



16 November 2022

SAFETY AT WORK

Protecting rail workers
from trains

100 YEARS
ANNIVERSARY





Evaluation of safety PDCA-framework implemented in the Netherlands in 2005: effect on staff hit by train and compared to international numbers

Bart Hoogcarspel, UIC webinar “Safety at work protecting rail workers from trains”, Paris, Nov 16th 2022

ProRail

veilig werken



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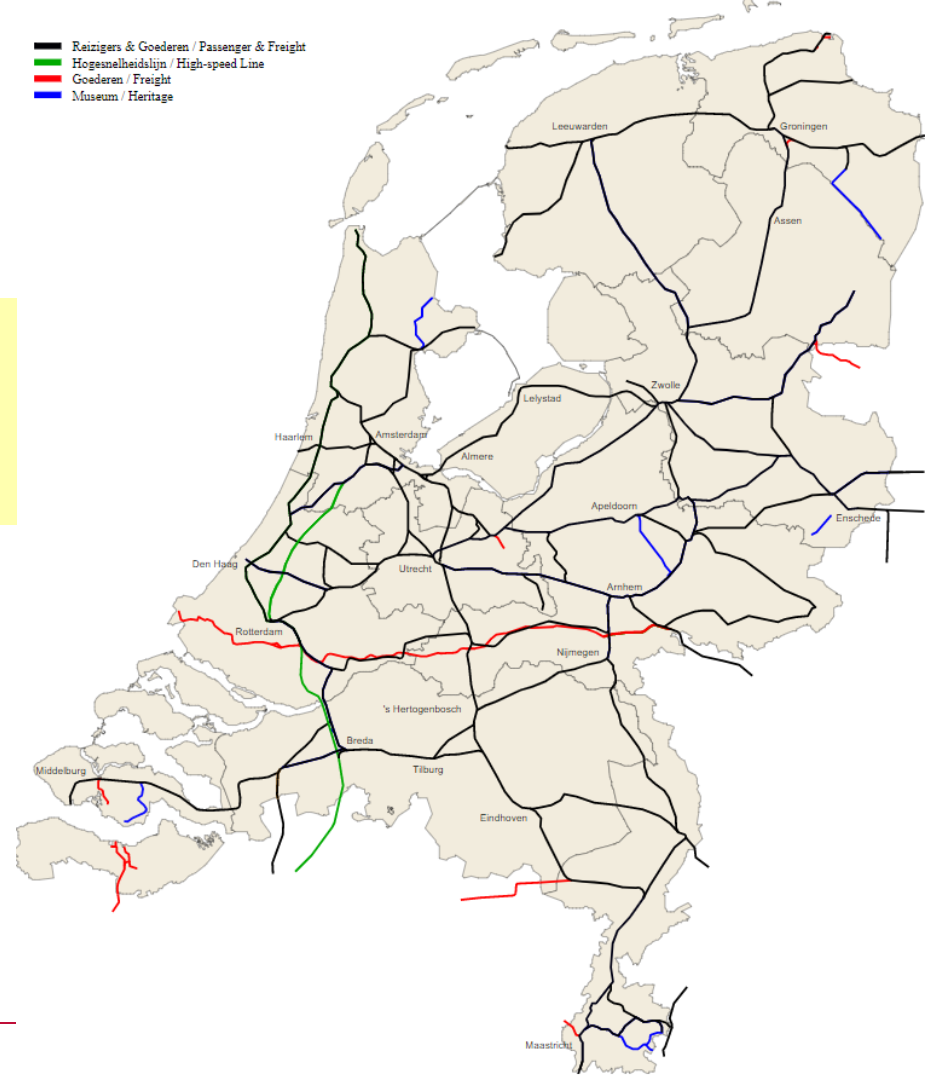
- **International:**

- UIC-Safety database
- Patterns for 21 countries
- Conclusions



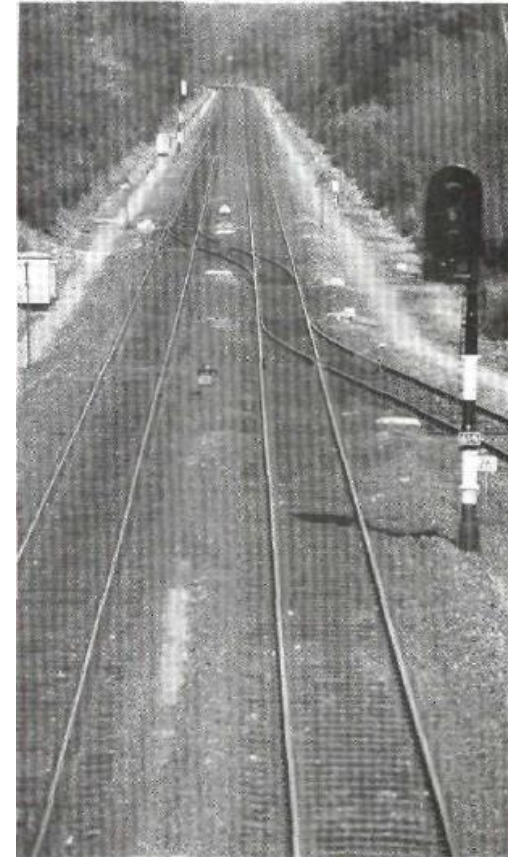
Netherlands

- Reizigers & Goederen / Passenger & Freight
- Hogesnelheidslijn / High-speed Line
- Goederen / Freight
- Museum / Heritage



Track worker fatalities Mook 1995

- During maintenance of switches, while train traffic continued, one of the switches was in the wrong position
- An intercity train approached the switch with high speed while 40 km/h was max in that position
- In the switch the train was running with 100 km/h, but did not derail
- 3 track workers died, others were able to save themselves
- Direct causes could not be identified
- Multiple measures were proposed, but not quickly implemented



Reorganisation Dutch railway sector 2005

- Final split of NSA, RU and IM
- All new infrastructure and maintenance done by contractors
- In 2006 foundation railAlert created:
 - Where IM and contractors work together on safety (in several working groups)
 - Responsible for training and certifying safety staff
 - Positive: measures are being accepted more easily (before measures could be declared, but were not always implemented)
 - Draw back: it takes a long time to reach agreement (first update in 2013; 2018 update not formally accepted; now 2022 update in review)
 - Ensuring safety has become a part of the revenues from the contractors

railAlert



Implementation of framework of standards NVW-2005

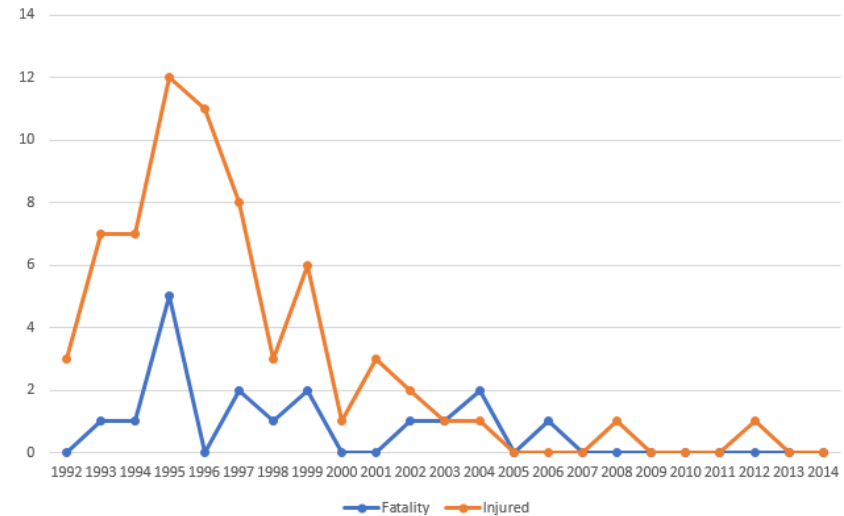
Some characteristics:

- Basic philosophy: no work on tracks while trains running
 - Eliminate source of danger
 - Shield the danger
 - Collective protection
 - Individual protection
- Double shell protection of possessions:
 - Measures by signaller
 - Explicit transfer of responsibility to safety staff on site
 - Measures by safety personal on site
- No mixture of tasks: safety task is separate from track work
- Systematic reduction of work with only Look-outs



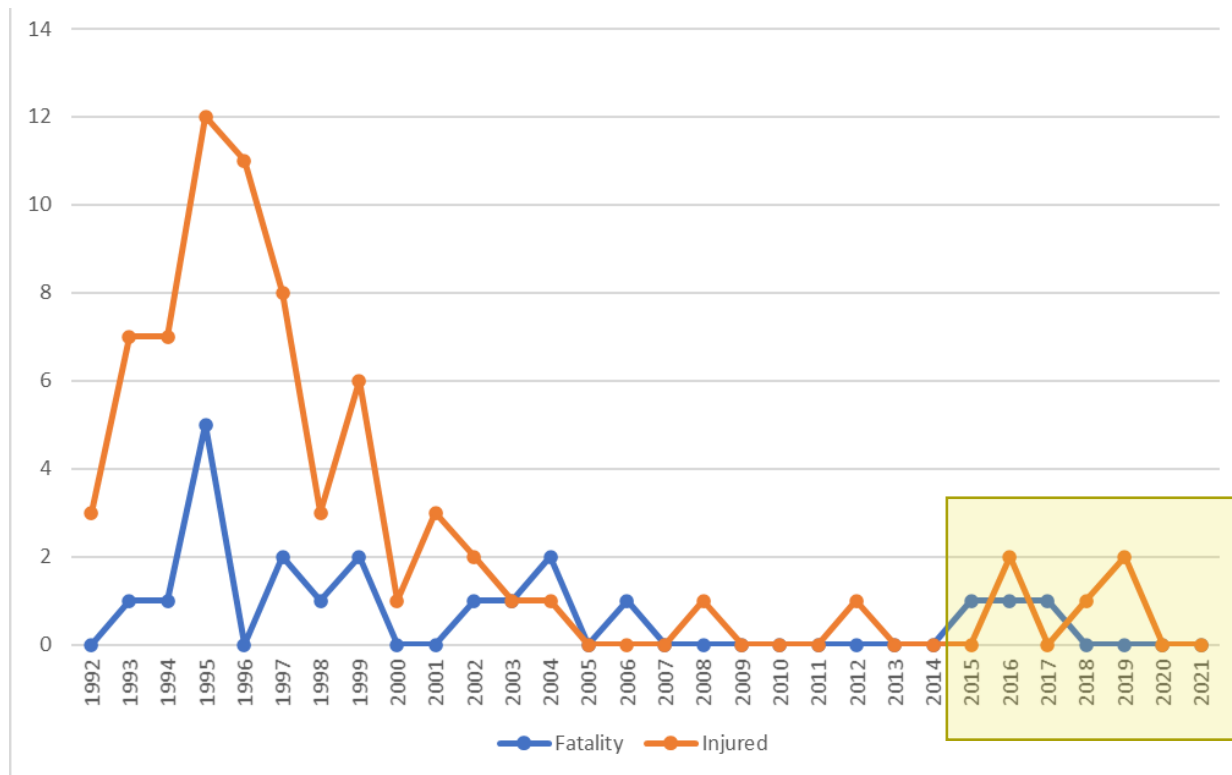
Evaluation NVW-2005 in 2015

- No fatalities (top) from 2007-2014
- Near accidents (below): decreasing 2002-2014
- Improvement started directly after 1995
- Since 2005 stepwise reduction of near accidents



Evolution after 2014: including light injuries

- From 2015 increase
- Since 2018 no fatalities
- Why the decline since 2015?



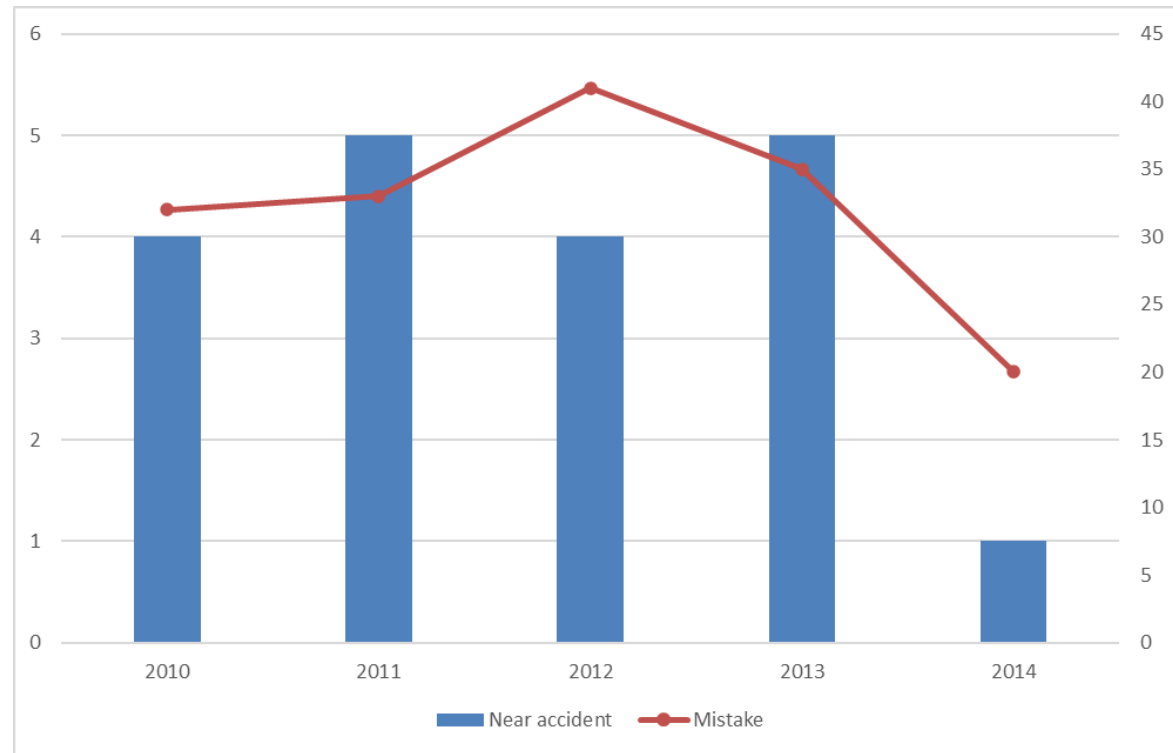
Conclusions

- Shockwave in 1995 (5 fatalities) triggered awareness and measures
- Systematic risk reduction applied
- Resulted in:
 - Reduction of fatalities and injuries
 - Reduction of near accidents
- But still: after some years higher numbers
- We have to stay aware!



Case 2014: double track possessions

- Before 2014: routinely single track possessions on double track lines
- Starting 2014: standard double track possessions
- Near accidents: from 4/5 to 1 per year
- Mistakes in possession protection: from 35 to 20 per year



Challenges for now

- Many track workers:
 - work only parttime for the railways (often < 1 day per week)
 - speak different languages
 - work in multiple countries (with different (levels of) safety measures)
 - will not work for the railways all of their lives
 - will not experience the danger in real life
 - might be distracted by worldwide problems:
like: climate, war, inflation, energy, pandemic
- Implementation of new technology
 - ETCS
 - Mobile devices (combined with the accompanying distraction)



International



Special focus on the COVID 19 pandemic

UIC SAFETY UNIT
UIC Safety Report 2022

Significant Accidents 2021

Public Report

October 2022



INTERNATIONAL UNION
OF RAILWAYS

UIC-Safety database

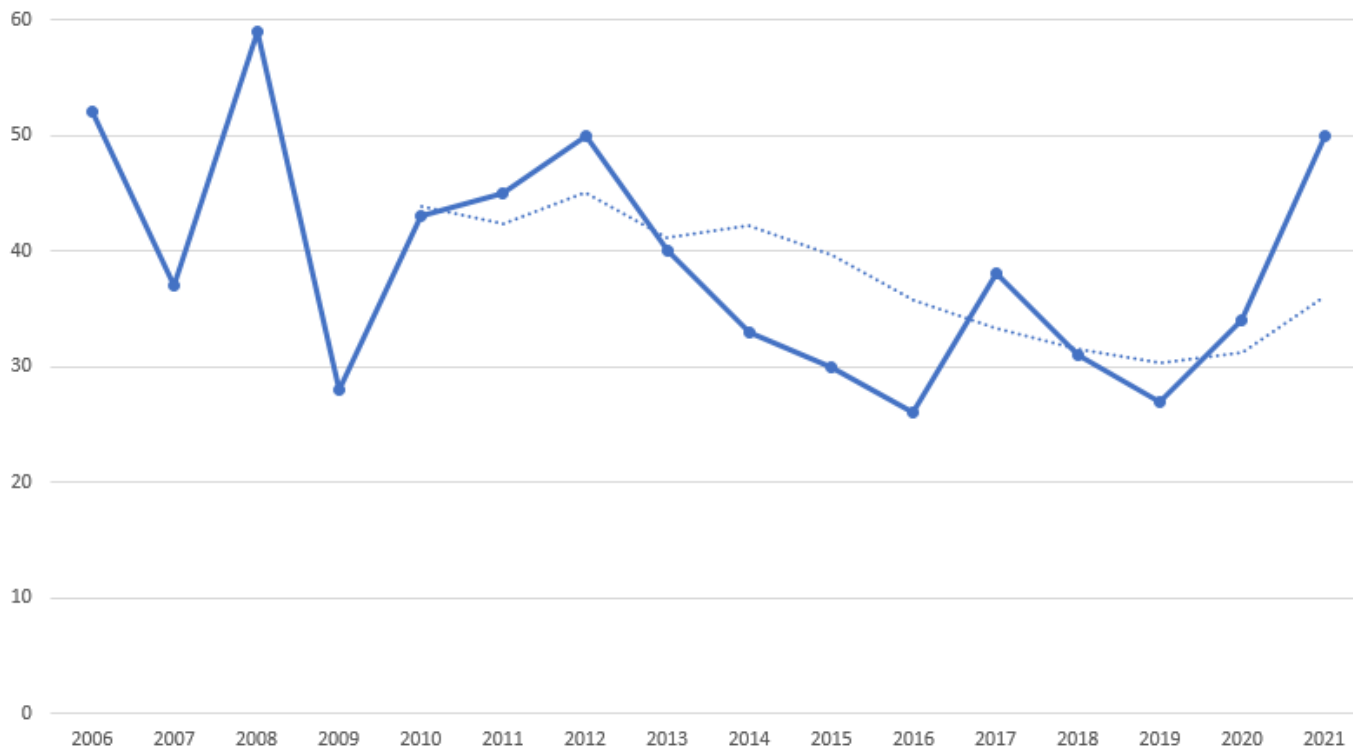
- > **Created in 2006, yearly report, benchmarking for members**
- > **Contains: individual significant accidents with:**
 - Date, time, location, description
 - Causes
 - Consequences
- > **Data include shunting operations**
- > **21 countries with data since 2006:**
 - Austria, Canada, Belgium, Bulgaria, Czechia, France, Germany, Hungary, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK

When you want to know your own data, please contact us!

Staff hit by train 2006-2021: slow improvement in whole group

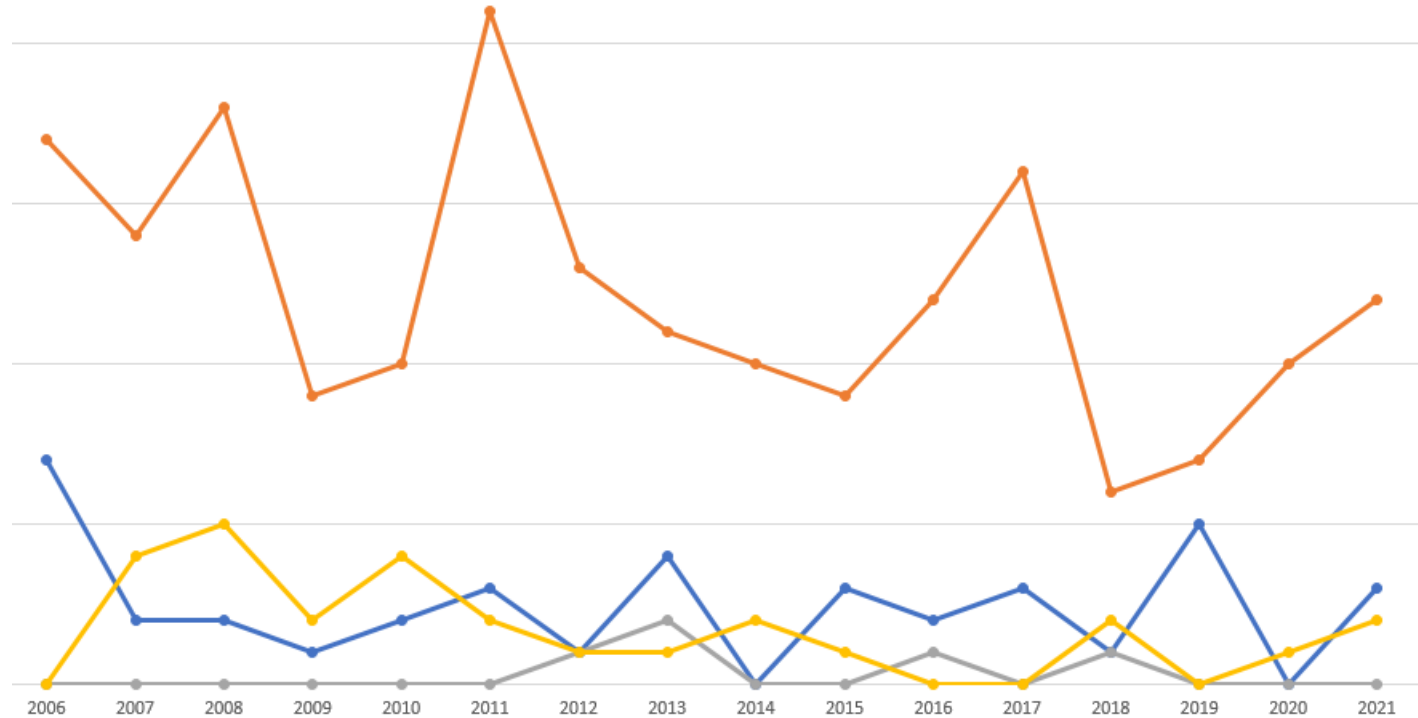
5-year means

- decrease from 44 till 30 (-32%) in 10 years
- Worrying increase to 36 in last 2 years
- Net gain: 19% in 12 years



Big differences between countries

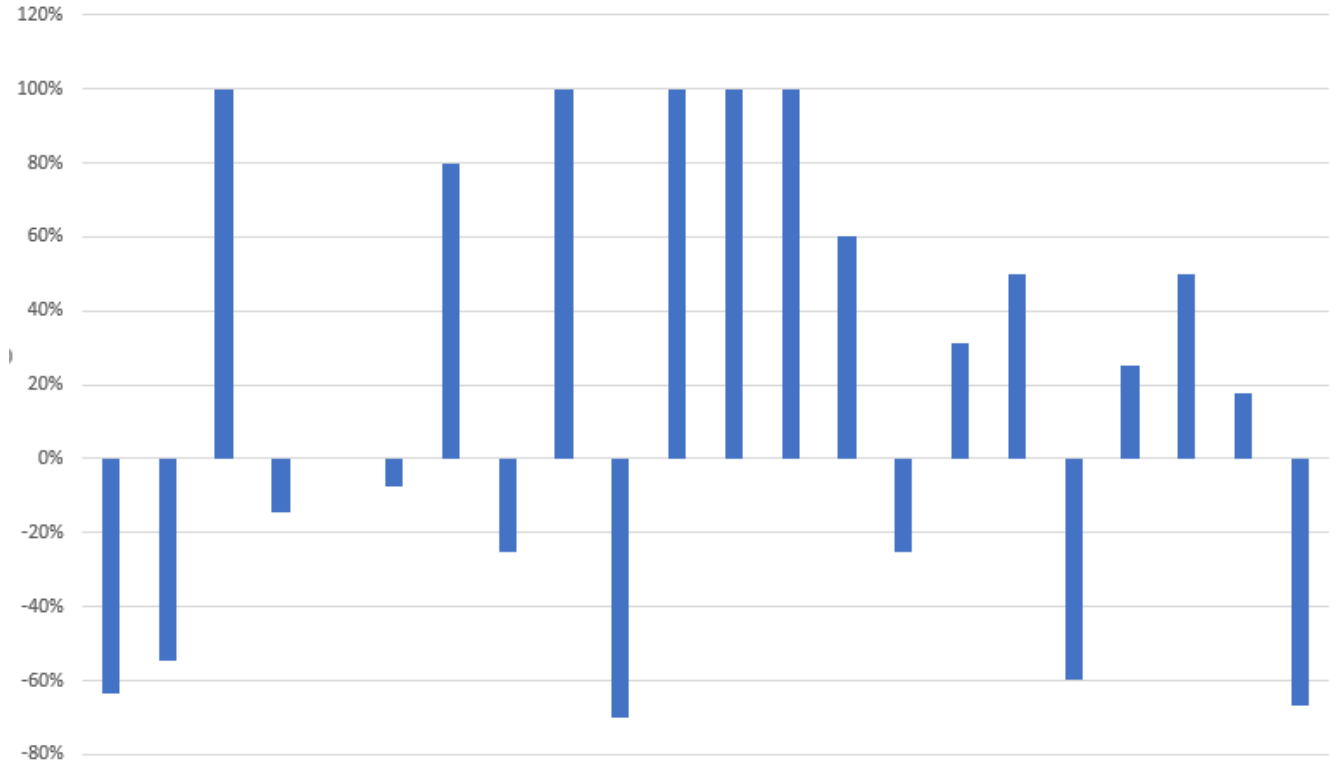
- High numbers and decreasing
- Low numbers and decreasing
- Low numbers and no change



Change (%) between 2006-2010 and 2017-2021 per country

12 countries show higher numbers

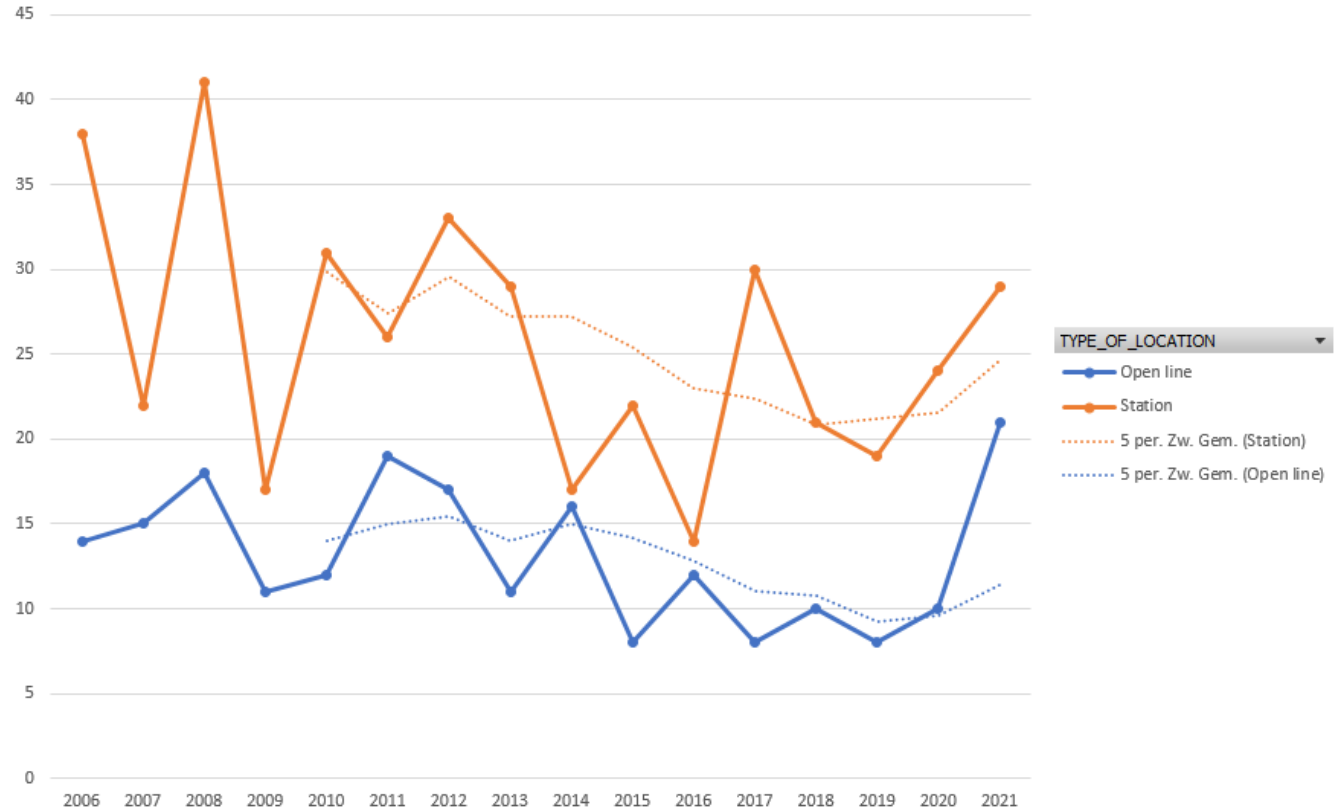
9 out of 21 countries have improved



Open line or Station

Stations give twice as many accidents, probably due to more infrastructure work in stations (signals, switches)

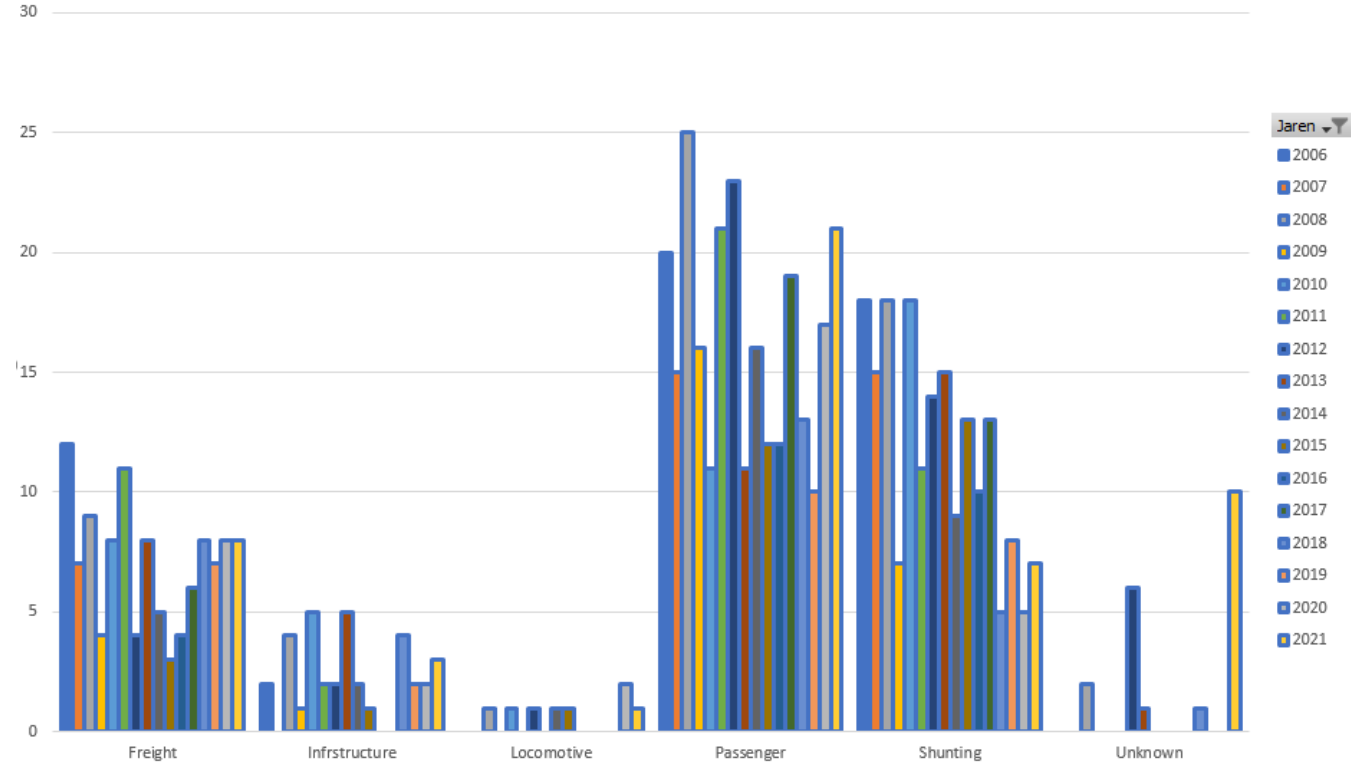
Evolutions are comparable



Type of traffic

Main Improvement
in **shunting**

Slight
improvement in
freight and
passengers



Conclusions

- > **Improvement of 19% in 12 years (5-year average, 2010-2021)**
- > **Worrying increase in 2020-2021: why?**
COVID-19?
people distracted?
- > **About half of the countries do better and the other half worse (2006-2010 and 2017-2021 compared)**
- > **In stations twice as many accidents compared to open line**
- > **Main improvement in shunting operations**

**Thank you for your
attention!**

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www.uic.org
[#UICrail](https://twitter.com/UICrail)



Q&A: answers to questions asked in the chat

- Can you elaborate on your understanding of experience from danger in real life (work) and how is that related to learning? Furthermore, what are your understanding of language differences and its impact on safety and how is ProRail working with that?
- Some excellent data. How was safety culture implementation received by the work force in general?
- *In 2014 we introduced a digital safety passport for all persons working on the tracks. To get the passport a one-day training is an obligation. The training focusses on danger awareness, safety culture and a set of life saving rules. You also need to follow an online safety training and make an exam showing that you understood the message. One of the regulations implemented is that when staff is not fluent in Dutch, there should always be somebody fluent in Dutch as well as in the language of the group.*
- What is exactly the definition of "near accident" in your statistics?
- *In ProRail we define Near accident as a situation where an accident would have occurred, but was prevented by a last moment intervention (use of horn by train driver, pulling a person in danger out of the line of the train, etc)*
- Does the chart showing the drop followed by a significant uptick in track worker accidents account for reduced train traffic during the covid-related lockdowns that were introduced between 2020 and 2022?
- *In the graph you see the absolute numbers of accidents, so no correction for less trains during the COVID-19 pandemic has been made.*