

UNECE Transport Statistics Activities

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Secretary, Working Party on Transport Statistics (WP.6)

Presentation to Working Party on Rail Transport (SC.2)

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UNECE



**COVID-19
RESPONSE**

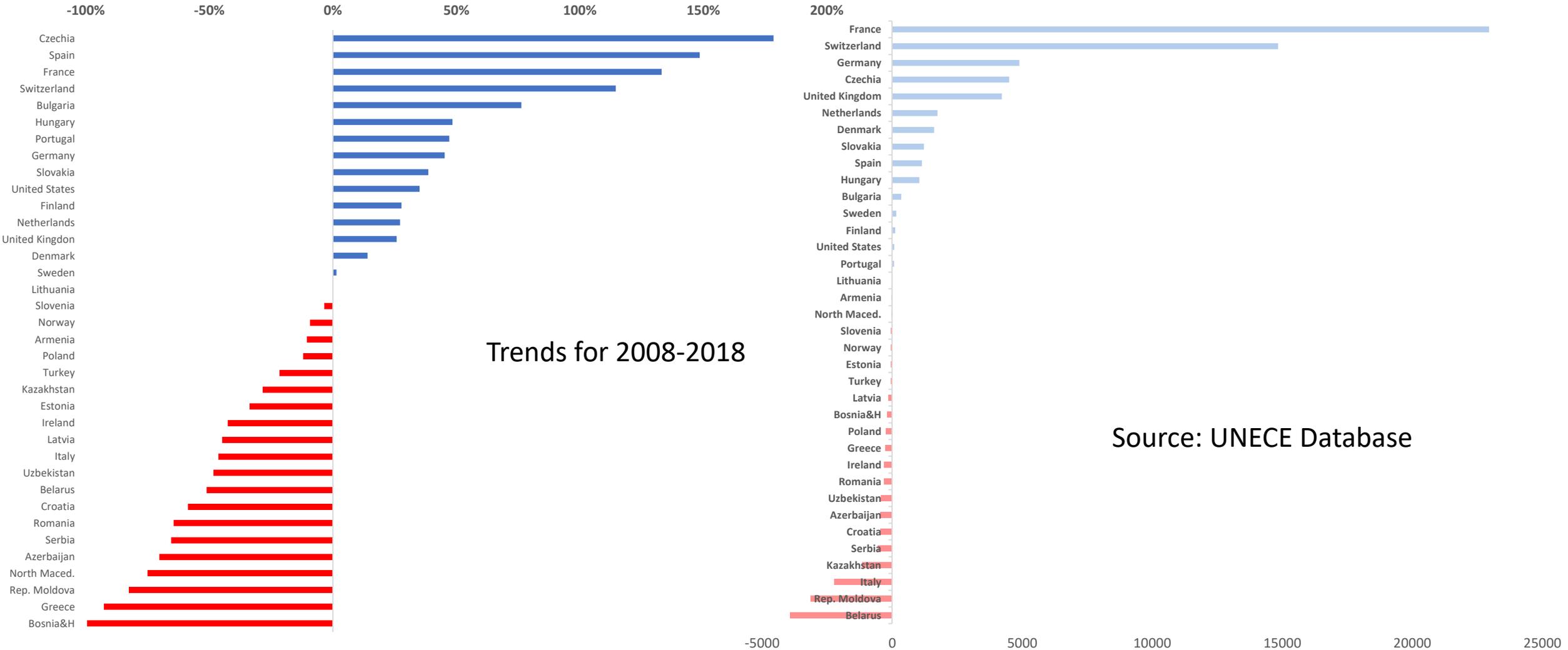


Overview

- International Rail Volumes: national-level data and visualisations of regional data
- WP.6 activities in 2020: Focus on short-term data and new sources to track COVID-19 impacts

International Rail passenger numbers

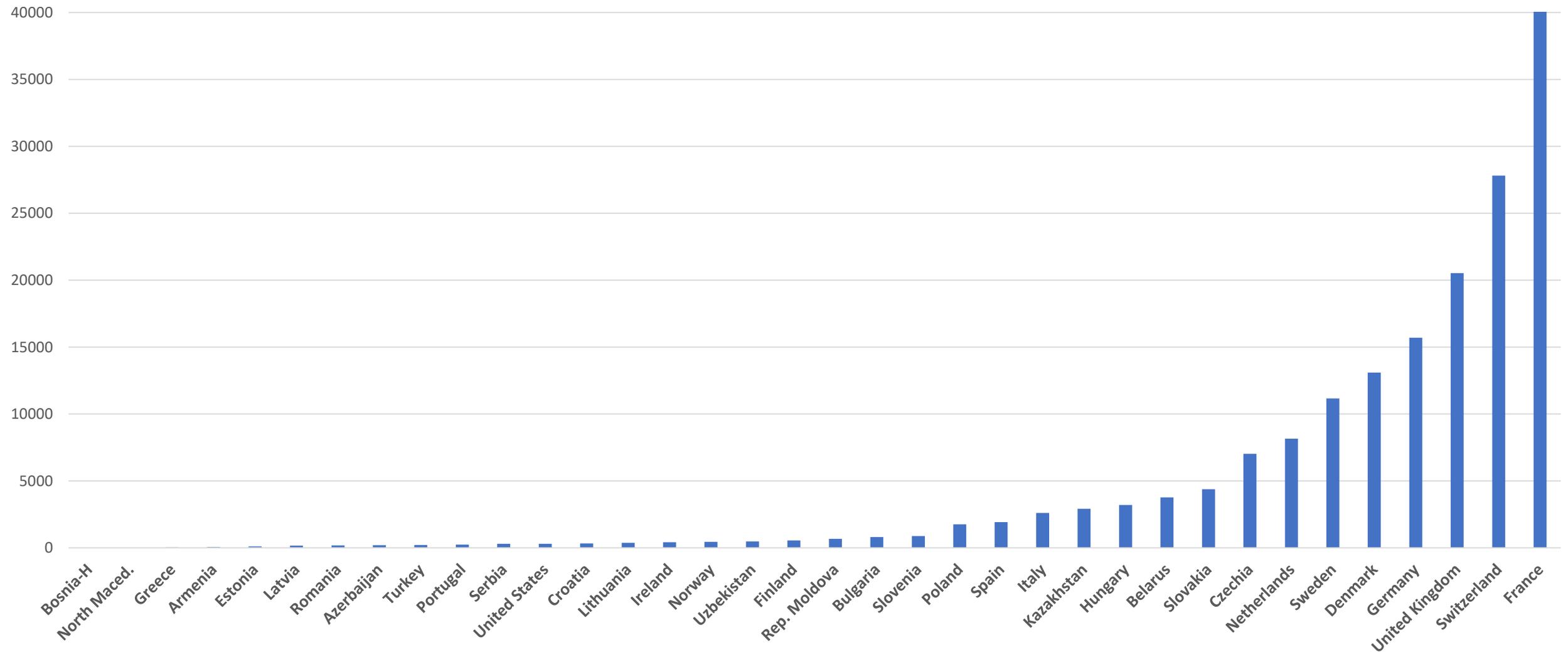
- Percentage changes in international rail passengers show strong growth for some countries but sharp declines for others. But many of the declines were in small markets, and in terms of overall numbers the trend is much more positive.



International Rail passenger numbers

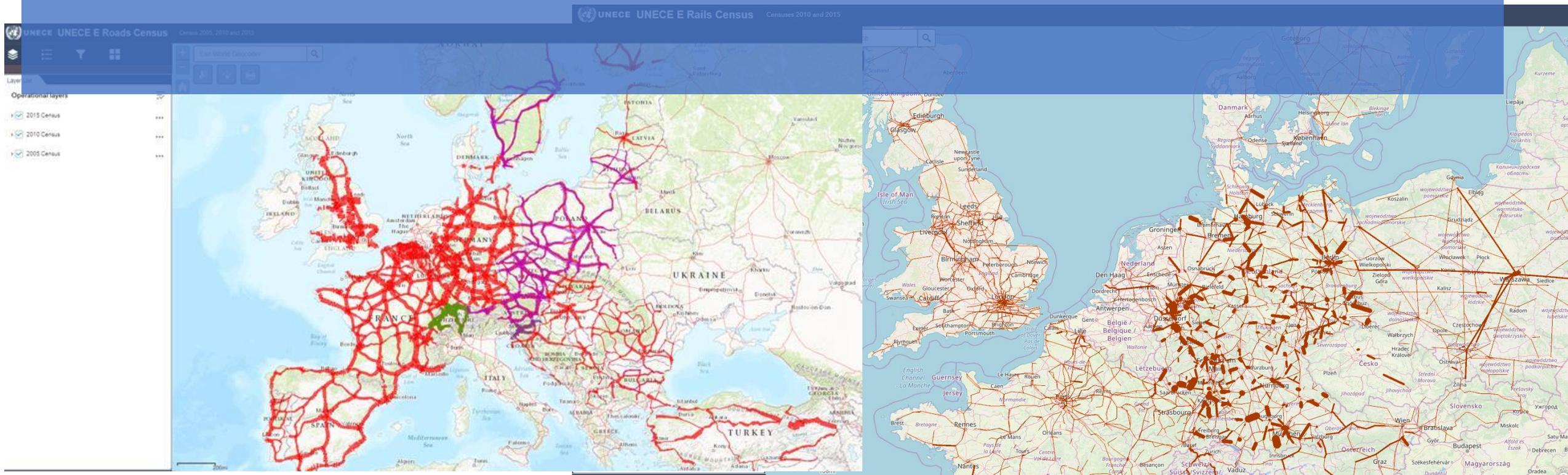
Thousands, 2018 or latest

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Background on Censuses

- UNECE for decades has collected road and rail traffic volumes every 5 years. This allows geospatial analysis of transport patterns, rather than just national-level summaries.
- Data cover numbers of trains (split between freight and passenger trains) per segment. Important uses, but passenger number figures often more useful for comparing specific origin-destinations.

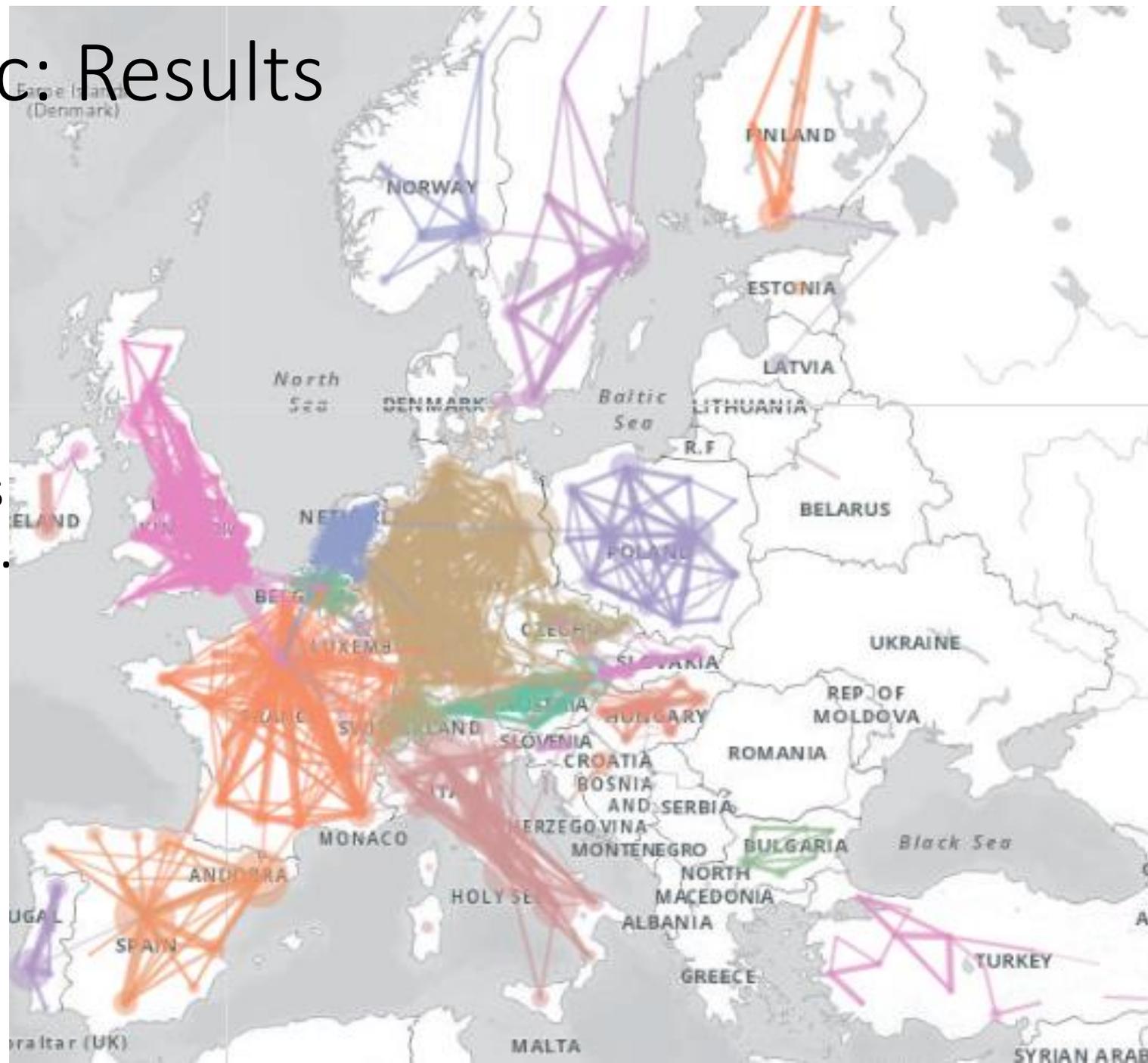


Visualising International Rail Traffic: Data Sources

- Eurostat has detailed country-level passenger data country-to-country on an annual basis
 - But some key country data are confidential: Austria, Belgium, Hungary, Netherlands...
- Regional data (NUTS2) also exist, but only collected every five years.
 - Give regional perspective (shows the balance between Capital cities and other regions)
 - Have the advantage of only needing data for one partner country in order to map an origin-destination pair, in cases of confidentiality.
 - But challenge of data inconsistencies when both countries provide data. Big differences (e.g. factor of 3) between sources, and sometimes data are not assigned to a region but just a country.

Visualising Rail Traffic: Results

- All passenger journeys: Interesting to see different shapes of traffic between e.g. France and Germany
- A few international connections are visible among the noise, e.g. Eurostar, Paris to Germany and Switzerland etc



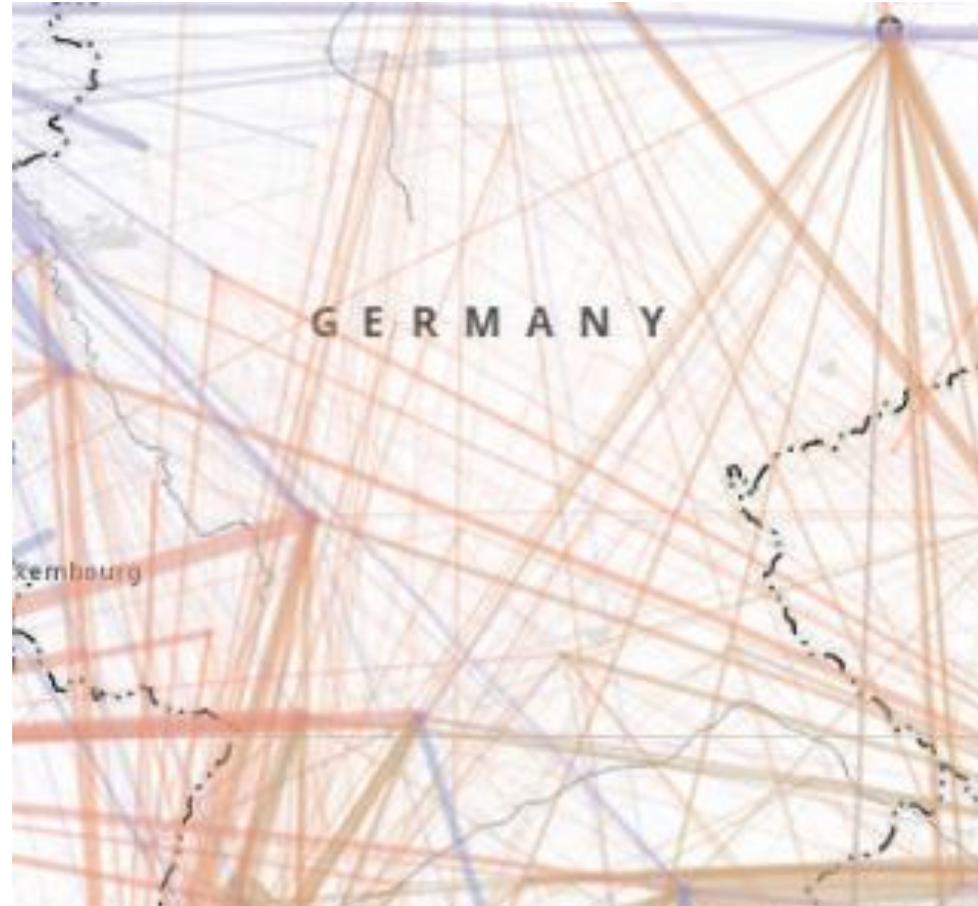
Visualising International Rail Traffic: National Totals

- (Thicknesses are transformed to allow very small quantities to be visible.)
- All volumes shows the main corridors between UK, France, Switzerland Germany etc.
- Biggest relationships:
 - UK-France
 - Denmark-Sweden
 - Switzerland-Germany
- EU/EFTA to Non-EU/EFTA Traffic volumes very small.
- Centroids of countries obviously don't reflect reality
- Contains some questionable routes (Switzerland-Japan)



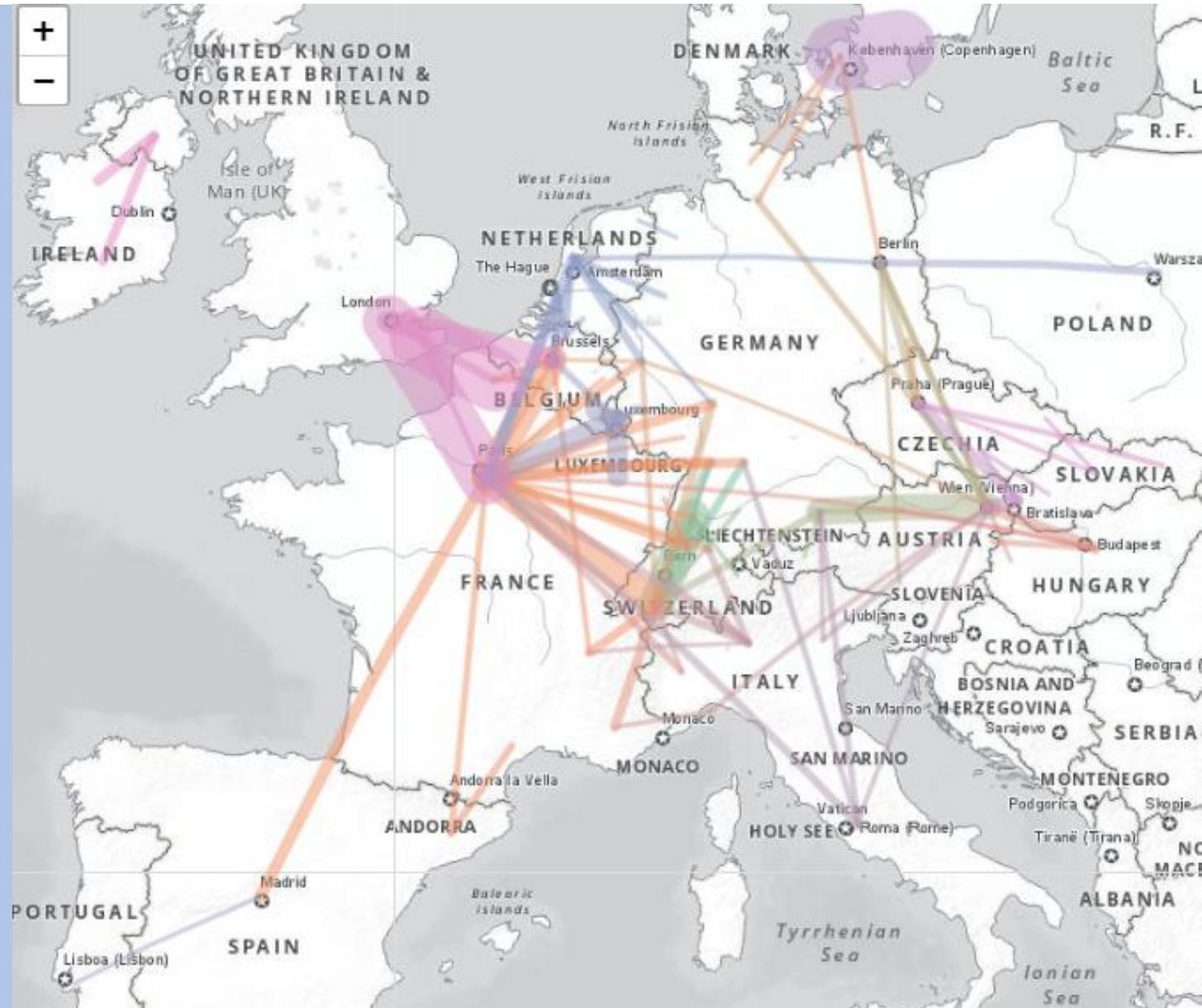
Visualising International Rail Traffic: Regional Breakdown

- Sheer number of connections makes analysis difficult, therefore a filter was applied of >100 thousand passengers a year.
- (100 000 passengers a year = 274 a day, not a huge number. But this does remove all international traffic from e.g. Slovenia.



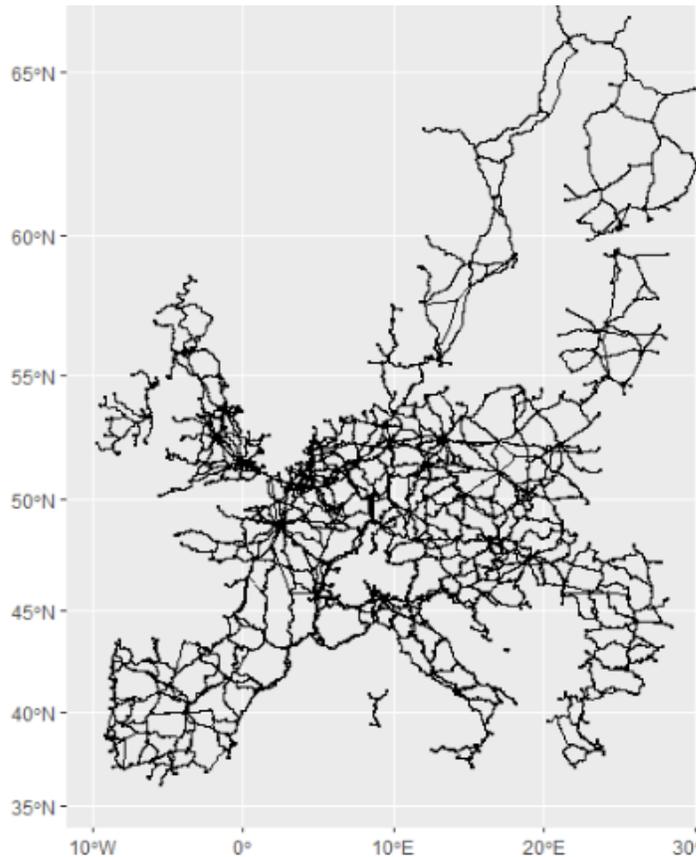
Visualising International Rail Traffic: Regional Breakdown

- Many assumptions necessary due to data gaps (e.g. Madrid-France traffic as Madrid-Paris, not Madrid-Hendaye).
- Top 10 connections:
 - Malmo - Copenhagen
 - Folkestone - Calais (Eurotunnel)
 - London - Paris (Eurostar)
 - Stuttgart - Geneva/Lausanne
 - Paris - Geneva/Lausanne
 - Paris - Brussels
 - Vienna - Munich
 - Paris - Luxembourg
 - London - Brussels
 - Luxembourg - Metz
- Highlights
 - importance of Paris as connector in North-West, and Vienna in Centre;
 - decentralized nature of traffic in Germany and Switzerland compared to e.g. France.
- Reminder: data for 2015 and not perfect



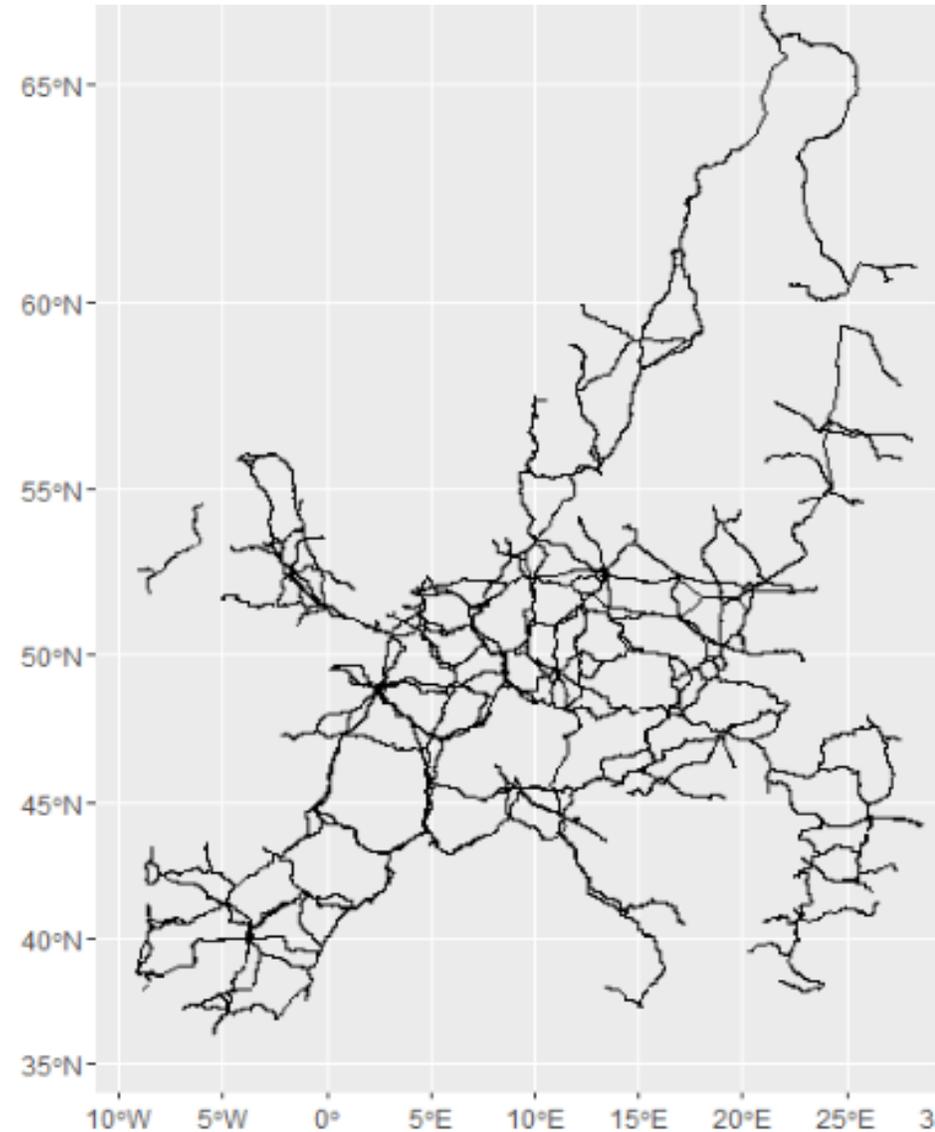
Can we apply these Volumes to the Real AGC Network?

Total Ten-T Rail Network



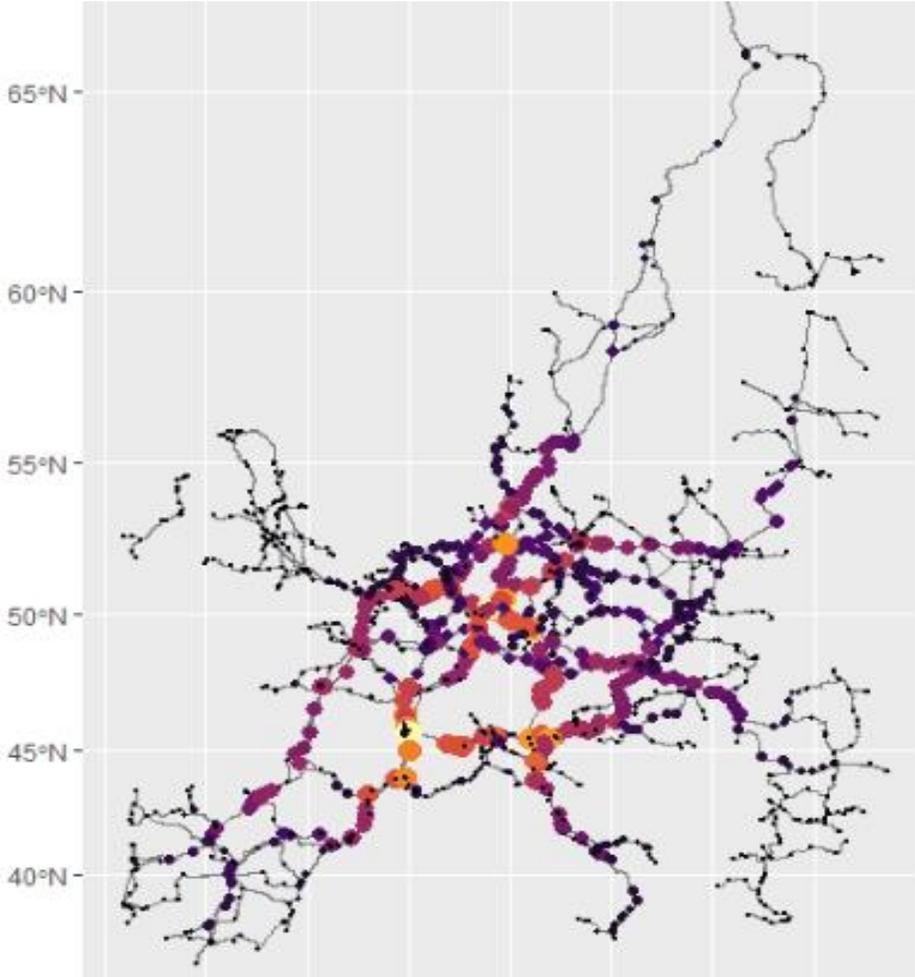
- Shapefiles of the AGC transport network are not available, but we do have the TEN-T network Shapefile, and the core network is distinguished.
- Problem: A Shapefile is not a network. “Line features do not know what they are connected to, but network elements do.”

TEN-T Core Network

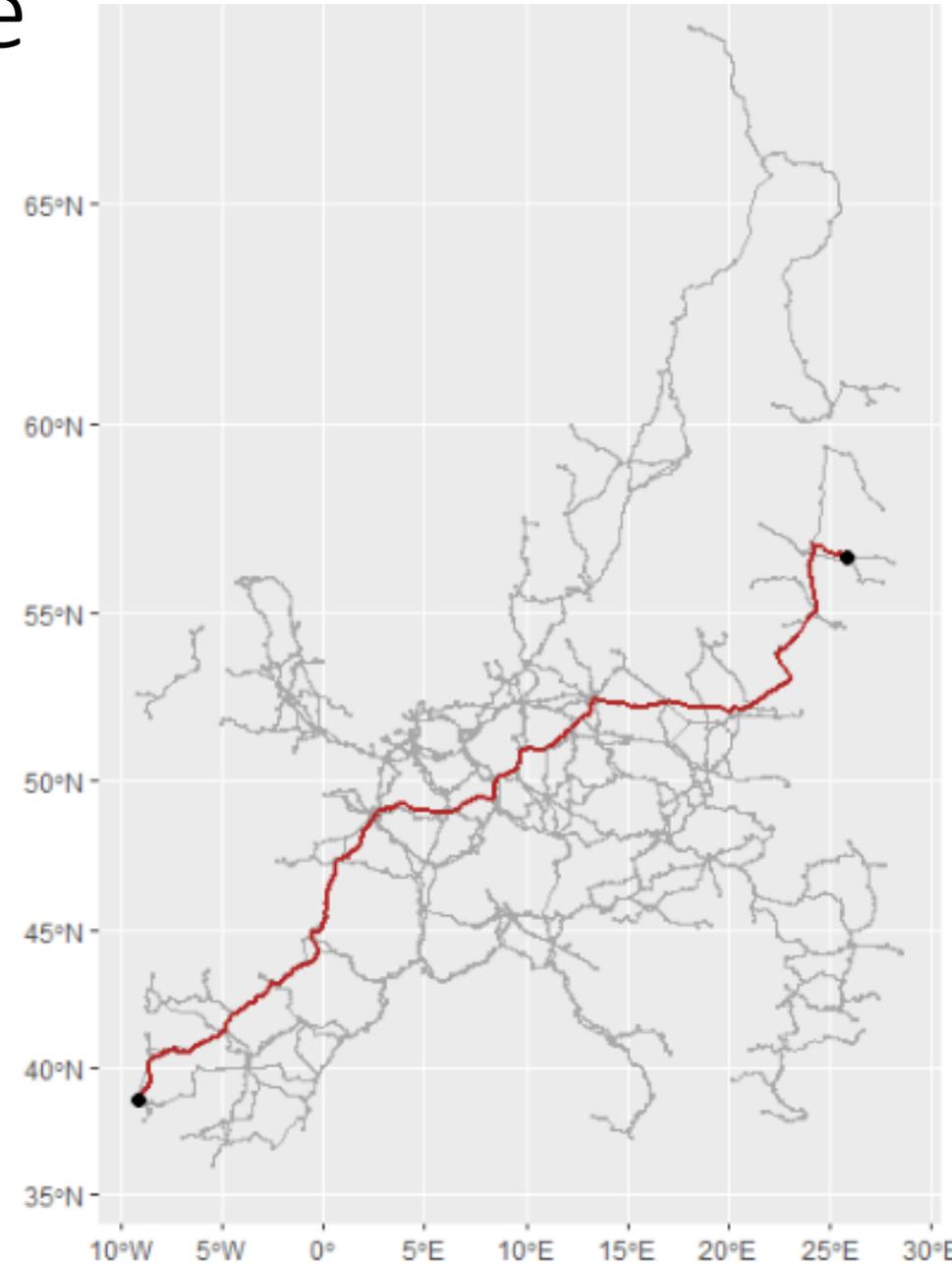


TEN-T Core Network Shapefile

Code is available for turning a Shapefile to a **network**, with nodes and edges. Distances between any two nodes can then be calculated. NUTS2 origin/destinations can then be applied to the network by connecting them to their nearest node. This will obviously not always follow geographical reality.



Next steps? Sum traffic across multiple routes to create a traffic map?



Data Collation on COVID19 transport impacts

- To maintain relevance, we wanted quick data from **official sources** on a fast evolving situation. This included provisional data and experimental statistics.
- Waiting 20 months for official, annual data will not help. An emergency questionnaire would not have been popular.
- Data collated and published at <https://wiki.unece.org/display/DSOCIOT/Data+Sources+on+Coronavirus+impact+on+transport>.
- Much Rail data available, including daily passenger index from UK, weekly and monthly data for other countries.

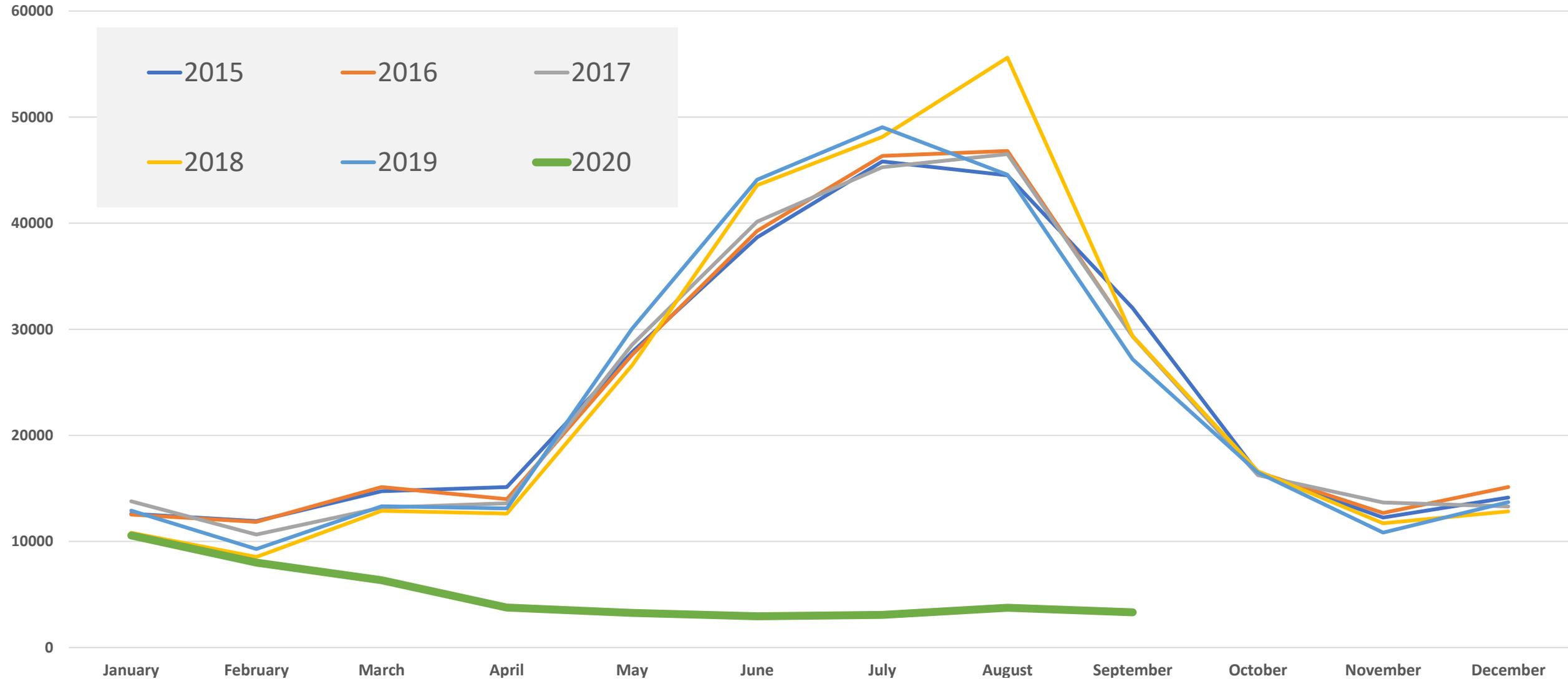


COVID-19
RESPONSE



Canada/USA Data: Impact of COVID-19

- With monthly international passenger data available, the COVID impact is clear and sustained on USA/Canada trips (monthly passenger numbers).



Summary

- Traffic censuses provide a useful geospatial analytical tool. SC.2 cooperation in obtaining 2020 rail census data as Shapefiles would be welcome.
- Using existing statistical data, a large amount of geospatial visualisations can be achieved for rail passenger analysis (international, or generally). **This can help identify future shift2rail opportunities**, especially when combined with e.g. road or flight data.
- Non-Eurostat countries: if similar regional data are available, similar analyses can be conducted. The analysis uses public datasets+open source software (code or output available on request).
- Collaboration on this with SC.2 delegates welcome.

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