



POLITECNICO  
MILANO 1863

160



# Mobility, two years later

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15th May 2023



 **FERROVIE**  
DELLO STATO  
**ITALIANE**

FS Research Centre

# The boundary conditions





# In these transition times

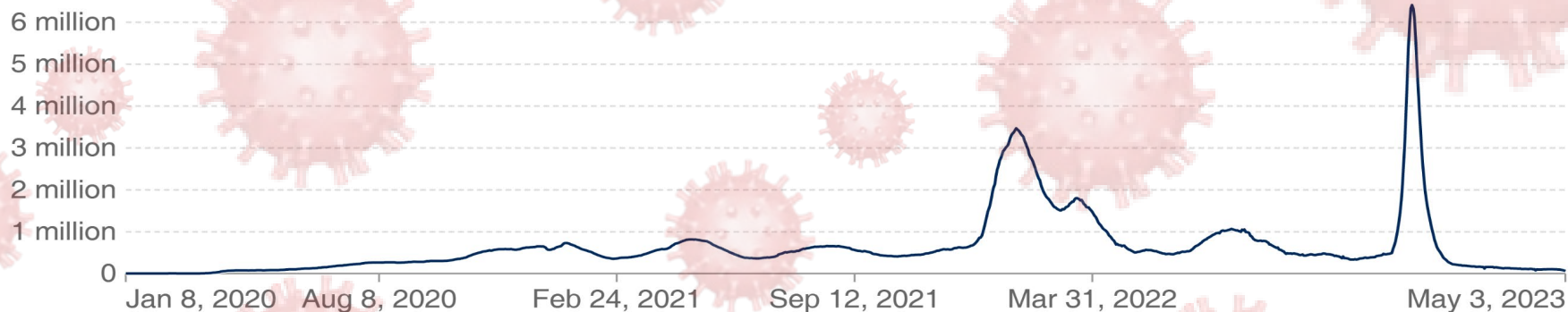
# Is the Covid-19 pandemic over?

## Daily new confirmed COVID-19 cases

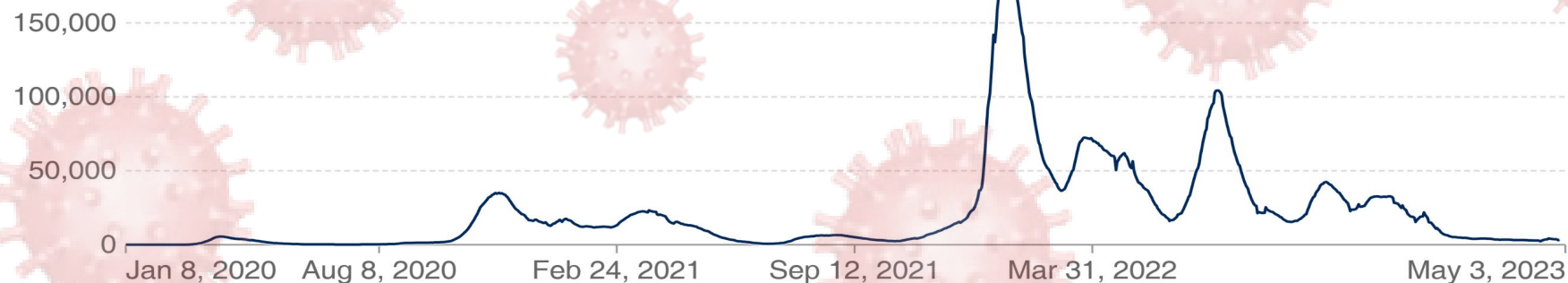
7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World in Data

### World



### Italy

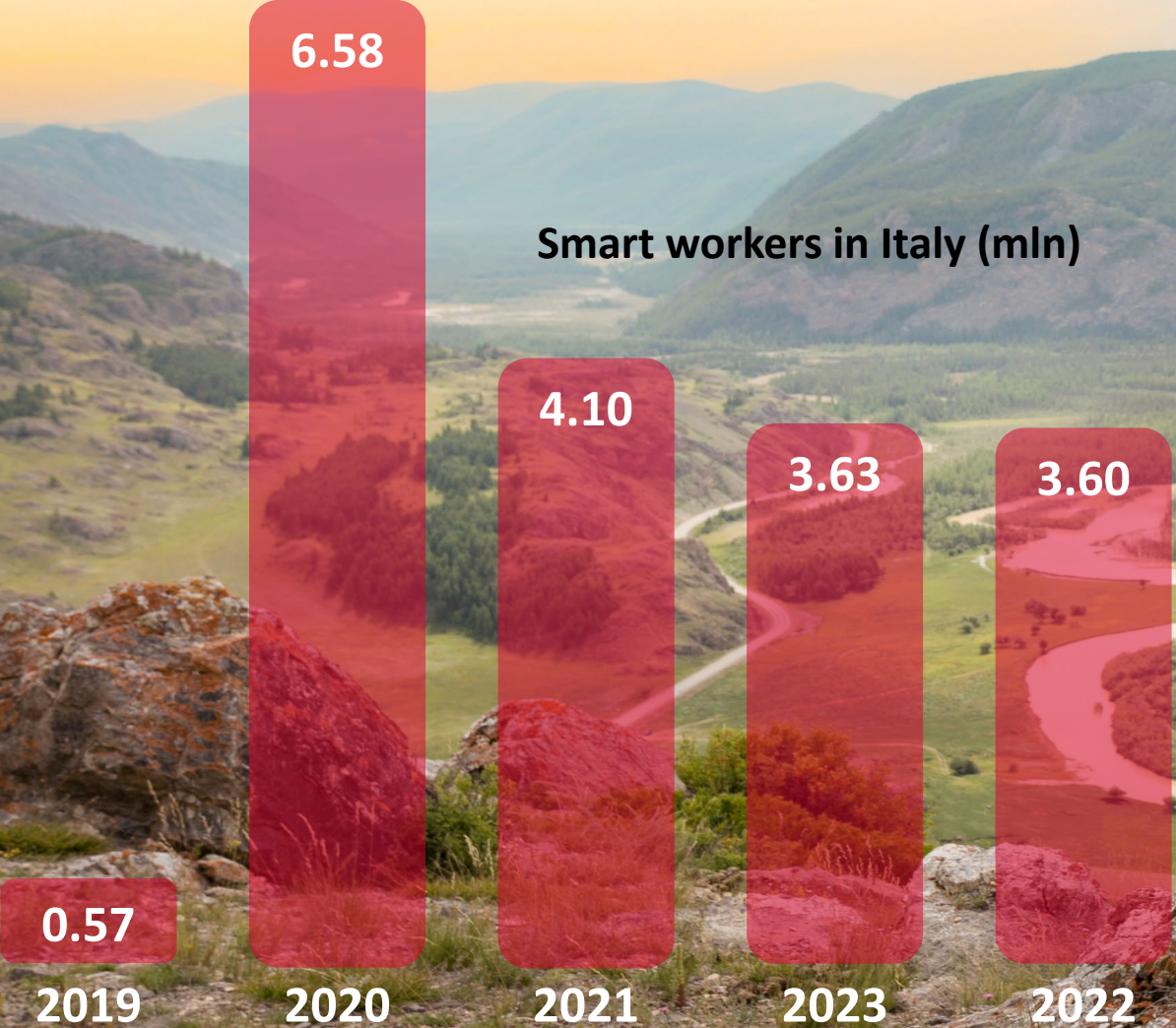


Source: WHO COVID-19 Dashboard

CC BY

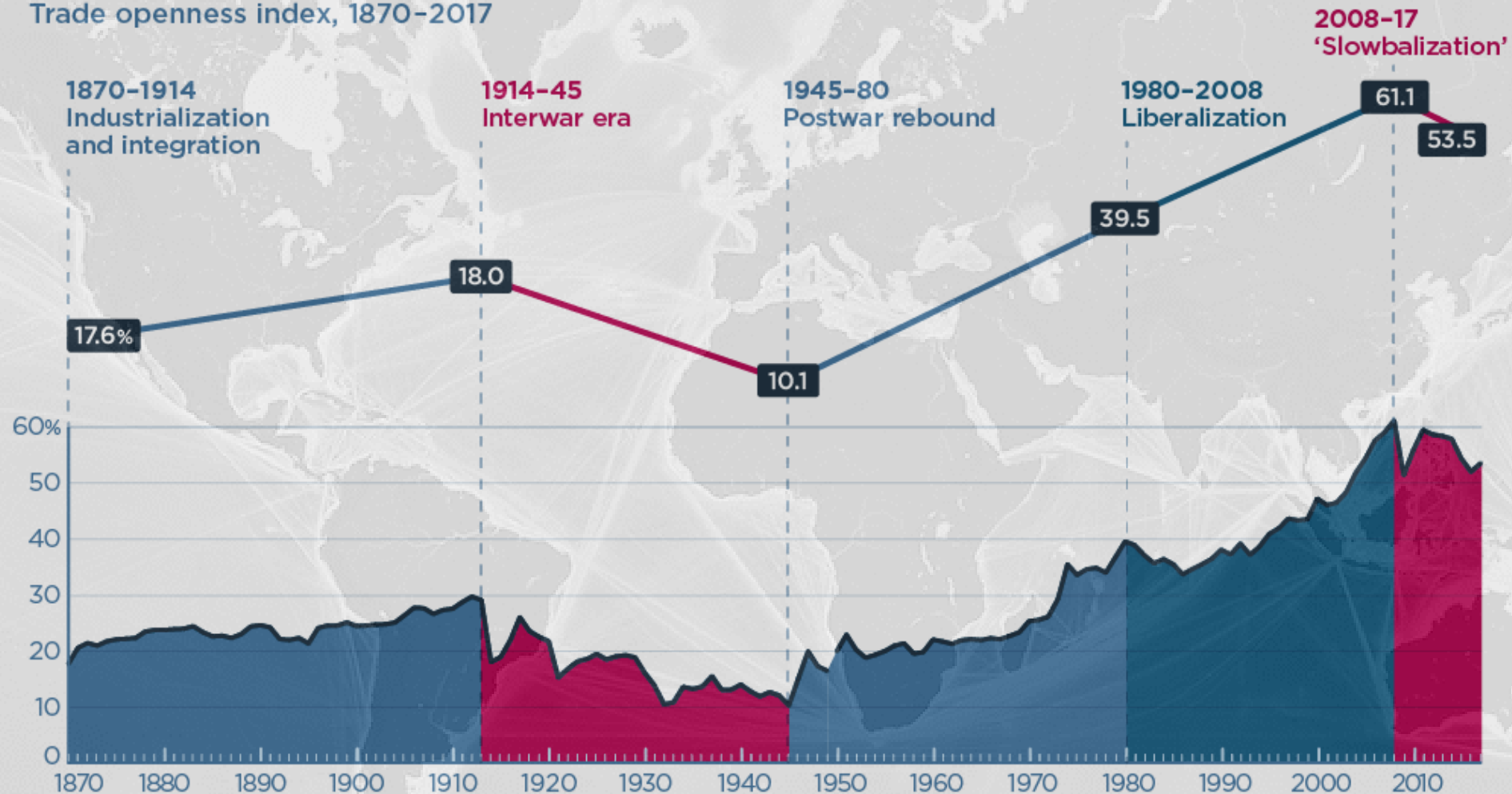
# New working styles

Smart workers in Italy (mln)



# Globalization is in retreat for the first time since World War II

Trade openness index, 1870-2017



# Globalization or deglobalization, that is the question

**Deglobalization** is a movement towards a less connected world, characterized by powerful nation states, local solutions, and border controls rather than global institutions, treaties, and free movement.

Some consider the world to have entered a period of deglobalization, citing **recent events** such as Brexit, Trumpism, the Ukraine war, problems with supply chains, the global energy crisis and the past decade's decline in foreign direct investment.

On the other hand, phenomena such as the COVID-19 pandemic, international crime, and climate change demonstrate the continuing relevance of **global collaboration** and interconnectivity.

So, it is better to understand the question as one of **balance** between globalizing and deglobalizing forces.

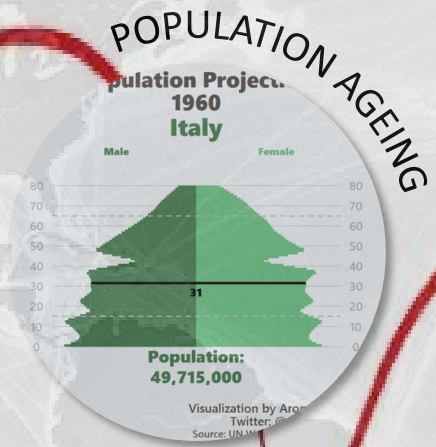
*(Kornprobst & Wallace , 2022)*

# A new equilibrium is coming





# While megatrends go their own way



# As a consequence, some issues rise for mobility

1. People's **mobility patterns** are changing due to economic changes (unemployment, inflation) and new lifestyles (smart working,...)
  - Slight **decrease** of total mobility
  - **Modal shift** from public transport to road
  - Increase of **non-systematic** trips
2. The **need for sustainability** and **resilience** increased, an **energy transition** process has begun, involving the automotive sector above all.
3. Transport sector is talking out both **logistic reshoring** and **resources shortage** and **price increase**
4. Transport sector is suffering from notable **labour shortages**.
  - Although it is a global problem, it especially affects the European labour market, due to population ageing and the consequent insufficient generational renewal
  - Shortage affects both white collars (highly qualified workers) and blue collars (such as drivers)

# Mobility surveys, two years later

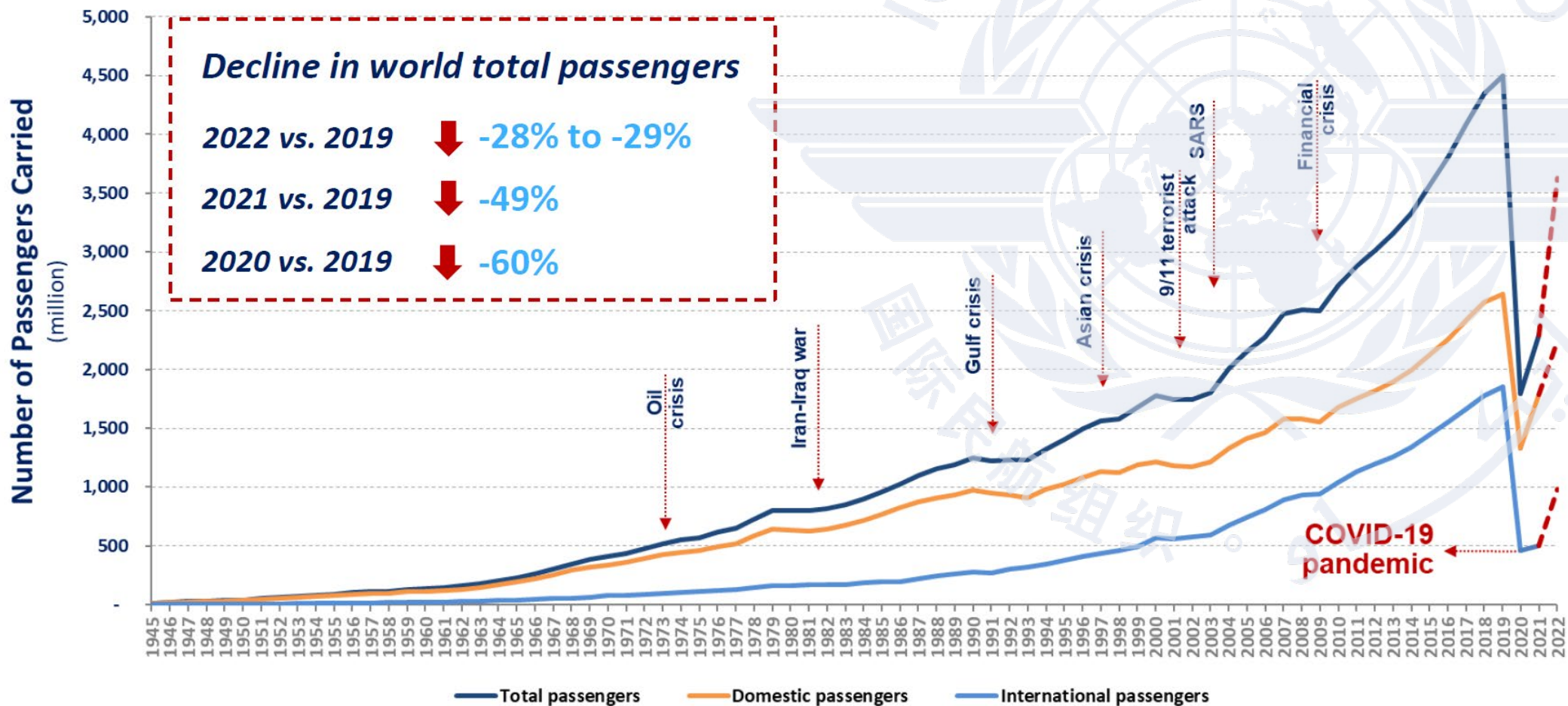


# Some main international open data sources

These data are mainly collected from Ministries of Transport, national statistical offices and other institutions designated as the official data source.

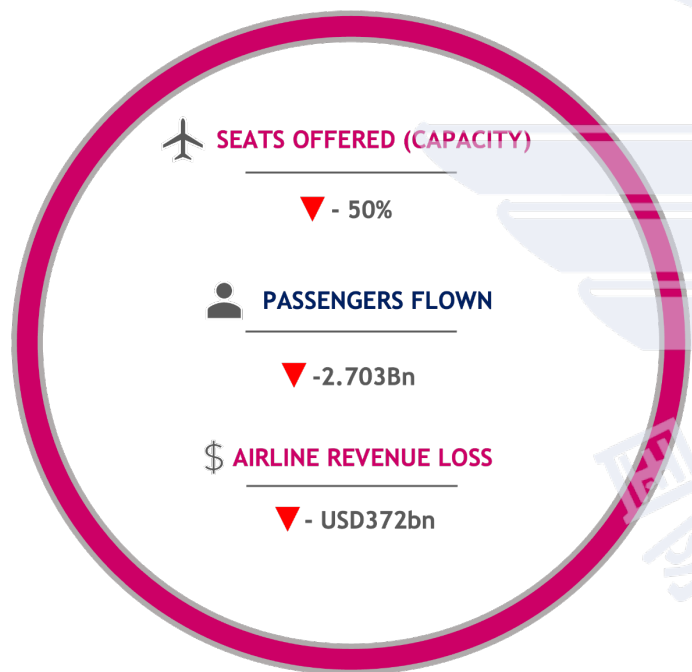
	Source	Boundaries	Target	Modes	Units	Data time reference	Publication delay
	International Transport Forum	OCDE members	Countries	Road, Rail, IWW, Pipe	Passengers, freights, infrastructure ...	Year, quarter	> 1,5 years (flash ~ 1 quarter)
	THE WORLD BANK	World countries	Countries	Road, Rail, Air	Passengers, freights, infrastructure ...	Year	> 1,5 years
	eurostat	European countries	Countries	Road, Rail, IWW, Pipe, Maritime, Air	Passengers, freights, infrastructure ...	Year, quarter, month	> 1,5 years
	UIC INTERNATIONAL UNION OF RAILWAYS	UIC members	Rail companies	Rail	Passengers, freights, infrastructure ...	Year, quarter	> 1 year (flash ~ 6 months)
	UNITED NATIONS UNCTAD	World	Ports	Maritime	Movements, passengers, freights	Year, quarter	> 3 months
	Central Intelligence Agency	World	Various	All modes	Passengers, freights, infrastructure ...	Year	> 3 months
	UNECE	World	Various	Land transports	Passengers, freights, infrastructure ...	Year	> 1,5 years

# World passenger air traffic evolution



# World passenger air traffic: the impact of Covid-19

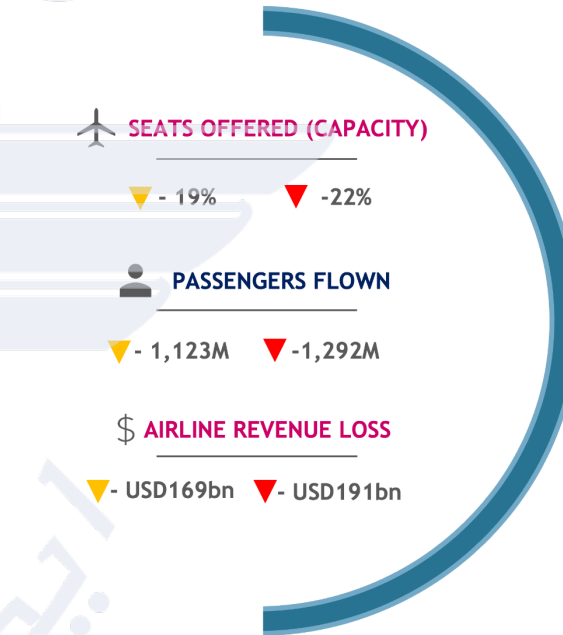
## YEAR 2020 RESULTS



## FULL YEAR 2021 RESULTS

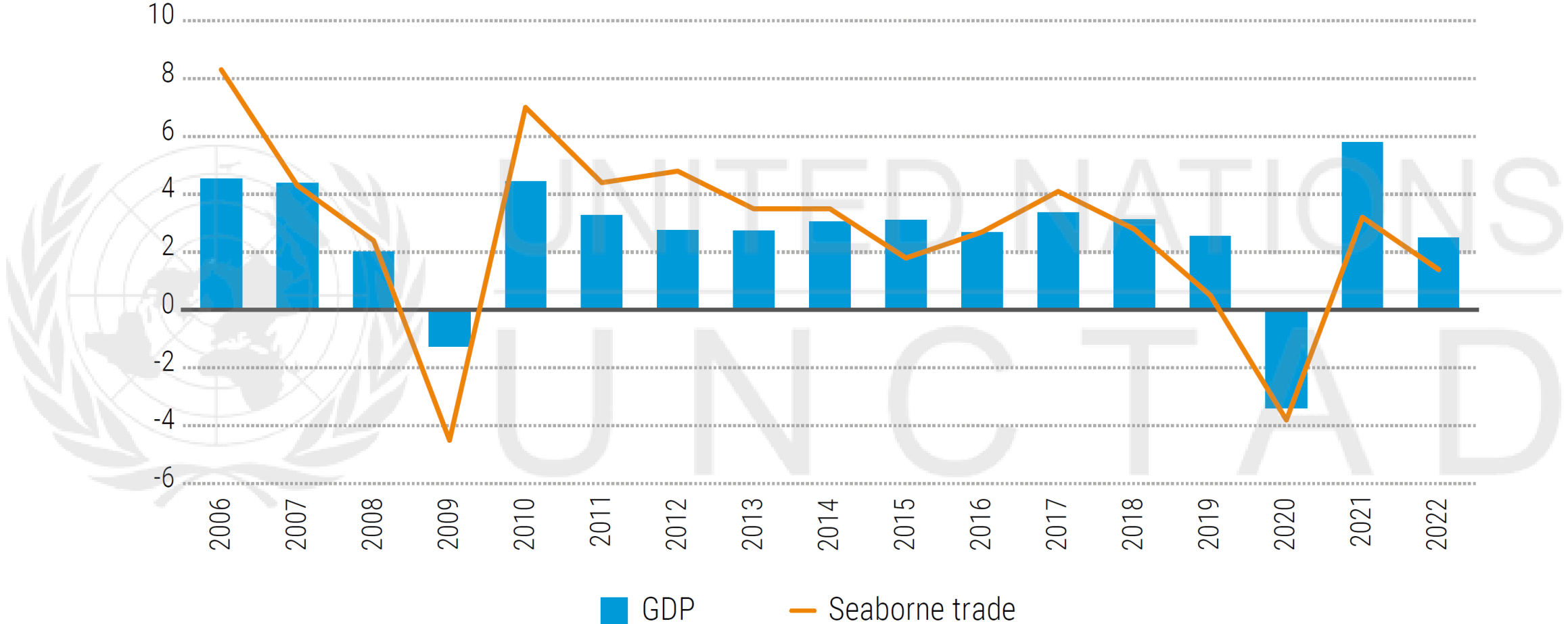


## Year 2022 Outlook



# International maritime trade and world GDP (% annual change)

Maritime trade recovered in 2021, but in 2022 faces a complex operating environment fraught with risk and uncertainty



# Main national data surveys from official statistics network

## 1 - Behavioural data



Source	Survey	Target	Modes	Units	Data time reference	Publication delay
Istat	Population Census	People	All	Trips for work and study reasons	Year	< 6 months
Istat	Time spent	People	All	Daily activities	Year	< 6 months
Istat	Daily life	People	All	Daily activities	Year	< 6 months
Istat	Travels and holidays	People	All	Trips for other reasons	Year	> 6 months
ISFORT	Audimob	People	All	All trips	Year	< 6 months



# Main national data surveys from official statistics network

## 2 - Flow data

	Source	Survey	Target	Modes	Units	Data time reference	Publication delay
www	Istat	Air transport	Airports	Air	Movements, passengers, freights	Year, quarter	~ 6 months
eurostat	Istat	Rail transport	Companies	Rail	Movements, passengers, freights	Year	> 6 months
	Istat	Maritime transport	Ports	Maritime	Movements, passengers, freights	Year	> 6 months
	Istat	Road freight transport	Companies/ Owners	Road	Freights by distance class	Year	> 6 months
	Istat	Road flows	Road network managers	Road	draft	draft	draft

# Main national data surveys from official statistics network

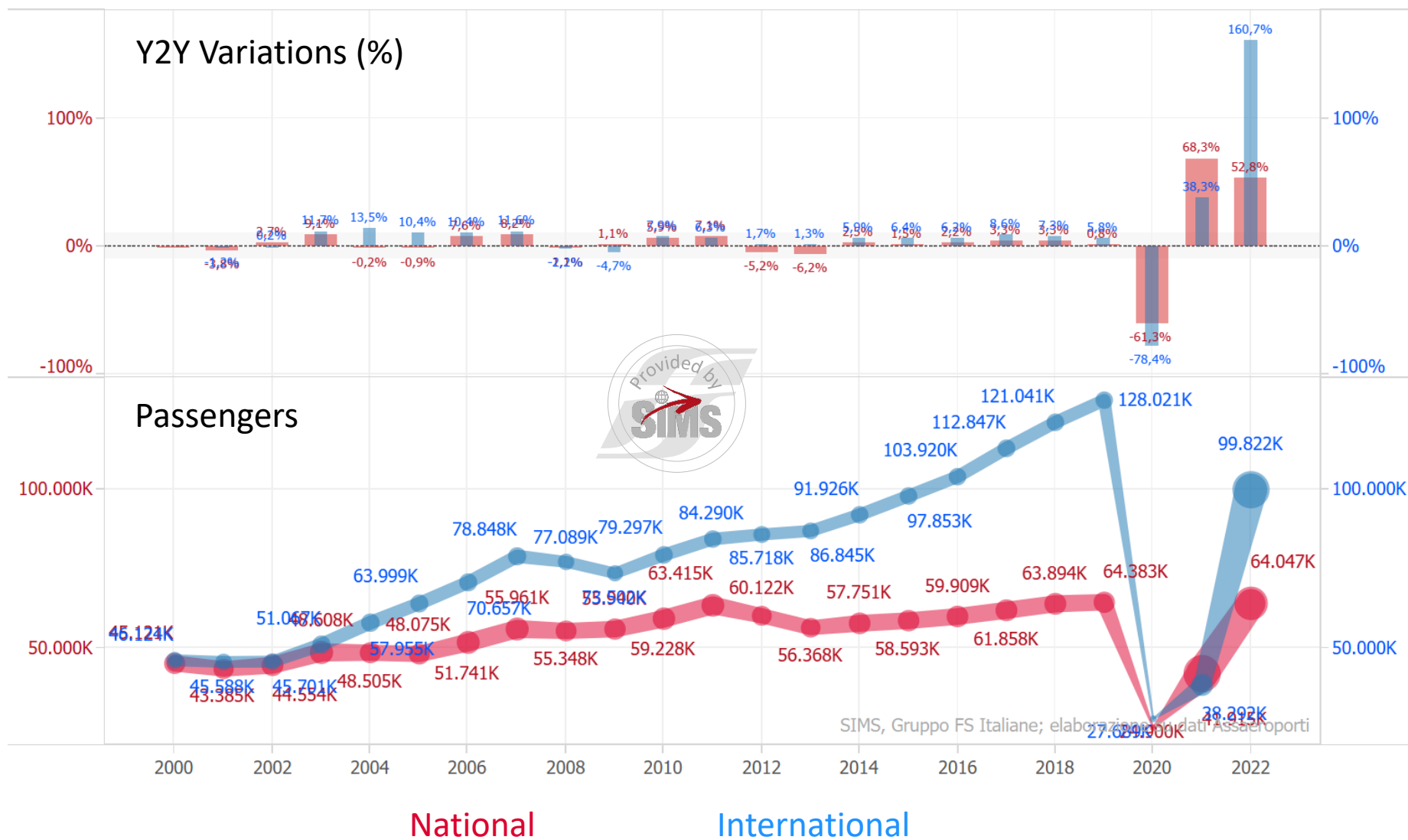
## 3 - Aggregated and asset data

	Source	Survey	Target	Modes	Units	Data time reference	Publication delay
		Urban environment	Municipalities	All	Transport supply and demand	Year	n.d.
		Sharing mobility	Various	Active, shared	Transport supply and demand	Year	n.d.
		Infrastructure and Transport National Account	Companies, Institutions	All	Transport supply and demand	Year	~ 6 months / 1,5 years
		Rail Market Monitoring (RMMS)	Transport Ministries	Rail	Railways supply and demand	Year	n.d.
		Various	Various	All	Infrastructure, services, economics, ...	year	n.d.
		Various	Users, institutions	Road	Vehicle fleet, accidents, fines, ...	Year	~ 3 months / 1,5 years

# Main national open data sources from associations

	Source	Boundaries	Target	Modes	Units	Data time reference	Publication delay
	ASSAEROPORTI Associazione Italiana Gestori Aeroporti	36 main airports	Airports	Air	Aircrafts, Passengers, Tons	Month	~ 1 month
	ENAC ENTE NAZIONALE PER L'AVIAZIONE CIVILE	All airports excluding small flows	Airports	Air	Aircrafts, Passengers, Tons	Year	~ 6 months
	ASSOPORTI	62 ports managed by Port Authorities	Ports	Maritime	Freights, TEU, RoRo, Passengers	Quarter Year	~ 3 months
	Aiscat	16 motorway companies, 4593 km	Road managers	Road	Vehicles, accidents	Month	~ 4 months

# Air passengers evolution, source:



# Road vehicles flows, 3<sup>rd</sup> quarter 2022, source:



Scegliere il dato da visualizzare:  
**Veicoli-km in milioni - Da inizio anno**

(GE) Voltri-Gravellona Toce (tratto Alessandria-..	775
(GE) Voltri-Gravellona Toce (tratto Voltri-Alessa..	765
(VE) Mestre - Belluno	573
A4 (da Padova est a intercon. est con A57) e A57 ..	1.366
Ancona - Pescara	1.480
Aosta-Traforo M.te Bianco	89
Asti-Cuneo	118
Bologna - Ancona	4.326
Bologna - Firenze	1.499
Bologna - Padova	1.477
Brennero - Modena (tratto Brennero-Verona)	2.791
Brennero - Modena (tratto Verona-Modena)	1.156
Brescia - Padova	3.770
Brescia-Milano	385
Canosa-Bari-Taranto	631
Caserta-Nola-Salerno	665
Collegamento Firenze-Roma e Roma-Napoli	488
Diramazione A8\A26	376
Firenze - Pisa nord	1.143
Firenze - Roma	3.923

# Maritime freight traffic, source:



Movimenti (sbarchi+imbarchi+trasbordi) - Totale Tonnellate Merci - 2021

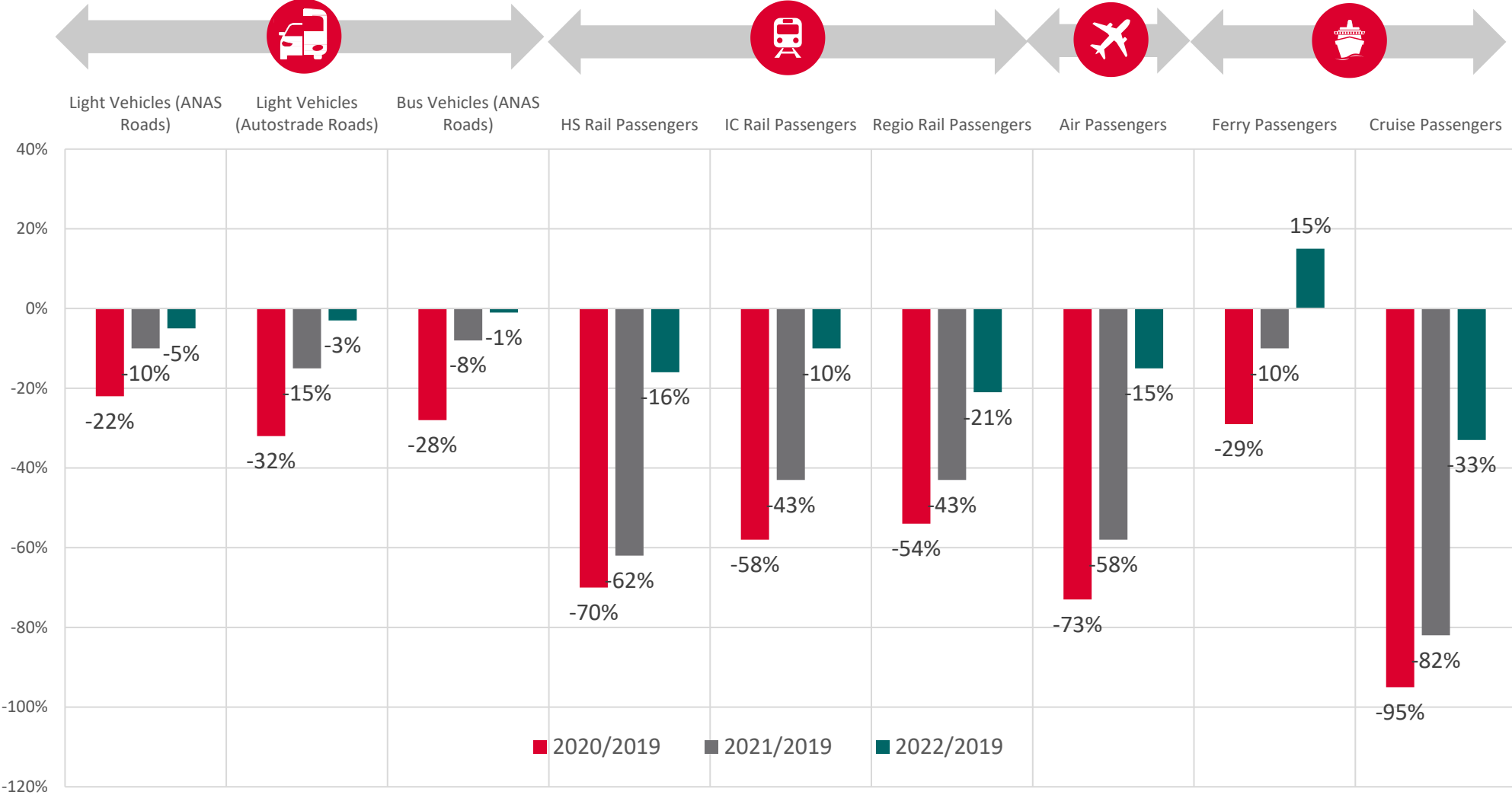
1	Trieste	55.361.257
2	Genova	48.831.609
3	Gioia Tauro	38.559.302
4	Livorno	34.346.072
5	Cagliari-Sarroch	31.222.358
6	Ravenna	27.100.051
7	Augusta	25.115.902
8	Venezia	24.204.875
9	Napoli	17.889.855
10	Taranto	17.529.183
11	Salerno	15.485.225
12	Savona-Vado	13.943.725
13	La Spezia	13.061.658
14	Ancona-Falconara	10.820.626
15	Civitavecchia	9.650.607
16	Catania	8.064.127
17	Palermo	7.637.948
18	Brindisi	7.626.732
19	Bari	7.304.428
20	Olbia	6.819.011



# Recapping data

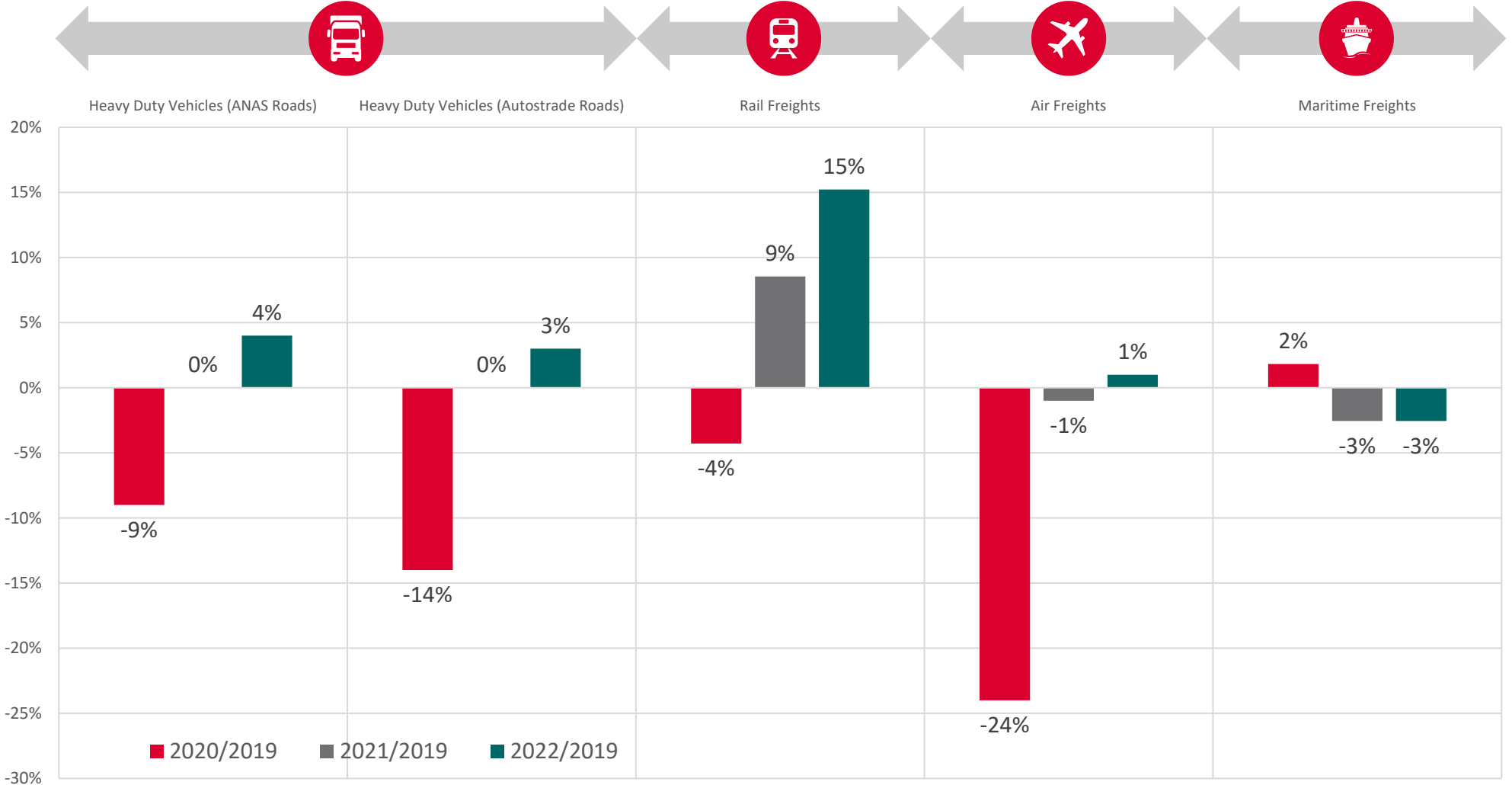


# Passenger traffic increase after the pandemic outbreak





# Freight traffic increase after the pandemic outbreak



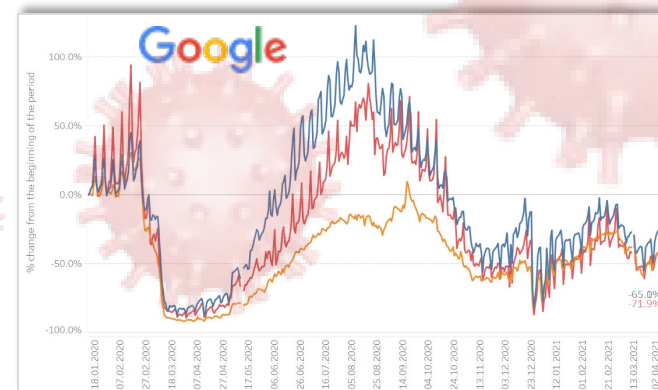
# A missed opportunity: resizing open data after pandemic

After the outbreak emergency, these data aren't available any more

**Apple Maps**

## Mobility Trends Reports

As of April 14, 2022, Apple is no longer providing COVID-19 mobility trends reports.



**McKinsey & Company**

## WORLD TRAVEL AND TOURISM COUNCIL

### Travel Demand Recovery Dashboard

The Travel Demand Recovery Dashboard consists of three interactive dashboards:

- Regional overview of online travel searches
- Regional overview of online travel bookings
- Movement and bookings

**Methodology:** Data sourced from Google trends have been categorized into segments further referenced as Adventure, Culture, Urban, Family, Sun & Beach, Travel Services. Each of the segments had been constructed through putting together a set of ~20 keywords, covering popular activities, sites and destinations. Example keywords include mountain and camping for Adventure, art and theater for Culture, city and attraction for Urban, theme park and water park for Family, beach and surf for Sun & Beach, bus and hotels for Travel Services. Language of origin country has been accepted for its country data excepting not only in English, but also in Arabic, French, German, Italian, Japanese, Portuguese and Spanish. Considered set of countries does not include China due to Great Firewall.

**Disclaimer:** The data provided is an AD-ID. WHERE IS basic information in the dashboard is derived from OTD, FerrovieRiviera, Covid-19, its licensors, and from public sources, without having verified the same. STI, FerrovieRiviera, Global Rescue, its licensors, do not represent or warrant that the information contained in this dashboard is complete or free from errors and do not assume, and expressly disclaim, any liability to any persons or entities for any loss or damage caused by the use of the data and/or errors or omissions in the data. The dashboard is provided for informational purposes only. The dashboard is provided for informational purposes only. The dashboard is provided for informational purposes only. The dashboard is provided for informational purposes only.

**UNWTO TOURISM DASHBOARD**

## INTERNATIONAL TOURISM AND COVID-19

A compilation of data on country, regional and global level or of COVID-19 on tourism, alongside an impact assessment on the impact of COVID-19 crisis on tourism.

12.05.23  
Latest update

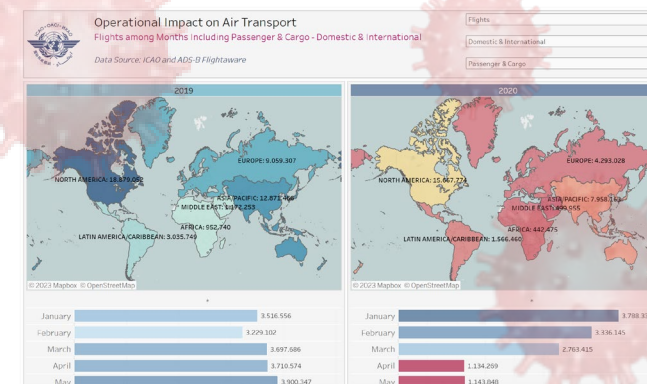
Methodological Notes

**SELECT AN AREA**

- Home
- Tourism Results by Region
- Tourism Results by Country
- Monthly Change
- Year-to-Date change
- Vulnerability of Destinations

**OTHER UNWTO DASHBOARDS**

- International Tourism
- UNWTO Recovery Tracker
- UNWTO/IATA Easy Travel
- COVID-19: Measures to Support Travel and Tourism



# Anyway, something else is coming soon....



May 2023, with 2023 1<sup>st</sup> quarter data



24<sup>th</sup> May 2023 at the ITF Summit



July 2023, with 2021-2022 data

# New opportunities



# New sources: Big Data and Smart Trusted Statistics



# Big Data sources for mobility

		Update	Sample	Causal info	Reason	O-D	Transport modes	Spatial resolution	Trip time	Trip frequency	Cost
TRADITIONAL	Survey censuarie	Occasional	Complete	Yes	Yes	Yes	Yes	Limited	Limited	Limited	High
	Survey campionarie	Occasional	Limited	Yes	Yes	Yes	Yes	High	Limited	Yes	High
BIG DATA	Mobile phones data	Continuous	Big	No	No	Yes	No	Grid	Grid	Yes	Low
	Floating car data	Continuous	Limited	No	No	Yes	Limited	High	Yes	Yes	Low
	GPS (app) data	Continuous	Big	No	No	Yes	No	High	Yes	Yes	Low
	Wi-fi field data	Continuous	Limited	No	No	No	No	High	No	No	Low
	Computer vision data	Continuous	Limited	No	No	No	Yes	High	No	No	High
	Social Networks Data	Continuous	Big	No	No	Yes	No	High	No	No	Low
	Smart card & detectors	Continuous	Big	Limited	No	Yes	Yes	Yes	Yes	Yes	Low
	GTFS & supply data	Continuous	Big	No	No	No	Yes	Yes	Yes	Yes	Average
	Transport Industry data	Continuous	Big	Yes	Yes	Yes	Yes	High	Yes	Yes	Average

# Data analysis from mobile phone data: a quick example

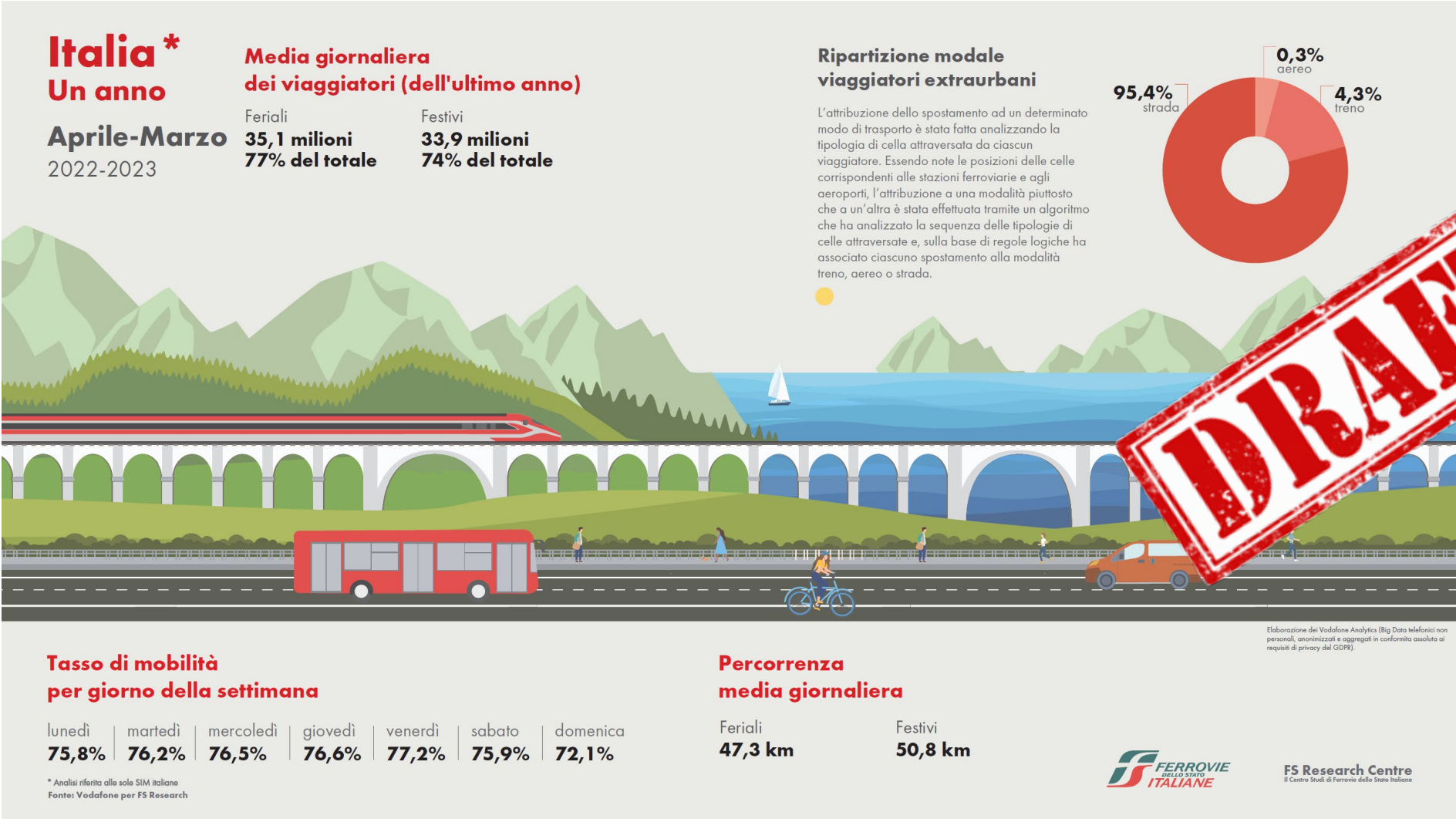
The screenshot shows the website interface for the FS Research Centre. At the top left is the logo for FERROVIE DELLO STATO ITALIANE. The navigation menu includes: Il Gruppo FS, Investor Relations, Sostenibilità, Innovazione, Opere Strategiche, Centro Studi (highlighted), Digital Projects, and Media. A search icon is located on the right. The main content area is titled 'Centro Studi' and contains a grid of links: 'La mobilità in Italia', 'Attività', 'Centro Nazionale per la mobilità sostenibile', and 'Archivio pubblicazioni'. Two featured images are shown: one titled 'La mobilità in Italia' with a digital data visualization, and another titled 'Centro Nazionale per la mobilità sostenibile' showing a train. At the bottom, a banner features the text '12 talenti italiani. 12 opere d'arte. 4 Poli del Gruppo FS' over a background image of a fingerprint.

# Monthly travellers in a station: analysis of mobile phone data





# Monthly travellers in Italy: analysis of big mobile phone data



# Thanks for your attention

