



15th December, 2020

# ITF Roundtable – Big Data and Transport Models

## Use of mobile telecommunication data in transport modelling – a French case study

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- Current models mainly based on household surveys
- Known limits of household surveys
- Opportunity to work with additional data: mobile phones data
- Widespread usage of mobile phones in the population
- Technologies available for tracking
- Privacy rules



## Objectives set by SNCF Réseau:

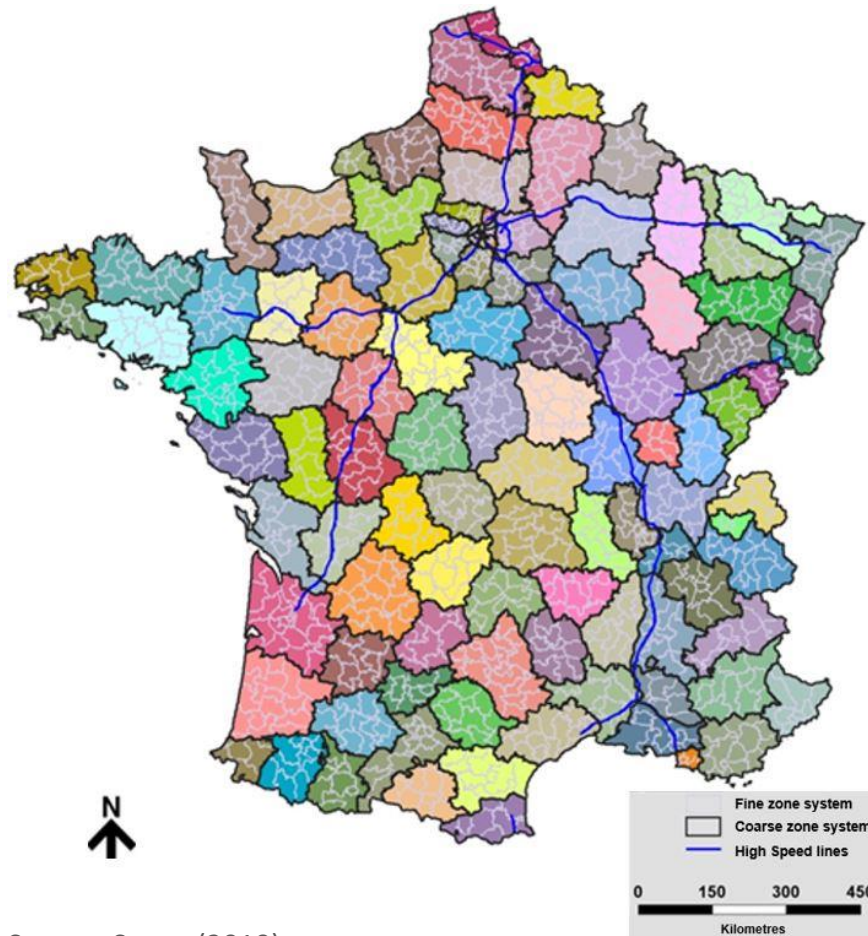
- Explore the potential of mobile phone data
- Propose sensitivity tests
- Validate the results against independent data sources

## Datasets provided and adjusted by the operator:

- Trip volumes observed for each day of November and December 2018
- Annual average day trip volumes for 2018
- Annual average of trip volumes during basic working days



## Fine zone and Coarse zone systems

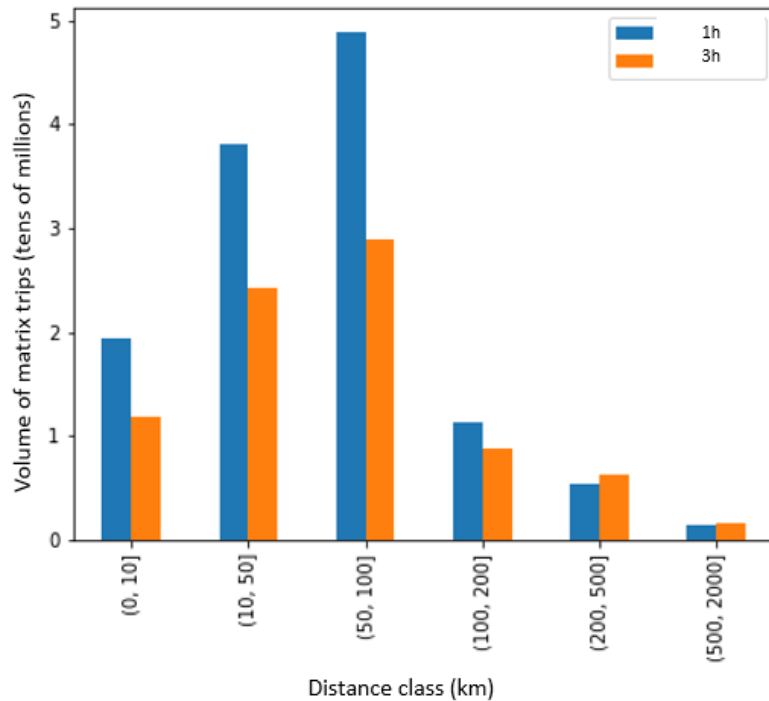


Source: Systra (2019)



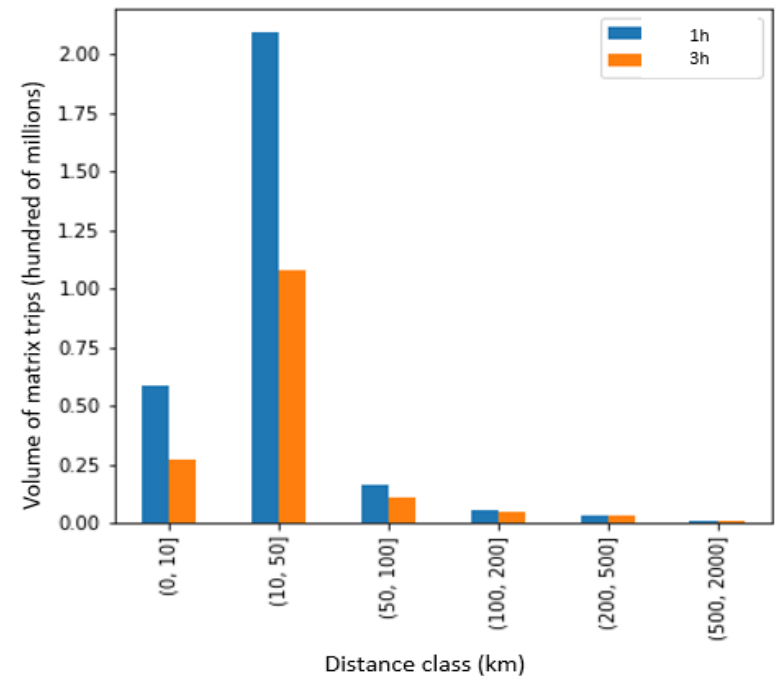
## Influence of the immobility threshold on trip numbers

Coarse zone system



Source: Systra (2019)

Fine zone system

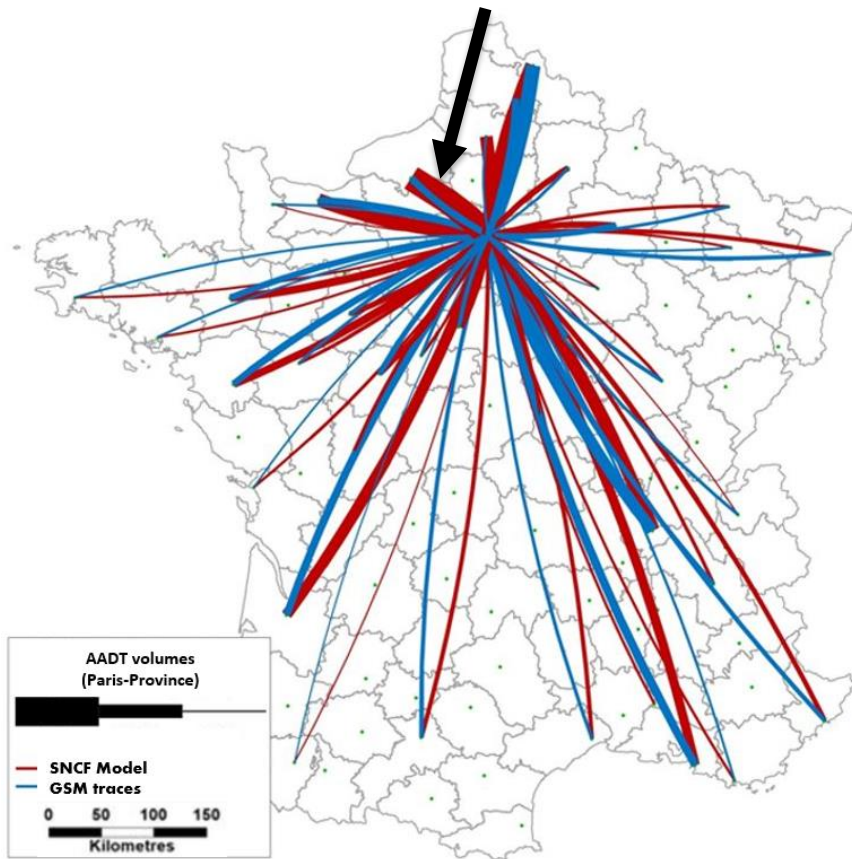


Source: Systra (2019)

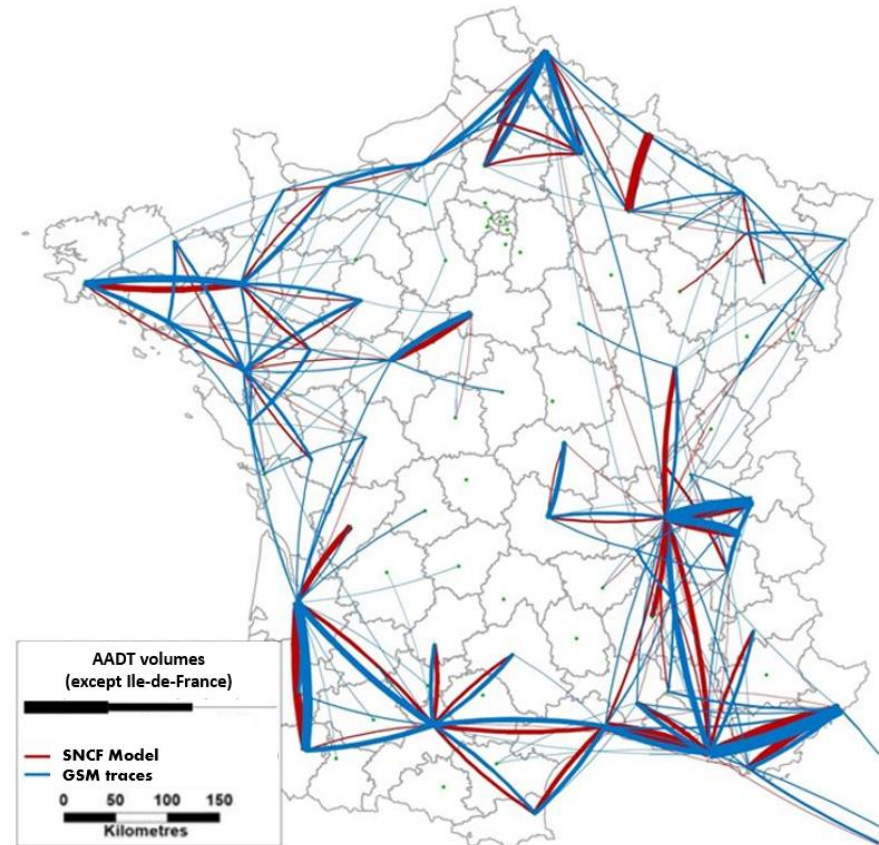


Indicators	Description
QI1	<b>Influence of statistical adjustment</b> This indicator indicates whether the flow has undergone a significant statistical adjustment to be representative of the population or not.
QI2	<b>Modal assignment</b> This indicator is high when a large part of the traces can be confidently attributed to a mode.
QI3	<b>Precision of the origin and destination areas</b> This indicator relates to the frequency of mobile locations. When this frequency is high, the reliability of locating the origin and destination area is better.
QI4	<b>Terrestrial modal assignment</b> This QI focuses only on terrestrial modes. The terrestrial modal assignment is largely determined by the passage through cells which are characteristic of a given mode.


## Comparison of Paris-Province and Province-Province flow between GSM traces and the model



Source: Systra (2019)



Source: Systra (2019)

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- ◉ Complexity of the data
  - ◉ Set a zoning system and a immobility threshold adapted to the scope of analysis
  - ◉ Favour the datasets over a long period
  - ◉ Transport mode reliability
  - ◉ An incredible source of information for the transport analysis and modelling



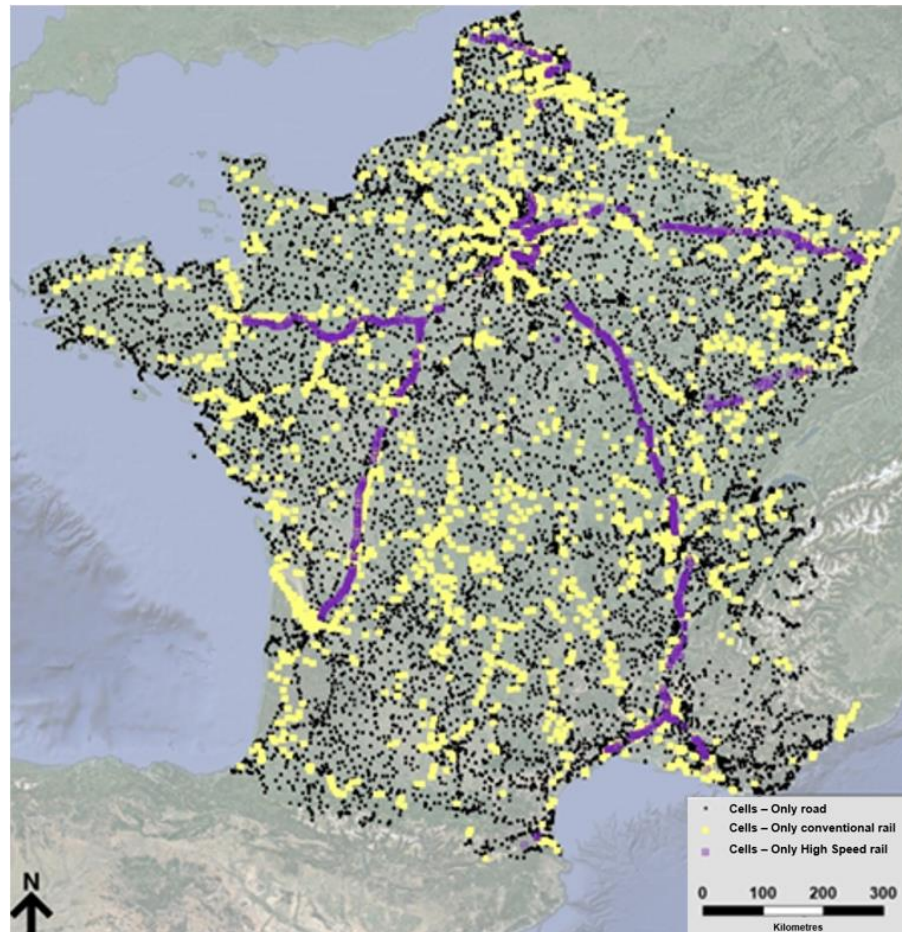


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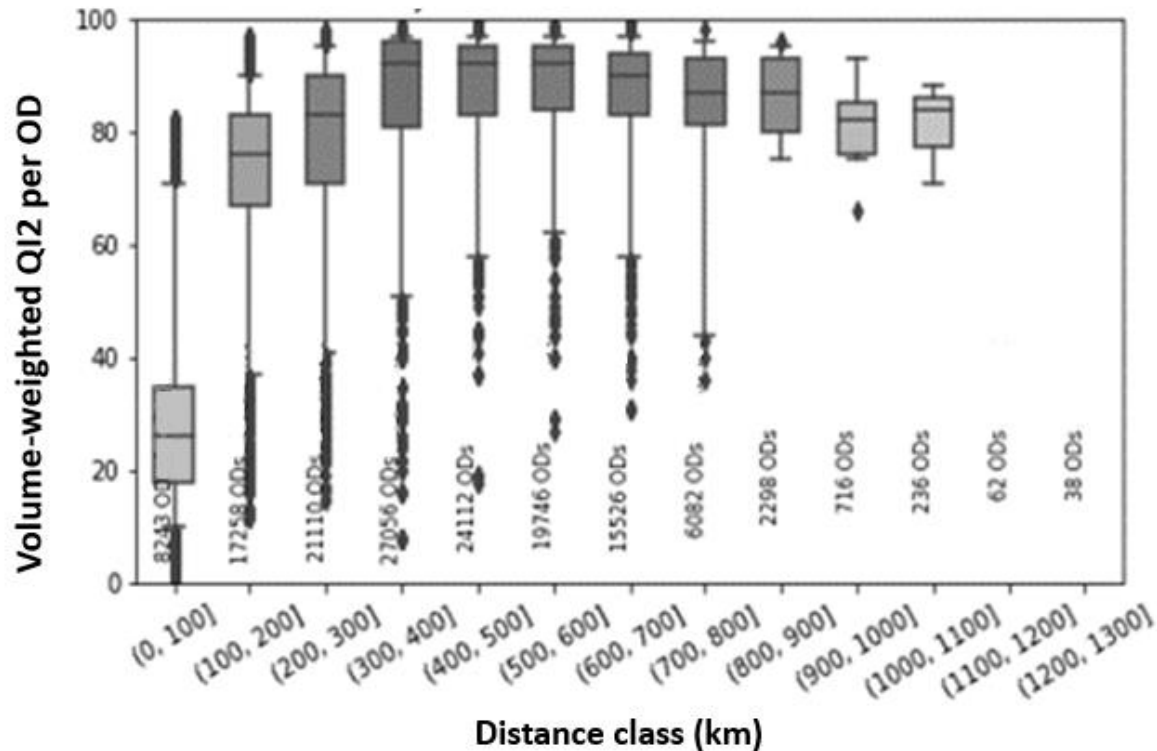
## Cell-towers coverage – all operators – France



Source: Systra (2019)

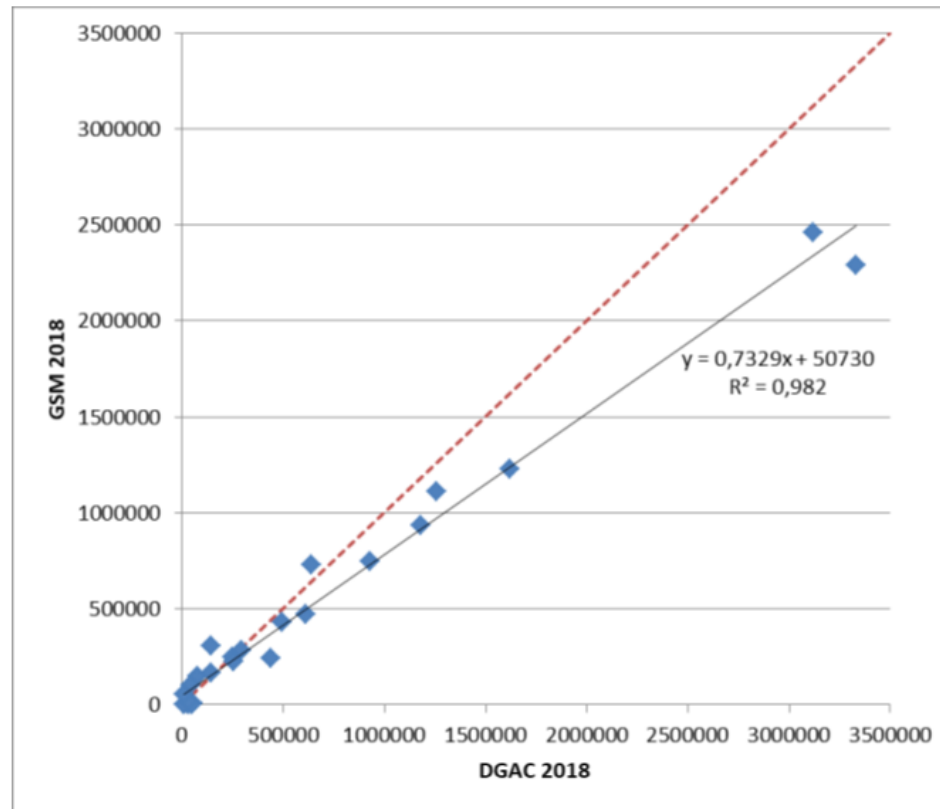


Distribution of QI 2 values by distance class



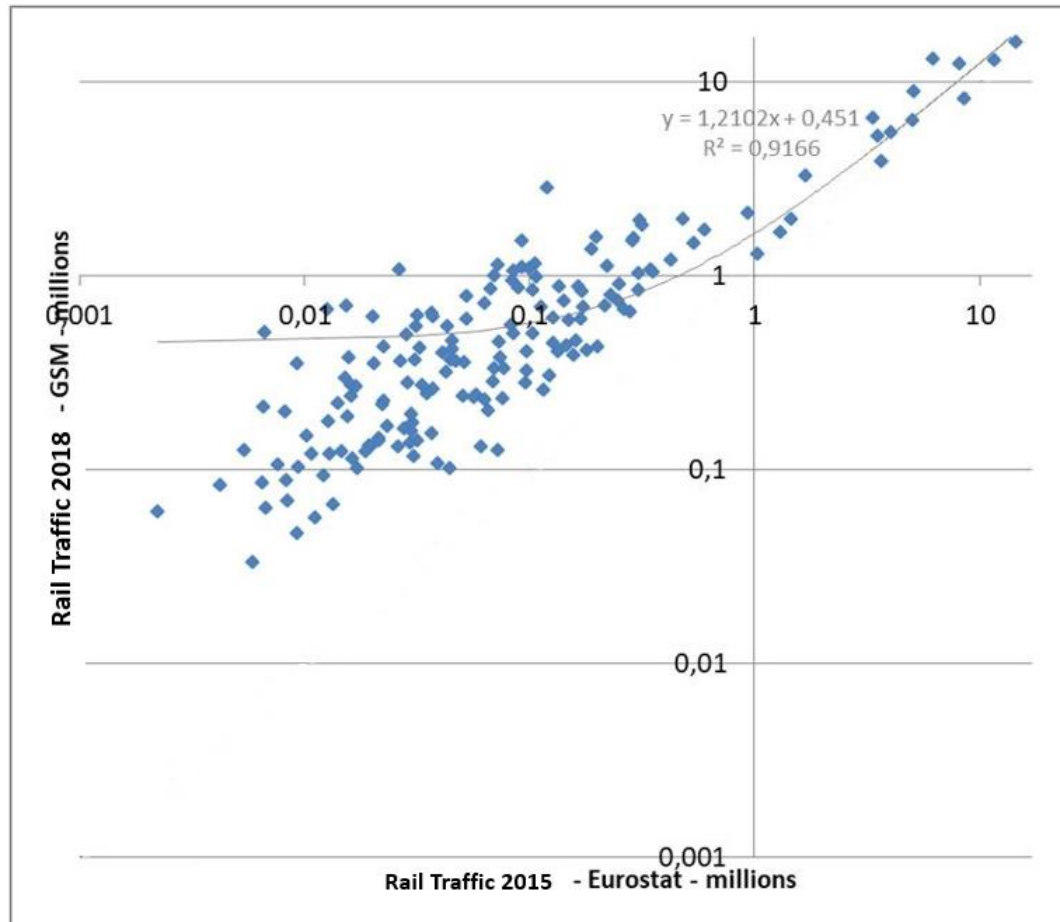
Source: Systra (2019)

Comparison of the main radial air flows 2018 GSM / DGAC



Source: Systra (2019)

Comparative of rail flows Region \* Region – GSM traces / Eurostat 2015



Source: Systra (2019)