Railway Safety in Europe

Josef Doppelbauer, European Union Agency for Railways

Since **20 years**, ERA develops **common approaches to safety**, working closely with stakeholders from the rail sector as well as with national authorities, the EU Institutions and other interested parties.
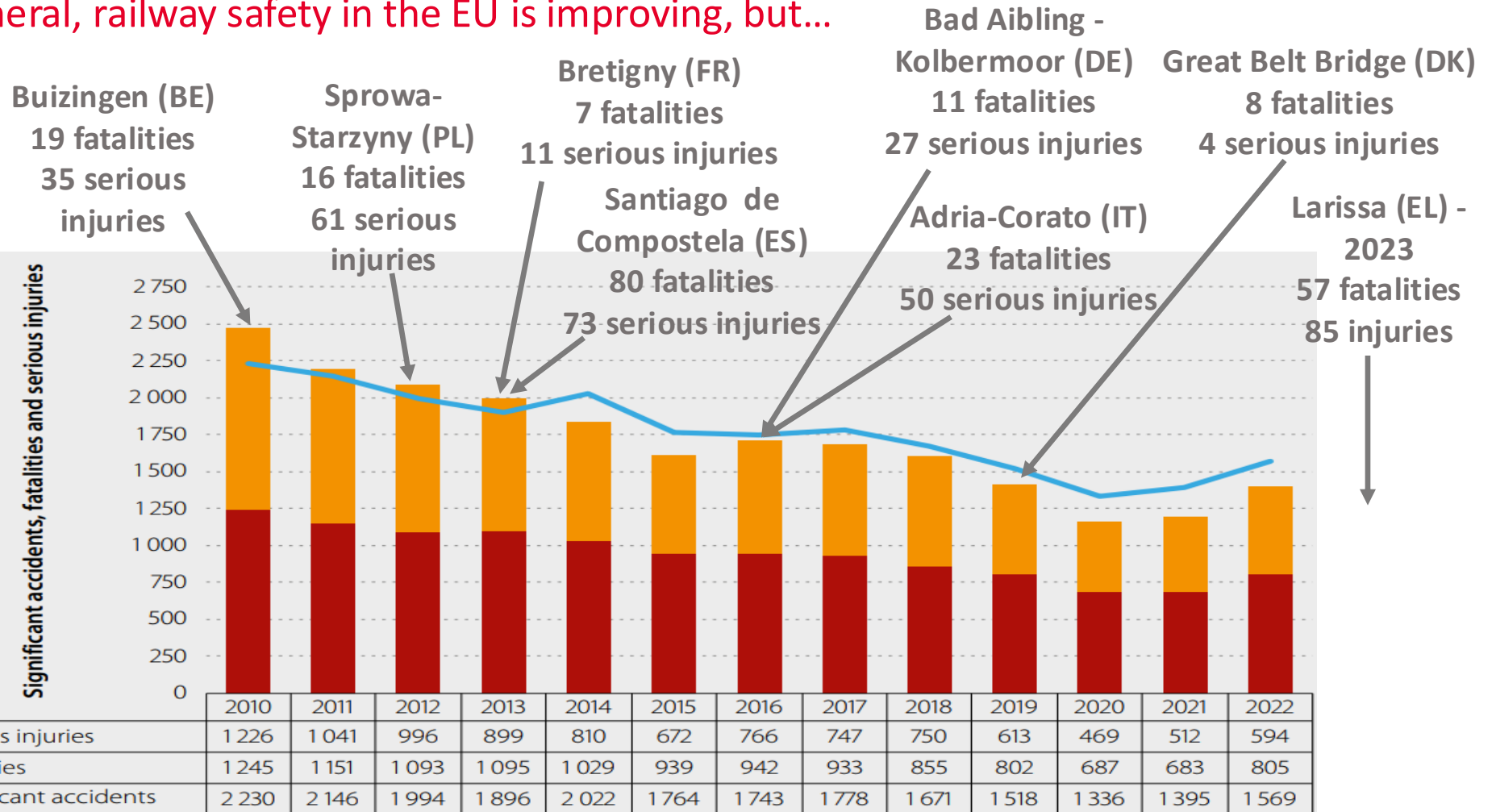Featuring a dedicated Safety Unit, ERA also **monitors and reports on rail safety** in the EU.

17-21 Sept. 2024

Vienna, Austria
Aula der Wissenschaften

Rail accidents and related casualties in the EU, 2010-2022

In general, railway safety in the EU is improving, but…

Buizingen (BE)
19 fatalities
35 serious injuries

Sprowa-Starzyny (PL)
16 fatalities
61 serious injuries

Bretigny (FR)
7 fatalities
11 serious injuries

Santiago de Compostela (ES)
80 fatalities
73 serious injuries

Bad Aibling - Kolbermoor (DE)
11 fatalities
27 serious injuries

Adria-Corato (IT)
23 fatalities
50 serious injuries

Great Belt Bridge (DK)
8 fatalities
4 serious injuries

Larissa (EL) - 2023
57 fatalities
85 injuries

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Serious injuries	1 226	1 041	996	899	810	672	766	747	750	613	469	512	594
Fatalities	1 245	1 151	1 093	1 095	1 029	939	942	933	855	802	687	683	805
Significant accidents	2 230	2 146	1 994	1 896	2 022	1 764	1 743	1 778	1 671	1 518	1 336	1 395	1 569

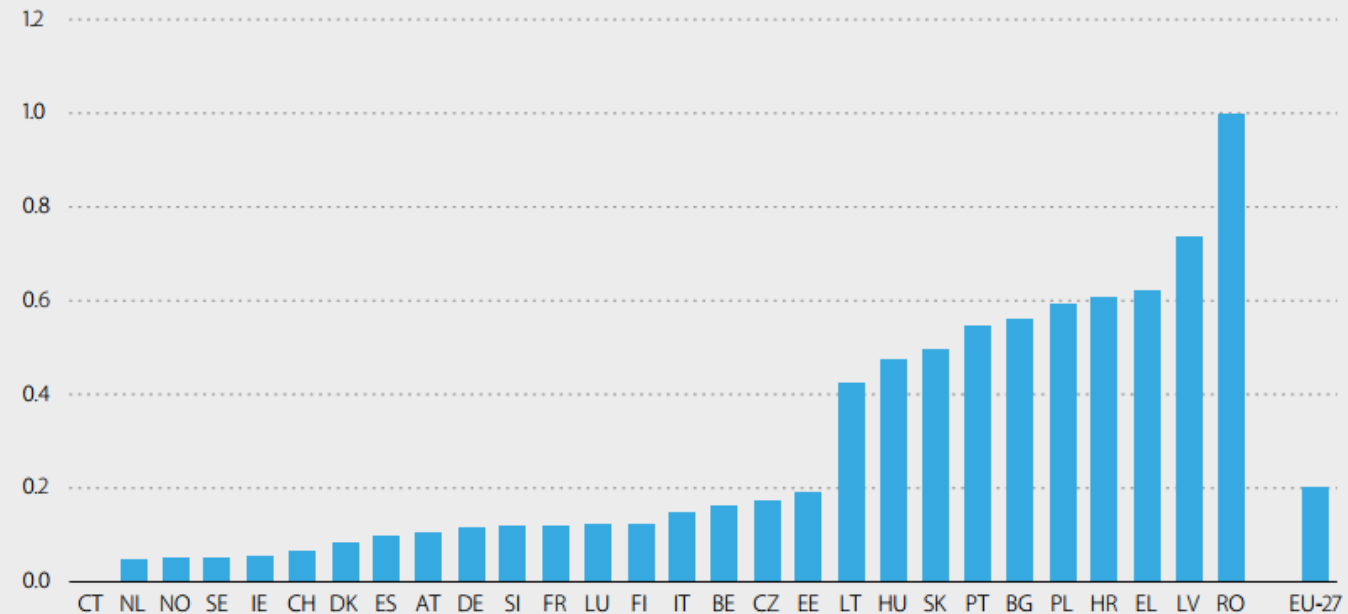*Significant accidents, fatalities and serious injuries*

Railway Safety Levels in Europe

- Large differences in casualty rates among Member States - fatality rates for Member States show at least a ten-fold difference for countries with the lowest and highest values

- The variance of the number of safety accidents and related casualties has declined in the last decade

Figure A-9: Railway fatality rates (2020–2022)

All fatalities per million train-km (average over 2020–2022)

Source: CSIs as reported by NSAs to the Agency.

Continuous Improvement of Railway Safety

Rule based safety: anticipating as much as possible

+

Safety managed: managing the unexpected

=

SAFETY

Expertise
Technical barriers
Rules and procedures

Competence
Learning Ability
Adaptations

SMS Certification
Supervision
Information Sharing

Compliance behaviour

Proactive behaviour

Learning

Human Factors:
Attention on the System as a Whole?

Human factors concentrates on the "screen out"

Hardware/ software engineering concentrates on the "screen in"

e.g. situation awareness errors, inconsistent behaviour, confusion, ...

(after Nancy Leveson)

Understanding the Interactions among Humans and other Elements of the System

- Understand why an action or decision made sense when it was taken (not knowing the negative outcome)
- Non-compliance does not explain behaviour
- May require external human and/or organisational factors expertise
- For technical systems (equipment and software) explain why in certain state or performing in a certain way

- Not only for performance in the operational activities, also for implementation (e.g. planning, training, …) and control activities

Next Steps

Priority Countries Programme (PCP)

Provide a 'live' picture of railway safety on the ground

Can indirectly lead to improvements in wider EU legislation

Safety plans to bring sustainable change

Ownership at MS level

Information Sharing System (ISS)

- Based on CSM ASLP
- Includes "Near Misses"

Improved reaction to incidents and accidents

Actual EU prevention process

Support to Safety Culture implementation

Feasibility and economies of scale

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IRSC
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Thank you for your attention!