

Rail transport accidents in the European Union in 2004-2005

Statistics in focus

TRANSPORT

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Author

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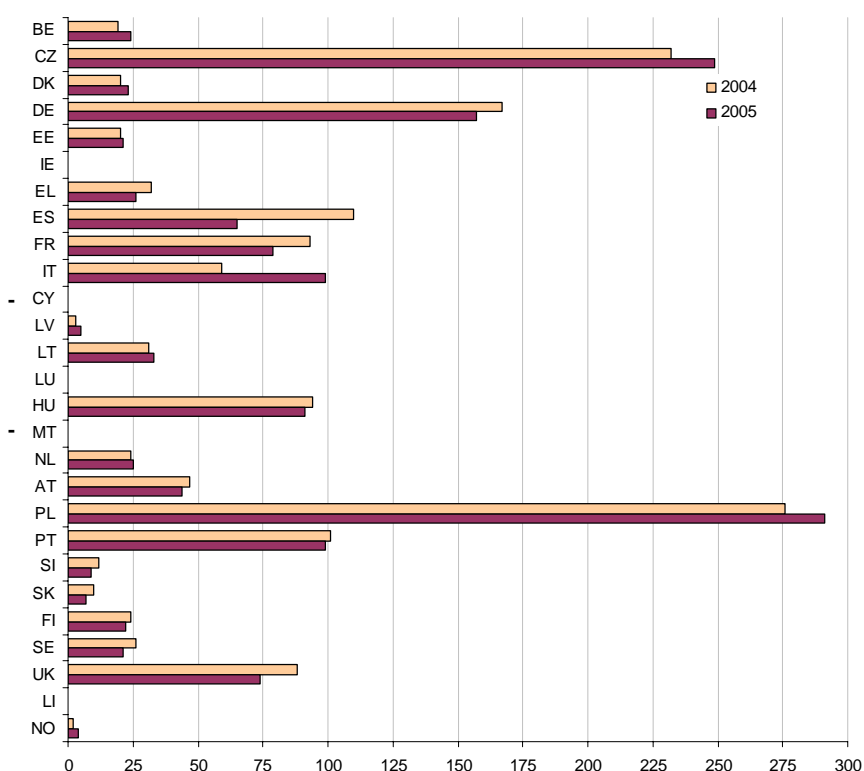
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Highlights

- In 2005, a total of 7 023 significant train accidents were reported at EU-25 level. 23% of these accidents were classified in the category “accidents caused by rolling stock in motion” and 17% happened at level-crossings. Compared to 2004, the total number of reported accidents decreased by 14%.
- In 2005, over three thousand persons were killed or seriously injured in railway accidents in EU-25. 28% of victims (fatalities and seriously injured) were either train passengers or railway enterprise employees. The total number of victims decreased by 5.4% between 2004 and 2005.
- In absolute terms, most fatalities in train accidents for both 2004 and 2005 were reported by Poland and the Czech Republic. However, the Czech statistics contain also suicides that should, in principle, be excluded from other data (see Graph 1 and Methodological notes).
- In relative terms, six countries registered a ratio of over one fatality per million train-kilometres in 2004 and 2005: Portugal, Estonia, Lithuania, the Czech Republic, Greece and Poland. For Portugal, Estonia and Lithuania, this ratio exceeded two fatalities in 2005.
- The majority of fatalities in train accident were not passengers in trains: among the 1464 persons killed in 2005, only 62 were actually passengers.

Graph 1: Number of persons killed in railway accidents (2004 and 2005)



Source: Eurostat/ NewCronos



Number of accidents and traffic performance

To assess the relative safety of rail transport, the number of accidents and the related number of victims should be linked to the traffic performance. In general, the large Member States with the longest rail networks display the highest transport performance values.

In 2005, Germany, the United Kingdom, France and Italy registered the highest number of train-kilometres in passenger transport with 796 million, 470 million, 397 million and 313 million train-kilometres respectively. Concerning goods transport, available data show 190 million train-kilometres in Germany and 108 million train-km for France, considerably ahead of Poland (77 million) and Italy (62 million).

In most countries for which data are available, the number of passenger train-kilometres significantly exceeded those registered for goods train-kilometres. The ratio between passenger train and goods train performances was particularly high in Denmark and in the Netherlands where passenger train kilometres outnumbered that of goods trains by a factor of 17 and 12 respectively. At the opposite, goods rail traffic was substantially more important in the Baltic States.

The two right columns of Table 1 show the distribution of the number of accidents and the number of persons killed or seriously injured (see Methodological notes, page 7) at Member State level.

As regards the absolute number of accidents, it appears that the largest number in 2005 was reported in Hungary (1 863), followed by Germany and Poland (1 111 and 961 accidents respectively). However, the figures on the number of accidents are not fully comparable between reporting countries; for example Hungary applied a national value (€40 000) as the threshold of 'significant accidents' (€150 000 in the harmonised definition).

Looking next at the number of persons killed and seriously injured in accidents, it appears that this figure is not strictly linked to the total number of accidents. Indeed, several countries reported a large proportion of accidents with only material damage without serious injuries in 2005. This was notably the case for Slovakia and Hungary. Conversely, five Member States reported an average number of victims per accident greater than

one, the EU-25 average being approximately one victim for every two accidents.

Four countries account for slightly over 60% of all rail victims in the EU-25: Poland, Hungary, Germany and the Czech Republic.

When comparing the data with those of 2004 (Statistics in Focus 6/2006 "Rail transport accidents in the European Union in 2004"), Germany, Spain, France, Lithuania and Hungary registered a decrease both in the number of accidents and in the number of killed or seriously injured persons. Among these countries progress was best in Spain with 38% fewer accidents and 23% fewer victims.

Table 1: Rail traffic performance (all undertakings) and number of significant accidents in EU-25, 2005

	1000 train-km			Total number of accidents	Total number of persons killed or seriously injured in accidents
	Goods	Passengers	TOTAL		
Belgium	15 329	77 496	92 825	38	50
Czech Republic	33 247	114 496	147 743	688	349
Denmark	4 151	70 842	74 993	86	36
Germany	190 205	796 481	986 686	1 111	366
Estonia	5 864	3 037	8 901	79	45
Ireland	2 060	13 900	15 960	2	1
Greece	1 836	15 893	17 729	75	86
Spain	37 697	159 167	196 864	100	97
France	108 419	397 380	505 799	138	121
Italy	62 005	312 624	374 629	146	220
Cyprus	-	-	-	-	-
Latvia	11 281	7 609	18 890	9	33
Lithuania	8 959	5 367	14 326	104	49
Luxembourg	1 765	5 800	7 565	1	1
Hungary	18 272	77 060	95 332	1 863	413
Malta	-	-	-	-	-
Netherlands	9 650	115 600	125 250	48	44
Austria	49 160	94 757	143 917	98	109
Poland	77 176	129 997	207 173	961	694
Portugal	7 674	30 001	37 675	508	169
Slovenia	7 877	10 758	18 635	35	32
Slovakia	15 999	31 296	47 295	647	27
Finland	16 819	31 408	48 227	86	35
Sweden	43 598	83 813	127 411	94	40
United Kingdom	49 717	469 663	519 380	106	95
EU-25	778 760	3054 445	3833 205	7 023	3 112
Liechtenstein	40	99	139	0	0
Norway	7 899	32 771	40 670	25	7

Note: Luxembourgish passenger train-km data are estimated.

Source: Eurostat/NewCronos

Victims by type of accident and category of person

A total of 3 112 persons lost their lives or were seriously injured in rail accidents at EU-25 level during 2005 (see Table 2). Suicides are in principle excluded from these statistics, but not all Member States can identify them in statistics sent to Eurostat (see Methodological notes).

The most common types of accident reporting at least one victim are the accidents caused by rolling stock in motion and those happening at level-crossings. These

two categories represent more than three quarters of the total amount of victims and more than 95% of the fatalities.

Only a minority of rail accident victims in the EU-25 were actually passengers travelling on trains or railway employees. The majority, about 70%, is represented by 'other persons' and the share for this category attains 90% of fatalities.

Table 2 indicates that out of a total of 1 464 persons killed in train accidents in 2005, 411 (corresponding to 28%) were killed in level-crossing accidents and 985 (67%) in accidents caused by rolling stock in motion.

However, among these fatalities, as observed earlier, only 62 were train passengers and 43 were employees.

In all categories of accidents, a total of 1 648 persons were seriously injured. However, there may be some differences in reporting seriously injured people by different Member States. For this reason, the number of fatalities is considered as a more reliable measure than the number of seriously injured persons or the number of accidents.

Collisions and derailments produced together 263 victims of which 224 were seriously injured and 39 were killed. The share of passengers and railway enterprise employees in the total number of victims is significantly higher than among the other accident categories.

Indeed, considering collisions and derailments alone, the proportion of passengers and railway enterprise employees among the seriously injured was 66% and 27% respectively.

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. This is far more evident for victims other than passengers and employees. The proportion for this category is over 90% for victims in accidents involving level-crossing and for fatalities in accidents to persons caused by rolling stock in motion.

Fatalities of this last category amounted to 985 and represented over 67% of the total number of persons killed in rail accidents.

Table 2: Number of persons killed and injured by type of accident and category of persons in EU-25, 2005

	Number of persons											
	Killed				Seriously injured				TOTAL			
	Passengers	Employees	Other	Total	Passengers	Employees	Other	Total	Passengers	Employees	Other	Total
Collisions	19	10	9	38	112	46	15	173	131	56	24	211
Derailments	0	0	1	1	35	15	1	51	35	15	2	52
Accidents involving level-crossings	6	2	403	411	17	20	432	469	23	22	835	880
Accidents to persons caused by rolling stock in motion	28	31	926	985	124	43	365	532	152	74	1 291	1 517
Fires in rolling stock	0	0	0	0	3	4	0	7	3	4	0	7
Others	9	0	20	29	338	24	54	416	347	24	74	445
Total	62	43	1 359	1 464	629	152	867	1 648	691	195	2 226	3 112

Source: Eurostat/NewCronos

Whereas Table 2 gives an insight into the victims of accidents in the EU-25, Table 3 is limited to the number of persons killed in various types of rail accidents, broken down by reporting country.

The image drawn from Table 2 is confirmed when looking at the situation in the different countries. Hence, in all but two EU Member States, the largest number of fatalities were registered in accidents caused by rolling stock in motion and accidents involving level-crossing.

In Ireland and Luxembourg there were no fatalities in 2005. In Estonia and Slovakia all fatalities were counted in a single type of accident, accidents caused by rolling stock in motion and accidents at level-crossings respectively.

Fatalities exceeded 200 in the Czech Republic and Poland, the majority of victims counted in the category 'rolling stock in motion'. However, at least in the case of the Czech Republic, these figures include suicides.

Table 3: Fatalities by type of accident in 2005

	Collisions	Derailments	Accidents involving level-crossings	Accidents to persons caused by rolling stock in motion	Fires in rolling stock	Others	Unknown	Total
Belgium	1	0	16	7	0	0	0	24
Czech Republic	1	0	52	196	0	0	0	249
Denmark	0	0	2	21	0	0	0	23
Germany	6	0	45	106	0	0	0	157
Estonia	0	0	0	21	0	0	0	21
Ireland	0	0	0	0	0	0	0	0
Greece	2	0	13	11	0	0	0	26
Spain	0	0	29	35	0	1	0	65
France	1	0	38	40	0	0	0	79
Italy	20	0	24	55	0	0	0	99
Cyprus	-	-	-	-	-	-	-	-
Latvia	4	0	1	0	0	0	0	5
Lithuania	0	0	10	23	0	0	0	33
Luxembourg	0	0	0	0	0	0	0	0
Hungary	0	0	23	58	0	10	0	91
Malta	-	-	-	-	-	-	-	-
Netherlands	0	0	18	7	0	0	0	25
Austria	2	0	24	18	0	0	0	44
Poland	1	0	64	226	0	0	0	291
Portugal	0	0	13	82	0	4	0	99
Slovenia	0	1	3	5	0	0	0	9
Slovakia	0	0	7	0	0	0	0	7
Finland	0	0	8	0	0	14	0	22
Sweden	0	0	7	14	0	0	0	21
United Kingdom	0	0	14	60	0	0	0	74
EU-25	38	1	411	985	0	29	0	1464
Liechtenstein	0	0	0	0	0	0	0	0
Norway	0	0	1	3	0	0	0	4

Source: Eurostat / NewCronos

Table 4: Fatalities by category of person in 2005

	Passengers	Employees	Other	Total
Belgium	0	1	23	24
Czech Republic	5	3	241	249
Denmark	1	0	22	23
Germany	7	8	142	157
Estonia	0	0	21	21
Ireland	0	0	0	0
Greece	0	2	24	26
Spain	3	0	62	65
France	5	3	71	79
Italy	26	7	66	99
Cyprus	-	-	-	-
Latvia	3	1	1	5
Lithuania	0	1	32	33
Luxembourg	0	0	0	0
Hungary	10	0	81	91
Malta	-	-	-	-
Netherlands	0	0	25	25
Austria	1	3	40	44
Poland	0	7	284	291
Portugal	1	2	96	99
Slovenia	0	0	9	9
Slovakia	0	0	7	7
Finland	0	0	22	22
Sweden	0	0	21	21
United Kingdom	0	5	69	74
EU-25	62	43	1359	1464
Liechtenstein	0	0	0	0
Norway	0	0	4	4

The latter two countries also registered many fatalities in accidents at level-crossings, with 52 and 64 deaths respectively.

In Poland, the Czech Republic and Germany the number of persons killed in accidents caused by rolling stock in motion exceeded 100 persons (226, 196 and 106 fatalities respectively).

Conversely, at EU-level, only one person lost their life in a derailment accident (in Slovenia), and no fatalities were registered in train fires. While train collisions recorded relatively few deaths at EU level, this category registered 20 victims in Italy.

Due to the rarity of fatalities in railway accidents, one should be very careful when comparing developments between years, in particular at national level.

As noted earlier, rail passengers and railway employees constitute only a minority of the number of persons killed (see Table 4). Eight EU Member States (Estonia, Ireland, Luxembourg, the Netherlands, Slovenia, Slovakia, Finland and Sweden) as well as Liechtenstein and Norway reported no fatalities in these categories.

Number of fatalities related to transport performance

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

It is important to note that as the number of passengers killed in rail accidents is very low and random, one accident - or even one victim - can make a big difference when comparing countries and years with this indicator (see Latvia in Graph 3).

All fatalities have been taken into account in the data of Graph 2, showing the number of railway accident deaths per million train-kilometres (goods and passenger trains).

On the basis of available data, six countries recorded a ratio of over one death per million train-kilometres: Portugal, Estonia, Lithuania, the Czech Republic, Greece and Poland. The risk of a fatal accident was

relatively high in Portugal, with a value ten times greater than for instance in Belgium, Italy or Latvia.

The latter country recorded a ratio that is roughly one tenth of neighbouring Lithuania and Estonia. A similar remark can be made for Portugal when compared to Spain and the Czech Republic compared to Slovakia

As regards the evolution between 2004 and 2005, Greece, Portugal and Spain displayed the highest decreases, while Lithuania reported a major increase.

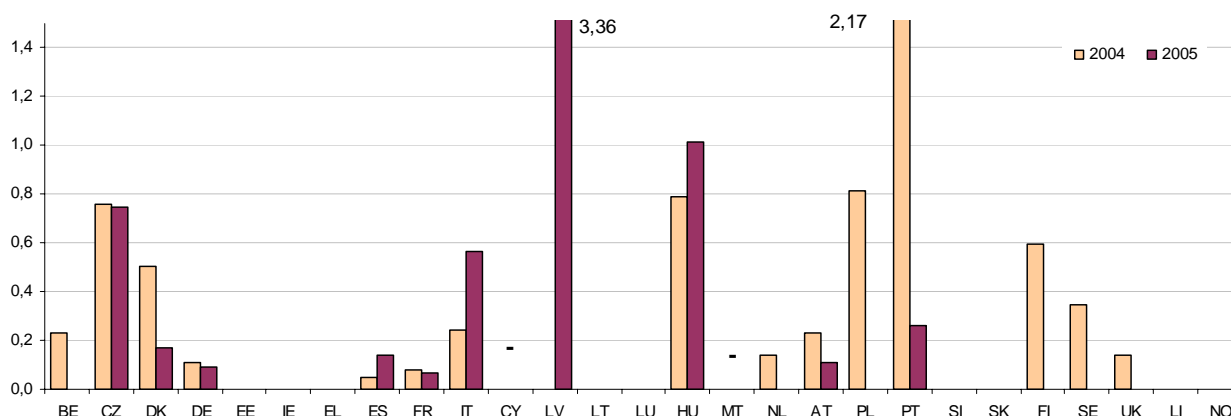
Graph 3 looks at fatalities among train passengers only, expressed per billion passenger-kilometres. In this case, Italy and Latvia feature particularly high values in 2005. Conversely, Portugal, with high ratio in 2004, reduced the risk considerably in 2005.

Graph 2: Fatalities per million train-km (2004 and 2005)



Source: Eurostat / NewCronos

Graph 3: Train passengers killed per billion passenger-km (2004 and 2005)



Source: Eurostat/NewCronos

Accidents involving dangerous goods

Table 5: Number of accidents with dangerous goods, 2004 and 2005

	Number of accidents								
	Involving dangerous goods			Releasing dangerous goods			Number of accidents involving dangerous goods per billion tkm of dangerous goods transport		
	2004	2005	2004 and 2005	2004	2005	2004 and 2005	2004	2005	Average 2004 and 2005
Belgium	0	0	0	0	0	0	0	0	0
Czech Republic	0	0	0	0	0	0	0	0	0
Denmark	3	2	5	0	0	0	32	17	24
Germany	14	5	19	2	0	2	1	0	1
Estonia	0	4	4	0	0	0	0	1	0
Ireland	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0	0	0	0	0	0
Spain	6	9	15	2	0	2	2	3	3
France	4	5	9	3	2	5	1	:	:
Italy	0	0	0	0	0	0	0	0	0
Cyprus	-	-	-	-	-	-	-	-	-
Latvia	0	0	0	0	0	0	0	0	0
Lithuania	5	7	12	0	0	0	1	2	1
Luxembourg	0	0	0	0	0	0	0	0	0
Hungary	0	0	0	0	0	0	0	0	0
Malta	-	-	-	-	-	-	-	-	-
Netherlands	2	5	7	0	0	0	4	10	7
Austria	23	21	44	19	20	39	16	15	15
Poland	1	1	2	0	0	0	:	0	:
Portugal	0	1	1	0	0	0	0	13	7
Slovenia	0	:	:	0	:	:	0	:	:
Slovakia	0	0	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0	0	0
Sweden	13	3	16	7	0	7	12	3	8
United Kingdom	4	11	15	2	9	11	3	9	6
EU-25 (no SI)	75	74	149	35	31	66	:	:	:
Liechtenstein	0	0	0	0	0	0	-	-	-
Norway	0	2	2	0	2	2	:	5	:

Note: In 2004, no data are available for PL, LI (simplified reporting) and NO for the transport of dangerous goods (in Mio tkm).

In 2005, no data are available for FR and LI (simplified reporting) for the transport of dangerous goods (in Mio tkm). SI data on the number of dangerous goods accidents are missing.

Source: Eurostat/NewCronos

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

In general, the number of reported accidents in 2004 and 2005 was very low in most Member States. In six EU Member States, the number of dangerous goods accidents was between 1 and 10 accidents.

In only five Member States - Austria, Germany, Sweden, Spain and Lithuania – did their number exceed 10. In 2005 Austria reported 21 accidents involving dangerous goods. Different reporting practices may be one reason for differences between countries in Table 5.

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). The United Kingdom (2004), Spain, Lithuania, Germany (2004), France (2004), Estonia and Poland (2005) display values between zero and five accidents per billion tonne-kilometres of dangerous goods forwarded. The risk in Austria, Sweden, the Netherlands and Portugal appeared to be notably higher, between five and ten. Denmark is the only country that exceeded ten accidents per billion tkm of dangerous goods transported, being close to 24 accidents. However the risk in 2005 halved compared to the ratio registered in 2004.

Due to a low number of occurrences, these results should however be interpreted with caution.

➤ 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

CZ	Fatalities currently include suicides and some slightly injured people may be included as 'seriously injured'.
DK	Statistics use 10 000€ as a threshold for reported material damage accidents. Some slight injury accidents may be reported as serious injury accidents and some suicides may be included as rail fatalities.
CY	No railway transport
MT	No railway transport
LU	Data on traffic performance (train-kms) in 2005 are incomplete.
HU	In 2004 and 2005, Hungary still uses €40 000 as a threshold for 'significant material damage' but 2006 data will be based on the threshold of €150 000
UK	The number of fatalities (currently including or excluding suicides) may be subject to change depending on Coroner's verdicts that were not yet available.

In Table 5, the number of accidents and incidents involving dangerous goods (detailed definition can be found in ADR/RID agreement) seem suspiciously low for most countries.

Methodology

According to the Regulation 91/2003, during the first five years of application of this Regulation, Member States may report these statistics according to national definitions, if data conforming to harmonised definitions are not available.

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.

Others

As a category of victim, "others" includes, for example, level crossing users and trespassers.

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 Isabelle DELIN and Sandrine ENGEL.

Further information:

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

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