Occupation rate} \times \text{Energy efficiency} \times \text{Energy carbon intensity}$$

- Working on daily mobility habits allows to have an impact on 3 of them...

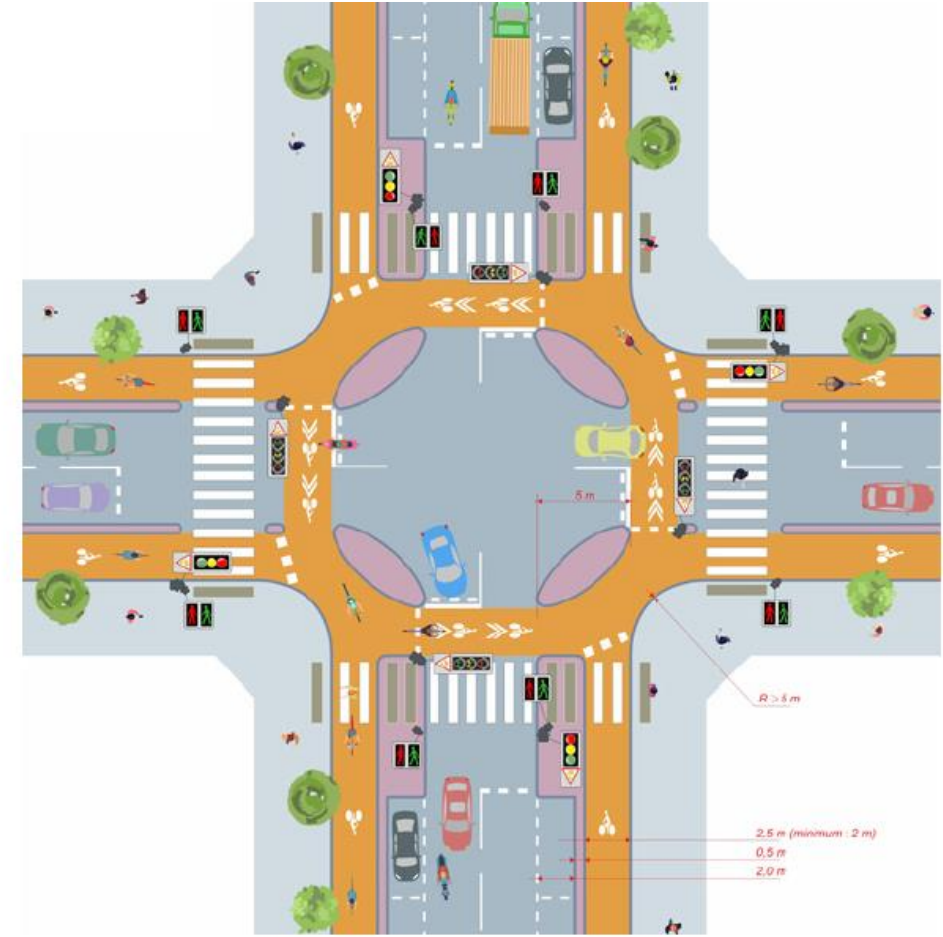
DATA TO DECARBONIZE

- Data enable to describe mobility patterns
- Data permit to elaborate the most relevant mobility projects

Relevant = attractive for users and decarbonized for climate

URBAN DESIGN AND PLANNING

- The street design is a powerful leverage to develop sustainable mobilities...
- Urban planning is a key issue to get consistent and sustainable urban development
- Cerema supports local authorities by producing guidelines and assisting them during their projects



MOBILITY MANAGEMENT

- Providing mobility services is not enough to change habits, mobility management is needed with local and specific initiatives

Examples :

- Developing mobility plans in companies, schools or administrations
- Subsidizing employees who are biking or carpooling to go to work (optional)



DIGITAL & INNOVATION

- Smartphones are now (almost) everywhere
- New mobility services emerged or strongly developed:
 - E-scooters, mopeds and bikes in free-floating shared services
 - Car rides platforms (like Uber or Lift)
 - Long distance carpooling platforms (like Blablacar)
- Still a small part of all trips, but a great dynamic
- Warning: not everybody has the ability to join!



MOBILITY AS A SERVICE

- Main Goal: make the use of the most appropriate (and less impacting) mode of transport really **easy**
- Mean of action: integrating information and fees
- To create something really user friendly and **easy** is a **complex** issue...
 - Governance: France now covered by mobility authorities
 - Cooperation between stakeholders
 - Finance: calculating (and sharing) one fee for all transport modes



What possible insights
for client countries?



WHAT INSIGHTS FOR WORLD BANK CLIENT COUNTRIES ?

- Guidelines are available on the Cerema website
- Cerema can accompany different kind of mobility projects

From design to implementation, including training and capacity building

WHAT INSIGHTS FOR WORLD BANK CLIENT COUNTRIES?

- Cerema can help analyze mobility data available, identify the gaps and find solutions to fill them
- EMC² methodology has already been used with adaptations:
 - Abroad (Belgium, Germany)
 - In overseas territories (French Guyana)
- Cerema can help to elaborate a survey methodology adapted to the local context, or organize a pilot survey in a client country

A good knowledge of the situation is the first step to find good solutions to decarbonize !

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Thanks for your attention

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