



IRSC 2022

INTERNATIONAL RAILWAY
SAFETY COUNCIL

SEVILLA, OCTOBER 16-21, 2022





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ADDRESSING TRESPASSES AND RAIL SUICIDES IN PORTUGAL: AN INTEGRATED APPROACH

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CHAPTER 2: Understanding the problem Accidents*

CHAPTER 3: Understanding the problem Suicides

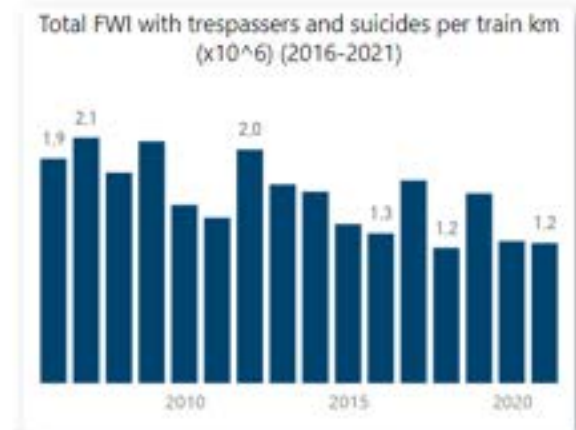
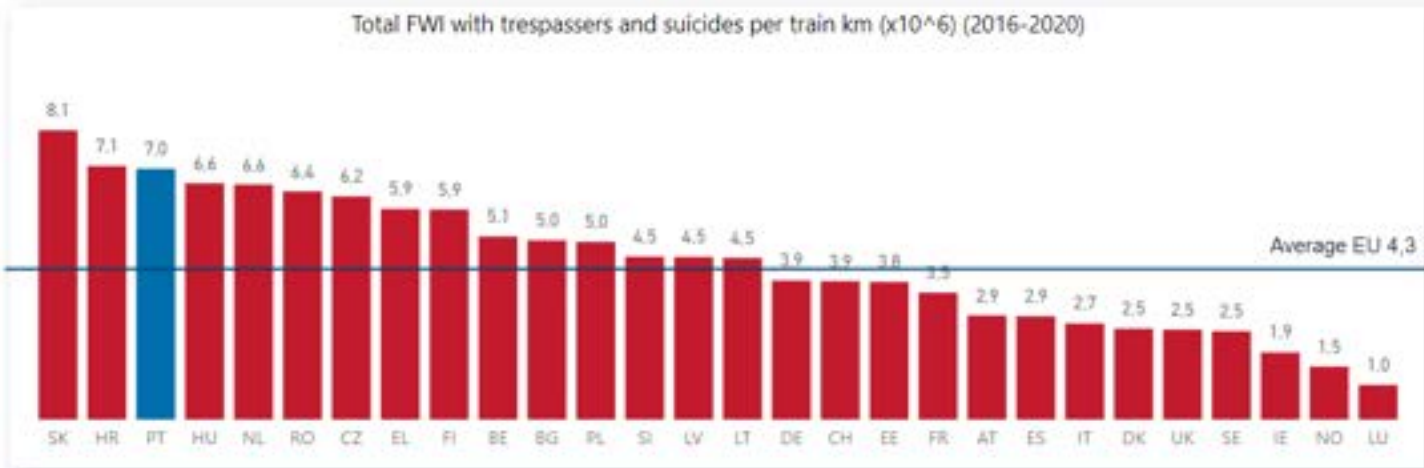
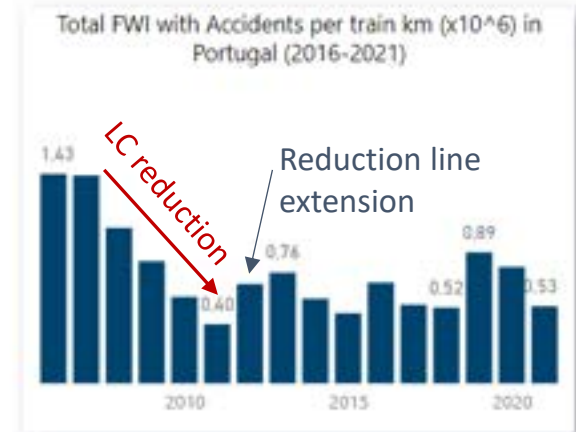
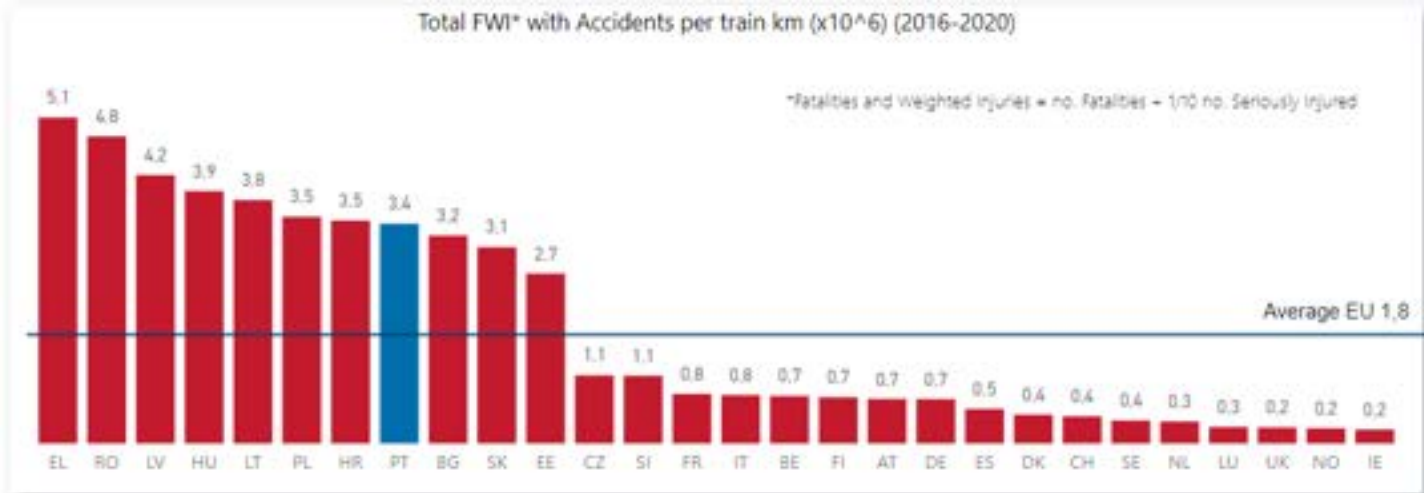
CHAPTER 4: Future actions

*include accidents to persons caused by rolling stock in motion and pedestrians in level-crossing (LV) accidents

CHAPTER 1

Background

Accidents and Suicides in the EU Context (2016 - 2020)

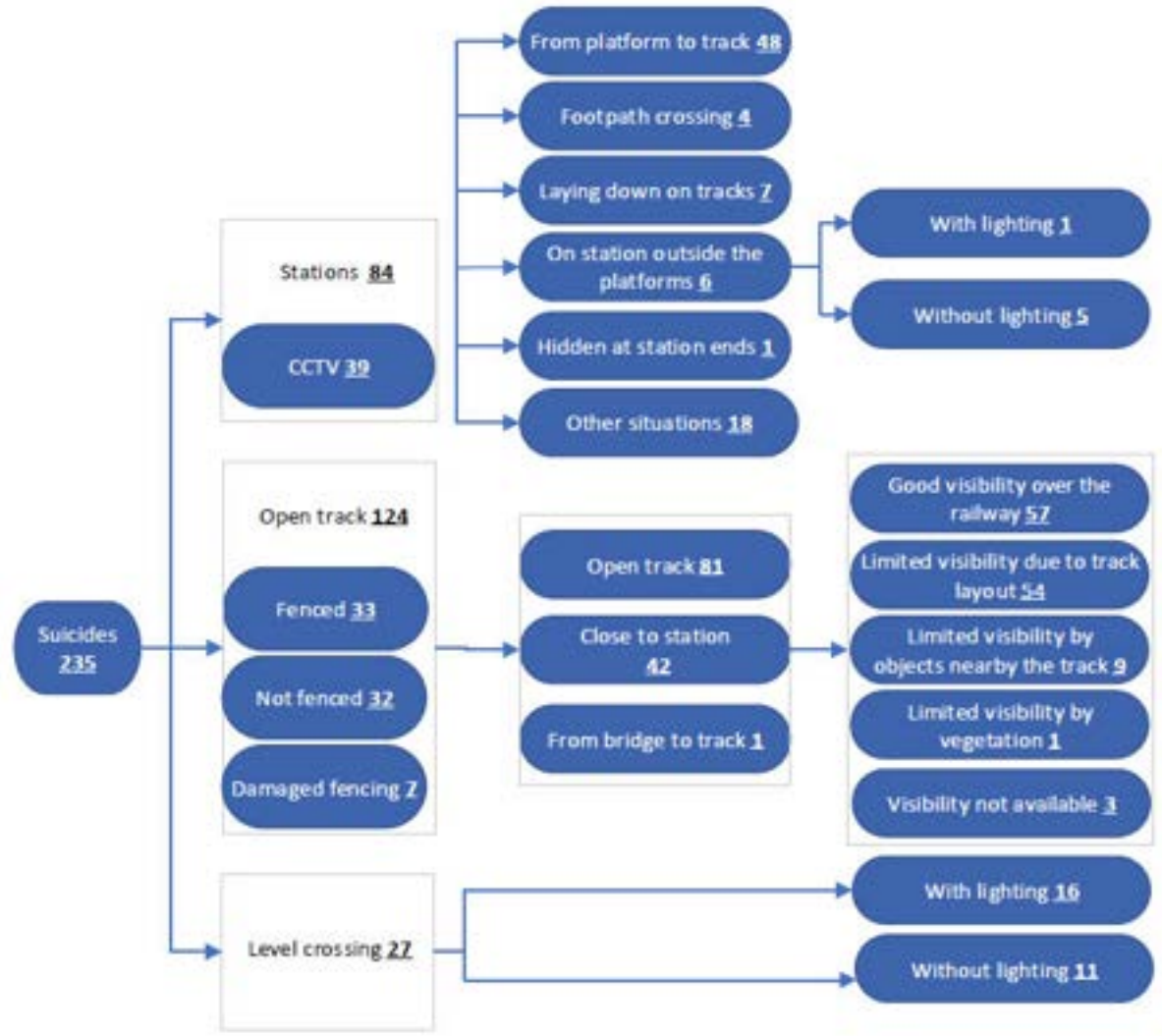
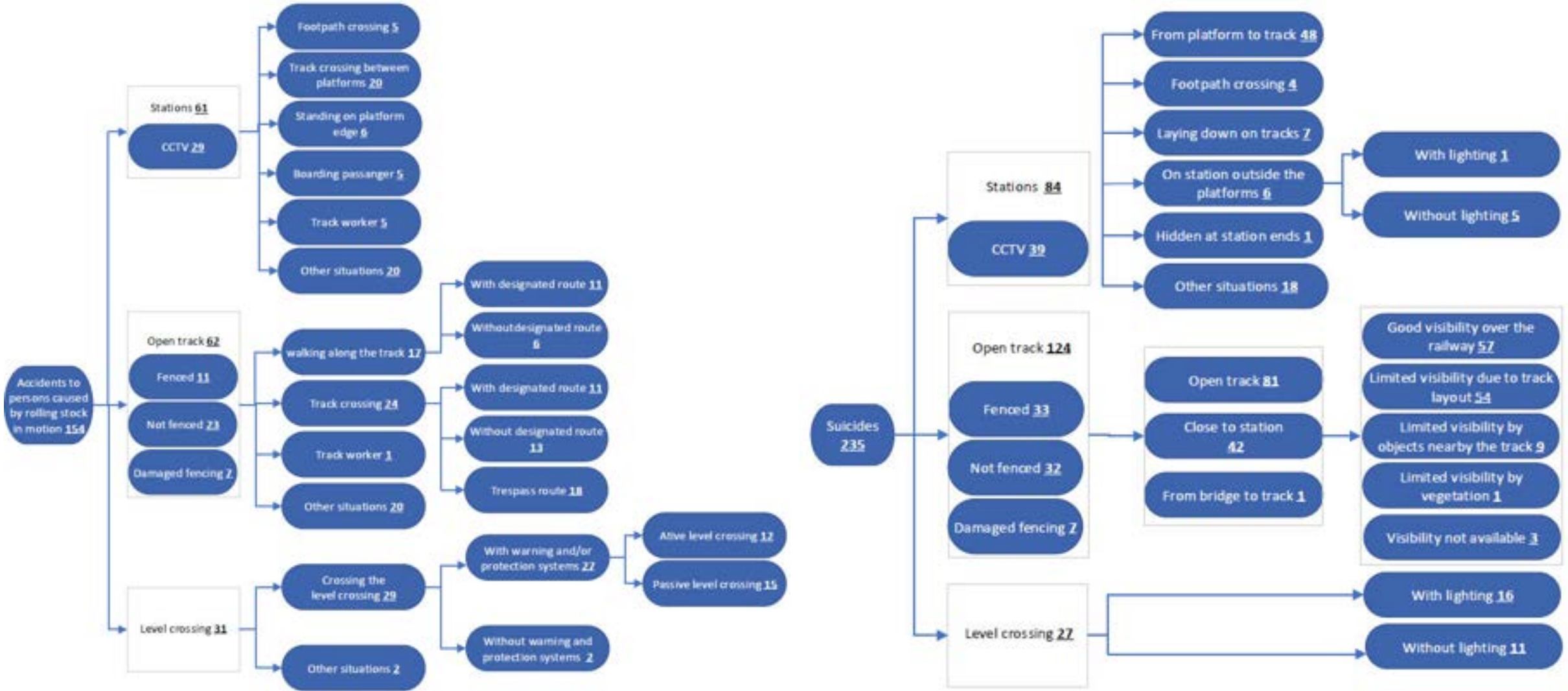


Data taken from ERAIL data base, last update: 23/05/2022. Accidents include "accidents to persons caused by rolling stock in motion" and "level-crossing users in all accidents".
Trespassers and suicides include "unauthorised persons in accidents to persons caused by rolling stock in motion" and both "suicides" and "Attempted suicides"

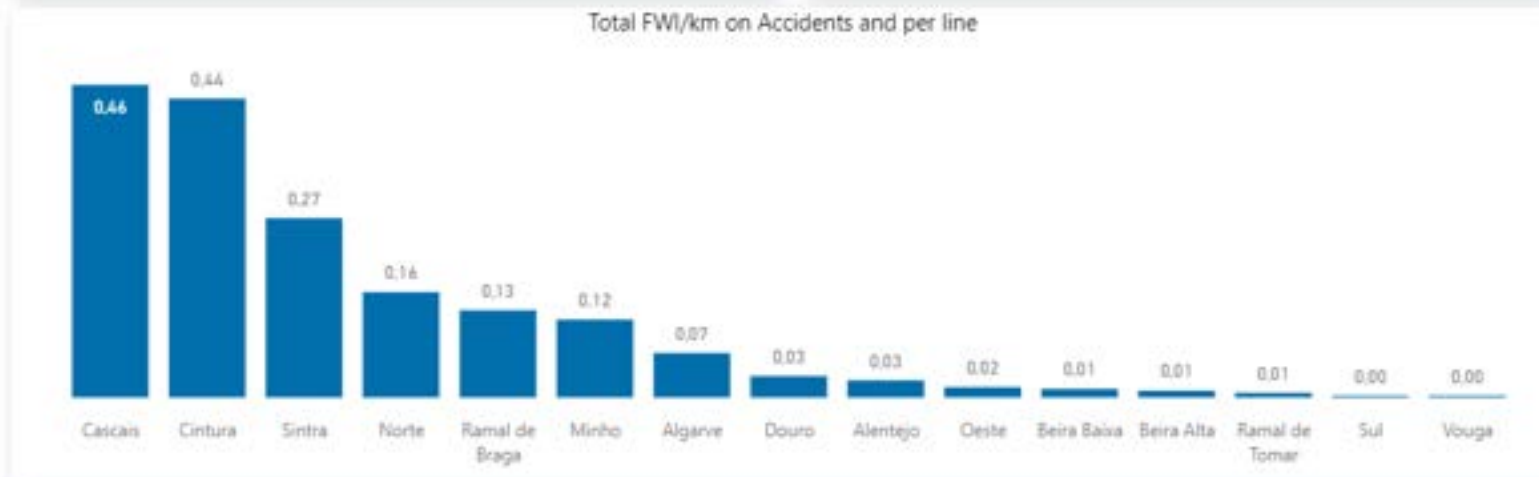
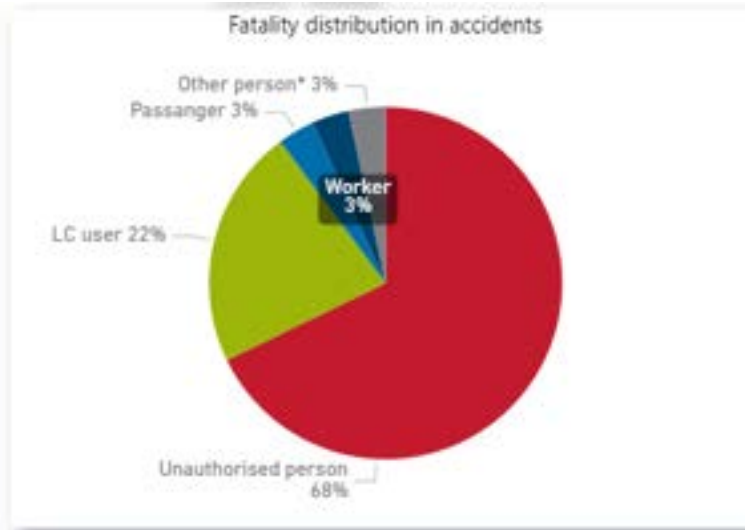
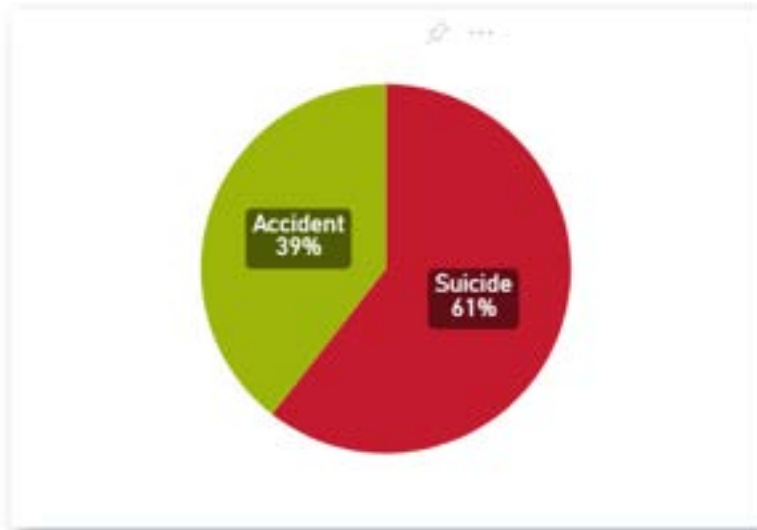
CHAPTER 2

Understanding the problem - Accidents (2016-2021)

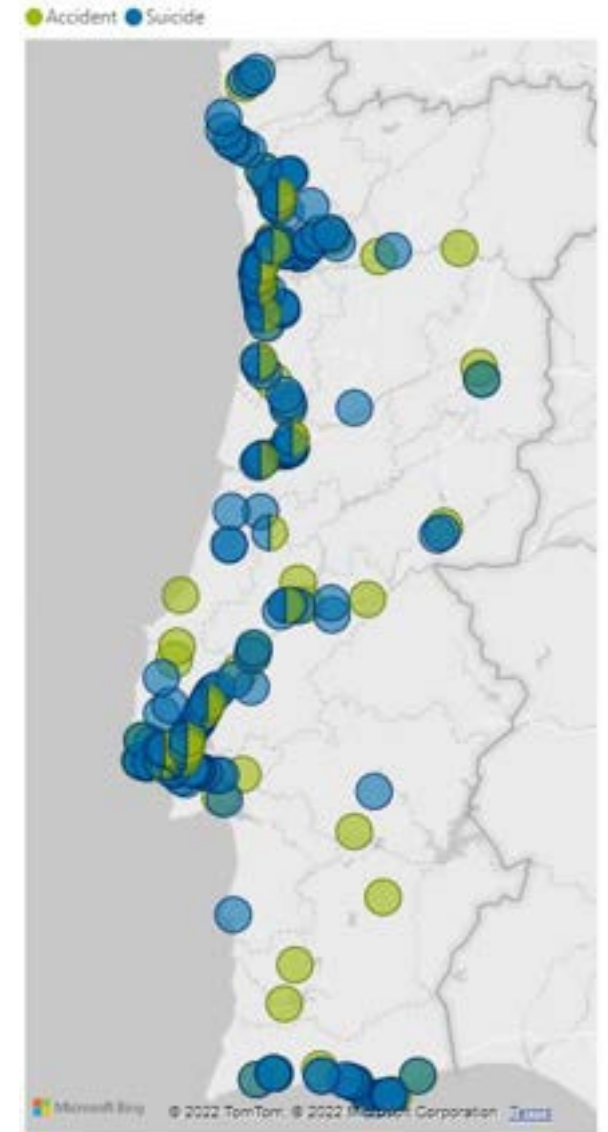
Accidents and suicides in Portugal



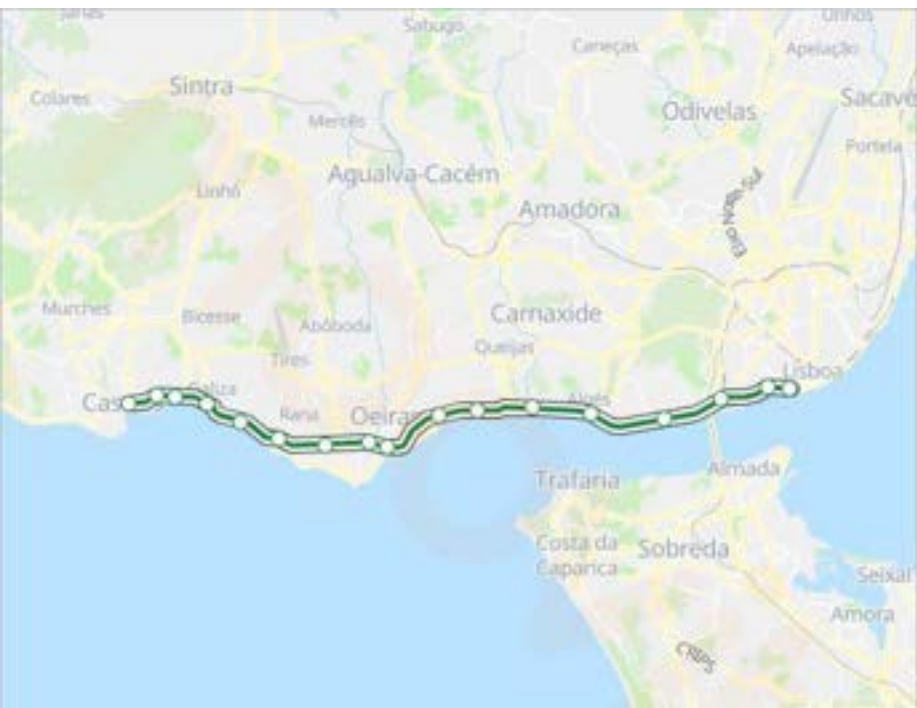
Accidents/ suicides geographical distribution



*It is considered "Other person" when the description of the occurrence isn't sufficient to categorise differently.



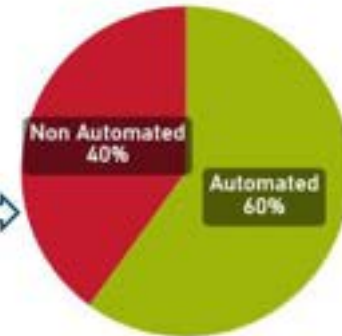
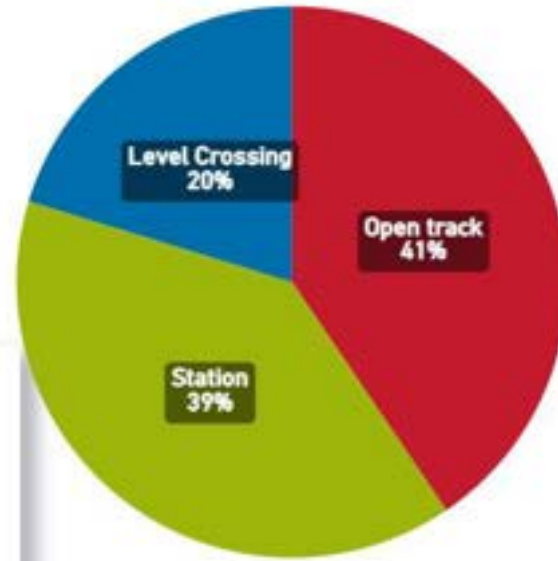
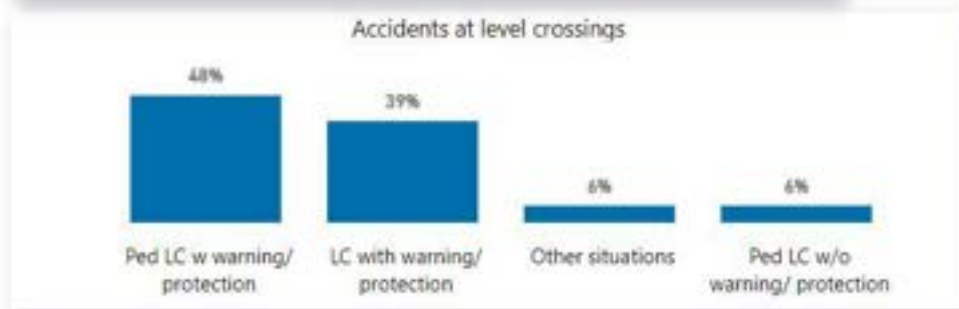
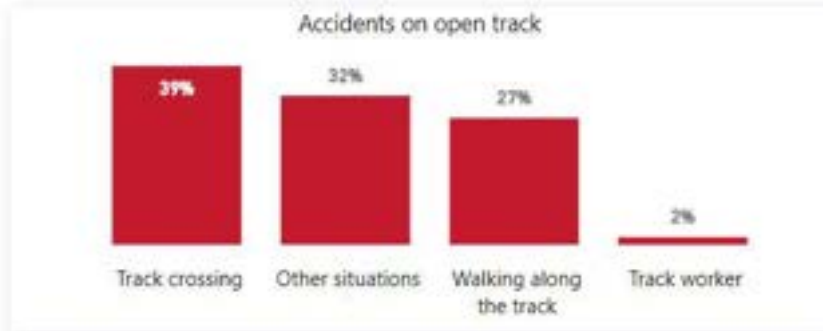
A closer look to Cascais line



● Accident ● Suicide



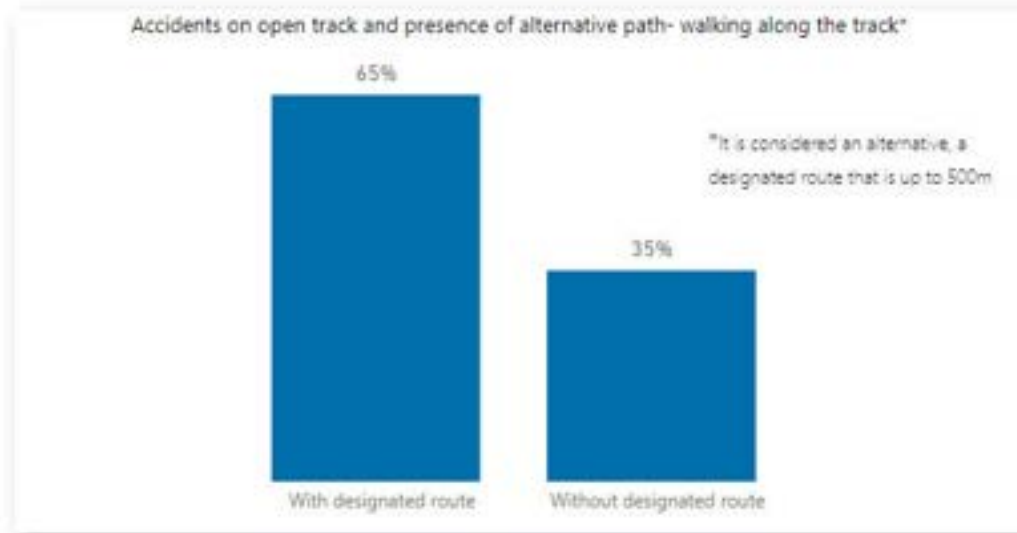
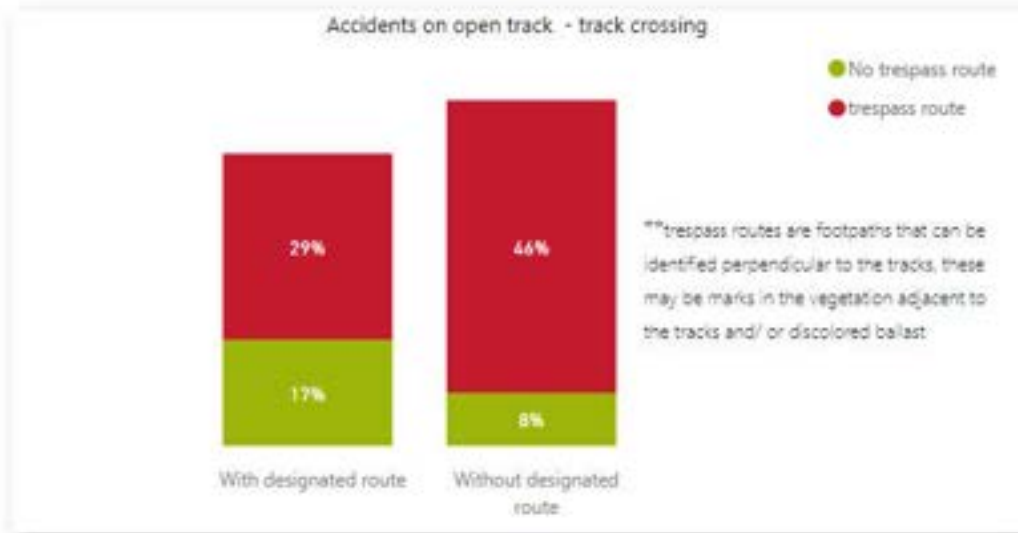
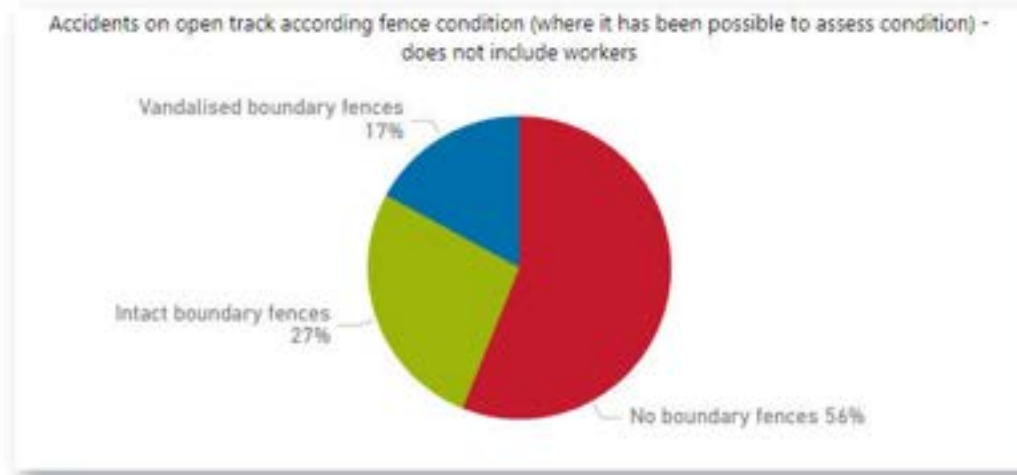
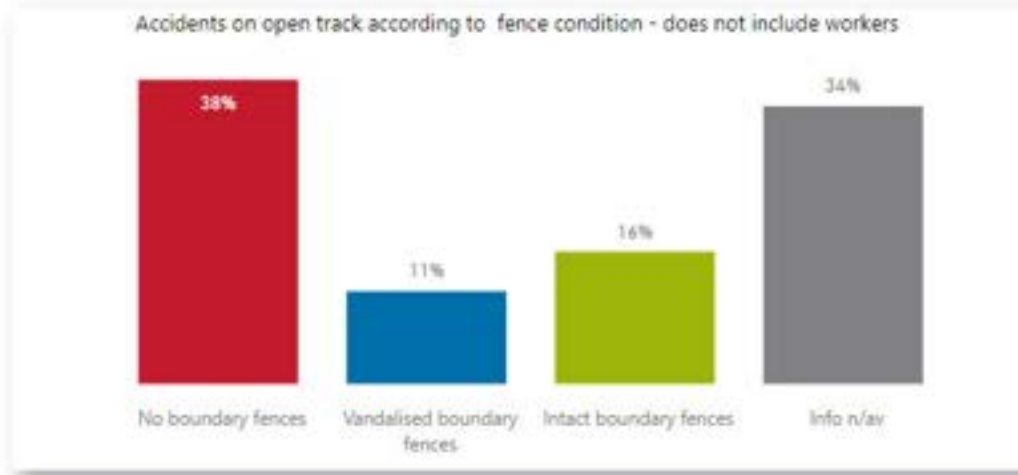
Accidents



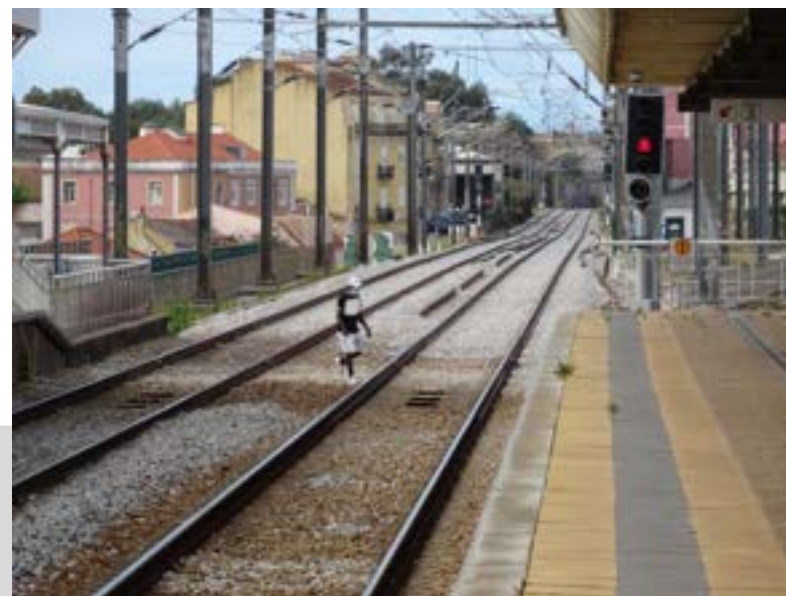
It is considered "Other situations" when the description of the occurrence isn't sufficient to categorise differently. Often describe occurrences that could be suicides but haven't been categorized as one.



Accidents on open track



Some situations found during inspections



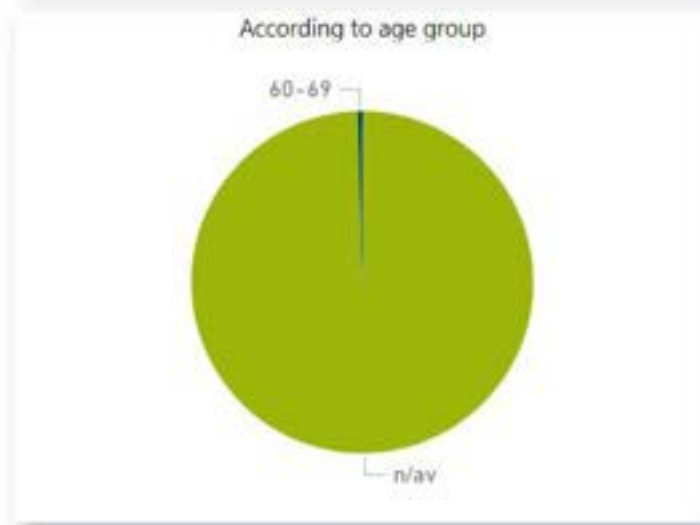
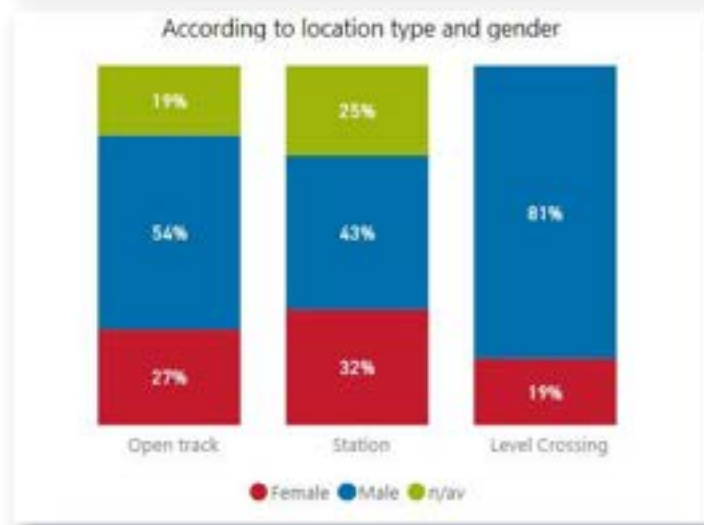
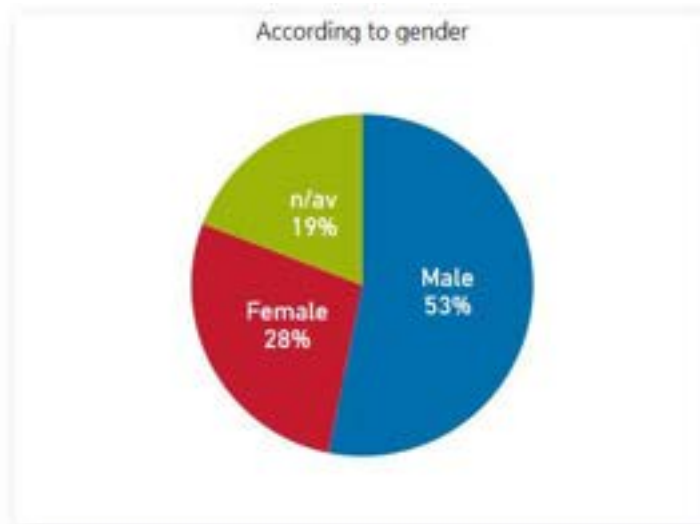
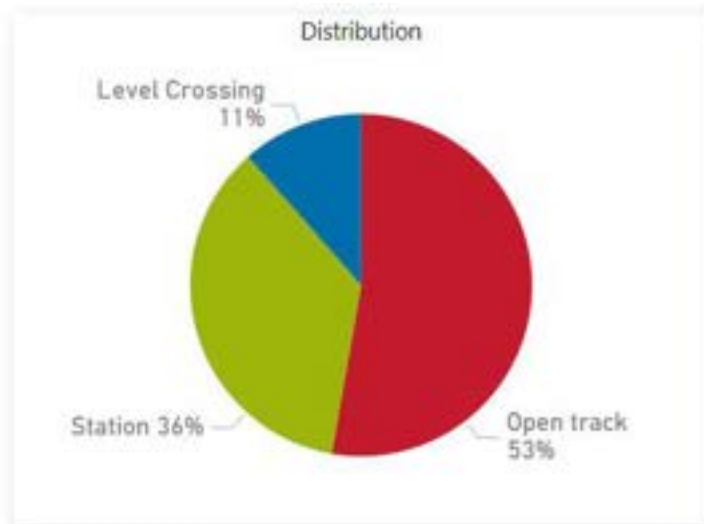
Summary - Accidents

- Most occurrences take place in **urban areas**
- 70% Accidents involve **unauthorised persons**
- Occurrences on **Open track** and at **Stations** are ~ 40% each
- At Stations:
 - Most accidents occur with people **crossing the track between platforms** (33%)
 - 60% of accidents in footpath crossings occurred in **automated crossings**
- On Open track:
 - Over 70% of occurrences took place in areas with **vandalised or no fence** (where it could be assessed)
 - A **trespass route** is visible in 75% of track crossing accidents
- At Level crossings:
 - 90% of accidents occur in **automated level crossings**
 - ~50% occur at **automated footpaths** (pedestrian level crossing)

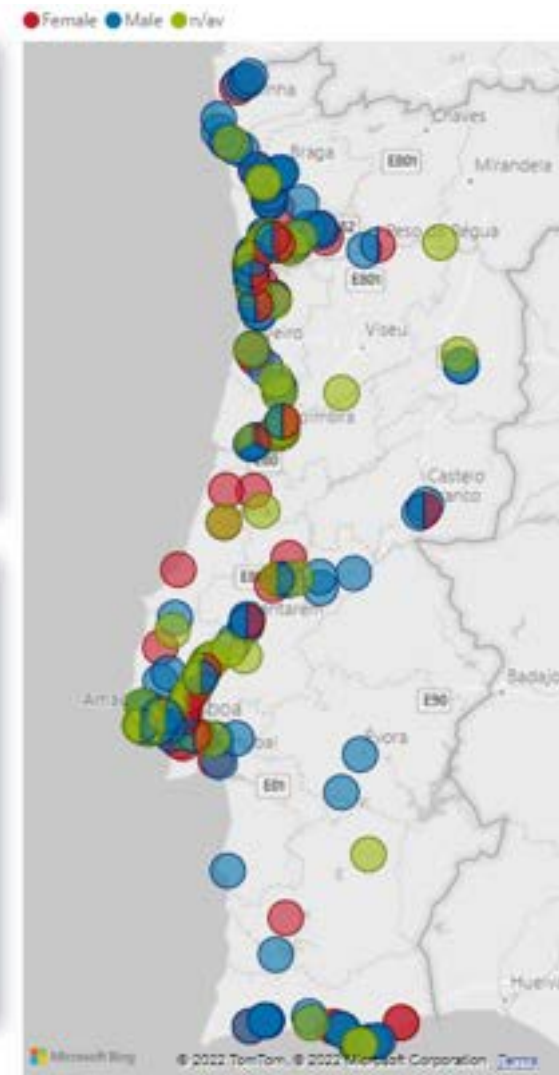
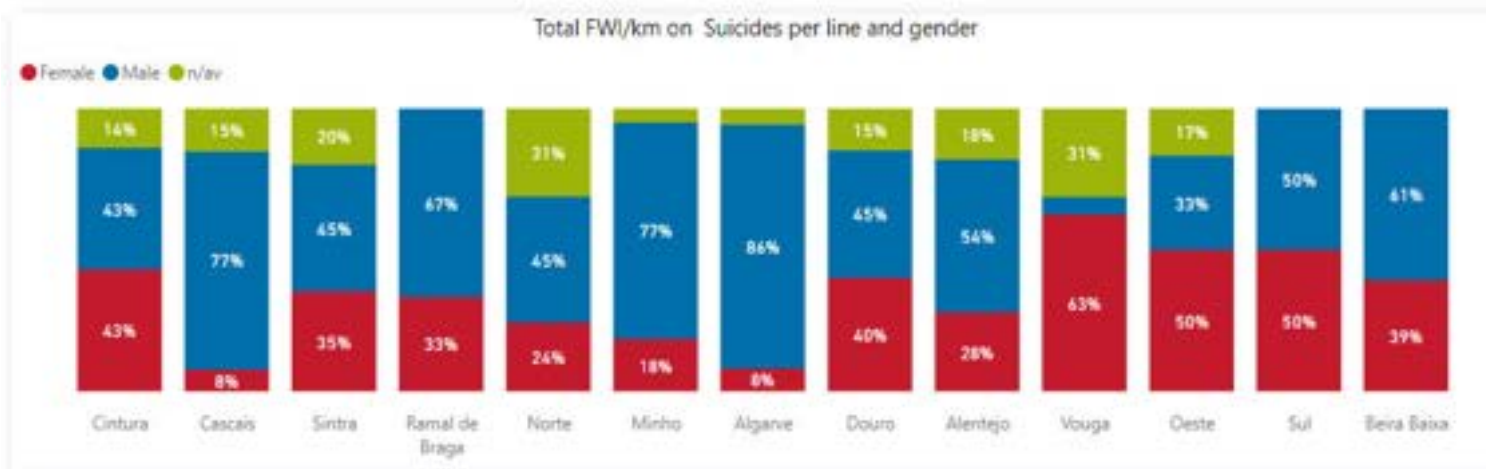
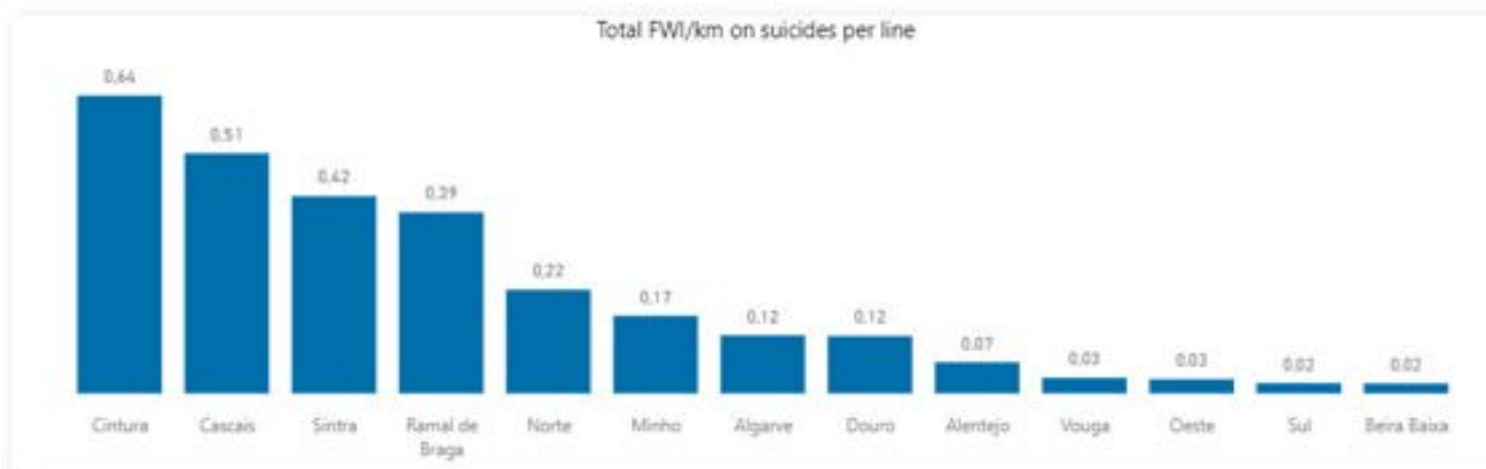
CHAPTER 3

Understanding the problem - Suicides (2016-2021)

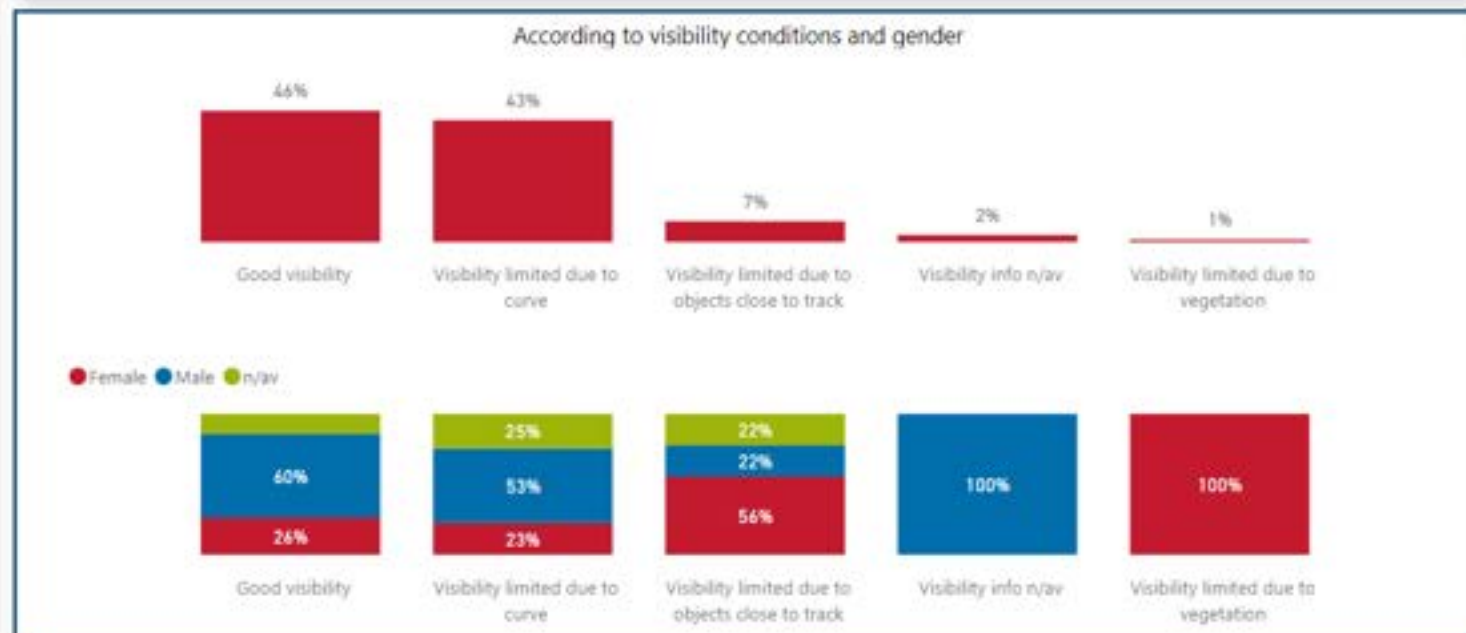
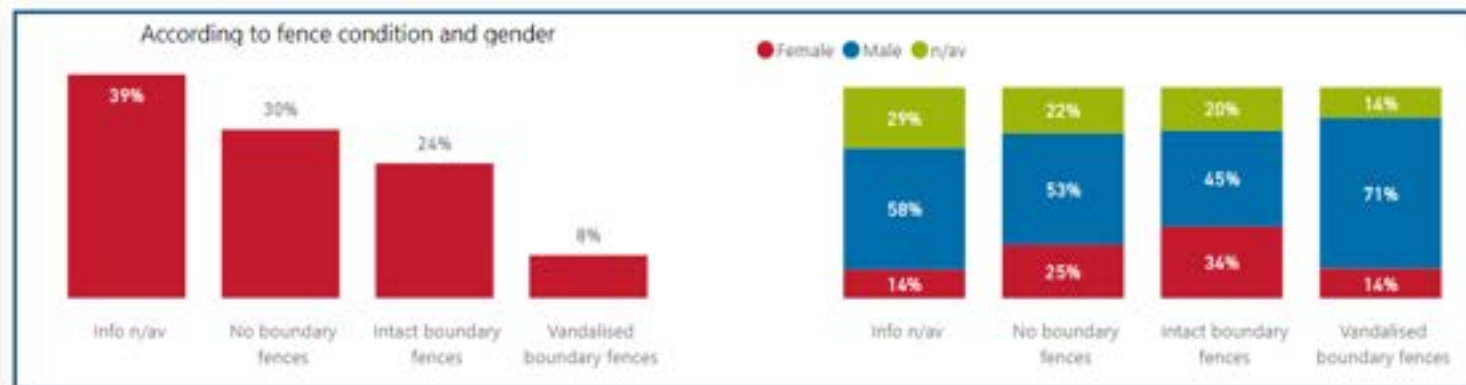
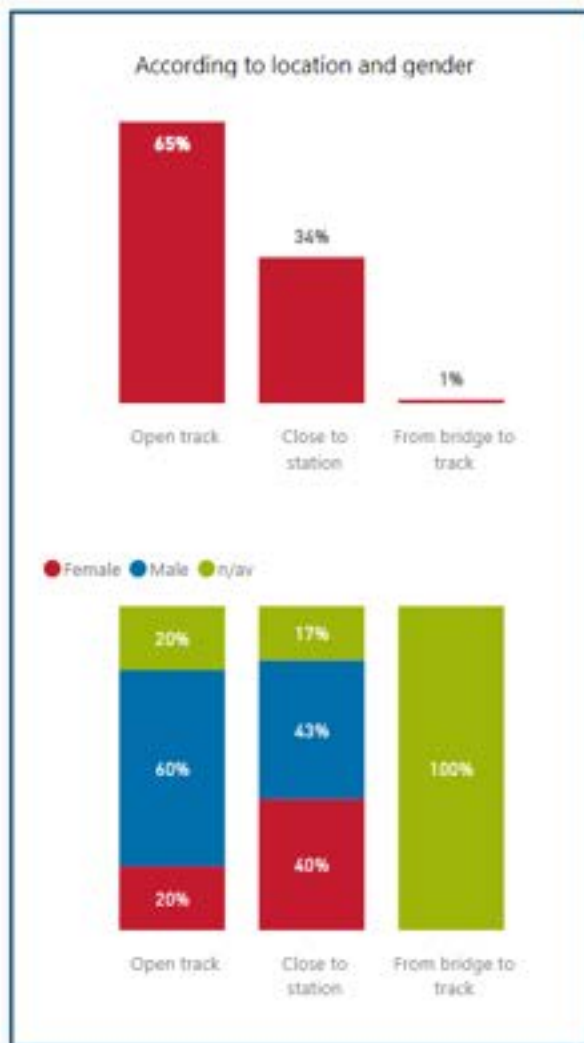
Suicides



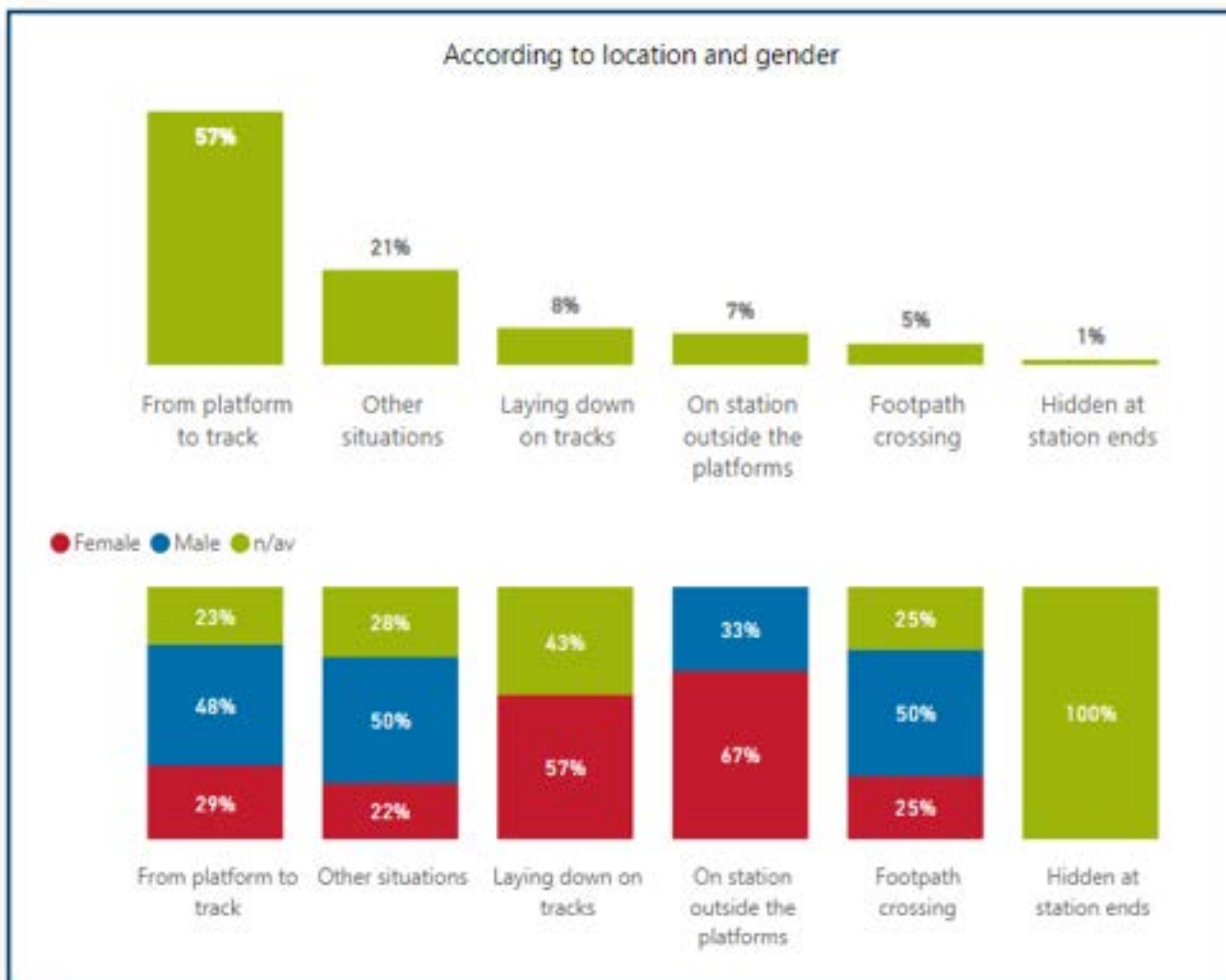
Suicides – per line and gender



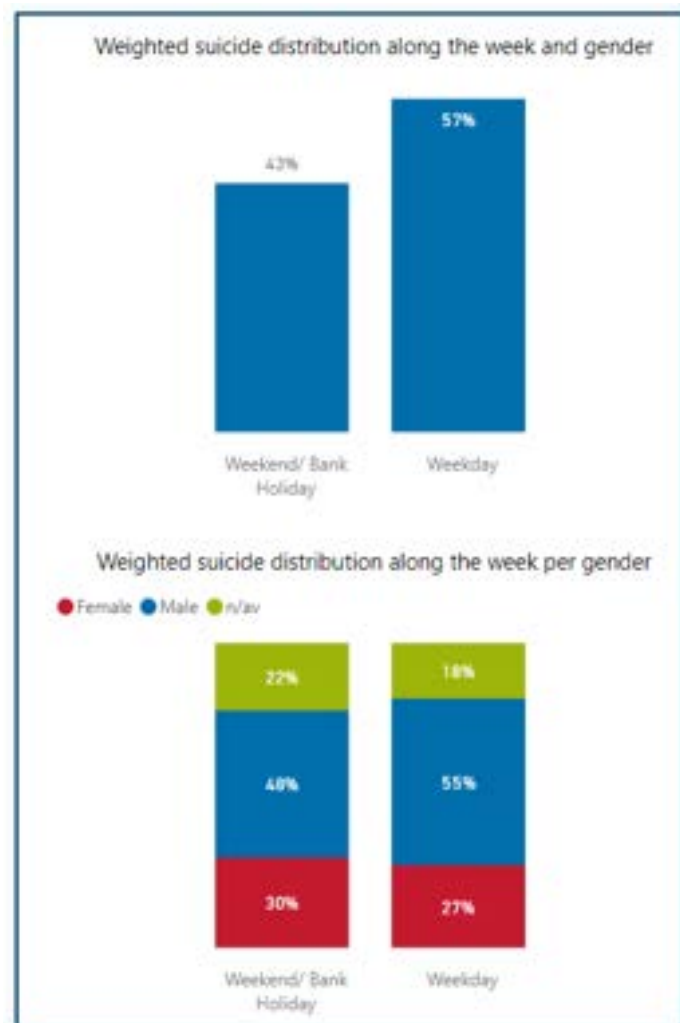
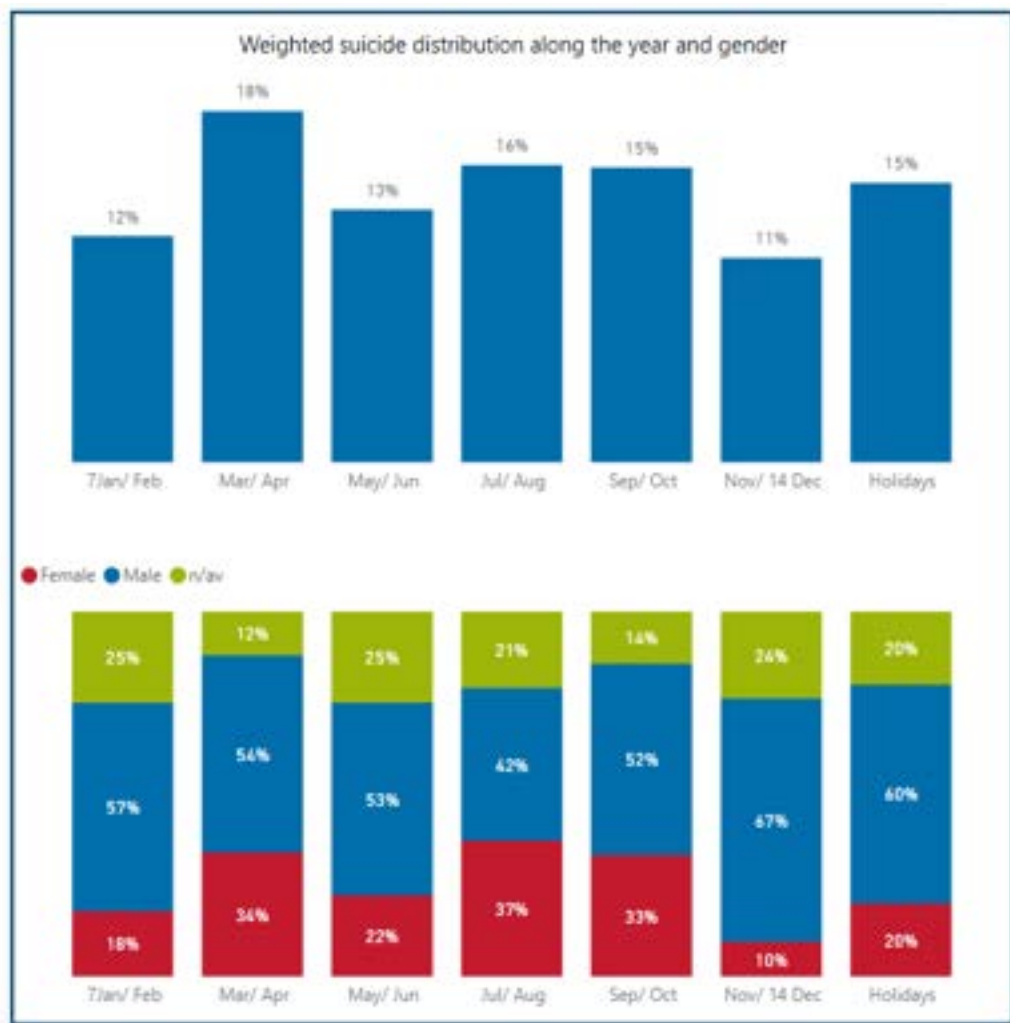
Suicides on open track



Suicides at Stations

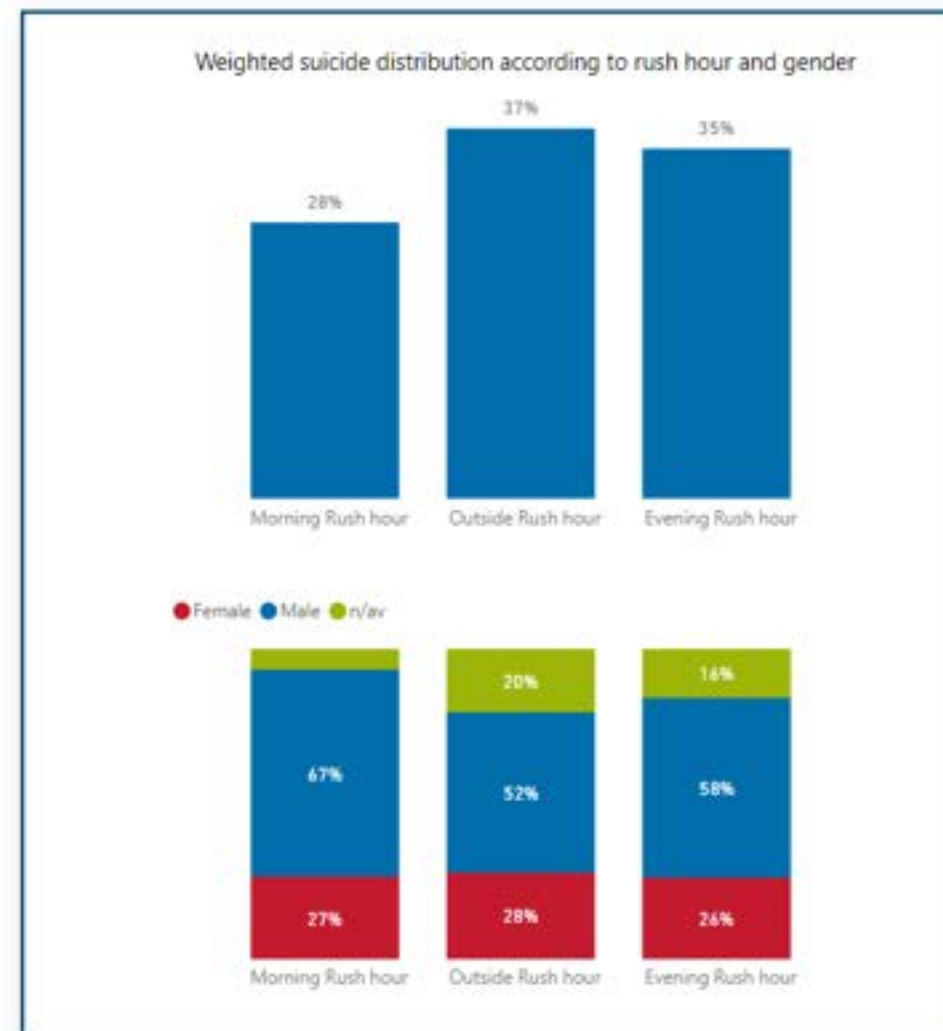
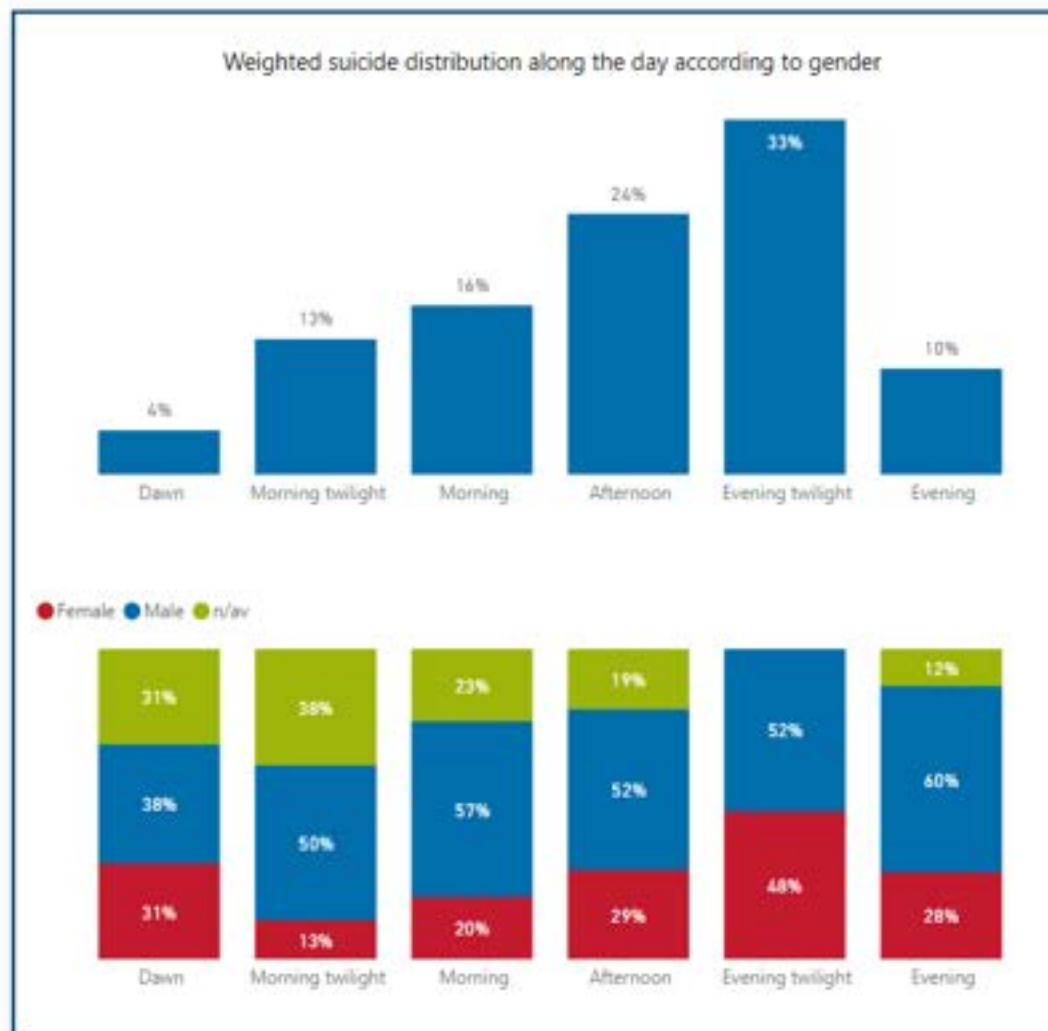


Suicides distribution along the year/week



Weighing calculation	no. Units	weighing factor
Jan/ Feb	53	1/53
Mar/ Apr	61	1/61
May/ Jun	61	1/61
Jul/ Aug	62	1/62
Sep/ Oct	61	1/61
Nov/ 14 Dec	44	1/44
Holidays	23	1/23
weekdays	5	1/5
weekends	2	1/2
Down	5	1/5
Morning twilight	1	1/1
Morning	6	1/6
Afternoon	7	1/7
Evening twilight	1	1/1
Night	4	1/4
Morning rush hour	2	1/2
outside rush hour	2	1/2
Evening rush hour	20	1/20

Suicides distribution along the day



Summary - Suicides

- Most occurrences take place in **urban areas**
 - Suicide rate increases throughout the day **peaking at evening twilight**
 - **Evening and Dawn** with **lowest** suicide rate
 - Surprising results in yearly distribution:
 - **7Jan-Feb and Nov-14Dec**: periods with **least** occurrences
 - Suicide **peak** occurs in **Mar-Apr**
 - **Winter holiday period** does not vary from **average**
 - **Age information** would be highly valuable but is not available (data protection)
 - **Male/Female** suicides proportion is ~66%/33%
- Gender analysis was most relevant:
 - **Open Track**:
 - **away from station** M/F proportion is ~75%/25%
 - M/F proportion varies significantly on **different lines** - lines with most occurrences:
 - **Cintura line** ~50%/50%
 - **Cascais line** ~90%/10%
 - **In yearly distribution**:
 - **Jul-Aug** ~50%/50%
 - **Nov-14Dec**: ~90%/10%
 - **Distribution along the day**:
 - **Morning twilight** ~80%/20%
 - **Evening twilight** ~50%/50%



CHAPTER 4

FUTURE ACTIONS

FUTURE ACTIONS

Measures to be implemented by the IM

Source: restrail.eu/toolbox

Fencing

- **Open track:** in hotspots and critical areas, along the track, with other devices
- **Stations:** mid-platform, between tracks, at platform ends, anti-trespass grids



Lighting

- To influence behaviour
- In hotspots
- Linked to movement sensors
- Dispelling lights
- Blue lights (suicides)



FUTURE ACTIONS

Measures to be implemented by the IM

Source: restrail.eu/toolbox

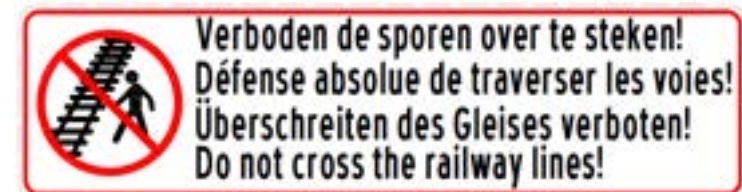
Detection and surveillance systems

- CCTV systems
- Intelligent systems combined with audible warnings
- Detection systems, triggering warnings or alerts



Signs

- Prohibitive signs
- Warning signs
- Information or advice posters



FUTURE ACTIONS

Information campaigns

Awareness campaigns

- Targeted campaigns to raise awareness
- Dissemination initiatives using posters in stations or near the track
- Mass media campaigns
- Social media targeted campaigns
- Media guidelines



Education and training

- Staff training
- Initiatives in schools
- Intervention in communities



Sources:

restrail.eu/toolbox

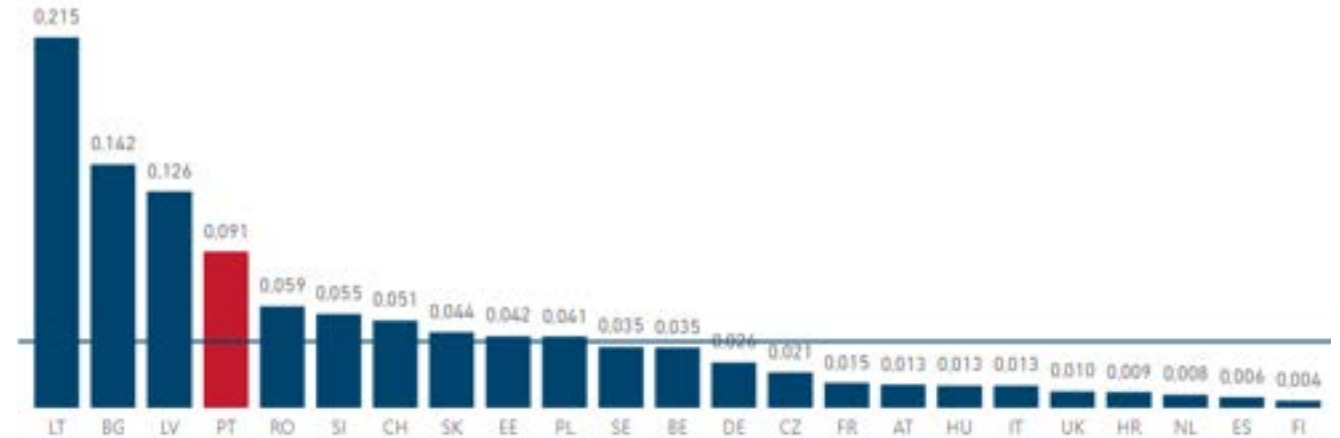
Strategies for Deterring Trespassing on Rail Transit and Commuter Rail Rights-of-Way (Transportation Research Board)

FUTURE ACTIONS

National Safety Authority

- Supervision actions to monitor sector initiatives
- Impact on drivers
- Cooperation with Health authorities and charities
- Further measures for level crossing accidents
- Further analysis on accidents with workers

Total FWI in accidents with workers on or near track per train Km (x10⁶)



Source: ERAIL database, last update 23/5/2022



www.irsc2022.com

