



# ERA biennial report on safety

## *Railway Safety Performance in the EU - 2014*

**3<sup>rd</sup> Session of the Group of Experts on LC safety**

Geneva, 23 October 2014

EKSLER Vojtech, Safety Unit

## Legal basis

- Art. 4,5,7 of the RSD (safety at least maintained, thus must be monitored with CSIs/CSTs).
- Art. 5 + Annex I introduce safety indicators (CSI) to allow safety monitoring in MSs.

Agency Regulation 881/2004 Art.9 :

“The Agency shall submit every two years a report on safety performance, which shall be made public.”

## 2014 report

- 4<sup>th</sup> statutory biennial report (7<sup>th</sup> report on the development of railway safety in the EU by the Agency)
- Based mostly on NSA annual reports and records in ERAIL database
- Geographical scope extended with Croatian accession to EU-28

## Safety overview

- General safety figures – outcomes
- Risk development in time
- Safety targets
- International comparison
- Intermodal comparison

## Accident outcomes

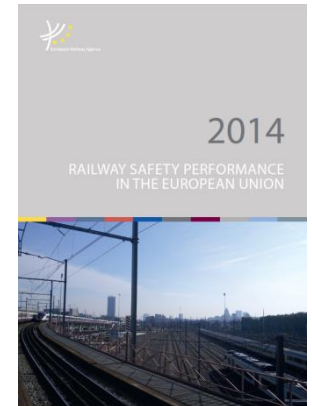
## Accident costs

## Safety of infrastructure

## Traffic volumes

## Safety management

## Independent accident investigation



*Safety at LCS*

### Data used

- Common Safety Indicators as defined in the Railway Safety Directive (49/2009/EC) and its Annex I – amended by 88/2014/EU
- Mandatory reporting by MSs to ERA (deadline - end September)
- The purpose of CSIs is to allow for general monitoring of railway safety and use of common safety targets

### Limits

- Risk analysis (type of accident/level crossing, ...)
- Only significant accidents (limited learning)



**Level crossings**

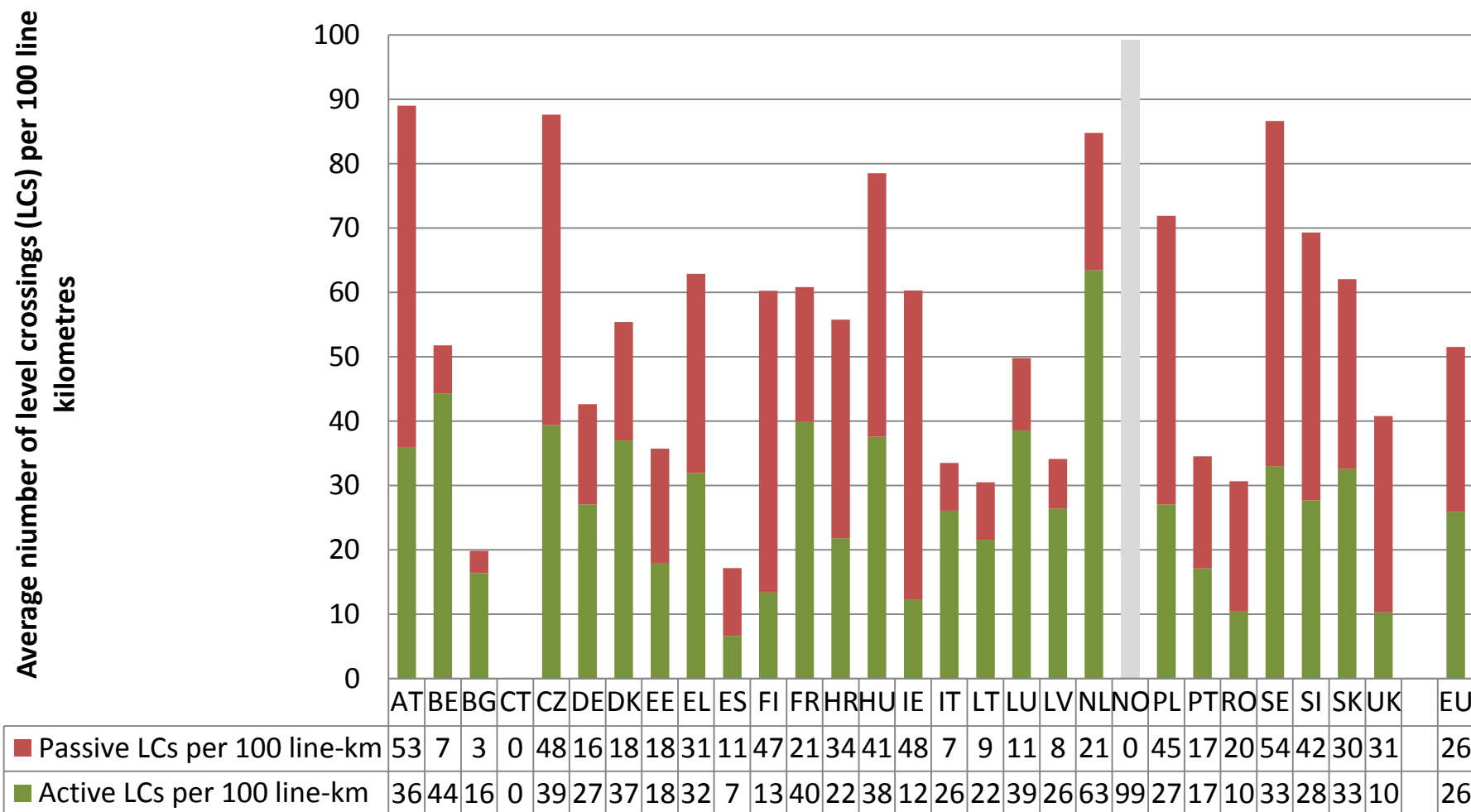
**&**

**Safety at level crossings**



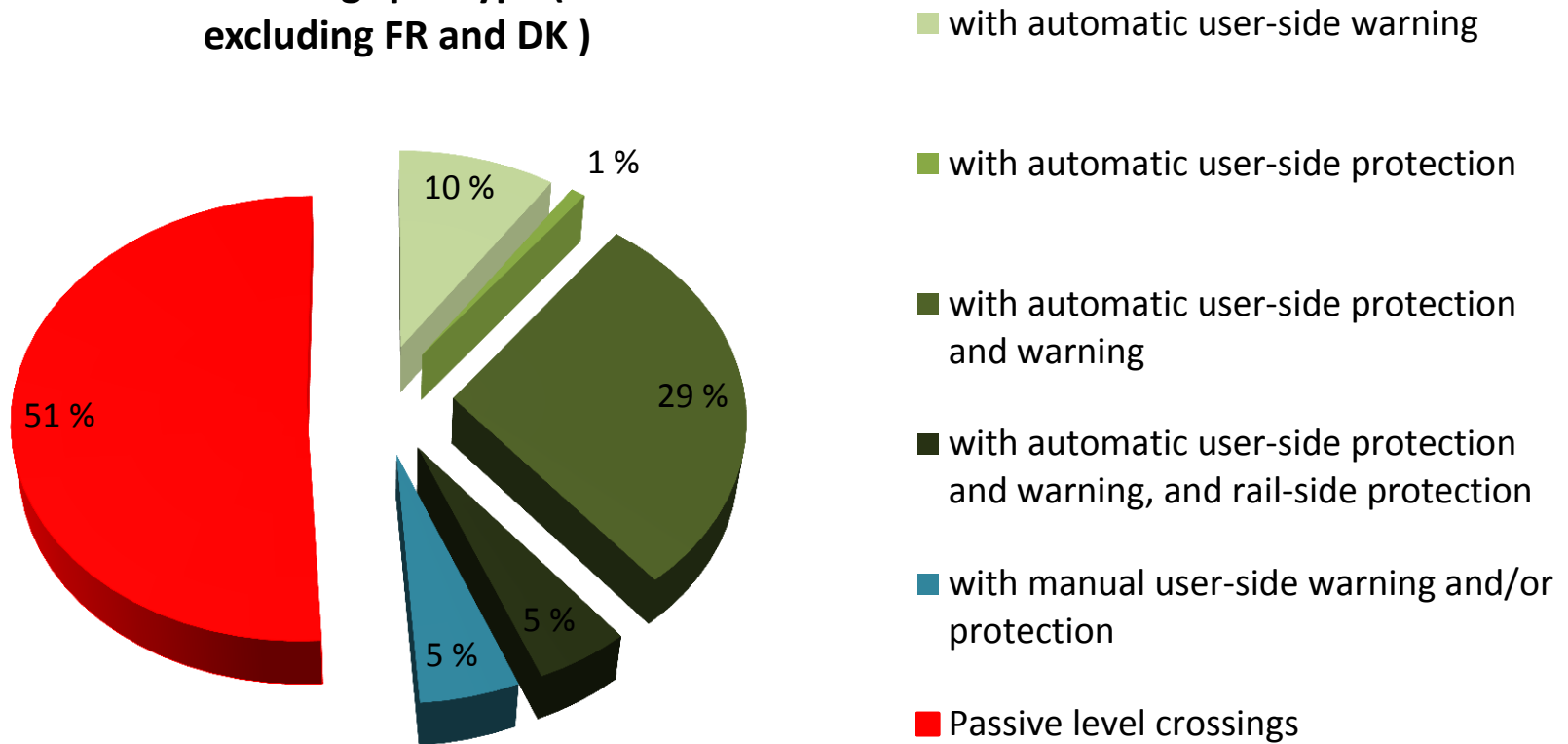
# Number and types of LCs

Number of level crossings (LCs) per 100 line kilometres (2012)



## Types of LCs

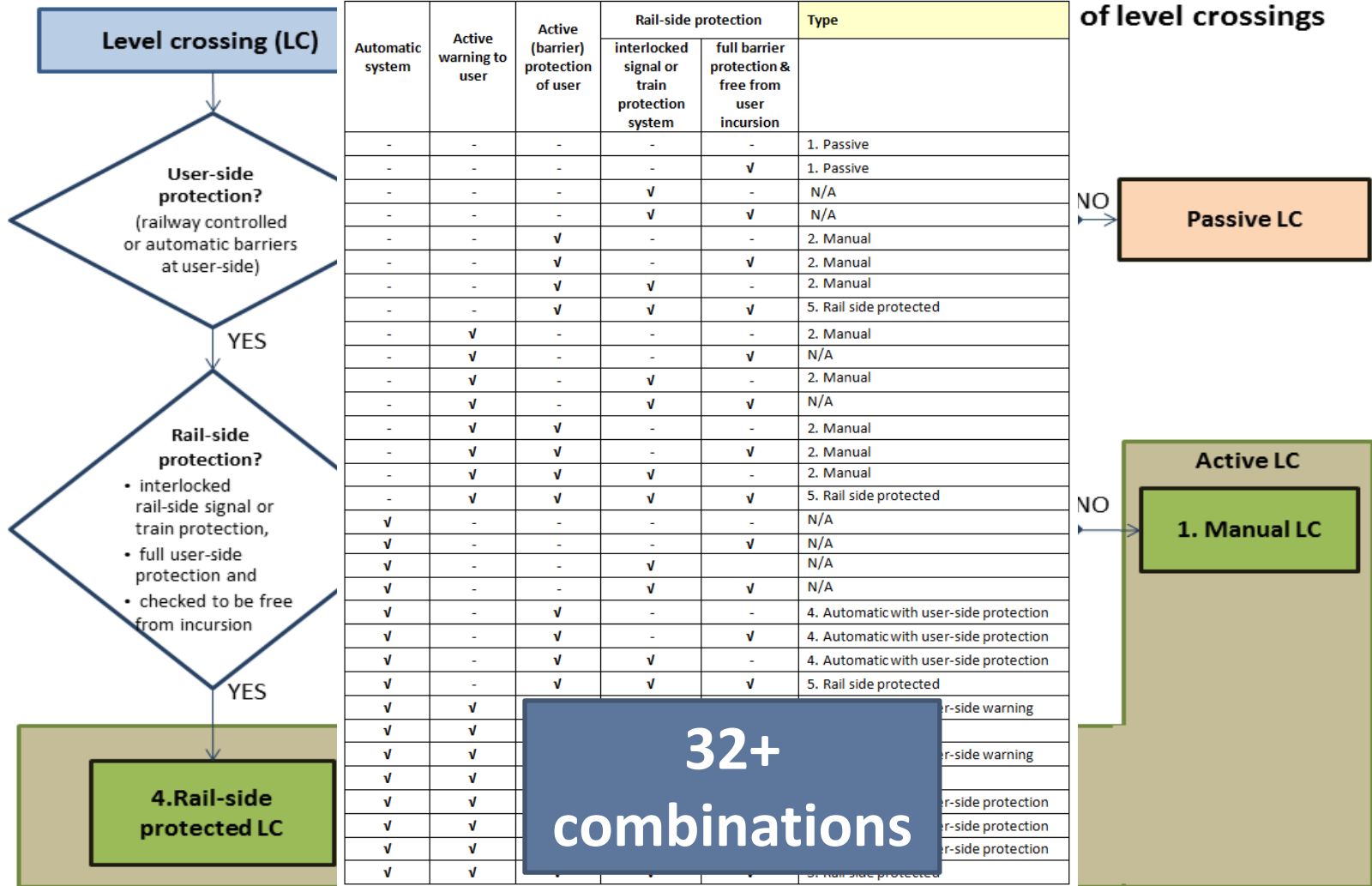
Level crossings per type (EU-28  
excluding FR and DK )



*Exposure and accident data per LC (type) not available...*

## Underlying classification system (CSIs)

**Table: Level crossing types classification matrix**

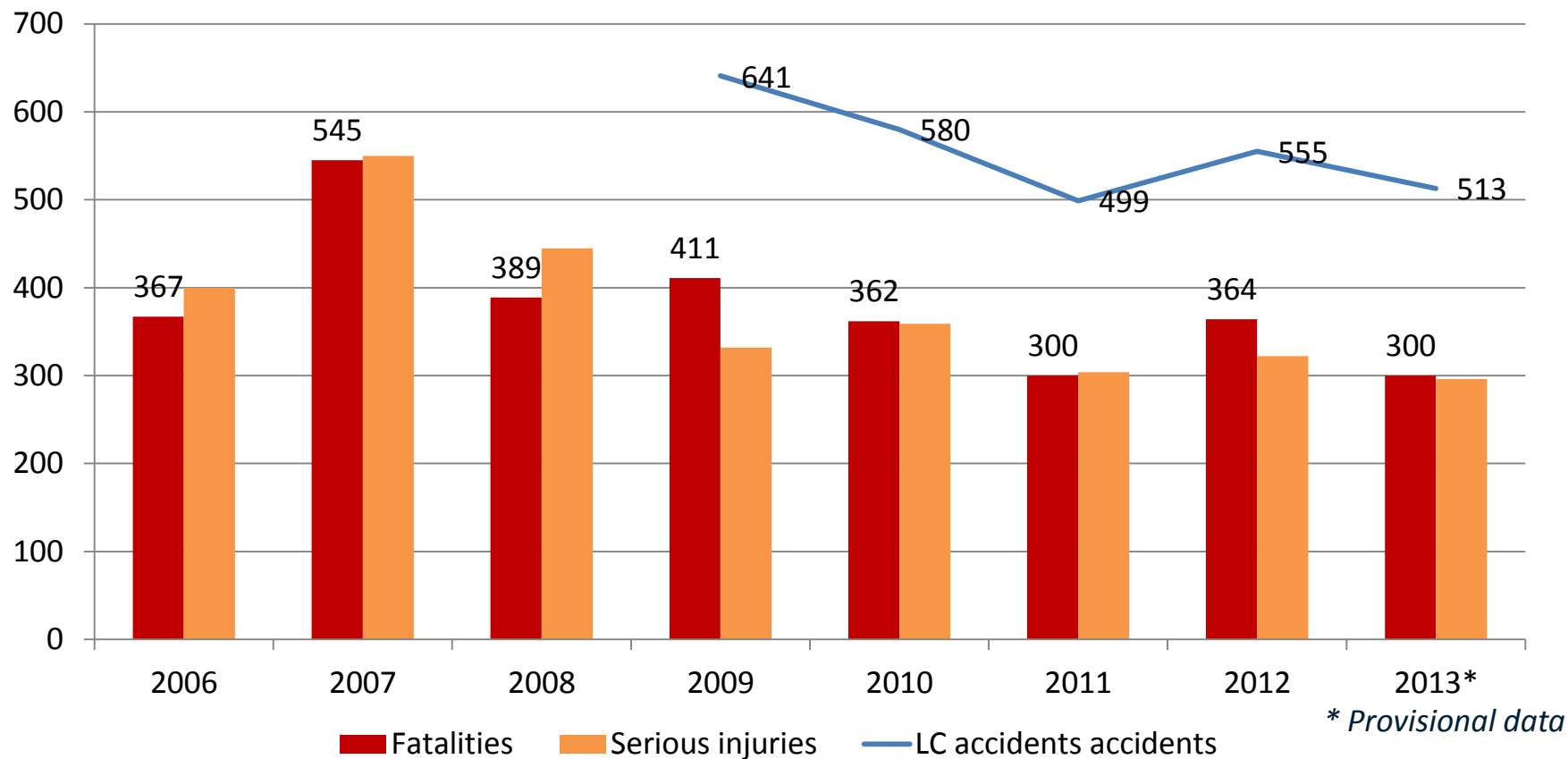


N/A or 'not applicable' indicates that the indicated logical conditions do not agree with each other.



# Accidents at LCs and their outcomes

Development in level-crossing accidents and the resulting casualties (EU-28, 2006-2013)



Since 1990: On average 3 LC accidents with more than 4 fatalities (catastrophic accidents) each year

# Underlying definitions

## Definitions in Reg.91/2003/EC (on transport statistics – Eurostat) and in specific legislation.

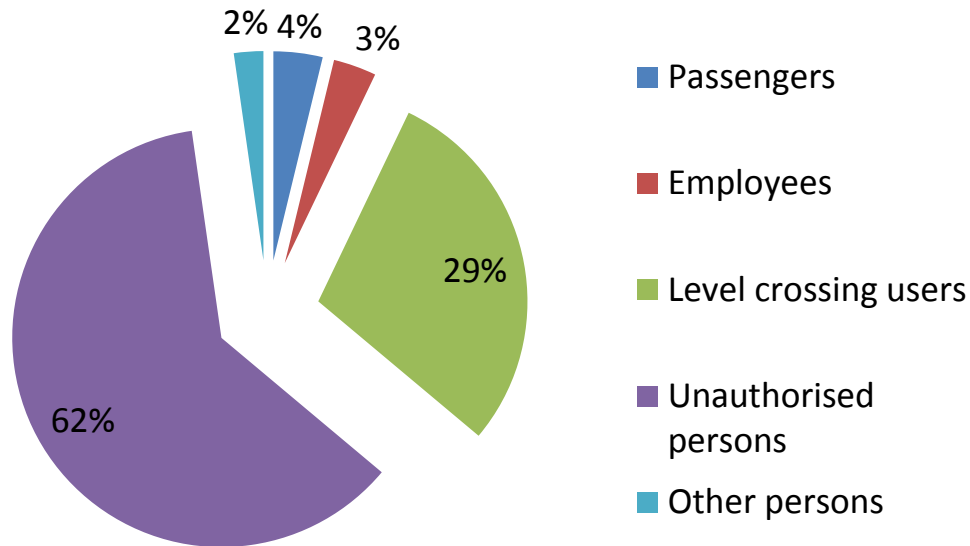
- Common definitions for fatality, serious injury, level crossing, ...
- Minor discrepancies for accident

	Rail (88/2014/EU)	Road (93/704/EC)
Accident	<b>Significant accident</b> <u>Criteria:</u> serious injury, significant damage or extensive traffic disruption	<b>Accident</b> Fatal/Non-fatal/injury
<i>Level crossing accident</i>	At least one railway vehicle and crossing vehicle, pedestrian or object at a level crossing.	Occurring at a level crossing.

*! Accidents per type of LC not yet available!*

# Level crossing accident fatalities shares

Level crossing accidents represents 26% of railway accidents and resulting fatalities represents 29% of all fatalities on railways (suicides excluded)

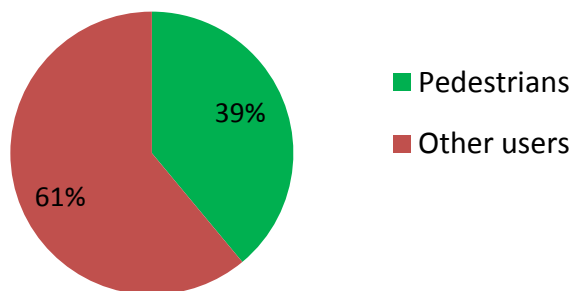


Share of LC accident fatalities among all railway and road fatalities (EU-28: 2010-2012)

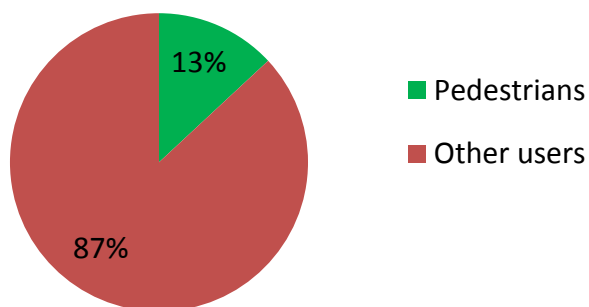
# Level crossing accident fatalities shares

## Who are the road user victims?

Killed LC users

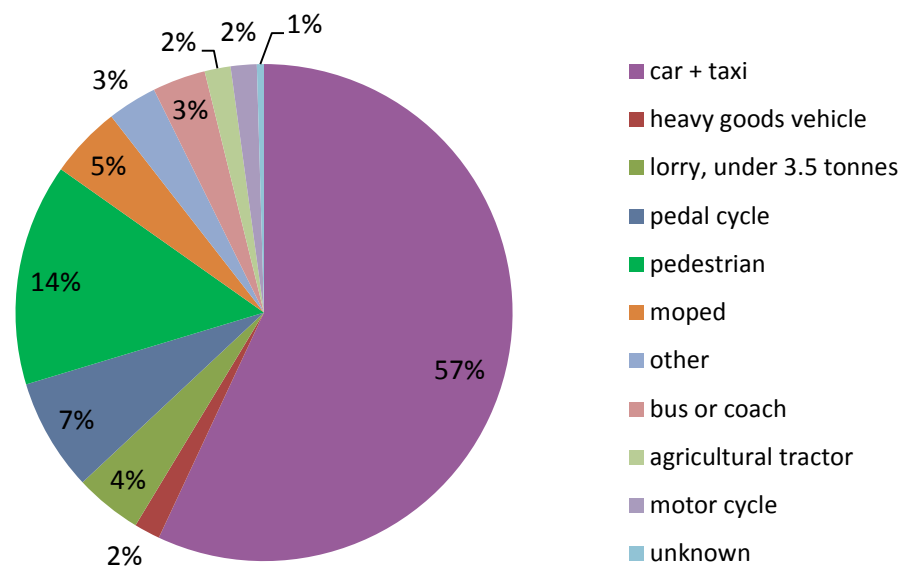


Seriously injured LC users



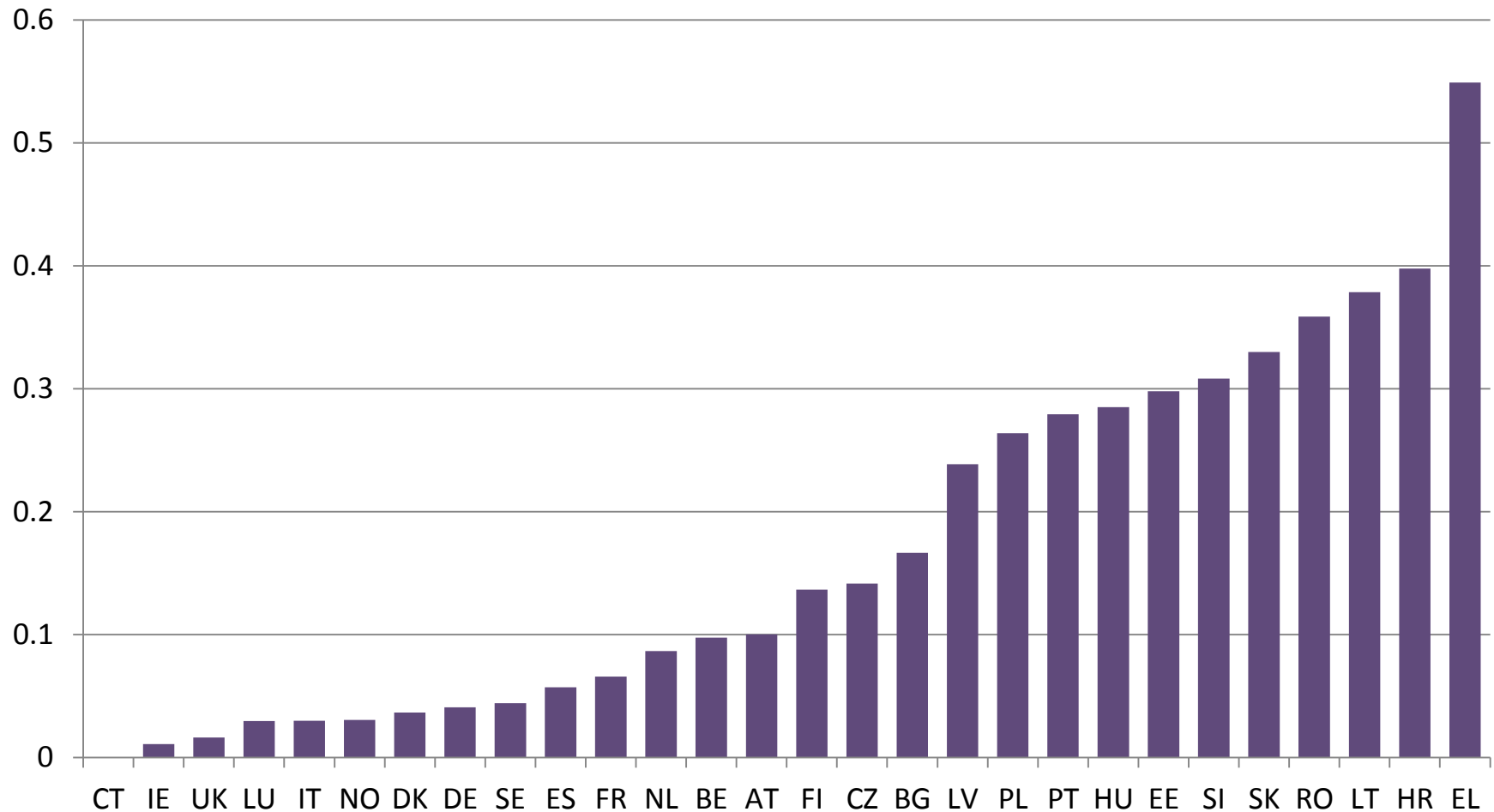
ERA survey among 14 MSs (2012 data)

Road casualties in LC accidents



CARE database – data for 6 MS (2006-2013)

## Fatality risk on LCs



Fatality risk at level crossings: Level crossing fatalities per million train-km (EU-28: 2010-2012)

## Risk at level crossings

- Accident risk
  - Relative number of significant accidents at LCs (per train-kilometres) (1)
- Casualty risks
  - Relative number of fatalities, serious injuries, KSIs, FWSI in LC accidents (per train-km) (2)
  - Number of LC user FWSIs per year arising from significant accidents/Number of train-km per year (3)
  - Number of LC user FWSIs per year arising from significant accidents/[(Number of Train-km per year \* Number of LCs)/Track-km]] (4)

*(1+2) CSIs (3+4) CSTs*

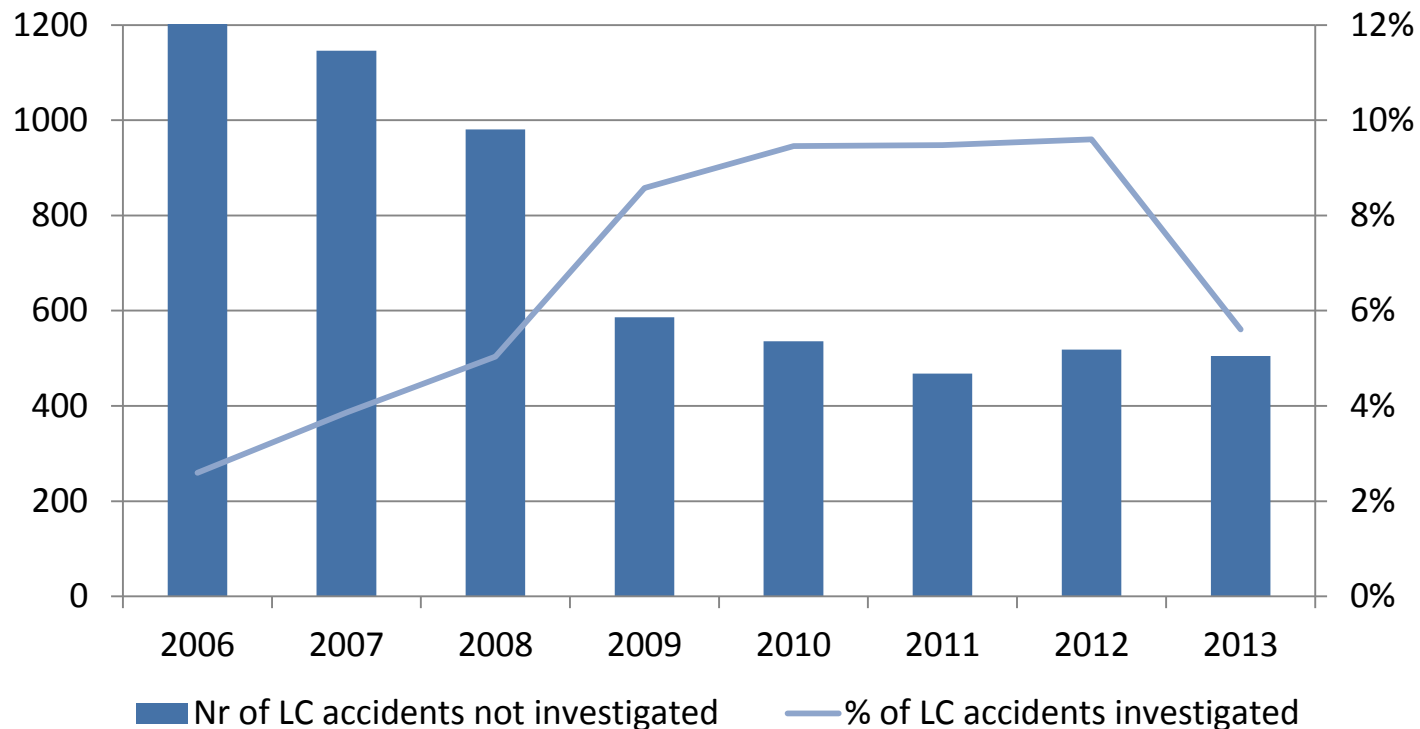


# Independent accident investigation

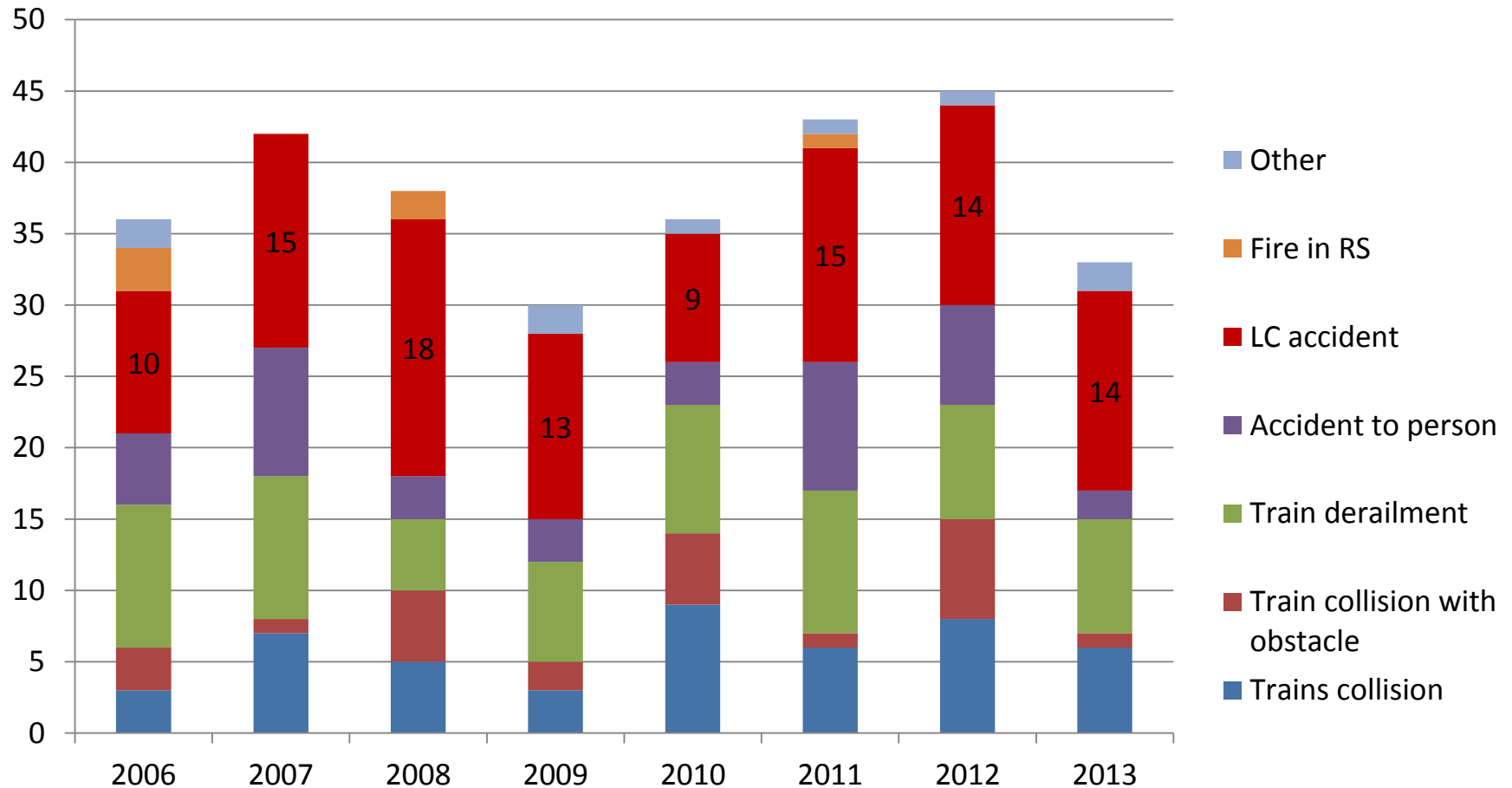


## NIB independent investigation of LC accidents

- NIBs investigated 6 % of LC accidents (2006-2013) (EU-28)
- LC accidents investigations account for 1/4 of investigations



# Serious accidents investigated



Serious accidents investigated by NIBs per type of accident (EU-27)

## What the independent accident investigation reports tell us?

- Indirect and underlying causes
  - Inspections carried out on the LC (visibility, protective devices...)
  - SMS of the IM and responsibility arrangements
  - Emergency response functioning
- Costs of accidents
  - Road infrastructure (about 7,000 EUR on average)
  - *Rail infrastructure + vehicles (100 kEUR+ on average)*
- Recommendations made (examples)
  - *Install barrier protection device*
  - *Assure a proper risk management by IMs*





2014

RAILWAY SAFETY PERFORMANCE  
IN THE EUROPEAN UNION

**More in the report**  
(also available on  
[era.europa.eu](http://era.europa.eu))



- **CSI data collected for EU-28 + NO+CH allows to evaluate and analyze safety at level crossings, but only at the top level.**
  - **While a common classification of LC types exists, the accident data are not yet collected for them.**
  - **Accident data may not be fully harmonized for different databases (rail, road), while fatalities and serious injury are.**
  - **Data on risk exposure (of different road users) is scarce – not available at EU level.**
  - **Methodologies for evaluating risk exist and have been tested (SELCAT, ERA) and are readily available**





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