



UIC

HIGHSPEED

Morocco 2023

HIGH-SPEED RAIL : THE RIGHT SPEED FOR OUR PLANET

Under the High Patronage of his Majesty King Mohammed VI

11TH WORLD CONGRESS OF HIGH-SPEED RAIL

Marrakech, 7-10 MARCH 2023

Mobile data analytics in Italian HSR stations

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6.3 Station / Capacity

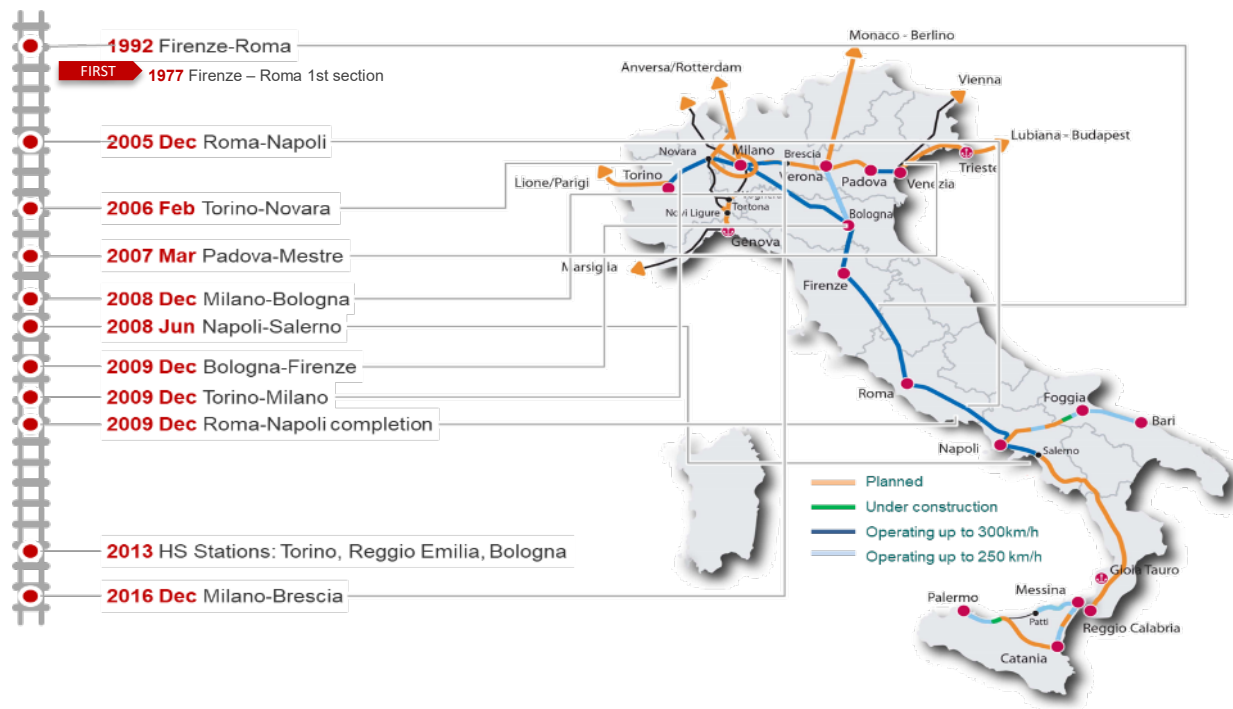




ITALIAN HIGH SPEED NETWORK EVOLUTION

- ❖ **First** Pendolino (tilting) train for public service between Rome and Ancona in 1976,
- ❖ **First** HSR section in Europe (1977)
- ❖ Europe **first** competitor on open access services from 2012
- ❖ **European Brand**

FRECCIAROSSA





DATA ANALYSIS & MOBILITY



RAILWAYS IS ALREADY THE GREENEST MODE OF TRANSPORT

KG DI CO₂ PER PAX

(FONTE: ECOPASSENGER.COM)



INCREASE PASSENGER

Strategy

"Continuos" Evaluation:

- ❖ Mobility demand mapping
- ❖ Commercial performance
- ❖ New services (smart working, business travels, holidays....)

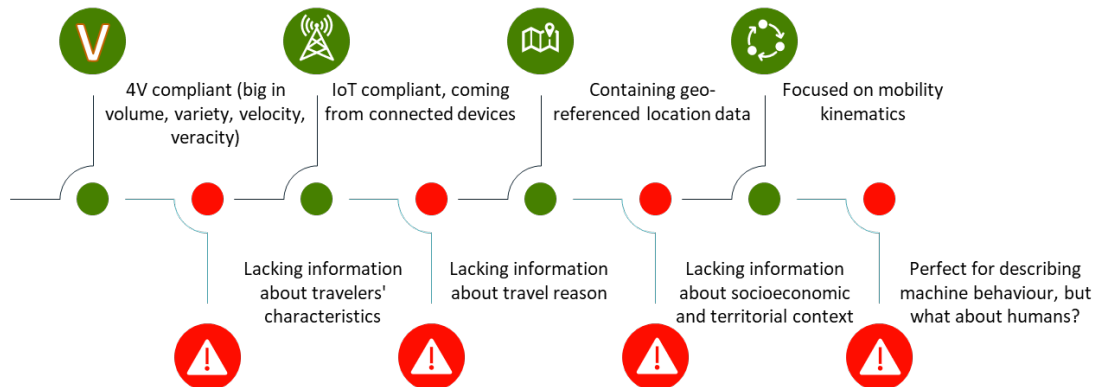
ESSENTIAL

Traditional	Big Data
Travel diary samples	Mobile phones data
Ticketing data	Social networks use
On site - Surveys	Wi-fi data
Traveller count	

MOBILE NETWORK DATA

Requirements

Developing a tool, not a single test



FIRST

- ❖ Preliminary **desk research** on the state of the art (es: from CDR to MDN)
- ❖ **Call for tender** (national wide analysis area) for MNO
- ❖ Contract with Vodafone
- ❖ One year of calibration and investigation (mapping all Italy!)
- ❖ Focus on modal identification
- ❖ From 2022 “standard” tool for analysis and strategic decision
- ❖ Some limitation.....

LIVE DATA



* 20 days delay

ITALIAN HSR MAIN STATIONS: OVERVIEW

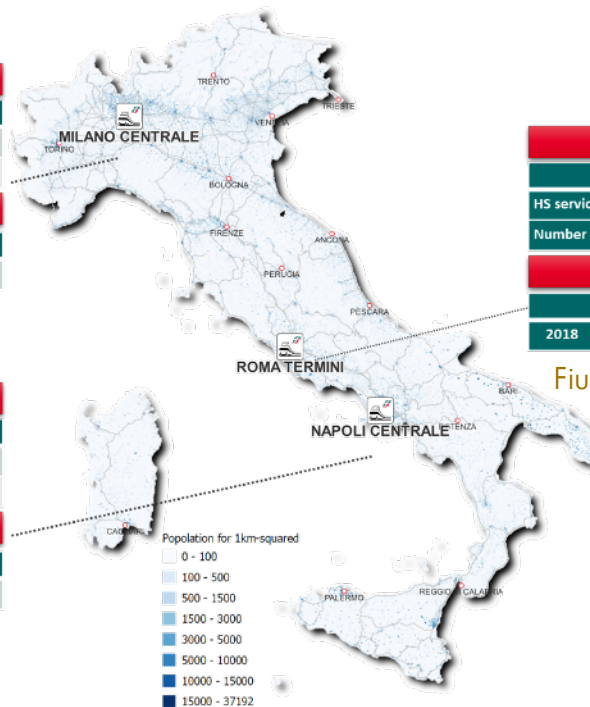
- ❖ Focus on **main station**
- ❖ **Dedicated mobile network**
- ❖ **Behaviour** passenger and visitors
- ❖ **POI** identification
- ❖ Airport train
- ❖ Connections
- ❖ **Waiting times**

Station performance		
	2008	2019
HS services calling at this station	202	323
Number of cities reachable within 4h*	38	43
Population of station user base**		
	By 15' walk	30' by collective transport
2018	48 008	1 809 388

Malpensa
Linate & Bergamo airports

Station performance		
	2008	2019
HS services calling at this station	49	170
Number of cities reachable within 4h*	7	17
Population of station user base**		
	By 15' walk	30' by collective transport
2018	55 712	1 529 431

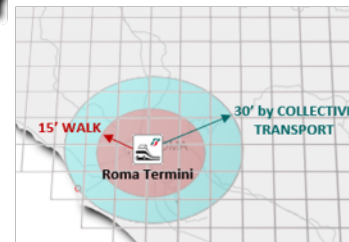
Naples' islands



Station performance		
	2008	2019
HS services calling at this station	152	331
Number of cities reachable within 4h*	21	40
Population of station user base**		
	By 15' walk	30' by collective transport
2018	26 370	1 965 355

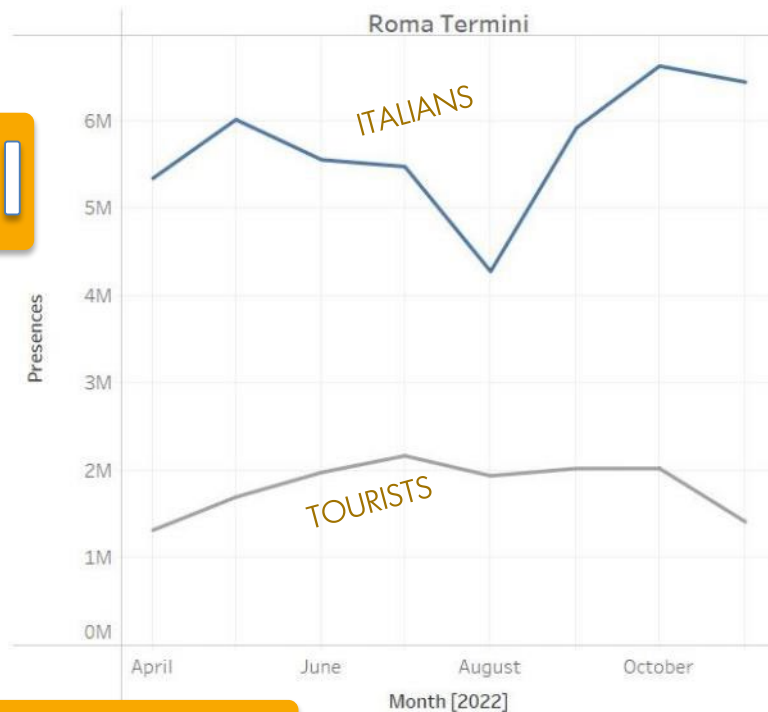
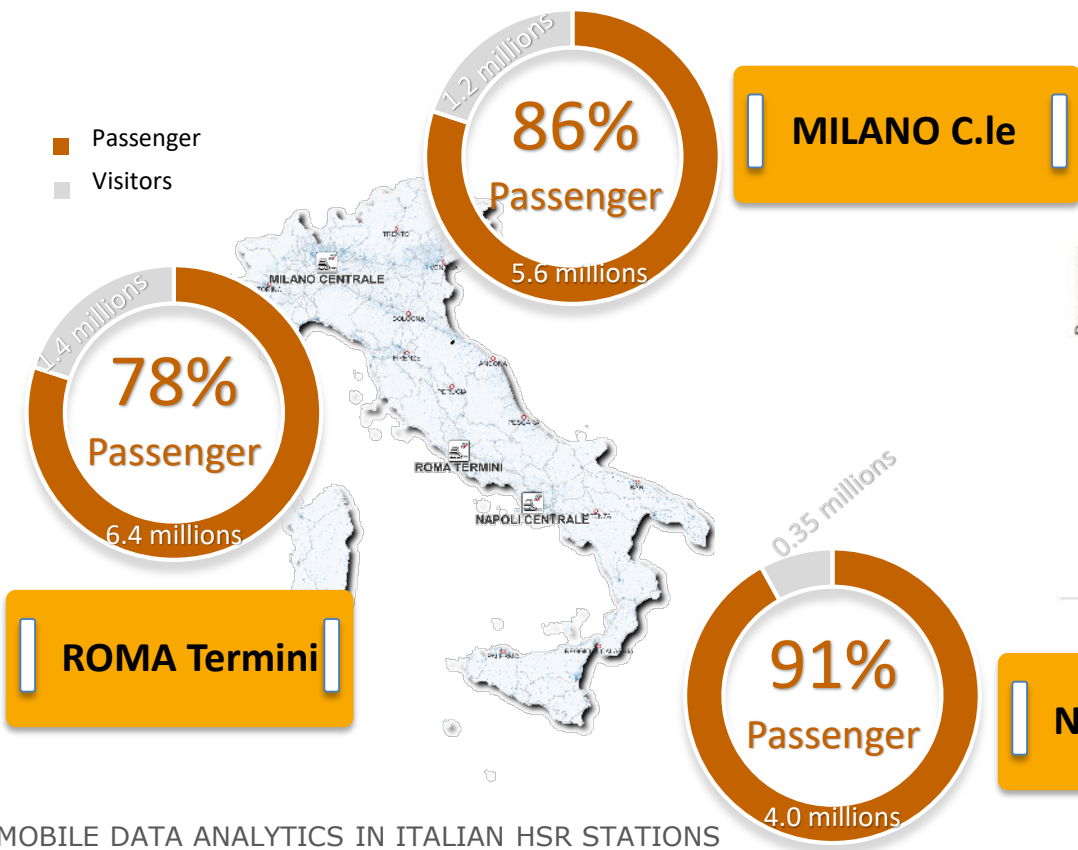
Fiumicino

* Considering only travel time
** Based on Eurostat 1km and 2 km grid 2018





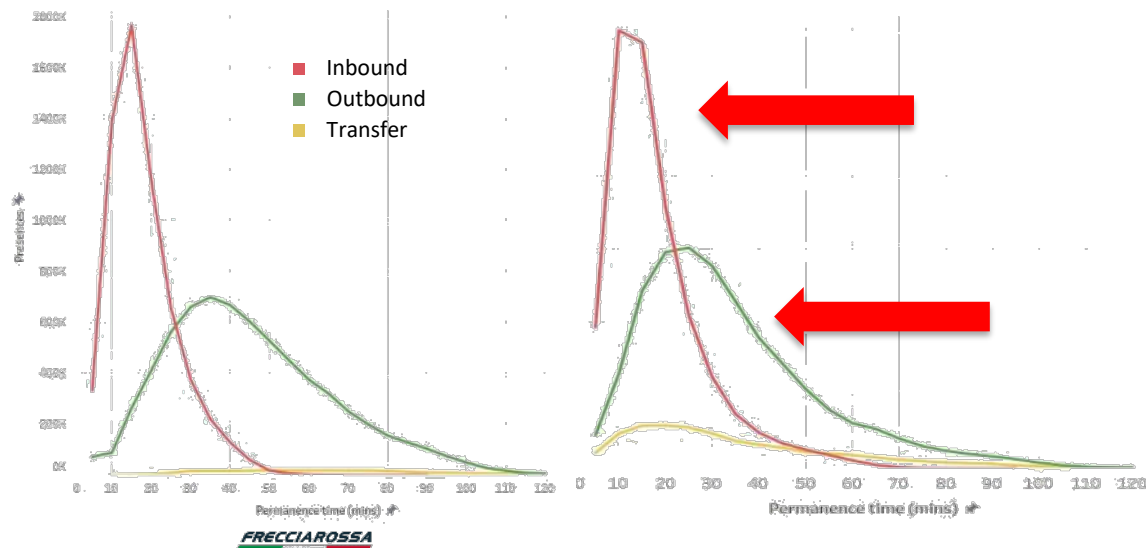
PRESENCES IN THE 3 STATIONS



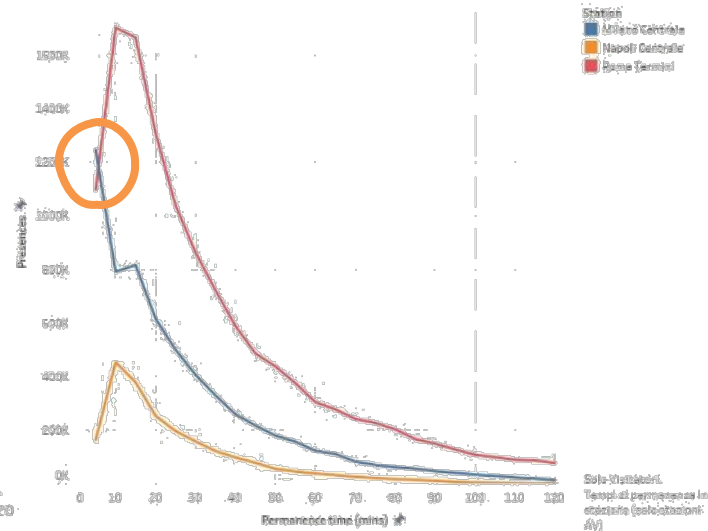


DURATION OF STAY

Passenger & Visitors (April - November 2022)



PASSENGER

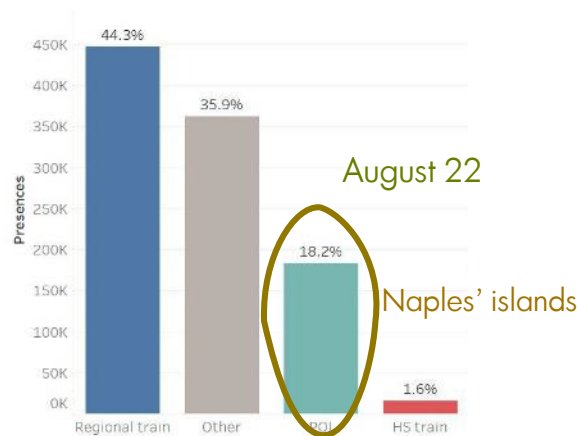
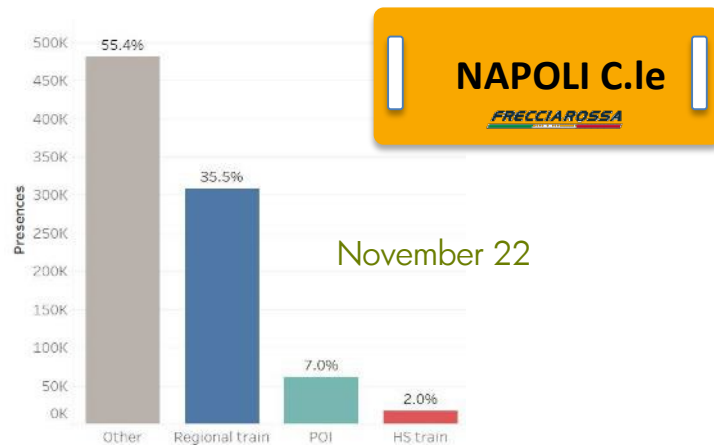


VISITORS



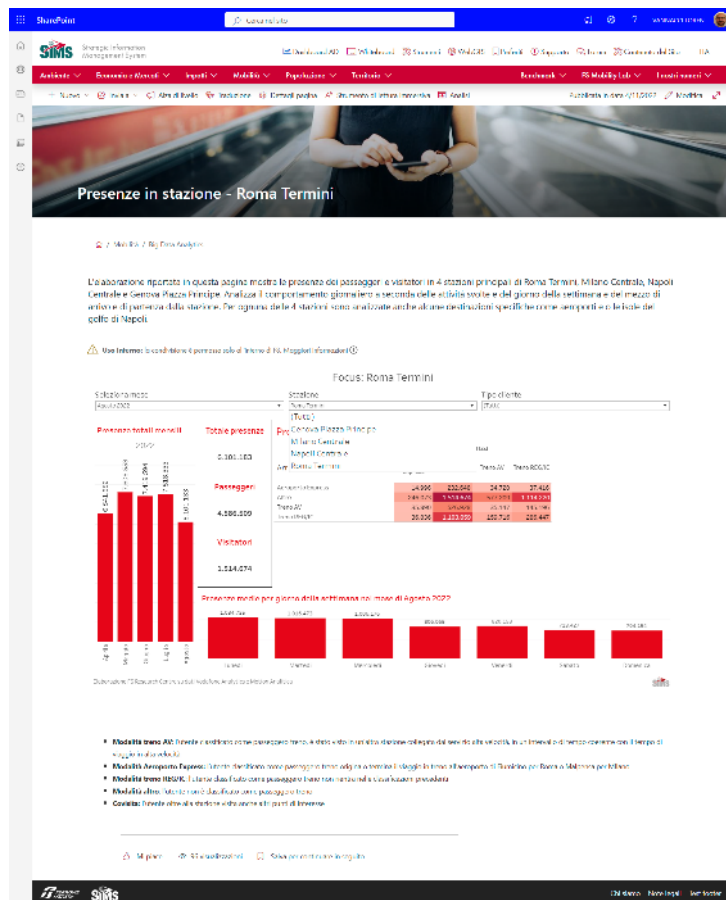
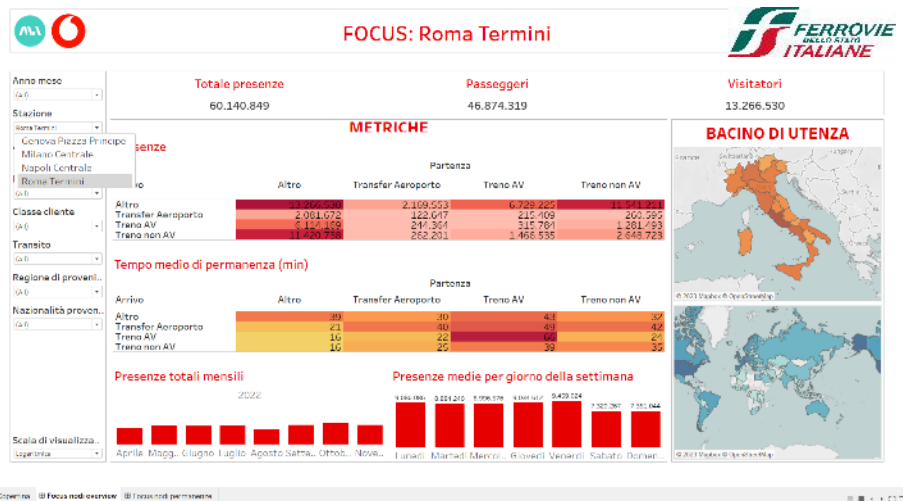
POI ANALYSIS

HSR passenger & POI visits



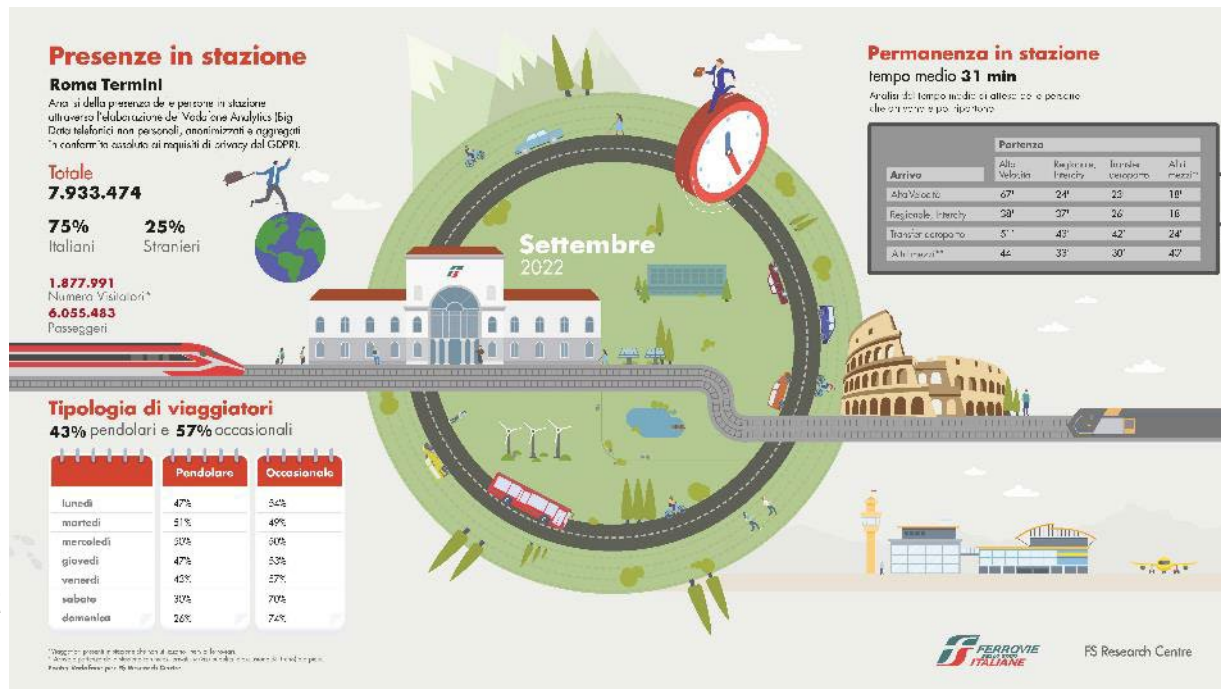


INTERACTIVE DASHBOARDS



MAIN CONCLUSIONS

- ❖ **Unique experience** from research to corporate tool
- ❖ **Extensive know how**
- ❖ **Updated data** (quite live.....)
- ❖ **Less expensive** than traditional surveys
- ❖ **Customizable** (also after data availability)
- ❖ **Limitation** in urban environment
- ❖ **We are ready for Public Data** dissemination





NEXT STEPS

After 2 yrs of intensive use:

- ❖ Better **modal identification** for station access and egress links
- ❖ Increase **dedicated networks in stations** (better analysis)
- ❖ Detailed study on **urban areas**: FS is starting a research with several Universities to overcome this limitation
- ❖ **Guide lines** (partnership Italian Statistic Institute)
- ❖ Work on 5/10 minutes time slots analysis in order to allow a **timetable improvement** in stations (connections)
- ❖ Definitely replace surveys when it is possible
- ❖ Develop the ability to work and plan with **live data**



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THANK YOU



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