

● ● ● Safety Database Activity Report
- Significant Accidents 2009
- Benchmarking and Appendix
(Public version)

Paris, November 2010



INTERNATIONAL UNION
OF RAILWAYS

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Foreword

The European railway accident statistics from 2009 are encouraging. Overall, the number of accidents is down significantly for the core group of 20 European UIC members that has been reporting to the UIC Safety Database since 2004.

The rate of accidents per train kilometre is lower as well. While the economic climate in 2009 made for a year in which the number of train kilometres dropped precipitously, the number of accidents went down even faster. Long recognised as one of the safest and most reliable modes of transport, rail in Europe continues to strengthen its reputation as consistently safe. For the period that the UIC Safety Database has been collecting information, the number of railway accidents in Europe has shown a steady downward trend. From 2006 to 2009, the number of accidents in 20 countries declined by 8.5 percent.

Most illuminating for railway companies is the fact that internally caused accidents, for which railway undertakings and infrastructure managers have the most responsibility, have declined the fastest. The percentage of accidents resulting from negligence or error on the part of the railways is vanishingly small, and getting smaller. The number of collisions and derailments has declined substantially. Most accidents in 2009 were the unfortunate result of members of the public acting in an unsafe manner around railway tracks, stations and level crossings.

The biggest beneficiary of these trends is the passenger. Those who depend on the railway to take them to work, school, cultural events and holiday destinations are safer than ever before. In 2009, no passengers were killed in collisions, derailments or level crossing accidents. In total there were 30 passenger fatalities, making up only two percent of all railway accident fatalities. For passengers in 2009, rail was an undeniably safe form of travel. There was one passenger killed for 122 million train-kilometres, a remarkably low rate of risk that sets a high standard for passenger safety in all transport modes.

Regrettably, there were nonetheless several accidents in 2009 with a heavy human toll. One catastrophic derailment resulted in 30 fatalities and 13 seriously injured. The five most serious accidents, two derailments and three collisions with an obstacle at level crossings, unfortunately each had more than 10 victims. Concerted efforts to improve all aspects of railway safety are as important as ever.

The most crucial task for the continued reduction of accidents is to address the chronic problems of trespassing on rail lines and public behaviour at level crossings. This will be a challenge that the railways must face with the full cooperation of roadway authorities, local governments and other public interest groups, to reduce the risk to the public, and to ensure that the railways will continue to run safely and smoothly in the years to come.

-- Jean-Michel RICHARD
Chairman of the Safety Platform

Executive Summary of significant accidents in 2009

In 2009 the UIC Safety Database collected significant accidents and critical events from the main railway companies in 21 European countries including Norway and Switzerland, plus Eurotunnel.

It is important to note that in previous years data was only available from 20 member countries. This year there is an additional country reporting data. The total number of accidents recorded in the database in 2009 is therefore higher than in 2008. Excluding the data from the 21st country, for comparison purposes, there are **fewer significant accidents than in 2008**, and this is part of a long-term trend of improvement.

The total number of victims (defined as fatalities and seriously injured persons), and the number of victims per accident are also lower than in the last two years, indicating a gradual trend toward improved safety. The most pronounced drop was in the rate of fatalities for passengers, with **half the number of passenger fatalities per accident** than in the two previous years. There were 171 passengers injured in accidents in 2009, down 17 percent from 2008, and only 30 passengers killed, less than half the number from the previous year. **Risk to passengers on the railway has decreased markedly.** Remarkably, there were no passengers killed in collisions, derailments, level crossing accidents, electrocutions or fires. All passenger fatalities were the result of individuals hit by trains or falling from trains.

It is important to note, however, that there were **significantly fewer kilometres of train movement in 2009** than in previous years. The comparison group of 20 countries recorded 3.9 billion kilometres of train movement, down 3.3 percent from the previous year. This is certainly a contributing reason for the lower number of accidents, but not the entire story, as the rate of significant accidents per kilometre of train movement is still lower than the past three years.

There were 188 “serious accidents”, comfortably lower than previous years. Serious accidents are the most severe significant accidents, defined as collisions or derailments with at least one fatality, or five serious injuries, or damage in excess of two million Euros.

The most serious accident in 2009 was a freight derailment caused by rolling stock failures which resulted in 43 victims. The second, third and fourth most serious accidents were all collisions at level crossings, caused by human error.

Years	Significant accidents	Serious accidents	Number of Fatalities / 100 significant accidents			All victims / 100 significant accidents	Significant accidents / Million of train Km movement	Fatalities / Million of train Km movement
			Passengers	Staff	Other			
2009	2129 (2298)	188 (203)	1.4	1.6	58.3	103.7	0.54	0.33
2008	2263	200	3.0	1.7	51.0	104.5	0.56	0.31
2007	2272	227	2.8	1.4	55.0	109.3	0.57	0.34
2006	2327	205	1.8	1.5	50.6	101.7	0.59	0.32

(Numbers in pink indicate data from 21 countries instead of 20)

As in past years, the accident data is dominated by individual accidents as opposed to collective accidents, and by external causes as opposed to internal causes. Nearly two-thirds of accidents reported in the database are individuals hit by a train, and of these, the overwhelming majority of individuals were trespassers or level crossing users not complying with safety regulations. In total, level crossing accidents involving pedestrians and road vehicles, combined with individuals hit by trains at other locations, comprise 80% of all accidents. Derailments, collisions, fires and all other types of accidents make up only 20%. Similarly, 81% of accidents had “external causes”, primarily “third parties” such as trespassers and level crossing users, while only 18% had “internal causes” intrinsic to the railway system. The rate of internally caused accidents declined significantly from 2008, when it comprised 21 percent of accidents. This is a positive sign that the railways are improving safety in the areas over which they have the most control.

Figure 1				Breakdown and rate of types of significant accidents in 2009 according to different definitions.			
Accidents		Types of accidents as defined in UIC – SDB		Additional information from UIC -SDB		Types of accidents as defined in Safety Directive	
Collective accidents 23,92%	3,8%	Derailments of trains	3,8%	Derailments of trains	3,8%	Derailments of trains	
	1,5%	Train collision with another train	1,5%	Train collision with another train	5,4%	Collisions of trains, including collisions with obstacles within the clearance gauge	
	18,7%	Train collision with an obstacle	3,9%	Train collision with an obstacle not at level crossing			
Individual accidents 72,34%	65,1%	Individual hit by a train	14,8%	Train collision with an obstacle at level crossing	21,7%	Level-crossing accidents, including accidents involving pedestrians at level-crossings,	
			6,9%	Individual hit by a train at level crossing			
	7,2%	Individual falling from a train	58,2%	Individual hit by a train not at level crossing	65,5%	Accidents to persons caused by rolling stock in motion, with the exception of suicides.	
			7,2%	Individual falling from a train			
Other types of accidents 3,74%	1,3%	Fire in rolling stock	1,3%	Fire in rolling stock	1,3%	Fire in rolling stock	
	2,3%	Electrocution by overhead line or third rail	2,3%	Electrocution by overhead line or third rail	2,4%	Other types of accidents	
	0,1%	Accident involving dangerous goods	0,1%	Accident involving dangerous goods			
100%	100%		100%		100%		

Figure 2				
UIC - SDB: First level analysis from UIC Safety Database - 2009 data				
Causes of accidents				
Simplest type of causes definition	Basic causes definition from UIC-SDB	More detailed information from UIC-SDB second level causes	Number of significant accidents	
EXTERNAL CAUSES 81,08%	THIRD PARTIES 80,2%	Trespass (intrusion)	46,02%	1058
		Not specified	15,62%	359
		Non-compliance with national laws & regulations	14,53%	334
		Other or vandalism	3,48%	80
		Objects on the gauge	0,48%	11
		Parallel or crossing infrastructure	0,04%	1
		WEATHER & ENVIRONMENT 0,9%	Environment	0,57%
	Weather	0,35%	8	
	Not specified	0,00%	0	
	INTERNAL CAUSES 17,79%	RAILWAY SUB-SYSTEMS 4,0%	Rolling stock	2,44%
Infrastructure (track & structures)			1,17%	27
Energy system			0,17%	4
Control-command signalling			0,17%	4
Operations & traffic management			0,09%	2
HUMAN FACTORS 13,7%		Passengers and freight company customers	7,31%	168
		Not specified	2,00%	46
		Traindriver and train crew	1,44%	33
		Control-command, energy, traffic operating and switching staff	1,30%	29
		Track and track contractors staff	0,91%	21
	Other users	0,52%	12	
	Other human factor in RUs	0,26%	6	
1,13% CAUSES NOT IDENTIFIED		1%	26	
100%	100%	100%	2298	

Change from previous year

The disparity between the percentage of individual and collective accidents has gotten wider, as has the disparity between internally and externally caused accidents.

The number of derailments has declined significantly, as has the number of level crossing accidents.

The number of collisions between trains has increased very slightly.

The number of individuals hit by train has increased modestly, as has the number of electrocutions and fires.

Years:	11 railway companies					20 railway companies			
	Average 2001-2005	2006	2007	2008	2009	2006	2007	2008	2009
Number of serious injury accidents	861	871	831	760	799	2093	2130	2061	1958
Serious injury accidents per million km of train movements	0,30	0,29	0,27	0,25	0,27	0,53	0,53	0,51	0,50
Number of fatalities	500	524	528	490	511	1254	1347	1256	1304
Fatalities per million km of train movements	0,17	0,17	0,17	0,16	0,17	0,32	0,34	0,31	0,33
Number of significant accidents	970	1080	948	934	926	2327	2272	2263	2129
Significant accidents per million km of train movements	0,34	0,36	0,31	0,30	0,31	0,59	0,57	0,56	0,54
Number of victims	1112	985	936	852	863	2367	2483	2356	2208
Victims per million km of train movements	0,39	0,33	0,30	0,28	0,29	0,60	0,62	0,58	0,56
Number of million km of train movements:	2874,273	3021,404	3094,03	3094,03	3013,78	3953,57	3997,36	4048,34	3912,74

Figure 4		Number of accidents and victims in 2009							
		Data from 21 railway companies from UIC Safety Database							
		Number of accidents	Killed			Seriously injured			Victims
			Passenger	Staff	Other	Passengers	Staff	Other	All
At station	Collisions with an obstacle	26	0	1	1	1	5	7	15
	Collisions between trains	22	0	0	0	3	5	0	8
	LC accidents	75	0	0	65	0	0	39	104
	Derailments	46	0	0	30	0	1	13	44
	Hit by a train	482	11	8	241	24	14	189	487
	Falling from a train	132	12	4	1	80	29	8	134
	Other cases	57	0	0	15	1	2	25	43
	TOTAL at station:	840	23	13	353	109	56	281	835
In open line	Collisions with an obstacle	58	0	2	8	5	3	10	28
	Collisions between trains	11	0	1	0	4	3	0	8
	LC accidents	428	0	3	314	21	25	200	563
	Derailments	35	0	1	0	15	2	0	18
	Hit by a train	844	1	8	642	3	7	202	863
	Falling from a train	34	6	6	2	12	6	2	34
	Other cases	27	0	1	7	0	5	3	16
	TOTAL in open line:	1437	7	22	973	60	51	417	1530
In other locations:	21	0	0	8	2	4	4	18	
TOTAL:	2298	30	35	1334	171	111	702	2383	

Note: Figures 5, 6 and 18-24 are included only in the full version of the report.

SECTION 1

DISCUSSION POINTS: TRESPASSING, LC ACCIDENTS AND ACCIDENTS AT STATION

Trespassing continues to be the single highest cause of railway accidents. It was the cause of 46 percent of accidents in 2009. An additional 18 percent of accidents were the result of non-compliance with laws or regulations, vandalism, theft, or other forms of third party intrusion on railway property (see Figure 2). Third parties were responsible for 80 percent of railway accidents, and represented 85 percent of accident victims. These numbers have been rising every year.

The number of level crossing accidents has, on the other hand, been falling for the past few years. The core group of 20 reporting countries has seen a decline of 26.5 percent in level crossing accidents between 2006 and 2009. Remarkably, there were no passenger fatalities in 2009 as a result of level crossing accidents. The rate of third party fatalities per level crossing accident has increased, however. This may be due to a reduction in the number of relatively minor level crossing accidents, with the more serious multiple-victim accidents therefore having a larger influence on the fatality rate.

More than other forms of transport, the railways have a porous infrastructure, with which the public is constantly coming in contact. Whether as trespassers or level crossing users, members of the public external to the rail system are the most critical target audience for informational campaigns to reduce the number of railway accidents.

Years	Level Crossings Significant accidents	Rate of total accidents	Number of Fatalities / 100 significant level crossing accidents			LC victims / 100 significant LC accidents	LC Significant accidents / Million of train Km movement	LC Fatalities / Million of train Km movement
			Passengers	Staff	Other			
2009	469 (503)	21.7	0.0	0.6	75	134.1	0.12	0.09
2008	548	24.2	0.5	0.4	60	125.2	0.14	0.08
2007	621	27.3	0.3	0.3	67	141.7	0.15	0.10
2006	638	27.4	0.2	0.5	52	121.3	0.16	0.08

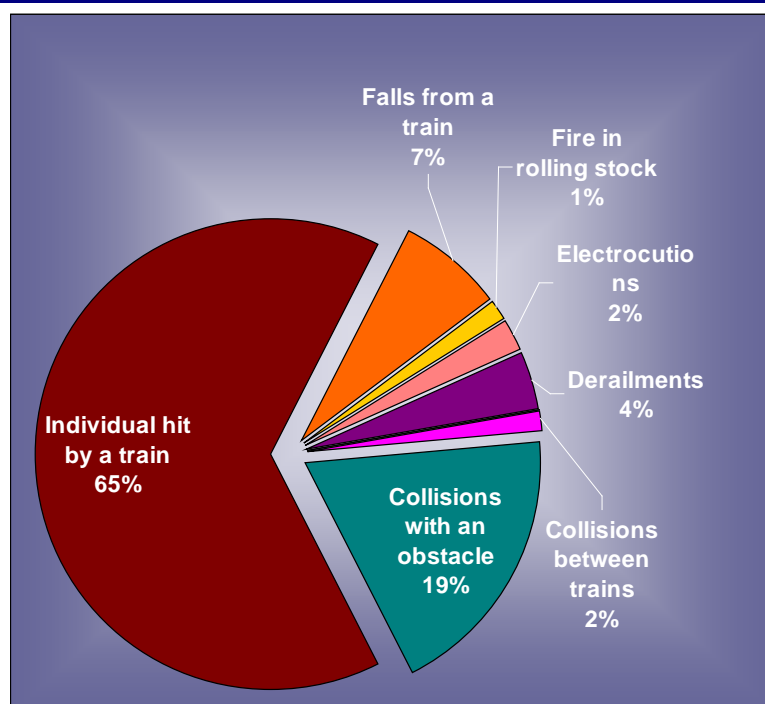
(Numbers in pink indicate data from 21 countries instead of 20)

Accidents at stations make up only 37 percent of all accidents. Yet station locations represented 77 percent of passenger fatalities and 64 percent of passenger injuries. Overall there has been a trend for several years of stations representing a larger and larger share of passenger victims. Unfortunately, station platforms and access points remain the most dangerous railway locations for passengers.

GENERAL REPORT ON SIGNIFICANT ACCIDENTS 2009

The total number of significant accidents registered in 2009 for 21 European UIC member railway companies is 2298.

Figure 7 UIC - SDB Report on significant accidents from 2009-01-01 to 2009-12-31 Breakdown of accidents by type for 21 European railways.



Accidents by type

- Collisions with an obstacle include collisions at level crossings.
- Individual hit by a train include pedestrians at level crossings.
- For level crossings accidents refer to Figure 10.

Rounded values:	Victims / accident	Fatalities / accident	Serious injuries / accident
Passengers	0,09	0,01	0,07
Staff	0,06	0,02	0,05
Others	0,89	0,58	0,31
Total:	1,04	0,61	0,43

Type of accidents	Accidents		Victims	
	Number	[%]	Fatalities	Serious injuries
- Train collision with another train	34	1,5%	1	17
- Train collision with an obstacle (including at LC)	429	18,7%	271	280
- Individual hit by a train (including at LC)	1497	65,1%	1 042	482
- Individual falling from a train	166	7,2%	31	137
- Fire in rolling stock	30	1,3%	1	1
- Electrocution by overhead line or third rail	54	2,4%	22	36
- Derailment	86	3,8%	31	31
- Dangerous goods accidents (no release)	1	0,0%	0	0
- Dangerous goods accidents (with release)	1	0,0%	0	0
Total:	2298	100%	1399	984

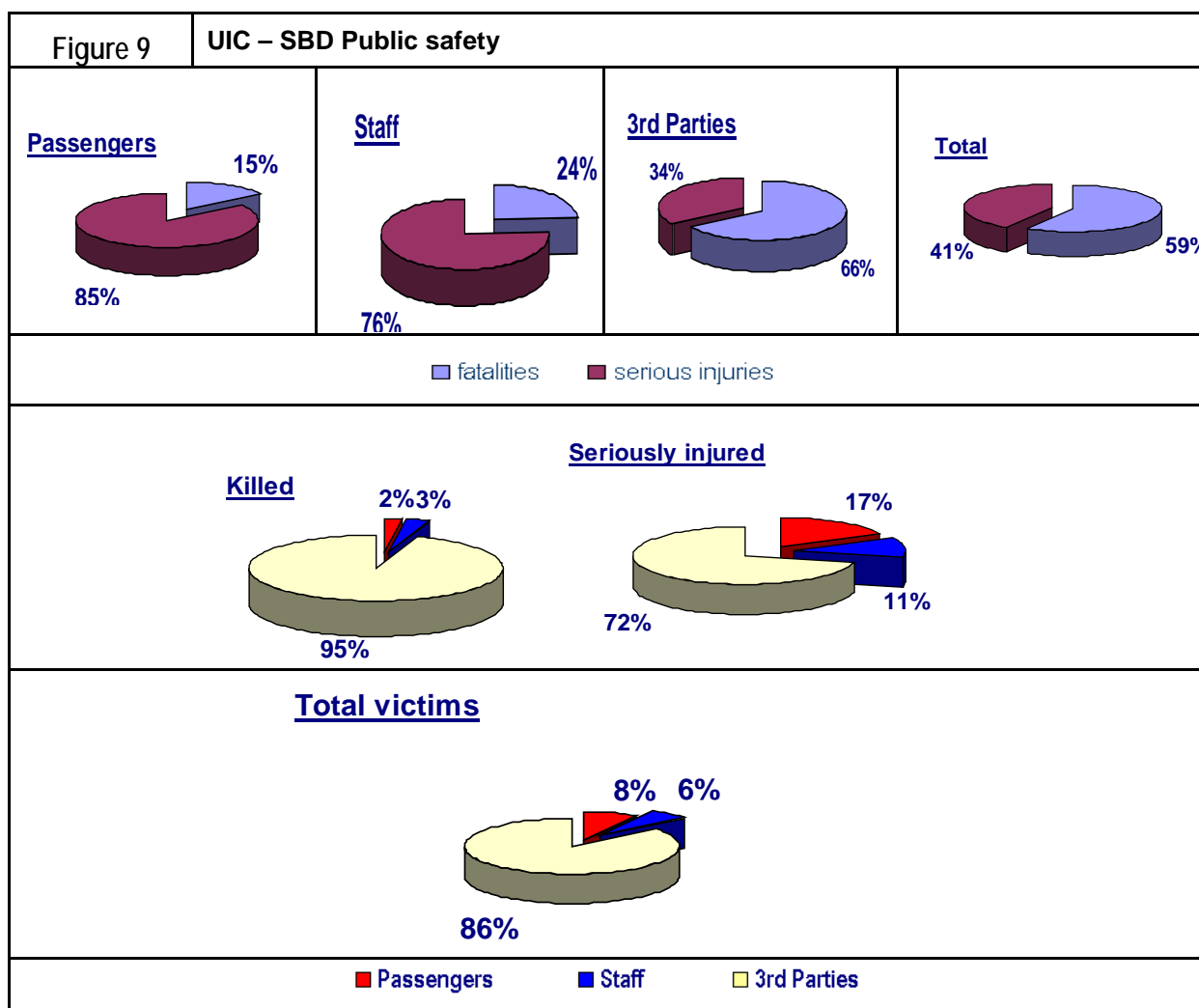
Summary results

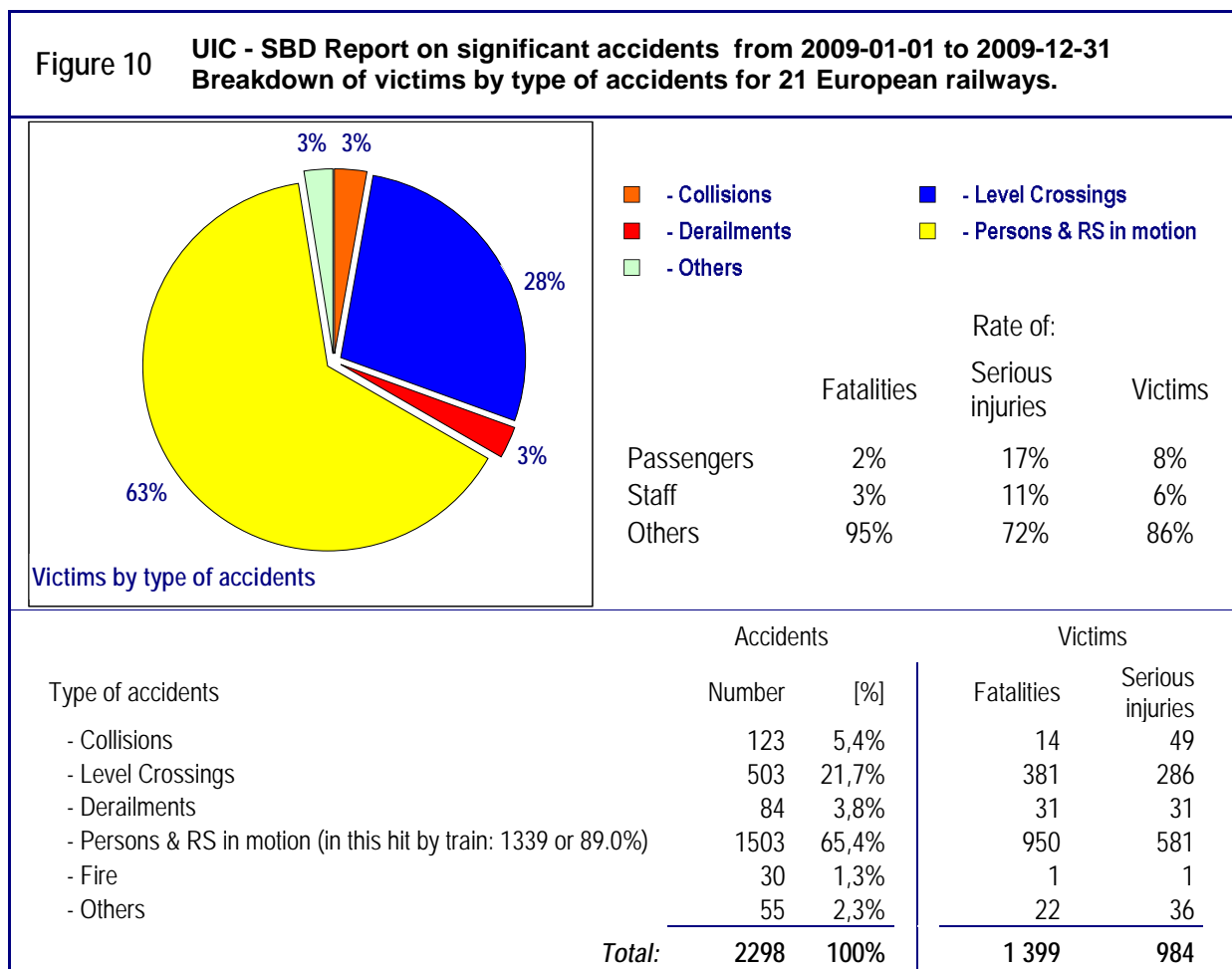
Although the total number of significant accidents was slightly higher than in 2008, the results for 2009 are for 21 countries while 2008 included only 20 countries. The data for 2009 includes Hungary in addition to the 20 countries from the previous year. If the data for Hungary is excluded, the total number of significant accidents is lower than in 2008.

Figure 8 UIC - SBD Report on significant accidents from 2009-01-01 to 2009-12-31 Fatalities and serious injuries

Type of accidents	Fatalities			Serious injuries		
	P	S	O	P	S	O
- Train collision with another train	0	1	0	7	10	0
- Train collision with an obstacle (including at LC)	0	6	265	27	34	219
- Individual hit by a train (including at LC)	12	16	1014	29	22	431
- Individual falling from a train	18	10	3	92	35	10
- Fire in rolling stock	0	0	1	0	1	0
- Electrocution by overhead line or third rail	0	1	21	1	6	29
- Derailment	0	1	30	15	3	13
- Accident involving dangerous goods	0	0	0	0	0	0
Total:	30	35	1334	171	111	702

(1) P = passengers; S = staff; O = others





Summary results

The most frequent type of accident was that to persons due to rolling stocks in motion. Excluding level crossings, there were 1339 accidents involving persons hit by a train, causing a total of 1363 victims. This amounts to more than 57% of the total number of victims in all railway accidents (up from 56% in 2008 and 54% in 2007). This type of accident was already the most frequent and caused the most victims in previous years.

In a total of 844 cases of accidents to persons hit by a train in open line (people struck by a train) there were 863 victims (651 persons were killed and 212 were seriously injured – see Figure 4).

As was the case in previous years, most passenger fatalities or serious injuries occurred in station areas, as a result of passengers falling from trains or being hit by trains (see also Figure 13).

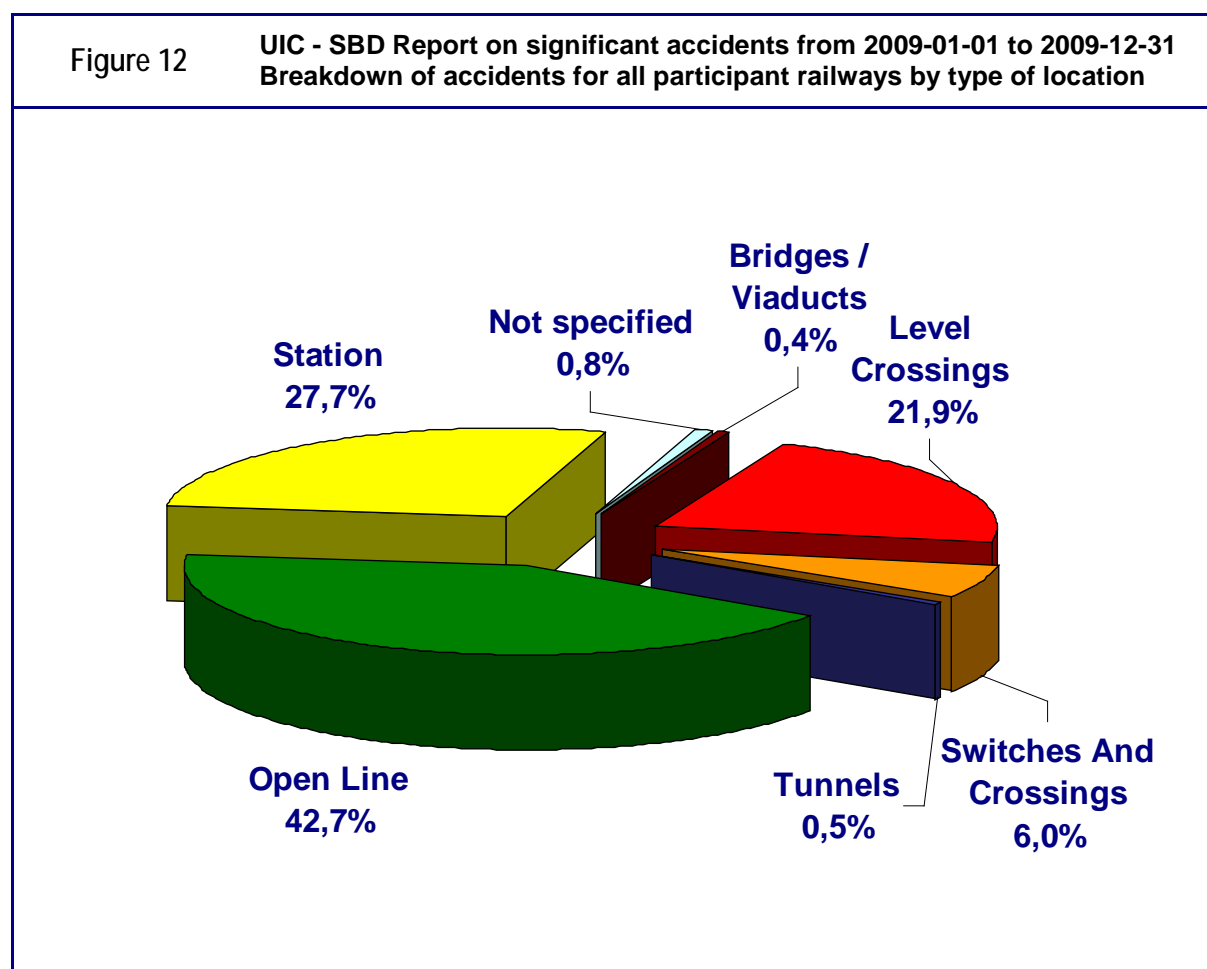
There were 503 level crossing accidents. This figure, representing 21.7% of all accidents, has declined from 24.2% in 2008 and 27.3% in 2007.

The most significant changes from 2008 are a diminution in the number of collisions and level crossing accidents. A far lower percentage of victims were passengers.

Figure 11 UIC - SBD Report on significant accidents from 2009-01-01 to 2009-12-31 Fatalities and serious injuries according to EUROSTAT definitions.

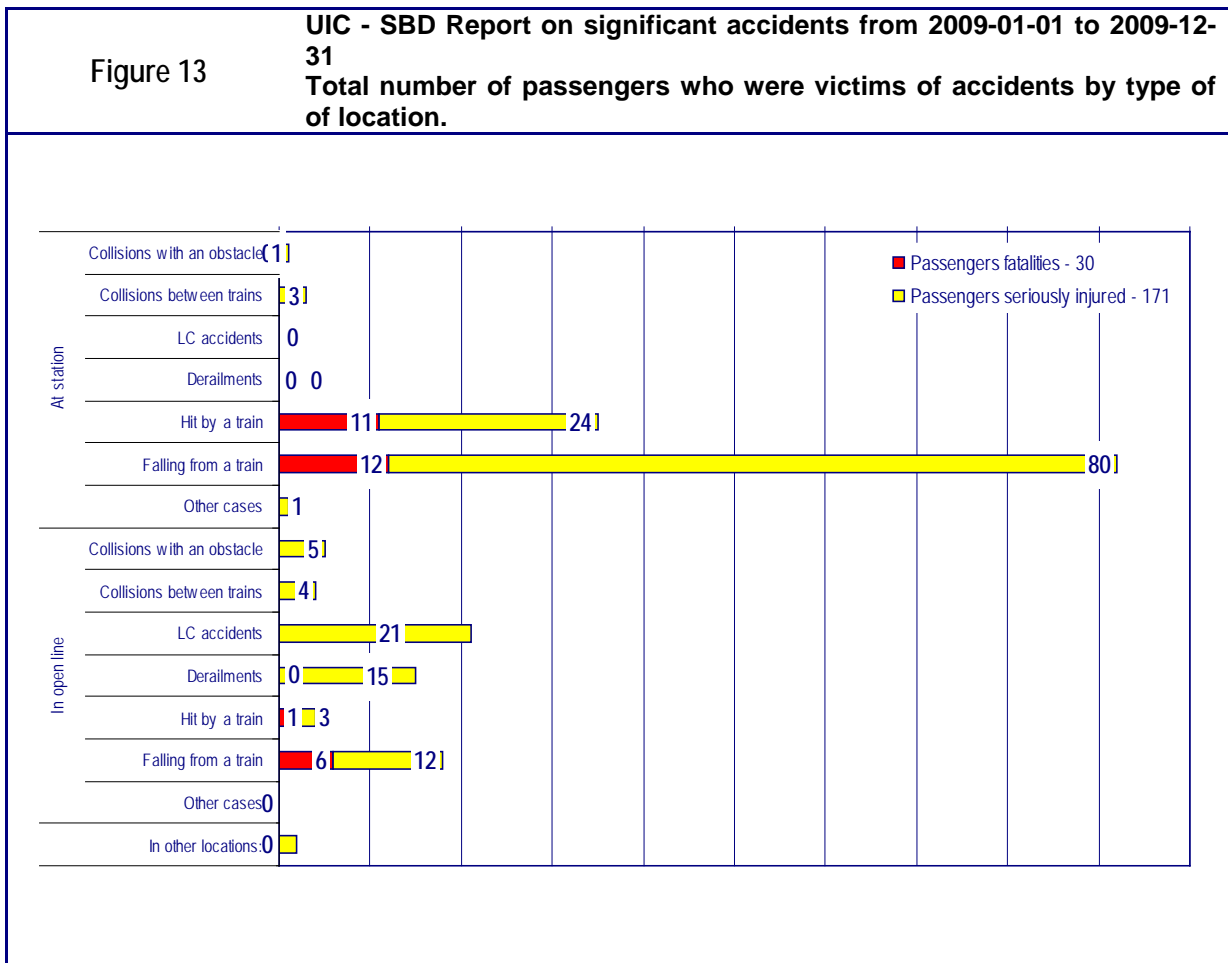
	Fatalities			Seriously injured		
	P	S	O	P	S	O
- Collisions	0	4	10	13	18	18
- Level Crossings	0	3	378	21	27	238
- Derailments	0	1	30	15	3	13
- Persons & RS in motion	30	26	894	121	56	404
- Dangerous goods Total	0	0	0	0	0	0
- Fire	0	0	1	0	1	0
- Others	0	1	21	1	6	29
Total:	30	35	1334	171	111	702

(1) P = passengers; S = staff; O = others



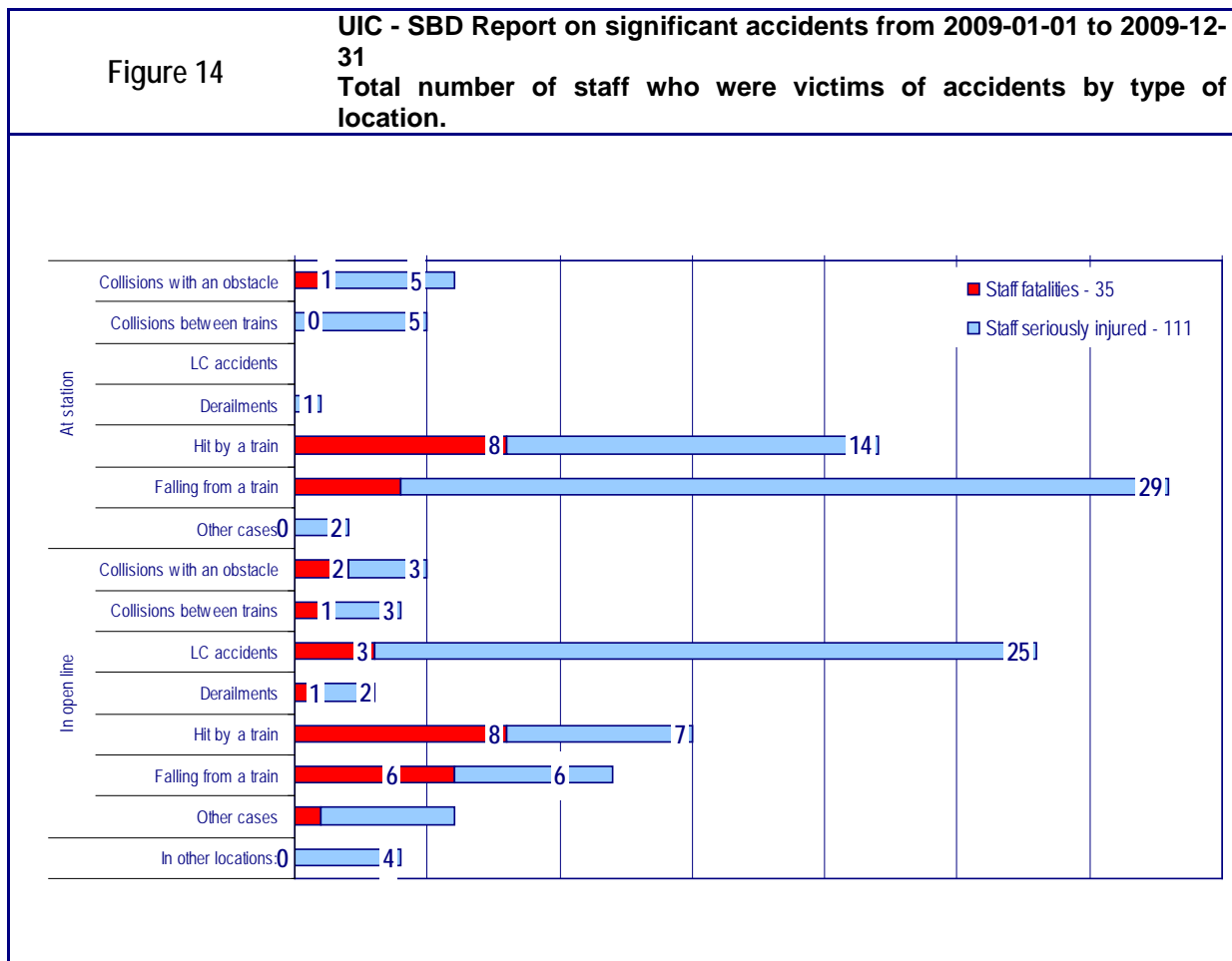
Summary results

There has been a continued decline in the number of accidents at switches and crossings, as well as at level crossings. In 2009 there were also fewer accidents at stations than in 2008. This indicates a reduction of the particular risks to safety posed by these environments. The number of accidents at open line locations has increased to more than half of total accidents.



Summary results

The vast majority of passenger deaths and injuries were caused by passengers falling from trains, followed by passengers hit by trains, and most of these accidents occurred at stations. The overall number of passenger victims is far lower than in previous years. There was a significant reduction in passenger victims from collisions in particular.



Summary results

The number of staff who were victims of accidents increased for the second consecutive year. In 2009 there were 146 staff victims compared with 131 in 2008 and 109 in 2007; the number of staff victims per hundred million train kilometres increased from 2.7 in 2007, to 3.2 in 2008, and to 3.6 in 2009. There were 1.5 staff members killed per 100 significant accidents, down from 1.7 in 2008.

Most staff victims were staff members falling from trains, being hit by trains, and level crossing accidents. The number of staff victims from level crossing accidents surged in 2009, surpassing the number hit by trains, and this despite a decline in the number of level crossing accidents. One level crossing accident alone caused 18 staff victims. Staff victims of level crossing accidents were more common in open line locations, while stations were the site of more staff victims hit by trains and falling from trains.

Figure 15		UIC – SBD: First level analysis from UIC Safety Database – 2009 data Number of victims per type, cause and location							
Accident [Events] and victims		Causes and victims	Location, [Events] and victims				Victims		
			Open Line	Station	Others	Details	(1)	Killed	Serious Injured
Individual hit by a train [1497]	1524	Third parties - 1406	[963] 984	[521] 527	[13] 13	Level crossings - 161	P S O	12 16 1014	29 22 431
		Human factors - 101				Switches & Crossings - 82			
		Not identified - 16				Bridges & Viaducts - 8			
		All others - 1				Tunnels - 8			
						All others - 1265			
Train collision with an obstacle [429]	551	Third parties - 533	[364] 470	[62] 79	[3] 2	Level crossings - 506	P S O	0 6 265	27 34 219
		Weather & Environment - 1				Switches & Crossings - 1			
		Human factors - 9				Bridges & Viaducts - 1			
		Not identified - 4				Tunnels - 2			
						Other type of location - 41			
Individual falling from a train [166]	168	Human factors - 123	[34] 34	[132] 134	[0] 0	Switches & Crossings - 4	P S O	18 10 3	92 35 10
		Third parties - 41				Other type of location - 164			
		Not identified - 2							
		Rolling stock - 1							
						Weather & Environment - 1			
Train collision with another train [34]	18	Human factors - 11	[11] 8	[22] 8	[1] 2	Switches & Crossings - 7	P S O	0 1 0	7 10 0
		Rolling stock - 0				Other type of location - 11			
		Third parties - 3							
		Infrastructure - 4							
Derailment [86]	62	Human factors - 3	[37] 18	[46] 44	[3] 0	Switches & Crossings - 44	P S O	0 1 30	15 3 13
		Third parties - 15				Other type of location - 18			
		Rolling stock - 44							
Electrocution [54]	58	Third parties - 49	[14] 15	[39] 42	[1] 1	Level crossings - 1	P S O	0 1 21	1 6 29
		Human factors - 9				Bridges & Viaducts - 2			
		Energy system - 0				Other type of location - 55			
Fires [30]	2	Human factors - 0	[14] 1	[16] 1	[0] 0	Other type of location - 2	P S O	0 0 1	0 1 0
		Rolling stock - 1							
		Third parties - 1							
Involving dangerous goods [2]	0	Rolling stock - [1] 0	[0] 0	[2] 0	[0] 0	Other type of location - [2] 0		0	0
		Third parties - [1] 0							
TOTAL [2298]	2383	Third parties - 2048	[1437] 1530	[840] 835	[21] 18	Level crossings - 668	P S O	30 35 1334	171 111 702
		Human factors - 256				Switches & Crossings - 138			
		Not identified - 22				Bridges & Viaducts - 11			
		Weather & Environment - 2				Tunnels - 10			
		*Railway Subsystems - 55				All others - 1556			
								1399	984

(1) P=passengers; S=staff; O=others

(*) Causes for 55 victims related to "Railway Subsystems" are attributed as follow: Infrastructure = 5; Energy system = 1; Control-Command & Signalling = 1; Operations & Traffic Management = 1; Rolling stock = 47.

Summary results

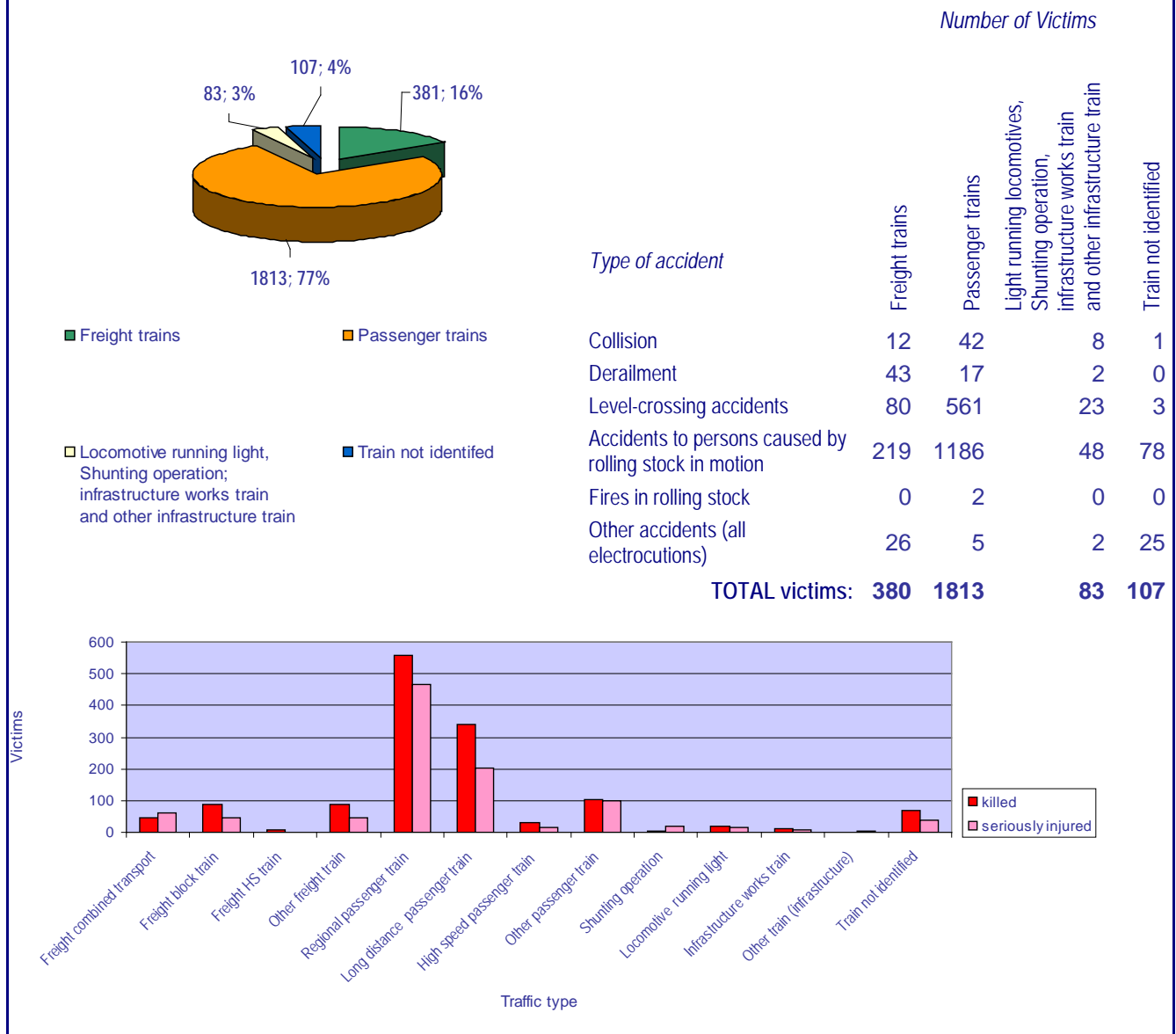
Third parties were the cause of 80 percent of accidents (see Figure 2) and made up 86 percent of victims. These percentages continue to increase, indicating that the interaction between the railway system and the external environment creates by far the majority of accidents and victims, while internally caused accidents are becoming an even smaller part of the story. As might be expected, the railways have had more success decreasing the number of accidents and victims that have internal causes than those caused by others.

Human factors were the cause of 11 percent of accident victims, while railway subsystems accounted for only 2 percent; both proportions that have fallen.

About a third of all accidents and victims were at stations. In the specific case of derailments, the majority of accidents and victims occurred at switches and crossings in stations.

Figure 16

UIC - SDB Report on significant accidents from 2009-01-01 to 2009-12-31
Breakdown of victims by type of traffic involved



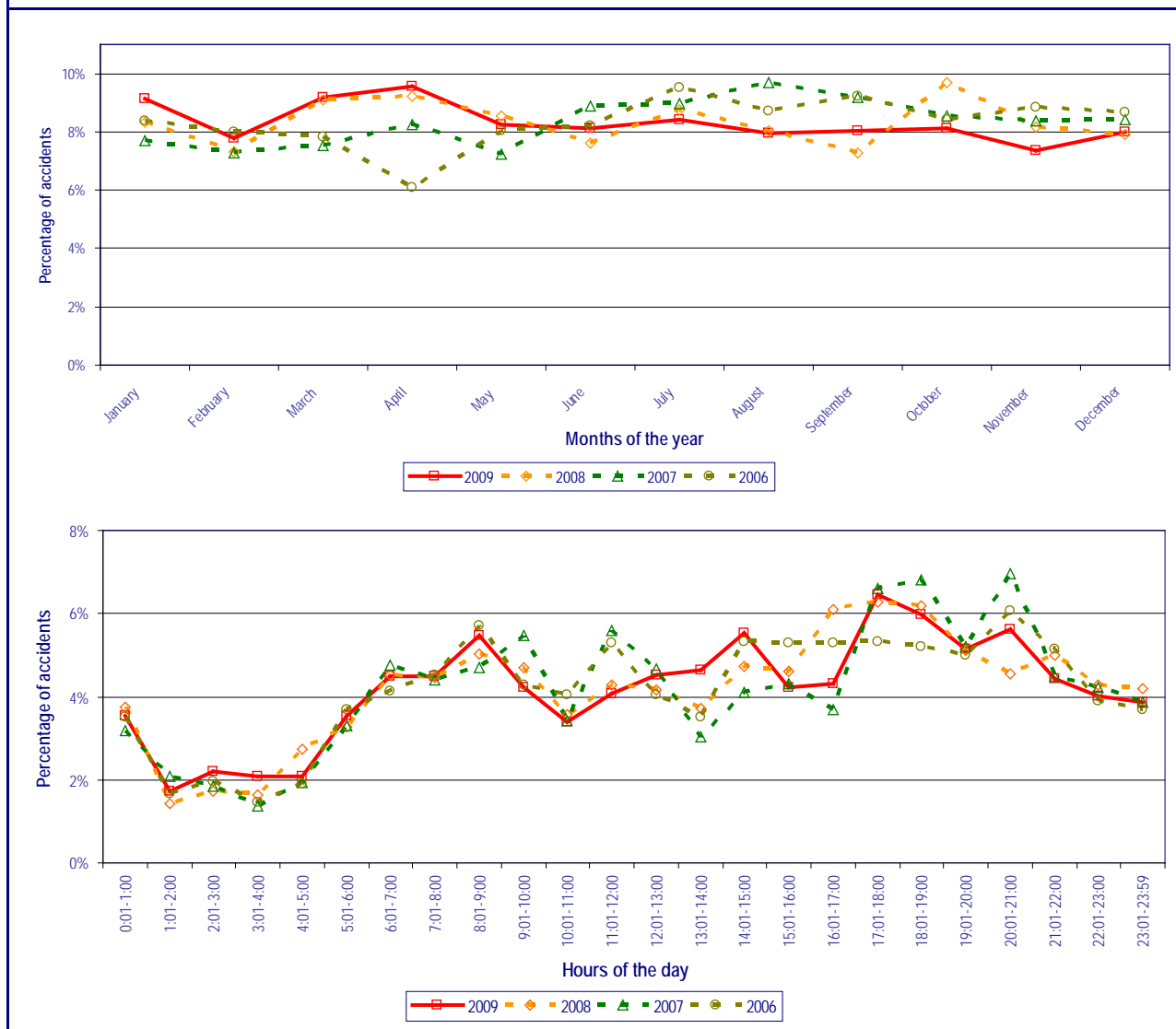
Summary results

More than three quarters of significant accidents involved passenger trains; 16 percent involved freight. Regional passenger trains largely outnumbered long distance passenger trains. The proportion of accidents involving passenger trains was higher this year, while there was a decline in the percentage of accidents involving locomotives running light, shunting operations, and work trains. The percentage of freight train accidents was unchanged.

Sixty-five percent of passenger train victims were killed or injured by rolling stock in motion, and 31 percent from level crossing accidents. Freight accidents break down to 57 percent of victims caused by rolling stock in motion and 21 percent by level crossing accidents. Derailments accounted for 12 percent of the victims in freight accidents, while in passenger accidents they accounted for less than one percent.

Figure 17

UIC - SDB Report on significant accidents. Monthly and daily accident distributions for the years 2006 – 2009



Summary results

The annual variation in the number of accidents shows small differences from month to month. The peak seen in previous years in the number of accidents between June and September has disappeared for the last two years. There were slightly more accidents in March and April, and slightly fewer in November. Historically this does not represent any particular trend.

As in previous years, the most common times for accidents to occur are in the afternoon and evening, with a peak between 17:00 and 21:00, roughly corresponding to the evening peak travel time. A similar spike is found in the morning between 8:00 and 9:00. An increase in accidents between 11:00 and noon, seen in previous years, did not occur in 2009. The period with the lowest accident rate remains between midnight and 05:00.

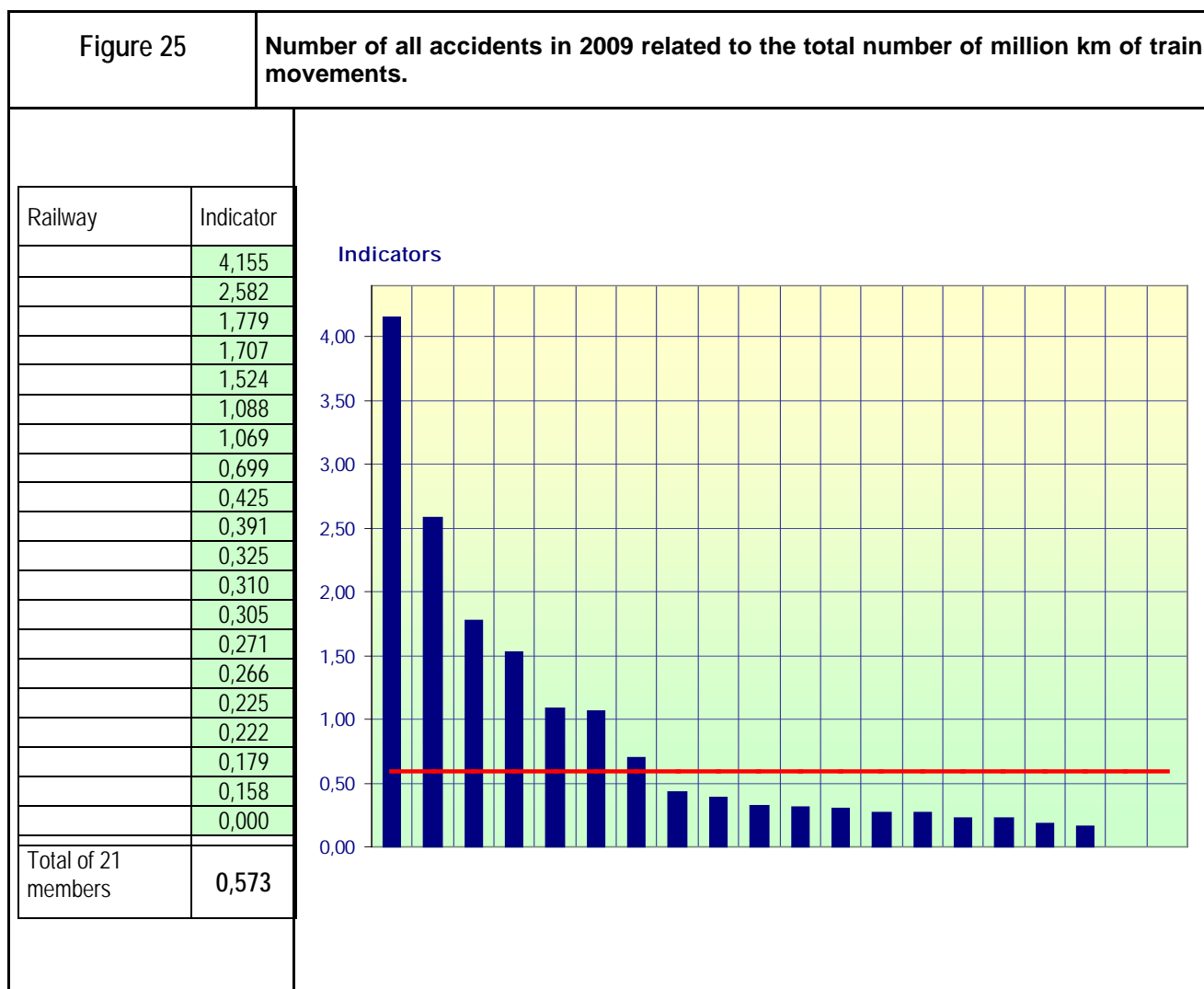
SECTION 2

BENCHMARKING INDICATORS

The benchmarking proposed here is based on the indicators of significant accidents victims recorded in the SDB in 2009. Each infrastructure manager in the sample can evaluate their performances in relation to the others. These indicators and the numbering system used to classify them correspond to the Common Safety Indicators defined by the European Commission.

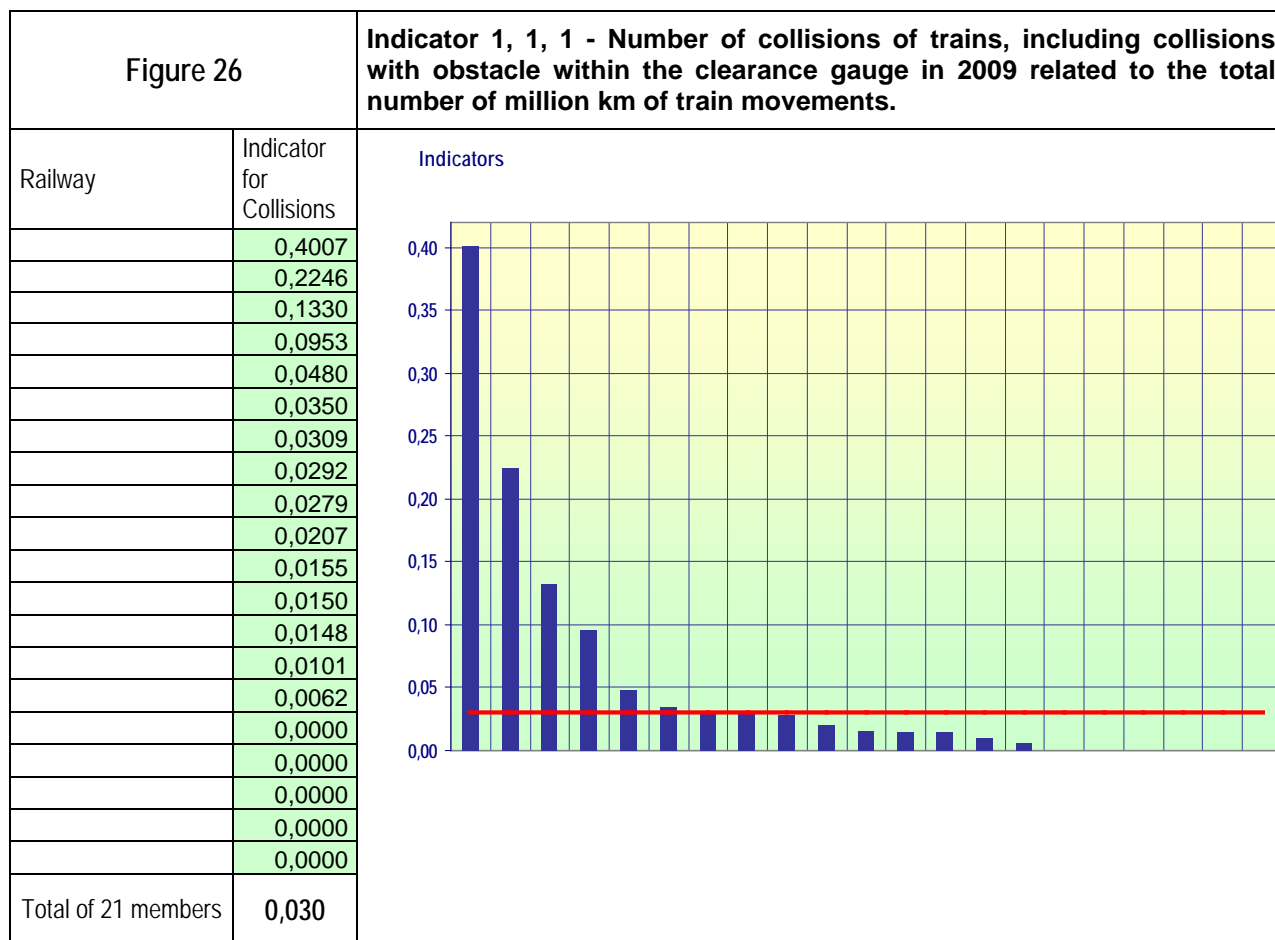
Figures 25 to 33 are graphic representations of several indicators (number of accidents of the same type divided by million km of train movements).

All accidents



Note: In Figures 25 through 33 the names of the members have been omitted. They are included in the full version of the report.

Collisions

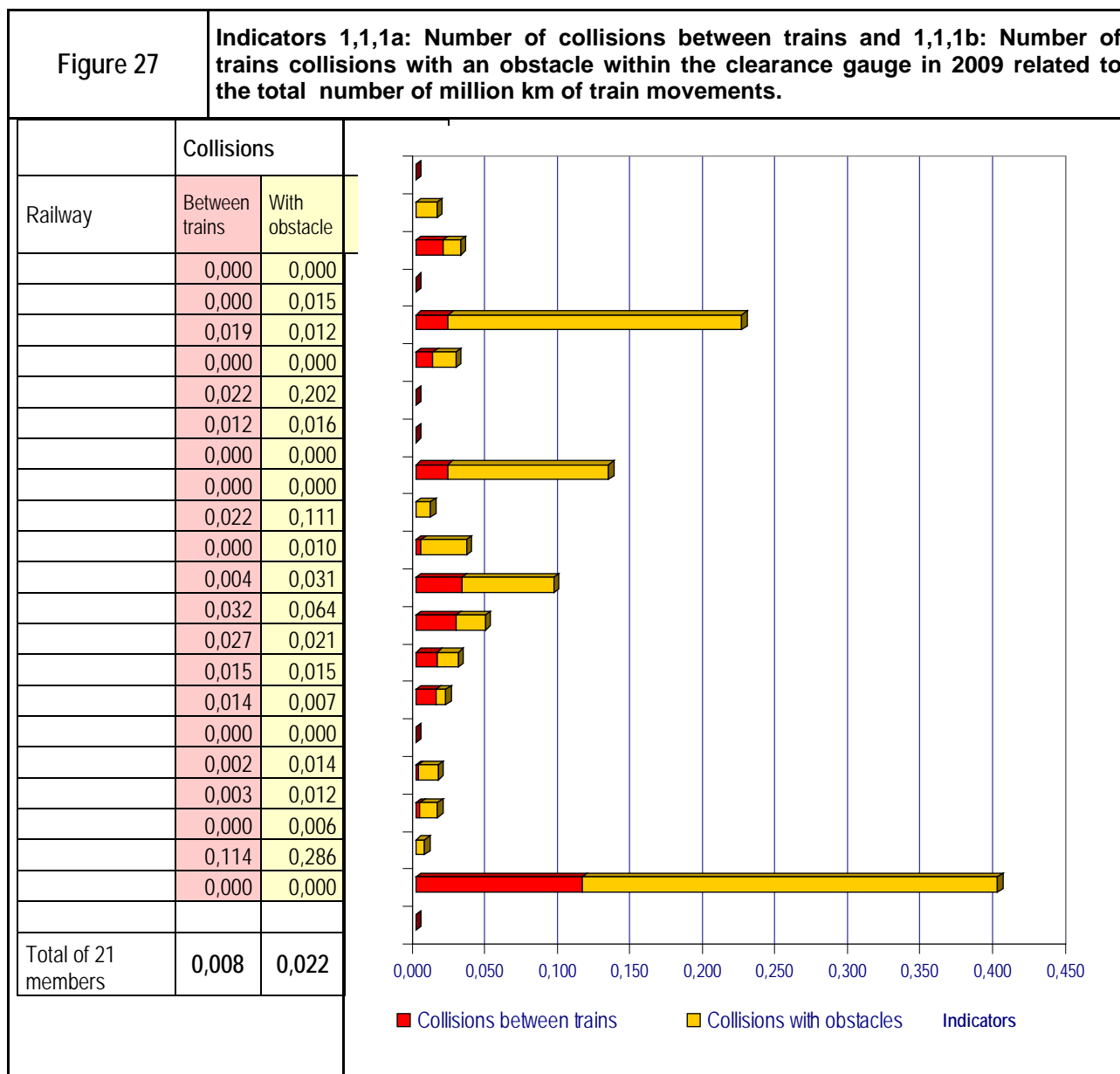


Summary results

Collisions are very rare. The average frequency is 6.4 collisions for every 100 million Km of train movements. The above value was 4.1 in 2008

Two more useful indicators are obtained by splitting collisions into "train collision with another train" and "train collision with an obstacle". The set of indicator values for collisions between trains is the most accurate (see Figure 27).

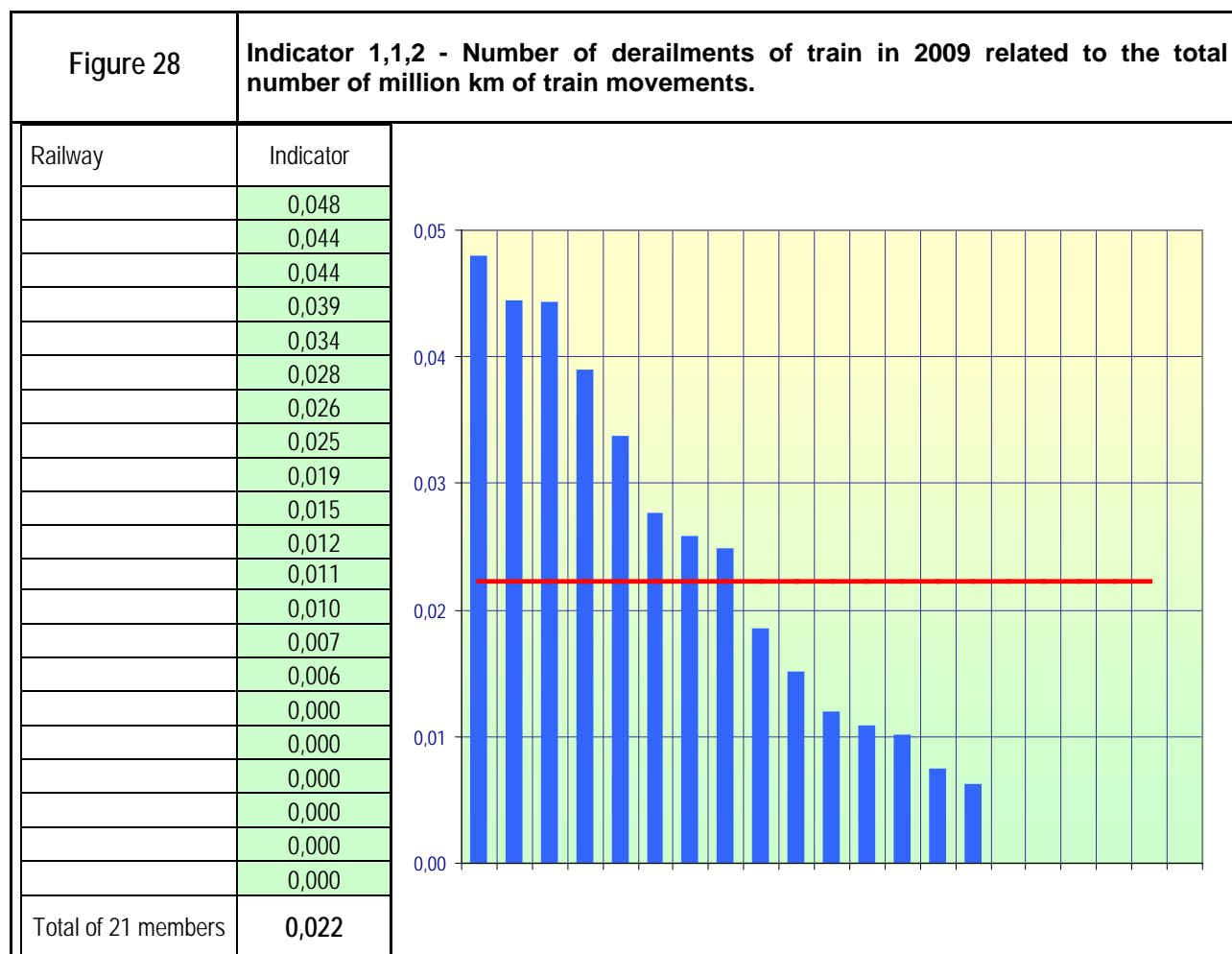
Breakdown of collisions



Summary results

The indicators for collisions with obstacles shown in this graphic do not include collisions at level crossings, where the majority of such collisions occur. Nonetheless, even excluding level crossings, collisions with obstacles are far more common than collisions between trains.

Derailments

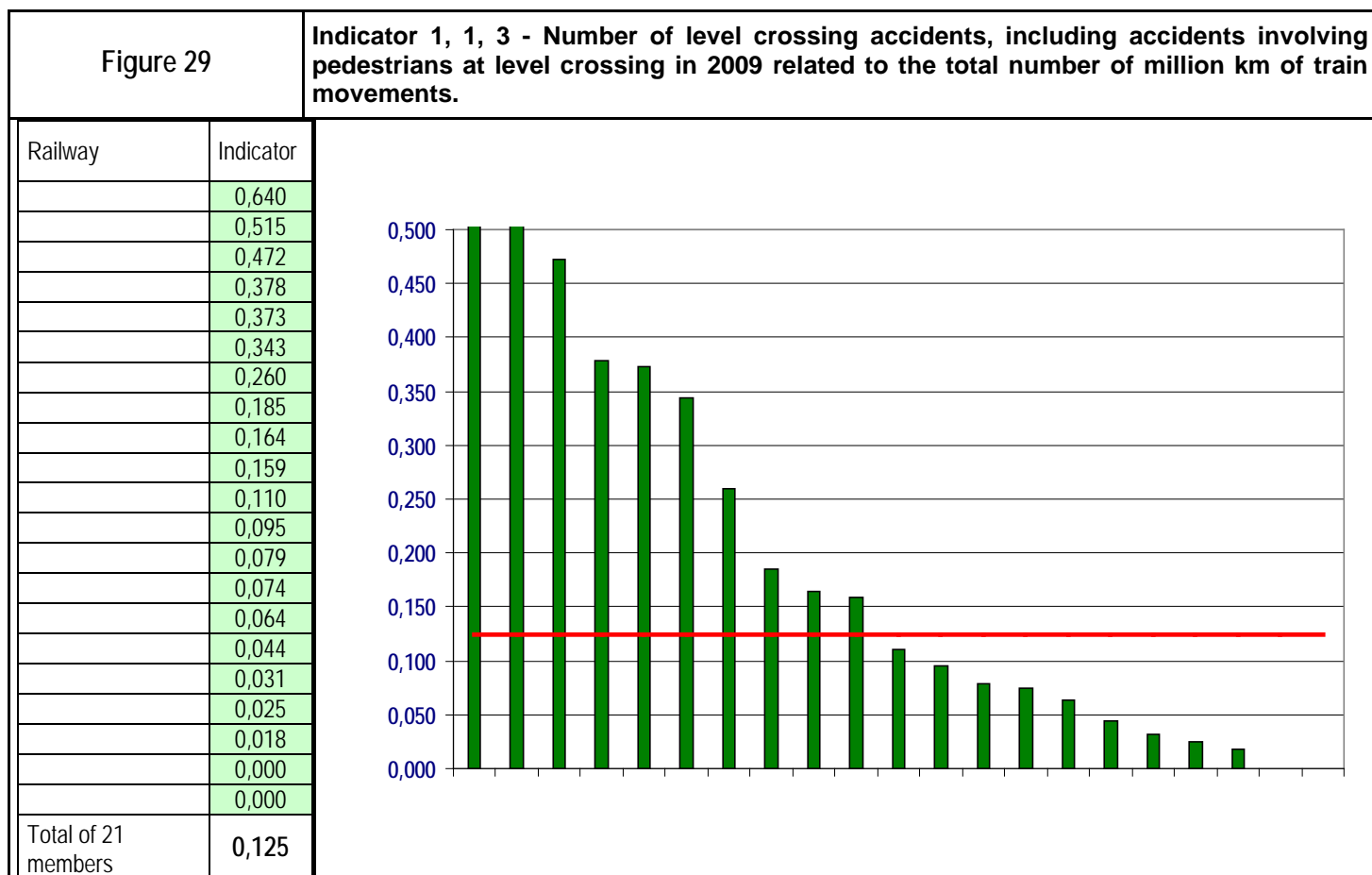


Summary results

Train derailments are very rare in Europe. The derailment rate in 2009 was 2.2 derailments per 100 million Km of train movements.

No passengers were killed in derailments. Unfortunately, one tragic freight derailment resulted in 43 victims who were people external to the railway system.

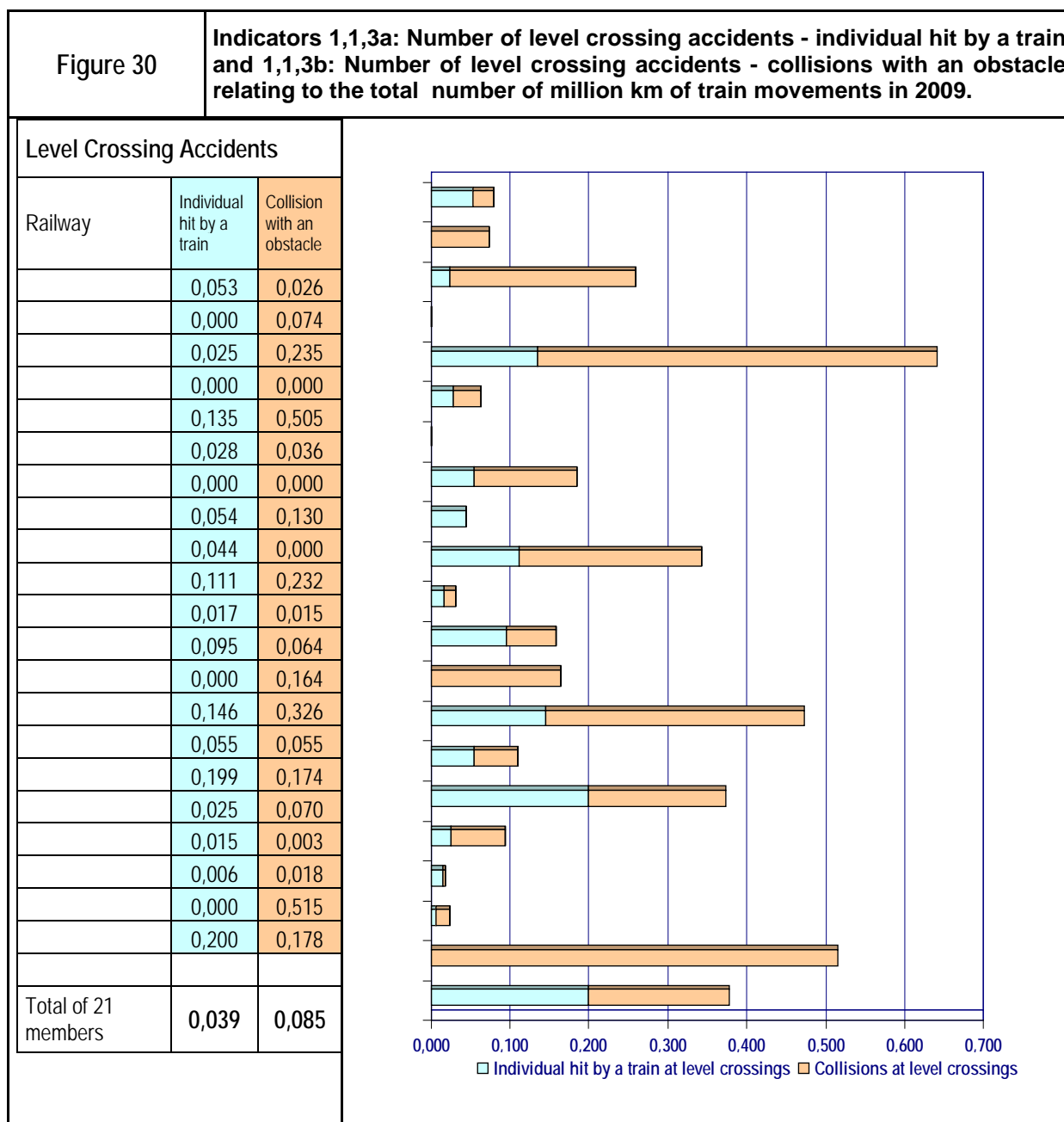
Level Crossing Accidents



Summary results

The rate of level crossing accidents varies considerably from one country to another. Certain networks are far above the average, while others are far below. Overall, however, the number of level crossing accidents per train kilometre has decreased from 2008.

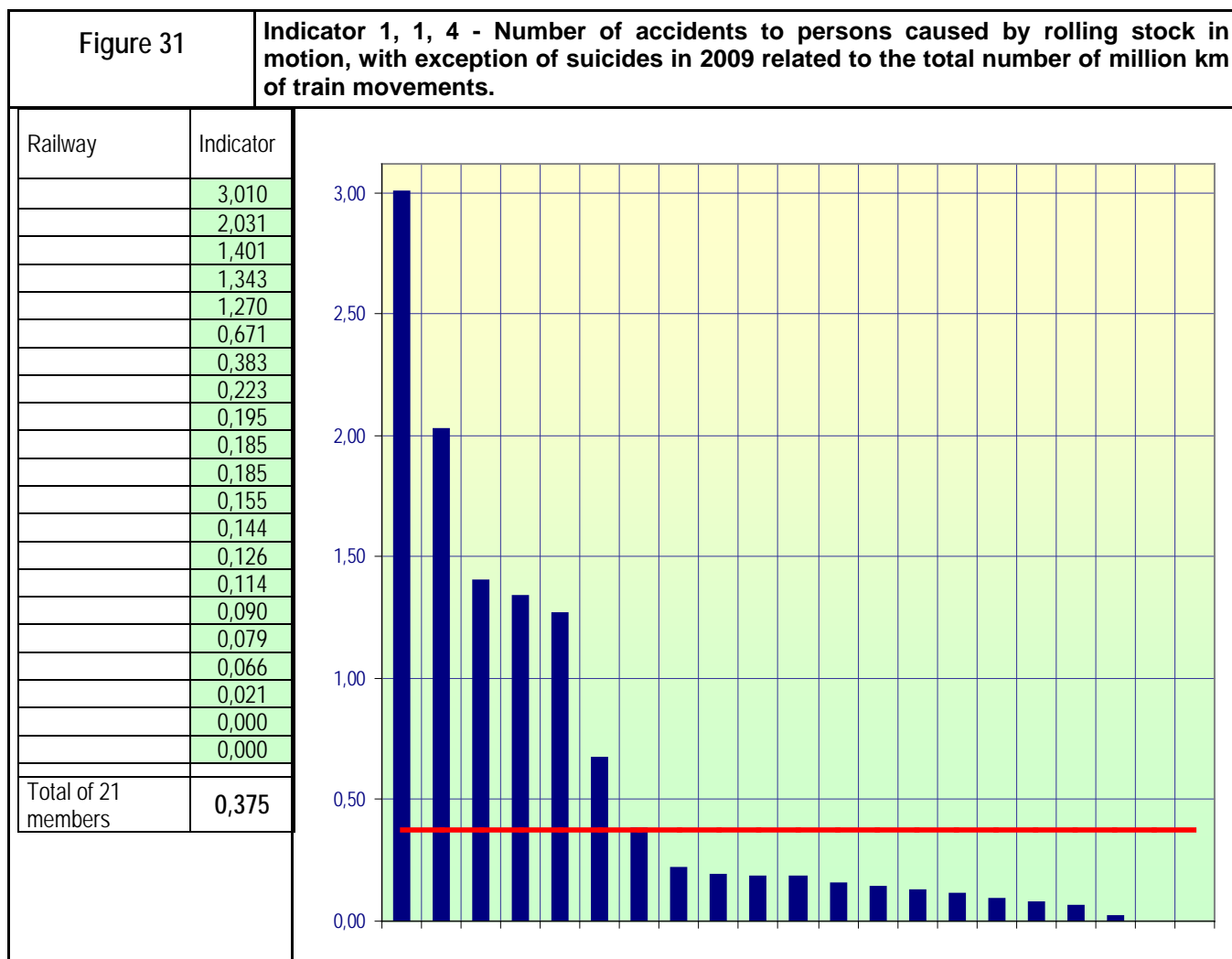
Breakdown of level crossing accidents



Summary results

Level crossings are the most common interface between railways and members of the public. They have long been recognised as locations vulnerable to accidents, and efforts are underway in nearly all countries to reduce the number of level crossings for this reason. Accidents at level crossings are generally pedestrians or motor vehicles being hit by a train. As these two types of accidents are fundamentally different, it is useful to separate them. Because vehicles travel at higher speeds than pedestrians, it is easier for motorists to commit errors at level crossings, such as failing to see the warning lights or failing to stop in time. It is also more difficult to see and hear trains when inside a vehicle. Not surprisingly, collisions with objects (generally motor vehicles) are more common than individuals hit by trains at level crossings. Fortunately, both indicators are lower than in the past few years.

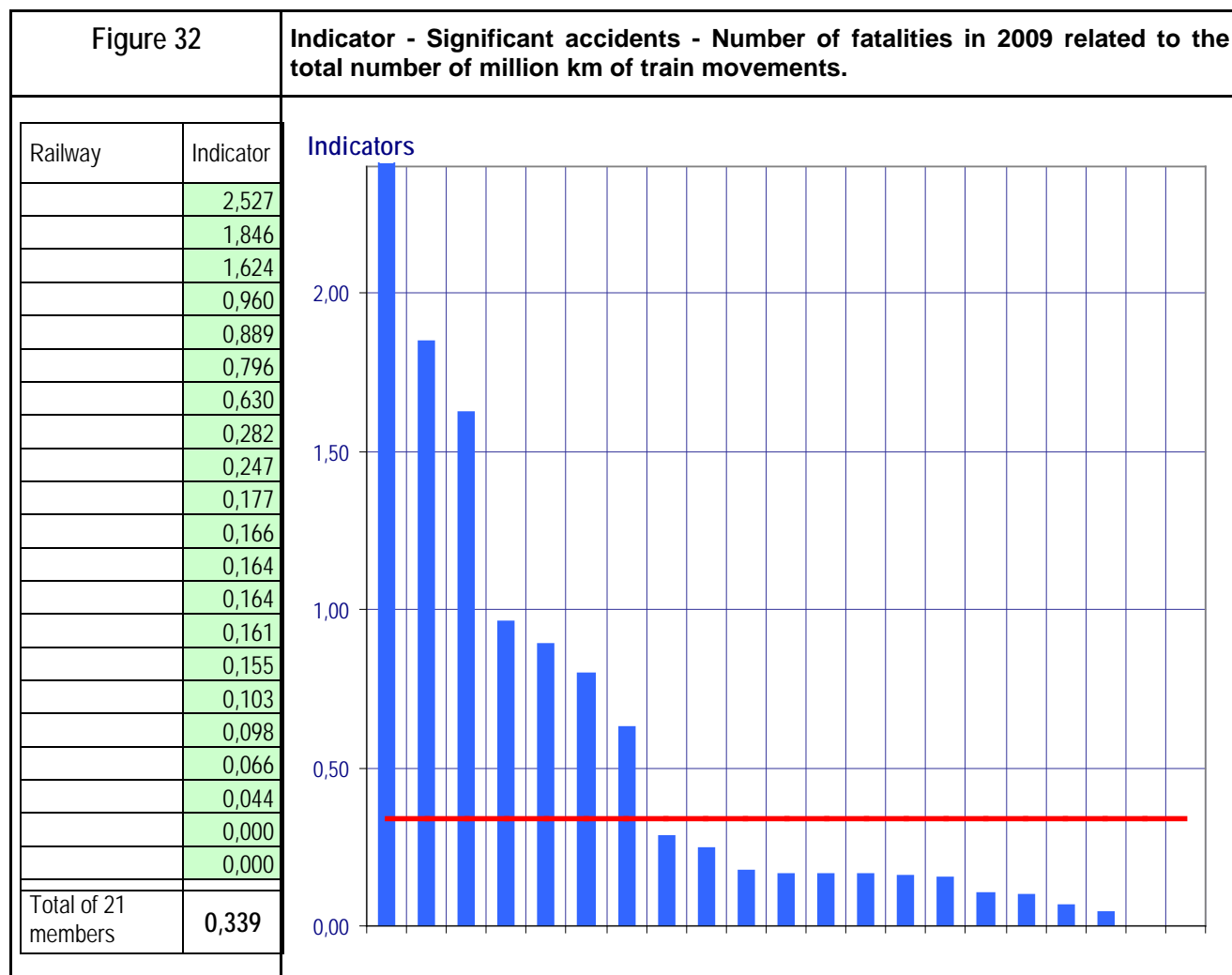
Rolling stock in motion



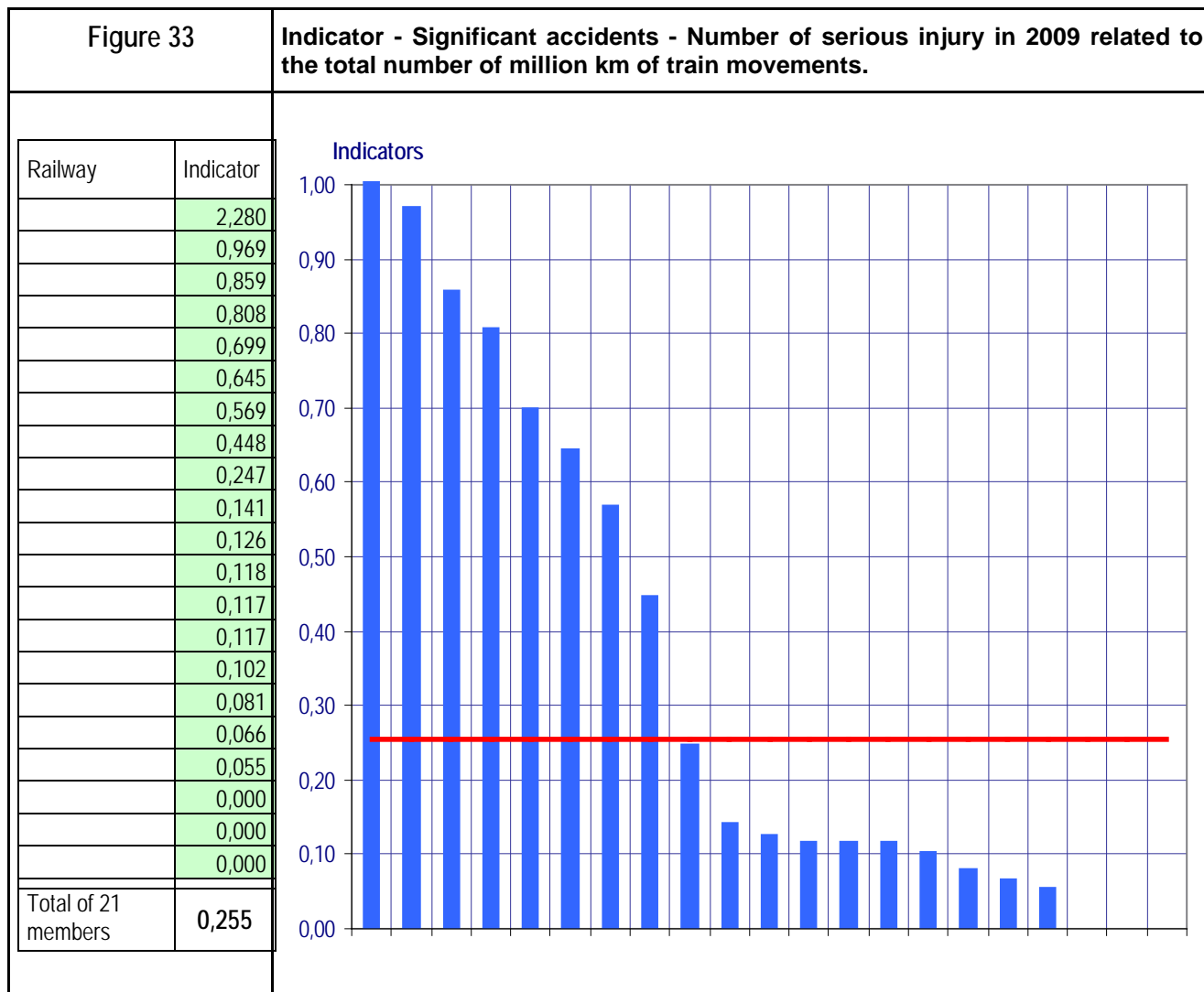
Summary results

Accidents to persons caused by rolling stock in motion are comprised of individuals hit by trains and individuals falling from trains. Level crossing accidents are not included here and can be found separately in Figures 29 and 30. The rate of these accidents varies considerably from country to country. The majority of rail network database members had rates below the average, while a few others had very high rates which skewed the overall average value.

Fatalities



Serious Injuries



Appendix

ACCIDENT DEFINITIONS CURRENTLY IN FORCE IN EUROPE

Please note that this appendix, following the request of the Safety Performance Group, has been repeated from the 2009 report. It gives the key accident definitions currently in force in Europe.

At present there are at least four definitions of "railway accidents" which have legal force in Europe:

2 definitions from Directive 2004/49/EC of 29 April 2004 (Railway Safety Directive):

"**Accident**" means an unwanted or unintended sudden event or a specific chain of such events which have harmful consequences; accidents are divided into the following categories: collisions, derailments, level-crossing accidents, accidents to persons caused by rolling stock in motion, fires and others;

"**Serious accident**" means any train collision or derailment of trains, resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other similar accident with an obvious impact on railway safety regulation or the management of safety; "extensive damage" means damage that can immediately be assessed by the investigating body to cost at least EUR 2 million in total.

2 definitions from Commission Regulation (EC) N° 1192/2003:

"**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. Accidents in workshops, warehouses and depots are excluded. **Notes from the European Office of Statistics (EUROSTAT) specify the following factors:** significant damage over €150K and extensive disruptions to traffic with tracks blocked for more than 6 hours.

"**Serious injury accident**" means any accident involving at least one rail vehicle in motion, resulting in at least one killed or seriously injured person. Accidents in workshops, warehouses and depots are excluded. (*Where "person killed" means any person killed immediately or dying within 30 days as a result of an accident, excluding suicides; and "person seriously injured" means any person injured who was hospitalised for more than 24 hours as a result of an accident, excluding attempted suicides*).

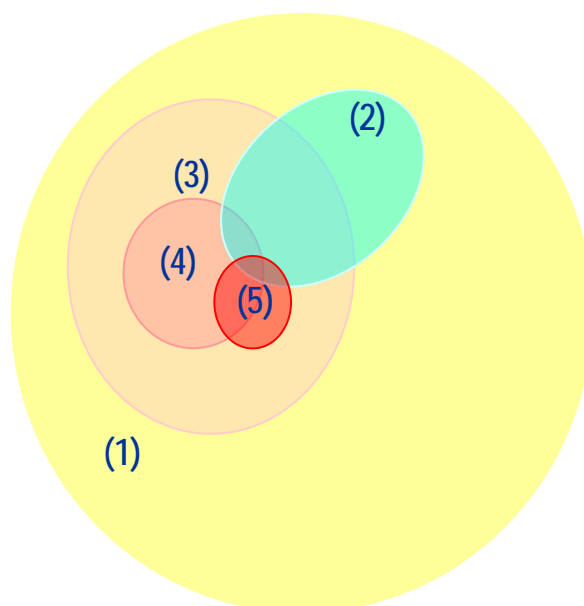
Fig 34 comprises a diagram showing the field of application of and intersection between the four accident definitions.

The UIC Safety Database collates information on railway accidents, critical events, suicides and attempted suicides. UIC SDB accepts declarations based on all the above accident definitions. However, **declaration of "Significant Accidents"** in accordance with the definition given by the Commission Regulation (EC) N° 1192/2003 and the notes from European Office of Statistics is **mandatory**.

Moreover, SDB offers specific reports and analysis for the community or for a single railway based on filtering the data collection according the definitions in force. So, for its own information, an SDB member can declare accidents to the database other than significant accidents without prejudice to its relative position in the international benchmarking where only significant accidents are automatically taken into account for declarations in accordance with Commission Regulation.

The UIC International Railway Statistic – Table A91 collates the total of Significant Accidents in 5 categories and the number of passenger, staff and third parties victims as a result of the accidents.

Figure 34 Domains of the different definitions of accidents



- (1) **Accidents as defined in the European Railway Safety Directive.**
It is not used for any mandatory data collection.
- (2) **Dangerous goods accidents as in RID/ADR section 1.8.5.**
It contains the accidents to take into account to complete EUROSTAT table H2
- (3) **Significant Accidents as in EC Regulation N° 1192/2003.**
It contains the accidents to take into account to complete EUROSTAT table H1 and to calculate the Safety Indicators as defined in the Safety Directive Annex 1.
- (4) **Serious Injury Accidents in EC Regulation N° 1192/2003**
It is used to complete the optional part of EUROSTAT table H1 and tables H2 and H3.
- (5) **Serious Accidents domain as defined in the European Railway Safety Directive.**
It contains those accidents for which Member States shall ensure that an investigation is carried out by the investigating body and the results of the investigations made known to the public.

Finally, SDB must contain at least all the significant accidents and all the dangerous goods accidents declared (one by one or automatically transferred) by the SDB Correspondents plus the number of critical events, suicides and attempted suicides in a defined period.

Table A91 of the UIC International Railway Statistics must contain, for each UIC member, the total number of accidents by type (5 types) and the number of passenger fatalities and injuries for each type of accident, calculated as a total of all significant accidents experienced by each UIC member.

Every year at the end of September, the values necessary to compile Table A91 are extracted by the SDB and transferred to the UIC Committee for International Statistics. Those responsible for statistics within UIC railway member companies can confirm or correct the totals that will be published thereafter in the official statistics Table A91: "Railway Accidents".

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List of the UIC European Railway Members participating in the Safety Database

Country	Country code	Railway Company	Railway Company name
-	-	Eurotunnel	Eurotunnel
Austria	AT	ÖBB	Österreichische Bundesbahnen
Belgium	BE	Infrabel	Infrabel
Bulgaria	BU	NRIC	National Railways Infrastructure Company
Czech Republic	CZ	CD; SZDC	Ceské Dráhy; Správa železniční dopravní cesty
Denmark	DK	DSB	Danske Statsbaner
Finland	FI	RHK	Ratahallintokeskus
France	FR	RFF SNCF	Réseau Ferré de France Société Nationale des Chemins de fer Français
Germany	DE	DB	Deutsche Bahn
Hungary	HU	MAV	Magyar Allamvasutak Rt.
Ireland	IE	CIE	Coras Iompair Eireann
Italy	IT	RFI	Rete Ferroviaria Italiana
Luxembourg	LU	CFL	Société Nationale des Chemins de Fer Luxembourg
Netherlands	NL	ProRail	ProRail
Norway	NO	JBV	Jernbaneverket
Poland	PL	PKP PLK	PKP Polskie Linie Kolejowe
Portugal	PT	REFER	Rede Ferroviária Nacional
Romania	RO	CFR	Compania Nationala de Cai Ferate CFR SA
Slovak Republic	SK	ZSR	Železnice Slovenskej Republiky
Slovenia	SI	SZ	Slovenske Zeleznice
Spain	ES	ADIF	Administrador de Infraestructuras Ferroviarias
Sweden	SE	Trafikverket	Trafikverket
Switzerland	CH	SBB-CFF-FFS	Chemin de Fer Suisse - Schweizerische Bundesbahnen
United Kingdom	UK	Network Rail	Network Rail Limited

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