UNECE E-Road and E-Rail Censuses, and visualizing traffic volumes

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Overview

- Census background
- E-Road Census situation with 2015 data
- E-Rail census: 2015 data
- What to do for 2020?
- Data sources? Not always official statistics
- Uses of the Data
- Visualising other transport volumes in a geospatial environment, and potential uses

UNCE Traffic Censuses

- Censuses have been collected going back to the 1970s (road) every five years. Rail was added in 2005.

- Initial goal was to understand infrastructure quality and traffic levels on networks covered by UNECE infrastructure agreements, e.g. AGR (road).

- Networks similar (though not identical) to TEN-T core networks.

UNCE E-Road Traffic Census: Evolution

		Total E Roads		E 60		E 70		E 58	
Vehicle category		All counting posts		Counting posts		Counting posts		Counting posts	
	code	365 (34)		56		43		34	
		Average number per post in 2005	Change over 2000 (%)	Average number per post in 2005	Change over 2000 (%)	Average number per post in 2005	Change over 2000 (%)	Average number per post in 2005	Change over 2000 (%)
1	All Motor vehicles	a	6788	22	11645	23	6224	13	4823	21
1.1	Light motor vehicles	a	5246	17	9759	24	4339	5	3874	18
	(total categories A and B)	b	77.3		83.8		69.7		80.3	
1.11	Category A	a	15	-9	18	-10	18	-5	13	-7
		c	0.3		0.2		0.4		0.3	
1.12	Category B	a	5231	17	9741	24	4321	5	3861	18
		c	99.7		99.8		99.6		99.7	
1.2	Heavy motor vehicles	a	1542	42	1886	23	1885	38	949	34
	(total categories C and D)	b	22.7		16.2		30.3		19.7	
1.21	Category C	a	1368	38	1626	17	1634	32	810	25
		d	88.7		86.2		86.7		85.4	

E Roads and number of corresponding counting p...

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- Still typically done with traffic counters (camera and pneumatic sensors.)
- What potential is there for new technology/data sources to disrupt this?

- Still typically done with traffic counters (camera and pneumatic sensors.)

- What potential is there for new technology/data sources to disrupt this?

- Geospatial data were only provided by 9 countries for the 2015 round, which does not allow sufficient pan-European analysis.

- Data are not always available with official statistics, but many highway agencies have the data.
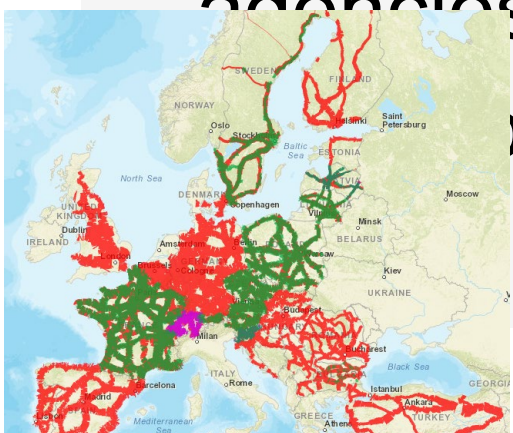
- not have the exact data , let's talk.

UNCE E-Rail Traffic Census: Evolution

- Activity started 2005 with Eurostat, collected as Annex V of rail regulation → EU origin-destination data not necessary.

- But origin-destination data if on large scale gives less useful visual results.

- Can countries provide Shapefiles as well?

- If not, smaller segments (+coordinates) better.

2015 E-Rail Census

- Eurostat provided data in bulk
- In addition, 10 countries provided some results, not many Shapefiles or maps

What to do for 2020?

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- We know traffic levels will plummet, so comparison with 2015 data less valid.

- But… quantifying the 2020 drop is useful in itself.

- Recommendation/request: provide data for 2019 and 2020. Will allow a comparison with 2015+quantify COVID drop.
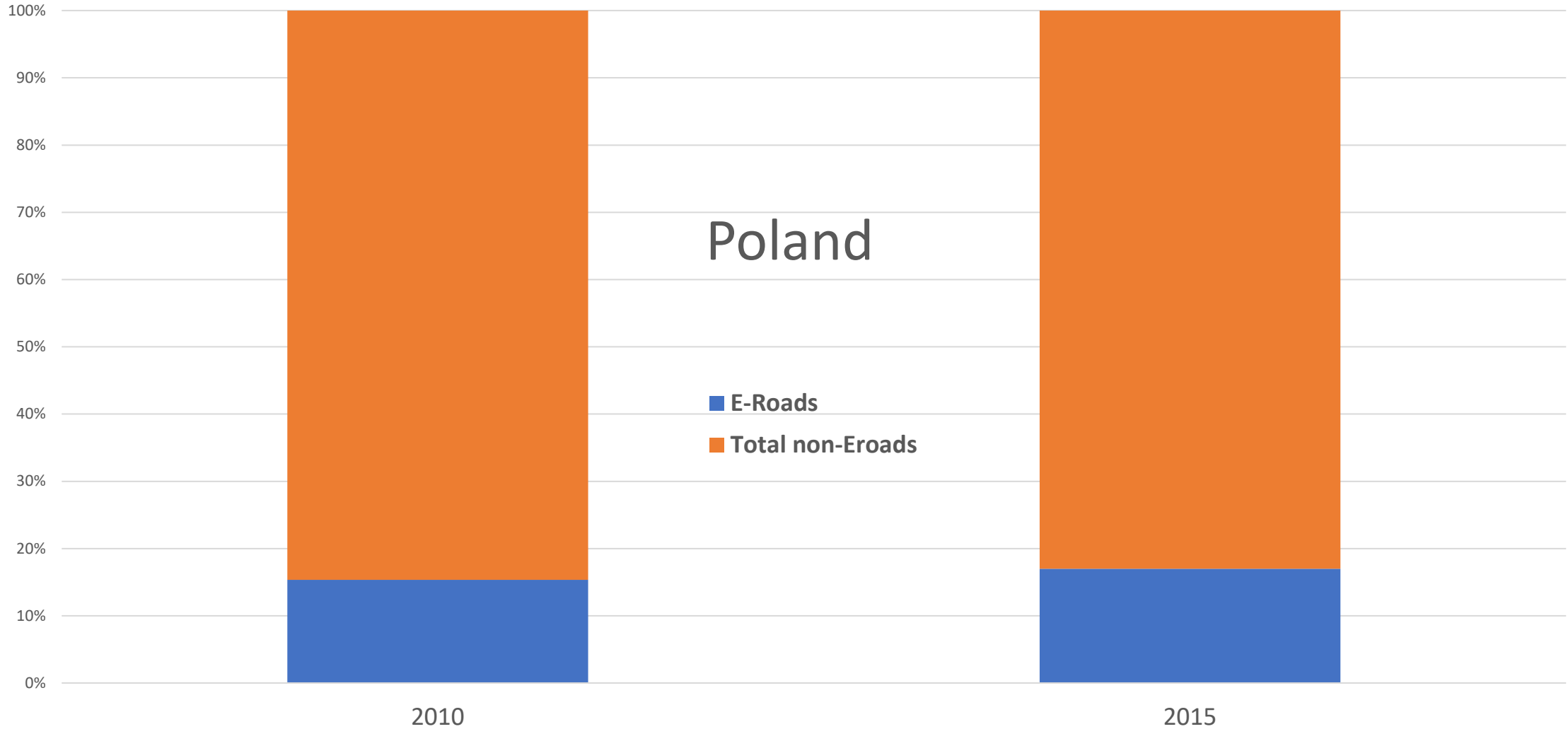
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- International infrastructure analysis
- Transport safety
- Modal shifting potential

Where traffic happens matters.

UK Urban Passenger car **vehicle miles**

— Urban 'A' Roads

— Minor Urban Roads

https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra
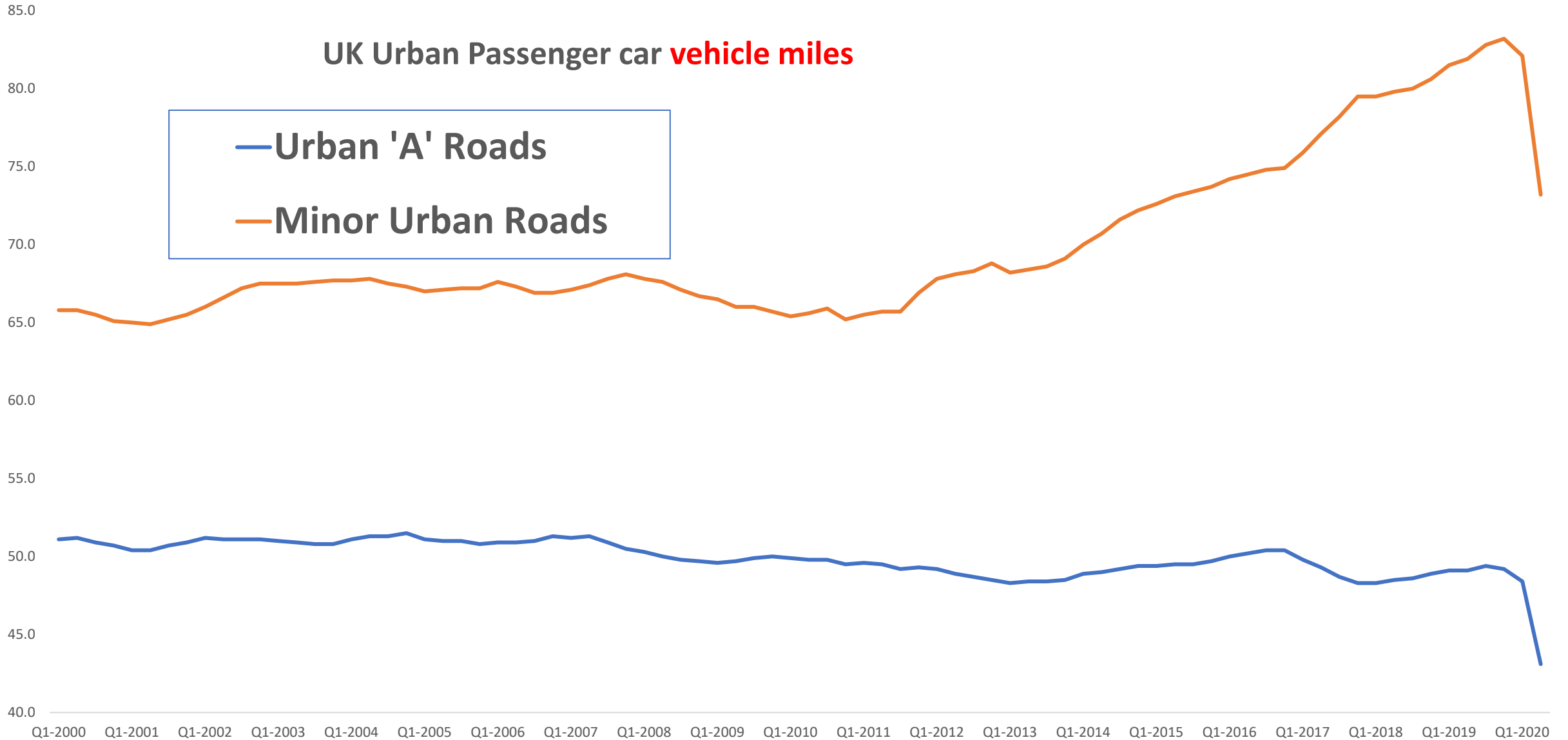
Census Gives Vehicle-km Location Insights

Further visualization possibilities

- Incomplete data made us explore other sources.
- How can we map origin-destination data?
- Easy to visualize due to Eurostat's open geospatial data
- UNECE Inland Water Transport Has Asked for their own Census: Can We Achieve the same results with data already collected?
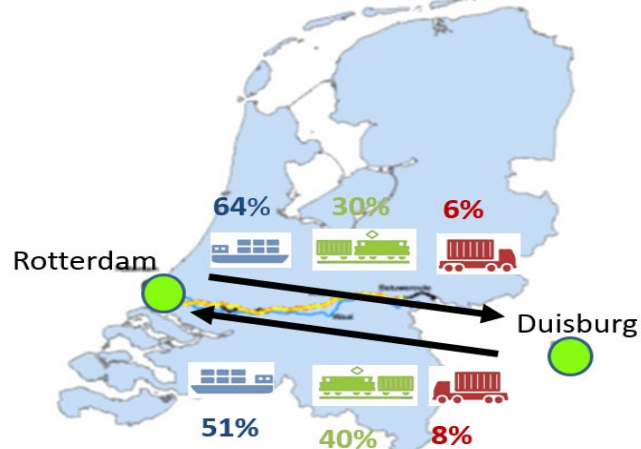
Rail Passengers
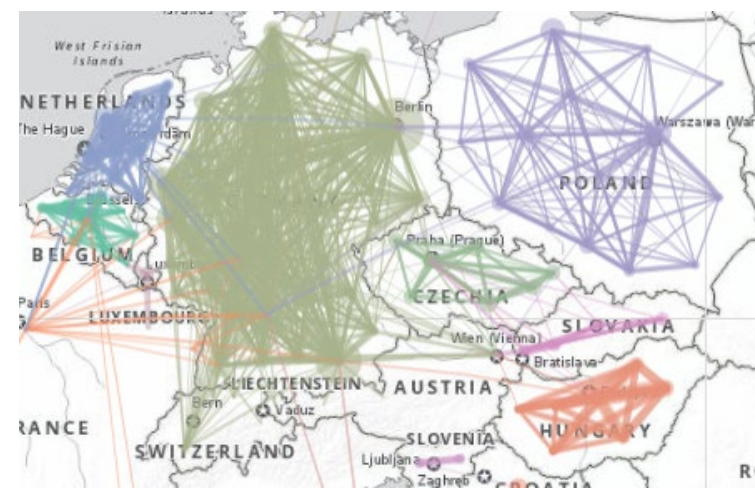
Rail Freight

Inland Water Freight
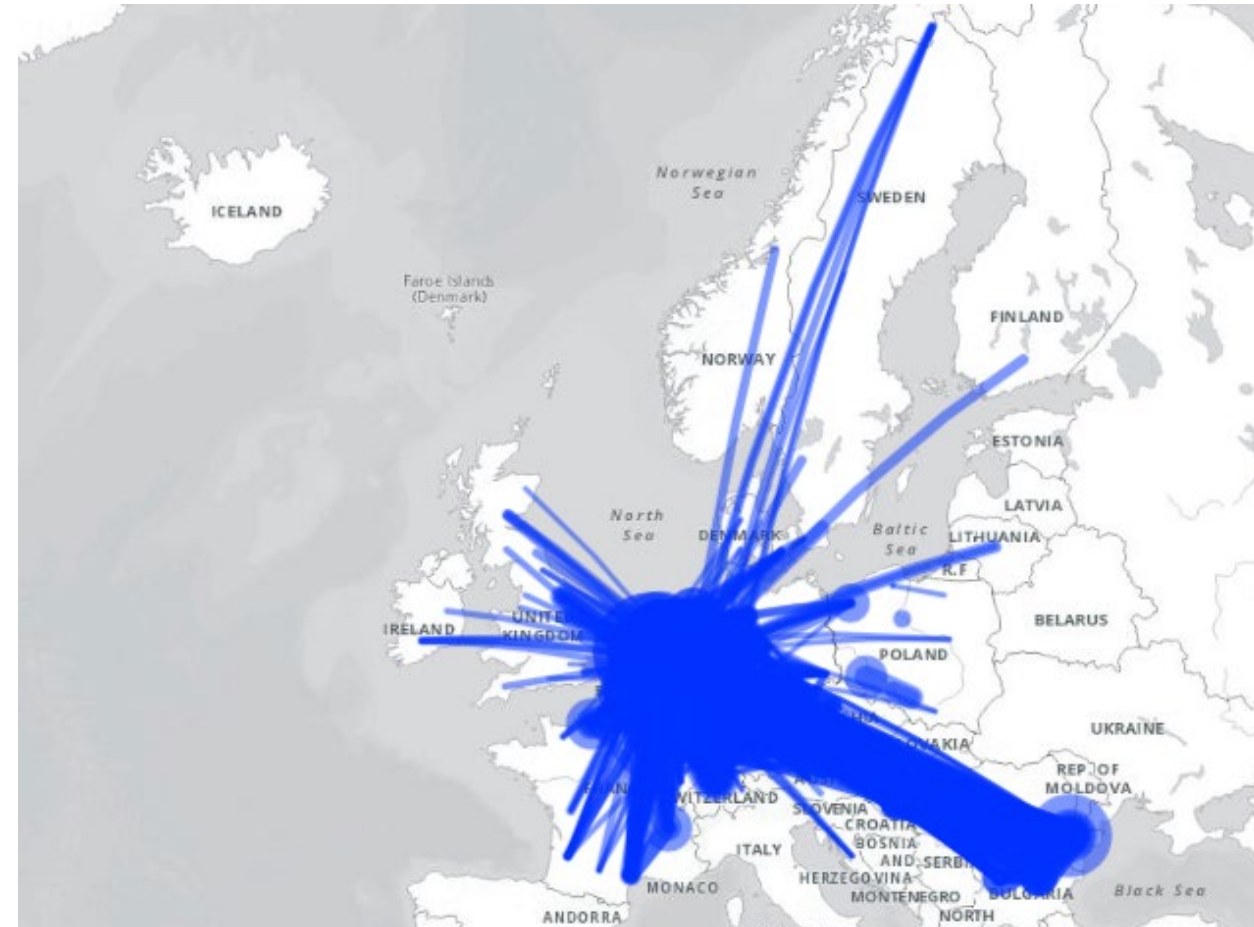
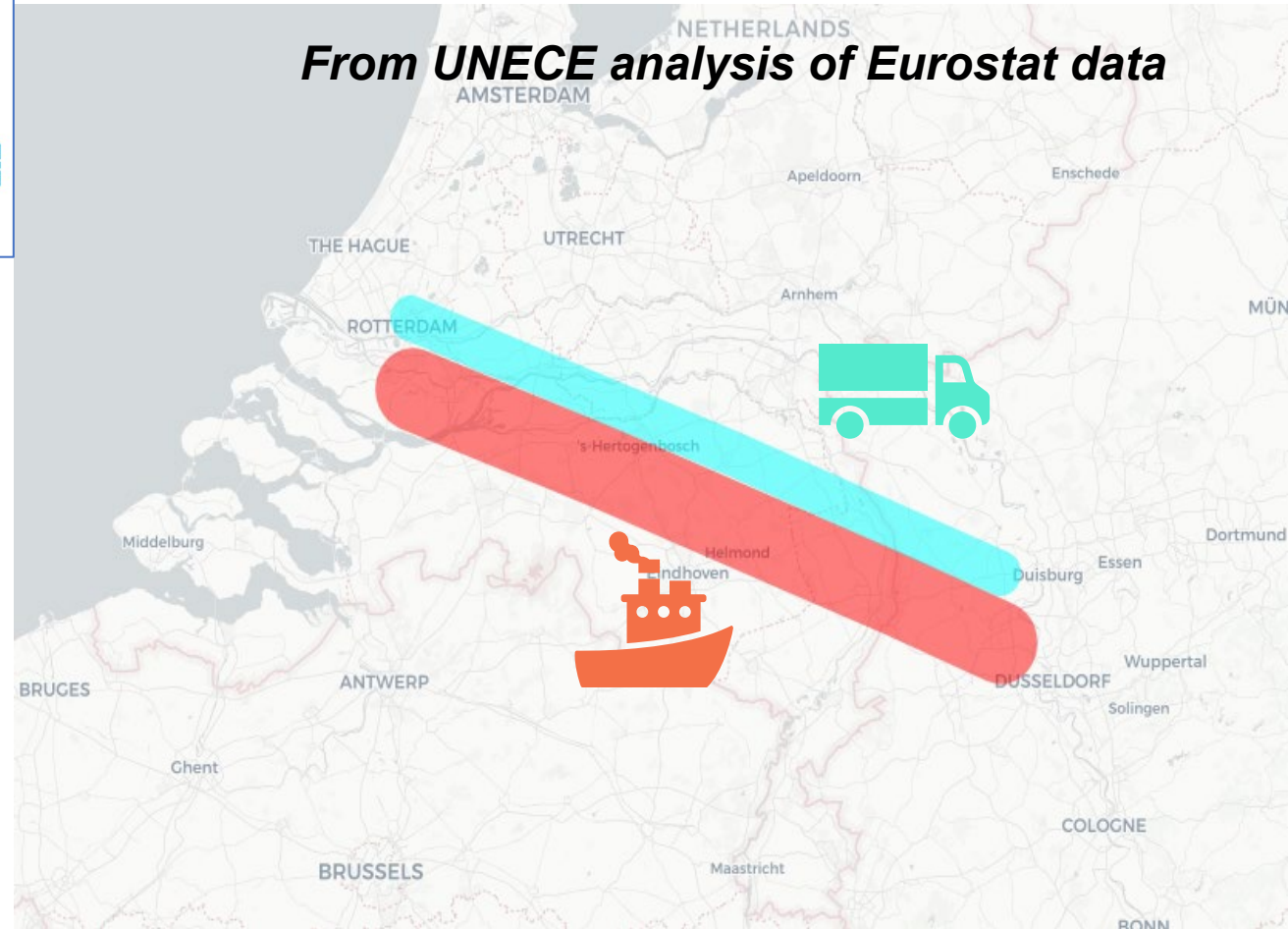# Providing transport corridor analysis like this
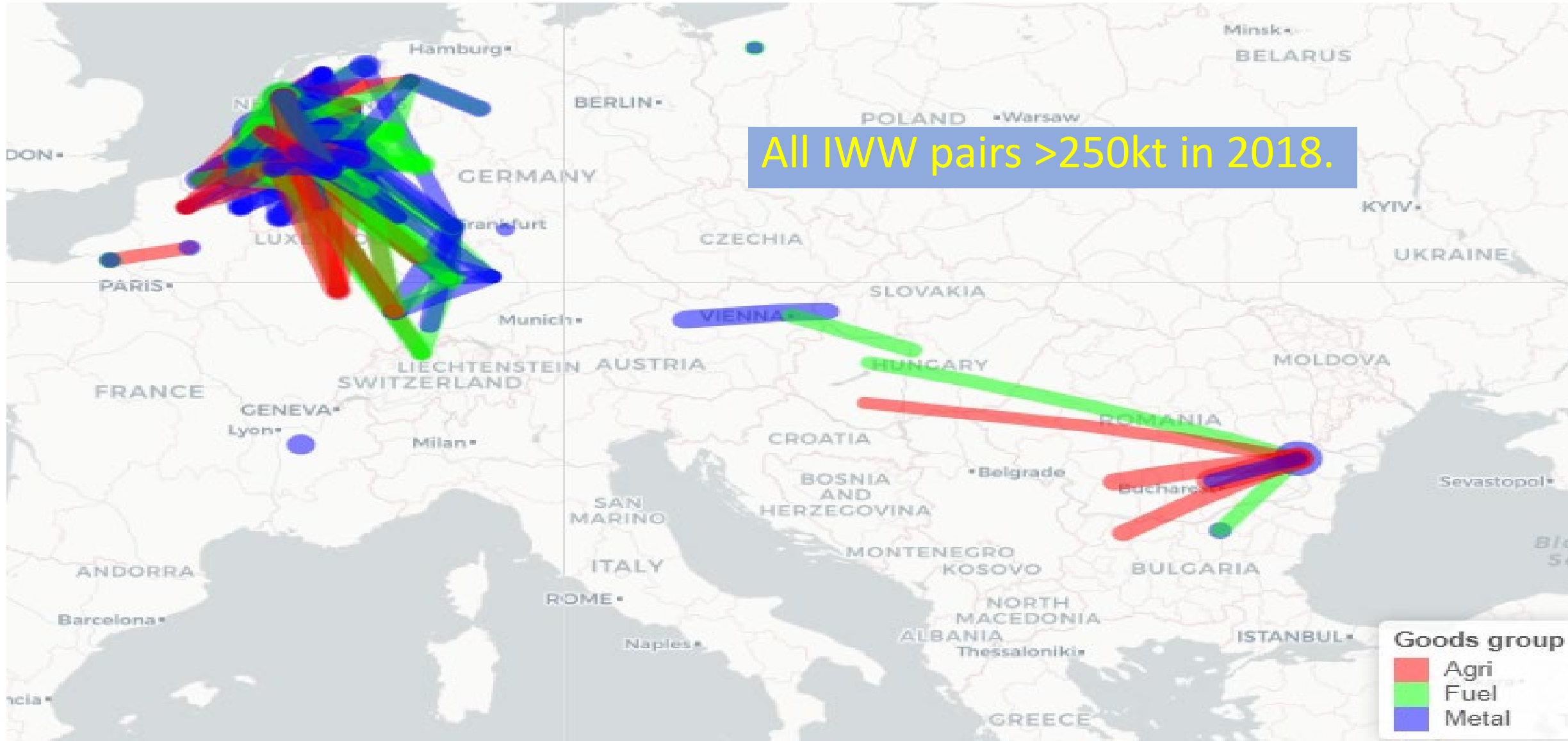

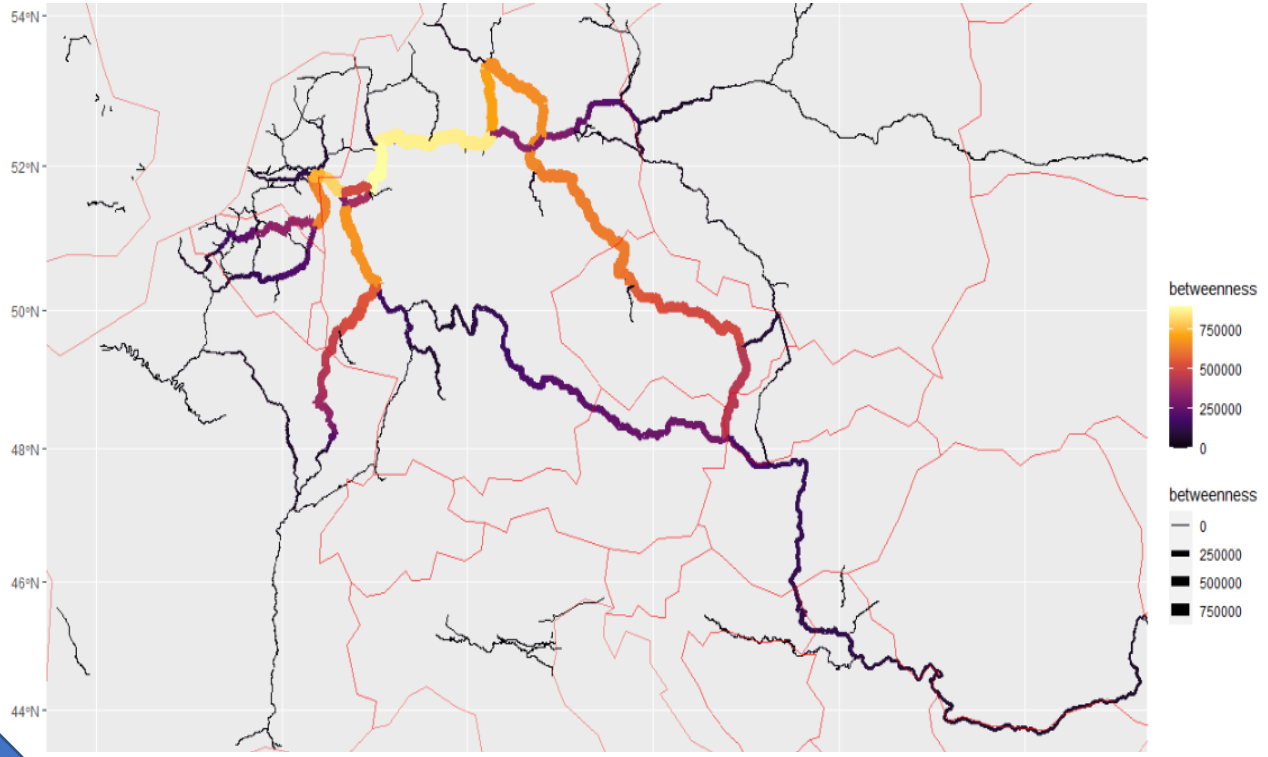Modal split (TEU) on TEN-T corridor, 2016

64% 30% 6%

Rotterdam

Duisburg

51% 40% 8%

From Statistics Netherlands

17

From UNECE analysis of Eurostat data

Mapping type of goods also possible

All IWW pairs >250kt in 2018.
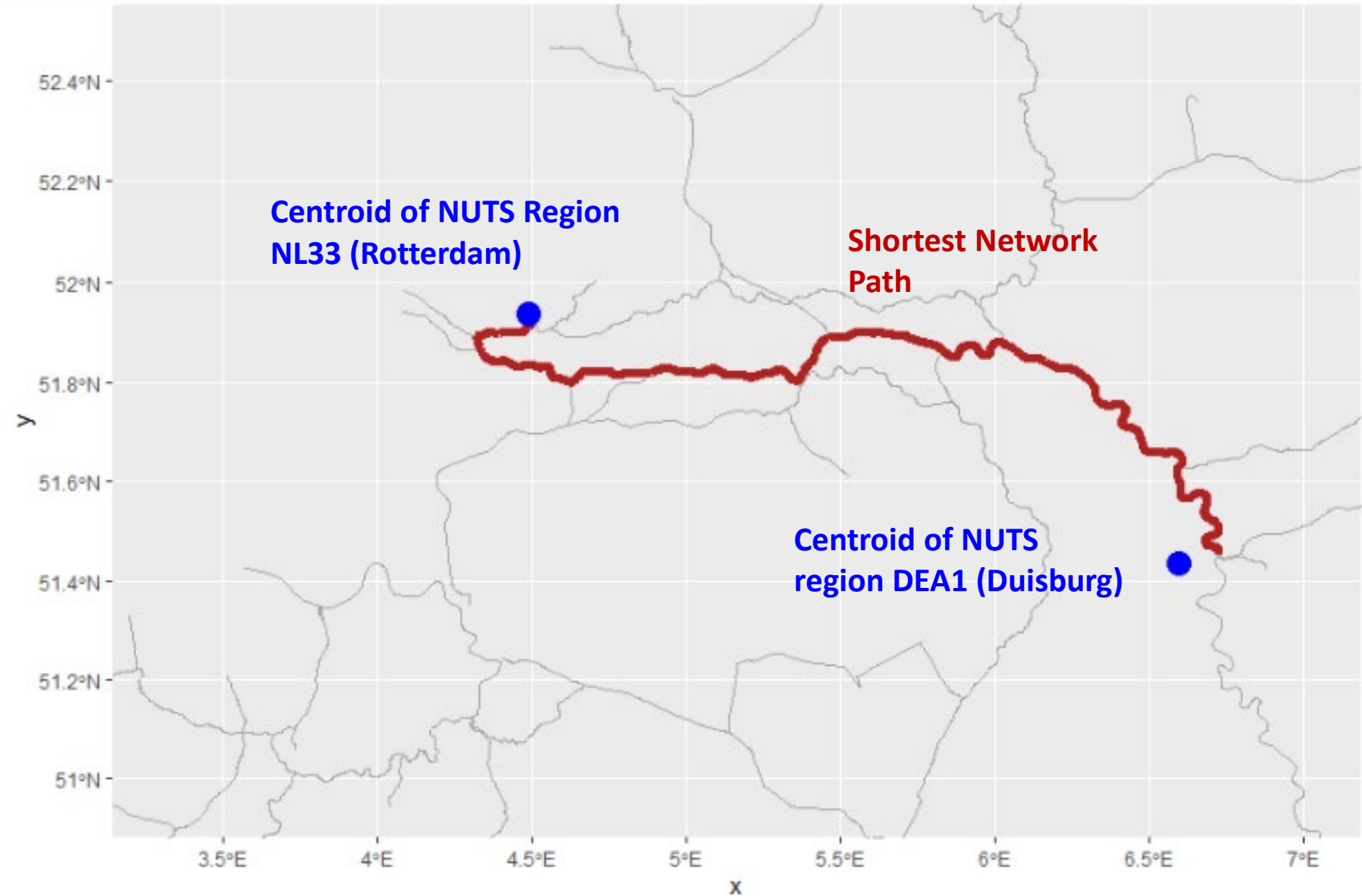
Goods group
Agri
Fuel
Metal

Mapping origin-destination lines onto the real network
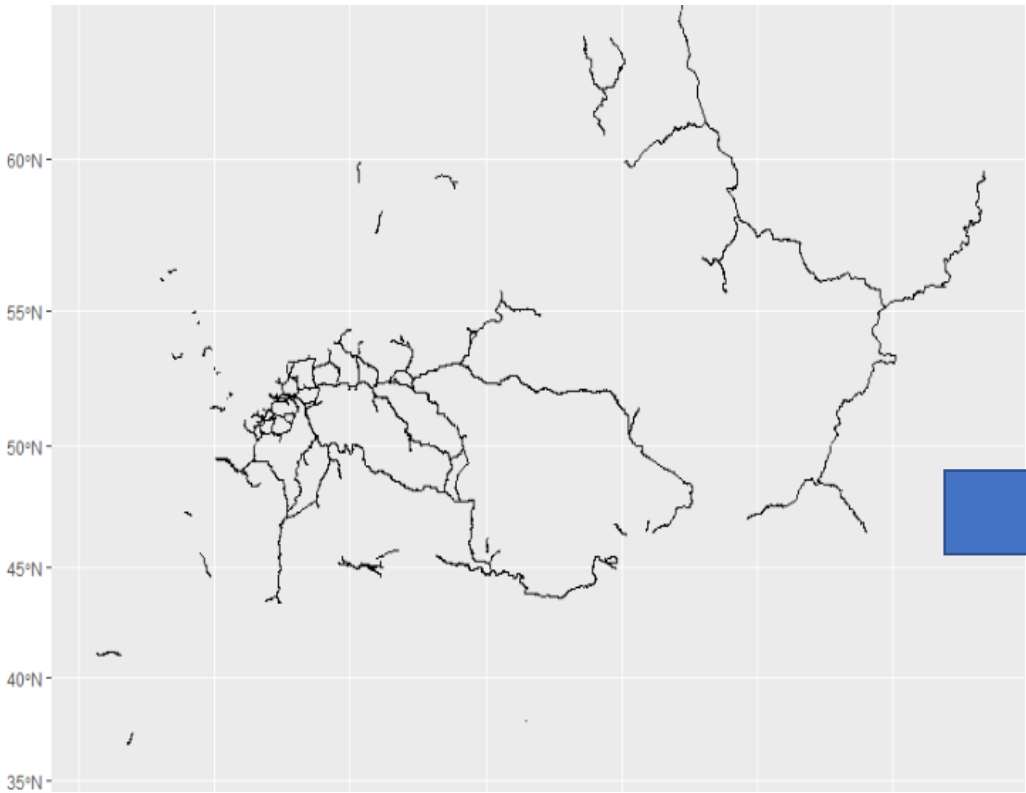
Further possible analysis

- Next step: sum multiple origin-destination pairs for each network segment.

- Change over time?

- **Has your organization mapped transport volumes in a similar way?**

UNCE Traffic Censuses: Conclusions

- Countries are encouraged to provide data on the E-Road censuses by 1 July 2021.

- E-Rail data deadline is mid-2022 (earlier better!) Eurostat countries can submit via Eurostat Annex V.

- Shapefiles greatly improve the usefulness of the end-product.

- Data can be used for corridor-specific analysis, road safety and tool showing how to shift volumes to rail and IWW.

- **What applications does transport visualization have in your country?**