

UIC Safety Report **2018**

Significant Accidents 2017 Public Report



Department of
Fundamental Values

Safety Unit

October 2018



INTERNATIONAL UNION
OF RAILWAYS

ISBN 978-2-7461-2753-1

Warning

No part of this publication may be copied, reproduced or distributed by any means whatsoever, including electronic, except for private and individual use, without the express permission of the International Union of Railways (UIC). The same applies for translation, adaptation or transformation, arrangement or reproduction by any method or procedure whatsoever. The sole exceptions - noting the author's name and the source - are "analyses and brief quotations justified by the critical, argumentative, educational, scientific or informative nature of the publication into which they are incorporated" (Articles L 122-4 and L122-5 of the French Intellectual Property Code).



UIC Safety Report **2018**

Significant Accidents
occurred in Europe
during the year 2017

Public Report

UIC Safety Report 2018

Table of contents

Foreword by the UIC Director of Fundamental Values

Executive summary by the Chairman of Safety Performance Group

Part 1 - General Safety Indicators

Part 2 - Time series and trends 2012-2017

Foreword

This is the 12th edition of the UIC Safety Report. We are pleased to announce the participation of three new railway companies, namely TCDD from Turkey, RAI from Iran and CIE from Ireland. For the first time, our scope exceeds the European continent.

These new members provided data from 2012 to 2017, and this allowed us to fully revise our time series. All statistics and trends presented in this report refer to the same perimeter, covering the 22 "historical" networks that have participated since 2006 as well as the 3 new members.

Regarding the number of events, 2017 remains at the level observed during the past two years. Nevertheless, the UIC Global Safety Index continued to improve and reached its best value at 8.75.

Let us not forget that 80% of railway accidents are caused by third parties, mostly trespassers and level crossing users crossing at the wrong time. These are the accidents whose number is hardest to reduce, and which the railways cannot eliminate alone. Society as a whole needs to be educated about risk, starting with public authorities.

I have no doubt that this report will prove useful to you in all your statistical analyses of railway safety. Together we will improve rail safety and promote it as the most fundamental value. Happy reading.

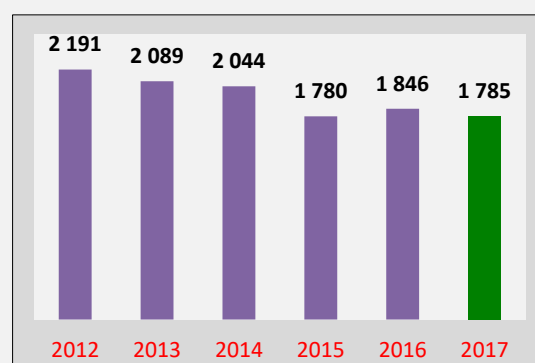
Jerzy Wiśniewski

UIC Director of Fundamental Values

Executive summary

Number of significant accidents

The number of significant accidents in 2017 (1785) was similar to 2016 and 2015 (1846 and 1780). This means a consolidation of the general improvement of railway safety over the past 10 years. We see that in the last three years the decreasing trend in significant accidents has levelled out. Although safety levels differ between countries, the general trends that we see among the existing members compared to the new member are the same.



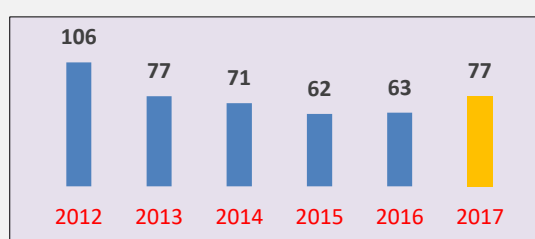
Number of fatalities

126 less fatalities were recorded in 2017 than in the previous year. Regarding the types of accidents the railway sector can influence most directly (train collisions, derailments, fires and shunting operations), we observe 91 fatalities in 2017 and 24 in 2016. This difference of 67 fatalities brings us back to the level of 2015: the best year in the last decade. The year 2017 has seen only one major accident: a train collision in Germany responsible for 35 serious passenger injuries (no fatalities). 66 less persons died hit by a train or falling from a train outside LC and there were 6 more fatalities at LC.

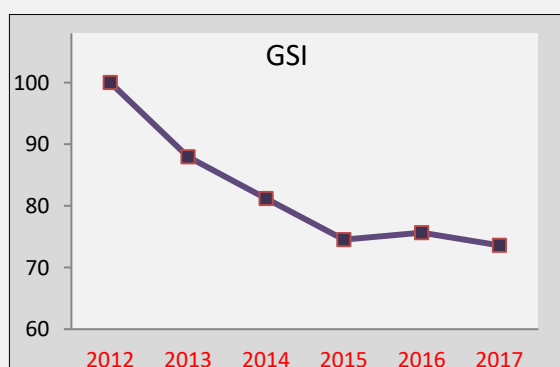
Fatalities	2016	2017	Diff.
Individual hit by train or falling from a train (outside LC)	732	666	-66
Level crossing accidents	275	282	+7
Other accidents	91	24	-67
Total	1098	972	-126

Staff victims

The clear decreasing trend in staff victims in the years 2006-2013 seems to have levelled out in the years 2014-2017 to a mean number of 68 per year. The infrastructure workers pay the highest toll.



UIC Global Safety index



The UIC Global Safety Index is actually a weighted number of accidents, whereby passenger and staff victims and internal causes are weighted more heavily than trespasser victims and external causes. In addition, a higher number of victims is weighted more heavily than a lower number. The decrease in the index from 2012 to 2015 seems to have levelled out in 2016 and 2017.

Bart Hoogcarspel

Chairman of Safety Performance Group



Part 1

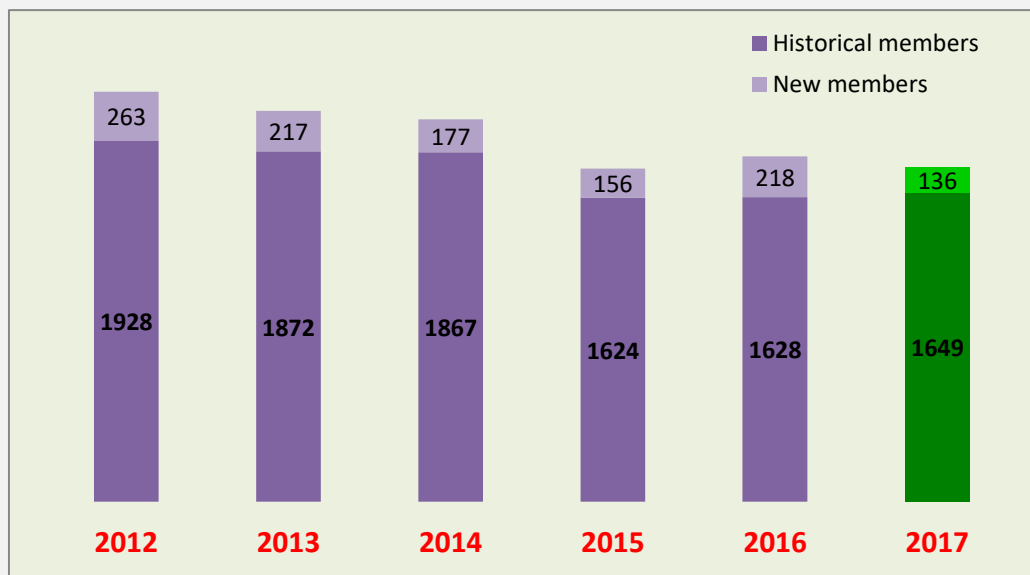
General Safety Indicators

Part 1 - General Safety Indicators

- 1.01 Evolution of significant accidents and UIC Global Safety Index
- 1.02 Types of accidents according to UIC-SDB and EU definitions
- 1.03 Main causes of accidents in the year 2017
- 1.04 Trend of accidents and rates on the last six years
- 1.05 Accidents by type
- 1.06 Fatalities and serious injuries by type of accident
- 1.07 Distribution of victims
- 1.08 Victims by type of accident according to Safety Directive definitions
- 1.09 Accidents by location details
- 1.10 Accidents at level crossings
- 1.11 Number of accidents and victims by type of accident
- 1.12 Passenger victims by type of accident and location
- 1.13 Staff victims by type of accident and location
- 1.14 Victims by type of traffic
- 1.15 Accidents by type and number of victims
- 1.16 UIC Global Safety Index
- 1.17 Accidents and victims by type of accident, causes and location

NB: the number 0 is indicated by the sign "-"

1.01 Evolution of significant accidents and UIC Global Safety Index

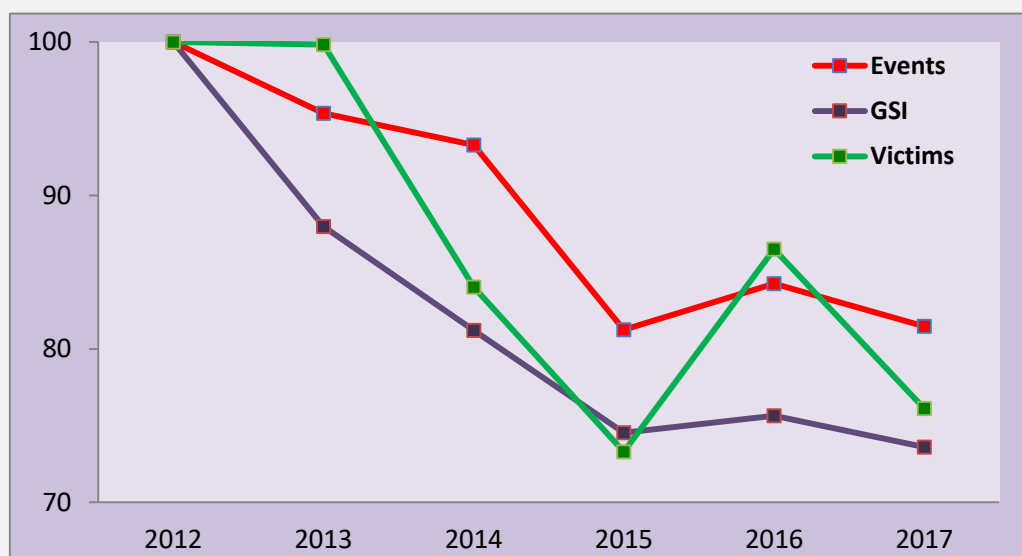


“Significant accident” means any accident involving at least one rail vehicle in motion, resulting in at least one killed or seriously injured person, or in significant damage to stock, track, other installations or environment, or extensive disruptions to traffic, excluding accidents in workshops, warehouses and depots.

The UIC Safety Database hosts this year three new members: TCDD (Turkey), RAI (Iran) and CIE (Ireland), depicted in light colour on the graph above.

Historical members observed in 2017 a decrease of -8% and new members a decrease of -34% compared to the average on the period 2012-2016.

The graph below compares the trends of the UIC Global Safety Index (GSI) with the trends of number of events and number of victims (Base 100 in 2012). Please confer page 1.16.



1.02 Types of accidents according to UIC-SDB and EU definitions

Types of accidents as defined in UIC – SDB	Additional information from UIC -SDB	Types of accidents as defined in EU Safety Directive
5,6%	Derailment of trains	5,6% Derailment of trains
1,3%	Train collision with another train	1,3% Train collision with another train
22,4% Train collision with an obstacle	5,9% Train collision with an obstacle not at LC	5,9% Train collision with an obstacle not at LC
	16,4% Train collision with an obstacle at LC	24,6% LC accidents, including accidents involving pedestrians at LC
62,9% Individual hit by a train	8,2% Individual hit by a train at LC	
	54,7% Individual hit by a train not at LC	58,2% Accidents to persons caused by rolling stock in motion, with the exception of suicides.
3,5% Individual falling from a train		
0,4%	Fire in rolling stock	0,4% Fire in rolling stock
0,2%	Electrocution by overhead line or third rail	3,9% Other types of accidents
0,0%	Accident involving dangerous goods	
3,7%	Shunting operations	
0,0%	Runaway vehicles	

- Two thirds of accidents involved individuals hit by a train or falling from a train.
- Collision with an obstacle was the second most common accident (a fifth of all accidents).
- Accidents at level crossings accounted for 25% of all significant accidents.
- Accidents during shunting operations and involving runaway vehicles are now separated to better fit with the EU definitions.
- Accidents at level crossings are separated in the UIC database between collisions with an obstacle (motorized vehicle) and pedestrians (or cyclists) hit by a train.

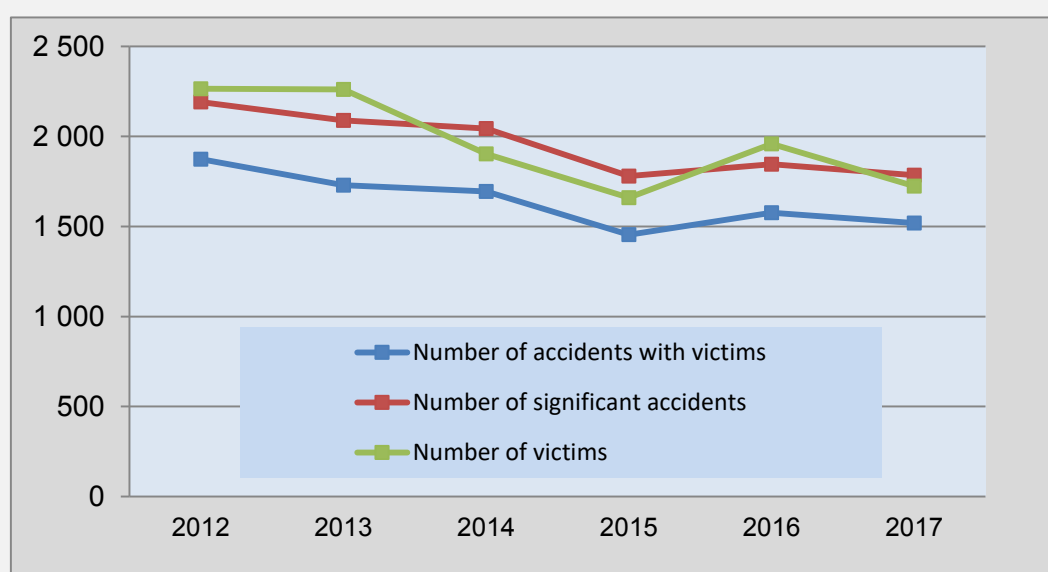
1.03 Main causes of accidents

2017	Causes at first level	Causes at second level	
EXTERNAL CAUSES	THIRD PARTIES	Trespassing	50,7%
		Vehicle (LC accident)	16,0%
		Pedestrian (LC accident)	7,9%
		Pedestrian on public railway area	3,2%
		Other or not specified	0,9%
	78,7%		
81,5%	WEATHER & ENVIRONMENT	Environment	1,6%
		Weather	1,2%
INTERNAL CAUSES	INFRASTRUCTURES	Tracks and structures	1,1%
		Energy system	1,2%
		Other or not specified	0,8%
	ROLLING STOCK	Running gear	1,3%
		Other or not specified	1,5%
	HUMAN FACTORS (Railway staff & subcontractors)	Track and switch maintenance staff	1,0%
		Traffic operating and signalling staff	1,2%
		Train drivers	2,5%
		Other or not specified	3,3%
	RAILWAY USERS	Passengers	2,7%
		Other or not specified	0,7%
17,3%	3,4%		
CAUSES NOT IDENTIFIED			1,2%

- More than 80% of accidents had external causes.
- Increase of the percentage of accidents caused by trespassing.
- Internal causes relate to both the infrastructure manager and railway undertakings.
- Decrease of all internal causes: infrastructure, rolling stock, human factors and users.

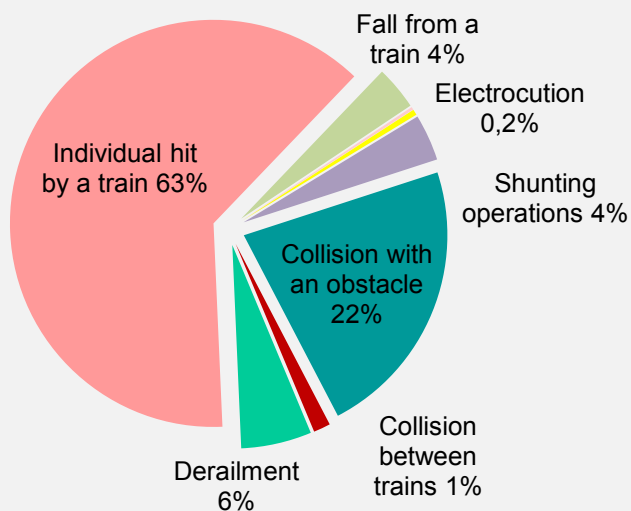
1.04 Trend of accidents and rates over the last six years

ALL RAILWAYS	2012	2013	2014	2015	2016	2017
Number of significant accidents	2 191	2 089	2 044	1 780	1 846	1 785
Significant accidents per million train-km	0,52	0,50	0,48	0,42	0,43	0,41
Number of accidents with victims	1 874	1 729	1 695	1 454	1 576	1 519
Accidents with victims per million train-km	0,44	0,41	0,40	0,34	0,37	0,35
Number of victims	2 265	2 261	1 903	1 660	1 959	1 724
Victims per million train-km	0,54	0,54	0,45	0,39	0,46	0,39
Number of fatalities	1 146	1 187	1 073	947	1 098	972
Fatalities per million train-km	0,27	0,28	0,25	0,22	0,26	0,22
Number of million train-kilometres	4 224	4 212	4 242	4 256	4 305	4 389

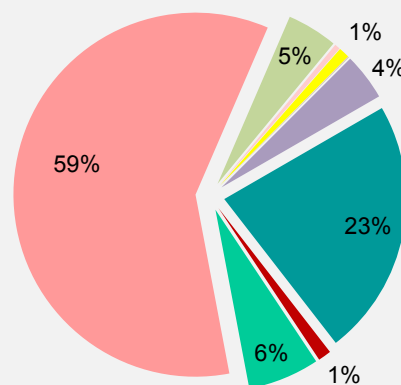


1.05 Accidents by type

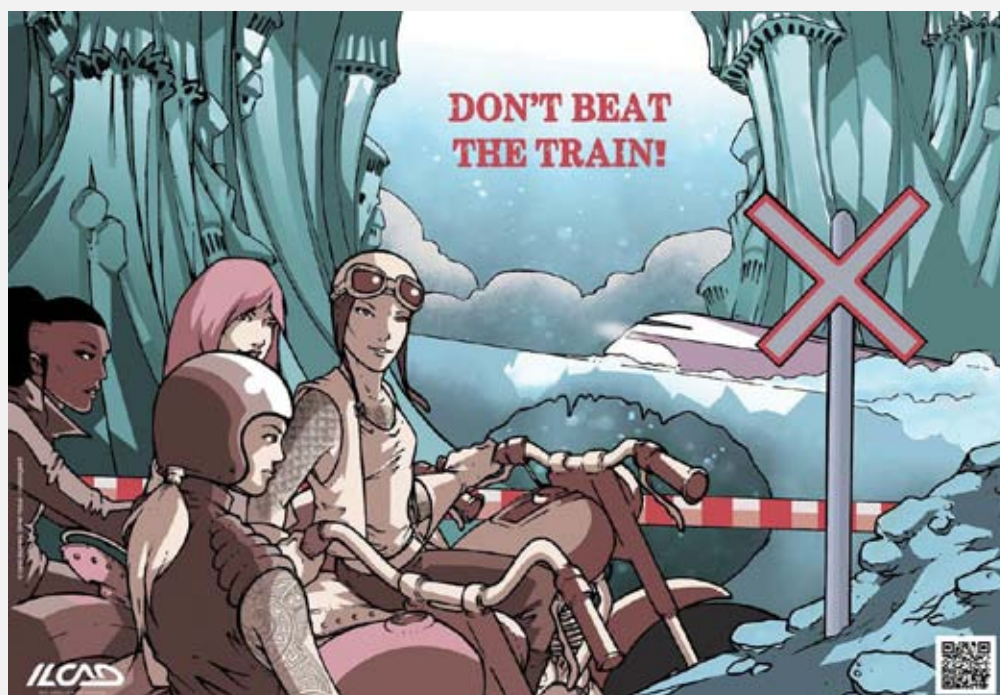
2017



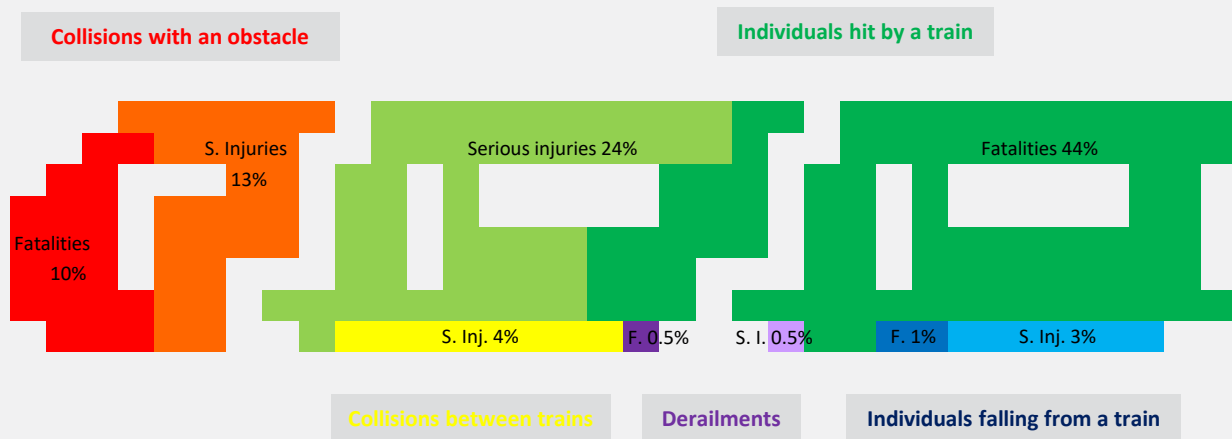
for comparison: period 2012-2016



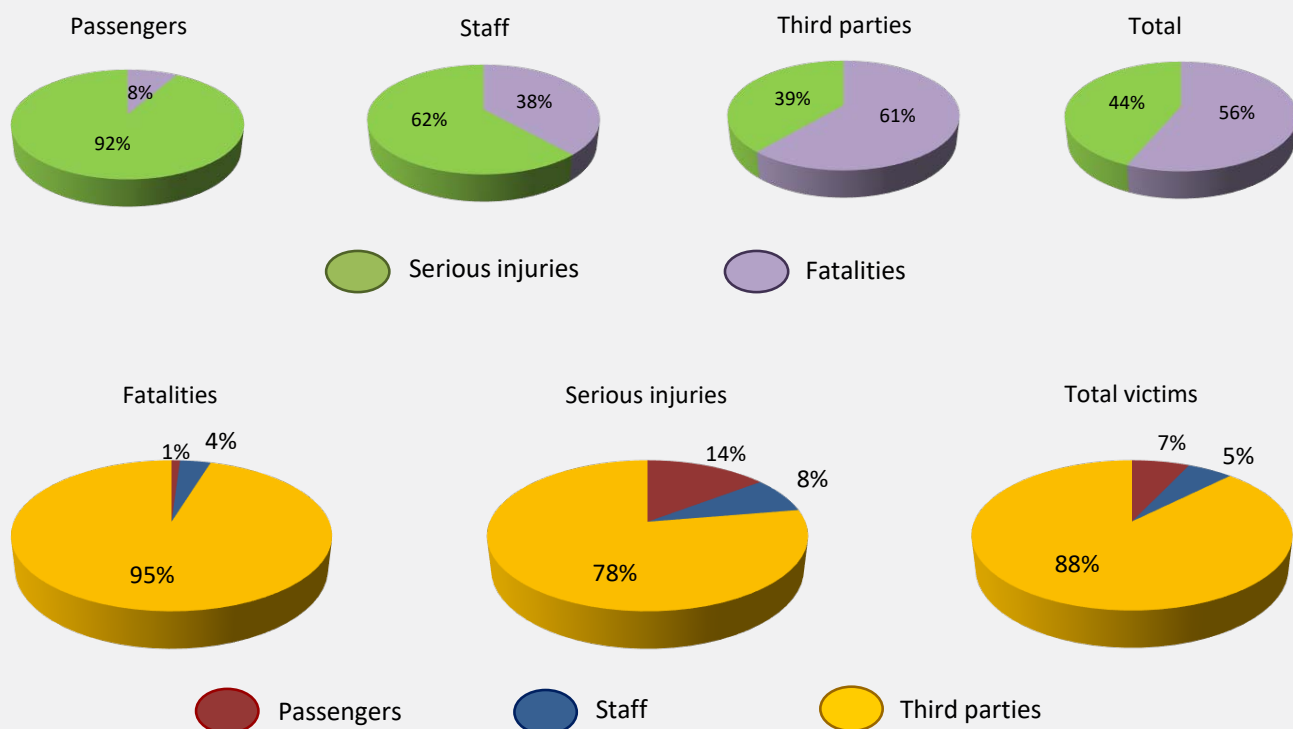
- "Collision with an obstacle" includes collisions at LC.
- "Individual hit by a train" includes pedestrians at LC.
- For LC accidents, refer to graph 1.10.



1.06 Fatalities and serious injuries by type of accident



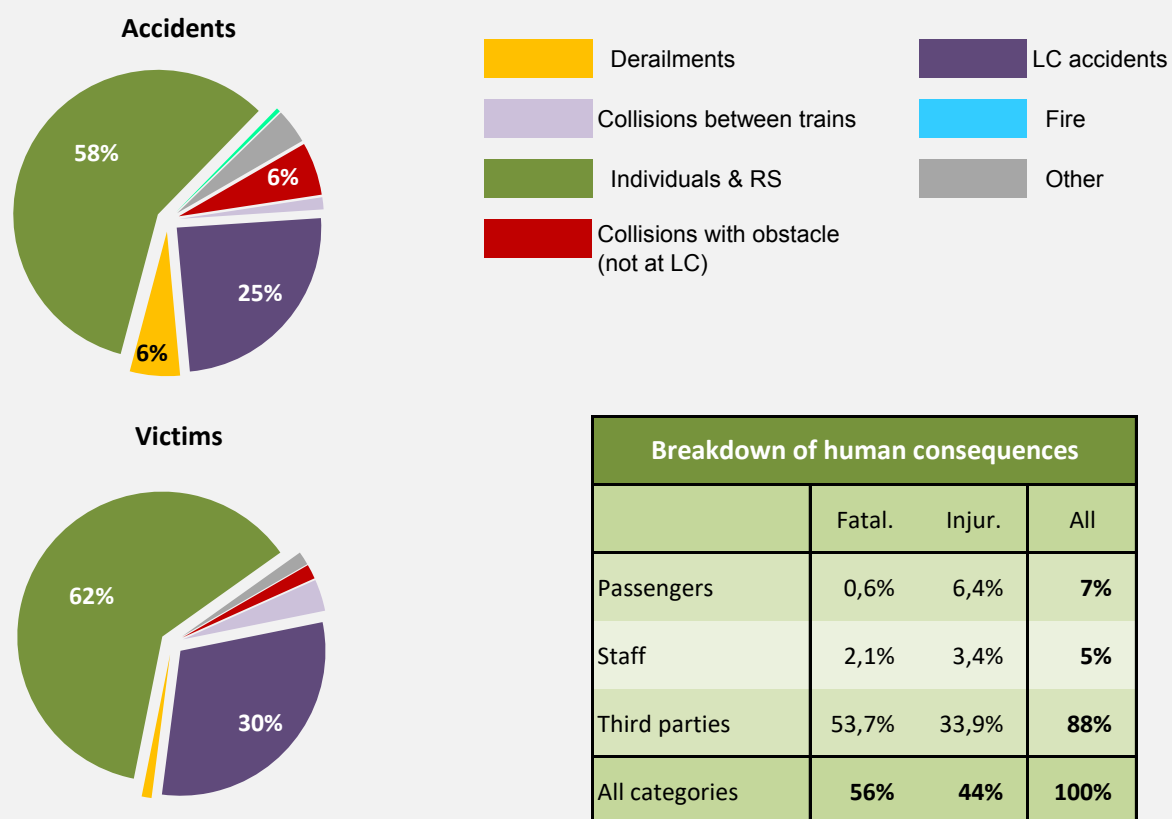
1.07 Distribution of victims



Reading method: fatalities account for 8% of passenger victims and passengers represent 1% of fatalities.

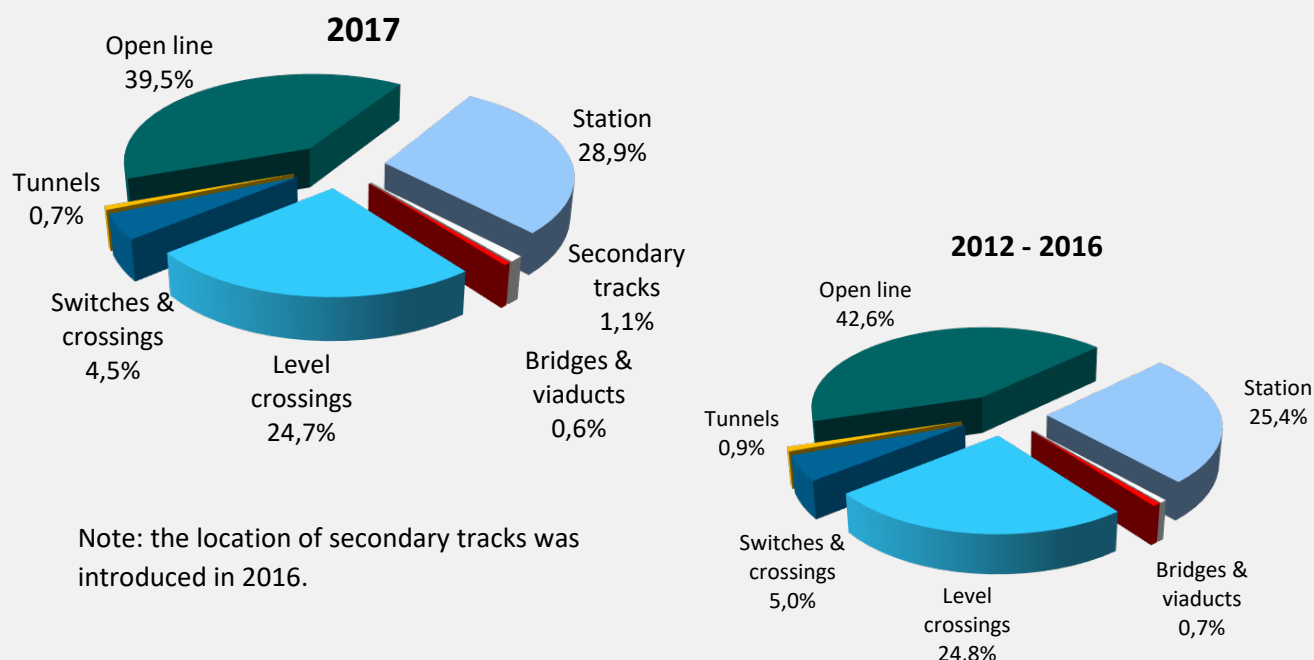
- Third parties represented 95% of all fatalities and 78% of serious injuries.
- Passengers accounted for 7% of all victims.

1.08 Victims by type of accident according to Safety Directive definitions

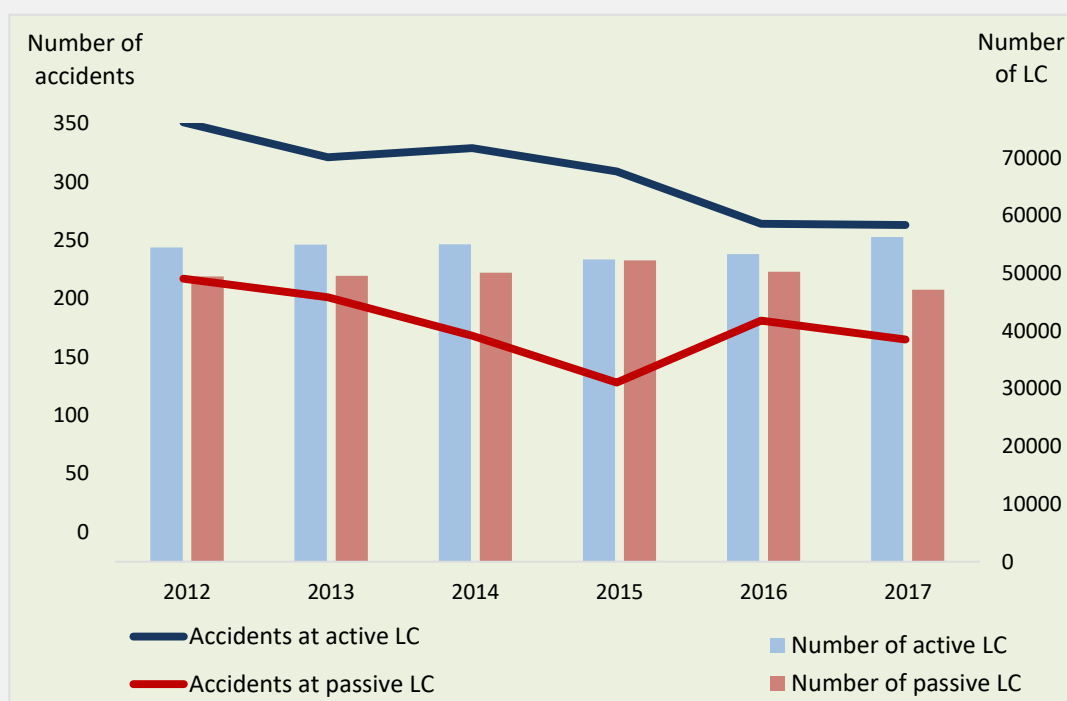


Type of accident	Number of events	%	Fatalities			Serious injuries		
			Passengers	Staff	3rd parties	Passengers	Staff	3rd parties
Collisions with obstacle (not at LC)	106	5,9%	-	1	10	3	8	6
Collisions between trains	24	1,3%	-	1	-	50	10	-
Level crossings	439	24,6%	-	1	281	5	6	228
Derailment	100	5,6%	1	8	-	9	1	-
Individuals & rolling stock in motion (not at LC)	1 038	58,2%	8	21	631	42	23	344
Fire	8	0,4%	-	-	-	-	-	-
Other types	70	3,9%	1	4	4	1	10	6
Total	1 785		10	36	926	110	58	584

1.09 Accidents by location details



1.10 Accidents at level crossings



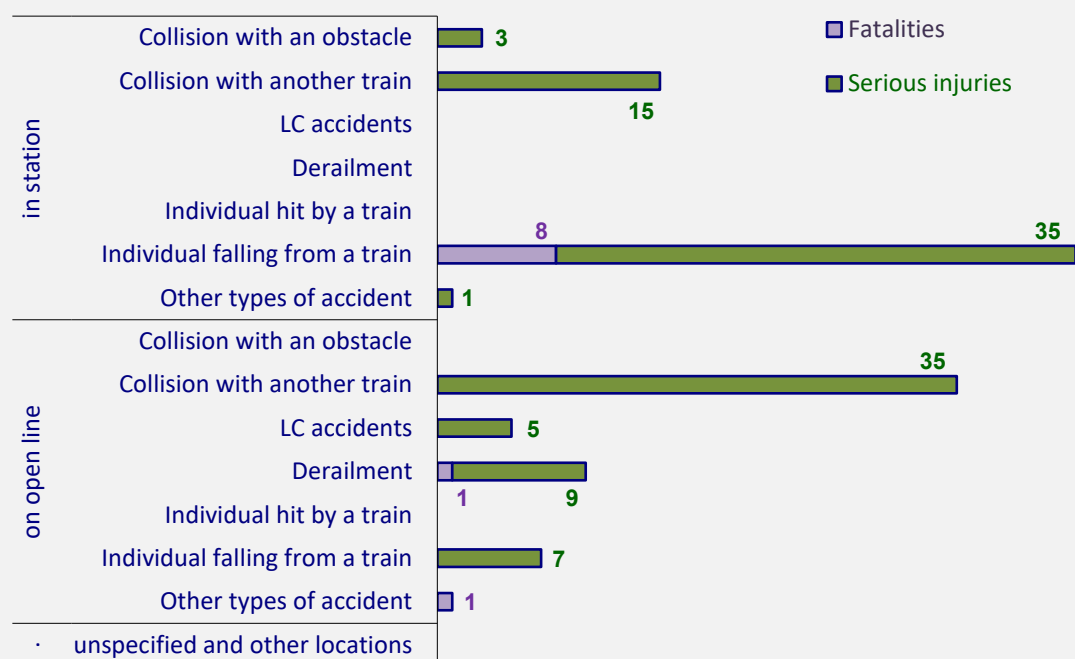
While the number of accidents at active level crossing is slowly decreasing over the years, we may worry about the reverse trends of accidents at passive level crossings since 2015.

1.11 Number of accidents and victims by type of accident

2017		Number of accidents	FATALITIES			SERIOUS INJURIES			ALL VICTIMS
			Passengers	Staff	3rd parties	Passengers	Staff	3rd parties	
At station	Collisions with an obstacle (not at LC)	25	-	1	4	3	6	2	16
	Collisions between trains	14	-	-	-	15	5	-	20
	LC accidents	71	-	-	44	-	-	30	74
	Derailments	44	-	1	-	-	1	-	2
	Hit by a train (not at LC)	395	-	13	206	-	11	173	403
	Falling from a train	51	8	-	4	35	2	3	52
	Other accidents	67	-	3	4	1	9	5	22
	Total at station	667	8	18	262	54	34	213	589
On open line	Collisions with an obstacle (not at LC)	80	-	-	6	-	2	4	12
	Collisions between trains	10	-	1	-	35	5	-	41
	LC accidents	368	-	1	237	5	6	198	447
	Derailments	56	1	7	-	9	-	-	17
	Hit by a train (not at LC)	579	-	7	417	-	9	167	600
	Falling from a train	11	-	1	2	7	1	-	11
	Other accidents	10	1	-	-	-	1	1	3
	Total in open line	1114	2	17	662	56	24	370	1131
not specified		4	-	1	2	-	-	1	4
GRAND TOTAL		1785	10	36	926	110	58	584	1724

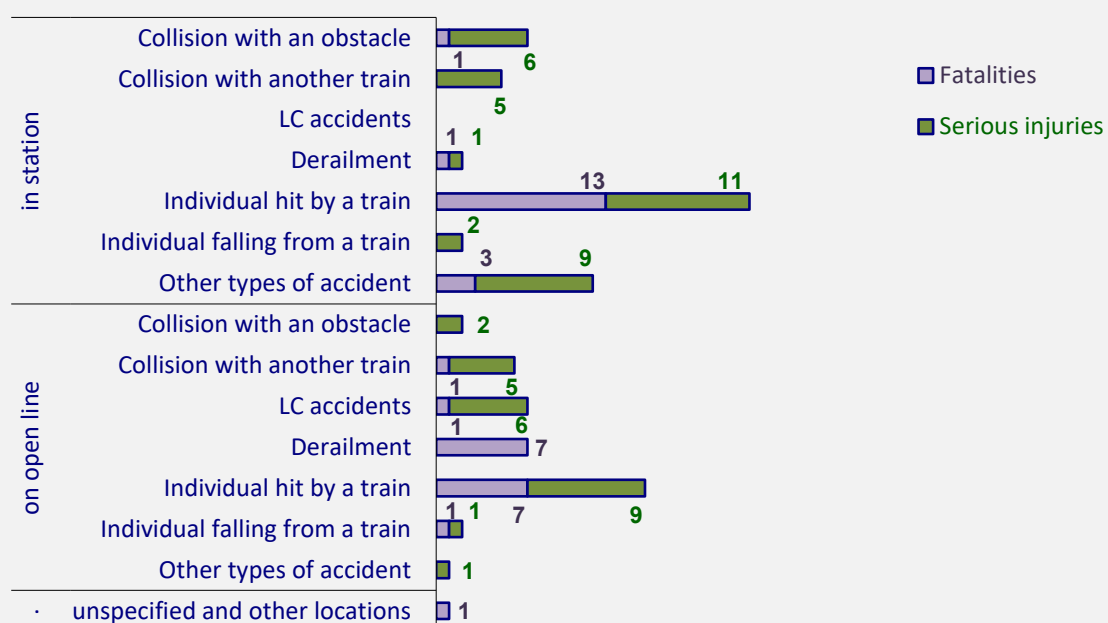
- 62% of accidents occurred on open line, whilst 38% happened in stations and yards.
- 70% of fatalities occurred on open line.
- Persons hit by a train and LC accidents represented 95% of all fatalities.

1.12 Passenger victims by type of accident and location



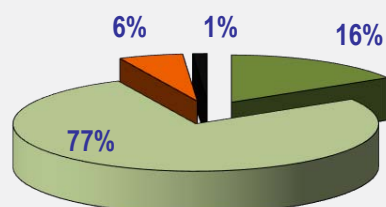
- One single collision between trains is responsible for the 35 passenger serious injuries in collisions on open line

1.13 Staff victims by type of accident and location



- Most of staff victims were hit by a train, and particularly during shunting operations (included in 'other types of accidents').

1.14 Victims by type of traffic



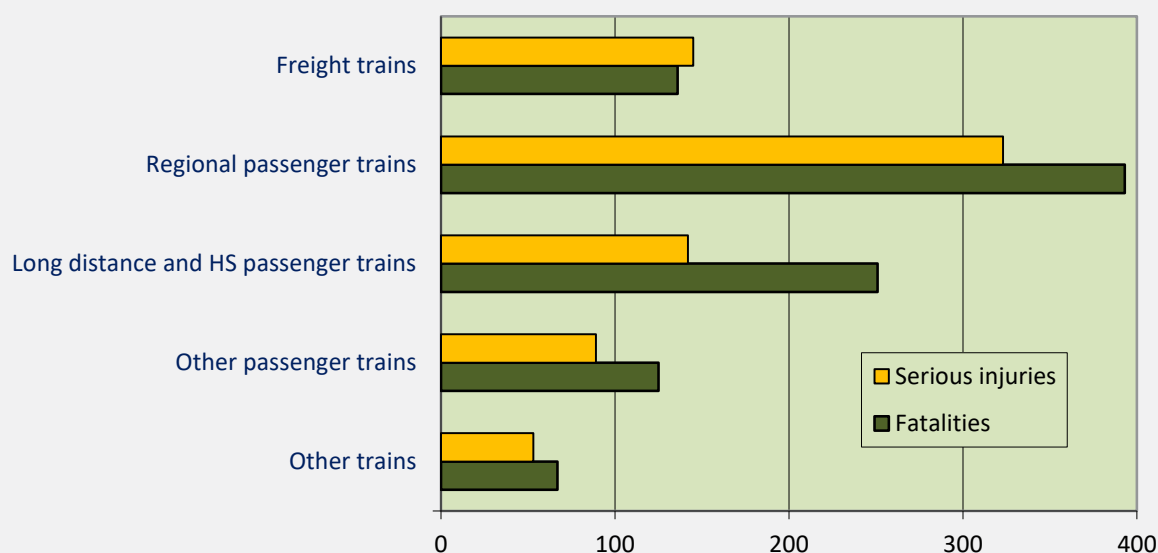
■ Freight trains

■ Passenger trains

■ Locomotive running light, infrastructure trains, unidentified trains

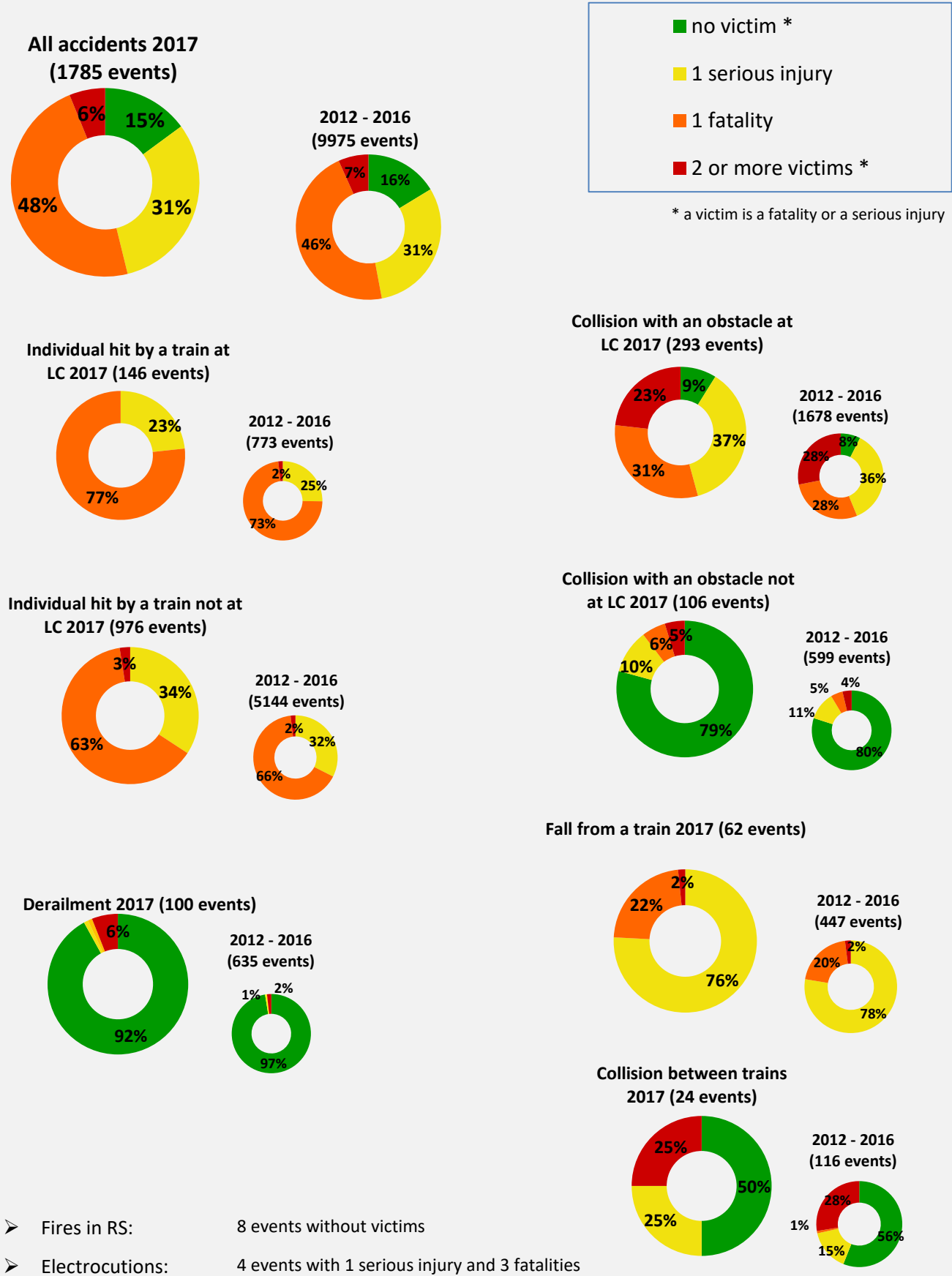
■ Shunting and runaway vehicles

Type of accident	Freight trains	Passenger trains	Locomotive running light, infrastructure trains, unidentified trains	Shunting and runaway vehicles
Collision	48	40	1	1
Derailment	5	11	3	1
Level-crossing accidents	65	431	25	1
Accidents to persons caused by rolling stock in motion	162	838	69	19
Other accidents	1	3	-	-
TOTAL victims	281	1323	98	22

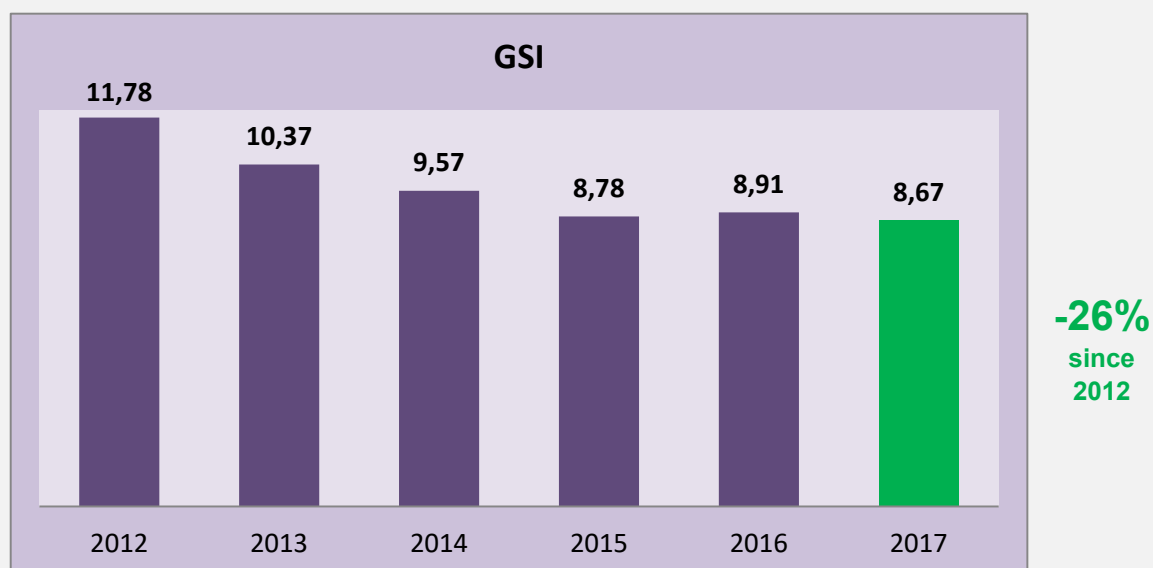


- Passenger trains were involved in accidents leading to 77% of victims.
- Regional passenger trains were involved in accidents leading to 42% of victims (23% for long distance and high-speed passenger trains).

1.15 Accidents by type and number of victims

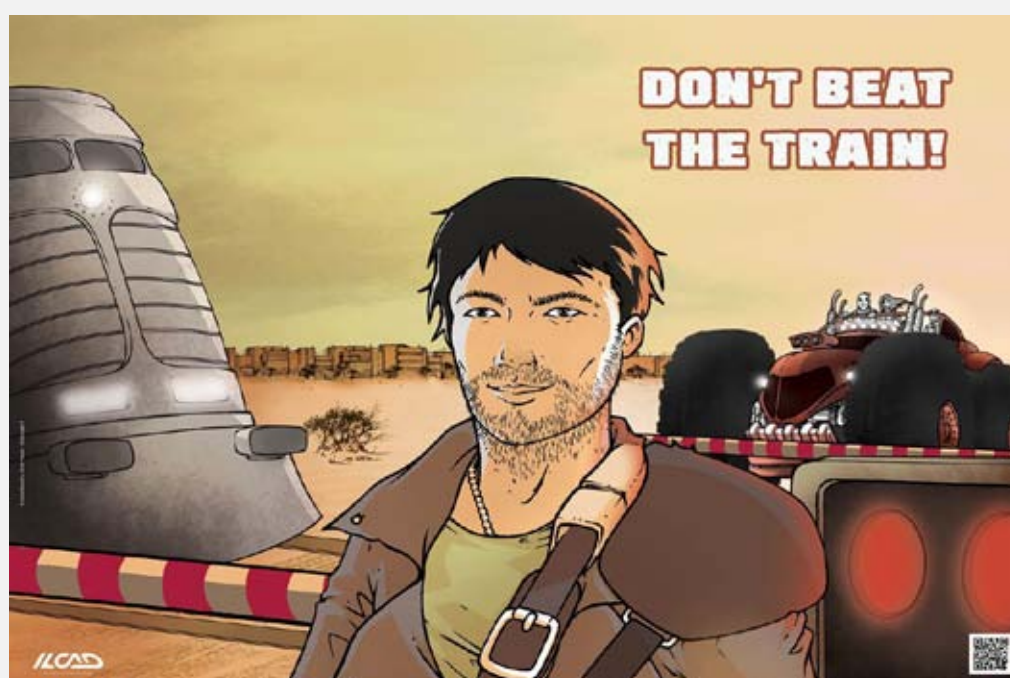


1.16 UIC Global Safety Index



The UIC Global Safety Index was created in 2015 by the Safety performance Group. It reflects more aspects than the sole number of events. Each event is weighted following the type of accident, the category of victim, the number of victims and the cause.

The exact calculation behind the UIC Global Safety Index is available at UIC.



1.17 Accidents and victims by type of accident, causes and location

Type of accidents	Causes			Location						Victims Fatal. S. Inj.		
				Type of location			Location details					
Individual hit by a train 1122 1152	INF	-	-	OL	684	705	LC	146	146	P	-	-
	RS	-	-				SC	21	23			
	HF	29	34	S	436	444	BV	8	9	S	20	20
	RU	12	12				T	10	13			
	WE	-	-	Ot	2	3	O	935	959	T	737	375
	TP	1078	1100									
Train collision with an obstacle 399 403	INF	20	1	OL	343	354	LC	293	375	P	-	8
	RS	4	-				SC	5	1			
	HF	21	14	S	55	49	BV	-	-	S	2	14
	RU	-	-				T	2	-			
	WE	48	1	Ot	1	-	O	97	27	T	179	200
	TP	306	387									
Individual falling from a train 62 63	INF	-	-	OL	11	11	LC	-	-	P	8	42
	RS	1	1				SC	2	2			
	HF	4	4	S	51	52	BV	-	-	S	1	3
	RU	47	47				T	-	-			
	WE	-	-	Ot	-	-	O	60	61	T	6	3
	TP	8	9									
Train collision with another train 24 61	INF	1	-	OL	10	41	LC	-	-	P	-	50
	RS	2	2				SC	3	2			
	HF	20	58	S	14	20	BV	-	-	S	1	10
	RU	-	-				T	-	-			
	WE	-	-	Ot	-	-	O	17	54	T	-	-
	TP	-	-									
Derailment 100 19	INF	28	-	OL	56	17	LC	1	-	P	1	9
	RS	32	2				SC	23	6			
	HF	23	11	S	44	2	BV	2	2	S	8	1
	RU	-	-				T	1	-			
	WE	2	2	Ot	-	-	O	64	11	T	-	-
	TP	2	4									
Electrocution 4 4	INF	-	-	OL	1	1	LC	-	-	P	1	-
	RS	-	-				SC	-	-			
	HF	-	-	S	3	3	BV	-	-	S	-	-
	RU	1	1				T	-	-			
	WE	-	-	Ot	-	-	O	4	4	T	2	1
	TP	3	3									
Fires 8 -	INF	-	-	OL	4	-	LC	-	-	P	-	-
	RS	7	-				SC	-	-			
	HF	1	-	S	4	-	BV	-	-	S	-	-
	RU	-	-				T	-	-			
	WE	-	-	Ot	-	-	O	8	-	T	-	-
	TP	-	-									

Type of accidents	Causes			Location				Victims		
				Type of location		Location details		Fatal.	S. Inj.	
Accident involving dangerous goods without release - -	INF	-	-	OL	-	-	LC	-	P	-
	RS	-	-				SC	-		
	HF	-	-				BV	-		
	RU	-	-	S	-	-	T	-	S	-
	WE	-	-				O	-		
	TP	-	-					-		
Accident involving dangerous goods with release - -	INF	-	-	OL	-	-	LC	-	P	-
	RS	-	-				SC	-		
	HF	-	-				BV	-		
	RU	-	-	S	-	-	T	-	S	-
	WE	-	-				O	-		
	TP	-	-					-		
Shunting operations 66 22	INF	6	-	OL	5	2	LC	1	P	-
	RS	3	-				SC	27		
	HF	46	11				BV	-		
	RU	1	1	S	60	19	T	-	S	4
	WE	-	-				O	36		
	TP	7	7					18		
Runaway vehicles - -	INF	-	-	OL	-	-	LC	-	P	-
	RS	-	-				SC	-		
	HF	-	-				BV	-		
	RU	-	-	S	-	-	T	-	S	-
	WE	-	-				O	-		
	TP	-	-					-		

TOTAL	INF	55	1	OL	1114	1131	LC	441	522	P	10	110
	RS	49	5				SC	81	37			
	HF	144	132				BV	10	11			
	RU	61	61	S	667	589	T	13	13	S	36	58
	WE	50	3				O	1221	1134			
	TP	1404	1510									
1785												
1724												
										972	752	

number of accidents	INF: Infrastructures	OL: Open line	LC: Level crossings	P: passengers
	RS: Rolling stock	S: At station	SC: Switches & Crossings	S: Staff
	HF: Human Factors	Ot: Other locations	BV: Bridges & Viaducts	T: Third parties
	RU: Railway users		T: Tunnels	
number of victims	WE: Weather-Environment		O: Other or unidentified	
	TP: Third Parties			



Part 2

**Time series and trends
2012-2017**

Part 2 - Time series and trends 2012-2017

CAUSES

2.01 Significant accidents

2.02 Causes

2.03 Internal causes

2.04 External causes

2.05 Third parties

HUMAN CONSEQUENCES

2.06 Human consequences

2.07 Severe accidents (two and more victims)

2.08 Passengers

2.09 Staff

2.10 Third parties

TYPE OF ACCIDENT

2.11 Collisions with an obstacle

2.12 Collisions between trains

2.13 Derailments

2.14 Individuals hit by a train

2.15 Individuals falling from a train

2.16 Accidents at level crossings

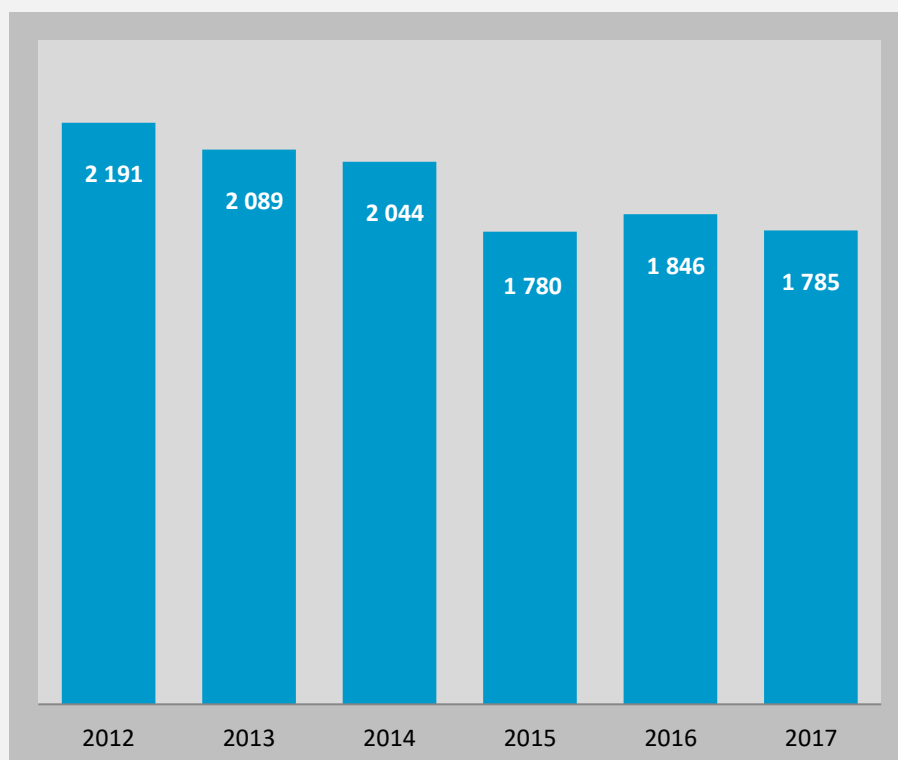
2.01a All significant accidents

Significant accidents declared by railway members of the Safety Database dropped from 2191 in 2012 to 1785 in 2017, which means a decrease of -18%.

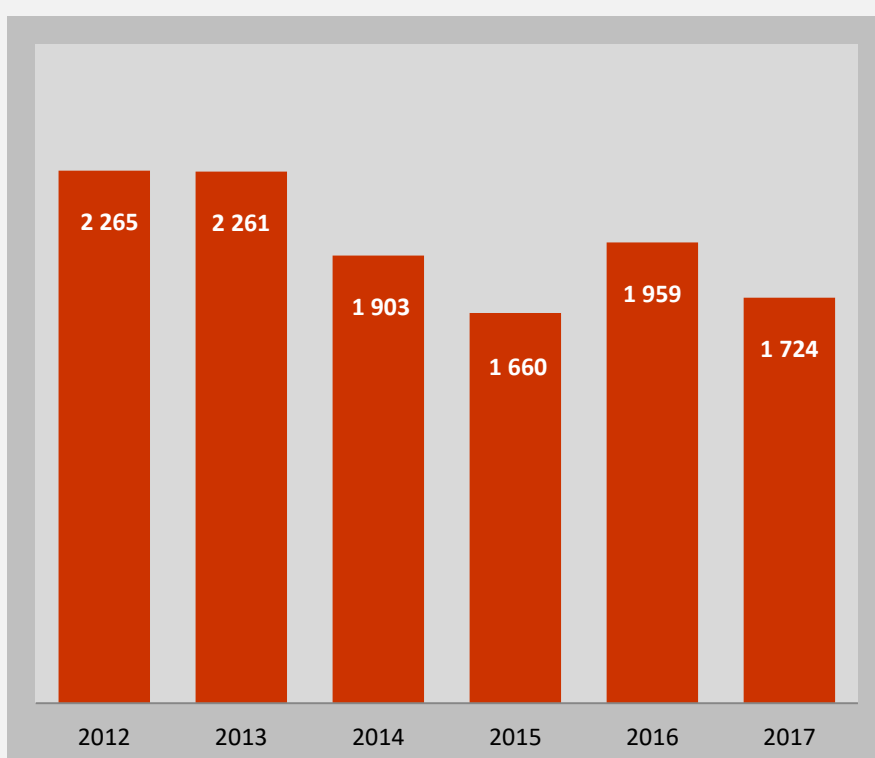
We observe a relative stability in the number of significant accidents on the last three years.

Trends are presented since 2012, as this is the first year data are available for all members of the Safety Database.

“Significant accident” means any accident involving at least one rail vehicle in motion, resulting in at least one killed or seriously injured person, or in significant damage to



2.01b Victims of rail accidents



stock, track, other installations or environment, or extensive disruptions to traffic, excluding accidents in workshops, warehouses and depots.

Regarding the number of victims of significant rail accidents, 2017 appears as the second best year, after 2015. The number of victims dropped 24% compared to the year 2012.

This means that one fourth of 2012 victims were spared in 2017. This is the most positive trend in railway safety issues we may observe on the period.

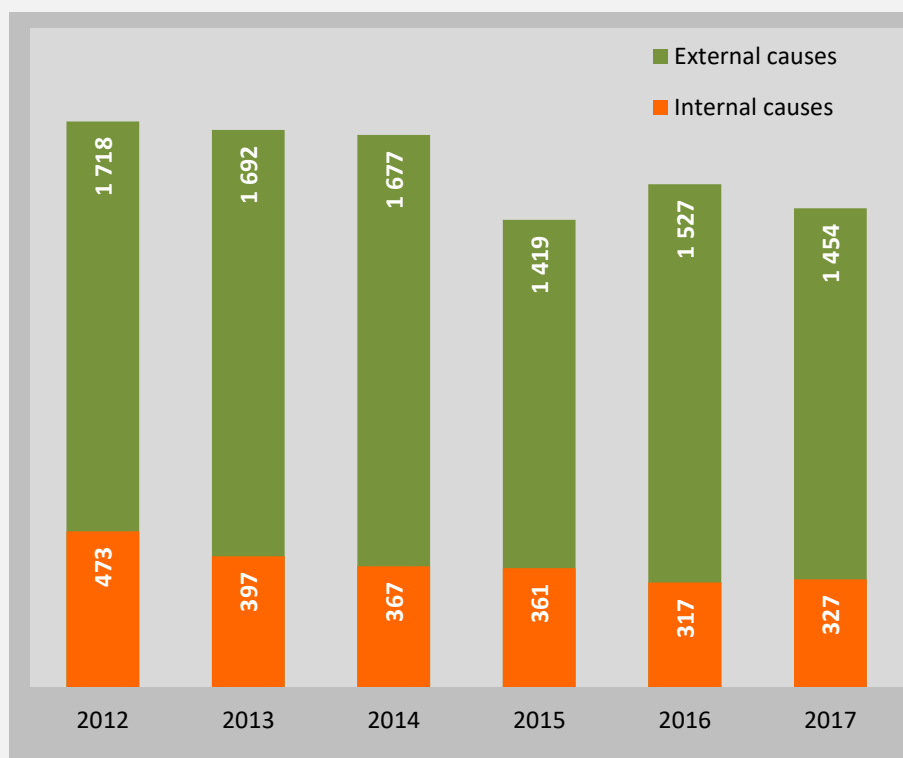
2.02a Accidents per internal / external causes

The number of accidents with internal causes decreased -31% between 2012 and 2017, while the number of accidents with external causes decreased -15%.

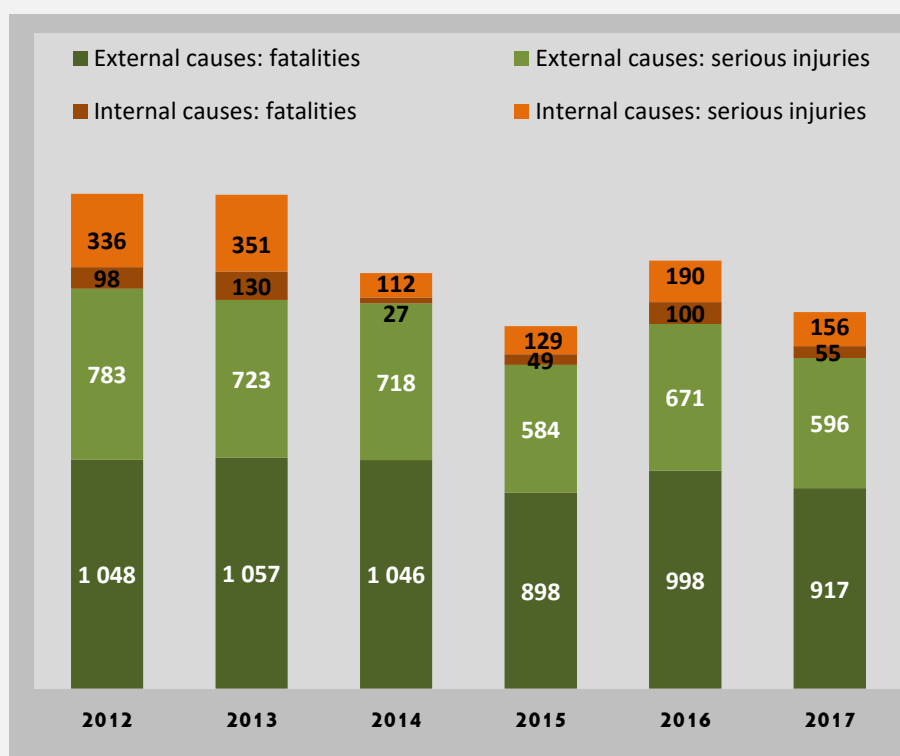
External causes are responsible for more than 80% of accidents each year.

Reminder

- Internal causes: infrastructure, rolling stock, human factors and railway users.
- External causes: third parties, weather and environment.
- Some accidents have unidentified causes. They are excluded from the graph.



2.02b Victims per internal / external causes



Decrease from 2012 to 2017:

Internal causes	-51%
fatalities	-44%
serious injuries	-54%
External causes	-17%
fatalities	-12%
serious injuries	-24%

In the year 2017:

- ✓ External causes are responsible for 88% of all victims and 94% of all fatalities.
- ✓ 61% of victims of accidents with external causes are fatalities.
- ✓ Only 27% of victims of accidents with internal causes are fatalities.

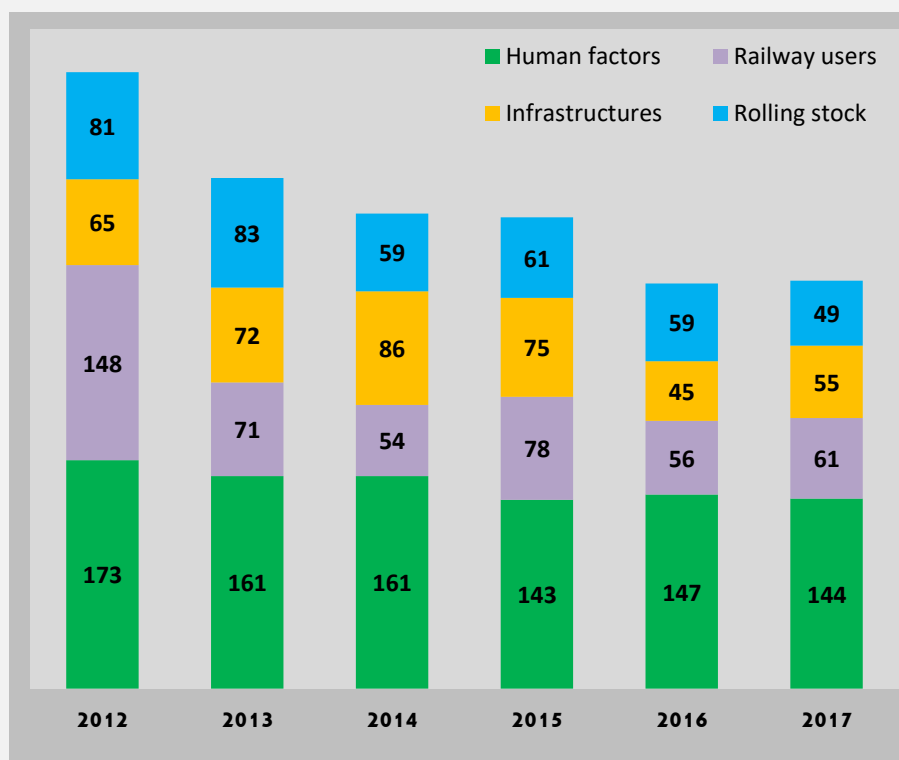
2.03a Accidents per internal causes

All categories of internal cause decrease on the six-year period.

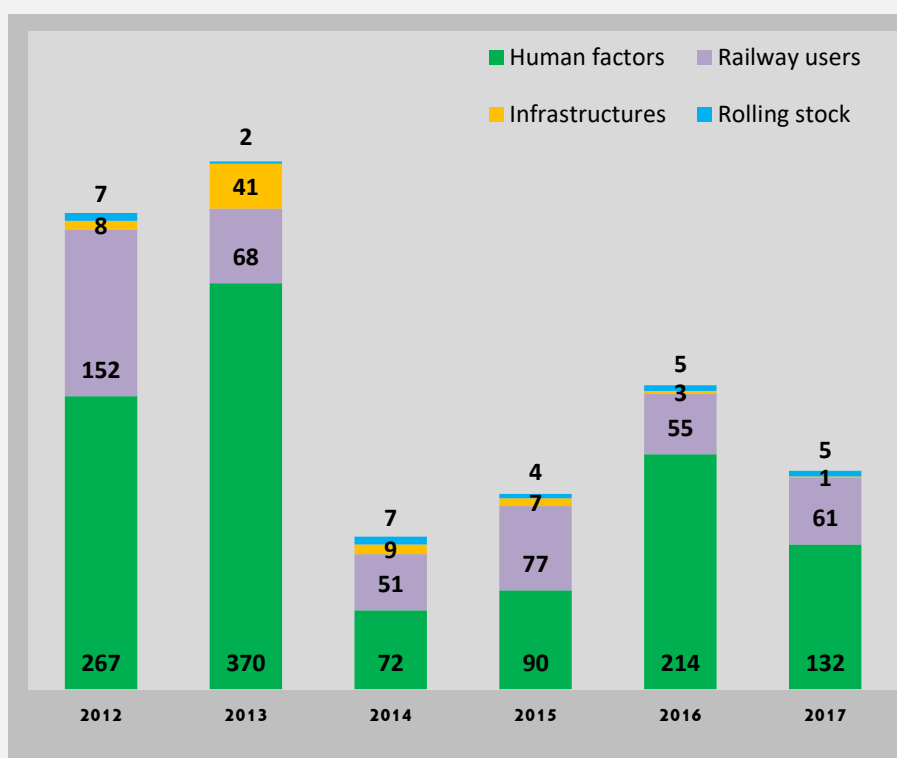
The most important decrease concerns accidents with "railway users" causes (mostly passengers): -58%

On the other hand, accidents with "human factor" causes only decreased -17% between 2012 and 2017.

As a result, accidents with "human factor" causes increase their part among accidents with internal cause from 37% to 45%.



2.03b Victims per internal causes



The number of victims of accidents with internal cause fell drastically between 2013 and 2014 (-71%)

Number of accidents and number of victims are quite disconnected. A few severe accidents may have a huge number of victims (year 2013, for instance).

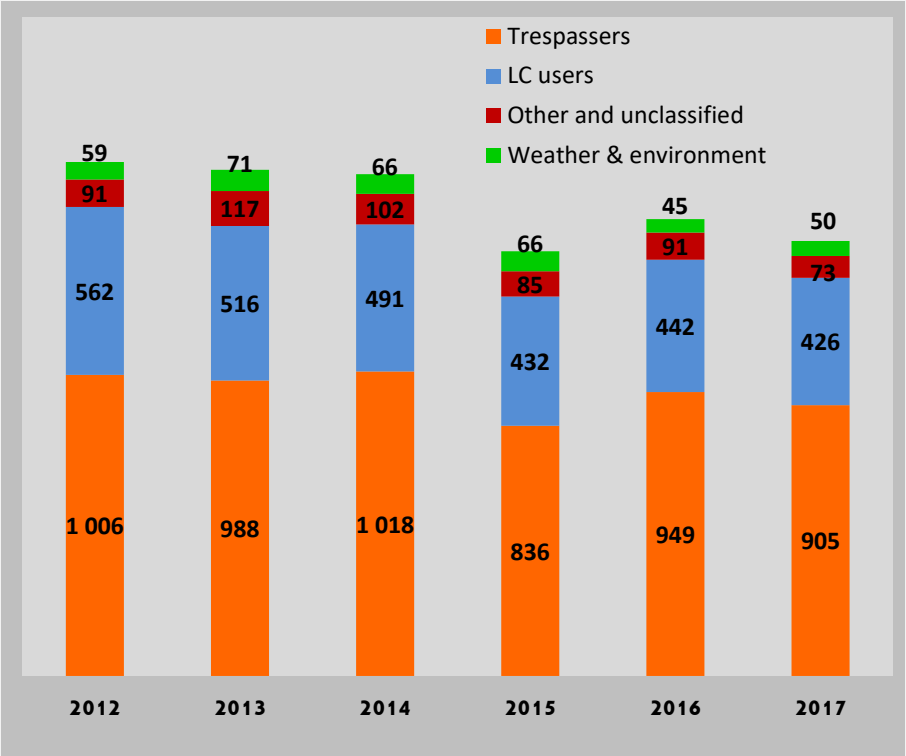
In 2017, we observe only one staff serious injury in an accident with infrastructure cause and four staff victims + one passenger serious injury in accidents with rolling stock cause.

2.04a Accidents per external causes

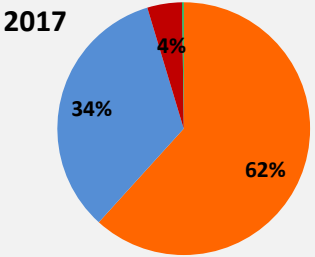
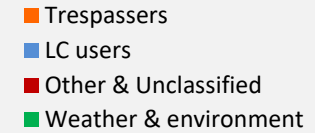
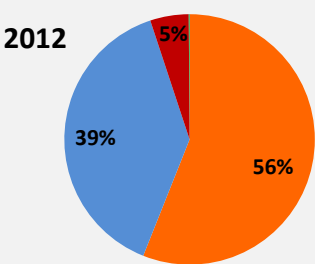
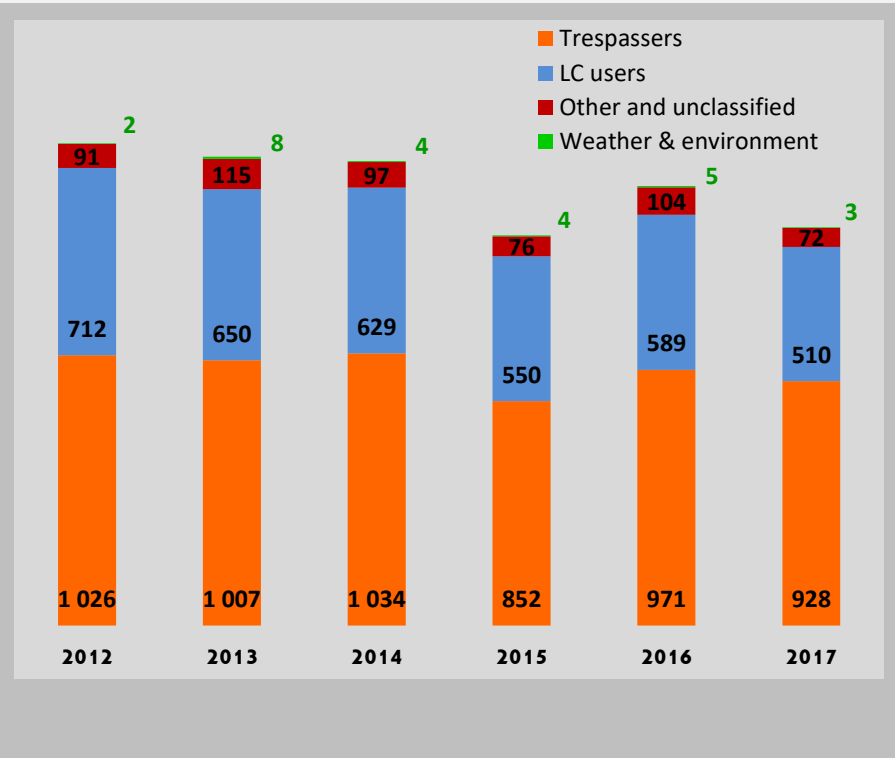
The number of accidents with external cause decreased -15% between 2012 and 2017. The main drop occurred between 2014 and 2015.

Trespassers remain the most common cause of accident: 62% of all accidents with external causes in 2017. Their number only decreased -10% in the period.

LC users are causing roughly 30% of all accidents with external causes in 2017. Compared to 2012, their number decreased -25%, which might show the impact of awareness campaigns like ILCAD.



2.04b Victims per external causes



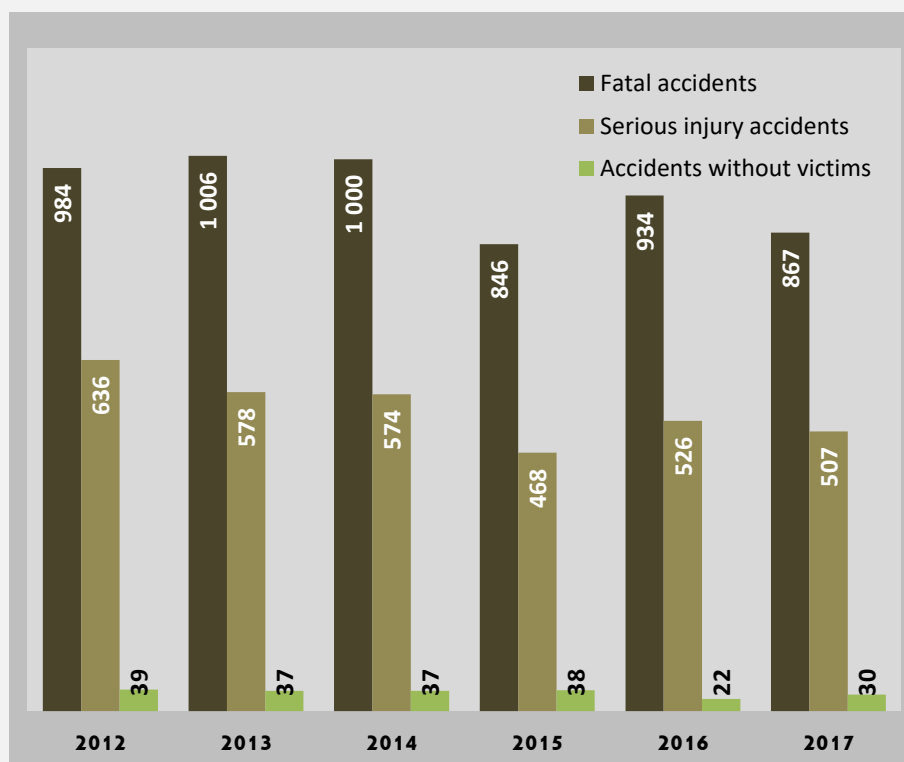
2.05a Accidents caused by third parties

Accidents caused by third parties decreased -15% between 2012 and 2017.

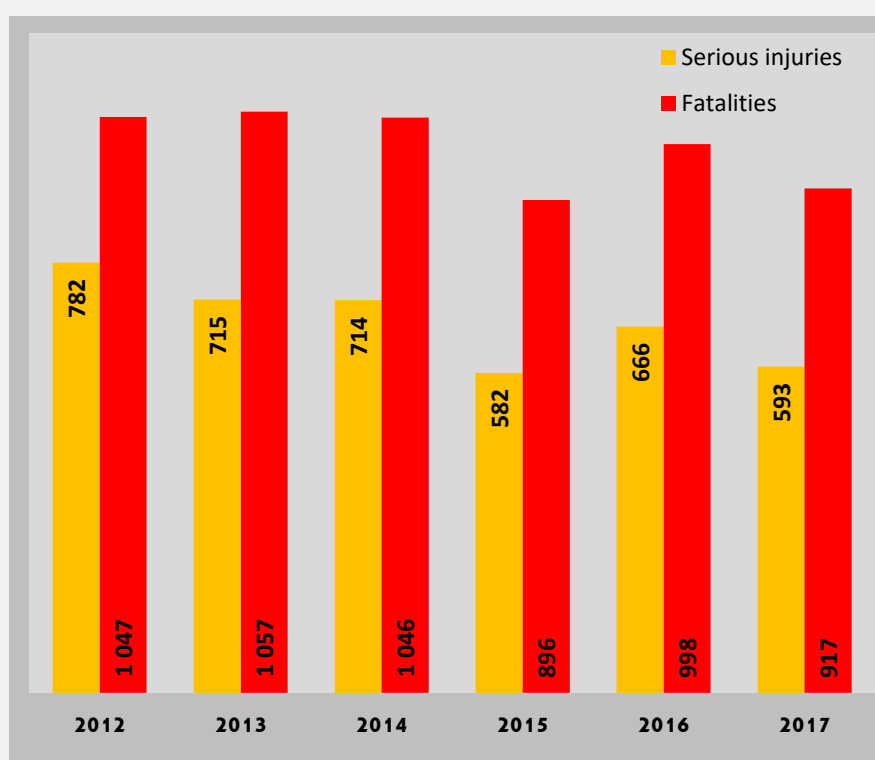
94% of fatal accidents and 84% of serious injury accidents are caused by third parties (year 2017).

Serious injuries decreased -21% and fatalities decreased -12% on the 6-year period.

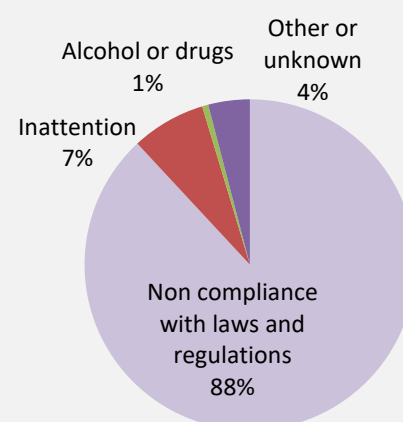
Non compliance with laws and regulations is the most common cause at third level, representing 88% of cases in 2017.



2.05b Victims of accidents caused by third parties



Split of victims
per cause at third level
2017

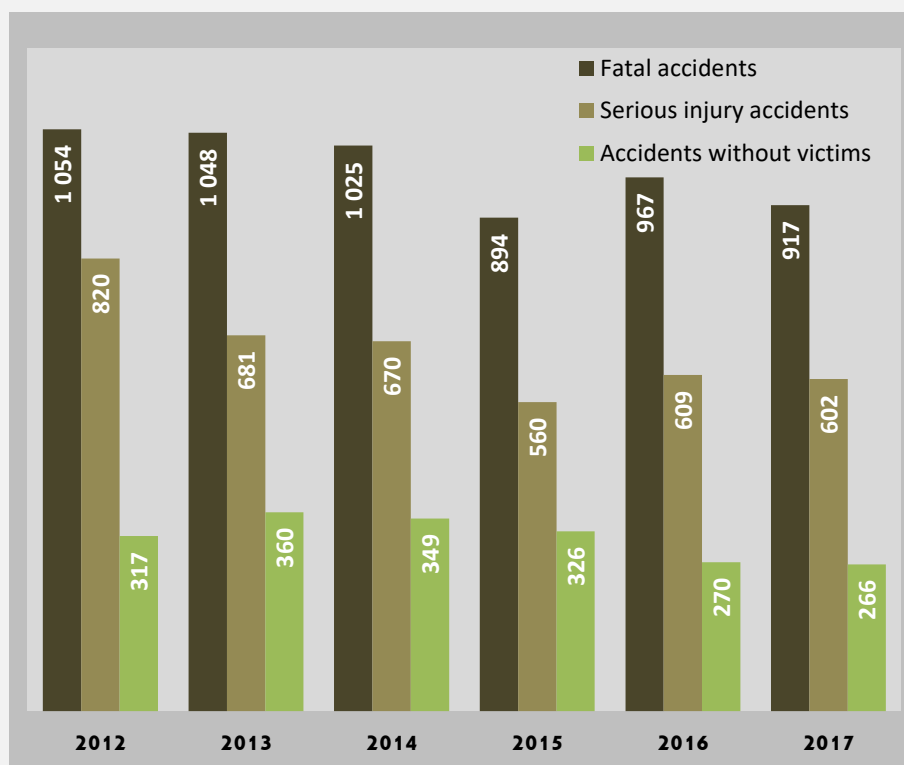


2.06a Accidents per human consequences

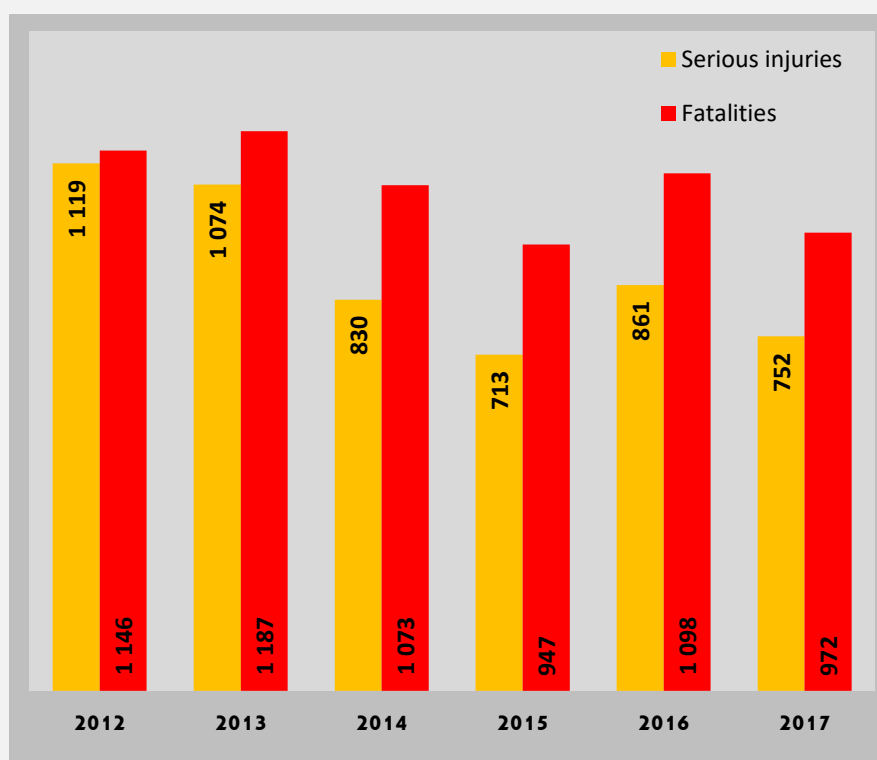
Fatal accidents roughly represent half of all significant accidents. This proportion is quite stable along the years, with a trend towards fewer fatal accidents.

A maximum of 52% of fatal accidents was observed in 2016 and a minimum of 48% in 2012.

Fatal accidents decreased by 13% from 2012 to 2017 while serious injury accidents decreased by 27%.



2.06b Fatalities and serious injuries



From 2012 to 2017, fatalities decreased by -33% while serious injuries decreased by -15%.

This evolution appears quite erratic as it might depend on a small number of severe accidents.

Every year, railway accidents lead to more fatalities than serious injuries, due to the preeminence of "individuals hit by a train" (see graph 2.14).

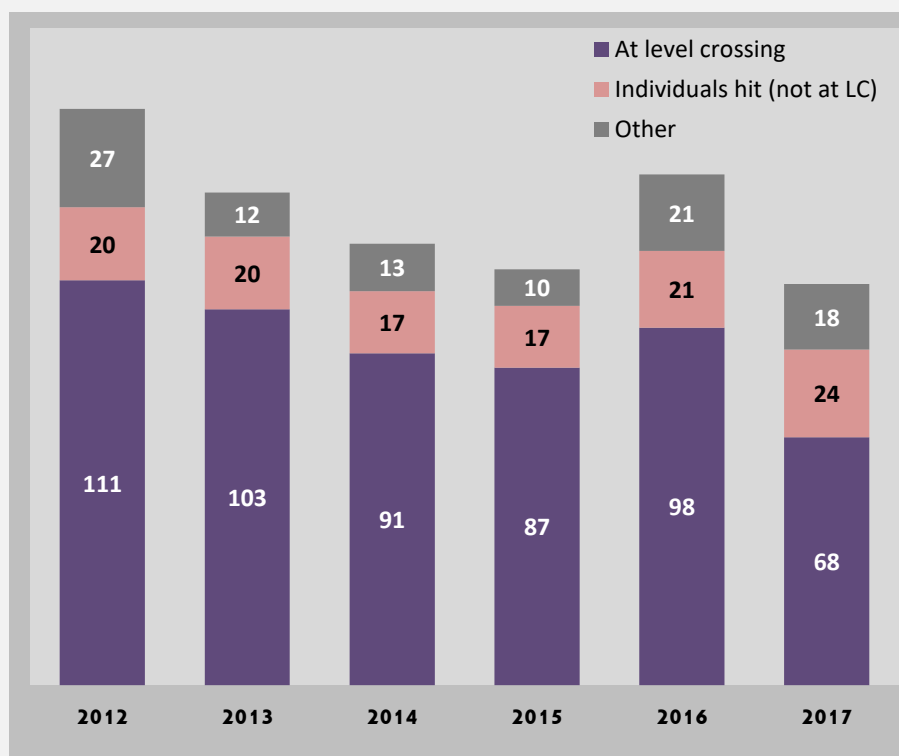
2.07a Severe accidents (two and more victims)

Severe accidents decreased -30% between 2012 and 2017.

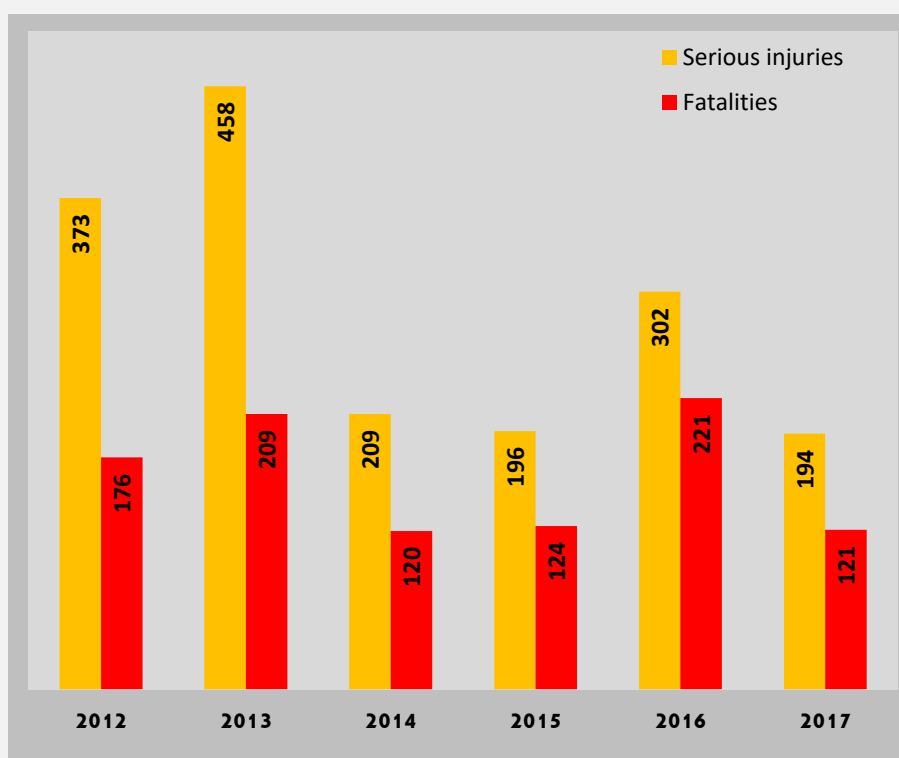
The number of collisions with road vehicles at level crossings dropped 31% between 2016 and 2017.

'Groups of individuals hit by a train' is the second most common severe accident : 4 events involving staff and 20 events involving third parties.

In 2017, the most severe events were a collision between trains causing 35 serious injuries and a collision with a bus at level crossing causing 6 fatalities and 10 serious injuries.



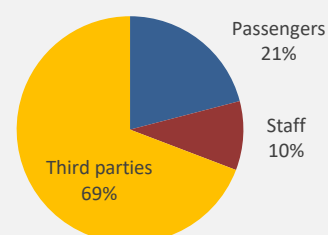
2.07b Victims of severe accidents



Severe accidents are unpredictable.

The number of victims of severe accidents in 2017 is close to the numbers observed in 2014 and 2015.

Split of victims 2017

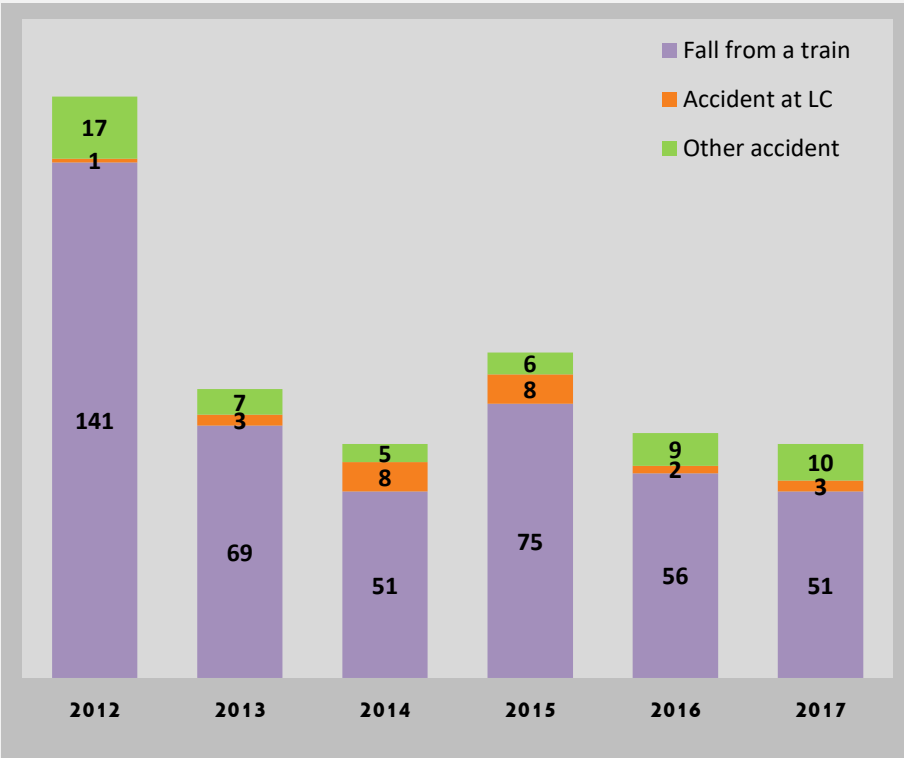


2.08a Accidents with passenger victims

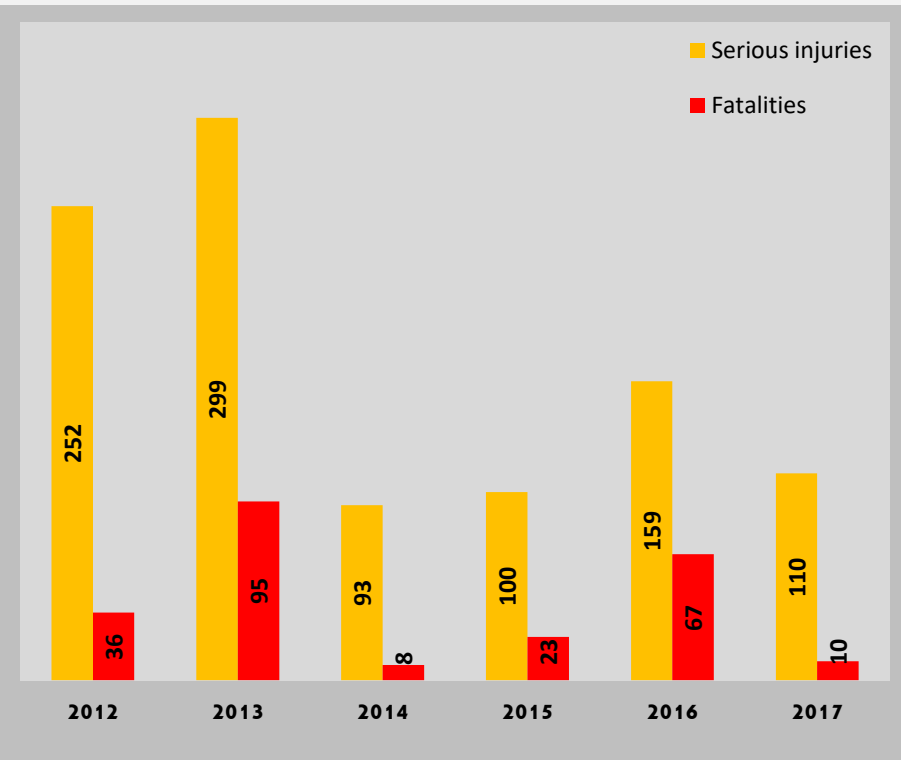
The number of accidents with passenger victims was cut by 50% from 2012 to 2013 and remained afterwards to levels unseen by the past.

64 accidents involving passenger victims occurred during the year 2017. This is the lowest figure ever observed, at the same level as 2014.

80% of events with passenger victims are "individuals falling from a train".



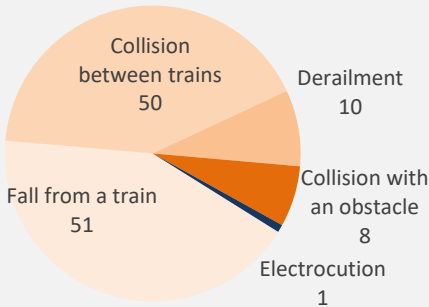
2.08b Passenger victims



One single collision between trains is responsible for one third of all passenger serious injuries.

The 10 passenger fatalities consist in 8 falls from a train, 1 electrocution and 1 passenger killed in a derailment.

Split of passenger victims in 2017

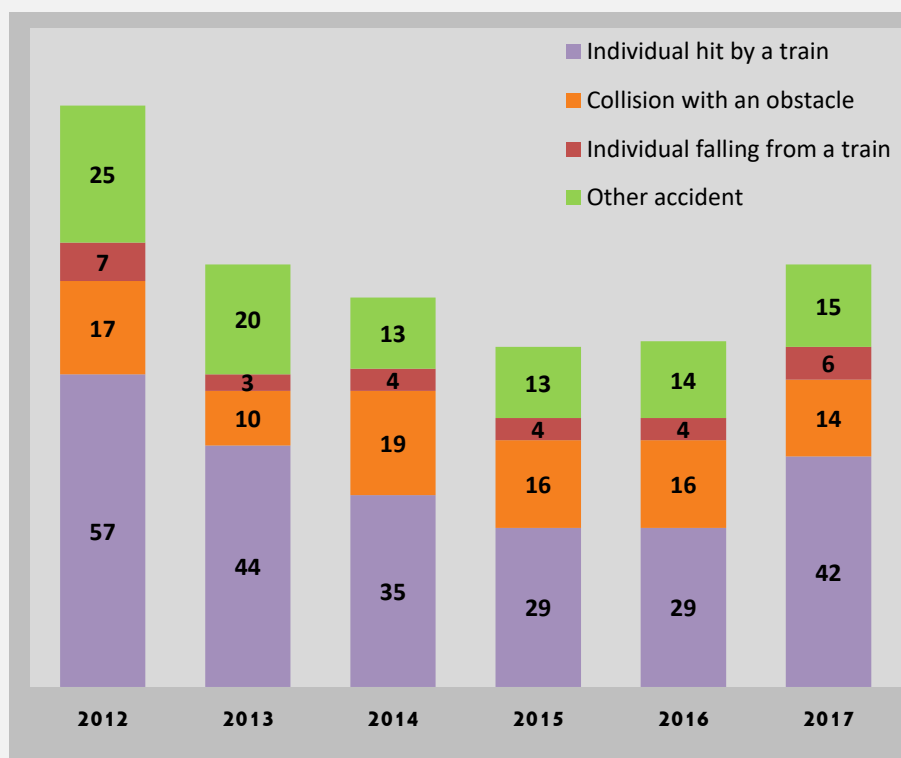


2.09a Accidents with staff victims

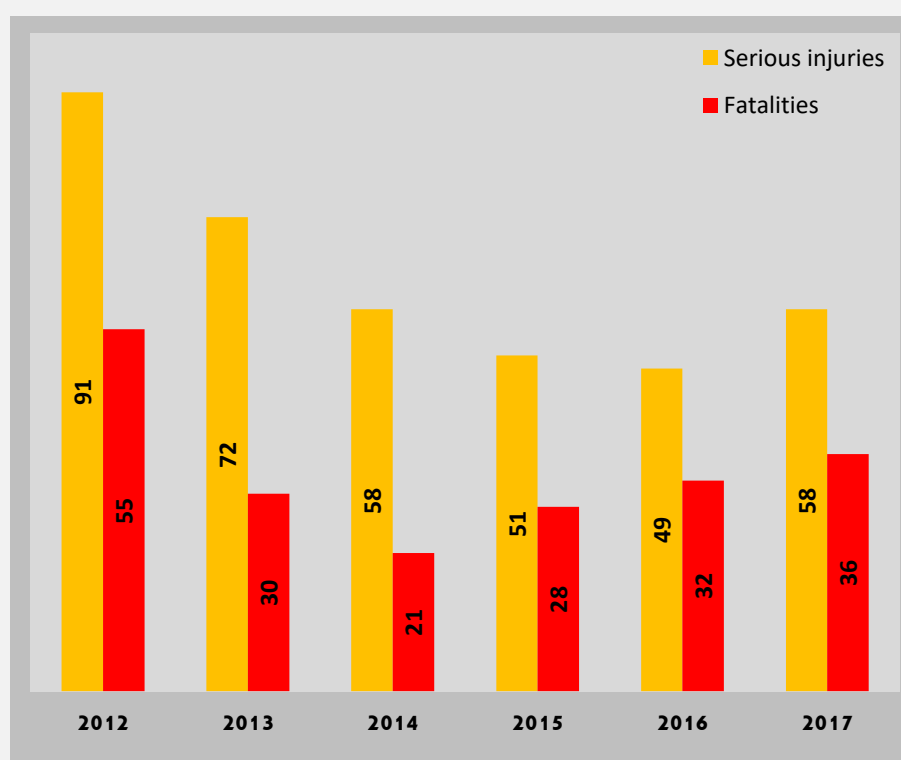
The number of accidents involving staff victims decreased from 2012 to 2015 but increased afterwards.

Trends are not obvious on this six-year period, but we should not forget that the number of accidents ten years ago was around 200, which means 2.5 higher than the present number.

Rail infrastructure staff pays the heaviest price (55% of accidents are workers hit by a train).



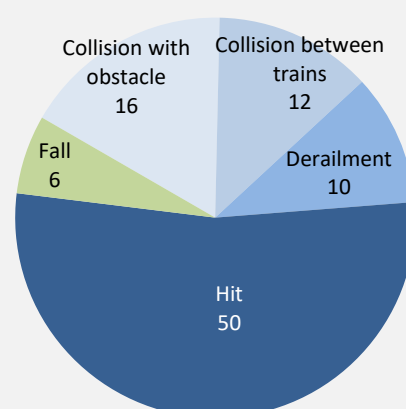
2.09b Staff victims



Staff members hit by a train represent less than a half of staff serious injuries (47%) but almost two thirds of staff fatalities (64%).

Since 2014, the number of staff fatalities increases every year.

Split of staff victims in 2017

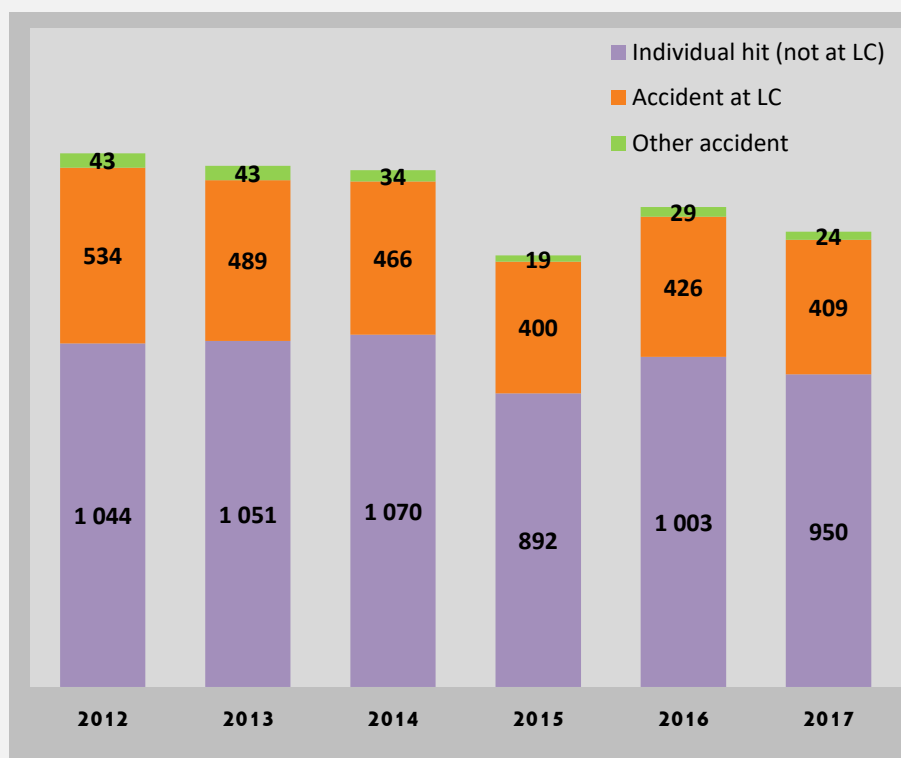


2.10a Accidents with third parties victims

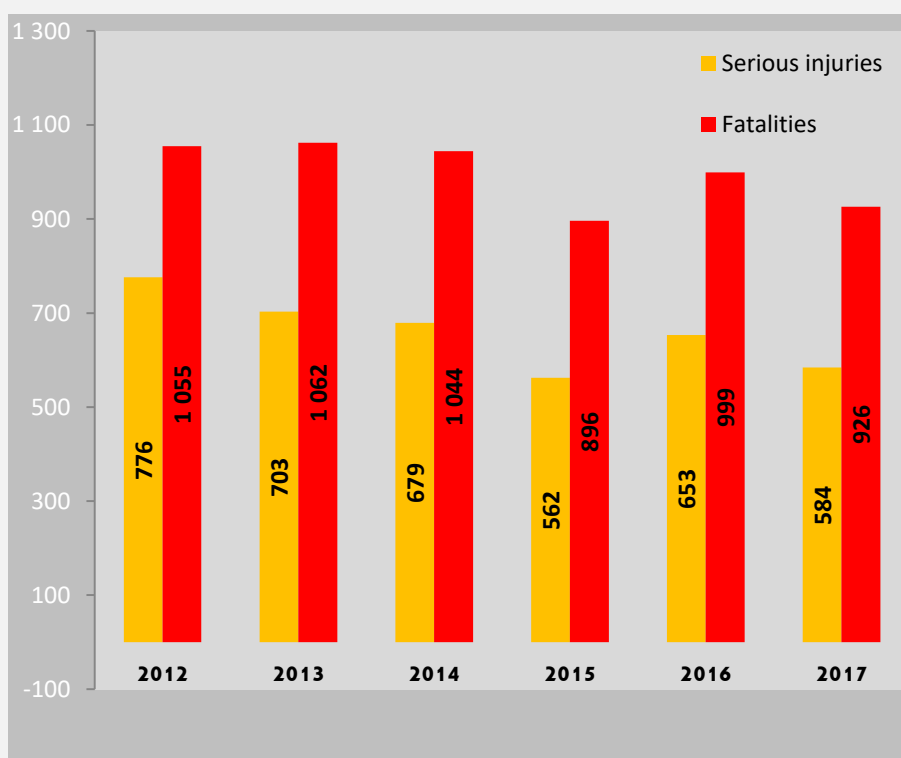
The number of accidents with third parties victims decreased -15% since 2012.

The number of accidents at LC decreased more deeply (-23%) than the number of individuals hit outside LC (-9%).

These two types of accidents represented 98% of accidents with third parties victims in 2017.



2.10b Third parties victims



Fatalities decreased -12% from 2012 to 2017, whilst serious injuries decreased -25%.

Fatalities represent around 60% of all victims every year.

In 2016, most victims were trespassers (62%), followed by LC users (33%) and other third parties (5%), mostly pedestrians on public railway area (platforms).

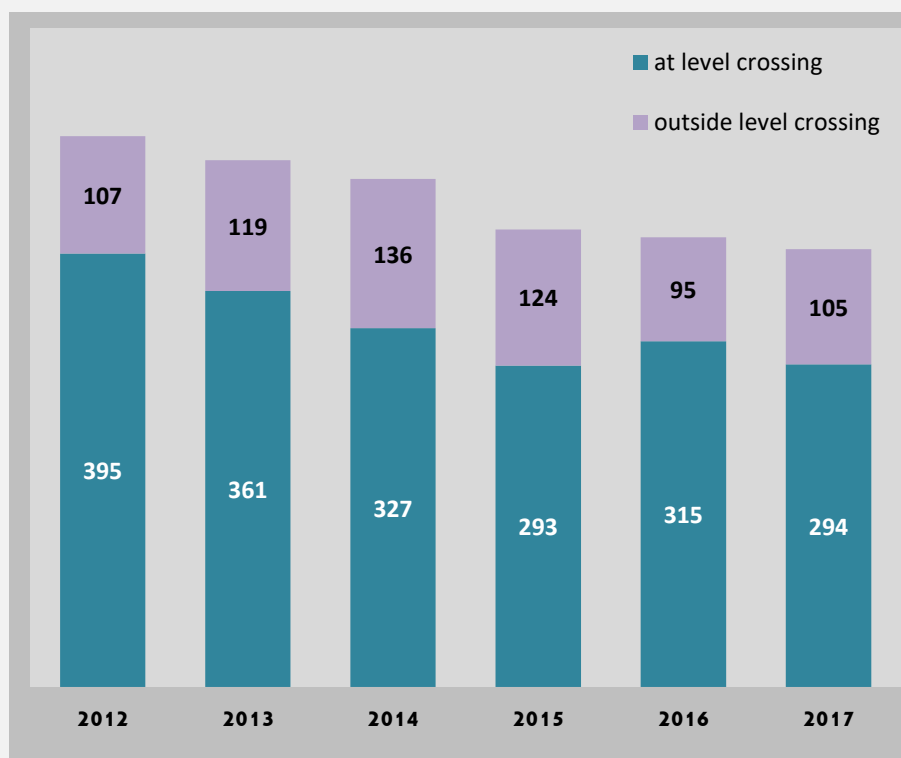
2.11a Collisions with an obstacle

This graph excludes shunting operations.

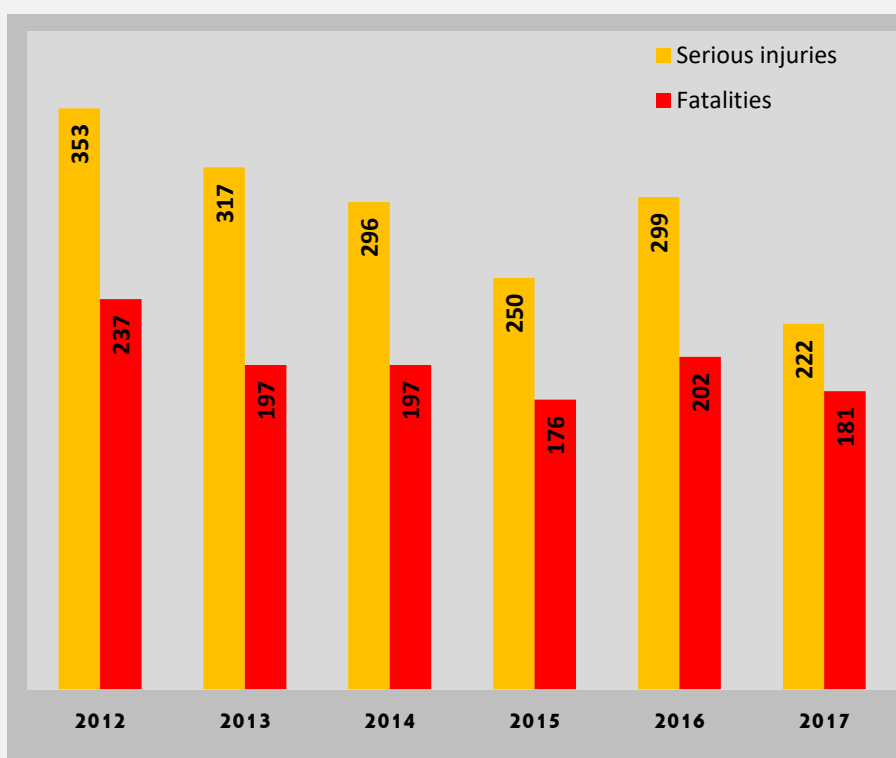
Collisions with an obstacle decreased -21% between 2012 and 2017.

There was no decrease in collisions with an obstacle at stations.

We shouldn't forget that most collisions with an obstacle occur at level crossings. See graph 2.16.



2.11b Victims of collisions with an obstacle



Collisions with an obstacle had fewer human consequences in 2017 than 2012:

- ⇒ 1.18 victim per event in 2012;
- ⇒ 1.01 victim per event in 2017.

The total number of victims decreased -32% on the period (fatalities: -24% and serious injuries: -37%).

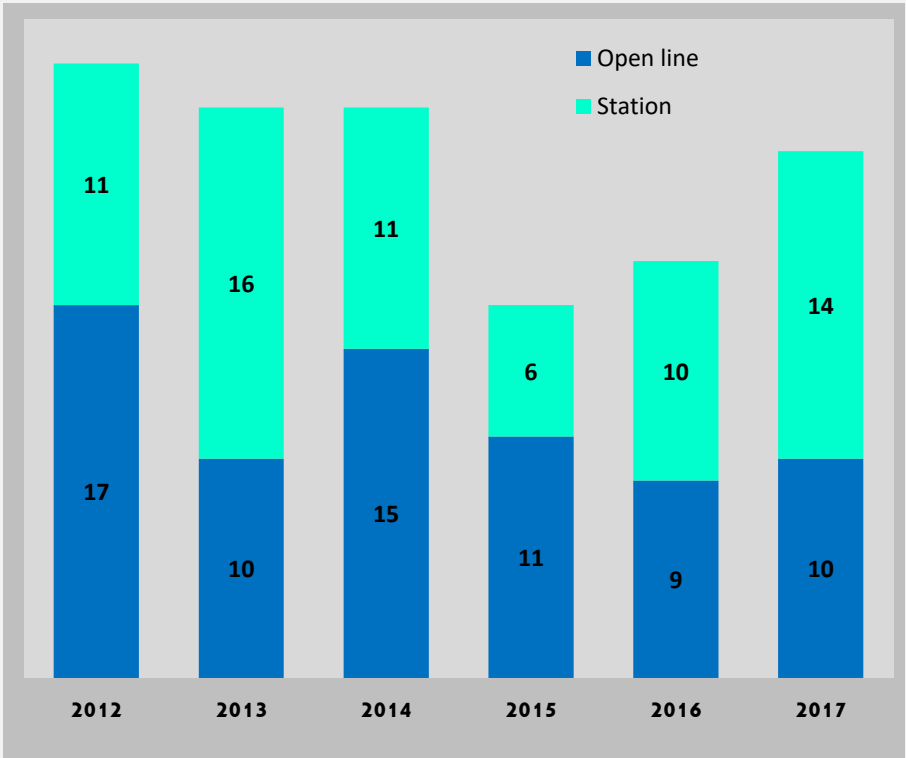
Level crossing users represent 90% of the 403 victims in 2017.

2.12a Collisions between trains

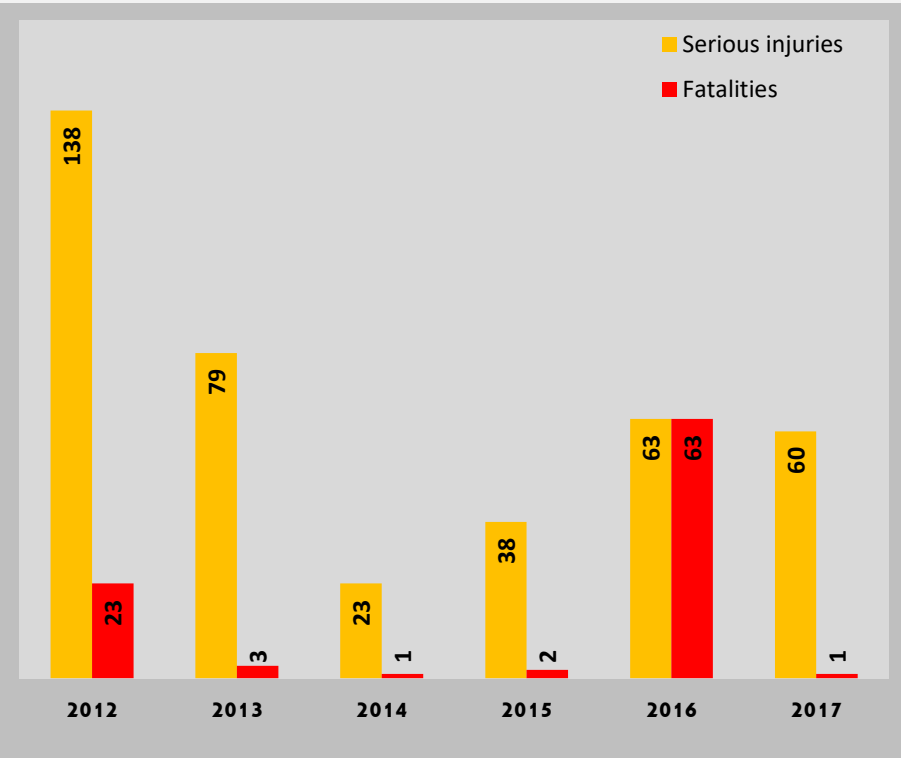
This graph excludes shunting operations.

There is no observable trend towards fewer collisions between trains on the period.

There is no correlation between the number of accidents and the number of victims. Few very severe accidents may lead to a large number of victims.



2.12b Victims of collisions between trains



Proportion of victims caused by the 2 most severe collisions each year:

2012	60%
2013	78%
2014	67%
2015	75%
2016	83%
2017	74%

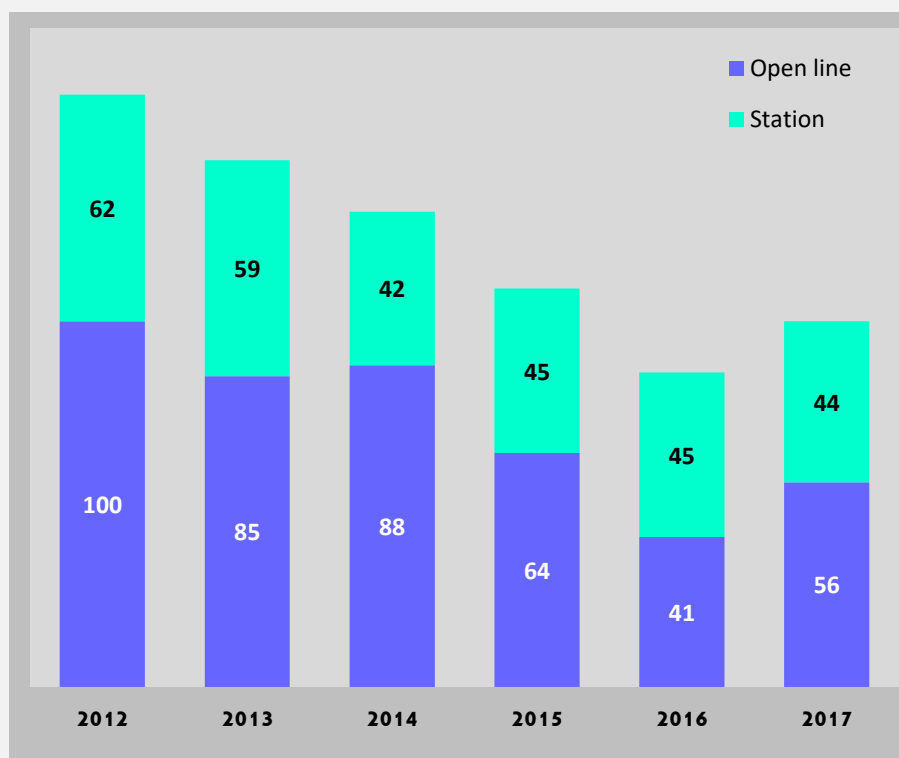
On the whole period, these 12 accidents (9% of the total) led to 72% of the victims in collisions between trains.

2.13a Derailments

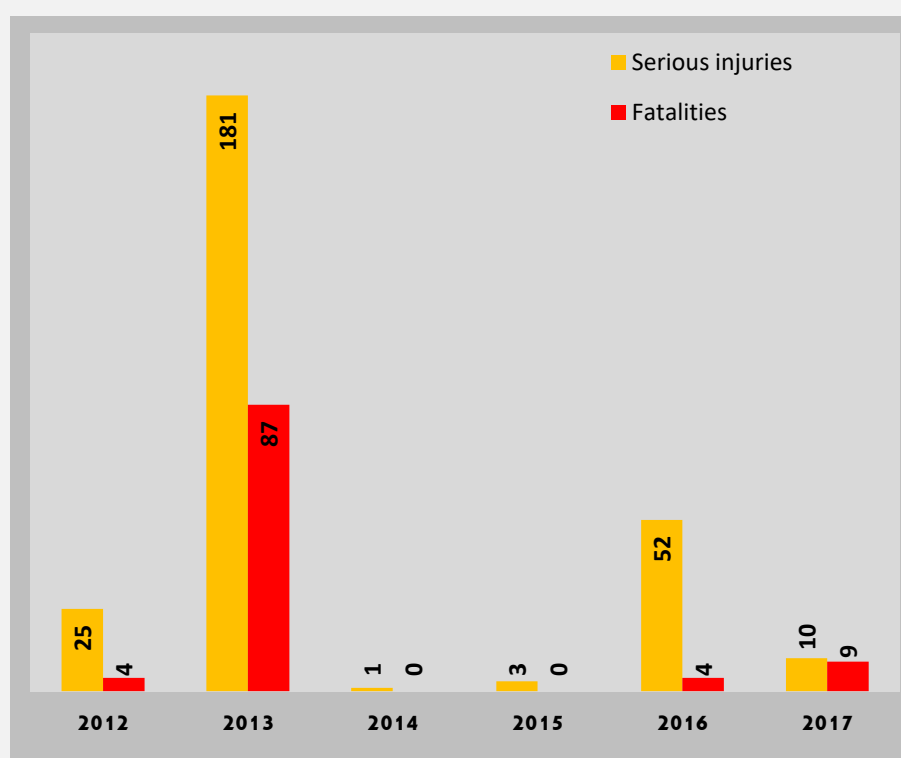
The number of derailments regularly decreased from 2012 to 2016. The trend on last year is opposite, due to an increase of derailments on open line.

65% of derailments in the year 2017 concerned freight trains (against respectively 27% passenger trains and 7% infrastructure trains).

The graph excludes shunting operations (there were 27 derailments during shunting operations).



2.13b Victims of derailments



97% of all derailments during the period had no human consequences.

Four accidents generated 90% of all fatalities and 88% of all serious injuries.

10 accidents were fatal during the period, of which 5 occurred in 2017.

In 2017, there were 1 passenger fatality and 9 passenger serious injuries vs 8 staff fatalities and 1 staff serious injury.

2.14a Individuals hit by a train: accidents

No real trend is observable regarding individuals hit by a train.

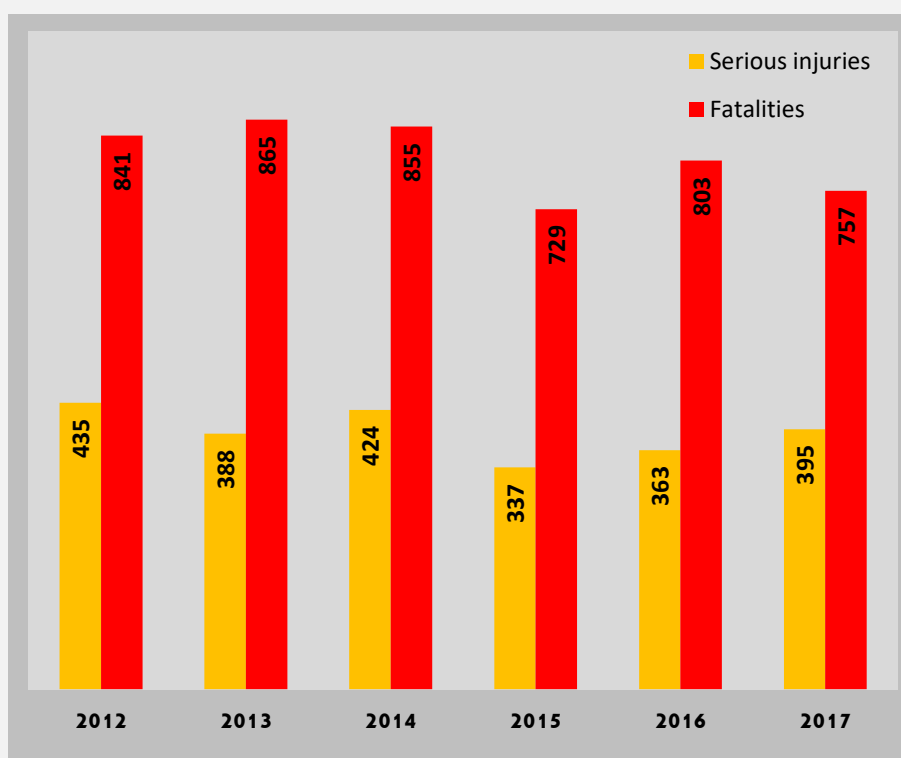
The number of accidents in 2017 still represents 90% of the number observed in 2012.

2016 and 2017 numbers are very similar and higher than the 2015 one.

The graph excludes shunting operations.



2.14b Individuals hit by a train: victims



Individuals being hit by a train is fatal in two thirds of events. This proportion remains equal along the years.

Split of victims in 2017:

- ⇒ Trespassers 79%
- ⇒ LC users 12%
- ⇒ Persons hit on platform 6%
- ⇒ Staff 3%

Split of accidents per number of victims in 2017:

- ⇒ 1 victim: 1 098 events
- ⇒ 2 victims: 20 events
- ⇒ 3 victims: 2 events
- ⇒ 4 victims: 2 events

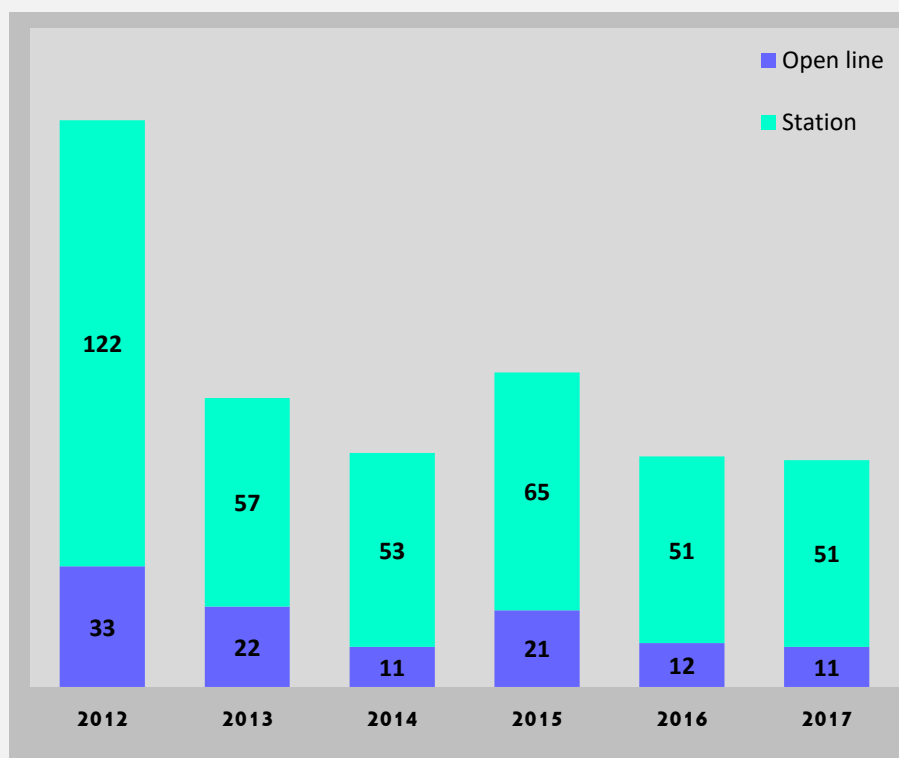
2.15a Individuals falling from a train: accidents

The number of individuals falling from a train decreased -50% between 2012 and 2013.

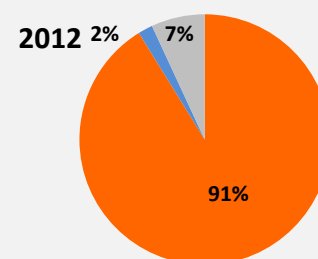
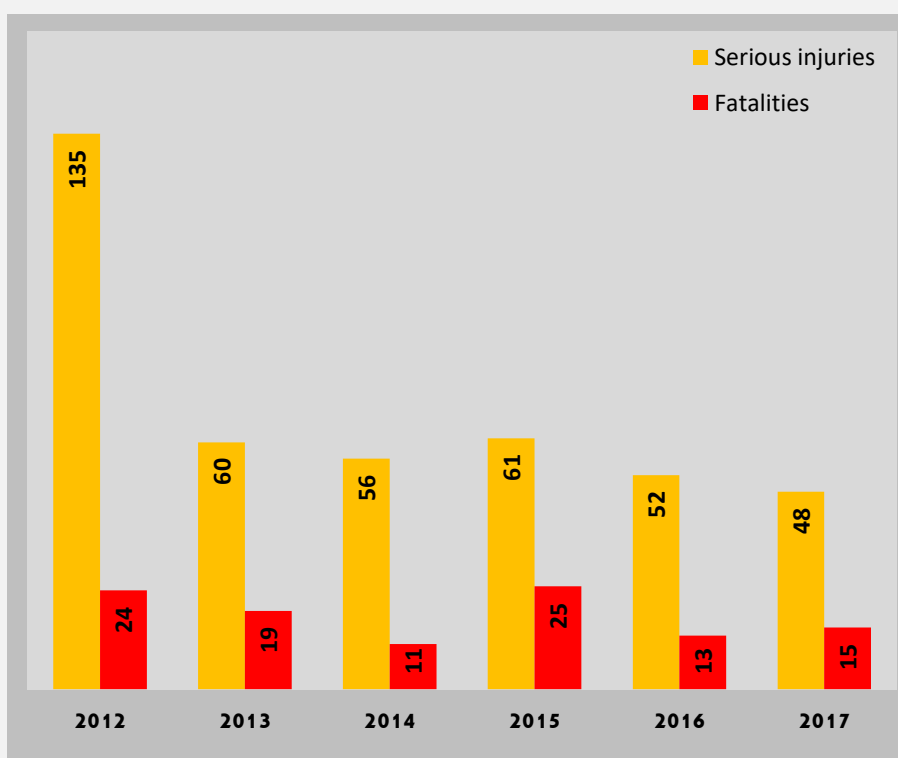
This was confirmed in the following years, with a majority of cases at stations.

During the year 2017, passengers were involved in 50 cases, staff in 4 cases and third parties in 8 cases.

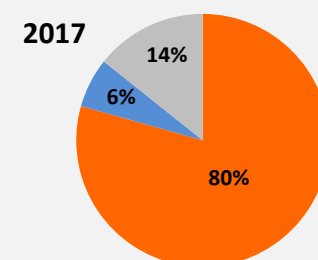
The graph excludes shunting operations.



2.15b Individuals falling from a train: victims



Passengers
Staff
Third parties



2.16a Accidents at level crossings

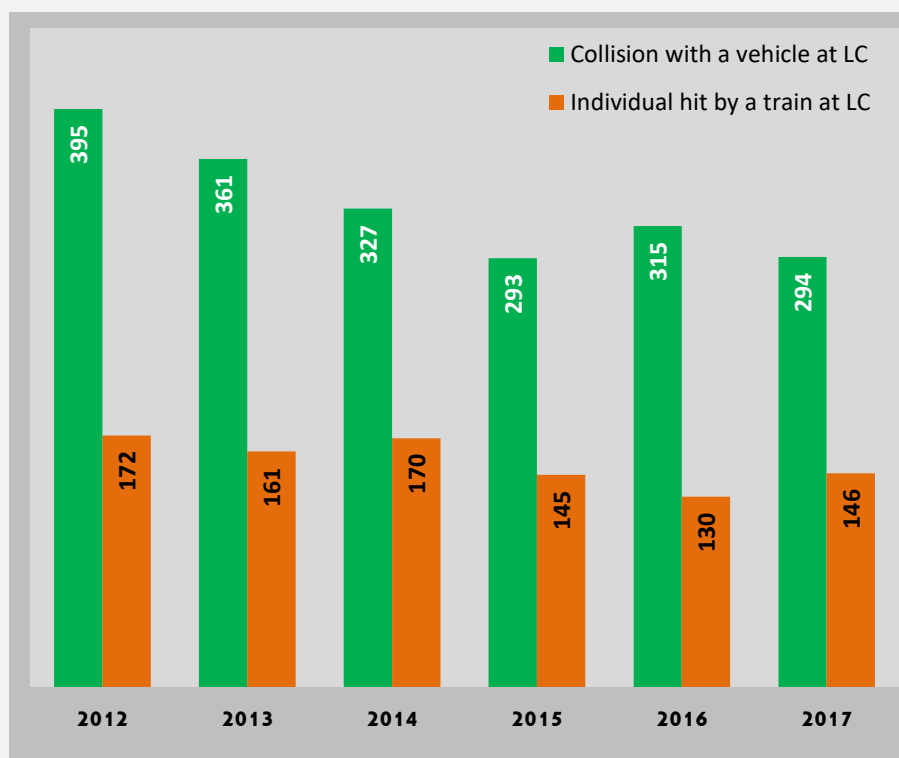
Safety at level crossings showed an huge improvement between 2012 and 2015:

⇒ the number of collisions with a road vehicle dropped -26%;

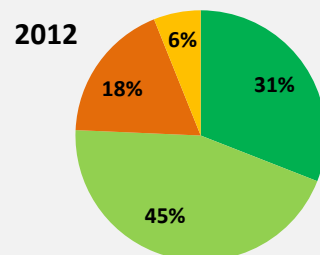
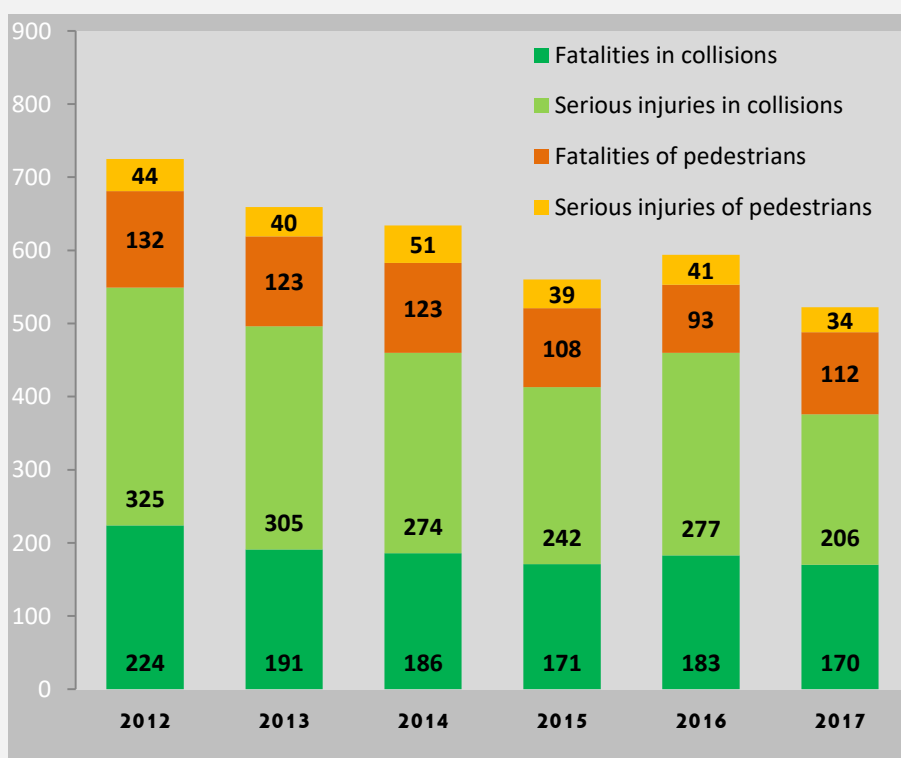
⇒ the number of accidents involving pedestrians and cyclists decreased -16%.

Nevertheless, there is no improvement observed after 2015: 438 events in 2015, 432 events in 2016 and 439 events in 2017.

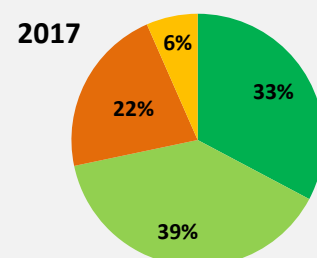
The split of victims (see graph below) is remarkably stable along the years.

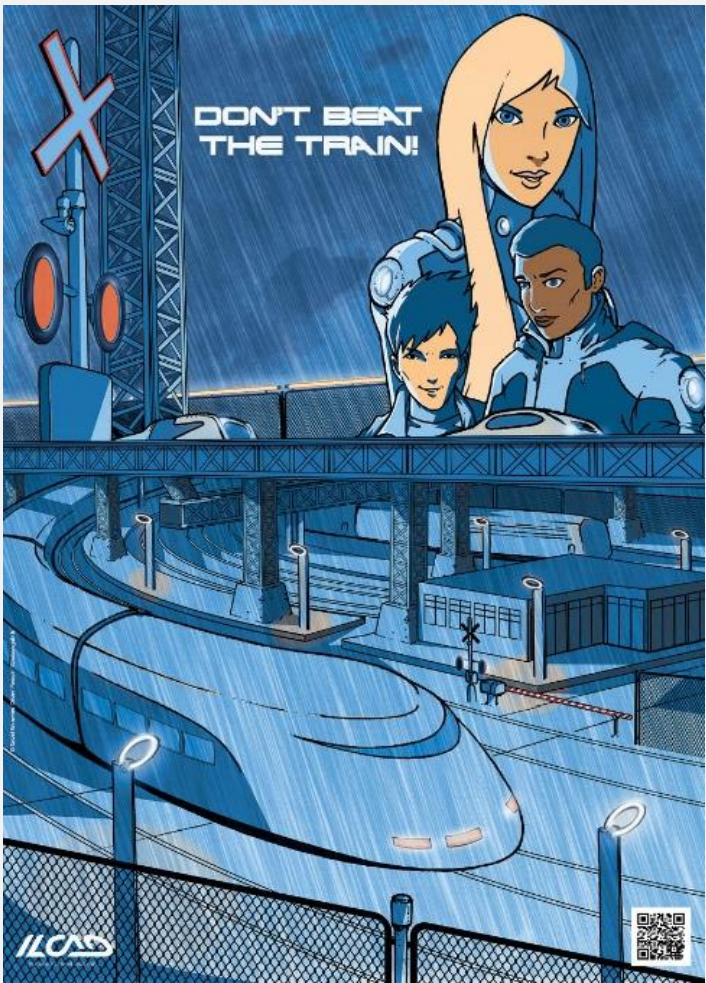


2.16b Victims of accidents at level crossings



■ Fatalities in collisions
 ■ S. injuries in collisions
 ■ Fatalities of pedestrians
 ■ S. injuries of pedestrians





Definitions from the Commission Directive 2016/798/EC ("Safety Directive")

"**Significant accident**" means any accident involving at least one rail vehicle in motion, resulting in at least one killed or seriously injured person, or in significant damage to stock, track, other installations or environment, or extensive disruptions to traffic, excluding accidents in workshops, warehouses and depots.

"**Significant damage to stock, track, other installations or environment**" means damage that is equivalent to EUR 150 000 or more.

"**Extensive disruptions to traffic**" means that train services on a main railway line are suspended for six hours or more.

European Safety Database Members

Company	Country	Code
ADIF	Spain	ES
ADIF AV	Spain	ES
Bane NOR SF	Norway	NO
CFL	Luxembourg	LU
CFR SA	Romania	RO
CIE	Ireland	IE
DB AG *	Germany	DE
Eurotunnel	France - UK	-
HZ	Croatia	HR
Infrabel *	Belgium	BE
IP	Portugal	PT
MÁV	Hungary	HU
ÖBB	Austria	AT
PKP	Poland	PL
PRORAIL **	Netherlands	NL
RAI	Iran	IR
RFI	Italy	IT
RSSB *	United Kingdom	GB
SBB CFF FFS *	Switzerland	CH
SNCF Réseau *	France	FR
SŽ	Slovenia	SI
SŽDC	Czechia	CZ
TCDD	Turkey	TR
Trafikverket *	Sweden	SE
ŽSR	Slovakia	SK

* Members and ** Chair of the Safety Performance Group

UIC Safety Database

Report 2018

Significant Accidents 2017

Contact

Olivier Georger

UIC Safety Unit

International Union of Railways

16 rue Jean Rey - F-75015 Paris

georger@uic.org

www.uic.org

The electronic version of the report is available on the UIC website at the following address:

<http://safetydb.uic.org>





ETF

Editions Techniques Ferroviaires
Railway Technical Publications
Eisenbahntechnische Publikationen

16 rue Jean Rey - F 75015 PARIS
www.shop-etf.com

Design and production:
C. Filippini / © ETF Publication
Photo credit: Fotolia

October 2018

ISBN 978-2-7461-2753-1

