AUSTRIA VIENNA 2024 IRSC INTERNATIONAL Railway Safety Council

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Vienna, Austria
Aula der Wissenschaften

Common Safety Indicators : lesson learned after 20 years.
How does they assess safety performance ?

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In France, every year

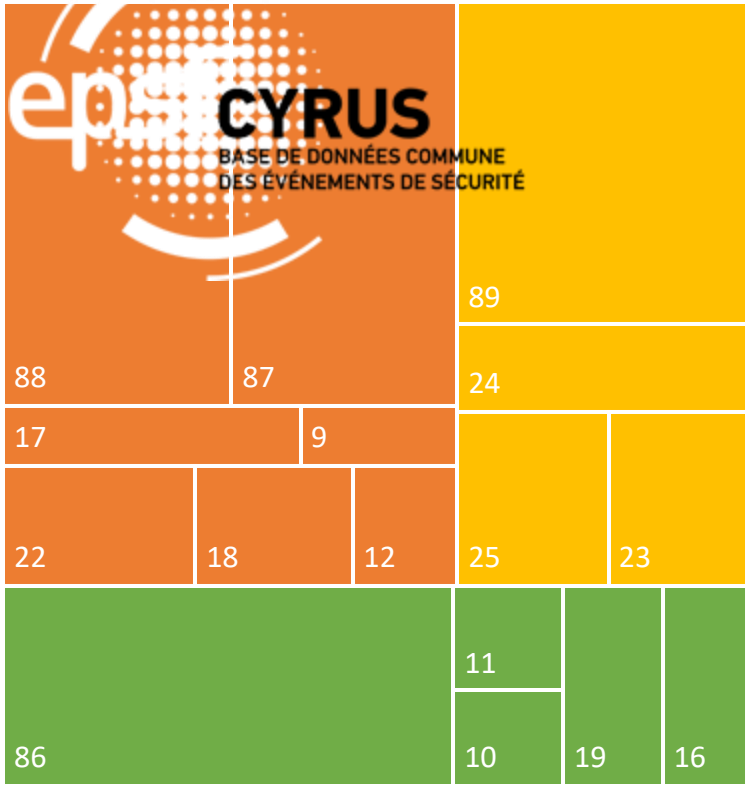
+ 25 000 safety events

~140 significant acc

~40 level crossing accidents

10 collisions or derailments

1-2 fire in rolling stock …



2023 common study

EPSF : French rail safety authority
INERIS : National institut about risk in industrial environment

1 – Annual collect of Common Safety Indicators by EPSF
2 – Transmission to ERA and multiple uses

How CSIs assess safety performance ?
Criticial analysis to qualify and enrich the representation of safety level

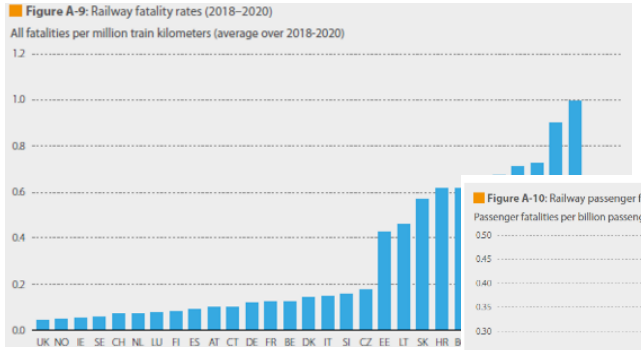
Overview of CSIs and CSTs

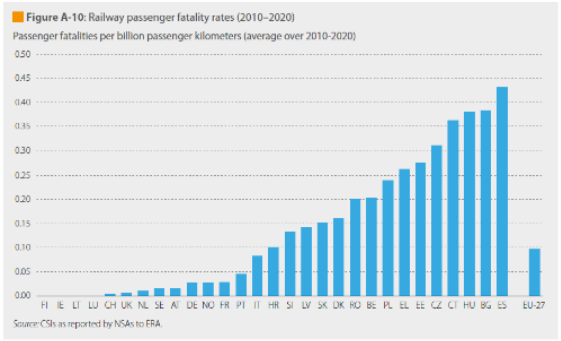
Designed to provide a representative picture of **rail risks in Europe**
First set in **2004** (Safety directive 2004/49/CE)

One of the **key choices** made by the CSIs was to measure the risks through the occurrence of **significant accidents** and an estimate of their human and economic

Overview of CSIs and CSTs

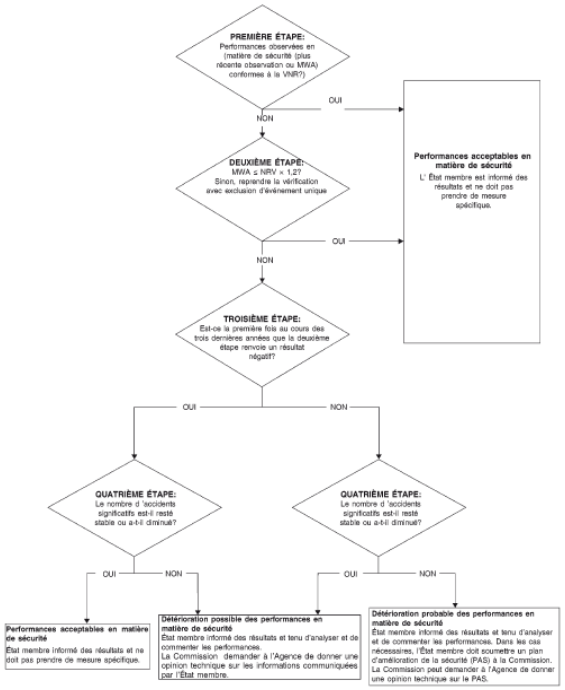
2 types of assessments : **Relative / Absolute**





Millions of Trains.km
to normalize

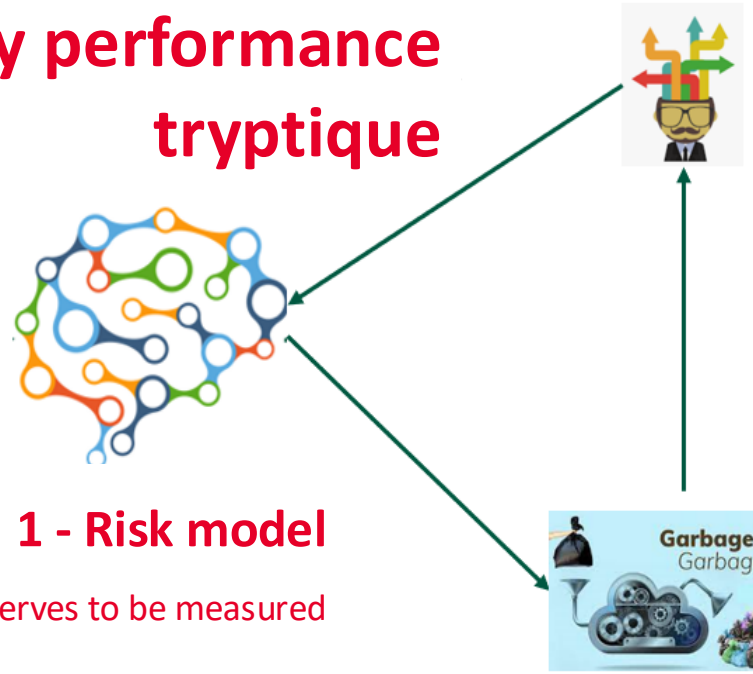
$$NRV_Y = \frac{\sum_{i=x}^{N} W_i \times OBS_i}{\sum_{i=x}^{N} W_i}$$



CSM CST 460/2009/CE

Methodological framework for analysis

Safety performance tryptique



3 – Uses

A set of uses for decision based on metrics

1 - Risk model

What deserves to be measured

2 – A set of metrics

What help to measure

1 - CSI and risk model

Visible composant with events we can detect

Unvisible composant with techincal, organisational and human dynamique where risk arise without visibility

Risk model focused on accidents => Risk level = f(quality of the collect system)

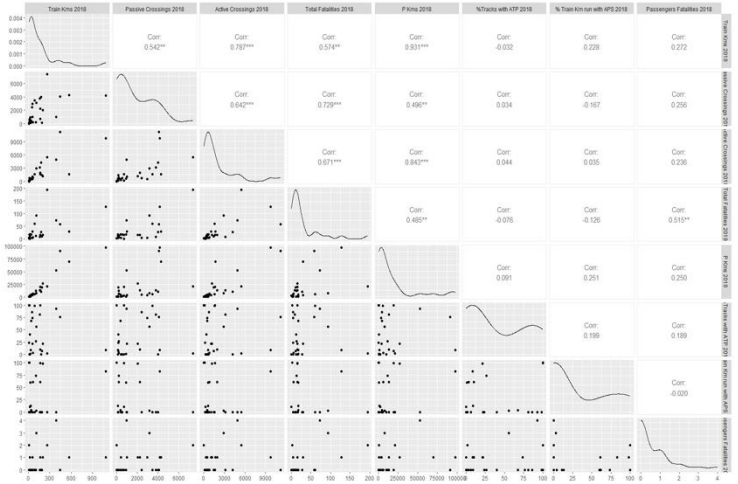
2 – Metrics

Relative assessment

Persons killed

?

Correlation analysis



1 – number of active LC
2 – number of passive LC
3 – network size

3 - Uses

Absolute assessment

National Reference Value and single CST are fixed value = linear acceptability

Gravité / Probabilité	Mineure	Significative	Grave	Très grave
Fréquent	Sc4	Sc6	Sc5	inacceptable Sc3
Peu fréquent		acceptable sous conditions		Sc1
Rare	Sc7		Sc7	Sc2
Très rare	acceptable	Sc6		

Acceptability matrix = convex acceptability

3 convictions as conclusion

- **Transparent reporting** of safety events is a key (culture securité)
- **Assessing** operators only on the **safety events** they report **can lead to certain deviations**
- **Safety assessment** of a rail operator = overall **performance** of **its safety management system**

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Thank you for your attention!