2011

Railway safety performance in the European Union

European Railway Agency

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List of abbreviations

ATP	Automatic train protection
CSI	Common safety indicator
CSM CA	Common safety method on conformity assessment
CSTs	Common safety targets
ECM	Entity in charge of maintenance
ERA	European Railway Agency
ERADIS	European Railway Agency Database of Interoperability and Safety
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
GDP	Gross domestic product
IM	Infrastructure manager
NIB	National investigation body
NRV	National reference value
NSA	National safety authority
RISC	Railway Interoperability and Safety Committee
RU	Railway undertaking
SMS	Safety management system
TSI	Technical specification for interoperability
VPC	Value of preventing a casualty
WTP	Willingness to pay

Foreword

This is the fourth annual report by the Agency on the development of railway safety in the European Union. According to the reported data, the year 2009 was the safest year on the EU's railways for both passengers and rail staff since 2006.

However, the shadows of two major accidents remain in the minds of people in Europe: the fire caused by the derailment of the freight train in Viareggio (Italy) in June 2009 and the head-on collision of two passenger trains in Buizingen (Belgium) in February 2010. Common to both, we still do not know the real causes of these two accidents, almost two years after Viareggio and more than a year after Buizingen. As the national investigation bodies, which are required by the railway safety directive to carry out independent investigations, have not yet published their final reports, the implementation of comprehensive improvement measures is in jeopardy. The reasons for this may be different in the two countries, but both cases indicate that in practice the safety regulatory framework, as set out in the railway safety directive, is not working well.

After the Buizingen accident the Agency carried out an assessment of the activities of the national safety authority (NSA) and the national investigation body (NIB) at the request of the Belgian Special Parliamentary Commission. The Agency is now seeking to build a framework for assessing both NSAs and NIBs, ultimately leading to the improvement of the organisational process and working practices that are crucial for assuring the high level of safety of European railways.

In addition to the accidents mentioned above and despite a positive trend in most safety indicators, there are some areas of railway safety which do not show improvements in the short term. Among them, fatalities of unauthorised persons and persons on level crossings may require additional attention by all relevant authorities.

The Agency has been working with national authorities to improve the quality of reporting on common safety indicators (CSIs). For the last time, the authorities could report CSI data to the Agency using their national definitions. This practice makes it impossible for the Agency to draw major conclusions from the data that have been available since 2006. The four-year time series is proof of the improvement in data quality achieved in cooperation with the Agency, and provides an indication of the positive development of railway safety in Europe.

In 2011, the second set of common safety targets (CSTs) will be proposed by the Agency, providing a new yardstick for the achievement of stringent safety objectives on European railways. New targets may be challenging given the continual changes on European railways; however, the Agency will be there to support Member States in meeting their safety goals.

Monitoring and analysing the safety of EU railways is a fundamental task for the Agency, providing feedback on the effectiveness of safety regulations in rail transport. Only by permanently evaluating management processes and safety outcomes, is it possible to maintain a high level of safety on European railways. Economic difficulties, which the EU has experienced in the last years, together with the continuous opening of the EU railway market bring additional pressure to bear on the assurance of safety in railway operations. The railway safety directive has brought to each Member State an institutional and regulatory framework which, if properly applied, will prevent safety from being jeopardised in turbulent times like these. Yet, many Member States are still not making use of the practical benefits of these frameworks, but see them only as formal requirements. The correct implementation of the existing regulatory frameworks is equally as important as their correct transposition. The Agency, as a guardian of railway safety in the EU, will therefore continue its work together with the NSAs and NIBs in this area.

Anders Lundström
Head of Safety Unit

Summary

Railways remain one of the safest modes of transport in the European Union (EU). Yet, some 1 400 people still die on EU railways each year; most of the fatalities are unauthorised persons and level-crossing users. Trends derived from the common safety indicators (CSIs) indicate an overall improvement in railway safety since 2006. Both the number of people killed and the number of seriously injured persons fell in 2009.

According to the CSI data provided by the national safety authorities (NSAs) to the Agency, 1 391 people were killed and 1 114 people were seriously injured in 3 073 railway accidents in 2009. These figures are by far the lowest among figures recorded since 2006.

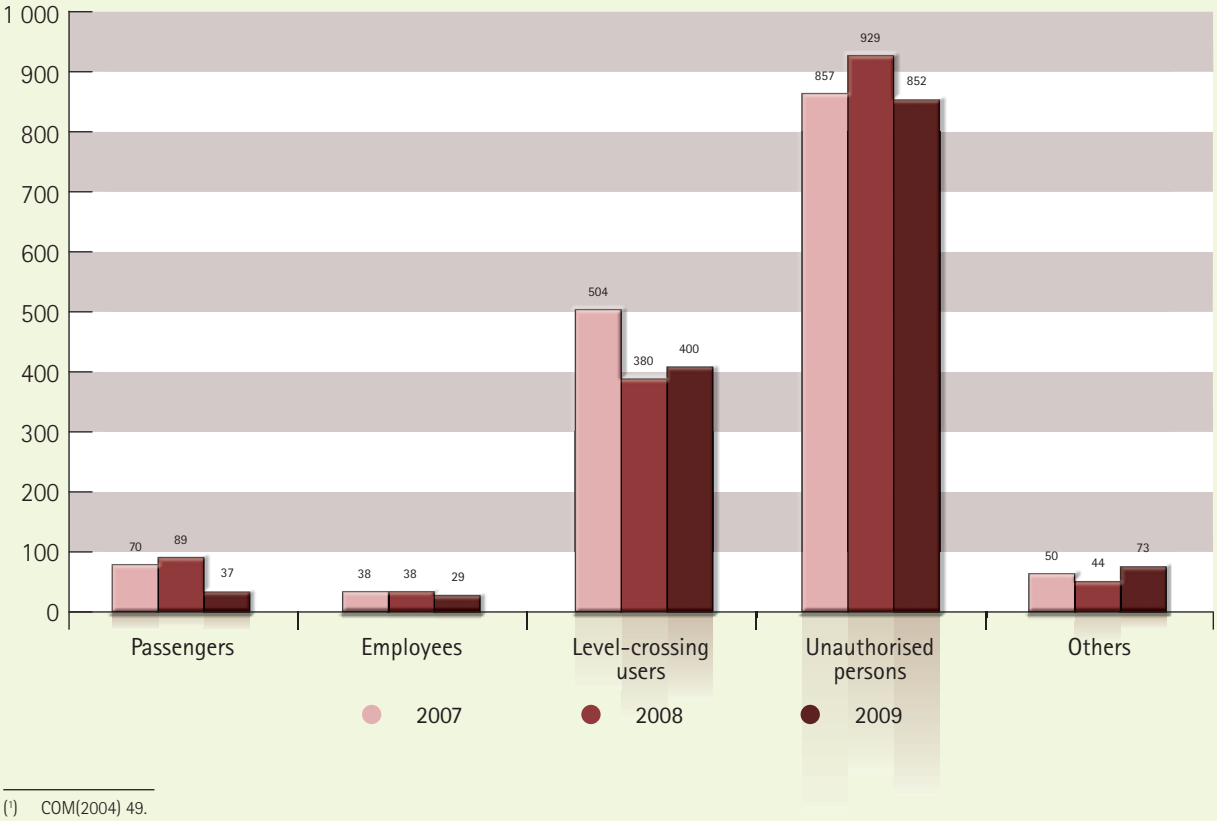
The national investigation bodies (NIBs) notified the Agency of 197 opened investigations of accidents and incidents that occurred during 2010. The Agency also received 210 investigation reports during 2009 covering accidents dating from 2006 and onwards.

The review of the NSA annual reports for 2009 shows that the number of safety certificates issued by NSAs to railway undertakings (RUs) has slightly increased. However, from the current status in the Agency's database, it appears that there are still a number of countries which have not yet issued any safety certificates, while in some other Member States a combination of new and old legislation is still being used. This is alarming, since from 1 January 2011 all RUs are required to have a safety certificate issued according to the railway safety directive ([1]).

Safety of railway users

Passenger and employee fatalities make up 5 % of all persons killed on European railways, suicides excluded. Single fatality accidents, such as unauthorised persons on railway premises being hit by rolling stock in motion or level-crossing accidents, form the major part of the fatalities. Collisions of trains, derailments and fires cause less than 3 % of the fatalities.

Figure 1: Number of fatalities for different categories of railway user (2007–2009)



([1]) COM(2004) 49.

The total number of passengers killed for the period from 2007 to 2009 is 196, a small figure compared with the total number of 4 390 persons killed on the railways. Some passenger fatalities occurred when passengers tried to embark or disembark from moving trains. The fluctuations in the number of reported fatalities of level-crossing users and unauthorised persons can be explained by changes in how the Member States classify these victims. Taken together, the reported numbers are stable during the period mentioned.

Level-crossing accidents

The number of level-crossing accidents constitutes a substantial share of the total number of accidents. Member States reported 1 284 level-crossing users killed in a total of 3 063 level-crossing accidents during the three years 2007–2009.

There are about 124 000 level crossings in the EU, so that on average there are 4 level crossings in each 10 km section of track. Only 41 % are equipped with either manual or automatic protection systems. The costs associated with upgrading level crossings are substantial, so that it will take some time for these figures to show significant improvement, unless more priority is given to reducing this risk.

Suicides on railway premises

The majority of fatalities on the EU railways are suicides. Over 2 700 suicides were recorded in 2009; more than seven per day on average. The consequences are not only trauma for all parties involved, but also significant costs because of delays, rescue services, police investigations, etc. There are now innovative countermeasures available. Fencing in urban and other strategic places is proving effective.

Unauthorised persons

The majority of the 852 unauthorised persons killed in 2009 were trespassers. These persons fail to realise the risk they are taking and the likelihood of fatal injury. Over 60 % of fatalities and 40 % of serious injuries happened to persons crossing or walking along tracks in unauthorised places; these numbers have not decreased over time. It can be difficult for the relevant authorities to determine whether the victim was a suicide or not; therefore these data need to be interpreted with caution.

Other accident victims

The Agency has noticed an increase in the number of accident victims classified as others in 2009. We consider that this is partly the result of improved reporting as well as an improved understanding of the complexity of accidents.

Reporting on serious and significant accidents

European legislation requires Member States to report to the Agency on serious accidents and significant accidents occurring on their territory. The national investigation body (NIB) must investigate all serious accidents, notify the Agency of these investigations and, when closed, send the investigation report to the Agency. The national safety authority (NSA) must report all significant accidents as one of the CSIs.

The legislation provides the following definitions for these two groups of accident; significant accident covers a wider range of events than serious accidents (Table 1).

Over the past three years, NIBs notified the Agency about 187 serious accidents, other accidents and incidents per year on average, while the NSAs reported on average 3 573 significant accidents per year (Table 2). Only 18 % of investigated occurrences were serious accidents as referred to in Article 19(1). Thus only one serious accident is investigated by a NIB out of 36 significant accidents reported by NSAs under the CSIs.

Some NIBs also investigate accidents and incidents other than those for which investigation is mandatory according to the railway safety directive.

Table 1: Accidents reported to the Agency according to EU legislation

Serious accident	Significant accident
Directive 2004/49/EC	Regulation (EC) No 91/2003 and Directive 2009/149/EC
'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.	'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. Significant damage is damage that is equivalent to EUR 150 000 or more.
Accident investigation by NIBs	Reporting of CSIs by NSAs
Within one week after the decision to open an investigation the investigating body shall inform the Agency thereof. The investigating body shall send the Agency a copy of the final report … normally not later than 12 months after the date of the occurrence ([2]).	Each year the safety authority shall publish an annual report concerning its activities in the preceding year and send it to the Agency by 30 September at the latest. The report shall contain information on: the development of railway safety, including an aggregation at Member State level of the CSIs laid down in Annex I ([3]).

Table 2: Yearly average number of events reported to the Agency (2007–2009)

National investigation bodies (NIBs)	National safety authorities (NSAs)
187 notifications of opened investigations	3 573 accidents and 16 139 precursors

([2]) Article 24 of the railway safety directive.
([3]) Article 18 of the railway safety directive.

Reporting by safety authorities

Reporting of accident statistics and indicators

The fourth set of common safety indicators (CSIs) was largely reported on time and with less need for correction than in previous years. The CSIs to be reported to the Agency are laid down and defined in Annex 1 of the railway safety directive. Member States are also required to report accident data to Eurostat. The revised Annex 1 of the railway safety directive was published on 27 November 2009 ([4]) and provides, for the first time, a set of safety indicators to be reported according to common definitions and calculation methods. The first reporting period has been specified as 2010; these CSI definitions will be applied when the NSAs report the 2010 CSI data to the Agency in 2011.

The work on improving data quality has continued in 2010 using a similar approach as developed in previous years and applied to the data reported for 2009. All the indicators have been checked for consistency and fluctuation, and a comparison with the Eurostat data has been carried out. For the first time a statistical test was applied to the data to determine whether the variations in the figures for 2006–2009 exceeded natural variation or not.

Data quality continues to improve; this year it has been possible to update some data reported in previous years; the CSI tables in the annex to this report replace the tables published in previous reports.

At the same time, the Agency has seen that the collection of CSI data has become more complicated in those countries where there are a large number of railway undertakings (RUs) and infrastructure managers (IMs). The NSAs in these countries may have limited control over the quality of data provided by the RUs and IMs.

Reporting by investigation bodies

Reporting of serious accidents and accident investigations

Independent accident investigation is a key element of learning lessons from accidents and incidents. Although all Member States established an investigation body, the Agency still has concerns as to whether the organisation and the procedures of the NIBs in some Member States comply with the requirements of the railway safety directive.

The directive requires the Member States to set up an independent accident investigation body that shall notify the Agency of any investigations opened, and to submit the full investigation report to the Agency when the investigation is closed. In 2010, the NIBs notified the Agency of 197 investigations opened and submitted 210 final investigation reports. The information is publicly available on the Agency's ERADIS database.

([4]) COM(2009) 149.

Platja de Castelldefels station in Spain
Source: Spanish NIB.

Safety performance

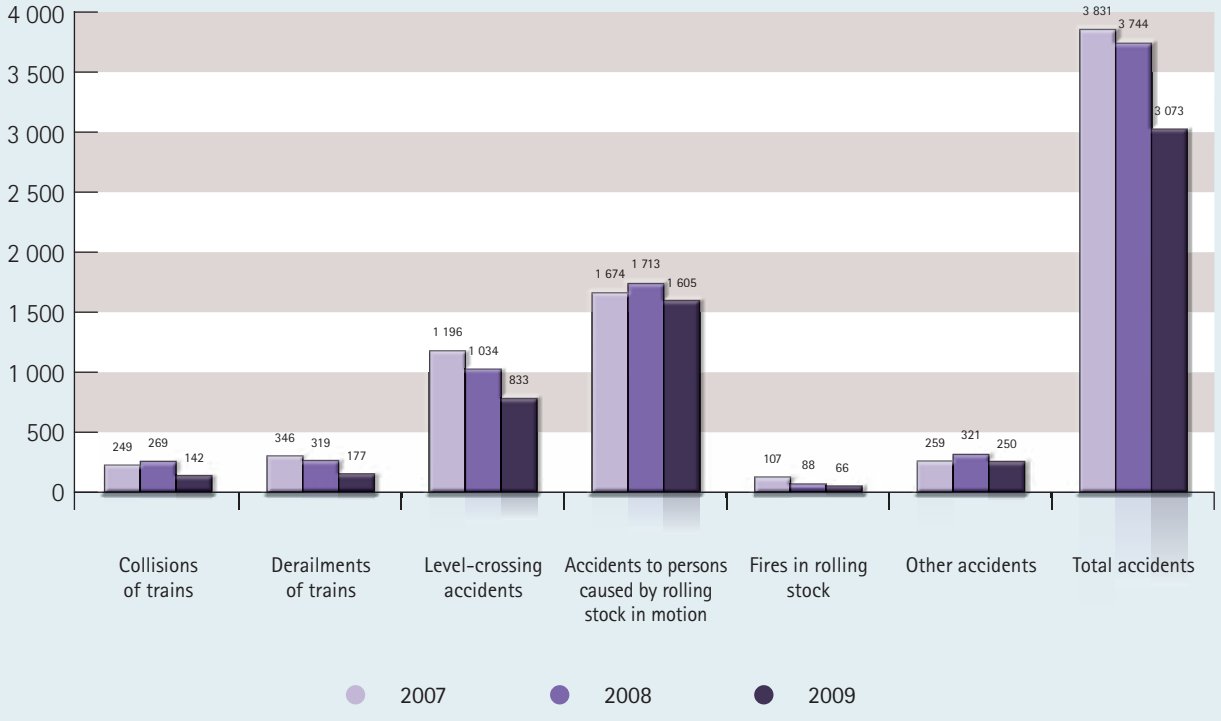
Railway accidents

More than 3 000 accidents are reported each year by the NSAs of EU Member States. Accidents to persons caused by rolling stock in motion and level-crossing accidents constitute around 75 % of the total number of accidents on the railways, suicides excluded. Figure 2 shows the number of significant accidents per accident type in the period from 2007 to 2009. For all accident types, the number of accidents in 2009 was lower than reported in the two preceding years. A clear downward trend over the period 2007–2009 can be observed for derailments of trains, level-crossing accidents and fires in rolling stock. The numbers of accidents to persons caused by rolling stock in motion and other accidents have been more stable over time. The reason for this could be that these types of accidents are less easy to prevent.

In 2009, 142 collisions of trains were reported, representing a significant drop in this type of accident in comparison with the two preceding years. Similarly the number of train derailments dropped significantly in 2009, to 177 reported events. The main reason is that in several countries shunting movements were previously reported under this category. Nevertheless, on average a derailment is reported every second day in the EU, causing significant traffic disruptions.

Over the past four years, there has been a sound reduction in the number of rail accidents in Europe, which could most likely be attributed to the systematic work of railway authorities, RUs and IMs in the field of safety. Even taking into account the 3 % drop in train-km as a result of the economic crisis hitting the EU in late 2008, the improvements in safety over the past years remain clearly visible. But vigilance is necessary, as an economic recession together with the market opening may have jeopardised safety investments.

Figure 2: Reported number of significant accidents per accident category (2007–2009)



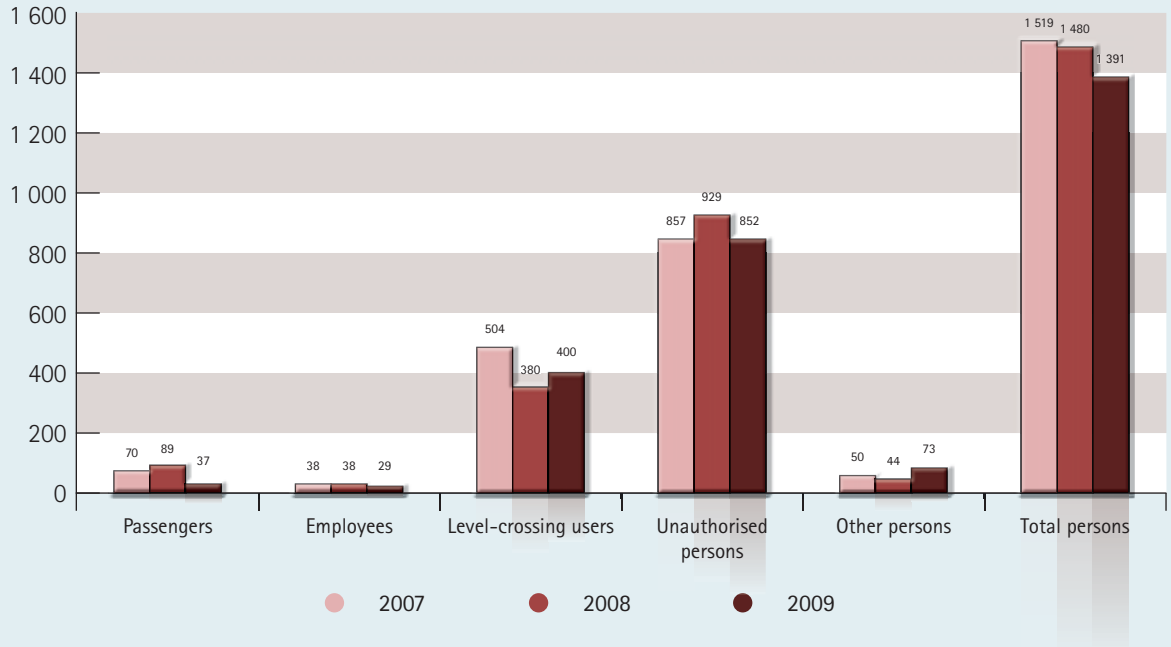
Fatalities and serious injuries

In parallel with the fall in railway accidents, the total number of fatalities, excluding suicides, has been decreasing steadily in recent years. There were slightly less than 1 400 fatalities in 2009. However, the seriousness of accidents seems to have worsened, since on average there were 45 fatalities per 100 accidents in 2009, compared with 40 fatalities per 100 accidents registered in the two previous years. It is not possible to say whether this is a trend or if it is a result of natural variation. A significant drop in casualties (fatalities and injuries together) has been registered in 2009. While the number of accidents decreased by 18 %, the number of fatalities fell by 6 % and the number of seriously injured persons dropped by 20 %. It has not been possible to establish why fatalities decreased to a lesser extent than serious accidents and serious injuries.

In Figure 3, showing the reported number of fatalities per victim type and year, there are big fluctuations in the reported numbers of fatalities among level-crossing users and unauthorised persons. However, by adding together the number of level-crossing fatalities and the fatalities of unauthorised persons, year by year, we obtain a series of 1 361, 1 309 and 1 252, which is a stable series of data. This may indicate that Member States are still in a learning process for classifying fatalities, and it is probable that this also applies for other indicators.

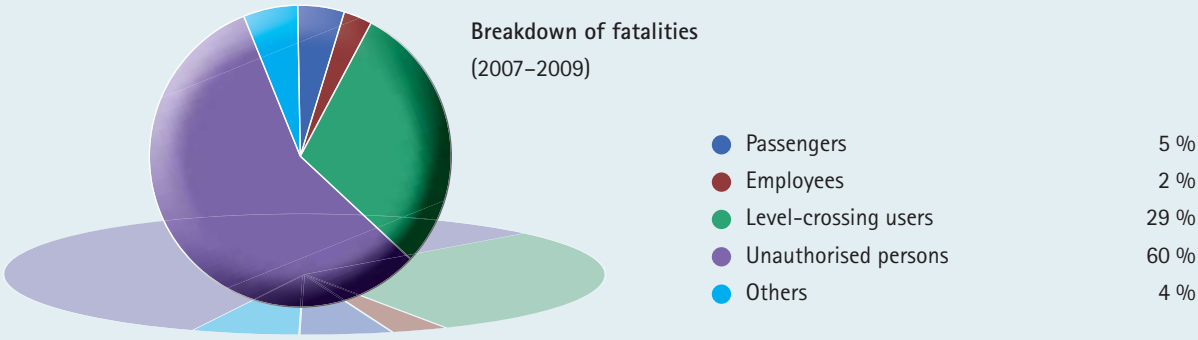
The total number of employee fatalities decreased from 38 in the three preceding years to 29 in 2009. The number of passenger fatalities dropped to 37. So, for the first time, the number of employee fatalities was below 30, and the number of passenger fatalities was less than 40 in one year. Although 400 level-crossing users died in level-crossing accidents in 2009 (29 % of all railway accident fatalities), this represented only 1.2 % of all road user fatalities. Level-crossing safety might therefore be perceived as a marginal problem by the road sector, while it is a key problem for the railway — also because of its impact on railway operation.

Figure 3: Reported number of fatalities per victim category (2007–2009)



The majority of the reported fatalities are unauthorised persons and level-crossing users. This is shown in Figure 4, which also reveals that the most common accident is that of an unauthorised person hit by rolling stock in motion. Passenger fatalities account for less than 5 % of the total number of deaths on railways. Some 2 % of all fatalities on railways are employees.

Figure 4. Fatalities per victim type (2007–2009)



In addition to persons killed on railways, a large number of persons are seriously injured each year. In 2009, 1 114 persons were seriously injured, a 20 % drop in comparison with the two previous years (Figure 5). This drop is mainly driven by significant decreases in injury to employees and level-crossing users. The reported number of other persons seriously injured increased substantially in 2009, reflecting one single accident at Viareggio that led to 32 fatalities and 27 serious injuries among the population living in the vicinity of the crash site.

Figure 5: Reported number of serious injuries per victim category (2007–2009)

Similarly, as in previous years, a number of NSAs have reported changes in their reporting procedures or the definitions applied in the data collection. These are reflected in several figures such as Figure 5. For serious injuries, the reported numbers of injured passengers and unauthorised persons for the period from 2007 to 2009 show large variations beyond what might be expected from natural fluctuation.

Over the period 2007–2009 there were four seriously injured passengers per one killed passenger while the numbers of all seriously and fatally injured persons were on equal level. At the same time, there were two fatally injured unauthorised persons per one seriously injured person in the same category of victims. This reflects the vulnerability of persons when hit by a train, on the one hand, and the difference in the chance of survival for passengers and trespassers on the other hand.

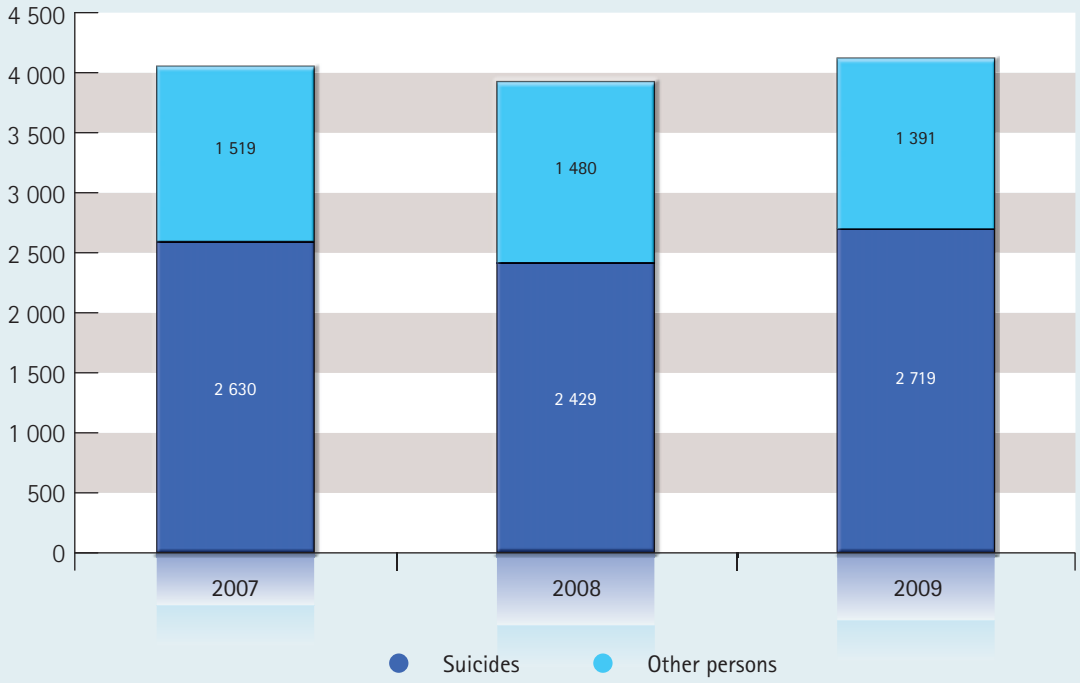
The slight decrease in the number of victims in recent years, rail passengers in particular, is promising. The corresponding risk level for passengers in terms of victims per passenger-km has been decreasing at the same pace, as the volume of passengers has not changed over time.

Suicides

Suicides are reported separately from accident fatalities. Suicides represent 66 % of all fatalities and, together with the unauthorised person fatalities, constitute 72 % of all fatalities occurring within the railway system. No trend can be derived from the available data, but as it appears, the number of suicides registered in 2009 is the highest value reported to the Agency (Figure 6).

The Member States use different methods for establishing whether a fatality is a suicide or not. The revised Annex 1 and its guidance will lead to a more harmonised approach to classifying suicides.

Figure 6. Suicides and other fatalities (2007–2009)



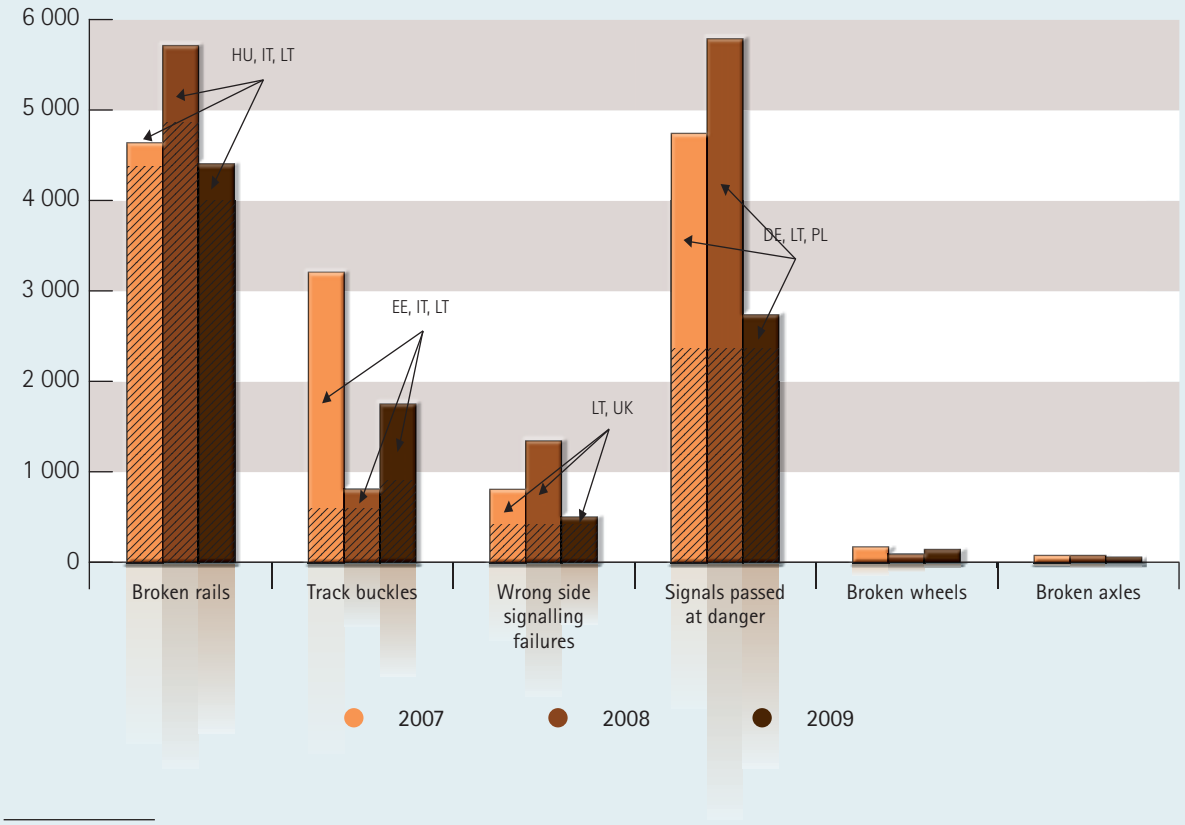
Precursors to accidents

Given the fact that accidents on railways are rare, the monitoring of less serious events occurring on railways is an essential tool in a proactive safety management system (SMS). 'Precursors to accidents' are indicators measuring incidents that under other circumstances could have led to an accident. There are indicators for broken rails, track buckles, signals passed at danger, wrong-side signalling failures, broken wheels and broken axles (Figure 7). Over the period 2007–2009, Member States reported as many as 4.5 precursors per one significant accident. This gives an impression of the learning potential in monitoring them.

The reported number of **track buckles** shows substantial variations over time and it seems impossible to determine any underlying patterns for groups of countries. As a matter of fact, developments observed at country level vary greatly. Unusual weather conditions give a natural variation in the number of track buckles. The use of data quality control has, however, revealed that the observed variation in some Member States is the result of changes in reporting practice.

The number of **broken rails** is also sensitive to the weather conditions and may not fully reflect the quality of work done by IMs. The incidence of broken rails decreased substantially in 2009, but this fall most likely reflects drops in the number of broken rails registered in individual countries such as Poland (from 2 396 in 2008 to 1 506 in 2009) and Hungary (from 716 in 2008 to 10 in 2009). Since 2009, Poland has only reported broken rails causing a disruption to railway traffic.

Figure 7: Accident precursors in all countries and in the subsets of countries (2007–2009) ([5])



([5]) Besides excluding some countries due to changes in definitions, Austria is not included in the dataset for broken rails and Greece for track buckles, as they did not report relevant data for the entire period.

The drop in the number of **wrong-side signalling failures** from 1 458 in 2008 to 514 in 2009 is driven by the data for the UK, which contained only 6 events in 2009, compared with 901 events in 2008. The UK decided to apply predefined thresholds for certain precursors to avoid reporting less serious incidents. For example, the UK figures for **signals passed at danger** only refer to those cases when an infrastructure fault led to a signal displaying an aspect less restrictive than it should. This excludes all cases resulting from wrong-side track circuit, point, level-crossing and other failures.

To conclude, reporting of precursors remains a difficult task for Member States for two major reasons: legal definitions in force leave a relatively large space for interpretation and NSAs have difficulties in obtaining data from relevant stakeholders. When aggregating data only for those countries which have not changed their scope of reporting, a stable series can be seen (Figure 7). Given the learning potential of a regular analysis of precursors, the Agency will also in the future focus attention on the correct reporting of these events.

The survey on national definitions of broken wheels and axles, performed by the Agency in 2009, showed that most NSAs only reported cracks in wheels and axles that led to accidents. Only one country, Germany, included cracks detected during regular maintenance, which is in accordance with the guidance for the revised Annex 1 of the railway safety directive. Germany reported three cracks that led to accidents in 2008, and a total of 752 cracks detected. This means that the figures reported for broken wheels and axles, displayed in Figure 7, only reveal part of the situation. The survey also showed that problems with hot boxes are of more concern than cracks in wheels and axles.

Accident costs and other CSIs

The data on the cost of accidents show wide variation and it is evident to the Agency that the Member States have problems in establishing reporting regimes for accident cost data. The revised Annex 1 of the railway safety directive will require the NSAs to use the willingness-to-pay approach based on estimates of the 'value of preventing a casualty' (VPC). They can either estimate a national value or use the reference values given in the Agency's guidance. It is believed that this will simplify the work for the Member States and will lead to a consistent and harmonised approach. Using the CSI data for 2007–2009 and fall-back values of costs for fatality and serious injury updated with GDP data, the Agency has made a calculation of accident costs.

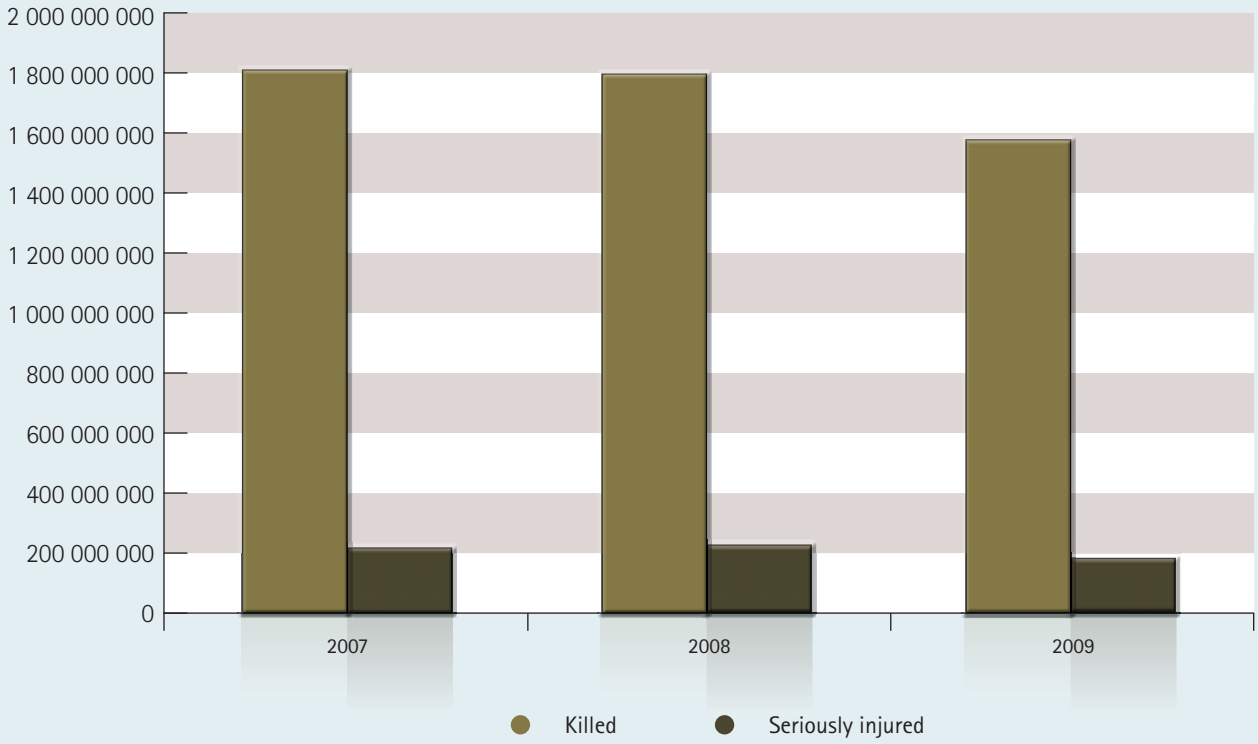
Costs for preventing casualties (fatalities and serious injuries) were calculated for the past years as shown in Figure 8. By adding the national values together, we obtain a value of EUR 2 billion representing the economic burden of rail casualties in 2009 for all Member States.

The value of preventing a casualty (VPC) is composed of:

(1) value of safety per se: willingness-to-pay (WTP) values based on stated preference studies carried out in the Member State for which they are applied;

(2) direct and indirect economic costs: cost values appraised in the Member State, composed of medical and rehabilitation cost; legal court cost, cost for police, private crash investigations, the emergency service and administrative costs of insurance; production losses: value to society of goods and services that could have been produced by the person if the accident had not occurred.

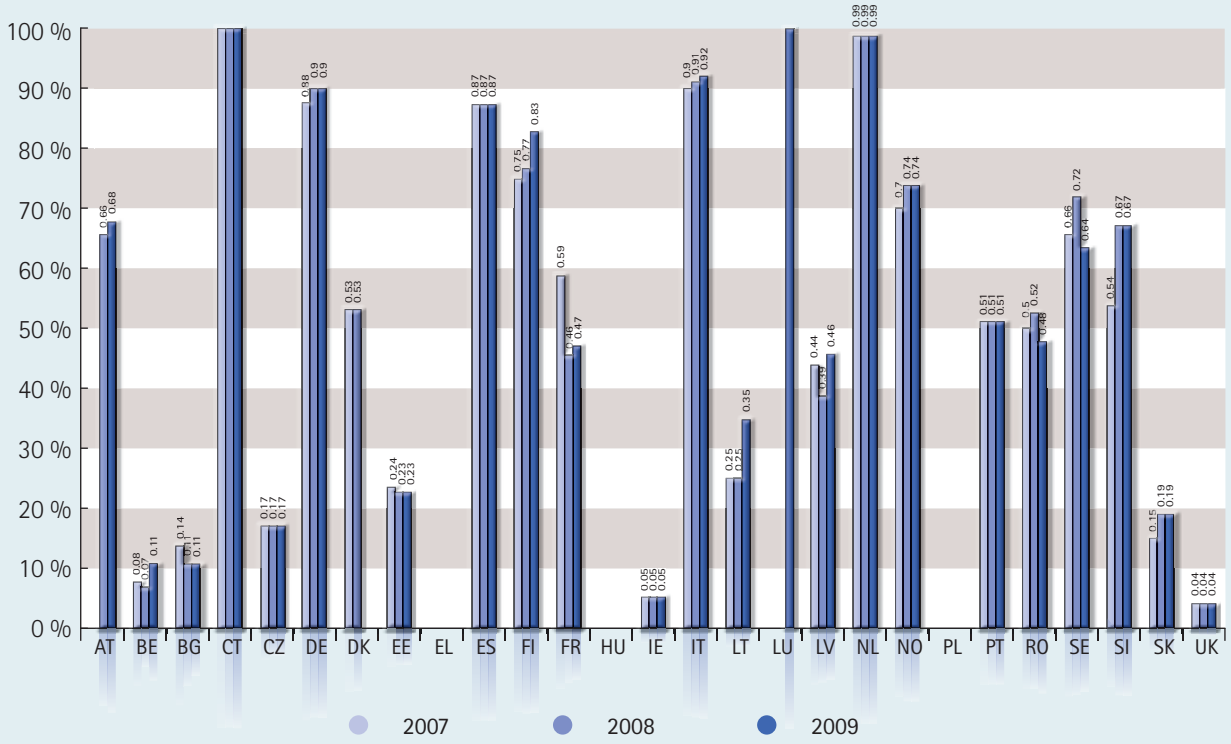
Figure 8: Values of preventing casualties in euros (2007–2009)



Infrastructure

Three CSIs concern railway infrastructure: one is a measure of the coverage of automatic train protection (ATP) systems on the lines; the second is the number of level crossings, normalised by the length of the network expressed in track-km; and the third gives information on the level of protection at level crossings.

Figure 9: Percentage of tracks equipped with automatic train protection (2007–2009) ([6])



In 2008 (the data are more complete for this year), 58 % of tracks were fitted with ATP in the EU ([7]). A relatively high density of protection is typical in countries with extensive track usage such as the Netherlands, Italy and Germany. This can be seen in Figure 9.

In order to overcome the slow process towards interoperability, a new ATP system has been promoted by the European Commission. The European Train Control System (ETCS) is based on cab signalling together with spot and/or continuous track to train data transmission. It ensures trains operate safely at all times by providing a safe movement authority directly to the driver through the on-board driver's display and by continuously monitoring train speed.

Automatic train protection

Definition

Automatic train protection (ATP) means a system that enforces obedience to signals and speed restrictions by speed supervision, including automatic stop at signals.

Guidance

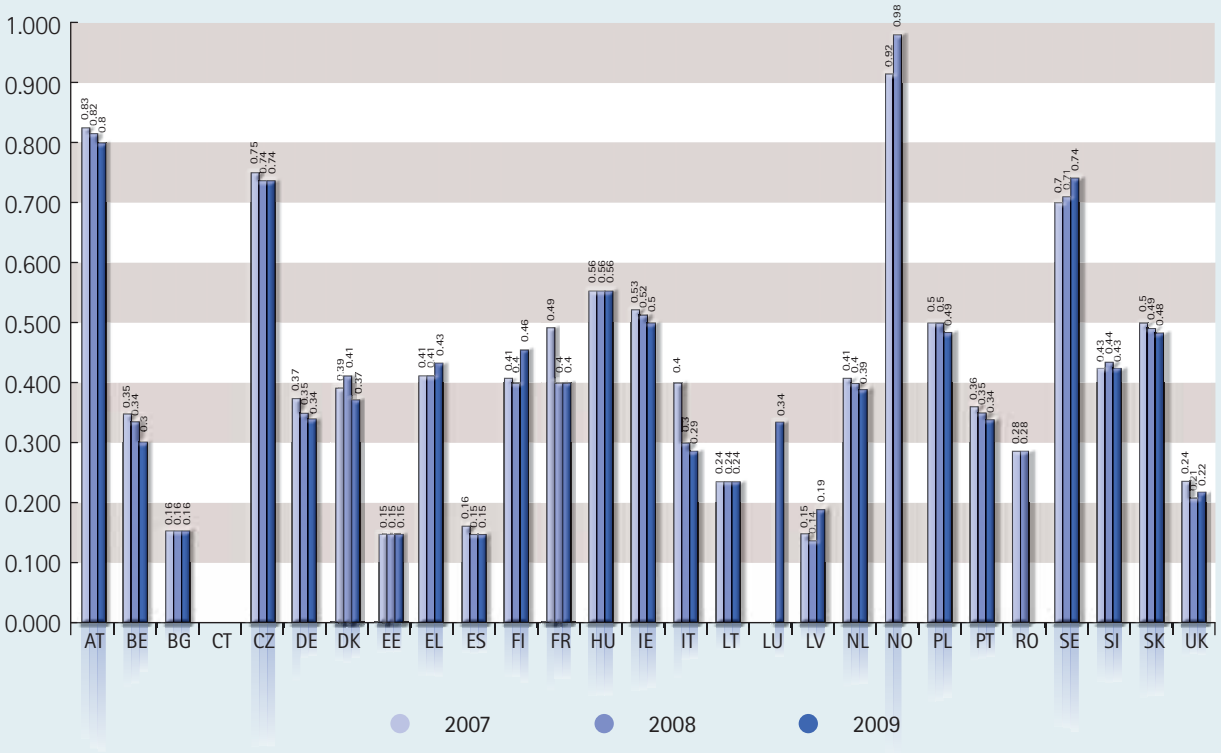
Systems where track signalling information is substituted and/or supplemented by cab signalling are included. The part of the definition relating to 'automatic stop at signals' is intended to include also automatic stops at conflict points between clearance gauges.

([6]) CT is the abbreviation for Channel Tunnel

([7]) Exact value 57.7 % for EU-27 excluding Greece, Hungary, Luxembourg, Poland.

The ETCS together with GSM-R, a GSM mobile communications standard for railway operations, are the two main components of the European Rail Traffic Management System (ERTMS). The ERTMS has been a success worldwide, but its implementation on EU railways is a lengthy process because of the high cost.

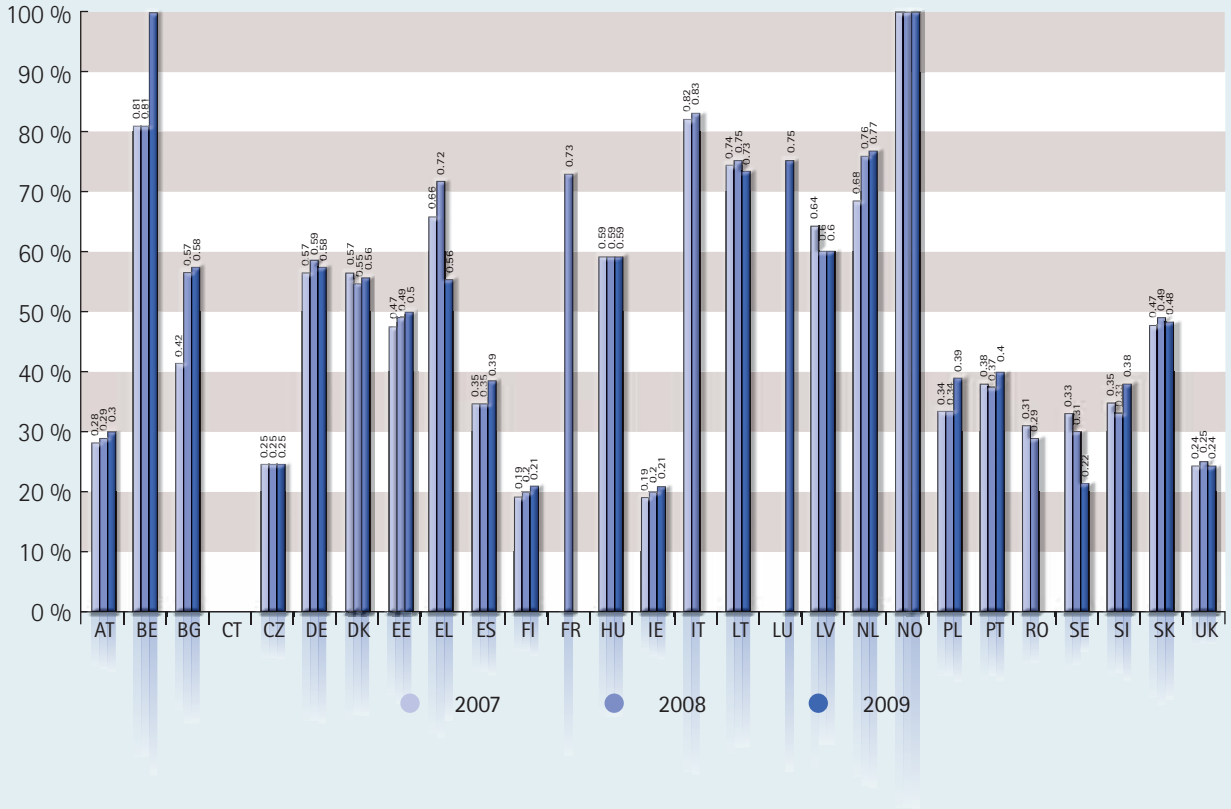
Figure 10: Number of level crossings per track-km (2007–2009)



On average, there are 4 level crossings per 10 track-km in the EU ([8]); only 31 % are equipped with some form of manual or automatic protection ([9]). The highest density of level crossings can be found in Scandinavian countries and in some central European countries (Figure 10). The lowest density is seen in east European countries and Spain. The proportion of level crossings equipped with automatic or manual protection varies greatly between countries (Figure 11). Only in four countries (Belgium, Luxembourg, Norway and the Netherlands) are more than three quarters of all level crossings equipped with manual or automatic protection. In six countries (Bulgaria, Estonia, Spain, Lithuania, Latvia and the United Kingdom) less than 25 % of level crossings are protected.

([8]) Exact figure for 2009 is 0.392 level crossings per track-km in EU countries excluding Romania and Luxembourg.
([9]) Exact figure for 2009 is 0.413 (41.3 %) for EU countries excluding France, Italy and Portugal.

Figure 11: Percentage of level crossings with automatic or manual protection (2007–2009)



Traffic volumes

There are two measures of rail traffic performance that are available for statistical purposes. The number of passenger-kilometres and the number of train-kilometres. While the number of passenger-km at the EU level has remained constant over the past three years, the number of train-km dropped by 3 % in 2009 in comparison with 2008, most likely as a result of the economic crisis.

Four countries with the highest passenger volumes (Germany, France, Italy and the UK) alone account for two thirds of all passenger-km ([10]). Only Belgium, France, the Netherlands and Portugal managed to sustain growth in rail passenger volume over the past three years. In Figure 13, the total number of train-km — both freight and passenger train-km combined — is shown. This should be kept in mind when comparing values shown in Figures 12 and 13.

([10]) Exact value for 2009 is 67 % (excluding Channel Tunnel).

Figure 12: Number of million passenger-km (2007–2009)

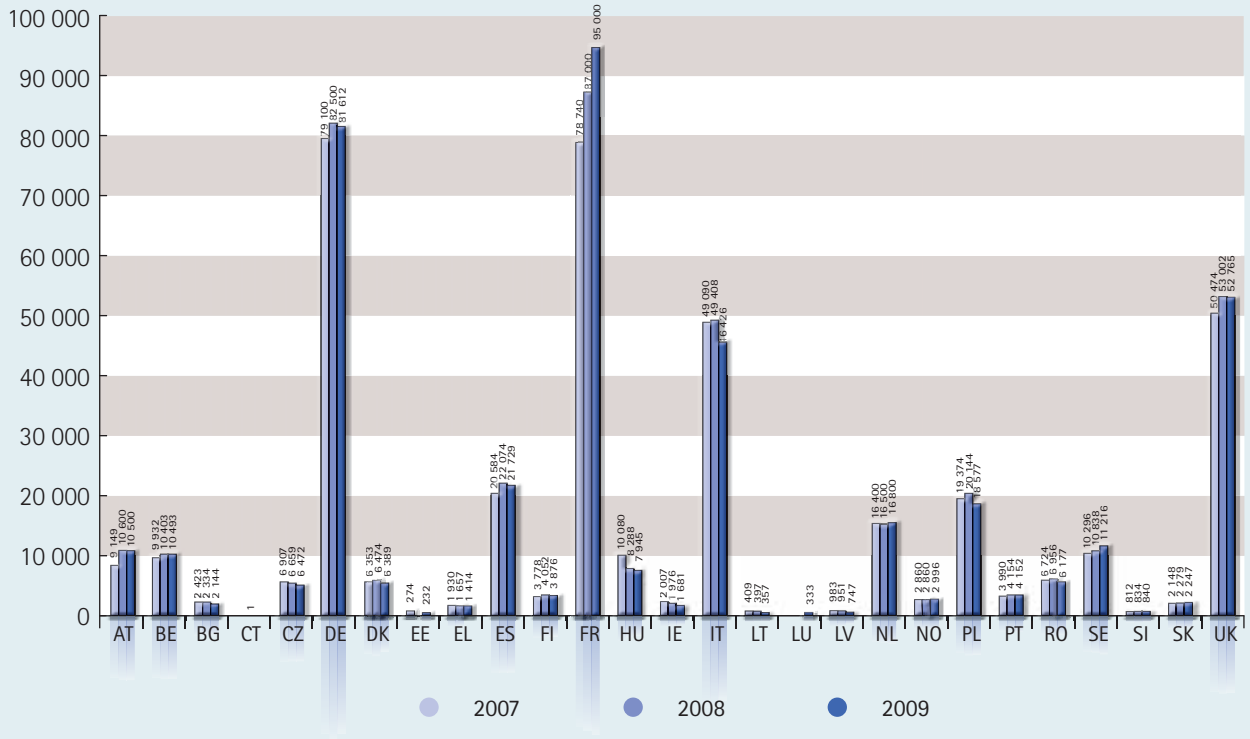
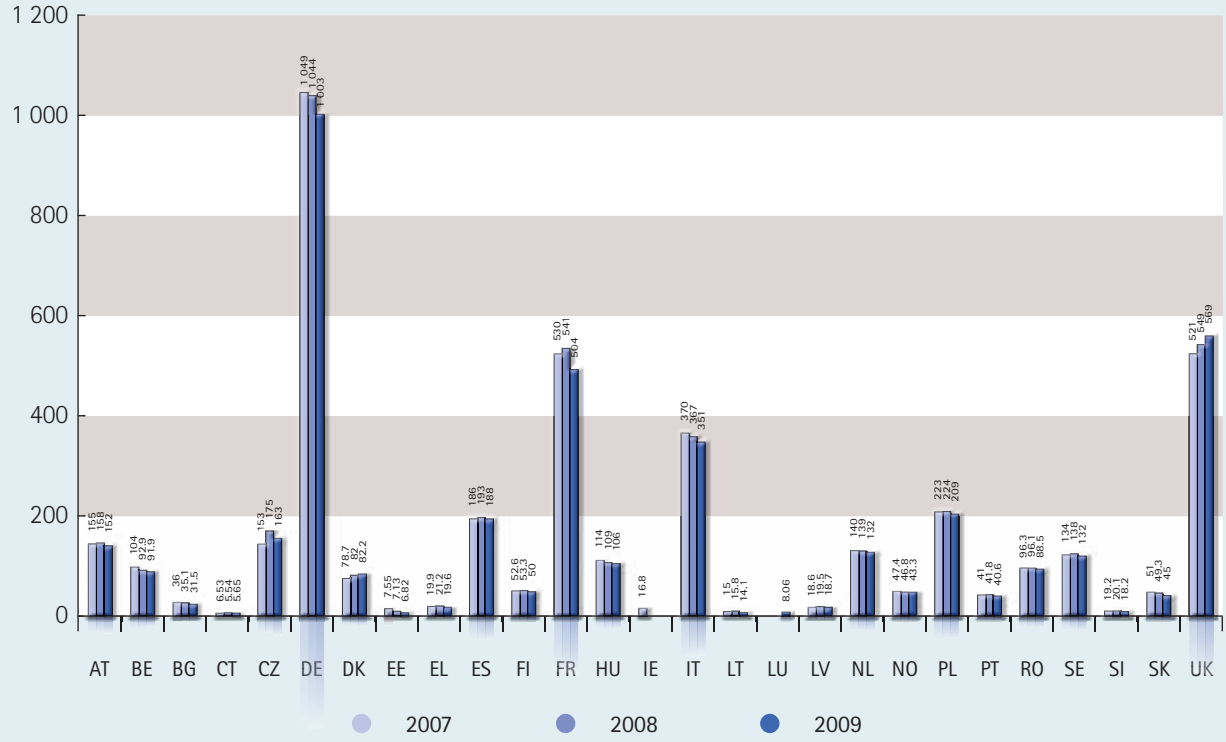


Figure 13: Number of million train-km (2007–2009)



Reporting accidents by the investigation bodies

National investigation bodies have a legal obligation to report the investigation of serious railway accidents to the Agency. Each accident is reported twice: as a notification of the opening of an investigation and when the final report is sent to the Agency. Both records are available to the public in the Agency's public database of safety documents, ERADIS.

The Agency receives notifications for a majority of the serious accidents, although the notification of their occurrence is not always sent within one week after the decision to investigate. The compliance of Member States with the requirements for the notification and submission of final reports has been improving over time. In 2010, just over one third of notifications to investigate were in fact submitted within one week after the occurrence of the accident; an improvement compared with 18 % in 2008. As the Agency does not yet systematically receive information on the starting date of the investigations, the date of the accident occurrence is used as a reference. It should be noted that the time between the occurrence and the decision to investigate can, in certain cases, be longer than a week.

The average number of days between the accident occurrence and the notification to investigate to the Agency has been decreasing over time: in 2008, it was 82 days, in 2009, 51 days, and in 2010, 37 days. This is a promising trend that will hopefully be sustained.

The final investigation reports should be made public as soon as possible, and normally not later than one year after the date of the occurrence. The average number of months before the final report is submitted to the Agency has also been decreasing over time, from more than 17 months for accidents occurring in 2007, to less than 10 months for accidents occurring in 2009. This significant progress made by NIBs is illustrated in Figure 14.

For some 5 % of notified accidents, the Agency did not receive the final investigation report by the end of 2010. Some Member States report that this is due to a lack of resources. The average number of days between the accident occurrence and the submission of the final report was 325 days for accidents that occurred in 2009. Figure 15 summarises the progress in timely reporting that has been achieved by NIBs.

Legal obligation to report serious accidents to ERA

The railway safety directive contains the requirement on Member States to report on accident investigations to the European Railway Agency.

Within one week after the decision to open an investigation the investigation body shall inform the Agency thereof.

The investigation body shall send the Agency a copy of the final investigation report.

Article 24(1)(2) of Directive 2004/49/EC

Figure 14: Average number of months for submission of final report (2007–2009)

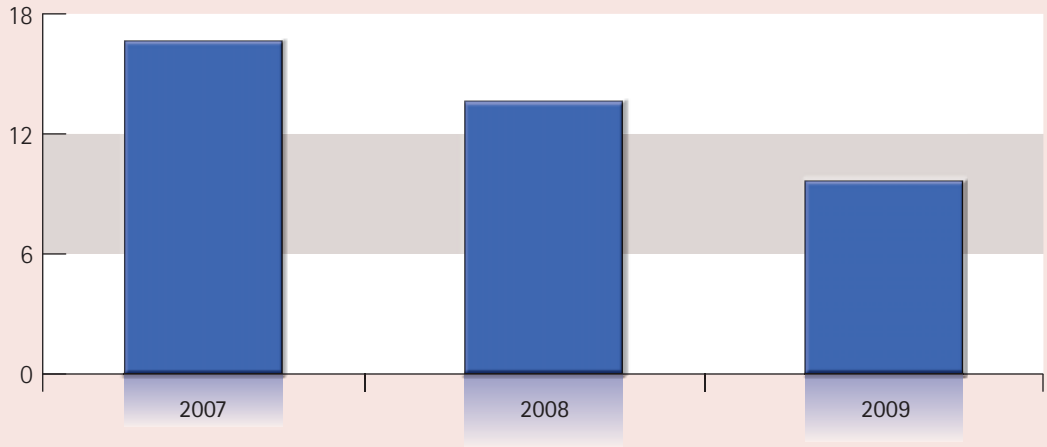
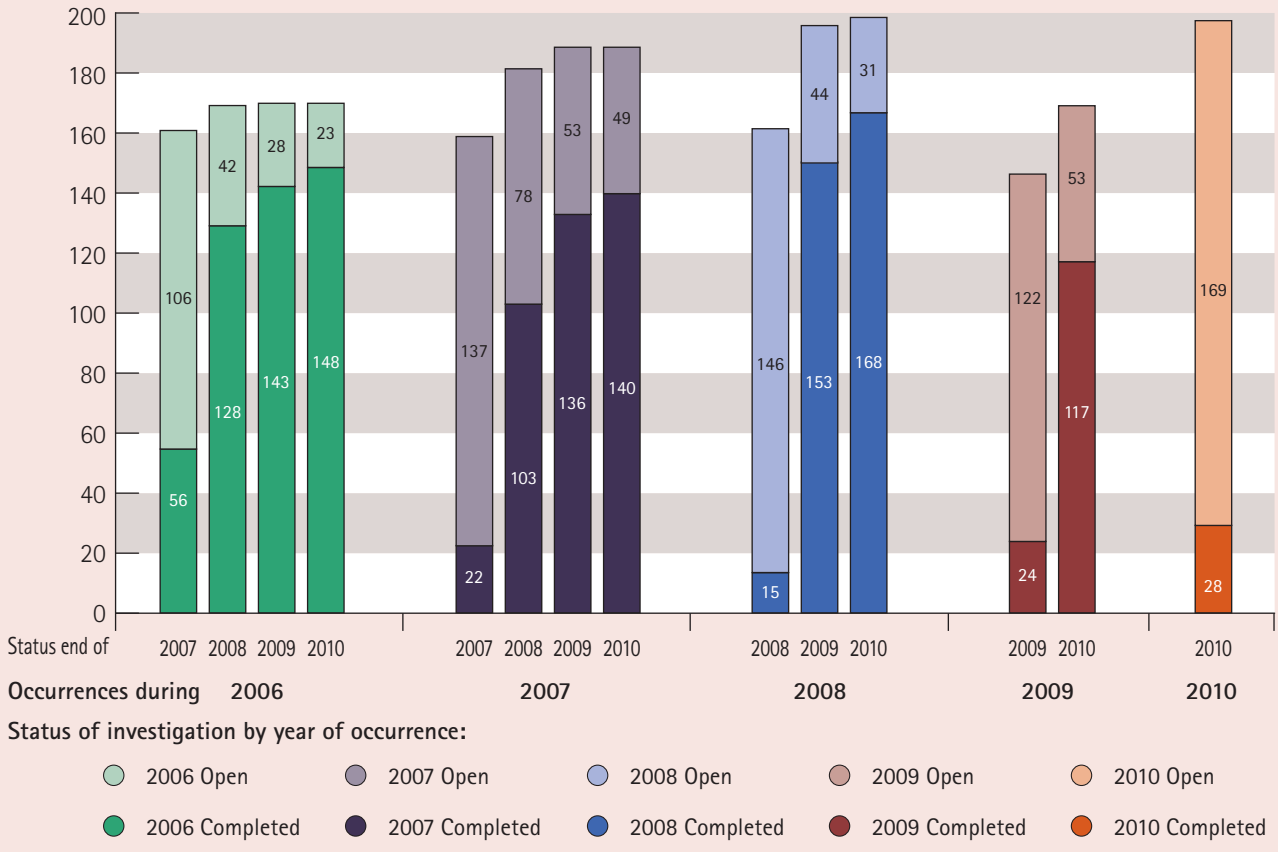


Table 3: Average time span between accident notification and the submission of the final investigation report to the Agency (in days) (2008–2010)

Average number of days between occurrence and ...	2008	2009	2010
... notification	82	51	37
... final investigation report	571	428	325

Accidents and incidents have been reported to the Agency since 2006. Each year the Agency has received notifications of at least 150 occurrences investigated by NIBs. Around 15 % of the final investigation reports reached the Agency by the end of the year in which the accident occurred. An overwhelming majority of final reports are submitted to the Agency in the year following the occurrence of the accident. For example, for occurrences in 2009, 24 were closed and the report submitted to the Agency by the end of 2009. During 2010, the final investigation report was received for 117 out of the 170 occurrences in 2009 (red bars in Figure 15). By the end of 2010, 28 out of 197 investigations opened during the year were closed, i.e. 14 % of investigations; this is similar to previous years.

Figure 15: Overview of reporting of accidents and incidents by NIBs to the Agency



NIB annual reports

The NIBs are required to send an annual report to the Agency. In the course of 2010, the Agency received 23 annual reports for the year 2009. The reports show large variation in the number of investigations opened by NIBs; during 2009, the numbers ranged from 0 to more than 15, and the number of recommendations issued following the investigation ranged from 0 to over 20.

Major EU rail accidents in 2010

There have been more than 100 serious rail accidents on European railways over the past three years. Accidents in which people die do not usually escape the attention of the national media; this acts as a warning to both the authorities and the public about the potential vulnerability of the railway transport system. In the following section we summarise some of the serious rail accidents reported to the Agency by the NIBs that occurred in the EU Member States during 2010. The criteria for inclusion in this section are: seriousness of outcomes, date of occurrence (between 1 January 2010 and 31 December 2010) and relevance to EU regulations. Single accidents are ordered according to the number of casualties.

Only a short summary of the information available is presented. More information about the accidents can be found in the Agency's database of rail accidents, ERADIS (http://pdb.era.europa.eu).

Event:	Head-on collision between trains
Date, time and location:	15 February 2010, 08:28, Buizingen (Belgium)
Outcome:	18 fatalities, 83 serious injuries

In the morning rush hour of 15 February 2010, two passenger trains collided at Buizingen station, 2 km north of Halle in Belgium. The accident forced one train to plough deep into the front carriage of the other, ripping open and totally destroying another carriage. There were some 300 passengers on the two trains and the accident caused the death of 18 people and a total of 171 injured ([11]).

The devastation at the accident scene was enormous and there was also substantial damage to the overhead power lines, as two of the carriages were forced up into the air by the collision.

Image 1. Train collision at Buizingen station, Belgium
Source : Belgian NIB.

([11]) These figures differ slightly from the initial values, which were also given in the Agency's 2010 Safety Performance Report. The final figures were communicated to the Agency in late 2010.

Event:	Accident to unauthorised persons
Date, time and location:	23 June 2010, 23:23, Platja de Castelldefels (Spain)
Outcome:	12 fatalities, 10 serious injuries

A long-distance passenger train travelling at a speed of 140 km/h hit people crossing the tracks at the Platja de Castelldefels station on the outskirts of Barcelona, causing 12 fatalities, 10 serious injuries and 7 slight injuries. The people hit were passengers who had got off the commuter train and were heading for the beach. The commuter train had been delayed by 10 minutes – had it been running on schedule, the accident would most likely not have happened. Many people had been expected to gather on the beach nearby to celebrate St John's Eve (mid-summer), particularly as there was a public holiday the following day.

Image 2. Accident to unauthorised persons at Castelldefels station
Source: Spanish NIB.

Police officers were present at the station as a planned measure. The disembarking passengers started to cross the double tracks from behind the end of the train. The investigation has not found any failure relating to the infrastructure, the rolling stock or the train driver's behaviour. The layout of the station had been redesigned in November 2009; two weeks earlier the existing footbridge over the tracks was closed and replaced with an underpass. Presumably, some people had not known that the footbridge had been replaced by the underpass, or had not noticed the exit signs, so they crossed the tracks.

Event:	Train collision
Date, time and location:	13 July 2010, 09:12, Kępice–Korzybie (Poland)
Outcome:	13 serious injuries, considerable material damage

A head-on collision between a passenger train and a freight train occurred on a single-track non-electrified line between Kępice and Korzybie. According to the initial results of the investigation, the passenger train left Korzybie station without permission, which led to a head-on collision with the freight train approaching the station. As a consequence of the accident, 13 persons were seriously injured, and 2 locomotives and 4 wagons were damaged. The collision took place about 500 m from Korzybie station, so fortunately the speed of both trains was below the speed permitted at the section. After the accident, railway traffic was stopped for 16 hours.

Image 3. Collision of trains close to Kępice
Source: Polish NIB.

Taking into account the seriousness of the accident and the fact that the safety systems were not working correctly on the line, the head of NIB Poland decided to investigate this serious accident using a team of independent investigators. Shortly after the accident, some provisional safety recommendations were issued by NIB Poland concerning the organisation of railway traffic on the line in order to improve safety.

Event:	Train derailment with consequent collision with obstacle
Date, time and location:	28 June 2010, 16:43, Ustí nad Labem (Czech Republic)
Outcome:	1 fatality, 7 serious injuries

Three carriages of passenger train No 2316 derailed on the switch at the approach to Ustí nad Labem station and hit a concrete wall. The accident occurred on the main transit line between the Prague and Decín stations.

The train driver did not reduce speed according to the entry signal and passed over the switch at a speed of 117 km/h instead of 50 km/h.

The whole electric unit derailed and crashed into a concrete wall. The train driver died in the crash and seven passengers were seriously injured.

The total material damage was CZK 70 914 339 (over EUR 2.8 million).

Image 4. Train collision at Ustí nad Labem station, Czech Republic
Source: Czech NIB.

Event:	Train collision
Date, time and location:	1 April 2010, 11:34, Spišská Nová Ves (Slovakia)
Outcome:	3 fatalities, 1 serious injury

A shunting locomotive hit the last, empty wagon of a passenger train ready for departure at Spišská Nová Ves station. Preliminary investigation findings indicate that the shunting locomotive was at this time performing a dynamic braking test and should have been running at a maximum speed of 40 km/h. At a switch, it unexpectedly changed direction, but surprisingly did not derail, despite running at a much higher speed than permitted.

There were six persons in the cab, possibly obstructing the view of the driver and reducing his ability to react. The cab occupants may also have fallen to the floor as the train passed over the switch, further adding to the reaction time of the driver.

Image 5. Train collision in Spišská Nová Ves station
Source: Slovakian NIB.

Event:	Train collision with a mechanical digger
Date, time and location:	12 September 2010, Kimstad (Sweden)
Outcome:	1 fatality, 2 serious injuries, major damage to train

A high-speed X2000 train collided with a mechanical digger which was on a track undergoing maintenance works. The collision occurred at a speed of 129 km/h.

The investigation of the accident by the NIB is still under way; the first indications show that the cause of the accident was insufficient planning and risk analysis of the maintenance works involving the use of the digger on the track.

Image 6. Train collision with a mechanical digger in Kimstad station
Source: Swedish NIB.

Event:	Level-crossing accident
Date, time and location:	15 April 2010, 11:32, Chintulovo (Bulgaria)
Outcome:	2 fatalities, 1 serious injury

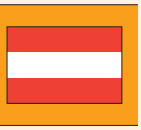
A rather frequent type of level-crossing accident occurred involving a taxi and a passenger train travelling from Karlovo to Burgas. Despite the red-light signals, the car did not stop before the crossing and was hit by the oncoming train. All car passengers were injured, two of them fatally.

Some 400 level-crossing users are killed each year in the EU and it is quite common to register level-crossing accidents involving a large number of passengers in buses. In 2009, however, no such accident was reported.

According to the requirements of the railway safety directive, level-crossing accidents do not have to be investigated by NIBs, but a large number of them investigate and report them to the Agency, as in total they often lead to a relatively high number of casualties at national level.

Image 7. Level-crossing accident by Chintulovo
Source: Bulgarian NIB.

Event:	Derailment of a freight train
Date, time and location:	16 June 2010, 03:07, Braz (Austria)
Outcome:	1 serious injury, damage estimated at EUR 6.5 million



On the late spring night of 16 June a runaway freight train passing through the Braz railway station derailed. The locomotive and 13 carriages crashed into the nearby gardens. The train consisted of 16 cars owned by a French operator and transported newly-assembled passenger cars from Romania to France. The cause of this accident was a failure in the braking system resulting from the loss of a rope, which ensures the safe positioning of the brake air-line. The safety rope had fallen off, because it had not been attached properly.

While this accident only resulted in a slight injury to the train driver, its toll could have been much higher under slightly different circumstances.

Image 8. Derailment of a freight train in Braz station
Source: Austrian NIB.

Event:	Freight train collision and fire
Date, time and location:	8 November 2010, 05:30, Białystok (Poland)
Outcome:	No personal injuries, considerable material damage

A spectacular collision of two freight trains transporting petroleum products occurred at Białystok railway station, resulting in a massive explosion. According to the initial results of the investigation, the first train passed the stop signal when it entered the station, and hit the second train, which was leaving the station. The collision occurred on a switch and led to the derailment of both trains. There were no injuries, despite the fact that the fire also engulfed one of the locomotives. The material damage was considerable and the explosion was truly spectacular and visible from afar.

This accident was a reminder of the derailment of the freight train in Viareggio in 2009 that resulted in an explosion of a liquid gas and cost the lives of 32 people living in the vicinity of the track.

Image 9. Collision of freight trains at Białystok station
Source: Polish NIB.

Event:	Train collision
Date, time and location:	25 July 2010, Stavoren (Netherlands)
Outcome:	No injuries, considerable damage

An Italian grinding train ran through the buffer stop at Stavoren station and caused substantial damage to a store; however, there were no serious injuries. The train belonged to a Swiss operator; it was being driven by an Italian driver, who was piloted by a local Dutch train driver. A third person was also in the cab. The ATP system on the track did not intervene as the on-board system was not compatible with the track-side system. As the Italian driver was not familiar with the route, he was accompanied by the Dutch driver, who was distracted as he was talking with the third person and did not notice the trackside signs.

An investigation by the Dutch NIB is under way and involves five parties. It is looking into both organisational aspects and human factors.

Image 10. Train collision in Stavoren

Source: Dutch NIB.

Managing safety

Assessing safety management systems

The railway safety directive requires national safety authorities to assess the safety management systems (SMSs) of railway undertakings (RUs) and infrastructure managers (IMs). If the SMS meets requirements set out in the railway safety directive the NSA can issue a safety certificate to an RU or an authorisation to an IM. This is known as Part A certification. The Part B certificate relates to the network specifics for the infrastructure and/or the vehicles used and operated. Part A certificates for RUs are valid throughout the EU, whereas the RUs will need to obtain a Part B certificate for each Member State in which they operate.

The Agency issued draft assessment criteria in 2007 for NSAs to use when assessing the SMS relevant for the Part A certificate. The criteria, that together with a set of principles for both the assessment process and the supervision regime, form the common safety method on conformity assessment (CSM CA), became regulation in 2010.

Safety management system

A safety management system (SMS) is a documented process for managing risks, integrating the operation of the railway, the vehicles and the infrastructure. It helps to ensure that railway undertakings and infrastructure managers are operating safely and maintaining their part of the railway systems.

Harmonisation of the assessment of the SMS ensures that the market is open and competitive because each Member State will be adopting a consistent and transparent process for managing safety. The Agency has recently developed, together with the NSAs, guidance for SMSs. It is available on the Agency's website.

Safety certification

Railway safety within the EU is built on the mutual acceptance of certificates and authorisations for RUs/entities in charge of maintenance (ECM) and IMs issued in individual Member States. This requires a similar approach to certification and regulation, an equal level of performance and a high degree of mutual trust among NSAs and between other certification bodies. However, recent findings show a great variety in approaches and different levels of organisational maturity of NSAs in different Member States, which is hindering further development of an open European railway market.

A prime objective for the Agency is therefore to promote and support an accelerated harmonisation of the core certification and regulation processes that form part of the safety regulatory framework. There are a number of activities in the existing and future work programme of the Agency which will help to reach this objective.

In 2010, the common safety method on conformity assessment (CSM CA) was published ([12]), providing a clear process that NSAs can use to assess applications for certificates. It sets out specific criteria for the various components of an SMS and also establishes for the first time the principles of a supervision scheme that NSAs should have in place. In addition, it strengthens the requirements for NSAs to cooperate and coordinate their activities, which is particularly crucial for RUs operating in different Member States.

Entity in charge of maintenance

The 'entity in charge of maintenance', or ECM, means the organisation that is responsible for ensuring that all applicable maintenance requirements are met for any freight wagon for which it is in charge.

ECM certification

The certification of ECM will provide evidence of responsibility and traceability of the maintenance undertaken on freight wagons. The ECM could be the railway undertaking or the keeper. If it is the railway undertaking the certification process will be included in their assessment of their SMS.

The certification of maintenance workshops sets out a self-certified process that ensures a transparent and structured management system for all workshops and will help to reduce the burden and duplication of controls and/or audits across the rail sector.

As a second important building block towards safe, European-wide transport of freight, the Agency has also drafted an ECM certification scheme that provides a harmonised framework for the mandatory certification of ECMs. This should help ECMs, RUs, certification bodies, as well as NSAs, to understand and accept their roles and responsibilities in the railway system.

The task force on freight wagon maintenance, which was a prompt response to the Viareggio accident in 2009, generated an unforeseen impetus within the railway sector. It established a platform for discussion and growing mutual understanding that all concerned parties — the railway sector, the NSAs as well as the Agency — would like to maintain and expand beyond the issue of broken axles.

([12]) Commission Regulation (EU) No 1169/2010 on a common safety method for assessing conformity with the requirements for obtaining a railway safety authorisation and Commission Regulation (EU) No 1158/2010 on a common safety method for assessing conformity with the requirements for obtaining railway safety certificates.

Safety certificates issued

In 2009, 20 NSAs awarded certificates based on the requirements set out in the railway safety directive. The remaining NSAs either continued to issue certificates using the provisions of previous legislation (Directive 2001/14/EC) or a combination of both. Three NSAs have not yet issued any Part A/B certificates under the railway safety directive and have no applications pending.

Table 4: Safety certificates issued and pending by 18 February 2011

No		Part A certificates		Part B (*) certificates	
		Issued	Pending	Issued	Pending
20	NSAs have used Directive 2004/49/EC to issue certificates	252	26	486 (**)	497
1	NSAs have applications for Part A certificates but not issued any	0	6	1	
Total		252	32	487 (*)	497

Source: ERA ERADIS database and NSA annual reports.

(*) The Agency has no reliable information in its database on the number of Part B certificates issued. There is no requirement to notify the Agency when a Part B certificate is issued. The data here are taken from the NSA annual reports.

(**) One Member State issued 215 Part B certificates during 2009. This may include a number of certificates for shunting only.

Safety regulation

In several Member States, the safety regulatory framework is still undergoing significant development. During 2010, the Agency continued the evaluation of the national measures implementing the railway safety directive in the Member States that it started in 2009 at the request of the Commission. The evaluation is expected to finish at the beginning of 2012, when the Agency will deliver a report to the Commission on its findings.

The Agency also evaluates the notifications of the national safety rules notified by the Member States in the Commission's public database NOTIF-IT ([13]). This database includes rules previously registered in the Agency's ERADIS database and new national safety rules for most Member States.

The transparency and availability of the national safety rules that should be used by the RUs operating on the railway network and by the IMs is a necessary step towards the opening up of the market without creating safety barriers. The railway safety directive requires Member States to notify the Commission of new and amended rules ([14]). The Commission monitors the introduction of new national rules in order to prevent new barriers. The long-term objective of the railway safety directive is the gradual reduction of national rules in order to move to a more harmonised European approach to safety.

([13]) https://webgate.ec.europa.eu/risdb

([14]) Article 8(2) and (4) of Directive 2004/49/EC.

In 2009, the Agency published a report on the evaluation of the way in which national safety rules are published and made available in the Member States ([15]), as well as recommendations ([16]) to make these rules more easily accessible for all stakeholders, particularly applicants for safety certification. Improvements in this respect are expected from all Member States. In 2010 the Agency issued detailed advice for individual Member States ([17]). In December 2010, the Railway Interoperability and Safety Committee (RISC) agreed to set up a dedicated task force to facilitate a common approach and clarify systems of national safety rules and better practice of their management.

In 2010, the Agency delivered several technical opinions to the Commission in relation to some national rules adopted in consequence of an incorrect interpretation of the roles of different parties and of the tasks of the NSAs, as set by the railway safety directive. Moreover, transparency was missing when introducing these national rules. The Agency provided comments on the relevant findings to the NSAs.

Common safety targets

CSTs are quantitative tools intended to monitor that current safety levels of the railways in the Member States are at least maintained. In the long term, they are also intended to help reduce the current differences in safety performance. Railway transport is the only mode of transport for which the framework of targets has been prescribed by European legislation.

In 2010, the Agency carried out the first assessment of the achievement of the first set of CSTs, based on a four-year time series of Eurostat data on railway accidents, covering the period from 2005 to 2008.

In 2011, the second set of CSTs and national reference values (NRVs) will be prepared by the Agency. They will be based on the six years of data, from 2004 to 2009, that were delivered to Eurostat by Member States according to Annex H of Regulation (EC) No 91/2003 on rail transport statistics. The second set of CSTs will be calculated using the method defined in the CSM on the assessment of the achievement of CSTs ([18]). The revisions the Member States have made to Eurostat data will be taken into account. The next Safety Performance Report will contain a more detailed analysis of the results of these assessments.

([15]) 'Evaluation of the way in which national safety rules are published and made available', supporting paper to final report (ERA/INF/02-2009/SAF).
([16]) 'Recommendation to the Commission for the publication of national safety rules in order to make the relevant information more easily accessible' (ERA/REC/04-2009/SAF).
([17]) 'Evaluation of the way in which national safety rules are published and made available', final report (ERA/REP/04-2009/SAF).
([18]) Regulation (EC) No 352/2009 on a common safety method on risk evaluation and assessment.

Economic evaluation of safety

Framework and perspectives

When proposing new safety regulations, the Agency has to evaluate the consequences of mandating safety measures under European law. Since the Agency was established, many safety-related recommendations have been passed and a harmonised approach to safety is gradually being developed. The Economic Evaluation Unit provides the Agency with appraisals and evaluations of recommendations and the technical specification for interoperability (TSI). It works closely with the Safety Unit in the development of its work and the methodologies that back up the conclusions.

Scarce resources

A critical issue that is commonly addressed within the work of the Agency is the appropriate and economic use of scarce resources. The recent history and emerging revised structure of the railway sector mean that there inevitably will be trade-offs that need to be analysed. The techniques employed in economic analysis show where trade-offs exist. Examples concerning the use of scarce resources include train protection systems and passive safety provisions (crashworthiness, safe interiors). Calculating the cost of such safety measures and balancing them against the 'value of human life' or variants thereof is an approach that has been used in the past. While there are methodological and moral difficulties in determining the 'value of human life', it is an approach that has been used for more than 50 years in transport appraisal, and for more than 40 years in the railway sector. The Agency has found the use of variants, e.g. costs of avoiding fatalities, to be a useful indicator that can help in the justification of new systems, e.g. train protection systems. Using such approaches enables the correct 'economic signals' to be given and ensures that the safety recommendations are grounded in sound economic thinking.

Better regulation

Systematic examination of Agency recommendations through impact assessment is in accordance with the European Commission's strategy on better regulation. Indeed, impact assessment should contribute towards ensuring that new legislative initiatives are evidence-based and well-understood. In particular, impact assessment performed by the Agency describes the problems at stake for a given recommendation and identifies the aims to be achieved. It also sets out relevant options or variants that could meet those objectives. Subsequently, the impacts of the different options are analysed. The approach is consistent with the European Commission's impact assessment guidelines.

Overview of activities

Over the past five years of activities a number of impact assessments have already been completed for different recommendations submitted to the Commission. In the safety area these have included (amongst others): common safety method for risk assessment, common safety method for conformity assessment, CSTs, certification for ECM and the derailment detection device. All the impact assessments performed to date are so-called *ex-ante* analyses that look at the possible future consequences of a given recommendation. The Agency is now starting so-called *ex-post* evaluation, where the focus is on examining the actual results. External consultants are currently performing such a study for the Agency on the results linked to the passengers with reduced mobility TSI.

Studies in 2010

In October 2010, a major study was started to identify and categorise the key factors that have contributed to the decrease of the railway risk level over the last 25 years. Working closely with the Agency during the next 12 months, the contractor will examine empirically all of the relevant factors that have impacted upon safety over the last 25 years, in order to understand their relative efficiency and importance. Through better understanding and learning from the past, the Agency hopes to provide an improved basis for recommendations in the future. The findings of the study will be included in the next Safety Performance Report.

Looking forward

The development of the safety performance of European railways is progressing well. The number of accidents and fatalities has continued to decrease. From 2011, the Member States are required to report safety indicator data according to common definitions, as laid down in the revised Annex 1 to the railway safety directive. This will give a better understanding of safety performance across the EU. The revised Annex 1 also provides a new set of indicators, with a comprehensive set of reference data that will enable more accurate analysis of safety performance in different Member States.

The use of common definitions will lay the foundation for the evaluation of performance against CSTs. During 2011, there will be a second assessment of the achievement of the first set of CSTs. Further, a second set of safety targets will be developed, using six years of Eurostat data. This work will also improve our understanding of the development of safety on European railways.

Although the correct transposition of the railway safety directive and the interoperability directive in national legislation is a fundamental prerequisite for the safety regulatory framework to work, it is increasingly clear that the proper application of this framework is equally important. To address this issue, a framework for the cross-audit of NSA activities has been proposed, which combines an immediate acceleration of the harmonisation of NSA decision-making, including an opportunity for sharing good practice and lessons learned, with an overview of all NSA activities in the short to mid term. During 2011, we will see the development of this framework, initial training of cross-auditors as well as the organisation of pilot cross-audits. In 2012 this will be followed by further development and evaluation of the framework and the organisation of pilot cross-audits.

The investigation of accidents and incidents in the railway system is key to understanding and learning how to maintain and improve safety performance. The NIBs have been developing since the entry into force of the railway safety directive. Today investigation bodies are well established in almost all countries. Although the quality of the investigations is improving, there is still some way to go. During 2011, the survey of the organisation of the NIBs in practice will continue. This work will bring new knowledge and contribute to improving accident investigations and the learning process.

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Annex 1 – Common safety indicators

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3B	Fatalities by type of accident and person category – 2007
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CSI data tables

Figures with a green background have a comment in the list of comments on pages 67–69.

Table 1 — Fatalities by category of person

ID	Victim types – fatalities	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
PK00	Passengers	2006	0	4	1		4	18	0		3	9	1	12	4	0	5	0		0	1	1	9	0	8	0	0	4	0	84
		2007	1	9	2	0	0	3	0	0	0	13	0	9	14	0	5	0		0	0	0	9	1	0	0	0	1	3	70
		2008	2	2	12	0	13	1	0	0	1	5	0	10	10	0	4	0		0	1	0	8	3	15	0	0	2	0	89
		2009	1	2	1	0	1	3	0	0	0	2	0	7	0	0	5	0	0	1	0	0	8	0	4	0	0	2	0	37
SK00	Employees	2006	0	0	0		1	6	1		1	3	0	4	0	0	13	3		0	1	0	3	1	0	0	1	0	0	38
		2007	3	3	1	0	1	9	0	1	0	0	1	2	3	0	3	0		1	0	0	3	5	0	0	0	0	2	38
		2008	2	1	1	0	4	8	0	0	2	1	0	2	1	0	5	2		2	0	0	1	1	4	0	0	0	1	38
		2009	0	1	1	0	0	4	1	2	1	0	1	1	1	0	5	1	1	1	1	0	1	1	3	0	1	0	1	29
LK00	Level-crossing users	2006	22	9	4		31	50	5		12	14	5	38	22	0	19	8		4	12	0	32	18	22	9	9	16	5	366
		2007	33	19	5	0	23	67	5	6	5	19	10	38	26	1	16	6		4	19	0	81	20	55	9	9	15	13	504
		2008	17	10	4	0	24	50	3	1	6	15	8	38	42	1	6	6		6	18	0	39	15	38	4	4	11	14	380
		2009	12	8	4	0	21	41	3	3	13	16	11	36	28	0	5	8	1	2	13	2	72	17	40	6	0	25	13	400
UK00	Unauthorised persons	2006	0	7	31		16	118	1		22	30	17	44	37	0	42	23		26	2	0	263	34	100	10	12	81	24	940
		2007	14	7	19	0	1	88	3	0	13	33	7	20	35	1	44	30		21	1	2	260	32	131	14	8	40	33	857
		2008	18	8	27	0	3	78	8	7	8	23	13	40	62	2	49	32		15	1	1	260	23	151	9	9	41	41	929
		2009	19	5	22	0	4	103	11	5	8	13	2	31	63	1	36	24	0	8	0	3	284	14	103	13	0	44	36	852
OK00	Other persons	2006	24	0	0		0	0	11		0	0	0	0	0	0	0	0		0	0	0	4	0	0	0	0	0	4	43
		2007	1	0	0	0	0	13	0	7	0	0	0	13	2	0	0	0		2	0	0	4	0	0	0	0	1	7	50
		2008	0	0	0	0	0	27	1	0	0	2	0	4	0	0	0	0		6	0	0	0	0	0	0	0	2	2	44
		2009	2	0	0	0	0	19	0	0	0	0	0	1	0	0	30	0	1	5	0	1	0	0	0	0	10	1	3	73
TK00	Total persons	2006	46	20	36		52	192	18		38	56	23	98	63	0	79	34		30	16	1	311	53	130	19	22	101	33	1 471
		2007	52	38	27	0	25	180	8	14	18	65	18	82	80	2	68	36		28	20	2	357	58	186	23	17	57	58	1 519
		2008	39	21	44	0	44	164	12	8	17	46	21	94	115	3	64	40		29	20	1	308	42	208	13	13	56	58	1 480
		2009	34	16	28	0	26	170	15	10	22	31	14	76	92	1	81	33	3	17	14	6	365	32	150	19	11	72	53	1 391
R01	No of train-km (million)	2006	152.190	104.937	36.090		158.999	1 013.500	80.541		19.071	185.000	50.900	508.000	106.787	18.242	377.000	13.827		17.122	133.000	47.392	221.737	39.264	94.900	132.295	18.980	50.978	535.757	4 117
		2007	155.000	103.587	36.030	6.533	152.890	1 048.700	78.700	7.553	19.905	186.000	52.577	529.540	114.000	16.832	370.000	14.992		18.578	140.000	47.392	223.031	40.980	96.262	134.345	19.160	51.003	521.292	4 185
		2008	158.400	92.900	35.075	5.540	174.961	1 043.500	82.000	7.131	21.164	193.000	53.259	541.000	109.000		366.863	15.817		19.525	139.000	46.841	224.359	41.760	96.145	138.194	20.098	49.332	549.067	4 224
		2009	152.300	91.870	31.490	5.652	163.187	1 002.917	82.150	6.820	19.613	188.000	50.019	504.000	106.286		350.549	14.053	8.063	18.726	132.000	43.278	208.640	40.580	88.500	131.518	18.208	44.958	568.569	4 072
R02	No of passenger-km (million)	2006	8 830	9 607	2 420		6 909	77 803	6 274		1 811	20 478	3 540	76 470	9 586	1 872	58 679	430		992	15 600	2 860	18 173	3 876		9 716	11	2 194	49 750	387 881
		2007	9 149	9 932	2 423	1	6 907	79 100	6 353	274	1 930	20 584	3 778	78 740	10 080	2 007	49 090	409		983	16 400	2 860	19 374	3 990	6 724	10 296	812	2 148	50 474	394 817
		2008	10 600	10 403	2 334		6 659	82 500	6 474	274	1 657	22 074	4 052	87 000	8 288	1 976	49 408	397		951	16 500	2 860	20 144	4 154	6 956	10 838	834	2 279	53 002	412 613
		2009	10 500	10 493	2 144		6 472	81 612	6 389	232	1 414	21 729	3 876	95 000	7 945	1 681	46 426	357	333	747	16 800	2 996	18 577	4 152	6 177	11 216	840	2 247	52 765	413 119

Table 2 — Serious injuries by category of person

ID	Victim types – serious injuries	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
PS00	Passengers	2006	12	63	29		12	65	4		14	22	1	17	26	0	39	0		0	8	1	63	8	28	1	0	6	1	420
		2007	8	41	6	0	18	20	3	0	5	11	0	10	37	0	10	0		1	2	1	67	5	6	1	1	4	13	270
		2008	6	36	8	1	40	30	3	0	9	3	0	14	28	0	5	0		2	0	1	44	6	26	3	11	5	1	282
		2009	9	10	10	1	9	13	5	0	0	2	0	14	43	1	35	0	0	2	1	1	49	4	20	2	2	0	2	235
SS00	Employees	2006	19	14	2		2	18	3		7	1	3	10	3	1	4	3		1	1	2	5	2	8	1	9	3	4	126
		2007	9	27	2	0	0	25	1	0	2	2	0	5	3	0	5	0		0	1	1	9	2	3	3	6	2	3	111
		2008	12	28	2	0	4	33	2	0	2	1	3	4	1	0	4	1		2	1	0	5	2	7	1	10	1	5	131
		2009	9	1	0	0	2	18	2	0	3	0	0	3	0	0	7	0	0	2	1	1	9	2	2	4	2	0	3	71
LS00	Level-crossing users	2006	26	14	7		49	39	3		20	1	5	13	23	0	16	8		7	2	1	87	9	0	8	10	12	3	363
		2007	34	25	8	0	41	55	2	13	22	4	2	7	27	0	4	7		4	7	2	107	8	69	8	15	13	1	485
		2008	23	16	6	0	42	32	2	0	12	2	1	14	16	0	8	4		7	5	0	113	10	74	1	0	15	5	408
		2009	27	6	1	0	33	22	0	1	16	4	3	22	11	0	0	3	0	4	4	0	50	5	50	7	0	14	2	285
US00	Unauthorised persons	2006	0	6	23		25	27	1		10	11	4	60	22	0	16	14		25	2	0	75	12	144	4	4	13	14	512
		2007	5	4	17	0	42	34	5	0	7	9	1	12	25	1	21	6		10	0	1	93	18	106	2	8	17	7	451
		2008	12	2	22	0	52	38	2	5	6	13	2	6	15	0	21	8		15	0	0	111	20	126	1	20	15	6	518
		2009	9	1	11	0	48	39	7	6	3	5	7	21	30	0	16	9	0	1	0	1	89	7	115	2	0	20	7	454
OS00	Other persons	2006	19	9	0		1	0	1		0	0	0	0	1	0	0	0		0	0	0	0	2	0	2	0	0	3	38
		2007	4	1	0	0	0	23	0	6	0	0	0	12	0	1	0	0		2	0	0	0	1	1	0	0	0	7	58
		2008	0	1	0	0	1	23	0	0	0	0	0	2	0	1	0	0		5	0	0	4	1	0	0	0	2	4	44
		2009	6	0	0	0	0	26	1	0	0	1	0	1	0	0	13	0	0	3	3	1	2	0	0	0	10	1	1	69
TS00	Total persons	2006	76	106	61		89	149	12		51	35	13	100	75	1	75	25		33	13	4	230	33	180	16	23	34	25	1 459
		2007	60	98	33	0	101	157	11	19	36	26	3	46	92	2	40	13		17	10	5	276	34	185	14	30	36	31	1 375
		2008	53	83	38	1	139	156	9	5	29	19	6	40	60	1	38	13		31	6	1	277	39	233	6	41	38	21	1 383
		2009	60	18	22	1	92	118	15	7	22	12	10	61	84	1	71	12	0	12	9	4	199	18	187	15	14	35	15	1 114
R01	No of train-km (million)	2006	152.190	104.937	36.090		158.999	1 013.500	80.541		19.071	185.000	50.900	508.000	106.787	18.242	377.000	13.827		17.122	133.000	47.392	221.737	39.264	94.900	132.295	18.980	50.978	535.757	4 117
		2007	155.000	103.587	36.030	6.533	152.890	1 048.700	78.700	7.553	19.905	186.000	52.577	529.540	114.000	16.832	370.000	14.992		18.578	140.000	47.392	223.031	40.980	96.262	134.345	19.160	51.003	521.292	4 185
		2008	158.400	92.900	35.075	5.540	174.961	1 043.500	82.000	7.131	21.164	193.000	53.259	541.000	109.000		366.863	15.817		19.525	139.000	46.841	224.359	41.760	96.145	138.194	20.098	49.332	549.067	4 224
		2009	152.300	91.870	31.490	5.652	163.187	1 002.917	82.150	6.820	19.613	188.000	50.019	504.000	106.286		350.549	14.053	8.063	18.726	132.000	43.278	208.640	40.580	88.500	131.518	18.208	44.958	568.569	4 072
R02	No of passenger-km (million)	2006	8 830	9 607	2 420		6 909	77 803	6 274		1 811	2 0478	3 540	76 470	9 586	1 872	58 679	430		992	15 600	2 860	18 173	3 876		9 716	11	2 194	49 750	387 881
		2007	9 149	9 932	2 423	1	6 907	79 100	6 353	274	1 930	20 584	3 778	78 740	10 080	2 007	49 090	409		983	16 400	2 860	19 374	3 990	6 724	10 296	812	2 148	50 474	394 817
		2008	10 600	10 403	2 334		6 659	82 500	6 474	274	1 657	22 074	4 052	87 000	8 288	1 976	49 408	397		951	16 500	2 860	20 144	4 154	6 956	10 838	834	2 279	53 002	412 613
		2009	10 500	10 493	2 144		6 472	81 612	6 389	232	1 414	21 729	3 876	95 000	7 945	1 681	46 426	357	333	747	16 800	2 996	18 577	4 152	6 177	11 216	840	2 247	52 765	413 119

Table 3A — 2006 — Fatalities by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TK01	Collisions of trains	Total	0	0	0		0	0	0		4	0	0	9	0	0	3	0		0	0	0	1	0	0	0	1	0	1	19
PK01		Passengers	0	0			0	0	0		1	0	0	4		0	0	0		0	0	0	0		0				0	5
SK01		Employees	0	0			0	0	0		1	0	0	2		0	3	0		0	0	0	1		0		1		0	8
LK01		Level-crossing users	0	0			0	0	0			0	0			0	0	0		0	0	0	0		0				0	0
UK01		Unauthorised persons		0			0	0	0		2	0	0	3		0	0	0		0	0	0	0		0				0	5
OK01		Other persons	0	0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				1	1
TK02	Derailments of trains	Total	0	0	0		0	0	0		0	7	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	7
PK02		Passengers	0	0			0	0	0		0	7	0			0	0	0		0	0	0	0		0				0	7
SK02		Employees	0	0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	0
LK02		Level-crossing users	0	0			0	0	0			0	0			0	0	0		0	0	0	0		0				0	0
UK02		Unauthorised persons		0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	0
OK02		Other persons	0	0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	0
TK03	Level-crossing accidents	Total	22	10	4		31	50	6		14	14	5	40	22	0	19	8		4	12	0	35	18	22	9	0	17	5	367
PK03		Passengers	0	1			0	0	0		2	0	0			0	0	0		0	0	0	1		0			1	0	5
SK03		Employees	0	0			0	0	0		0	0	0	2		0	0	0		0	0	0	2		0				0	4
LK03		Level-crossing users	22	9	4		31	50	5		12	14	5	38	22	0	19	8		4	12	0	32	18	22	9		16	5	357
UK03		Unauthorised persons		0			0	0	0			0	0			0	0	0		0	0	0	0		0				0	0
OK03		Other persons	0	0			0	0	1		0	0	0			0	0	0		0	0	0	0		0				0	1
TK04	Accidents to persons caused by rolling stock in motion	Total	22	10	32		21	142	12		20	33	18	37	41	0	55	26		26	4	0	257	35	108	10	21	35	27	992
PK04		Passengers	0	3	1		4	18	0		0	2	1	8	4	0	5	0		0	1	0	0		8			3	0	58
SK04		Employees	0	0			1	6	1		0	1	0			0	8	3		0	1	0	0	1	0				0	22
LK04		Level-crossing users	0	0			0	0	0			0	0			0	0	0		0	0	0	0		0		9		0	9
UK04		Unauthorised persons		7	31		16	118	1		20	30	17	29	37	0	42	23		26	2	0	253	34	100	10	12	32	24	864
OK04		Other persons	22	0			0	0	10		0	0	0			0	0	0		0	0	0	4	0	0				3	39
TK05	Fires in rolling stock	Total	0	0	0		0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
PK05		Passengers	0	0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	0
SK05		Employees	0	0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	0
LK05		Level-crossing users	0	0			0	0	0			0	0			0	0	0		0	0	0	0		0				0	0
UK05		Unauthorised persons		0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	0
OK05		Other persons	0	0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	0
TK06	Other accidents	Total	2	0	0		0	0	0		0	2	0	12	0	0	2	0		0	0	1	18	0	0	0	0	49	0	86
PK06		Passengers	0	0			0	0	0		0	0	0			0	0	0		0	0	1	8		0				0	9
SK06		Employees	0	0			0	0	0		0	2	0			0	2	0		0	0	0	0		0				0	4
LK06		Level-crossing users	0	0			0	0	0			0	0			0	0	0		0	0	0	0		0				0	0
UK06		Unauthorised persons		0			0	0	0		0	0	0	12		0	0	0		0	0	0	10		0			49	0	71
OK06		Other persons	2	0			0	0	0		0	0	0			0	0	0		0	0	0	0		0				0	2

Table 3B — 2007 — Fatalities by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TK01	Collisions of trains	Total	0	0	0	0	1	1	0	0	2	0	0	2	2	0	1	0		0	0	0	1	0	0	0	0	0	0	10
PK01		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
SK01		Employees	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0		0	0	0	1	0	0	0	0	0	0	3
LK01		Level-crossing users	0	0	0	0	0	1	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1
UK01		Unauthorised persons	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	3
OK01		Other persons	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0		0	0	0	0	0	0	0	0	0	0	3
TK02	Derailments of trains	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	1	4
PK02		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	1	2
SK02		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	2	0	0	0	0	0	2
LK02		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
UK02		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OK02		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TK03	Level-crossing accidents	Total	33	20	5	0	23	66	5	6	5	19	10	39	63	1	16	6		4	19	0	84	20	55	9	9	15	13	545
PK03		Passengers	0	1	0	0	0	0	0	0	0	0	0	0	6	0	0	0		0	0	0	1	0	0	0	0	0	0	8
SK03		Employees	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	2	0	0	0	0	0	0	3
LK03		Level-crossing users	33	19	5	0	23	66	5	6	5	19	10	38	24	1	16	6		4	19	0	81	20	55	9	9	15	13	501
UK03		Unauthorised persons	0	0	0	0	0	0	0	0		0	0	0	32	0	0	0		0	0	0	0	0	0	0	0	0	0	32
OK03		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	1
TK04	Accidents to persons caused by rolling stock in motion	Total	16	18	22	0	1	111	2	8	11	46	8	38	9	1	51	30		24	1	2	264	35	131	14	8	42	44	937
PK04		Passengers	1	8	2	0	0	3	0	0	0	13	0	9	8	0	5	0		0	0	0	0	0	0	0	0	1	2	52
SK04		Employees	3	3	1	0	0	7	0	1	0	0	1	1	1	0	3	0		1	0	0	0	3	0	0	0	0	2	27
LK04		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
UK04		Unauthorised persons	12	7	19	0	1	88	2	0	11	33	7	20	0	1	43	30		21	1	2	260	32	131	14	8	40	33	816
OK04		Other persons	0	0	0	0	0	13	0	7	0	0	0	8	0	0	0	0		2	0	0	4	0	0	0	0	1	7	42
TK05	Fires in rolling stock	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
PK05		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
SK05		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
LK05		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
UK05		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OK05		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TK06	Other accidents	Total	3	0	0	0	0	2	1	0	0	0	0	3	6	0	0	0		0	0	0	8	0	0	0	0	0	0	23
PK06		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	8	0	0	0	0	0	0	8
SK06		Employees	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	3
LK06		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	2	0	0	0		0	0	0	0	0	0	0	0	0	0	2
UK06		Unauthorised persons	2	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0		0	0	0	0	0	0	0	0	0	0	6
OK06		Other persons	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0		0	0	0	0	0	0	0	0	0	0	4

Table 3C — 2008 — Fatalities by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TK01	Collisions of trains	Total	1	0	0	0	10	1	0	0	0	3	0	0	4	0	1	0		2	0	0	0	0	0	0	0	0	0	22
PK01		Passengers	0	0	0	0	8	0	0	0	0	0	0	0	4	0	0	0		0	0	0	0	0	0	0	0	0	0	12
SK01		Employees	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0		2	0	0	0	0	0	0	0	0	0	6
LK01		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
UK01		Unauthorised persons	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	2
OK01		Other persons	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2
TK02	Derailments of trains	Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	1	1	0	0	0	0	3
PK02		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	1	1	0	0	0	0	2
SK02		Employees	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1
LK02		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
UK02		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OK02		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TK03	Level-crossing accidents	Total	17	10	4	0	25	52	3	1	7	15	8	39	42	1	6	6		6	18	0	39	15	38	4	8	11	14	389
PK03		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
SK03		Employees	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2
LK03		Level-crossing users	17	10	4	0	24	50	3	1	6	15	8	38	42	1	6	6		6	18	0	39	15	38	4	4	11	14	380
UK03		Unauthorised persons	0	0	0	0	0	2	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	4	0	0	6
OK03		Other persons	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1
TK04	Accidents to persons caused by rolling stock in motion	Total	20	11	31	0	9	110	8	7	10	28	13	39	69	2	57	34		21	1	1	257	26	165	9	4	45	43	1 020
PK04		Passengers	1	2	3	0	5	1	0	0	1	5	0	6	6	0	4	0		0	1	0	0	2	13	0	0	2	0	52
SK04		Employees	2	1	1	0	1	6	0	0	1	0	0	0	1	0	5	2		0	0	0	1	1	1	0	0	0	0	23
LK04		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
UK04		Unauthorised persons	17	8	27	0	3	76	7	7	8	23	13	31	62	2	48	32		15	0	1	256	23	151	9	4	41	41	905
OK04		Other persons	0	0	0	0	0	27	1	0	0	0	0	2	0	0	0	0		6	0	0	0	0	0	0	0	2	2	40
TK05	Fires in rolling stock	Total	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	9
PK05		Passengers	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	9
SK05		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
LK05		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
UK05		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OK05		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TK06	Other accidents	Total	1	0	0	0	0	0	1	0	0	0	0	16	0	0	0	0		0	1	0	12	0	4	0	1	0	1	37
PK06		Passengers	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0		0	0	0	8	0	1	0	0	0	0	14
SK06		Employees	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0		0	0	0	0	0	3	0	0	0	1	6
LK06		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
UK06		Unauthorised persons	0	0	0	0	0	0	1	0	0	0	0	9	0	0	0	0		0	1	0	4	0	0	0	1	0	0	16
OK06		Other persons	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1

Table 3D — 2009 — Fatalities by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TK01	Collisions of trains	Total	0	0	0	0	0	1	0	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	7
PK01		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SK01		Employees	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	3
LK01		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UK01		Unauthorised persons	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
OK01		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TK02	Derailments of trains	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	30
PK02		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SK02		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LK02		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UK02		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OK02		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	30
TK03	Level-crossing accidents	Total	12	8	4	0	21	41	4	3	13	16	11	36	29	0	5	8	1	4	13	2	73	17	40	6	7	25	13	412
PK03		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
SK03		Employees	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
LK03		Level-crossing users	12	8	4	0	21	41	3	3	13	16	11	36	28	0	5	8	1	2	13	2	72	17	40	6	0	25	13	400
UK03		Unauthorised persons	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OK03		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7
TK04	Accidents to persons caused by rolling stock in motion	Total	21	8	24	0	5	127	9	7	7	15	3	38	63	1	45	25	2	13	0	4	292	15	107	13	4	47	38	933
PK04		Passengers	1	2	1	0	1	2	0	0	0	2	0	7	0	0	5	0	0	0	0	0	7	0	4	0	0	2	0	34
SK04		Employees	0	1	1	0	0	3	0	2	1	0	1	1	0	0	4	1	1	0	0	0	1	1	3	0	1	0	1	23
LK04		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UK04		Unauthorised persons	19	5	22	0	4	103	9	5	6	13	2	29	63	1	36	24	0	8	0	3	284	14	100	13	0	44	34	841
OK04		Other persons	1	0	0	0	0	19	0	0	0	0	0	1	0	0	0	0	1	5	0	1	0	0	0	0	3	1	3	35
TK05	Fires in rolling stock	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PK05		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SK05		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LK05		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UK05		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0
OK05		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TK06	Other accidents	Total	1	0	0	0	0	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	9
PK06		Passengers	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
SK06		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LK06		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UK06		Unauthorised persons	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	-	0	0	3	0	0	0	7
OK06		Other persons	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Table 4A — 2006 — Serious injuries by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TS01	Collisions of trains	Total	5	0	0		4	10	0		5	0	0	3	2	0	15	0		0	4	0	2	1	0	0	0	0	1	52
PS01		Passengers	1	0	-		1	2	0		2	0	0	2	2	0	15	0		0	4	0	0	-	0	-	-	-	0	29
SS01		Employees	4	0	-		2	8	0		3	0	0	-	-	0	0	0		0	0	0	2	1	0	-	-	-	1	21
LS01		Level-crossing users	0	0	-		0	0	0		-	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
US01		Unauthorised persons	-	0	-		0	0	0		0	0	0	1	-	0	0	0		0	0	0	0	-	0	-	-	-	0	1
OS01		Other persons	0	0	-		1	0	0		0	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	1
TS02	Derailments of trains	Total	1	0	0		0	0	0		0	14	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	17
PS02		Passengers	0	0	-		0	0	0		0	14	0	-	-	0	0	0		0	1	0	0	-	0	-	-	-	0	15
SS02		Employees	1	0	-		0	0	0		0	0	0	-	-	0	0	0		0	0	0	0	1	0	-	-	-	0	2
LS02		Level-crossing users	0	0	-		0	0	0		-	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
US02		Unauthorised persons	-	0	-		0	0	0		0	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
OS02		Other persons	0	0	-		0	0	0		0	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
TS03	Level-crossing accidents	Total	26	19	7		49	45	2		32	1	6	13	25	0	17	8		7	2	1	97	9	0	8	10	14	3	401
PS03		Passengers	0	2	-		0	1	0		11	0	0	-	2	0	1	0		0	0	0	8	-	0	-	-	-	0	25
SS03		Employees	0	3	-		0	4	0		1	0	1	-	-	0	0	0		0	0	0	2	-	0	-	-	2	0	13
LS03		Level-crossing users	26	14	7		49	39	2		20	1	5	13	23	0	16	8		7	2	1	87	9	0	8	10	12	3	362
US03		Unauthorised persons	-	0	-		0	1	0		-	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	1
OS03		Other persons	0	0	-		0	0	0		-	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
TS04	Accidents to persons caused by rolling stock in motion	Total	38	8	52		36	39	6		14	20	6	39	39	0	38	17		26	4	1	75	22	180	7	13	20	19	719
PS04		Passengers	10	2	29		11	14	4		1	8	1	12	17	0	20	0		0	2	1	0	8	28	1	-	6	1	176
SS04		Employees	14	0	-		0	5	1		3	1	1	5	1	0	2	3		1	0	0	0	-	8	-	9	1	1	56
LS04		Level-crossing users	0	0	-		0	0	0		-	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
US04		Unauthorised persons	-	6	23		25	20	0		10	11	4	22	20	0	16	14		25	2	0	75	12	144	4	4	13	14	464
OS04		Other persons	14	0	-		0	0	1		0	0	0	-	1	0	0	0		0	0	0	0	2	0	2	-	-	3	23
TS05	Fires in rolling stock	Total	1	0	2		0	0	0		0	0	0	1	0	0	3	0		0	0	2	0	0	0	0	0	0	0	9
PS05		Passengers	0	0	-		0	0	0		0	0	0	-	-	0	3	0		0	0	0	0	-	0	-	-	-	0	3
SS05		Employees	0	0	2		0	0	0		0	0	0	1	-	0	0	0		0	0	2	0	-	0	-	-	-	0	5
LS05		Level-crossing users	0	0	-		0	0	0		-	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
US05		Unauthorised persons	-	0	-		0	0	0		0	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	0
OS05		Other persons	1	0	-		0	0	0		0	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	1
TS06	Other accidents	Total	5	79	0		0	55	4		0	0	1	44	9	1	2	0		0	2	0	56	0	0	1	0	0	2	261
PS06		Passengers	1	59	-		0	48	0		0	0	0	3	5	0	0	0		0	1	0	55	-	0	-	-	-	0	172
SS06		Employees	0	11	-		0	1	2		0	0	1	4	2	1	2	0		0	1	0	1	-	0	1	-	-	2	29
LS06		Level-crossing users	0	0	-		0	0	1		-	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	1
US06		Unauthorised persons	-	0	-		0	6	1		0	0	0	37	2	0	0	0		0	0	0	0	-	0	-	-	-	0	46
OS06		Other persons	4	9	-		0	0	0		0	0	0	-	-	0	0	0		0	0	0	0	-	0	-	-	-	0	13

Table 4B — 2007 — Serious injuries by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TS01	Collisions of trains	Total	4	3	4	0	1	8	0	0	2	0	0	2	4	0	1	0		0	1	0	1	0	0	0	0	0	0	31
PS01		Passengers	1	2	0	0	1	3	0	0	2	0	0	0	3	0	0	0		0	0	0	0	0	0	0	0	0	0	12
SS01		Employees	2	1	2	0	0	4	0	0	0	0	0	0	1	0	1	0		0	1	0	1	0	0	0	0	0	0	13
LS01		Level-crossing users	0	0	0	0	0	1	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1
US01		Unauthorised persons	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2
OS01		Other persons	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0		0	0	0	0	0	0	0	0	0	0	3
TS02	Derailments of trains	Total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	1	2	0	0	0	0	12	16
PS02		Passengers	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	2	0	0	0	0	11	14
SS02		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	0	0	0	0	1	2
LS02		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
US02		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OS02		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TS03	Level-crossing accidents	Total	34	53	8	0	42	63	2	13	24	4	2	9	35	0	4	7		4	7	2	120	8	70	8	16	16	1	552
PS03		Passengers	0	25	0	0	1	4	0	0	1	0	0	1	8	0	0	0		0	0	0	11	0	0	0	0	2	0	53
SS03		Employees	0	4	0	0	0	5	0	0	1	0	0	1	0	0	0	0		0	0	0	2	0	1	0	1	1	0	16
LS03		Level-crossing users	34	24	8	0	41	54	2	13	22	4	2	7	27	0	4	7		4	7	2	107	8	69	8	15	13	1	483
US03		Unauthorised persons	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OS03		Other persons	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TS04	Accidents to persons caused by rolling stock in motion	Total	15	20	21	0	58	83	8	6	9	20	1	28	52	1	34	6		13	2	0	95	23	114	6	9	20	18	662
PS04		Passengers	7	14	6	0	16	13	3	0	1	10	0	9	26	0	10	0		1	2	0	0	2	6	1	1	2	2	132
SS04		Employees	2	1	0	0	0	14	0	0	1	1	0	1	1	0	3	0		0	0	0	4	2	2	3	0	1	2	38
LS04		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
US04		Unauthorised persons	4	4	15	0	42	33	5	0	7	9	1	10	25	1	21	6		10	0	0	91	18	106	2	8	17	7	442
OS04		Other persons	2	1	0	0	0	23	0	6	0	0	0	8	0	0	0	0		2	0	0	0	1	0	0	0	0	7	50
TS05	Fires in rolling stock	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
PS05		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
SS05		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
LS05		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
US05		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OS05		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TS06	Other accidents	Total	7	22	0	0	0	3	1	0	0	2	0	7	1	1	1	0		0	0	3	59	1	1	0	5	0	0	114
PS06		Passengers	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		0	0	1	56	1	0	0	0	0	0	59
SS06		Employees	5	21	0	0	0	2	1	0	0	1	0	3	1	0	1	0		0	0	1	1	0	0	0	5	0	0	42
LS06		Level-crossing users	0	1	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1
US06		Unauthorised persons	1	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0		0	0	1	2	0	0	0	0	0	0	7
OS06		Other persons	1	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0		0	0	0	0	0	1	0	0	0	0	5

Table 4C — 2008 — Serious injuries by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TS01	Collisions of trains	Total	0	15	5	0	30	28	0	0	0	0	2	2	3	0	0	0		0	0	0	6	0	0	0	7	1	0	99
PS01		Passengers	0	10	0	0	28	21	0	0	0	0	0	0	3	0	0	0		0	0	0	3	0	0	0	4	0	0	69
SS01		Employees	0	4	0	0	1	5	0	0	0	0	2	2	0	0	0	0		0	0	0	3	0	0	0	3	0	0	20
LS01		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
US01		Unauthorised persons	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1	0	6
OS01		Other persons	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	4
TS02	Derailments of trains	Total	0	0	0	0	0	1	0	0	4	1	0	0	1	0	0	0		0	0	0	0	4	4	0	0	0	0	15
PS02		Passengers	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	0		0	0	0	0	4	3	0	0	0	0	12
SS02		Employees	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	3
LS02		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
US02		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OS02		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TS03	Level-crossing accidents	Total	23	28	7	0	43	35	3	0	16	2	2	15	16	0	8	4		7	6	0	104	10	74	1	20	17	5	446
PS03		Passengers	0	14	0	0	0	0	0	0	2	0	0	1	0	0	0	0		0	0	0	2	0	0	0	4	0	0	23
SS03		Employees	0	0	1	0	1	3	1	0	2	0	1	0	0	0	0	0		0	1	0	0	0	0	0	2	1	0	13
LS03		Level-crossing users	23	14	6	0	42	32	2	0	12	2	1	14	16	0	8	4		7	5	0	102	10	74	1		15	5	395
US03		Unauthorised persons	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	14	0	0	14
OS03		Other persons	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1	0	1
TS04	Accidents to persons caused by rolling stock in motion	Total	15	15	21	1	66	86	5	5	9	16	2	18	40	1	30	9		24	0	1	105	23	149	4	10	20	15	690
PS04		Passengers	2	12	3	1	12	9	3	0	3	3	0	13	24	0	5	0		2	0	1	0	2	18	3	1	5	1	123
SS04		Employees	4	1	1	0	2	19	0	0	0	0	0	0	1	0	4	1		2	0	0	0	0	5	0	3	0	4	47
LS04		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
US04		Unauthorised persons	9	2	17	0	52	37	2	5	6	13	2	4	15	0	21	8		15	0	0	105	20	126	1	6	14	6	486
OS04		Other persons	0	0	0	0	0	21	0	0	0	0	0	1	0	1	0	0		5	0	0	0	1	0	0	0	1	4	34
TS05	Fires in rolling stock	Total	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	5
PS05		Passengers	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	5
SS05		Employees	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
LS05		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0
US05		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
OS05		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TS06	Other accidents	Total	15	25	0	0	0	6	1	0	0	0	0	5	0	0	0	0		0	0	0	62	2	6	1	4	0	1	128
PS06		Passengers	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	39	0	5	0	2	0	0	50
SS06		Employees	8	23	0	0	0	5	1	0	0	0	0	2	0	0	0	0		0	0	0	2	2	1	1	2	0	1	48
LS06		Level-crossing users	0	2	0	0	0	0	0	0	-	0	0	0	0	0	0	0		0	0	0	11	0	0	0		0	0	13
US06		Unauthorised persons	3	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0		0	0	0	6	0	0	0	0	0	0	12
OS06		Other persons	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	4	0	0	0	0	0	0	5

Table 4D — 2009 — Serious injuries by type of accident and victim category

ID	Accident types	Victim types	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
TS01	Collisions of trains	Total	5	0	4	0	1	9	0	0	0	1	0	3	0	0	18	0	0	0	1	1	1	0	3	0	2	0	0	49
PS01		Passengers	0	0	1	0	0	0	0	0	0	0	0	2	0	0	18	0	0	0	0	0	0	0	3	0	0	0	0	24
SS01		Employees	2	0	0	0	1	6	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	12
LS01		Level-crossing users	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
US01		Unauthorised persons	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
OS01		Other persons	3	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	10
TS02	Derailments of trains	Total	1	0	0	0	0	0	0	0	1	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	15
PS02		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SS02		Employees	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
LS02		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
US02		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OS02		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	13
TS03	Level-crossing accidents	Total	29	6	1	0	33	29	1	1	16	4	3	22	11	0	0	3	0	6	4	0	76	5	50	7	9	14	2	332
PS03		Passengers	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	20	0	0	0	1	0	0	28
SS03		Employees	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	12
LS03		Level-crossing users	27	6	1	0	33	22	0	1	16	4	3	22	11	0	0	3	0	4	4	0	50	5	50	7	0	14	2	285
US03		Unauthorised persons	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OS03		Other persons	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7
TS04	Accidents to persons caused by rolling stock in motion	Total	16	5	17	1	58	79	11	6	4	7	7	30	73	1	36	9	0	6	4	3	119	13	128	7	3	21	11	675
PS04		Passengers	6	3	9	1	9	10	4	0	0	2	0	12	43	1	17	0	0	0	1	1	28	4	17	2	1	0	2	173
SS04		Employees	2	1	0	0	1	7	0	0	1	0	0	1	0	0	3	0	0	2	0	1	0	2	2	3	1	0	1	28
LS04		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
US04		Unauthorised persons	6	1	8	0	48	39	6	6	3	5	7	16	30	0	16	9	0	1	0	1	89	7	109	2	0	20	7	436
OS04		Other persons	2	0	0	0	0	23	1	0	0	0	0	1	0	0	0	0	0	3	3	0	2	0	0	0	1	1	1	38
TS05	Fires in rolling stock	Total	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
PS05		Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SS05		Employees	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
LS05		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
US05		Unauthorised persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OS05		Other persons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TS06	Other accidents	Total	8	7	0	0	0	1	3	0	1	0	0	6	0	0	4	0	0	0	0	0	3	0	6	1	0	0	1	41
PS06		Passengers	1	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	10
SS06		Employees	3	0	0	0	0	1	1	0	1	0	0	1	0	0	4	0	0	0	0	0	2	0	0	1	0	0	1	15
LS06		Level-crossing users	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
US06		Unauthorised persons	3	0	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	15
OS06		Other persons	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Table 5 — Total and relative no of suicides

ID	Category	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
N07	Total no of suicides	2006	78	97	32		174	-	21		1	189	42	351	128	7	126	0		6	190	11	25	40	16	69	6	49	227	1 885
		2007	113	94	39	0	150	706	32	0	4	188	54	344	111	5	138	0		10	193	8	28	52	24	78	14	48	197	2 630
		2008	93		27	0	160	714	24	1	1	174	52	289	111	7	137	0		9	164	7	29	50	29	71	20	58	202	2 429
		2009	101	69	19	0	185	875	32	0	3	163		337	139	2	111	2	4	10	197	8	25	69	25	67	10	56	210	2 719
N17	Relative to train-km. No of suicides	2006	0.513	0.924	0.887		1.094		0.261		0.052	1.022	0.825	0.691	1.199	0.384	0.334	0		0.350	1.429	0.232	0.113	1.019	0.169	0.522	0.316	0.961	0.424	13.719
		2007	0.729	0.907	1.082	0	0.981	0.673	0.407	0	0.201	1.011	1.027	0.650	0.974	0.297	0.373	0		0.538	1.379	0.169	0.126	1.269	0.249	0.581	0.731	0.941	0.378	15.672
		2008	0.587		0.770	0	0.914	0.684	0.293	0.140	0.047	0.902	0.976	0.534	1.018		0.373	0		0.461	1.180	0.149	0.129	1.197	0.302	0.514	0.995	1.176	0.368	13.711
		2009	0.663	0.751	0.603	0	1.134	0.872	0.390	0	0.153	0.867		0.669	1.308		0.317	0.142	0.496	0.534	1.492	0.185	0.120	1.700	0.282	0.468	0.549	1.246	0.369	15.311
R01	Train-km (million)	2006	152.190	104.937	36.090		158.999	1 013.500	80.541		19.071	185.000	50.900	508.000	106.787	18.242	377.000	13.827		17.122	133.000	47.392	221.737	39.264	94.900	132.295	18.980	50.978	535.757	4 117
		2007	155.000	103.587	36.030	6.533	152.890	1 048.700	78.700	7.553	19.905	186.000	52.577	529.540	114.000	16.832	370.000	14.992		18.578	140.000	47.392	223.031	40.980	96.262	134.345	19.160	51.003	521.292	4 185
		2008	158.400	92.900	35.075	5.540	174.961	1 043.500	82.000	7.131	21.164	193.000	53.259	541.000	109.000		366.863	15.817		19.525	139.000	46.841	224.359	41.760	96.145	138.194	20.098	49.332	549.067	4 224
		2009	152.300	91.870	31.490	5.652	163.187	1 002.917	82.150	6.820	19.613	188.000	50.019	504.000	106.286		350.549	14.053	8.063	18.726	132.000	43.278	208.640	40.580	88.500	131.518	18.208	44.958	568.569	4 072

Table 6 — Number of accidents by type of accident

ID	Accident types	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
N01	Collisions of trains	2006	2	84	44		13	422	1		4	0	0	48	4	1	5	1		0	4	5	13	3	2	3		7	4	670
		2007	4	77	3	0	3	15	0	0	3	0	0	85	5	0	4	6		0	4	4	6	3	0	1	0	14	12	249
		2008	3	94	3	0	5	13	0	0	1	4	0	97	1	0	2	1		1	2	6	8	0	0	4	4	12	8	269
		2009	5	34	3	0	5	16	1	0	2	3	0	7	0	1	7	4	0	1	2	6	18	0	2	1	1	6	17	142
N02	Derailments of trains	2006	1	7	139		10	52	0		4	9	0	42	16	0	11	7		1	2	3	126	9	0	5	3	8	22	477
		2007	3	17	1	0	3	7	0	1	8	12	0	68	7	0	10	27		0	0	0	132	3	0	11	5	11	20	346
		2008	7	21	0	0	2	12	0	2	2	15	1	97	1	1	10	1		0	1	3	105	3	1	14	0	6	14	319
		2009	1	41	0	0	3	7	0	0	2	7	2	14	1	0	6	1	0	0	2	3	63	1	1	7	0	3	12	177
N03	Level-crossing accidents	2006	40	56	31		104	181	8		25	13	9	140	104	0	38	21		10	12	2	275	22	87	16	41	68	9	1 312
		2007	55	76	10	0	48	97	7	33	22	19	11	115	54	2	23	13		9	26	2	325	27	91	14	32	71	14	1 196
		2008	36	56	9	0	53	76	5	12	17	18	9	115	44	1	16	19		10	21	0	278	20	86	6	41	63	23	1 034
		2009	36	31	5	0	42	64	2	7	26	19	12	49	39	1	7	14	5	8	13	2	288	15	57	13	11	51	16	833
N04	Accidents to persons caused by rolling stock in motion	2006	55	22	72		104	216	18		35	51	23	74	244	0	88	37		52	9	2	423	55	295	17	23	53	49	2 017
		2007	27	30	42	0	59	184	10	14	20	63	9	77	92	2	85	36		37	3	2	418	56	245	20	19	63	61	1 674
		2008	35	25	52	1	72	193	13	12	19	43	14	57	79	3	83	42		45	1	2	397	49	314	13	14	78	57	1 713
		2009	37	34	40	1	62	201	21	12	11	22	10	64	136	2	83	33	2	19	4	4	400	27	235	20	2	74	49	1 605
N05	Fires in rolling stock	2006	1	18	23		0	98	1		2	0	17	62	1	0	5	0		0	1	3	5		0	3	1	8	0	249
		2007	1	17	0	0	1	3	0	1	0	0	1	37	3	0	5	1		0	0	1	7	0	0	4	0	22	3	107
		2008	0	24	1	1	1	6	0	0	1	0	0	24	0	0	2	5		0	0	3	9	0	0	3	0	8	0	88
		2009	1	6	0	0	1	4	0	0	0	0	0	16	1	0	9	3	0	0	0	1	3	0	0	1	0	14	6	66
N06	Other accidents	2006	7	0	1630		2	14	4		0	4	3	65	40	1	5	0		0	0	1	86		35	7	2	55	1	1 962
		2007	14	0	0	0	1	14	4	0	0	4	0	31	1	1	3	0		5	0	3	88	4	34	6	5	41	0	259
		2008	16	0	0	0	0	29	4	0	0	0	3	63	30	0	3	0		5	1	0	92	1	10	6	6	50	2	321
		2009	8	0	0	0	0	18	5	0	1	0	2	21	3	1	7	0	0	2	1	0	71	0	9	4	5	88	4	250
N00	Total no accidents	2006	106	187	1939		233	983	32		70	77	52	431	409	2	152	66		63	28	16	928	89	419	51	70	199	85	6 687
		2007	104	217	56	0	115	320	21	49	53	98	21	413	162	5	130	83		51	33	12	976	93	370	56	61	222	110	3 831
		2008	97	220	65	2	133	329	22	26	40	80	27	453	155	5	116	68		61	26	14	889	73	411	46	65	217	104	3 744
		2009	88	146	48	1	113	310	29	19	42	51	26	171	180	5	119	55	7	30	22	16	843	43	304	46	19	236	104	3 073
R01	No of train-km (million)	2006	152.190	104.937	36.090		158.999	1 013.500	80.541		19.071	185.000	50.900	508.000	106.787	18.242	377.000	13.827		17.122	133.000	47.392	221.737	39.264	94.900	132.295	18.980	50.978	535.757	4 117
		2007	155.000	103.587	36.030	6.533	152.890	1 048.700	78.700	7.553	19.905	186.000	52.577	529.540	114.000	16.832	370.000	14.992		18.578	140.000	47.392	223.031	40.980	96.262	134.345	19.160	51.003	521.292	4 185
		2008	158.400	92.900	35.075	5.540	174.961	1 043.500	82.000	7.131	21.164	193.000	53.259	541.000	109.000		366.863	15.817		19.525	139.000	46.841	224.359	41.760	96.145	138.194	20.098	49.332	549.067	4 224
		2009	152.300	91.870	31.490	5.652	163.187	1 002.917	82.150	6.820	19.613	188.000	50.019	504.000	106.286		350.549	14.053	8.063	18.726	132.000	43.278	208.640	40.580	88.500	131.518	18.208	44.958	568.569	4 072

Table 7 — Number of precursors to accidents

ID	Precursors to accidents	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
I01	Broken rails	2006		115	7		0	124	0			74	65	11	768	8	361	1		1	34	51	3054	45	349	256	76	1	232	5 633
		2007		98	92	13	21	407	32	7	269	54	21	323	654	1	430	62		5	31	10	2484	39	319	187	57	5	192	5 813
		2008		281	67	8	4	536	14	7	223	70	19	309	716	3	84	1		4	31	36	2396	33	380	218	79	10	170	5 699
		2009		30	185	3	15	591	40	16	172	103	25	294	10	4	404	1	12	10	58	44	1 506	35	414	235	94	15	146	4 462
I02	Track buckles	2006		1			1	72	1			186	10	171	3	5	6 743	2		1	143	96	80	95	0	80	26	1	86	7 803
		2007		0	25	0	0	68	6	0		171	7	177	4	1	3 113	40		1	13	14	17	40	3	102	11	2	5	3 820
		2008		0	10	0	0	40	8	0	110	218	3	194	8	0	41	0		3	8	17	19	37	0	87	16	0	16	835
		2009		0	6	0	0	38	2	111	89	415	1	163	0	3	677	0	7	4	9	37	22	44	3	115	8	1	28	1 783
I03	Wrong-side signalling failures	2006		1			0	0	544		0	6		290		4	4	4		3		0			0	8		4	617	1 485
		2007	7	1	10	0	0	0	193	0	0	5		277	0	1	0	245		0		0	0	0	0	6		6	550	1 301
		2008	3	1	13	0	0	0	119	0	0	6	2	277	8	2	2	39		0	18	1	52	0	0	12		2	901	1 458
		2009	0	2	0	0	0	0	43	75	0	4	0	287	0	2	0	44	2	0	18	0	21	0	0	9		1	6	514
I04	Signals passed at danger	2006	15	55	5		60		756		1	93	18	35	8	35	24	124		4	292	78		24	425	194	15	78	352	2 691
		2007	12	81	15	5	26	727	568	2	1	93	22	112	12	31	15	60		2	275	73	4 013	20	425	217	16	79	324	7 226
		2008	16	97	12	3	26	760	510	2	1	111	30	124	8	22	20	3		5	240	70	2 653	24	396	275	15	75	316	5 814
		2009	20	75	3	4	39	355	531	1	5	94	20	133	7	17	15	7	1	4	214	105	13	12	432	362	12	75	260	2 816
I05	Broken wheels	2006		0			0	2	19			1	14		1	0	2	0		5	0	52	137	1	1	8			0	243
		2007	2	1	17	0	0	6	22	0	1	0		2	0	0	0	0		9	0	39	66	0	2	2	0	1	0	170
		2008	0	1	13	0	0	1	7	0	1	0	0	0	0	0	0	1		2	0	6	57	0	0	1	0	0	0	90
		2009	0	0	0	0	1	2	14	0	0	0	0	0	1	0	1	9	0	1	0	0	105	0	0	0	0	0	0	134
I06	Broken axles	2006		0			0	9	23			0	0		3	0	2	22		2	0	0	3	3	2	10	1		0	80
		2007	3	0	29	0	0	4	8	0	0	0		0	1	0	1	28		1	0	0	22	1	2	3	0	0	0	103
		2008	3	0	7	0	0	9	9	0	0	0	0	1	0	1	2	0		0	1	2	67	0	2	1	0	0	0	105
		2009	1	0	0	1	0	1	12	0	0	1	0	2	0	0	4	0	0	0	1	3	12	0	1	2	0	0	0	41
R01	No of train-km (million)	2006	152.190	104.937	36.090		158.999	1 013.500	80.541		19.071	185.000	50.900	508.000	106.787	18.242	377.000	13.827		17.122	133.000	47.392	221.737	39.264	94.900	132.295	18.980	50.978	535.757	4 117
		2007	155.000	103.587	36.030	6.533	152.890	1 048.700	78.700	7.553	19.905	186.000	52.577	529.540	114.000	16.832	370.000	14.992		18.578	140.000	47.392	223.031	40.980	96.262	134.345	19.160	51.003	521.292	4 185
		2008	158.400	92.900	35.075	5.540	174.961	1 043.500	82.000	7.131	21.164	193.000	53.259	541.000	109.000		366.863	15.817		19.525	139.000	46.841	224.359	41.760	96.145	138.194	20.098	49.332	549.067	4 224
		2009	152.300	91.870	31.490	5.652	163.187	1 002.917	82.150	6.820	19.613	188.000	50.019	504.000	106.286		350.549	14.053	8.063	18.726	132.000	43.278	208.640	40.580	88.500	131.518	18.208	44.958	568.569	4 072

Table 8 — Costs of all accidents

ID	Category	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
C00	Costs of all accidents (€)	2006	0	0	1 091 619		3 015 487	0	0		0	0	45 366 103	0	1 873 308	750 000	0	18 036 842		43 424	0	34 625 211	4 483 573	52 113 923	638 670	67 145 296	1 944 225	1 160 000	120 266 703	352 554 386
		2007	0	0	674 623	0	3 844 692	0	13 740 712	0	2 119 403	0	35 316 435	0	17	110 000	0	18 536 814		339 309	0	6 375 000	5 370 073	60 250 000	580 504	79 530 122	0	1 990 000	189 681 101	418 458 804
		2008	0	0	686 371	130 000 000	10 079 369	0	23 601 892	179 747	2 193 186	0	42 242 859	0	0	800 000	0	20 582 744		3 545 660	91 900	6 975 000	2 855 166	47 696 000	1 541 908	55 490 741	301 987	2 806 375	129 256 683	480 927 589
		2009	89 876 841	39 493 321	694 466	234 726	304 901	0	47 298 709	7 114 424	2 122 359	0	29 818 224	161 167 637	0	18 799 000	127 238 708	20 818 685	8 163 330	788 522	54 530 488	0	221 063 433	32 336 397	678 468	59 503 282	13 692 317	2 124 167	102 233 136	1 040 095 539
C01	Costs of deaths (€)	2006					945 111						42 270 504		33 654			16 896 300		0		0		47 240 000	112	35 775 161		750 000	80 643 600	224 554 442
		2007			0	0	12 623		12 017 760	0			34 569 918					17 890 200		1 329		0	156 296	54 960 000	2 125	43 306 774	0	0	129 925 800	292 842 825
		2008			16 353	0	522 252		21 814 744	0			40 734 897					19 878 000		11 186	40 200	0	14 958	40 540 000	1 081	31 201 398		0	114 448 875	269 223 944
		2009	72 426 273	34 082 952	0	0	31 325		38 755 814	6 360 702			27 292 384	144 924 430			114 361 378	19 216 374	8 163 330	14 513	29 972 250	0	183 303 000	30 073 837	0	39 929 105	11 742 902	0	98 861 059	859 511 629
C02	Costs of injuries (€)	2006					474 373						3 095 599		559			1 128 100		951		31 657		3 934 062	0	8 724 086		387 000	5 600 250	23 376 637
		2007			2 523	0	6 208		1 722 952	0			746 517					586 612		0		275 000	24 639	4 310 000		7 412 473	0	0	6 944 310	22 031 234
		2008			0	0	99 249		1 787 148	0			1 507 962					586 612		740	3 100	275 000	63 193	5 030 000		2 675 484		0	4 073 604	16 102 092
		2009	17 450 568	5 235 170	0	234 726	81 285		4 796 913	588 184			2 525 840	16 243 206			12 877 330	634 508	0	206	2 558 238	0	13 627 882	2 262 560	0	5 856 628	1 949 415	0	3 097 932	90 020 590
C03	Costs of replacement or repair of damaged RS and railway installations (€)	2006			1 091 619		1 596 004								1 838 231	750 000		12 442		40 037		16 389 474	4 483 573	-	629 858	21 078 727	1 944 225	20 000	16 071 468	65 945 658
		2007			572 084	0	3 724 791			0	1 933 255				17	110 000		60 002		335 235		3 000 000	5 095 912	-	317 137	24 775 843	0	1 890 000	44 406 218	86 220 493
		2008			634 361	60 000 000	9 410 339			146 102	618 441					800 000		118 132		3 340 839	24 300	3 600 000	2 671 815	750 000	1 490 182	19 510 021	301 987	2 639 224	6 228 951	112 284 693
		2009		175 198	551 005	0	177 39		3 745 982	118 331	1 974 940					12 699 000		967 803		765 812	22 000 000	0	24 132 551	0	643 897	13 717 550		2 124 167		83 793 575
C04	Costs of delays (€)	2006													864			0		2 436		18 204 080		939 861	8 700	1 567 322		3 000	17 951 385	38 677 649
		2007			100 016	0	101 070			0	186 148							0		2 745		3 100 000	93 226	980 000	261 241	4 035 032	0	100 000	8 404 773	17 364 252
		2008			35 657	70 000 000	47 529			33 646	1 574 745							0		192 895	24 300	3 100 000	105 201	1 376 000	50 645	2 103 839		167 151	4 505 253	83 316 860
		2009	0	0	143 461	0	14 952		0	47 207	147 419		0			6 100 000	0	0	0	7 991	0	0	0	0	34 570		0	0	274 145	6 769 745
R01	No of train-km (million)	2006	152.190	104.937	36.090		158.999	1 013.500	80.541		19.071	185.000	50.900	508.000	106.787	18.242	377.000	13.827		17.122	133.000	47.392	221.737	39.264	94.900	132.295	18.980	50.978	535.757	4 117
		2007	155.000	103.587	36.030	6.533	152.890	1 048.700	78.700	7.553	19.905	186.000	52.577	529.540	114.000	16.832	370.000	14.992		18.578	140.000	47.392	223.031	40.980	96.262	134.345	19.160	51.003	521.292	4 185
		2008	158.400	92.900	35.075	5.540	174.961	1 043.500	82.000	7.131	21.164	193.000	53.259	541.000	109.000		366.863	15.817		19.525	139.000	46.841	224.359	41.760	96.145	138.194	20.098	49.332	549.067	4 224
		2009	152.300	91.870	31.490	5.652	163.187	1 002.917	82.150	6.820	19.613	188.000	50.019	504.000	106.286		350.549	14.053	8.063	18.726	132.000	43.278	208.640	40.580	88.500	131.518	18.208	44.958	568.569	4 072

Table 9 — Hours lost due to accidents

ID	Category	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
W00	Total no of hours lost	2006									95 312						9 039	441.2		0		4 647.5	3 962		233	2 299			33 470	149 403.7
		2007				0	1 189			0	5 840						12 164.6	8 149.75		0		9 283	25 635.72		1 185	7 124	0	0	21 349	91 920.07
		2008				0	4 500			200	95 104						2 572.016	160.03		2 400		1 148	16 625		723	1 794		0	38 115	163 341.046
		2009					3 000				7 232							140		0								0		10 372
W10	No of hours lost relative to total number of working hours	2006									0.006						0	0.000		0		0.000				0			0	0.006
		2007				0	0.000				0.000						0	0.000		0		0.001	0.000		0.000	0	0		0.000	0.002
		2008				0	0.000				0.007						0	0.000		0.000		0.000	0.000		0.000	0			0.000	0.007
		2009					0.000				0.000							0.000		0										0.001
R04	Total no of working hours (1 000 hours)	2006					102 000				16 027				837		145 790.322	18 689.348		24 181		119 890		16 239		15 163 144	16 857		184 127 400	345 395 586.348
		2007				3 400.235	87 822.437			0	15 134						131 620.554	18 448		22 010		12 597.795	87 751.3	15 812	117 578.368	27 486 739	16 668	0	188 623.8	159 693 138.935
		2008				3 514.81	91 000			0	14 608				36 656		128888731.27	18 828		20 947		13 215.047	94 464.212	16 006	95 972	36 070 744	16 788	0	235 796	165 617 270.339
		2009					95 000				15 048				36 345	8 458 120		18 263		15 424								0		8 638 200

Table 10 — Technical safety of infrastructure and its implementation

ID	Category	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
T01	% of track with ATP in operation	2006		0.081	0.150		0.160	-	0.280			0.856	0.720	0.558	0.340	0.050	0.572	0.250		0.325	0.980	0.700		0.503	0.488	0.706	0.640	0.151	0.043	
		2007		0.084	0.140	1.000	0.170	0.881	0.530	0.240		0.866	0.749	0.585		0.050	0.900	0.250		0.436	0.990	0.700		0.508	0.500	0.656	0.545	0.151	0.042	
		2008	0.664	0.069	0.110	1.000	0.170	0.900	0.530	0.232		0.870	0.770	0.463		0.050	0.915	0.250		0.387	0.990	0.740		0.513	0.525	0.720	0.670	0.185	0.042	
		2009	0.679	0.110	0.110	1.000	0.170	0.900		0.228		0.874	0.830	0.472		0.050	0.924	0.349	1.000	0.464	0.990	0.740		0.513	0.483	0.640	0.670	0.185	0.042	
T02	% of train-km using operational ATP	2006		0.060	0.080								0.900		0.780	0.120	0.490	0.641			0.999	0.900		0.900				0.418	0.030	
		2007			0.200	1.000				0.950			0.970	0.791		0.137	0.625	0.608			0.999	0.900		0.900		0.932			0.030	
		2008		0.039	0.210	1.000				0.684			0.980			0.133	0.717	0.589			0.999	0.900		0.900		0.960			0.030	
		2009		0.042	0.210	1.000				0.725		0.964	0.990			0.117	0.788	0.665	0.990		0.990	0.900		0.900		0.930			0.030	
T03	Total number of Level-crossings	2006	6 977	2 037	820		8 576	20 317	1 548		1 270	2 885	4 430	16 804	5 981	1 171	8 383	436		657	2 724	4 300	17 011	1 297	5 534	10 541	965	2 322	7 211	134 197
		2007	6 776	2 180	820		8 628	19 011	1 449	328	1 265	2 811	3 634	14 651	5 972	1 126	7 350	531		660	2 720	3 761	14 219	1 266	5 625	10 572	944	2 307	7 456	126 062
		2008	6 713	2 110	821		8 551	18 051	1 563	329	1 265	2 699	3 515	18 507	5 910	1 095	7 643	523		641	2 700	3 987	14 255	1 229	5 784	11 352	959	2 265	6 680	129 147
		2009	6 530	1 913	819		8 523	17 508	1 364	329	1 305	2 613	4 061	18 459	5 910	1 069	7 585	530	142	634	2 659	3 656	14 163	1 191	5 181	11 371	941	2 220	6 802	127 478
T04	Total number of Level-crossings per track-km	2006	0.880	0.328	0.160		0.737	0.391	0.432		0.424	0.168	0.502	0.545	0.747	0.555	0.462	0.199		0.161	0.419	1.052	0.598	0.369	0.271	0.686	0.440	0.496	0.228	
		2007	0.831	0.351	0.160		0.747	0.370	0.390	0.149	0.413	0.157	0.412	0.489	0.565	0.534	0.404	0.243		0.152	0.406	0.922	0.499	0.359	0.276	0.696	0.431	0.496	0.237	
		2008	0.819	0.336	0.160		0.740	0.348	0.411	0.154	0.413	0.150	0.397	0.403	0.559	0.519	0.297	0.240		0.135	0.403	0.977	0.497	0.348	0.284	0.706	0.438	0.488	0.212	
		2009	0.801	0.298	0.159		0.738	0.338	0.370	0.152	0.425	0.145	0.459	0.401	0.559	0.499	0.290	0.243	0.336	0.187	0.387		0.491	0.338		0.741	0.430	0.479	0.215	
T05	% of Level-crossings with automatic or manual protection	2006	0.290	0.792	0.420		0.412	0.540			0.610	0.350	0.190	0.740	0.615	0.170	0.753	0.764		0.640	0.677	1.000	0.390	0.393	0.303	0.344	0.340	0.470	0.234	
		2007	0.283	0.808	0.420		0.247	0.570	0.570	0.470	0.656	0.353	0.194		0.590	0.193	0.822	0.744		0.640	0.675	1.000	0.337	0.382	0.305	0.329	0.350	0.470	0.241	
		2008	0.286	0.810	0.570		0.247	0.590	0.550	0.490	0.720	0.353	0.201	0.727	0.590	0.200	0.835	0.750		0.600	0.763	1.000	0.337	0.373	0.294	0.310	0.330	0.487	0.246	
		2009	0.298	1.000	0.580		0.247	0.580	0.557	0.498	0.561	0.390	0.206		0.590	0.206		0.732	0.754	0.600	0.766	1.000	0.389	0.397	0.000	0.216	0.384	0.485	0.236	
R03	No of track-km	2006	7 924	6 212	5 119		11 642	51 959	3 586		2 997	17 160	8 830	30 860	8 007	2 110	18 154	2 187		4 091	6 500	4 087	28 446	3 513	20 385	15 360	2 192	4 678	31 594	297 593
		2007	8 154	6 215	5 119	159	11 554	33 897	3 720	2 200	3 060	17 885	8 816	29 973	10 577	2 110	18 195	2 181		4 353	6 700	4 080	28 499	3 528	20 385	15 198	2 192	4 648	31 515	284 912
		2008	8 197	6 282	5 116	159	11 554	51 851	3 800	2 133	3 062	17 960	8 848	45 951	10 577	2 110	25 720	2 180		4 731	6 700	4 080	28 673	3 528	20 348	16 075	2 192	4 638	31 534	327 997
		2009	8 154	6 426	5 154	159	11 554	51 780	3 687	2 166	3 070	17 972	8 847	46 007	10 577	2 141	26 174	2 182	422	3 396	6 868		28 836	3 528		15 349	2 187	4 638	31 571	302 845

Table 11 — Management of safety — number of audits planned and conducted

ID	Category	Years	AT	BE	BG	CT	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IE	IT	LT	LU	LV	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
A01	Total no of accomplished audits	2006		0	2 719		159		33			731	44	1		21	1 278	21		131		55	0	2		319		6	720	6 240
		2007		0	3 215	25	290		36	249		755	43	44	21	13	2 157	27		1 853	20	66	0	6		188		0	189	9 197
		2008	109	0	3 196	24	263		32	83	0	777	33	50		21	2 158	29		265	20	72	0	1		156	4	1	47	7 341
		2009	220		2 941	19	410			84	0	1 365	26		41	18	2 431	27	317	5	5	86	0	10		164		1	758	8 928
A02	Accomplished audits as percentage of required/planned audits	2006		0.00			1.00		1.38			1.01	0.91	1.00		1.05	0.98	0.81		1.19		0.70	1.00	1.00		0.98			0.93	
		2007				0.85	1.10		1.57	1.00		1.01	0.67	1.00	0.77	1.00	0.56	1.00		0.98	1.00	0.74	0.00	1.00		0.97		0.00	0.98	
		2008	0.96	0.00		0.59	1.00		1.33	0.94	0.00	1.02	0.97	1.00		1.05	0.83	1.00		1.15	1.00	0.95	0.00	1.00		0.88	1.00	1.00	1.02	
		2009	0.92			0.76	1.00			0.95	0.00	1.12	0.93	1.00	1.29	0.90	0.85	0.96		1.00	1.00	0.77	0.00	1.00	0.00	0.74		1.00	0.83	

Comments on CSI data tables

ERA has reviewed the reported CSI data and all large fluctuations have been checked by the reporting NSA. The table below includes comments for the data where, for example, fluctuations are due to changes in reporting procedures or where the national definition applied gives a value that deviates from the European average.

Table	Country	Year	Variable	Comment
Table 3C	CZ	2008	PK01	The high number of passengers seriously injured and killed in 2008 is due to one serious accident, a bridge collapse and subsequent high-speed train collision (8 August 2008).
Table 3D	IT	2009	OK02	The high number of other persons killed in derailments of trains in 2009 is due to one serious accident, a derailment of a train with dangerous goods.
Table 4A	EL	2006	PS03	One significant level-crossing accident in 2006 explains the large number of passengers seriously injured.
	BE	2007	SS06	The figure includes work accidents.
Table 4C	CZ	2008	PS01	The high number of passengers seriously injured and killed in 2008 is due to one serious accident, a bridge collapse and subsequent high-speed train collision (8 August 2008).
Table 4B	DE	2008	PS01	The large number of passengers seriously injured is mainly due to one big accident.
Table 4D	BG	2009	US01	The high number of unauthorised persons seriously injured in collisions of trains in 2009 is due to one serious accident in which a car was hit by a train while outside a level crossing.
	IT	2009	OS02	The high number of other persons seriously injured in derailments of trains in 2009 is due to one serious accident in which a derailment led to an explosion of dangerous goods.
	LV	2009	PS03	The high number of passengers seriously injured in level-crossing accidents in 2009 is due to a single collision with heavy road-building equipment.
	PL	2009	PS04	The high number of passengers seriously injured in accidents caused by rolling stock in motion in 2009 is due to the inclusion of persons hopping on or jumping out of trains in motion, in line with Annex 1 of Directive 2004/49/EC, from 2009.
	RO	2009	US06	The high number of other unauthorised persons seriously injured reflects a single event of a high-voltage accident to persons stealing goods from a wagon.
Table 6	BG	2006	N01–N06	The variable includes non-significant accidents.
	DE	2006	N01–N06	Data include non-significant accidents.
	FI	2006	N04–N05	Data include non-significant accidents.
	FR	2006	N01–N02	Does not include collisions/derailments on sidings.
	HU	2006–08	N01–N06	The fluctuation in the number of occurrences between 2006 and 2008 is due to a combination of a change in reporting procedures and a true change in number of events.
	RO	2006	N01	The variable does not include collisions with objects.

Table	Country	Year	Variable	Comment
Table 7	BG	2006	I01	Only includes broken rails that result in more than 30-minute traffic delays.
	DE	2006	I01	Only includes broken rails with a subsequent dangerous situation.
	DE	2008	I01	The large number of broken rails was due to a severe winter.
	DK	2006	I03	National definition: All events when the signal changes expectantly, also to a more restrictive, are registered.
	DK	2006	I04	National definition: All events when a restrictive signal is passed are registered, also when there is no real danger and in many cases just by a few metres.
	FR	2006	I01	There was a change in reporting procedures between 2006 and 2007. Using 2007 reporting procedures, the figure would have been 346.
	FR	2006	I04	There was a change in reporting procedures between 2006 and 2007. Using 2007 reporting procedures, the figure would have been 110.
	IT	2008	I01	There was a change in reporting procedures between 2007 and 2008.
	IT	2006–08	I02	There was a change in reporting procedures between 2006 and 2008.
	LT	2006–07	I01–I04	The fluctuation in the reported number of occurrences is the effect of a change in definition.
	NL	2006	I02	The large reported number of track buckles is due to an extremely hot summer causing a great deal of track buckles.
	NL	2009	I01	Breaks in welds and within points have not been included before 2009.
	NO	2006–07	I01–I02	Varying weather conditions caused large fluctuations in this variable between 2006 and 2007.
	NO	2008	I01, I05	The change in reported number of events is due to an improved implementation of existing reporting procedures.
	PL	2006	I03–I04	The infrastructure manager did not collect information on incidents and near misses before 2007. The information is therefore incomplete. Signals passed at danger were not collected.
	PL	2006–08	I03–I06	There has been a change in reporting procedures, explaining the fluctuation in the reported number of events.
	PL	2009	I01,I02,I06	There was a change in definition in 2009. Broken rails that are not causing disruption of traffic are excluded from reporting.
	UK	2009	I03	A new criterion for including wrong-side signalling failure has been applied since 2009. The number now relates only to cases in which a signal has been displaying an aspect less restrictive than it should as a result of an infrastructure fault.

Table	Country	Year	Variable	Comment
Table 8	LV	2008	C00–C04	The large numbers are explained by a small number of serious accidents and improved reporting and data collection procedures.
Table 9	RO	2008	R04	The change is due to a change in definitions and reporting procedures
	UK	2007	R04	The change in the reported number of working hours is due to a change in reporting procedures.
Table 10	BE	2006–07	R03	The figure is taken from Eurostat 2005 data.
	DE	2006	R03	The figure given is as per 31 December 2007.
	IT	2008	R03	The increase in network length is due to a change in reporting from line-km to track-km.
	LT	2008–09	T01,T02	The increase in the number of tracks with ATP in operation is due to modernisation of lines and closure of some lines over time.
	PL	2006–07	R03	The figure is excluding crossovers on main lines and is taken from Eurostat 2005 data.
Table 11	LV	2006	A01	The figure only includes audits conducted by the State Railway Technical Inspectorate.
	LV	2007	A01	The figure includes audits conducted by the IM, RU and State Railway Technical Inspectorate.
	UK	2008	A01	The change in the reported number of audits is due to a change in interpretation of the definition.

Annex 2 — List of national safety authorities and national investigation bodies

Country	National safety authority	National investigation body
Austria	**Bundesministerium für Verkehr, Innovation und Technologie** Oberste Eisenbahnbehörde http://www.bmvit.gv.at	**Bundesanstalt für Verkehr (VERSA)** Unfalluntersuchungstelle des Bundes, Fachbereich Schiene http://versa.bmvit.gv.at
Belgium	**Federale Overheidsdienst Mobiliteit en Vervoer** Directoraat-generaal vervoer te Land **Service Public fédéral Mobilité et Transports** Direction générale Transport terrestre http://www.mobilit.fgov.be	**Federale Overheidsdienst Mobiliteit en Vervoer** Onderzoeksorgaan voor Ongevallen en Incidenten op het Spoor **Service Public fédéral Mobilité et Transports** Organisme d'enquête sur les Accidents et les Incidents ferroviaires http://www.mobilit.fgov.be
Bulgaria	**Ministry of Transport — Railway Administration Executive Agency** http://www.iaja.government.bg	**Ministry of Transport — Railway Accident Investigation Unit** http://www.mtitc.government.bg
Czech Republic	**Drazni Urad — Rail Authority** http://www.ducr.cz	**Drážní inspekce — Rail Safety Inspection Office** http://www.dicr.cz
Germany	**Eisenbahn — Bundesamt (EBA)** http://www.eba.bund.de	**Bundesministerium für Verkehr, Bau und Stadtentwicklung** Eisenbahn-Unfalluntersuchungsstelle http://www.bmvbs.de
Denmark	**Trafikstyrelsen** http://www.trafikstyrelsen.dk	**Havarikommissonen for Civil Luftfart og Jernbane** http://www.havarikommissionen.dk
Estonia	**Estonian Technical Surveillance Authority** http://www.tja.ee	**Ministry of Economic Affairs and Communications** Emergency Management Department http://www.mkm.ee
Greece	**Hellenic Ministry of Infrastructure, Transport and Networks** Safety Authority for Railway Transport http://www.yme.gr	**Hellenic Ministry of Infrastructure, Transport and Networks** Committee for Accident Investigation http://www.yme.gr
Spain	**Agencia de Seguridad del Transporte Terrestre** http://www.fomento.es	**Ministerio de Fomento** Comision de Investigación de Accidentes ferroviarios http://www.fomento.es
Finland	**Finnish Transport Safety Agency (TraFi)** http://www.trafi.fi	**Accident Investigation Board of Finland** http://www.onnettomuustutkinta.fi
France	**Établissement Public de Sécurité Ferroviaire (EPSF)** http://www.securite-ferroviaire.fr	**Bureau d'Enquêtes sur les Accidents de Transport Terrestre** http://www.bea-tt.equipement.gouv.fr
Hungary	**National Transport Authority** http://www.nkh.gov.hu	**Transportation Safety Bureau** http://www.kbsz.hu

Country	National safety authority	National investigation body
Ireland	**Railway Safety Commission** http://www.rsc.ie	**Railway Accident Investigation Unit** http://www.raiu.ie
Italy	**Agenzia Nazionale per la Sicurezza delle Ferrovie** http://www.ansf.it	**Railway Safety Commission** http://www.mit.gov.it
Lithuania	**Valstybinė geležinkelio inspekcija** **State Railway Inspectorate** http://www.vgi.lt	**Katastrofų tyrimų vadovas** National Investigation Body http://www.transp.lt
Luxembourg	**Ministère du Développement durable et des Infrastructures** http://www.gouvernement.lu	**Administration des Enquêtes Techniques** http://www.mt.public.lu/transports/AET/
Latvia	**State Railway Technical Inspectorate (SRTI)** http://www.vdzti.gov.lv	**Transport Accident and Incident Investigation Bureau (TAIIB)** http://www.taiib.gov.lv
Netherlands	**Inspectie Verkeer en Waterstaat** http://www.ivw.nl	**Dutch Safety Board** http://www.safetyboard.nl
Norway	**Norwegian Railway Inspectorate** http://www.sjt.no	**Accident Investigation Board Norway** http://www.aibn.no
Poland	**Urząd Transportu Kolejowego** http://www.utk.gov.pl	**Państwowa Komisja Badania Wypadków Kolejowych (NIB)** http://www.mi.gov.pl
Portugal	**Instituto da Mobilidade e dos Transportes Terrestres** http://www.imtt.pt	**Gabinete de Investigação de Segurança e de Acidentes Ferroviários (GISAF)** http://www.iot.gov.pt (site under construction)
Romania	**Autoritatea Feroviară Română (AFER)** Romanian Railway Safety Authority http://www.afer.ro	**Autoritatea Feroviară Română (AFER)** Romanian Railway Investigating Body http://www.afer.ro
Sweden	**Transportstyrelsen** http://www.transportstyrelsen.se	**Statens haverikommission** http://www.havkom.se
Slovenia	**Public Agency of the Republic of Slovenia for Railway Transport** http://www.azp.si	**Ministry of Transport** Railway Accident and Incident Investigation Division http://www.mzp.gov.si
Slovakia	**Railway Regulatory Authority (URZD)** http://www.urzd.sk	**Ministry of Transport Posts and Telecommunication** http://www.telecom.gov.sk
United Kingdom	**Office of Rail Regulation (ORR)** http://www.rail-reg.gov.uk	**Rail Accident Investigation Branch** http://www.raib.gov.uk
Channel Tunnel	**Channel Tunnel Intergovernmental Commission (IGC)** Commission intergouvernementale Tunnel sous la Manche http://www.channeltunneligc.co.uk **Assisted by:** Channel Tunnel Safety Authority E-mail: ctsa@orr.gsi.gov.uk Secrétariat général au Tunnel sous la Manche (SGTM) E-mail: tunnelmanche@equipement.gouv.fr	See the relevant authority or body in France or the United Kingdom for the respective part of the Channel Tunnel.

Key documents and references

Regulation (EC) No 881/2004 of the European Parliament and Council of 29 April 2004 establishing a European railway agency amended by Regulation (EC) No 1335/2008 of the European Parliament and of the Council of 16 December 2008.

Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification; amended by:
– Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008;
– Directive 2008/110/EC of the European Parliament and of the Council of 16 December 2008;
– Commission Directive 2009/149/EC of 27 November 2009 as regards Common Safety Indicators and common methods to calculate accident costs.

Regulation (EC) No 91/2003 of the European Parliament and of the Council on rail transport statistics amended by:
– Commission Regulation (EC) No 1192/2003 of 3 July 2003;
– Commission Regulation (EC) No 1304/2007 of 7 November 2007;
– Regulation (EC) No 219/2009 of the European Parliament and of the Council of 11 March 2009.

The annual reports of all Member States' NIBs and NSAs submitted to the Agency.

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Design: GELLIS Communication

The Railway Safety Performance in the European Union
A report from the European Railway Agency
72 pages, 21 × 29.7 cm

Luxembourg: Publications Office of the European Union, 2011

ISBN 978-92-9205-014-6
ISSN 1831-1512
doi:10.2821/13224

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Printed on recycled paper that has been awarded the EU eco-label for graphic paper (http://ec.europa.eu/environment/ecolabel).
Printed in Belgium

TR-AB-11-001-EN-C

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Publications Office

ISBN 978-92-9205-014-6