Traffic Statistics: Uses and Visualisations

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ESCWA Transport Workshop.

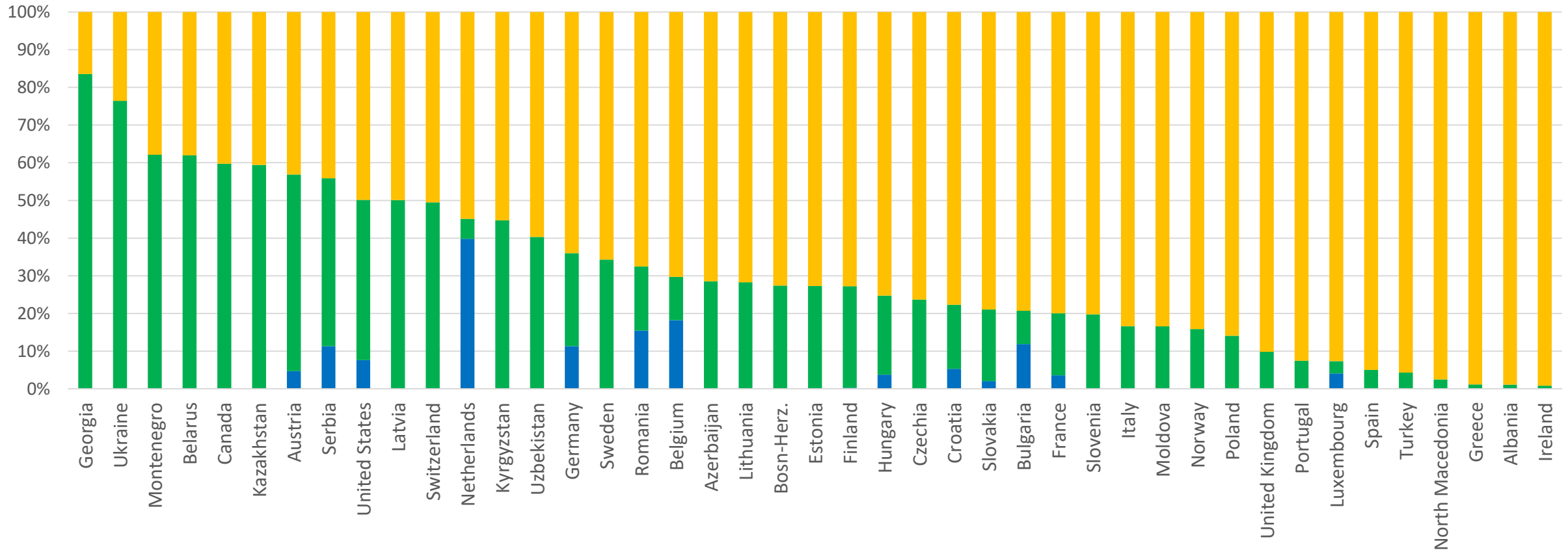*Beirut, 8-10 December 2020*

Uses of Transport Data

- Modal Split
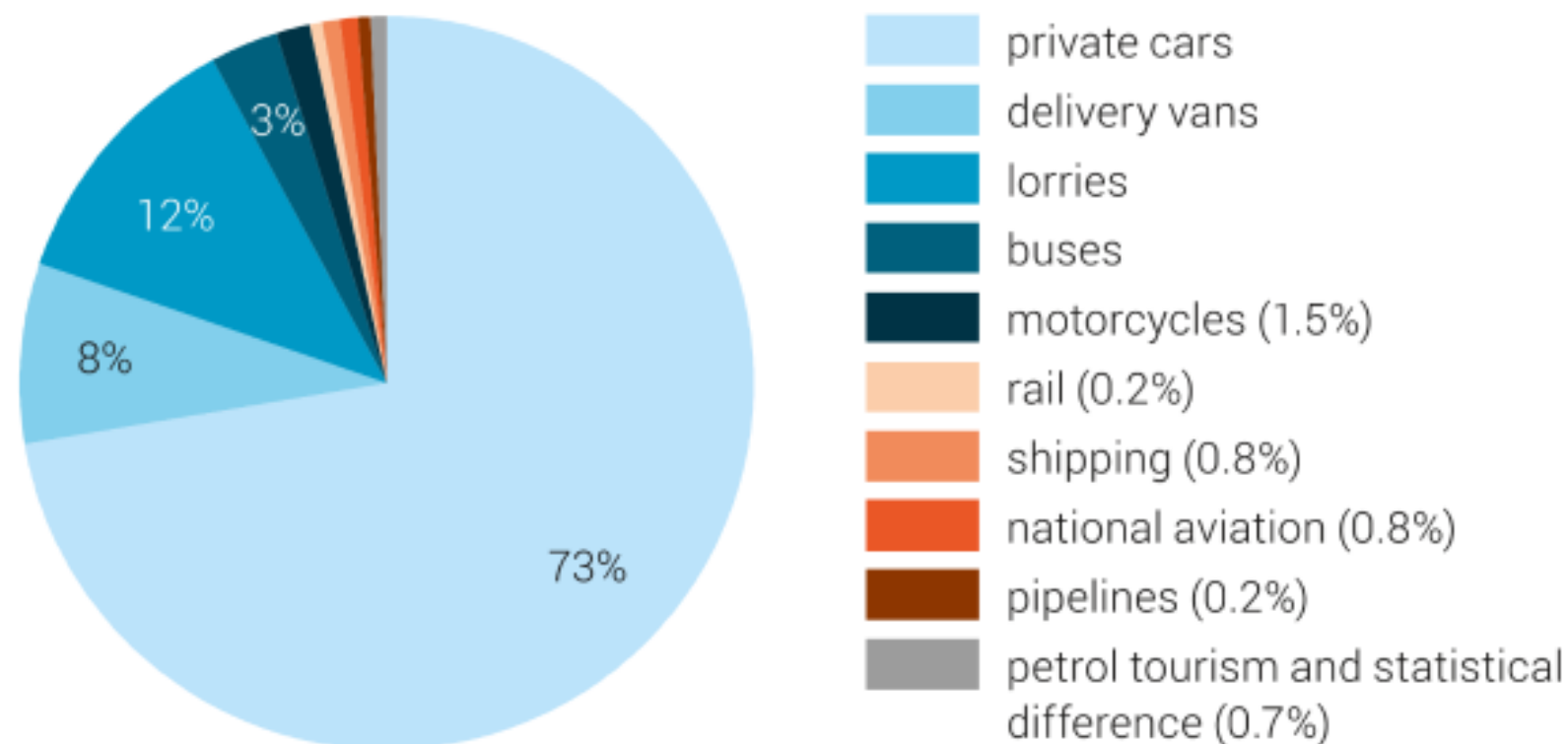- **Transport visualisations & Specific corridor analysis**

Why care about modal split?

Inland freight modal split, available ECE countries

iww ■ rail ■ road

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Climate Change

CO$_2$ emissions from transport by means of transport, 2018

Without international aviation

private cars — 73%
delivery vans — 8%
lorries — 12%
buses — 3%
motorcycles (1.5%)
rail (0.2%)
shipping (0.8%)
national aviation (0.8%)
pipelines (0.2%)
petrol tourism and statistical difference (0.7%)

total: 14.8 million tonnes

Source: FOEN – Greenhouse gas inventory

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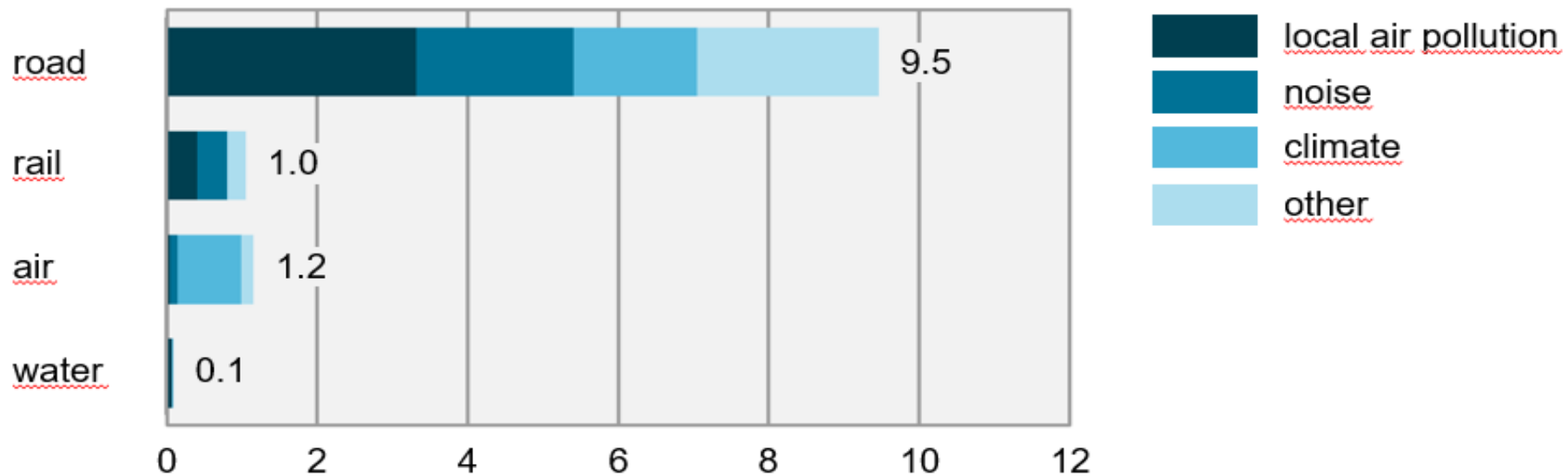
Environment and health

Safety, emissions, health, noise, cost, time/congestion?

Environmental and health costs of transport, 2015

CHF billion

road	9.5
rail	1.0
air	1.2
water	0.1

Legend:
- local air pollution
- noise
- climate
- other
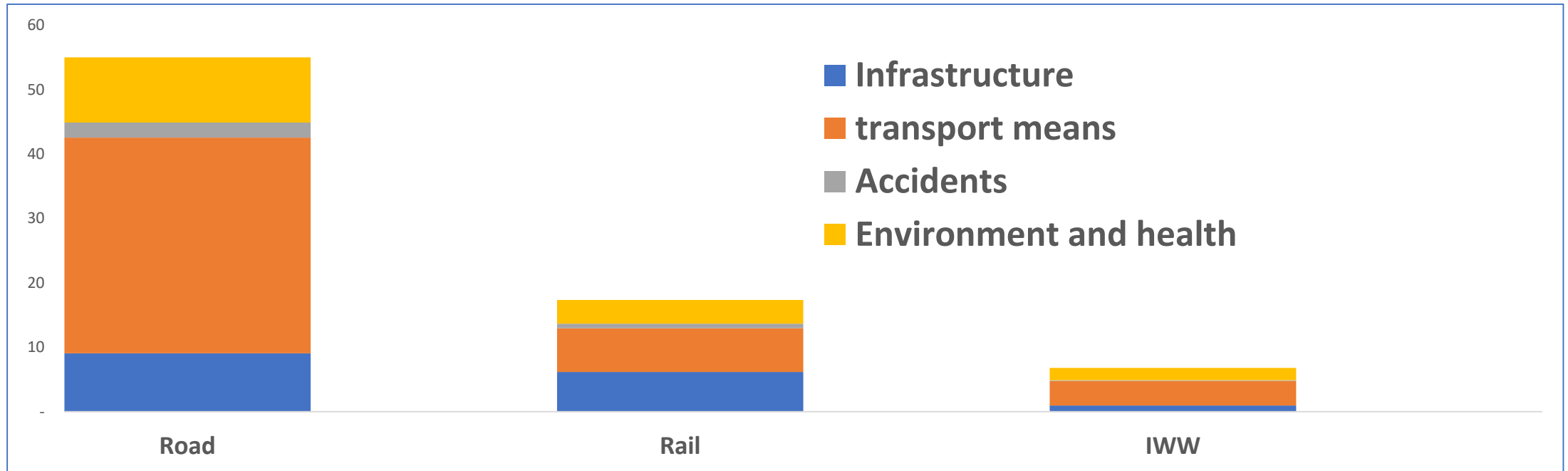
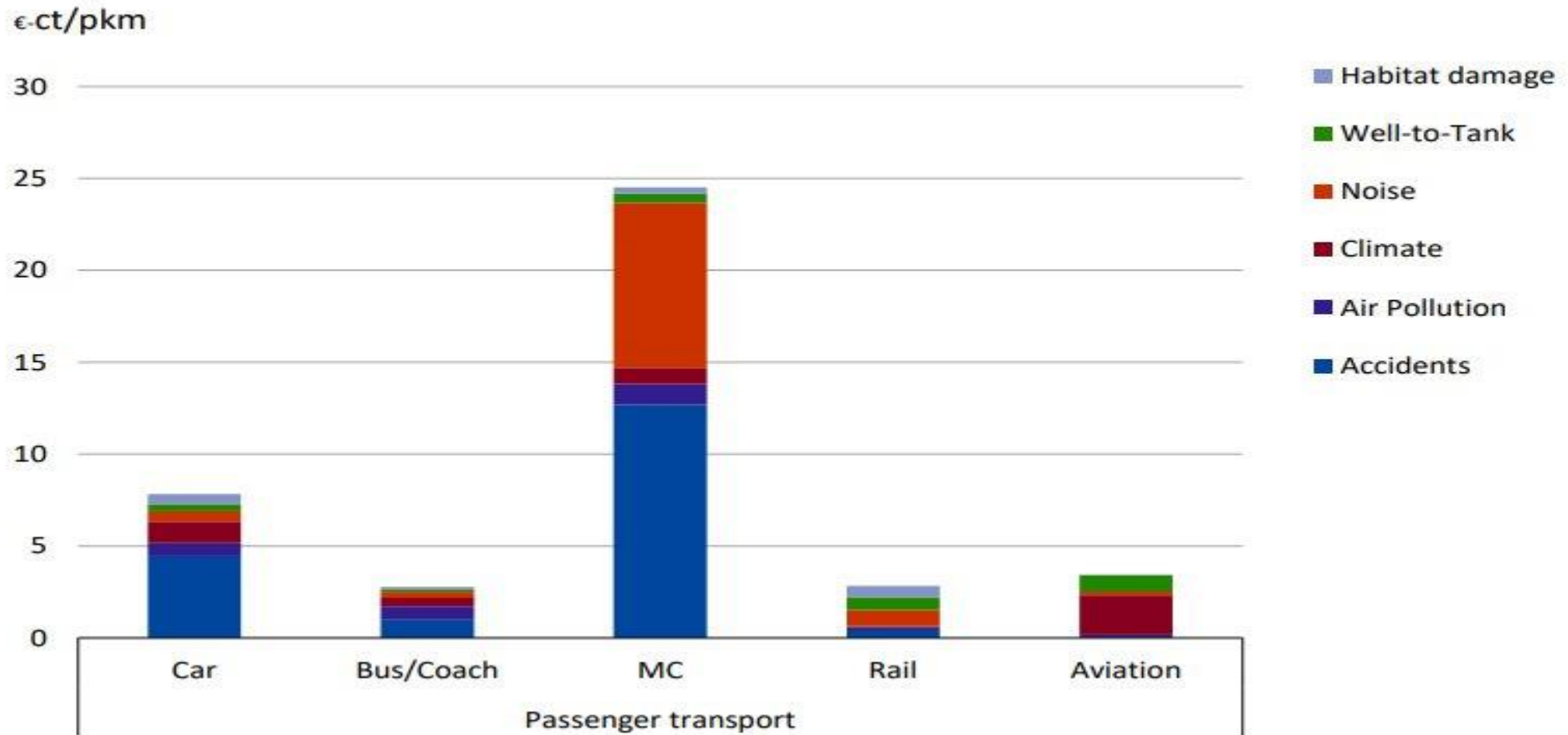From FSO Switzerland; statistik.ch

Why care About Freight Modal Split?

Cost of goods transport in Switzerland in cents per tonne-km. Reasons to measure modal split: differences in transport safety, emissions, health, noise, affordability and accessibility, time/congestion, space allocation in cities…

https://www.bfs.admin.ch/bfs/fr/home/statistiques/mobilite-transports/couts-financement.assetdetail.812-1600.html

All costs

Average external costs per mode at EU28 level - Passenger

€-ct/pkm

Legend:
- Habitat damage
- Well-to-Tank
- Noise
- Climate
- Air Pollution
- Accidents

Passenger transport: Car, Bus/Coach, MC, Rail, Aviation

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Statistical unit and gender questions

Number of passengers   **passenger-km**

What is the most important public transport mode in Switzerland?

- UK: Men make ~6% fewer trips than women, but travel 15% longer. Women take 10% more walking trips and 33% more bus trips. France: two-thirds of public transport users are women.

- Policy impact: women make more "trip chains" (e.g. home>school>work), which tend to be short. These rely on good walking and cycling environments, frequent PT connections, short-term parking etc.

- Statistics impact: measuring both trip numbers and passenger-km are important for a full understanding of transport.
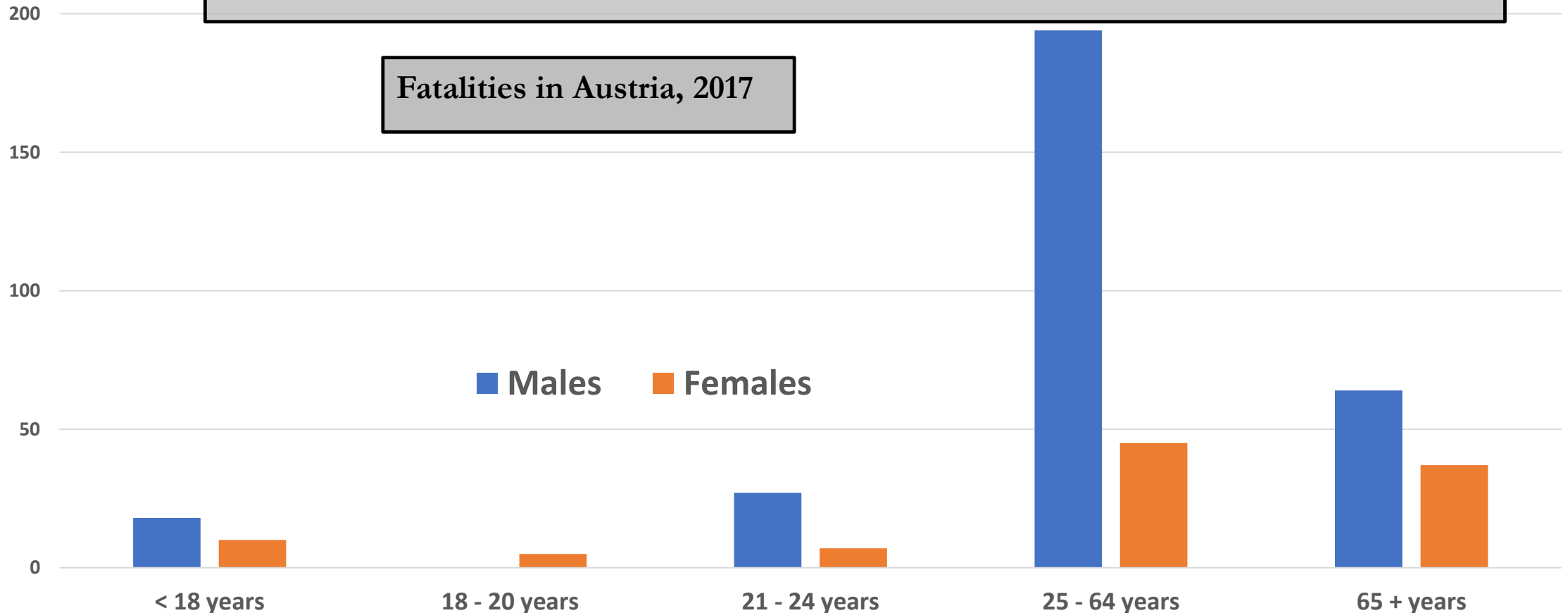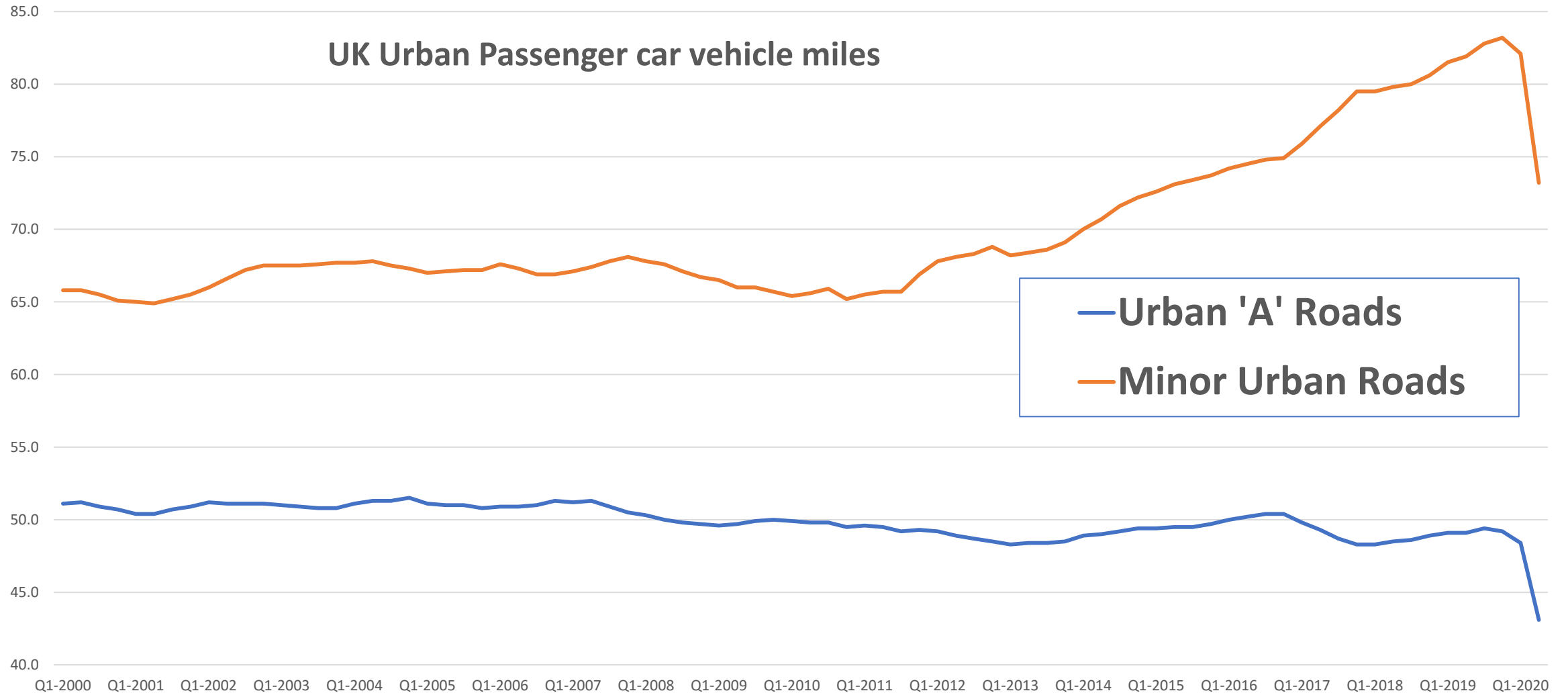
Age and Gender Aspects

Three quarters of road fatalities are men, but pedestrian fatalities are closer to 50/50. Understanding gender (and age, victim etc.) differences in data means policy tools can be better targeted.

Fatalities in Austria, 2017

■ Males ■ Females

| | < 18 years | 18 - 20 years | 21 - 24 years | 25 - 64 years | 65 + years |

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Where traffic happens matters

UK Urban Passenger car vehicle miles

Urban 'A' Roads
Minor Urban Roads

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Visualising traffic

UNECE E-Road census allows traffic volumes to be visualized over multiple countries.

Identifies most used corridors, can reduce bottlenecks, shows where to improve infrastructure.

Can identify modal shifting opportunities.
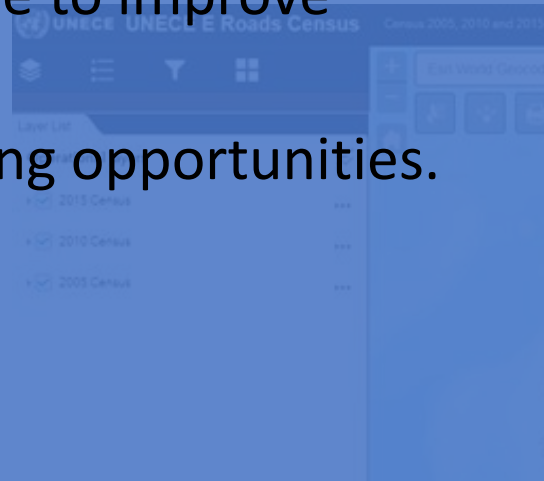
Visualising Rail Traffic: Passengers

- Data from Eurostat.

- Shows the value of collecting data at the sub-national level

- Note different shapes of traffic between e.g. France and Poland
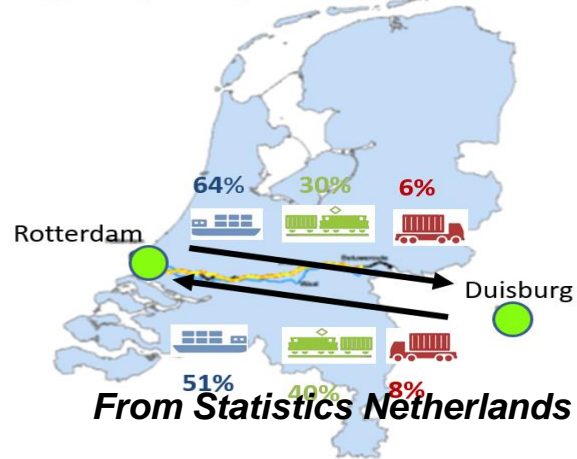

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Visualising International Rail Traffic

- Again, a useful visualization for identifying biggest journey pairs for logistics and modal shifting analysis
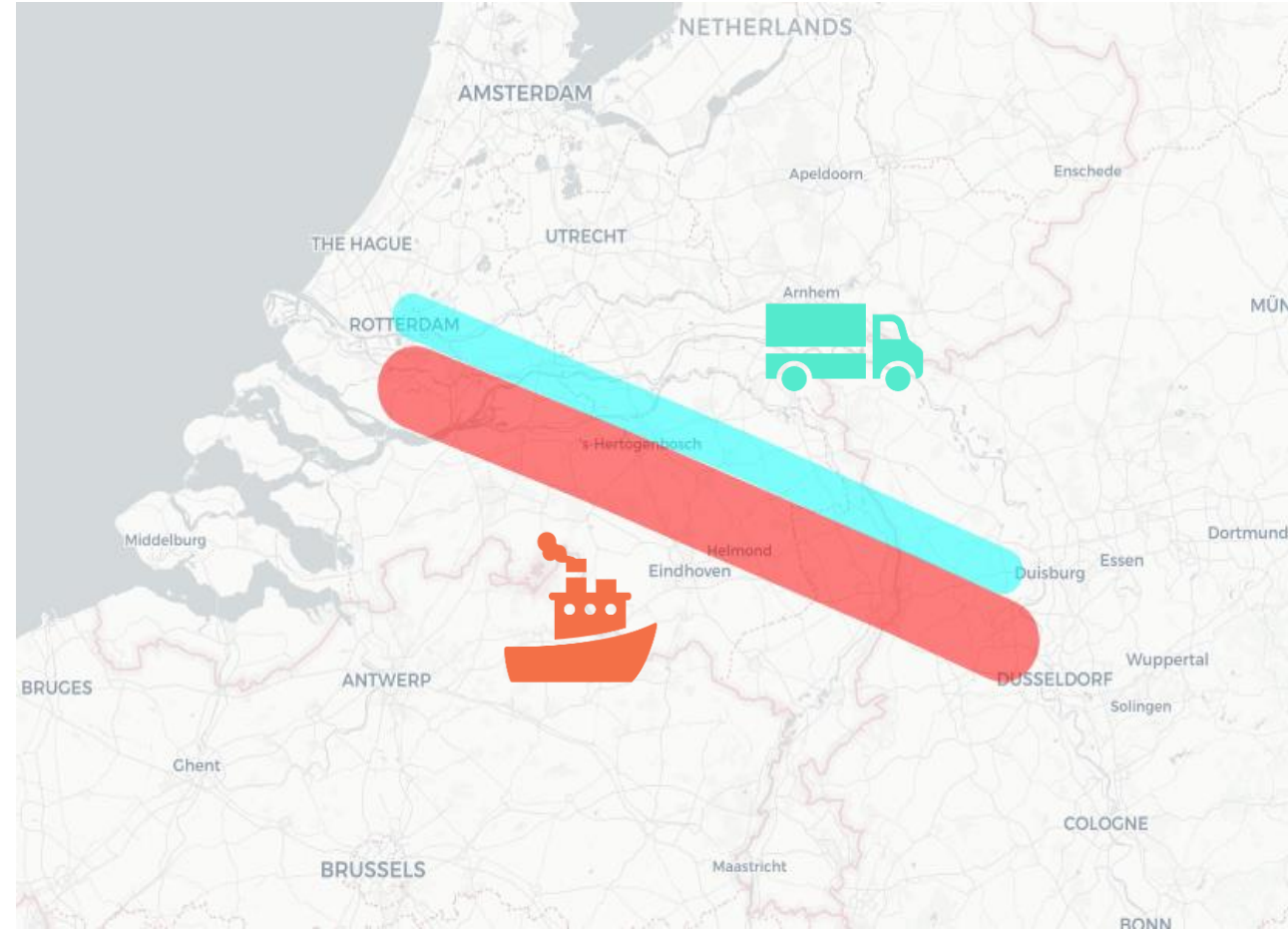

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Corridor analysis

Modal split (TEU) on TEN-T corridor, 2016

64% 30% 6%
Rotterdam
Duisburg
51% 40% 8%
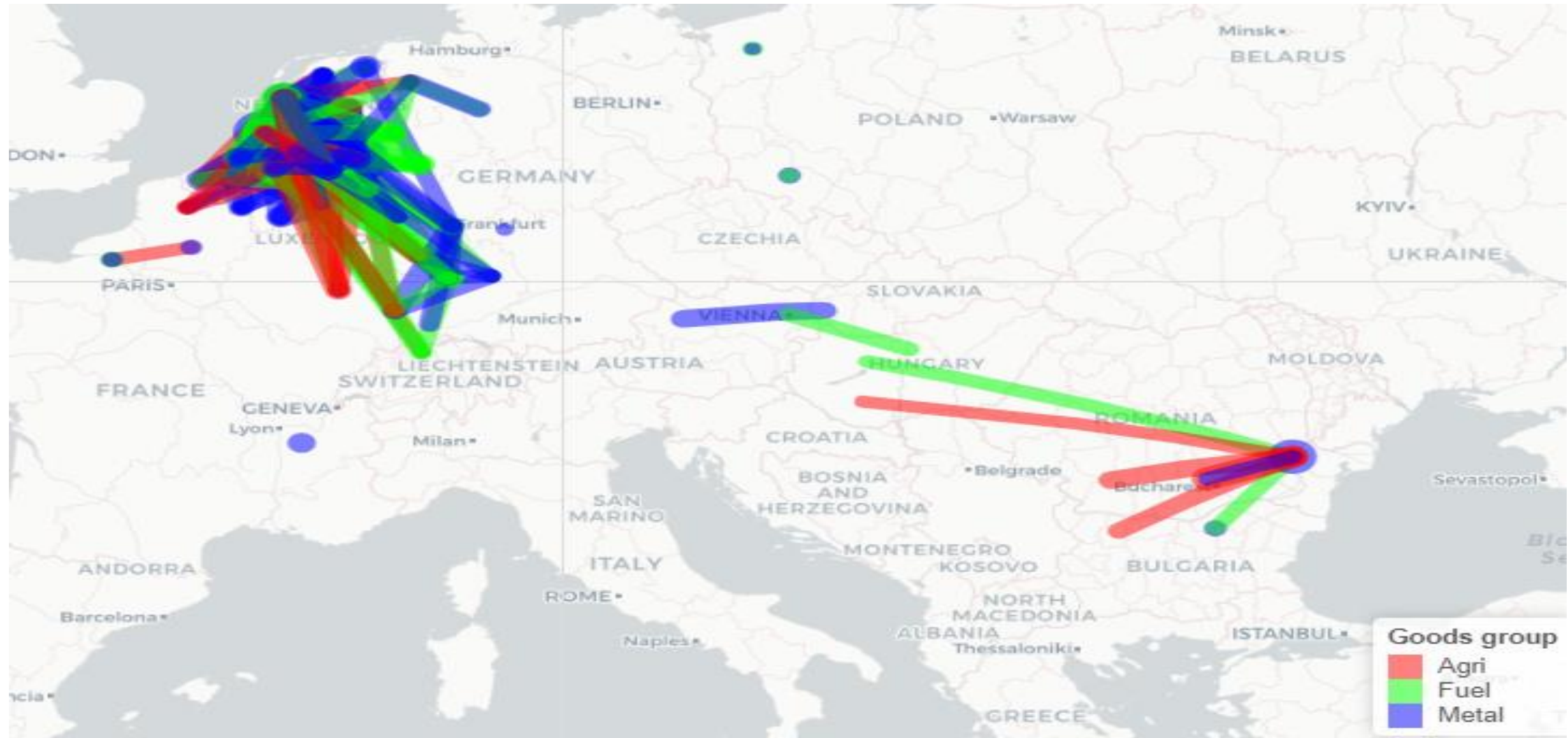
From Statistics Netherlands

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Modal split on specific corridors can help identify barriers to modal shifting opportunities to less polluting modes


From UNECE analysis of Eurostat data

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Analysis of specific goods possible


Goods group
- Agri
- Fuel
- Metal

Shapefiles

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.
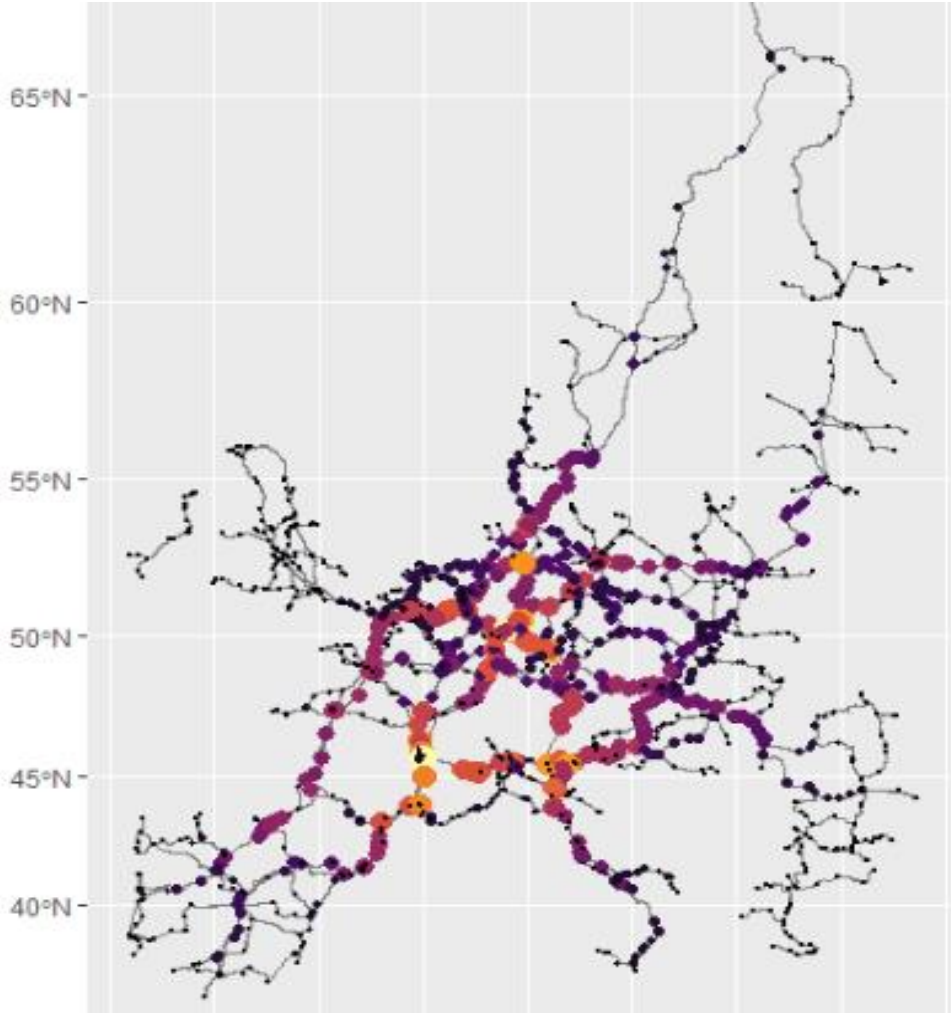
Also possible to sum traffic across multiple routes to create a traffic chloropleth map
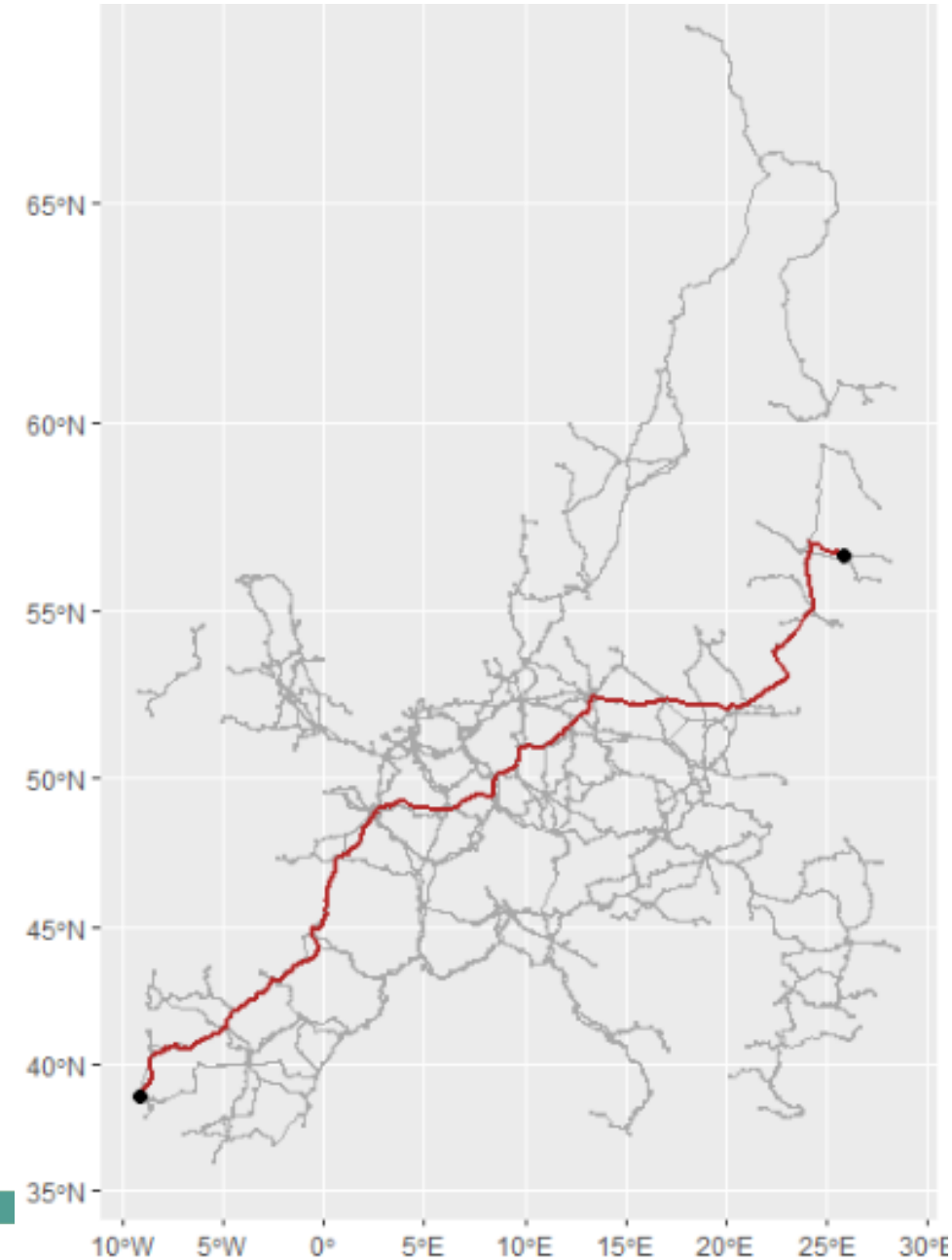
Summary

- There are many ways to visualize transport volumes. They are a useful tool to communicate to policy makers and the general public.

- Good visualisations show both the existing reality and future possibilities.

- Detailed visualisations require detailed data.

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