

# Rail transport accidents in the European Union in 2004

## Statistics in focus

TRANSPORT

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## Contents

Highlights ..... 1

Number of accidents and transport performance ..... 2

Victims by type of accident and category of person..... 3

Number of fatalities related to transport performance ..... 5

Accidents involving dangerous goods ..... 6

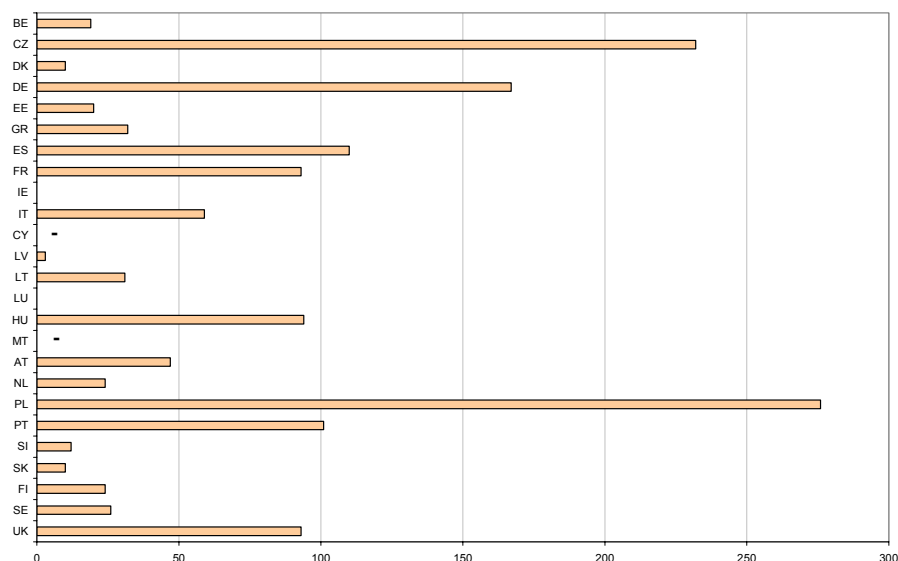
### Highlights

\* A total of 9 309 train accidents were reported in the EU 25 in 2004. A large proportion of accidents involved rolling stock in motion (30% of all accidents) or happened at level-crossings (19%).

\* 3 441 persons were killed or seriously injured in the EU 25 in 2004, of which 33% were either passengers or employees.

\* In absolute terms, most fatalities of train accidents were reported by Poland and the Czech Republic. In relative terms, six countries registered a ratio of over one fatality per million train-kilometres: Portugal, Estonia, Lithuania, Greece, the Czech Republic and Poland. For Portugal, this ratio is particularly high: nearly three deaths.

\* However, the majority of the fatalities in train accidents are not passengers in trains: among the 1 483 persons killed in 2004, only 84 were actually passengers.



Graph 1: Number of persons killed in railway accidents (2004)

Source: Eurostat/ Production data base



## Number of accidents and transport performance

To assess the relative safety of rail transport, the number of accidents and the number of victims should be related to the transport performance. In general, the countries with the largest networks show the highest transport performance values. Figures in Table 1 show that Germany and France registered the highest values in the number of train-kilometres in goods transport with 187 million and 126 million respectively. The next countries, Poland and Italy, followed at considerable distance.

The picture appears slightly different as regards the transport performance of passenger trains: 702 million train-km were registered in Germany and 401 million train-km in France, considerably ahead of the 260 million train-km registered in Italy. Spain and Poland recorded performance figures of around 140 million train-km. In most countries for which data are available, the number of passenger train-kilometres significantly exceeded those of goods train-kilometres. The opposite was true only in the Baltic States.

Table 1 shows two separate columns for freight and passenger trains. The column 'Detailed reporting' refers to the main railway undertakings whereas the column 'Simplified reporting' refers to the smaller enterprises.

Turning now to the number of accidents, it appears that in absolute terms, biggest number of accidents in 2004 was reported by Hungary (2 198); many happened in the United Kingdom (1 306) and Germany (1 172), too.

However, a differentiation is made between the total number of accidents and those with at least one person killed or seriously injured. Hence, looking at the two right hand side columns of Table 1, it appears that in a number of countries, a large proportion of the accidents were material damage accidents. This means there were no fatalities or seriously injured persons in these accidents. This was notably the case in Latvia, Hungary, Finland and Estonia (see Methodological Notes).

Table 1: Rail traffic performance and number of accidents in EU 25 (2004)

	1000 train-km				TOTAL	Number of accidents	
	Goods		Passengers			Total number of accidents	of which: with at least 1 person killed or seriously injured
	Detailed reporting	Simplified reporting	Detailed reporting	Simplified reporting			
BE	17,263	:	78,168	:	95,431	150	42
CZ	35,560	-	110,557	-	146,117	268	212
DK	4,639	90	44,568	7,671	56,968	55	15
DE	187,368	-	702,100	-	889,468	1,172	568
EE	6,010	-	3,221	-	9,231	78	17
GR	1,072	-	16,553	-	17,625	716	:
ES	36,699	1,976	139,211	22,174	200,060	162	126
FR	125,511	-	401,258	-	526,769	142	124
IE	2,710	-	12,417	-	15,127	2	1
IT	62,301	3,718	260,056	38,317	364,392	144	:
CY	-	-	-	-	-	-	-
LV	10,866	-	7,512	-	18,378	18	3
LT	8,489	-	8,489	-	16,978	99	53
LU <sup>1</sup>	1,914	-	5,715	-	7,629	0	0
HU	16,498	1,213	80,237	1,610	99,558	2,198	419
MT	-	-	-	-	-	-	-
NL <sup>1</sup>	9,000	-	115,200	-	124,200	37	:
AT	51,940	2,087	86,008	7,895	147,930	119	:
PL	73,943	6,755	139,340	-	220,038	964	594
PT	9,730	-	25,312	-	35,042	890	:
SI	8,003	-	11,939	-	19,942	49	28
SK	15,698	68	31,143	85	46,994	514	123
FI	17,324	-	31,365	-	48,689	109	24
SE	41,060	-	:	-	:	117	:
UK	39,383	:	:	:	:	1,306	:
EU 25	782,981	:	:	:	:	9,309	:

<sup>1</sup> Source of estimate: International Union of Railways

Source: Eurostat / Production data base

## Victims by type of accident and category of person

A total of 9 309 accidents were registered in the EU 25 in 2004 (see Table 2). The most common type of train accident was classified as "Other" (3 197 accidents), followed by "Accidents caused by rolling stock in motion" (2 762 accidents, or 30% of the total) and "Accidents involving level crossings" (1 728 or 19%).

Only a minority of rail accident fatalities in the EU 25 were actually passengers travelling on trains. Most fatalities have been recorded in accidents occurring at railway level-crossings and in accidents caused by rolling stock in motion, where no passengers lost their lives.

Table 2 indicates that out of a total of 1 483 persons killed in train accidents in 2004, 416 (or 28%) were killed in level-crossing accidents but 992 (or 67%) in accidents caused by rolling stock in motion. Suicides are excluded from these statistics.

However, among these fatalities, only 130 were either passengers or employees.

In all categories of accidents, a total of 1 958 persons were seriously injured. Collisions and derailments together made only 225 victims (persons killed and seriously injured) and a total of 39 persons were killed. Nevertheless, collisions and derailments are often multiple-fatality accidents. The share of passengers and employees in the number of persons killed in these accidents is therefore significantly higher than among the other categories of accidents.

In general, when looking at the number of persons killed and those seriously injured, it appears that accidents involving rolling stock in motion and accidents occurring at level-crossings are particularly frequent and severe as the number of killed and seriously injured is quite similar in these two categories. In the former category, the number of killed (992) even exceeded that of seriously injured (949).

Table 2: Number of person killed and injured by type of accident and category of persons in EU 25 (2004)

	Number of persons												Number of accidents <sup>(1)</sup>	
	Killed				Seriously injured				TOTAL				Total number of accidents	of which: with at least 1 person killed or seriously injured
Passengers	Employees	Other	Total	Passengers	Employees	Other	Total	Passengers	Employees	Other	Total			
Collisions	5	6	12	23	48	58	13	119	53	64	25	142	667	105
Derailments	8	5	3	16	47	18	2	67	55	23	5	83	691	12
Accidents involving level-crossings	1	3	412	416	13	20	406	439	14	23	818	855	1,728	482
Accidents to persons caused by rolling stock in motion	54	30	908	992	346	121	482	949	400	151	1,390	1,941	2,762	1,439
Fires in rolling stock	0	0	1	1	2	1	0	3	2	1	1	4	264	9
Others	16	2	17	35	259	71	51	381	275	73	68	416	3,197	260
Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	42
<b>Total</b>	<b>84</b>	<b>46</b>	<b>1,353</b>	<b>1,483</b>	<b>715</b>	<b>289</b>	<b>954</b>	<b>1,958</b>	<b>799</b>	<b>335</b>	<b>2,307</b>	<b>3,441</b>	<b>9,309</b>	<b>2,349</b>

<sup>1</sup> Data not available for GR, IT, NL, AT, PT, SE, UK for the number of accidents in which at least one person was killed or seriously injured.

Source: Eurostat / Production data base

Whereas Table 2 gives an insight into victims of all serious injury and other accidents in the EU 25, Table 3 is limited to the number of persons killed in various types of rail accidents, broken down by individual EU Member State.

The image drawn from Table 2 is confirmed when looking at the situation in different countries. Hence, the

large majority of the fatalities occurred in accidents caused by rolling stock in motion in all individual Member States except in Slovakia, where all deadly victims were counted in accidents at level-crossings, the Netherlands, Denmark and Sweden. Fatalities exceeded 200 in Poland and in the Czech Republic.

Table 3: Fatalities by type of accident in 2004

	Collisions	Derailments	Accidents involving level-crossings	Accidents to persons caused by rolling stock in motion	Fires in rolling stock	Others	Unknown	Total
BE	5	0	8	6	0	0	0	19
CZ	2	0	57	171	0	2	0	232
DK	0	0	4	4	1	1	0	10
DE	6	0	61	100	0	0	0	167
EE	0	0	6	14	0	0	0	20
GR	3	0	13	16	0	0	0	32
ES	0	0	42	68	0	0	0	110
FR	6	0	38	49	0	0	0	93
IE	0	0	0	0	0	0	0	0
IT	0	4	17	36	0	2	0	59
CY	-	-	-	-	-	-	-	-
LV	0	0	3	0	0	0	0	3
LT	0	0	4	27	0	0	0	31
LU	0	0	0	0	0	0	0	0
HU	0	0	18	76	0	0	0	94
MT	-	-	-	-	-	-	-	-
NL	0	0	17	7	0	0	0	24
AT	0	0	18	25	0	4	0	47
PL	0	0	51	205	0	20	0	276
PT	0	3	26	68	0	4	0	101
SI	0	0	1	11	0	0	0	12
SK	0	0	10	0	0	0	0	10
FI	0	0	7	15	0	2	0	24
SE	0	0	13	13	0	0	0	26
UK	1	9	2	81	0	0	0	93
<b>EU 25</b>	<b>23</b>	<b>16</b>	<b>416</b>	<b>992</b>	<b>1</b>	<b>35</b>	<b>0</b>	<b>1483</b>

Source: Eurostat / Production data base

Table 4: Fatalities by category of person in 2004

	Passengers	Employees	Other	Total
BE	2	2	15	19
CZ	5	3	224	232
DK	3	1	6	10
DE	8	6	153	167
EE	0	0	20	20
GR	0	1	31	32
ES	1	2	107	110
FR	6	5	82	93
IE	0	0	0	0
IT	12	4	43	59
CY	-	-	-	-
LV	0	0	3	3
LT	0	0	31	31
LU	0	0	0	0
HU	8	0	86	94
MT	-	-	-	-
AT	2	3	42	47
NL	2	2	20	24
PL	15	2	259	276
PT	8	4	89	101
SI	0	0	12	12
SK	0	0	10	10
FI	2	0	22	24
SE	3	2	21	26
UK	7	9	77	93
<b>EU 25</b>	<b>84</b>	<b>46</b>	<b>1353</b>	<b>1483</b>

Around 50 to 60 persons were killed in level crossing accidents in the Czech Republic, Germany and Poland. Conversely, only one person was killed in a train fire in 2004 and both collisions and derailments resulted in relatively few deaths.

As noted earlier, rail passengers and employees of railway undertakings constitute only a minority in the number of persons killed (see Table 4). Seven countries have reported no fatalities in these categories (Estonia, Ireland, Latvia, Lithuania, Luxembourg, Slovenia and Slovakia).

Source: Eurostat / Production data base

## Number of fatalities related to transport performance

The following section focuses on the number of persons that have been killed in rail accidents in relation to traffic and transport performance.

All fatalities have been taken into account in the data of Graph 2, showing the number of fatalities per million train-kilometres.

On the basis of available data, six countries recorded a ratio of over one death per million train-kilometres: Portugal, Estonia, Lithuania, Greece, the Czech Republic and Poland. The risk of a train being involved in a fatal accident was particularly high in Portugal with close to three deaths per million train-kilometres, three times higher than for instance in Hungary, or six times higher than in Finland.

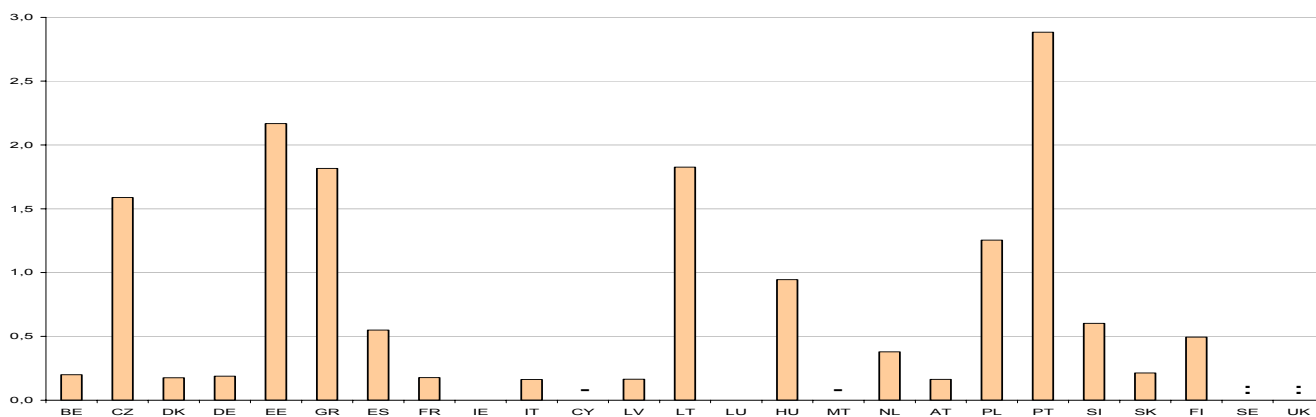
Latvia recorded a ratio that is roughly one tenth that of neighbouring Lithuania and Estonia. Hence, Latvia

shows the same relative safety as for instance Belgium, Denmark, France or Italy. In 2004, no railway fatalities were counted in Ireland and Luxembourg.

Graph 3 looks at deaths among train passengers only. The information relates the number of fatalities to the transport performance of passenger trains (expressed in passenger-kilometres — whereas the information in Graph 2 looks at train-kilometres, whether performed by goods or passenger trains).

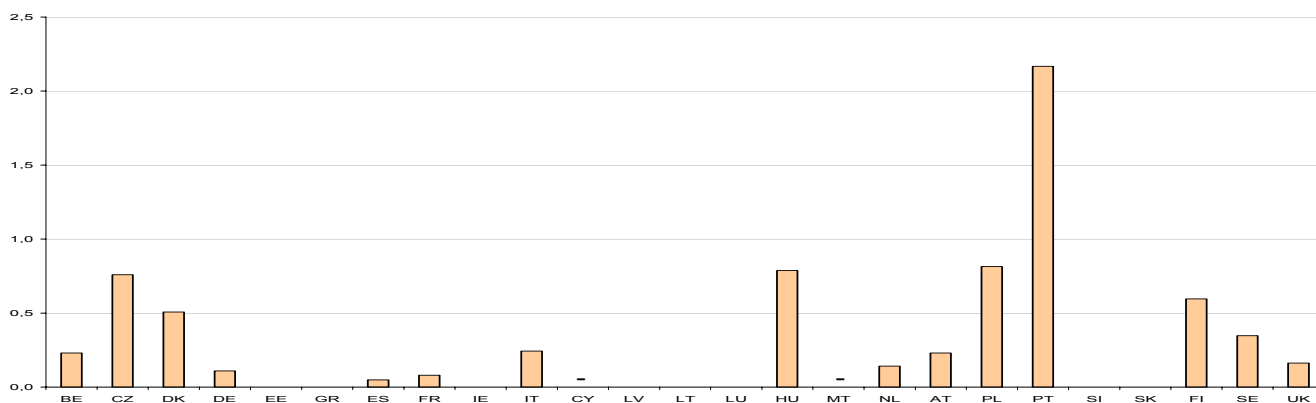
Again, Portugal stands out of the lot with over two deaths per billion passenger-kilometres; Hungary, Poland and the Czech Republic all registered close to one fatality per billion passenger-kilometres.

In ten Member States (including Cyprus and Malta that do not have railways) no rail passengers were killed in 2004 (see Table 4).



Graph 2: Fatalities per million train-km (2004)

Source: Eurostat / Production data base



Graph 3: Train passengers killed per billion passenger-km (2004)

Source: Eurostat / New Cronos and Production data base

## Accidents involving dangerous goods

Table 5 looks at the number of rail accidents involving dangerous goods and also lists the numbers of accidents in which dangerous goods were released (spillage resulting in contamination of the soil, release of harmful gaseous substances, etc.).

In general, the number of such accidents in 2004 was very low in most Member States (zero or close to zero). In Denmark, Germany, Spain, France, Lithuania, the Netherlands, Poland and the United Kingdom, the number of dangerous goods accidents was low — between 1 and 7 accidents. In only two Member States, Austria and Sweden, the number of accidents appeared relatively high with 23 and 13 cases respectively.

For a fair evaluation of the relative safety, the number of registered accidents should be related to the transport performance of dangerous goods (number of tonne-kilometres performed). Germany and France display a similar value (with an average of 0.51 and 0.73 accidents per billion tonne-kilometres of dangerous goods hauled respectively). The risk in the Netherlands, Spain, the United Kingdom and Sweden appeared to be four to twelve times higher.

A comparatively high risk was registered in Austria (16 accidents per billion tkm) and in Denmark (32 accidents per billion tkm of dangerous goods hauled). These results, however, should be interpreted with caution due to a low number of accidents.

Table 5: Number of accidents with dangerous goods (2004)

	Number of accidents		
	Involving dangerous goods	Releasing dangerous goods	Number of accidents involving dangerous goods per billion tkm of dangerous goods transport
BE	0	0	0.00
CZ	0	0	0.00
DK	3	0	31.63
DE	7	1	0.51
EE	0	0	0.00
GR	0	0	0.00
ES	6	2	2.45
FR	4	3	0.73
IE	0	0	:
IT	0	0	0.00
CY	-	-	-
LV	0	0	0.00
LT	5	0	0.85
LU	0	0	0.00
HU	0	0	0.00
MT	-	-	-
NL	2	0	4.03
AT	23	19	16.05
PL	1	0	:
PT	0	0	0.00
SI	0	0	0.00
SK	0	0	0.00
FI	0	0	0.00
SE	13	7	6.31
UK	4	1	3.00

Source: Eurostat / Production data base

## ➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

### Data availability

The figures presented in this publication have been extracted from the Eurostat rail transport database. It includes the statistics on rail accidents in the Member States, collected according to the Regulation n°91/2003.

The following table presents the different characteristics of availability encountered:

### Country / Characteristics of data availability

CY	No railways transport
MT	No railways transport

### Methodology

Table 1 presents data collected under the detailed and simplified reporting. Simplified reporting is an alternative to the normal detailed reporting for undertakings for which the total transport performance is less than 500 million tonne-kilometres or 200 million passenger-kilometres.

Some countries report all data under detailed reporting (Germany, Estonia and Sweden).

### Definitions

Definitions presented here are those of the Regulation n°1192/2003 (EC) of 3 July 2003 amending Regulation (EC) No 91/2003 of the European Parliament and of the Council on rail transport statistics. However, several Member States (for example, Germany, Greece and Hungary) have reported these statistics according to national definitions (Annex H, Note 5).

### Passenger-km

The unit of measure representing the transport of one passenger by rail over a distance of one kilometre. Only the distance on the national territory of the reporting country is taken into account.

### Train-km

The unit of measure representing the movement of a train over one kilometre. The distance used is the distance actually run, if available, otherwise the standard network distance between the origin and destination is used. Only the distance on the national territory of the reporting country is taken into account.

### Significant accident

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.

### Significant damage to stock, track, other installations or environment

This means damage that is equivalent to EUR 150 000 or more.

### Serious injury accident

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.

### Level crossing accident

Any accident at level crossings involving at least one railway vehicle and one or more road vehicles, other users of the road such as pedestrians or other objects temporarily present at or near the track.

### Accident to persons caused by rolling stock in motion

Any accident to one or more persons that are either hit by a railway vehicle or part of it or hit by an object detached from the vehicle. Persons that fall from railway vehicles are included, as well as persons that fall or are hit by loose objects when travelling on-board vehicles.

### Person killed (Fatality)

Any person killed immediately or dying within 30 days as a result of an accident, excluding suicides. It includes passengers, employees and others persons specified or unspecified person involved in a rail injury accident.

### Person seriously injured

Any person injured who was hospitalised for more than 24 hours as a result of an accident, excluding attempted suicides.

### Rail passenger

Any person, excluding members of the train crew, who makes a trip by rail. For accident statistics, passengers trying to embark/disembark onto/from a moving train are included.

### Accident involving the transport of dangerous goods

Any accident or incident that is subject to reporting in accordance with RID/ADR section 1.8.5.

### Symbols:

: not available

- not applicable









0 actual zero or very negligible transport

This publication was prepared with the assistance of Sandrine CIPPONERI and Jelle BOSCH.

## Further information:

Data: [EUROSTAT Website/Home page/Transport/Data](#)

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