

The challenges of coherent rail transport statistics

9th ITF Transport Statistics Meeting

Giacomo Potenza | 4 April 2023 | Paris & online

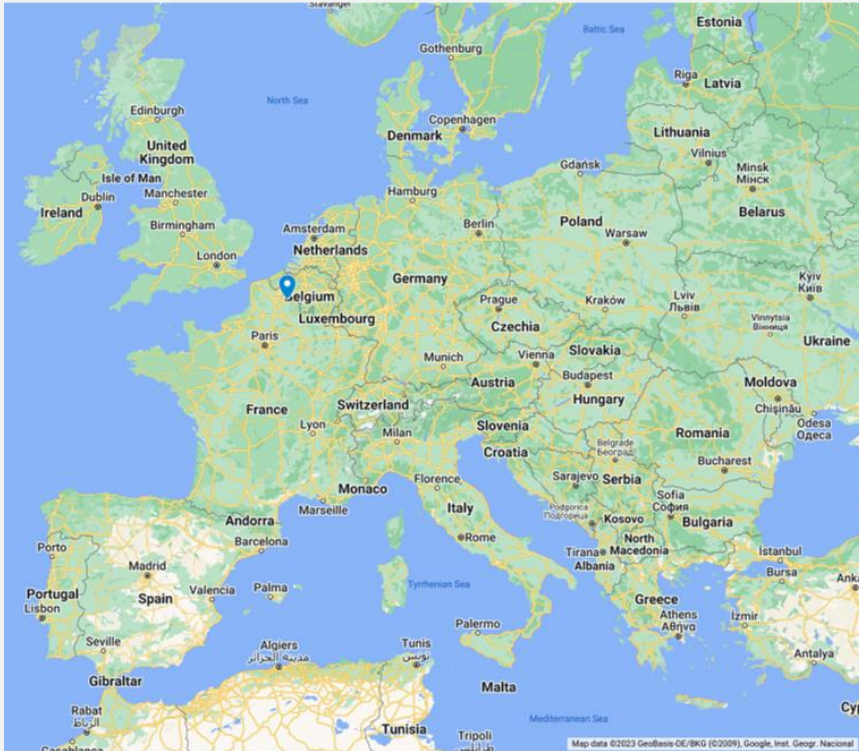


EUROPEAN
UNION
AGENCY
FOR RAILWAYS

Who is ERA

The European Union Agency for Railways:

- Founded in 2004 and based in Valenciennes, France
- Approximately 200 staff members
- Operating according to [Regulation \(EU\) 2016/796](#) and performing tasks such as:
 - Devise the technical and legal framework to remove technical barriers for rail interoperability;
 - Promoting, monitoring and auditing a harmonised approach to rail safety;
 - Issuing vehicle authorisations, single safety certificates of railway undertakings and approvals for track-side deployment of the ERTMS signalling system
- Maintaining 13 registers of rail-related data and documents, including the Register of Infrastructure ([RINF](#)) and the European Vehicle Register ([EVR](#))
- Publishing [studies and reports](#) on railways, including statistics to monitor interoperability and safety in the EU



Why is it a challenge to collect coherent rail transport statistics at international level?

Multiple organisations

Different Institutions and industry associations collect rail statistics for different reason: legal obligations, membership management, policy, market monitoring. Data collection is often indirect through national organisations

Different scope of reporting

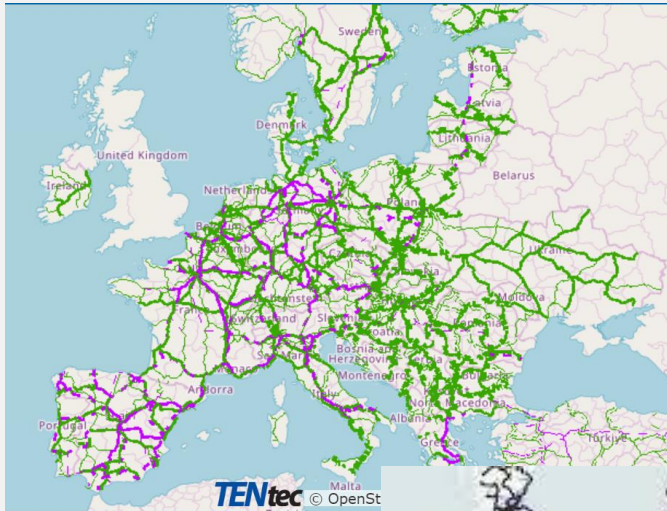
Data collection is tailored for each international organisation and relevant exclusions from country, network, fleets, operations, type of traffic are required

Similar but not identical definitions

Indicators to be fed with data following each organisations' definitions. Small differences generate misunderstandings and incorrect data submission by rail industry ultimate data providers



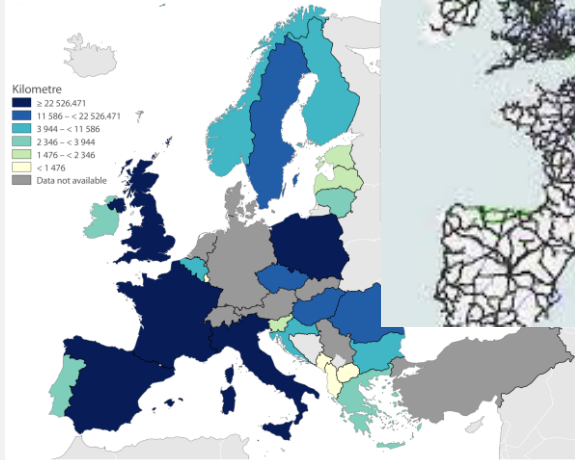
The scope of reporting, a challenge to report accurately



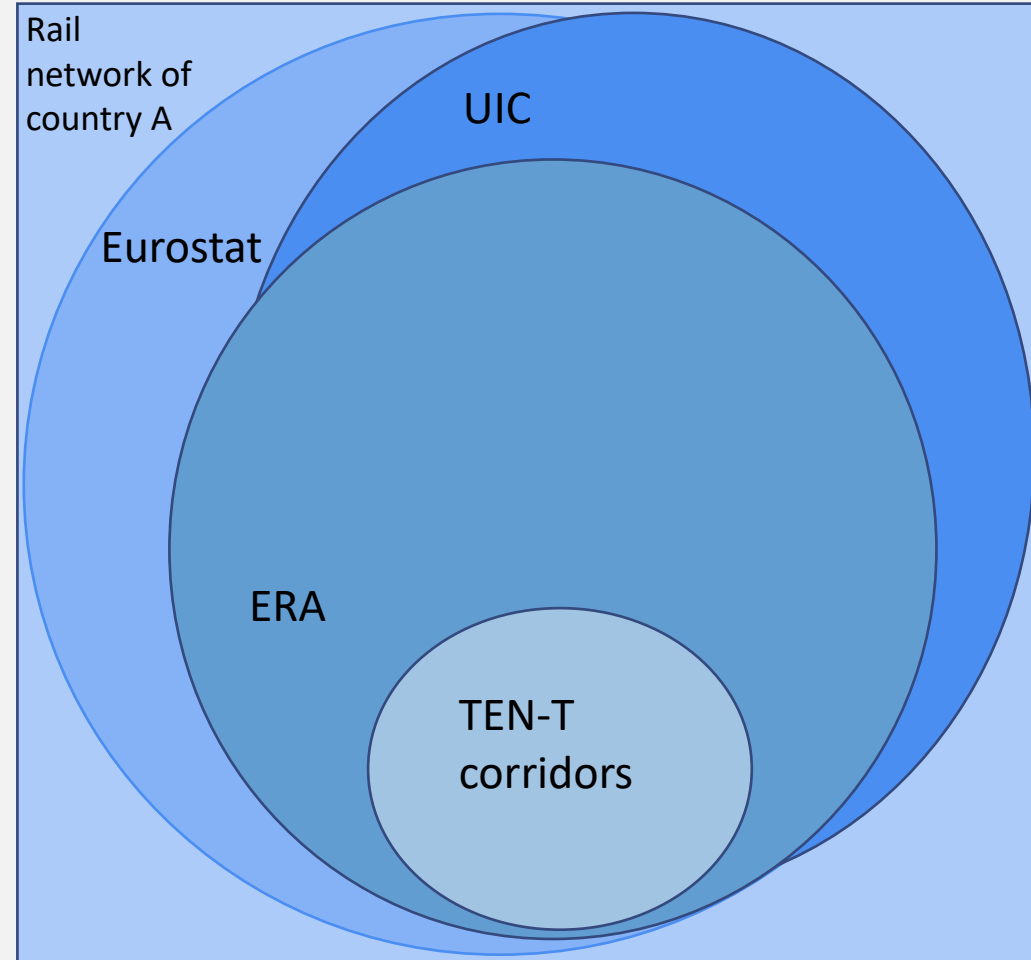
Which lines are in scope of the data collection questionnaires?



Railway transport - length of tracks (2021)
Total



Source: Eurostat (dataset code rail_if_tracks) Administrative boundaries: © EuroGeographics © UN-FAO © Turstat Cartography: Eurostat - IMAGE, 04/2023



ERA Task Force on Data Quality

Subgroup on Railway Statistics

From October 2022 to March 2023, we worked with many organisations to improve accuracy, consistency, completeness and timeliness of data by discussing comparability across datasets of definitions, scope and sources used.

What we did:

- Mapping of definitions and data providers for about 20 indicators;
- Identifying possible overlaps and data quality issues among different organisations
- Making proposals for harmonization and clarity
- Interacting as a community of rail statistics experts



We worked with organisations that collect and publish identical or similar rail stats indicators in Europe

Organisation	Data collected	Link to publications
National Rail Safety Authorities	CSI data, relevant for train-km, tonne-km, etc	CSI dataset and national purposes
Eurostat	Stats according to Regulation (EU) 2018/643 and Common Questionnaire for Inland Transport Statistics	Transport Statistics
ITF	Common Questionnaire for Inland Transport Statistics	ITF Transport Statistics
UNECE	Common Questionnaire for Inland Transport Statistics	UNECE Working Party on Transport Statistics (WP.6)
DG MOVE European Commission	Stats according to Commission Implementing Regulation (EU) 2015/1100 on Rail Market Monitoring Scheme and own production of a Pocketbook	RMMS Statistical Pocketbook
IRG-Rail	Market monitoring by national rail regulatory bodies	Market Monitoring
PRIME	Platform of main IMs collecting KPIs for benchmarking as per Article 7f of Directive(EU) 2016/2370	PRIME KPI Subgroup PRIME External Report PRIME KPI Catalogue
UIC	Various statistics from UIC members, Railisa database	UIC Statistics
CER	Statistics from CER members for annual activity report	CER Annual Reports
EIM	Statistics from EIM members for annual report	EIM Annual Reports

The indicators the Task Force worked on

Starting from the Common Questionnaire ESTAT/ITF/UNECE, we compared in each organisation:

- Definitions
- Scope
- Major inconsistencies of results

N.	Indicator	ERA	DG MOVE	Eurostat	UIC	EIM*	IRG-Rail	OECD (ITF)	NSAs	PRIME	UNECE
Infrastructure											
1.	Line-km	√		√	√	√	√	√	√	√	√
2.	Electrified Line-km			√	√	√	√	√		√	√
3.	High-speed Line-km			√	√	√	√	√		√	√
4.	Track-km			√	√	√		√	√	√	
5.	Line-km equipped with ERTMS	√					√			√	
6.	Line-km part of TEN-T		√			√	√				
7.	Freight and multi-modal terminals		√				√				
Transport equipment											
8.	Rolling stock			√	√			√			√
9.	Vehicles equipped with ERTMS	√							√		
Enterprises											
10.	Number of RUs			√			√	√			√
11.	Number of IMs			√				√			√
12.	Revenue		√		√	√	√				
13.	Investments and maintenance		√	√	√	√	√	√			√
14.	Number of train drivers	√	√		√						
Traffic											
15.	Train-km	√	√	√	√	√	√	√	√	√	√
Transport measurement											
16.	Tonnes transported			√	√			√	√		√
17.	Tonne-km	√	√	√	√	√		√	√	√	√
18.	Passengers transported			√	√		√	√			√
19.	Passenger-km	√	√	√	√	√	√	√	√		√
20.	Modal split freight transport	√	√	√				√			√
21.	Modal split passenger transport	√	√	√				√			√

Some major misalignments identified

Eurostat compared some statistics from the CQ, from Eurostat legal basis, from ERA Common Safety Indicators, from ERA's Register of Infrastructure and from UIC

Line-km					Track-km				
Year 2020	Eurostat/ITF /UNECE Common Questionnaire	RINF	ERA CSI item R08	diff ERA CSI / CQ	Year 2020	Eurostat/ITF /UNECE Common Questionnaire	RINF	ERA CSI item R03	diff ERA CSI / CQ
AT	5,607	5,221	5,299	-5%	AT	N/A	7,335	7,522	N/A
BE	N/A	3,907	3,618		BE	N/A	6,796	6,542	N/A
BG	4,025	3,726	4,025	0%	BG	5,464	4,709	6,454	18%
CH	5,917	5,843	3,837	-28%	CH	N/A	11,614	5,470	N/A
CZ	9,542	9,662	9,599	1%	CZ	15,360	11,759	15,486	1%
DE	38,394	34,252	33,299	-13%	DE	N/A	53,507	60,872	N/A
DK	1,998	2,048	2,633	32%	DK	N/A	3,068	3,729	N/A
EE	1,167	1,011	1,167	0%	EE	2,143	1,108	2,143	0%
EL	2,345	3,021	2,345	0%	EL	3,035	3,606	3,035	0%
ES	16,135	15,316	15,519	-4%	ES	22,274	21,304	21,533	-3%
FI	5,918	5,726	5,918	0%	FI	8,599	6,512	6,707	-22%
FR	26,838	27,915	30,000	12%	FR	53,382	53,401	48,027	-10%
HR	2,617	2,436	2,617	0%	HR	3,950	2,679	2,871	-27%
HU	7,787	5,260	7,687	-1%	HU	11,393	5,416	8,906	-22%
IE	2,045	N/A	1,683	-18%	IE	2,477	N/A	2,166	-13%
IT	16,782	16,258	17,536	4%	IT	24,515	24,496	25,538	4%
LT	1,910	1,763	1,910	0%	LT	2,346	2,469	3,465	48%
LU	271	279	275	1%	LU	628	479	677	8%
LV	1,853	1,505	1,853	0%	LV	2,216	1,853	3,358	52%
NL	3,041	3,027	3,075	1%	NL	3,041	5,591	7,097	133%
NO	3,851	3,907	4,208	9%	NO	4,196	3,907	4,477	7%
PL	19,383	19,802	19,404	0%	PL	37,269	28,595	37,393	0%
PT	2,526	2,451	2,526	0%	PT	3,224	3,146	3,224	0%
RO	10,769	10,355	16,863	57%	RO	20,071	13,318	19,784	-1%
SE	10,909	10,824	10,826	-1%	SE	15,557	13,034	15,401	-1%
SI	1,209	1,195	1,209	0%	SI	2,178	1,518	2,177	0%
SK	3,527	3,841	3,527	0%	SK	N/A	4,942	6,866	N/A
UK	16,377	15,905	16,268	-1%	UK	31,940	32,121	31,722	-1%
Colour legend					Colour legend				
			Perfect matching CQ - ER					Perfect matching CQ - ER	
			Minor inconsistency					Minor inconsistency	
			Major inconsistency					Major inconsistency	

Countries	Tractive stock		Passenger transport stock	Freight transport stock
	locomotives	railcars		
Austria	CQ > UIC (~10%)	CQ << UIC (50%)	CQ < UIC (20%)	CQ = UIC
Belgium	Missing from CQ			
Bulgaria	Missing from CQ			
Croatia	CQ > UIC (~33%)	CQ = UIC	CQ = UIC	CQ = UIC
Czech Republic	CQ > UIC (~40%)	UIC 2020 > CQ > UIC 2021	CQ < UIC (20%)	CQ > UIC (~50%)
Denmark	CQ >> UIC	CQ < UIC 2021 (~15%)	CQ >> UIC	absent from CQ and UIC
Estonia	Missing from UIC			
Finland	Missing from CQ			
France	CQ > UIC 2020 (~30%)	CQ << UIC 2020 (40%)	CQ > UIC (~50%)	CQ >> UIC
Germany	Missing from CQ			
Greece	Missing from UIC			
Hungary	CQ > UIC (~50%)	CQ > UIC (~50%)	CQ > UIC (~25%)	absent from UIC
Ireland	Missing from CQ			
Italy	CQ 2020 >> UIC	absent from CQ		
Latvia	CQ > UIC (~33%)	CQ >> UIC	absent from CQ and UIC	CQ > UIC (~40%)
Lithuania	CQ = UIC	CQ < UIC (~20%)	CQ = UIC	CQ = UIC
Luxembourg	CQ < UIC (~30%)	Missing from UIC		
Netherlands	Missing from CQ			
Poland	CQ >> UIC	CQ >> UIC	CQ >> UIC	Missing from UIC
Portugal	CQ > UIC (~60%)	CQ < UIC (~40%)	CQ ~ UIC	Missing from UIC
Romania	CQ >> UIC	Missing from UIC		CQ > UIC 2020 (~20%)
Slovakia	CQ > UIC 2020 (~30%)	CQ > UIC 2020 (~30%)	CQ < UIC (~35%)	CQ > UIC (~10%)
Slovenia	CQ = UIC	CQ << UIC	CQ > UIC (~20%)	CQ ~ UIC
Spain	CQ > UIC (~33%)	CQ << UIC	CQ ~ UIC	CQ > UIC 2021 (~33%)
Sweden	CQ >> UIC	CQ >> UIC	CQ >> UIC	Missing from UIC and CQ
Switzerland	absent from CQ	CQ >> UIC	CQ 2020 >> UIC	Missing from CQ
Norway	Missing from CQ and UIC			
Albania	Missing from UIC			
Bosnia-Herzegovina	CQ = UIC 2020	CQ ~ UIC 2020	CQ ~ UIC 2020	CQ ~ UIC 2020
North Macedonia	CQ = UIC	CQ << UIC	CQ = UIC 2020	CQ ~ UIC
Montenegro	Missing from CQ			
Serbia	CQ 2020 >> UIC	Missing from UIC	CQ 2020 >> UIC	CQ 2020 < UIC (~25%)
Kosovo	Missing from UIC			
Turkey	CQ 2020 ~ UIC	CQ >> UIC	CQ 2020 < UIC (~35%)	CQ 2020 ~ UIC except on total
Ukraine	CQ 2020 ~ UIC	Missing from CQ	CQ 2020 ~ UIC	CQ 2020 ~ UIC

Year 2020	Tonne-km (millions)				Passenger-km (millions)			
	Eurostat/ITF /UNECE Common Questionnaire	Eurostat EU regulation 643/2018	ERA CSI R07	diff ERA CSI / CQ	Eurostat/ITF /UNECE Common Questionnaire	Eurostat EU regulation 643/2018	ERA CSI R02	diff ERA CSI / CQ
AT	20,498	20,498	21,600	5%	7,417	7,375	7,400	0%
BE	:	:	9,974		:	:	7,755	
BG	4,503	4,503	9,000	100%	1,119	1,118	1,228	10%
CH	11,067	11,067	11,027	0%	13,340	13,267	12,301	-8%
CZ	15,251	15,251	32,833	115%	6,665	6,623	6,665	0%
DE	108,405	109,219	108,407	0%	:	57,787	56,398	-2%
DK	2,450	2,450	2,450	0%	3,755	3,940	3,042	-19%
EE	1,729	1,729	1,729	0%	263	263	263	0%
EL	:	:	555		640	640	662	3%
ES	8,920	8,920	0	-100%	12,060	12,060	11,190	-7%
FI	10,138	10,137	10,140	0%	2,820	2,820	2,820	0%
FR	31,559	31,559	27,142	-14%	56,606	56,606	59,003	4%
HR	3,279	3,279	3,279	0%	449	448	449	0%
HU	11,595	11,595	11,671	1%	4,854	:	4,761	-2%
IE	74	74	74	0%	956	834	864	-10%
IT	20,750	20,750	24,099	16%	22,269	22,269	21,558	-3%
LT	15,865	15,865	15,865	0%	237	237	258	9%
LU	:	162	218	35%	269	268	103	-62%
LV	7,979	7,979	7,979	0%	413	413	413	0%
NL	6,665	6,665	6,664	0%	9,164	:	4,048	-56%
NO	4,110	4,110	4,121	0%	1,804	1,801	1,715	-5%
PL	51,096	51,096	52,218	2%	12,487	:	12,286	-2%
PT	2,402	2,302	2,345	-2%	2,552	2,563	2,551	0%
RO	12,291	12,291	9,423	-23%	3,720	3,720	3,542	-5%
SE	22,094	22,094	22,094	0%	8,129	8,129	8,001	-2%
SI	4,726	4,726	3,988	-16%	397	338	397	0%
SK	7,268	6,908	6,908	-5%	2,180	2,133	2,133	-2%
UK	15,212	:	15,159	0%	25,074	:	24,530	-2%

: in EU reg means usually that the data are confidential

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Our key recommendations

Category	Observations	Recommendations
1. Scope	Reporting scopes are defined by different legal acts, but unclear how Member States apply the scope.	Member States should be encouraged to explicitly specify the network(s) or lines(s) that fall outside the scope of application of the Interoperability and Safety Directives. Data collectors should highlight the scope differences when requesting data on indicators that is also collected by others.
2. Definitions	Data quality is negatively affected by complex and unharmonized definitions.	Promote collaboration between data collectors to harmonise and simplify definitions. Provide guidance on definitions with examples and when helpful drawings
3. Administrative burden – data provision by ERA	ERA registers were not set up for statistical purposes but have statistical value in absence of alternative sources.	The use of ERA registers for statistical purposes could reduce administrative costs and improve the accuracy of providing and collecting statistics. Such use case should be considered when defining access and utilisation rights.
5. Governance – data collectors	Coordination between data collectors and providers is necessary to implement the recommendations as formulated by this task force.	For transport statistics, new channels through new or revamped EC Expert Groups should be set up to ensure communication, alignment on data quality issues and involvement of ultimate data providers from the rail industry
6. Governance – data providers	Structural data quality issues at country level need to be addressed by involving national and ultimate data providers from the rail industry	Eurostat is encouraged to organise national campaigns on railway data quality
7. Data quality assurance	Data providers are often assigned the responsibility for data quality. Data collectors are however better positioned to cross-check data and spot issues.	The data quality assurance role of data collectors should be acknowledged, and adequate resources assigned to this role.

More details per individual rail statistic indicator will be available in the Final Report of the ERA Task Force on Data Quality, to be published end of April 2023 on era.europa.eu



THANK YOU

Moving Europe towards a sustainable and safe railway system without frontiers.

giacomo.potenza@era.europa.eu

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