TSG 2014-1353

RAILWAY SAFETY REPORT

Swedish Transport Agency 2013 Annual Report in accordance with Article 18 of Directive 2004/49/EC (the Railway Safety Directive)

TRANSPORT STYRELSEN

Revisions

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0.1	08/09/2014	Eva Linmalm, with the help of documentation from the sections for infrastructure, railway undertakings, technology – railway, as well as data collection and analysis.	
0.2	18/09/2014	Eva Linmalm, processing of comments, etc.	
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Preface

This annual report on railway operations will describe the safety levels in Sweden. The description complies with the requirements set out in Directive 2004/49/EC of the European Parliament and of the Council, also known as the Railway Safety Directive. The format of this year's report was changed to that of a new template from the European Railway Agency (ERA), which is the European authority that receives the report.

A number of Swedish Transport Agency employees contributed to the production of this report, including: Lena Lundborg and Margareta Lövgren, Section: Infrastructure; Samer Sada, Section: Railway undertakings; Mikael Hägg, Section: Technology – Railway; Per Almqvist and Eva Linmalm, Section: Data collection and analysis. Peter Thornborg, Communications Department, produced the first page of the report.

In addition to the contributions of Swedish Transport Agency representatives, railway undertakings and infrastructure managers, i.e. operators, also contributed with documentation in their annual safety reports.

Norrköping, September 2014

Staffan Widlert
Director-General

Contents

A. INTRODUCTION

The Railway Safety Directive[1], henceforth also called the Safety Directive, requires the national safety authority of each Member State to submit a report to the European Railway Agency (ERA) by 30 September each year. This is the eighth report, covers 2013, and follows the template provided by ERA. This report differs from those of previous years because the template from ERA has been changed.

Purpose
The purpose of this report is to describe national safety levels and, pursuant to the Safety Directive, it must contain information on the development of railway safety, important changes in legislation and other regulations concerning railway safety, the development of safety certification and safety authorisations, as well as results of and experience relating to the safety authority's oversight activities[2].

Scope and exemption
National railway operations are covered by the Safety Directive requirements while trams and metros are not. Some infrastructure managers and railway undertakings are exempted from submitting a safety report and thus it is not the safety of railway operations in Sweden as a whole that is described here.

Recipients and stakeholders
Although the report is prepared for ERA at their request, the content may be of interest to others, such as employees at the Swedish Transport Agency, the Swedish Ministry of Enterprise, Energy and Communications, Transport Analysis, other government agencies, as well as research institutes, railway undertakings, infrastructure managers, and other stakeholders with an interest in the railway industry. The report may also be of interest to those with a general interest in railways and rail safety.

The report is published on the Swedish Transport Agency website[3] and the ERA website[4], where the annual reports from other countries are also published. ERA, in turn, publishes a consolidated report that is based on the reports that the countries submit.

The Safety Directive also stipulates that the operators, i.e. railway undertakings and infrastructure managers, must submit a safety report to the safety authority by 30 June each year[5]. In accordance with the directive, this report must contain information on the organisation's corporate safety targets, reporting of information

[1] Directive 2004/49/EU of the European Parliament and of the Council, Chapter IV, Article 18.
[2] Article 18 of Directive 2004/49/EC.
[3] www.transportstyrelsen.se
[4] www.era.europa.eu
[5] Directive 2004/49/EC, Chapter II, Article 9

relevant to common safety indicators (CSIs), results of internal safety auditing, and observations on deficiencies and faults in the railway system that could be relevant to safety. A summarised result of the operator's safety reports is included in the report.

Swedish railways are governed by the Railway Act[6]. The government's Railway Ordinance[7] authorised the Swedish Transport Agency to issue railway regulations. The Swedish Transport Agency's regulations are published in the Agency's Code of Statutes (TSFS).

Significant organisational changes
There have not been any significant organisational changes during 2013.

B. NATIONAL ACHIEVEMENT OF SAFETY TARGETS AND STRATEGY COMPLIANCE

This section describes national safety target achievements and safety strategy compliance during 2013. Initially, the Swedish Transport Agency replied to ERA concerning a report which stated that achievement of the national safety targets for employees in railway operations had deteriorated.

ERA issued a report in June 2014 on how Member States had managed to meet the national safety targets for the years 2008 to 2012. The calculations are based on the Commission's decisions on national safety targets and calculation methods to produce them. This means that a comparison is made against national reference values, which are based on the outcome of the years 2004 to 2009, a period in which very few railway workers were killed or injured in railway accidents in Sweden. In the years 2008 to 2012, there were a few more fatalities, which means that Sweden is one of four States that did not meet the safety targets for 20082012.

Article 5 of Commission Decision 2009/460/EC states that ‘in case of “possible deterioration of safety performance”: the Member State/s concerned shall send to the Commission a report explaining the likely causes of the results obtained’. Sweden must therefore send to the Commission an explanation of, inter alia, the measures we have taken and will take. The ERA report on national safety targets indicates that Sweden must also analyse why the data differ between the two sources; ERA and Eurostat[8].

Sweden includes the explanation for the results in the annual report to ERA, as agreed with ERA.

[6] Järnvägslagen [the Railway Act] (2004:519)
[7] Järnvägsförordningen [the Railway Ordinance] (2004:526)
[8] 2014 Report on the Assessment of Achievement of Safety Targets, p 13.

The Swedish Transport Agency's reply to the Commission

The source of statistical information is the official accident statistics for railway operations available on the Transport Analysis website at http://www.trafa.se/sv/Statistik/Bantrafik/Tidsserier/

Few employees have been killed in railway operations

Statistics show that two employees were killed in a railway accident in the period 2004-2009. The second set of national reference values is based on these six years. The two aforementioned employees were a train driver and a crew member who died in a level crossing accident on 10/9/2004.

Every serious accident involving personal injuries is tragic for the railways as a transport system, and especially tragic for the people involved. These undesirable events must be avoided insofar as possible. There are relatively few accidents in Sweden that involve an employee death or serious injury. During the period on which the second national reference value is based, 2004-2009, there was thus one fatal accident in which employees were killed. No employees were killed in connection with railway operations during 2005-2009. This makes the national reference value close to zero (it is not zero because some employees were seriously injured in accidents during the period in question).

The national reference value is then compared to a moving weighted average for the years 2008-2012 in order to determine if safety has changed. Five railway workers died in Sweden during the period concerned (2010 (2), 2011 (2), 2012 (1)).

A question that arises is whether it was random variations that led to three consecutive years with accidents in which employees were killed, or if it is a sign that safety has deteriorated.

As stated, few employees die as a result of accidents in railway operations. This makes it dubious to establish statistical trends on the basis of just a few years, as in this case. Transport Analysis is the Swedish authority for transport statistics and responsible for the official Swedish statistics for railway accidents, which follow the same rules on which Eurostat statistics are based. By utilising the official statistics, a timescale longer than the last five years can be described. Table 1 shows the number of employees who died in railway operations. The figures are presented in five-year intervals in order to follow the ERA report's mean values, beginning in 2012.

Periods	1993-1997	1998-2002	2003-2007	2008-2012
Employees	12	6	2	5

Table 1: The number of railway employees who died as a result of railway accidents, broken down in five-year intervals (Source: Transport Analysis, Time series[9])

[9] A table of official accident statistics per year can be found in Annex A.1

A timescale longer than five years shows that even though employees have been killed in railway accidents in the five years on which the weighted average in the ERA report is based, 2008-2012, the number of deaths is still less than in previous five-year periods, with the exception of 2003-2007. The statistical data in Table 1 reinforces the thesis that it is random factors that lie behind the higher average in the period 2008-2012, compared with the outcome of 2004-2009.

The new Railway Act was introduced in Sweden on 1 July 2004. The Railway Safety Directive[10] was transposed into Swedish law thorough the Railway Act[11] and the Railway Ordinance[12]. Since then, the railway industry has experienced major changes, including the introduction of uniform rules that apply over the whole of Europe. These changes have not led to a deterioration of employee safety; see Table 1.

The responsibility for a safe employee working environment lies with several stakeholders

According to the Railway Safety Directive, the Railway Act, and the Railway Ordinance, with several regulatory frameworks that affect the roles of the stakeholders, the Swedish Transport Agency in its role as safety authority is responsible for setting standards, oversight, issuing permits/authorisations, and record-keeping for the national railway system. A large part of Swedish Transport Agency oversight and application examinations involves ensuring that operators, railway undertakings, and infrastructure managers have functioning safety management systems. The operators themselves are responsible for detecting and attending to any safety shortcomings.

In the case of employee's occupational health and safety, the Swedish Work Environment Authority has a mandate from the government and the Swedish Parliament to ensure compliance with legislation on occupational health and safety and working time. The Swedish Transport Agency and the Swedish Work Environment Authority have an established collaboration with each other.

During 2010-2012, the Swedish Transport Agency noticed that the risk for employees in the track environment increased, due partly to the serious accidents that had occurred. This entailed the Swedish Transport Agency conducting oversight activities of, in particular, the Swedish Transport Administration, which is the state-owned infrastructure manager. An example of one such oversight activity is the Swedish Transport Agency's review of the Swedish Transport Administration's deviation management. In 2010, the Swedish Transport Agency called on the Swedish Transport Administration to take steps to increase trackwork safety, which the Administration did by tightening the internal trackwork rules.

[10] SFS 2004:519.
[11] SFS 2004:526.
[12] Directive 2004/49/EC of the European Parliament and of the Council.

The Swedish Transport Administration has also indicated that they now make approximately 450 unannounced workplace inspections per year at trackwork sites. There was serious accident in 2012 in which an employee was killed in a shunting movement. Immediately following the event, the concerned railway undertaking informed all vehicle type Z70 owners about the event and the risk of crack formation. In addition, a driving ban was imposed on all Z70 vehicles of railway undertakings. After the accident, the Swedish Transport Agency conducted an audit of all railway undertakings that were holders of Z70 vehicles, or closely related types of vehicles. The Agency also informed the undertakings concerned that this vehicle type has a high risk of crack formations in the wheel axles.

The Swedish Accident Investigation Authority has also drawn attention to the risk for employees who work in the track area and decided in the autumn of 2012 to launch a thematic study on trackwork safety[13]. The study is ongoing and has therefore not yet been published.

Finally, it can be mentioned that in 2013 no employees died as a result of railway operations, which has been reported to Eurostat in June 2014 and will be reported to the ERA in the annual report, Section C.2. The Swedish Transport Agency continues to actively monitor the risk for employees in the railway system and if the risk increases, the Agency will promptly take adequate measures within its mandate.

Analysis of differences in data between Eurostat and the ERA

Differences between the data for Eurostat and ERA derive from the fact that there are two different regulatory frameworks that govern the content of the data. Some changes have already been introduced in order to equate the content of the regulatory frameworks with one another[14].

Despite this, differences in the scope of the rules still remain. That which still differs between the two regulatory frameworks is the exemption possibilities of Member States.

Directive 2004/49/EC of the European Parliament and of the Council, Article 2:

a) Networks that are functionally separate from the rest of the railway system and intended only for the operation of local, urban or suburban passenger services, as well as railway undertakings operating solely on these networks.

[13] Swedish Accident Investigation Authority, reference number J-67/12.

[14] Directive 2008/110/EC of the European Parliament and of the Council amending Directive 2004/49/EC as regards, inter alia, Article 2 point 2 on exemption from the Directive. Commission Directive 2009/149/EC (amending Directive 2004/49/EC of the European Parliament and of the Council) adapts its definitions in Annex to the definitions contained in Annex H of Commission Regulation (EC) No 1192/2003 (amending Regulation (EC) No 91/2003 of the European Parliament and of the Council).

This exemption possibility is missing from Regulation (EC) No 91/2003 of the European Parliament and of the Council.

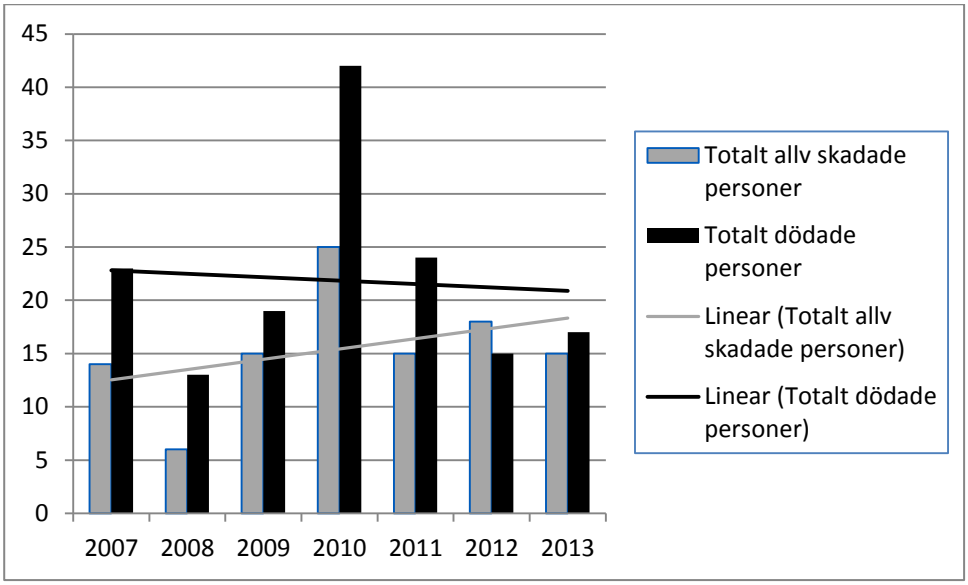
B.1 Main conclusions on the reported year

The Swedish Parliament has decided that the overall objective of transport policy is to ensure socio-economically effective and long-term sustainable transport services for the public and businesses throughout the country. Under the overall objective, the government has set performance objectives and HES objectives as well as five transport policy principles. The objectives, which are intermodal, concern the Swedish Transport Agency, the Swedish Transport Administration, and Transport Analysis. At the same time, the objectives will serve as support and inspiration for local and regional transport objectives and corporate policies[15].

The safety objective for railways is specified in the government's HES objectives. The objective is for the number of deaths and serious injuries in the rail transport sector to continue to decrease. A comparison over time does not demonstrate clear trends; Figure 1. In order to make comparisons, linear trend lines have been added in Figure 1. The trend lines show that since 2007, which is the first year the CSIs (common safety indicators) were presented, the number of deaths from accidents in railway operations has remained relatively unchanged. If anything, one can suspect that the number of deaths is decreasing slightly. However, the number of serious injuries shows a rising trend.

2010 is still the year that ‘messes things up’ due to an unusually high number of deaths and serious injuries that year. A clearer picture reveals itself if one removes the statistics from 2010. The number of deaths decreases less than the increase in seriously injuries. Both scenarios reveal that the difference between the number of deaths and the number of serious injuries is decreasing. It tends to be the case that the majority of those who are injured in railway accidents die as a result of the powerful forces that are involved in such accidents.

[15] Source: government website http://www.regeringen.se/sb/d/18128



Totalt allv skadade personer	Total number of seriously injured persons
Totalt dödade personer	Total number of persons killed
Linear (Totalt allv skadade personer)	Linear trend (Total number of seriously injured persons)
Linear (Totalt dödade personer)	Linear trend (Total number of persons killed)

Figure 1: Number of killed and seriously injured persons in accidents in railway operations in the period 2007-2013 (Source: Injuries to persons reported injuries to the ERA, the Swedish Transport Agency)

B.2 National safety strategy, programs, and initiatives

The overall objective of the transport policies for safety in railway operations – that the number of deaths and serious injuries must continue to decrease – applies to the Swedish Transport Agency, which has developed strategies to meet that objective. The strategies are divided into eight areas, two of which are that our regulatory framework must facilitate ongoing technological development and that our oversight, inasmuch as possible, must be risk-based[16]. The Swedish Transport Administration is also included in the overall objective of the transport policies and they have set goals for their safety efforts. One expressed goal is to halve the number of deaths in railway operations by 2020, as compared to 2010[17]. The Swedish Transport Administration's figures also include suicides, while the accident statistics to the ERA and Eurostat only include accidents. Suicidal events are excluded. They are reported separately and are not included in the analysis of railway safety developments.

[16] Mål och uppdrag för Transportstyrelsen 2014 [Objectives and assignments for the Swedish Transport Agency in 2014], TSG 2013-800.
[17] Analys av säkerhetsutvecklingen 2013 inom järnvägstrafiken [Analysis of 2013 safety developments in rail traffic], the Swedish Transport Administration. Publication number: 2014-058.

B.3 A look back on the reported year

During 2013, the Swedish Transport Agency has worked on the introduction of a fourth railway package and the development or introduction of other EU rules.

At the end of 2013, the Swedish Transport Agency received a governmental commission to study how maintenance in the railway sector could be streamlined in order to, inter alia, improve safety. The study presented several improvement measures, such as a proposal to expand analysis operations by, for example, analysing oversight results in a more systematic manner.

The Swedish Transport Administration has called upon stakeholders in the rail sector to collaborate in order to increase safety in railway operations. The idea is for the participants to represent their organisations and, through agreements within the group, contribute to solutions for improved safety. The group called ‘gruppen för nationell samverkan’ (GNS), or, the group for national collaboration. One result of the group's collaboration is an analytical report on safety developments in 2013 that the Swedish Transport Administration published; representatives of various organisations worked on the report.

B.4 Areas in focus next year

Efforts directed at a fourth railway package will continue in 2014.

The Swedish Transport Agency's Road and Rail Department will continue its efforts to develop methods and procedures for safety oversight based on, inter alia, the report on streamlined maintenance and the Swedish Transport Agency's objective for oversight to be risk-based. To accomplish this, the aforementioned department will develop the application of accident information that infrastructure managers report to us as well as improve the chances of finding reasons behind derailments and other types of events by intensifying the analyses of investigation reports. The department will also go more in-depth in its studies and analyses of safety management system shortcomings, on which it will place a greater emphasis on following-up on the measures that infrastructure managers and railway undertakings decide upon and implement.

C. TRENDS IN RAILWAY SAFETY

This section describes the consequences and trends of accidents and precursors, which indicate whether or not safety trends are at risk of worsening. The number of persons killed and seriously injured in railway operations, the number of serious accidents, and the number of deviations are presented. Definitions follow those of Directive 2009/149/EC amending Annex 1 of the Railway Safety Directive as regards common safety indicators. The rules have been transposed into Swedish law through the Swedish Transport Agency's Regulations (TSFS 2011:86) on

railway accident and safety reporting[18]. Suicidal events are reported separately and are not included in the analysis of railway safety developments.

The reporting of data for this annual report takes place in two steps. The first step is the immediate reporting of serious accidents, incidents, and significant faults and shortcomings that operators are to provide to the Swedish Transport Agency's contingency line. The second step is the operators' annual accident and safety reporting. This year's data are based on responses from 174 operators on accidents and other safety-related shortcomings as well as their actions to address these shortcomings. There are somewhat fewer safety reports than in 2012, when 182 reports were included.

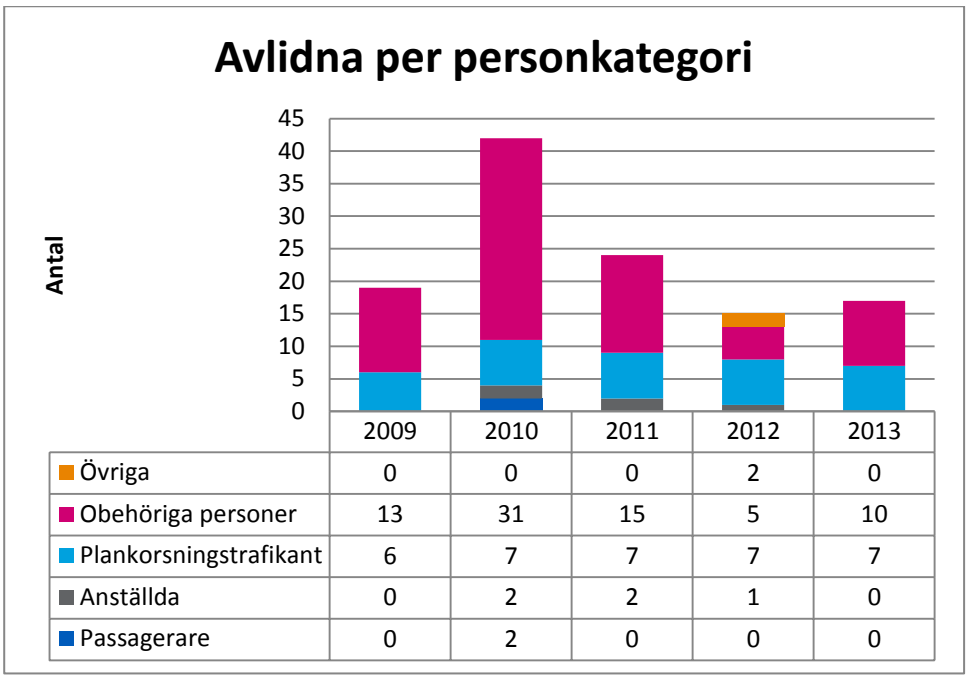
C.1 Detailed analysis of documented accident trends

1. Number of killed and seriously injured persons (total and relative per train kilometre)

In 2013, 17 (15, 24, 42, and 19) persons died in railway accidents (Figure 2) and 15 (18, 15, 25, 15, and 6) persons were seriously injured (Figure 3). A person is counted as seriously injured when he or she has been hospitalised for at least 24 hours. It is sometimes difficult to verify whether a person has been seriously injured because the police often lack data on potential hospitalisations. The police are the main source for the assessment of the severity of injuries, i.e. if the person died or was seriously injured. They also provide information on the cause of an accident; if it was an accident or a suicidal event.

Those who died or were seriously injured in railway accidents in 2013 were mainly level crossing users and unauthorised persons in the track area. One passenger was seriously injured and none were killed. No employees were killed or seriously injured during the year.

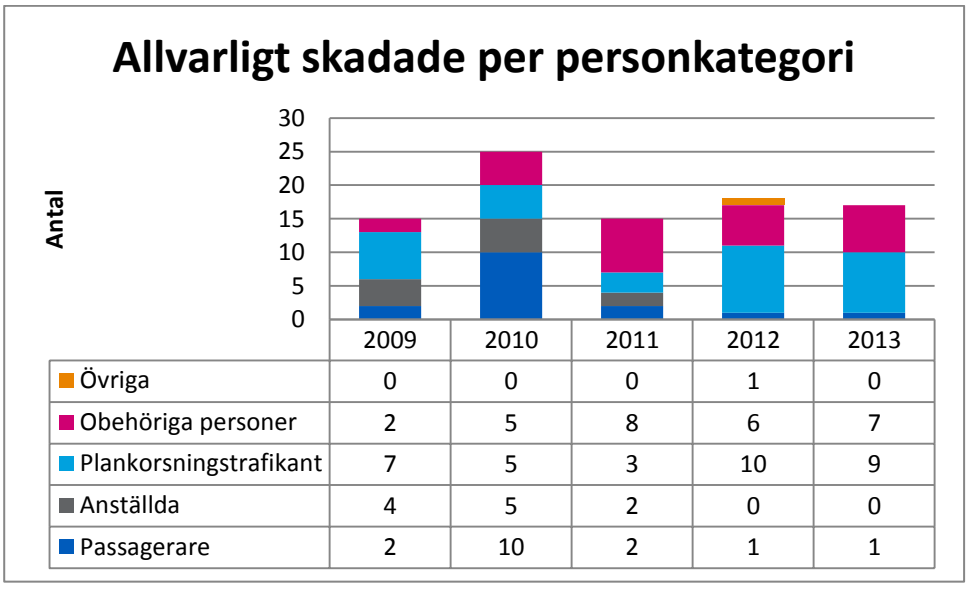
[18] Accidents in which at least one trackbound vehicle in motion was involved and in which at least one person was killed or seriously injured, or in which damage to stock, tracks, or other installations resulted in costs of at least one hundred and fifty thousand euro. Accidents that cause environmental damage or which significantly delay traffic are also regarded as accidents that must be reported.



	2009	2010	2011	2012	2013
Övriga	0	0	0	2	0
Obehöriga personer	13	31	15	5	10
Plankorsningstrafikant	6	7	7	7	7
Anställda	0	2	2	1	0
Passagerare	0	2	0	0	0

Figure 2: Number of fatalities in railway accidents 2009-2013, broken down by category of person

Avlidna per personkategori	Fatalities by category of person
Övriga	Others
Obehöriga personer	Unauthorised persons
Plankorsningstrafikant	Level crossing users
Anställda	Employees
Passagerare	Passengers



	2009	2010	2011	2012	2013
Övriga	0	0	0	1	0
Obehöriga personer	2	5	8	6	7
Plankorsningstrafikant	7	5	3	10	9
Anställda	4	5	2	0	0
Passagerare	2	10	2	1	1

Figure 3: Number of serious injuries in railway accidents 2009-2013, broken down by category of person

Allvarligt skadade per personkategori	Serious injuries by category of person
Övriga	Others
Obehöriga personer	Unauthorised persons
Plankorsningstrafikant	Level crossing users
Anställda	Employees
Passagerare	Passengers

Events in which the police have not taken a position as to whether the event was an accident or a suicide are counted as accidents. In 2013 there were 90 suicidal events, whereby 89 persons died and one person was seriously injured. That is more than in 2012, when there were 82 suicidal events. In 2011 there were 62 suicidal events.

The number of persons killed and seriously injured in railway accidents in relation to traffic volume was higher in 2013 than in 2012. There were thus more deaths or serious injuries per billion train-km in 2013 than in 2012, though 2013 had the second lowest value in the comparative period of 2009-2013.

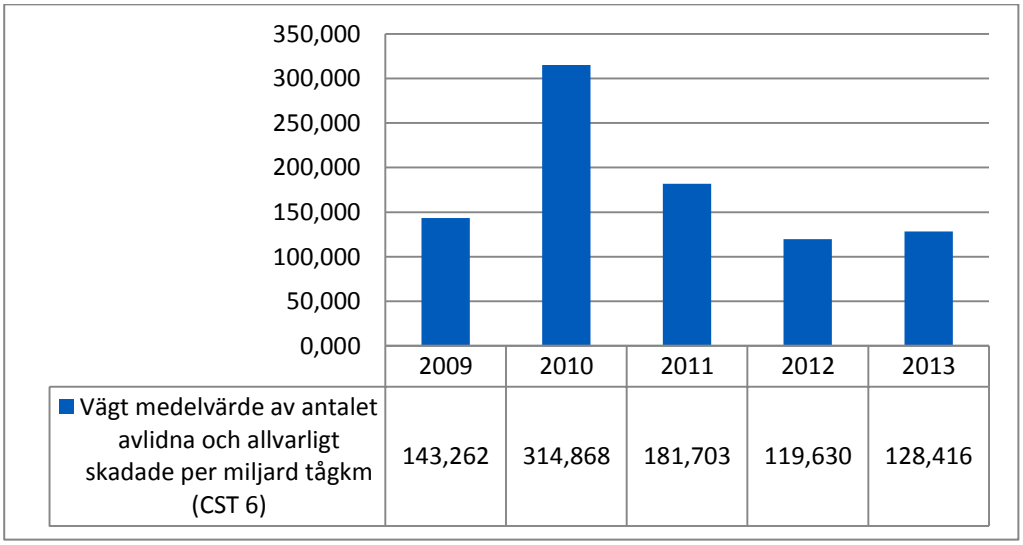


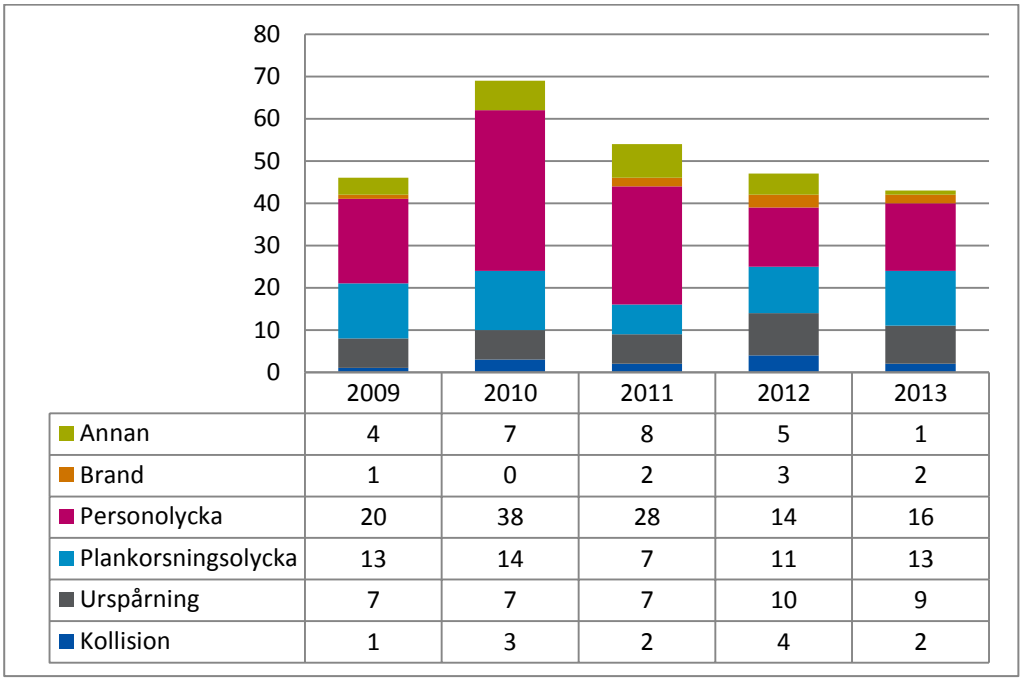
Figure 4: Weighted average of the number of persons killed and seriously injured per billion train-km (Common Safety Target 6)

Vägt medelvärde av antalet avlidna och allvarligt skadade per miljard tågkm (CST 6)	Weighted average of the number of persons killed and seriously injured per billion train-km (CST 6)

2. Number of serious accidents (total)

Figure 5 shows the trends of serious accidents. There were 43 (47, 54, 69, 46) serious accidents in 2013, which is the lowest number of accidents in the last five years. Most of the accidents were accidents to persons, of which there were 16 (14, 28, 38, 20), closely followed by level-crossing accidents, of which there were 13 (11, 7, 14, 13).

There were 9 (10, 7, 7, 7) train derailments and 2 (4, 2, 3, 1) train collisions. There were two fires (3, 2, 0, 1) and one other accident (5, 8, 7, 4). There were no deaths or serious injuries as a result of these accidents in 2013.



	2009	2010	2011	2012	2013
Annan	4	7	8	5	1
Brand	1	0	2	3	2
Personolycka	20	38	28	14	16
Plankorsningsolycka	13	14	7	11	13
Urspårning	7	7	7	10	9
Kollision	1	3	2	4	2

Figure 5: Number of serious accidents 2009-2013, broken down by accident type

Annan	Other
Brand	Fire
Personolycka	Accident to person
Plankorsningsolycka	Level-crossing accident
Urspårning	Derailment
Kollision	Collision

3. Number of deviations

The subject of follow-ups in the common safety indicators are precursors such as broken axles, broken wheels, signals passed at danger, wrong-side signalling failures, track geometry faults, and broken rails. The overall trend is that the total number of deviations has increased, both in 2012 and in 2013; see Figure 4. The category that increased the most is track geometry fault. The increasing number may be due to the fact that the state-owned infrastructure manager, the Swedish Transport Administration, began to use a modified follow-up procedure in 2012; see Figure 6.

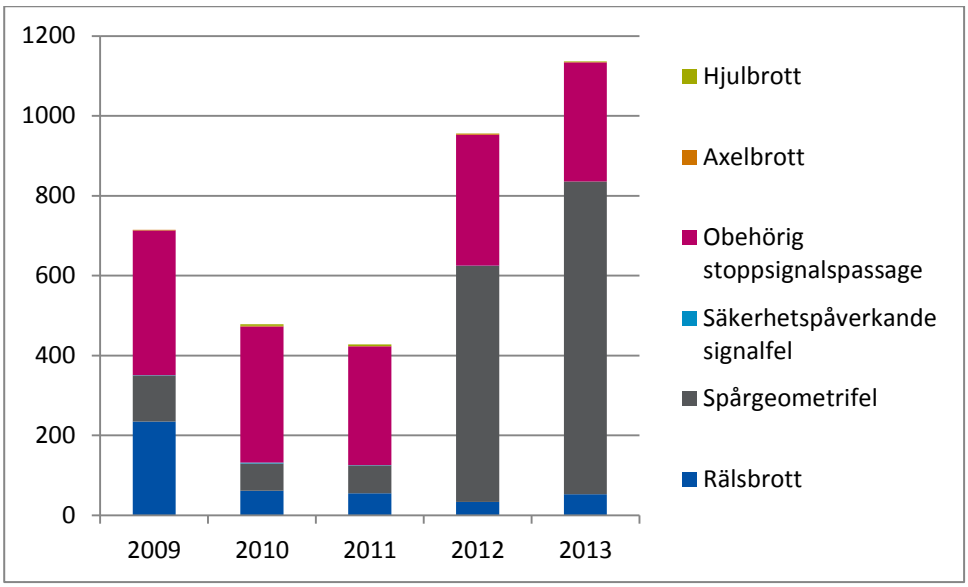


Figure 6: Number of deviations per year

Hjulbrott	Broken wheel
Axelbrott	Broken axle
Obehörig stoppsignals passage	Signal passed at danger
Säkerhetspåverkande signalfel	Wrong-side signalling failure
Spårgeometrifel	Track geometry fault
Rälsbrott	Broken rail

The deviations in Figure 6 and Table 2 are based on reported deviations in the operators' safety reports. One category in the 2012 reporting that was presented as problematic was signals passed at danger. This year's report shows that these have declined somewhat in 2013; see Table 2.

	2013	**2012**	**2011**	**2010**	**2009**
Total deviations	**1,137**	**956**	**429**	**477**	**723**
Broken rail	53	34	55	62	235
Track geometry fault	783	590	70	68	115
Wrong-side signalling failure	1	1	2	1	9
Signal Passed at Danger	298	328	297	341	362
Broken wheel	1	1	4	4	0
Broken axle	1	2	1	1	2

Table 2: Number of precursors reported by the operators in their safety reports

4. Costs of serious accidents

The Swedish Transport Agency's regulations on accident and safety reporting lack reporting requirements for the costs of serious accidents. Instead, the costs of all accidents are to be reported (§ 12, TSFS 2011:86). For this reason, the costs of

serious accidents cannot be presented. We are aware that the reporting rules will change when Commission Directive 2014/88/EU enters into force. The Swedish Transport Agency has begun work on adapting the existing regulations that are affected by the Directive.

5. Technical safety of infrastructure and infrastructure safety management
Under Annex 1 to the Safety Directive, the number of level crossings and the types of level crossing safety installations are to be reported. Tables 3 and 4 contain the numbers of reported level crossings. Table 3 sums up all of the infrastructure managers' level crossings while Table 4 includes only the Swedish Transport Administration's reported level crossings.

All of the infrastructure managers' types of level crossings

	Type of level crossing	**2013**	**2012**
1.	Number of level crossings with automatic acoustic and/or visual systems that warn level-crossing users	803	836
2.	Number of level crossings with automatic barrier systems (whole or half barriers, including gates or similar) that warn/protect level-crossing users	10	11
3.	Number of level crossings with automatic systems comprising both 1 and 2	2,197	2,215
4.	Number of level crossings with both 1 and 2 that are also equipped with obstacle detectors	80	77
5.	Number of level crossings with manually controlled acoustic and/or visual systems that warn level-crossing users	68	87
6.	Number of level crossings with manually controlled barrier systems, including gates or similar that warn/protect level-crossing users	16	16
7.	Number of level crossings with manually controlled systems comprising both 5 and 6	18	40
8.	Number of passive level crossings	5,029	5334
TOTAL		**8,221**	**8,616**

Table 3: Number of level crossings broken down by type of level crossing safety installation summed up from all reported level crossings in the operators' safety reports

The Swedish Transport Administration's types of level crossings

Type of level crossing		**2013**	**2012**
1.	Number of level crossings with automatic acoustic and/or visual systems that warn level-crossing users	660	690
2.	Number of level crossings with automatic barrier systems (whole or half barriers, including gates or similar) that warn/protect level-crossing users	0	0
3.	Number of level crossings with automatic systems comprising both 1 and 2	2,089	2116
4.	Number of level crossings with both 1 and 2 that are also equipped with obstacle detectors	79	77
5.	Number of level crossings with manually controlled acoustic and/or visual systems that warn level-crossing users	16	17
6.	Number of level crossings with manually controlled barrier systems, including gates or similar that warn/protect level-crossing users	0	0
7.	Number of level crossings with manually controlled systems comprising both 5 and 6	0	0
8.	Number of passive level crossings	3,003	3260
TOTAL		**5,847**	**6,160**

Table 4: Number of level crossings that the Swedish Transport Administration has reported in its safety report

Overall, the number of level crossings has decreased, both among the Transport Administration and among other infrastructure managers; see Tables 3 and 4. The number of passive level crossings is decreasing while the number of level crossings with manual protection is unchanged.

Figure 7 shows the trend in the number of killed and seriously injured level crossing users per billion train-km in relation to the number of track kilometres per level crossing.

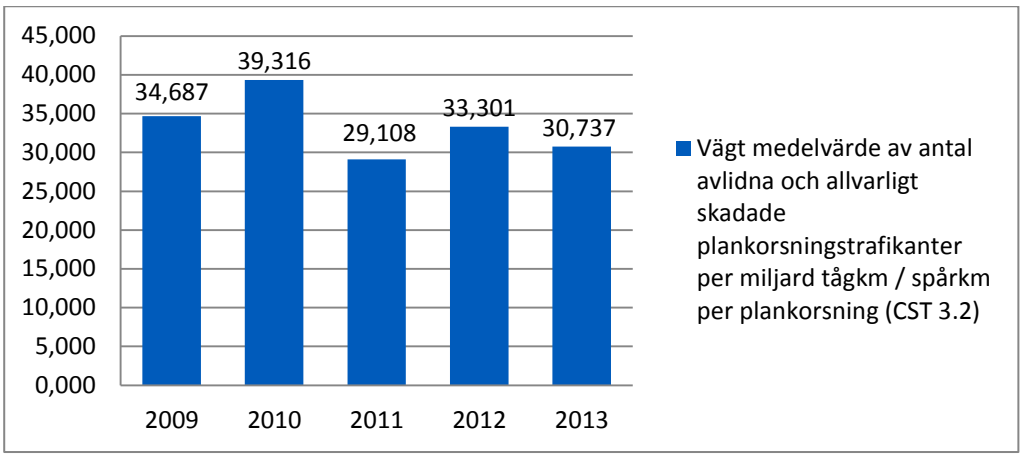


Figure 7: Weighted average of the number of killed and seriously injured level crossing users per billion train-km/track kilometres per number of level crossings (Common Safety Target 3.2).

Vägt medelvärde av antal avlidna och allvarligt skadade plankorsningstrafikanter per miljard tågkm / spårkm per plankorsning (CST 3.2)	Weighted average of the number of killed and seriously injured level crossing users per billion train-km/track-km per level crossing (CST 3.2)

Figure 7 shows that after 2010, the weighted average of the number of killed and seriously injured level crossing users has decreased slightly.

C.2 Results of safety recommendations

In 2013, the Swedish Accident Investigation Authority addressed 10 safety recommendations to the Swedish Transport Agency; see Table 5. In all cases, except for two, the Swedish Transport Agency has commenced activities to meet the recommendations of the Accident Investigation Authority. The activity is already completed in one case and not yet commenced in the other case. The Swedish Transport Agency conducts risk-based oversight and each activity therefore competes with other activities in the oversight schedule. For this reason, the completion of some activities can take longer than others. Completed activities are reported back to the Swedish Accident Investigation Authority at semi-annual coordination meetings between the Swedish Transport Agency and the Swedish Accident Investigation Authority.

Safety recommendation	**Activity occasioned by the recommendation**	**Implementation status**
TSJ 2011-1804: 'The Swedish Transport Agency is recommended to particularly examine the prevalence of so-called directly planned work (as opposed to pre-planned) by infrastructure managers in order to elucidate the extent to which such work is used in the absence of the conditions for it under JTF and, if necessary, take appropriate measures'	The matter is addressed at the regular meetings with the Swedish Transport Administration. Regarding Inlandsbanan (the inland line), oversight will be conducted on directly planned work and movements.	Under implementation: Completed on IBAB. Swedish Transport Administration audit scheduled for 2015.
TSJ 2011-1804: 'Review the approval process to ensure that the right skills are involved in assessing whether an approval is needed so that both operative aspects and user aspects are taken into account'	Procedure description for greater interaction between the sections is to be developed.	Under implementation: Work is underway to increase interaction between the sections.
TSJ 2011-1804: 'As part of the work initiated to increase interaction between the sections for approval and permits, create procedures or equivalent to ensure that the information transmitted to the Swedish Transport Agency is transferred between different processes'	Work and discussions are underway to develop a procedure description and identify an interface in order to achieve greater integration and cooperation between the sections. A procedure description is under development.	Under implementation: Work is underway to increase interaction between the sections.
TSJ 2012-238: 'Within the framework of its oversight, the Swedish Transport Agency is recommended to encourage infrastructure managers and railway undertakings, in their deviation systems, to monitor the prevalence of unauthorised signals passed at danger where the signal is located on the right side of the track in order to determine whether signals located on the right are passed without authorisation more often than signals located on the left'	The recommendations have been entered into the Swedish Transport Agency's oversight schedule in order to plan appropriate oversight measures, following a prioritization of risk-based oversight.	Under implementation: Audits of infrastructure managers are scheduled for autumn 2014. Oversight of railway undertakings has not been prioritised by risk in the 2014 operational plan. Remains in the oversight schedule.
TSJ 2012-238: 'Within the framework of its oversight, encourage infrastructure managers to have a look over right-side dwarf	The recommendations have been entered into the Swedish Transport Agency's oversight schedule in order to plan appropriate oversight measures,	Under implementation: Audit is scheduled for autumn 2014. Remains in the oversight schedule.

Safety recommendation	Activity occasioned by the recommendation	Implementation status
shunting signals to determine if such placement is still warranted'	following a prioritization of risk-based oversight.	
TSJ 2012-238: 'The Swedish Transport Agency is recommended to conduct oversight that railway undertakings clearly indicate signals with deviating placement in local yard instructions'	The recommendations have been entered into the Swedish Transport Agency's oversight schedule in order to plan appropriate oversight measures, following a prioritization of risk-based oversight.	Not yet begun: Oversight not prioritised by risk in the 2014 operational plan. Remains in the oversight schedule.
TSJ 2012-238: 'Conduct oversight of infrastructure managers' use of arrow signs designed according JvSFS 2008:7'	The recommendations have been entered into the Swedish Transport Agency's oversight schedule in order to plan appropriate oversight measures, following a prioritisation of risk-based oversight.	Under implementation: Audit is scheduled for autumn 2014.
TSJ 2011-1803: 'Within the framework of its oversight, the Swedish Transport Agency is recommended to take the measures necessary to ensure that the railway undertakings and their engaged contractors have appropriate procedures for transferring information, performance testing, and clearing, as well as for follow-ups on personnel knowledge in practice'	The recommendations have been entered into the Swedish Transport Agency's oversight schedule in order to plan appropriate oversight measures, following a prioritization of risk-based oversight.	Under implementation: Safety oversight is conducted on a number of undertakings in 2014.
TSJ 2011-1803: 'Within the framework of its oversight, the Swedish Transport Agency is recommended to take the measures necessary to ensure in particular that the personnel of railway undertakings or their engaged contractors that perform work in Sweden that is of importance to traffic safety – but who are employed or trained in another country – have the necessary training on the regulations and procedures for performance testing and clearing that apply in Sweden and that the application of their knowledge in practice in these respects is regularly followed-up on by the responsible railway	The recommendations have been entered into the Swedish Transport Agency's oversight schedule in order to plan appropriate oversight measures, following a prioritization of risk-based oversight.	Under implementation: Safety oversight R2 is conducted on a number of undertakings in 2014.

Safety recommendation	Activity occasioned by the recommendation	Implementation status
undertaking'		
TSJ 2011-968: 'In its efforts to analyse and evaluate its practices, the Swedish Transport Agency is recommended to particularly consider whether oversight form R1 ('brevtillsyn', an inspection of all relevant paperwork) and corporate meetings are sufficient to verify that operators in the rail traffic sector meet their obligations to have expedient procedures to notice shortcomings and deviations in vehicle maintenance'	The Swedish Transport Agency has a governmental commission to review its oversight activities as regards railway maintenance. The growth of oversight activities means that they will also become applicable to metros and trams and place more focus on underlying systemic shortcomings, even in small audits.	Completed: Our forms of oversight have been analysed as a whole. Governmental commission (Case TSJ 2013-2649) completed spring 2014.

Table 5: Introduction of safety-focused measures initiated by the 2013 safety recommendations

C.3 Other safety activities

Activities carried out beyond the recommendations from the Swedish Accident Investigation Authority are oversight of the management of signal drawings and oversight of work in the track environment; see Table 6.

Area of focus	Description of trigger	Safety measure(s) introduced
Management of signal drawings with the largest infrastructure managers.	No previous oversight in this area, but shortcomings have been identified in the context of other oversights.	The infrastructure managers have prepared their procedures and improved control of the drawings.
Work in the track environment	The number of accidents and incidents increased markedly in 2011, so this is an ongoing effort.	New rules have been drawn up by the IMs and they now have better follow-ups on rule compliance.

Table 6: Safety improvements made by the Swedish Transport Agency beyond the recommendations from the Swedish Accident Investigation Authority

D. SAFETY OVERSIGHT

The Swedish Transport Agency' safety oversight is aimed at the safety management systems of operators and how they themselves can identify and address safety shortcomings.

Application of CSM monitoring (Commission Regulation (EU) No 1077/2012) is optional until 6/7/2013, which means that Sections D.1 and D.3-D.5 are optional until that date.

D.1 Strategies and plans

The oversight performed is intended to maintain and improve the current situation. The selection of oversight items is risk-based. The following two criteria serve as guidance to perform oversight activities:

- Operations where an accident could have a major impact and the probability of such an accident occurring is not negligible.
- Operations with a high probability of an accident occurring, the impact of which would not be acceptable.

Furthermore, the ambition is for the annual planning of oversight activities to be preliminary. Planning is re-evaluated every quarter on the basis of events that have occurred. The planning also allows for the quick launch of new oversight if an event indicates the need for such. The oversight has thus become both risk and event-driven to enable a quick reaction to changes in the rail system. Internal procedures and checklists are developed for the oversight activities. An example of an event-driven oversight activity is the shunting accident in Sundsvall on 20/09/2013 in which an employee life was lost. The Swedish Transport Agency conducted event-driven oversight as a result of the accident.

Other audits are planned from a risk-based approach in which various factors are weighed in order to determine the audit areas and permit-holders that are to be audited. The basis for this selection is data from the analysis section (based on risk analyses and events reported to the contingency line), observations from other oversight activities and application examinations, as well as information from the public, the rail industry, and media. All of this information is compiled and available as an oversight proposal in TRAP.

Event-driven oversight
Safety audits are mostly based on that which has been set out in the operational plan, as described above, but reprioritisations are sometimes necessitated by events that have occurred. In such cases, the risk-based approach still constitutes the basis and events that are not the subject of immediate action are entered as oversight proposals and may result in an audit at a later date.

Another factor that may affect operational planning is changes that may occur within the sections or the organisation in general.

D.2 Human resources

The total number of hours that has been spent on inspections and audits and the average per administrator.

Number of hours that have been spent to perform inspections and audits
In 2013, the Railway Undertakings Section had a total of 12 administrators as well

as the Head of Section. 10 of these administrators had oversight as a part of their duties, however, these 10 also have duties other than oversight.

In 2013, the Infrastructure Section had a total of 12 administrators, plus the Head of Section. 10 of these administrators had oversight as a part of their duties, though these 10 also have other tasks such as permit administration and regulatory work.

Number of hours per employee spent on inspections and audits
In 2013, 10 administrators in the Railway Undertakings Section spent a total of 5,210 working hours and 10 administrators in the Infrastructure Section spent a total of approximately 5,000 working hours on oversight.

The percentage of working hours that an employee used on inspections and audits
An administrator on average spends approximately 30% of their AWU (annual work units) on oversight of railway undertakings. However, when a section has several duties in addition to oversight of railway undertakings, this figure can be misleading. Administrators in the Infrastructure Section who have oversight as their main job spend approximately 60% of their working hours on oversight. This figure varies from year to year among other administrators.

D.3 Competence

Describe the competence management system that has been implemented.
The results of oversight are dependent on safety audits that are performed in an objective manner and on verifications that are performed to the extent required by the oversight. The Head of Section is responsible for assembling an audit team that consists of auditors and administrators with specialist knowledge. Administrators with specialist knowledge need not be authorised as auditors, but safety auditors must have previously participated in a safety audit of the type concerned.

An individual is authorised as a lead auditor if they have successfully passed audit training in accordance with ISO 9001:2000 or equivalent and participated in at least two safety audits of the type concerned.

A basic requirement to be present in an active track area on ones own is that one has completed training for that purpose or otherwise obtained equivalent competence. However, recruits from outside the railway sector must always take the course ‘Att vistas i spår’ (Being on the tracks). The requirements placed on the Swedish Transport Agency's personnel must, on the whole, harmonise with the requirements in the Swedish Transport Administration's rules regarding self protection. These rules state, inter alia, that there must be baseline vision and hearing requirements. In-service training of at least four hours is needed every three years and must include both theory and practice. Initial and in-service

training may be conducted by the Swedish Transport Agency's personnel who have a teaching qualification or it can be purchased from the Swedish Transport Administration or one of their contractors.

D.4 Decision-making

Describe the decision criteria developed by the Swedish Transport Agency to monitor and influence compliance with the regulatory framework as well as the Agency's process to establish the decision criteria.

In 2013, the Swedish Transport Agency's Road and Rail Department completed a project, 'Maxiföredragningskulturen' (approximately The Max Presentation Culture), which entails, inter alia, an analysis of approaches within the department with an emphasis on the realisation of support and decision-making. The results of the project led to a new assignment which aims to clarify/describe the reasons/motives/considerations that form the basis for the levels of decision-making that are applied. This basis will in turn be usable as a basis to take a position as to whether levels of decision-making and the support that precedes decisions are legally certain and effective. Where deemed appropriate – within the framework of the assignment and taking into account, inter alia, legal certainty and efficacy – changes will be proposed to the levels of decision-making and/or support preceding decisions. The assignment also includes, where appropriate, the development of proposals for decision trees and the principles that are to guide the selection of such. This work continues through February 2015.

Describe the main complaints that railway undertakings and infrastructure managers have made about decision-making in oversight activities and responses from the Swedish Transport Agency.

No operators have appealed decisions made by the Railway Undertakings Section or the Infrastructure Section during 2013.

D.5 Coordination and cooperation

Describe the agreements reached with supervisory authorities (NSA) in other Member States in 2013 as regards coordinated oversight activities. Summarize the content of these agreements.

Describe the agreements with other supervisory authorities (NSA) that were in place in 2013 and their practical significance.

The Railway Undertakings Section has a cooperation agreement with Norway and Denmark. We meet once a year to communicate our respective operational plans and invite each other to participate in our oversight as observers or convey oversight questions from other safety authorities. We also communicate to Denmark and Norway our injunctions against railway undertakings that have a safety certificate Part B in their country.

An MOU agreement is in place with Norway, though not with Denmark. Sweden has provided an MOU agreement proposal to Denmark but they have not yet signed it.

D.6 Results of the operators' activities

Describe the main findings from the evaluation of measures taken by railway undertakings and infrastructure managers.

Overall, we have found that the undertakings are poor at identifying and implementing new requirements themselves, in particular the requirements that come directly from the EU.

The focus of the Railway Undertakings Section this year has been safety certificate renewals. We have performed complete audits of some of the biggest operators in the market. We have also inspected railway undertakings that focus primarily on railway maintenance. These undertakings have had major shortcomings in their safety management systems. This has led to us calling in a number of undertakings, which yielded good results in that they realised the gravity of the deviations that emerged in the audits. Another measure that we took during the year is that when renewing a safety certificate we gave the undertaking a shorter period of validity for the certificate than in the past, normally five years. We did so because the undertaking had major shortcomings in its safety management system when audited, though with great effort it managed to get a new permit. However, we doubted that all of the activities the undertaking presented to us would be implemented as promised, hence this action.

During 2013, the Infrastructure Section focused on municipalities and museum associations and their safety management systems and compliance with regulations because we have seen in previous audits that they have difficulty assimilating new rules and regulations, both national and those that come from the EU.

E. SAFETY CERTIFICATES AND SAFETY AUTHORISATIONS

E.1 Guidance

Describe how guidance and other information is provided to those who wish to apply for Part A or Part B safety certificates or safety authorisations.

The Swedish Transport Agency's external website contains a great deal of information:
http://www.transportstyrelsen.se/sv/Jarnvag/Tillstand/Tillstandsformer-for-jarnvagsforetag/Vagledning-for-jarnvagsforetag/

The site also contains a number of guidance documents. A digital form has been available since 2013 with a direct link to the TRAP ERP system. Permit applications must be processed and completed within four months from the notification, provided that any questions from the administrator are responded to promptly. Application examinations and approvals conform to the EU acquis such as Directive CSM CA 1158/2010 and Regulation EC 653/2007.

E.2 Contacts with national safety authorities

What inquiries have other national safety authorities (NSAs) made when requesting information on railway undertakings with safety certificate Part A in your country subsequent to the railway undertaking in question seeking a permit in the Member State that is making the request?

What inquiries has the Swedish Transport Agency made of other safety authorities regarding the safety certificate Part A of railway undertakings that are applying for a safety certificate Part B in our country?

What is the main content of the contacts and data provided for the inquiries?

The Railway Undertakings Section continuously cooperates with Norway and Denmark. We inform each other of new applicants that meet the above description.

E.3 Procedural issues

Describe if there have been any issues with evaluations of or in the examination of applications for safety certificates and safety authorisations in 2013.
There have been some shortcomings in the operators' documentation due to a lack of understanding of the regulatory framework or uncertainty (from the side of the operators) on how the regulatory framework is to be interpreted or applied.

E.4 Feedback

Describe how operators can express their opinions on the application examination process/management and how complaints are stored. Summarise the opinions and complaints received by the Agency and the measures taken as a result thereof.
Operators may express their opinions and complaints via referral comments on new regulations, via our industry council, at the corporate meetings, and during audits.

Whistleblower system: In order to address bad conditions, wrongdoing, etc., one must be aware of them. The Swedish Transport Agency now offers an additional channel to make anonymous reports on any improper Agency actions. If someone discovers wrongdoing such as corruption, bribery, or bias at the Swedish Transport Agency, it is important that the Agency be made aware of it. The Agency has set up an external, independent function for a whistleblower system, which is an additional channel to anonymously to report faults with the Swedish Transport

Agency. This is yet another tool in the Swedish Transport Agency's efforts to live up to the Agency's common approach to be reliable, engaged, and comprehensible.

F. CHANGES IN THE REGULATORY FRAMEWORK

F.1 Changes based on the Railway Safety Directive

The Railway Act (2004:519) and the Railway Ordinance (2004:524) comprise the legislation that implemented the Safety Directive into Swedish law. The legislation entered into force on 1 July 2004.

Thereafter, the legislation has been amended in line with the EU acquis. The Railway Safety Directive has been amended, for example. The regulations issued in 2013 are found in Annex B.

F.2 CHANGES IN LEGISLATION AND OTHER REGULATORY FRAMEWORKS

Amendments made as a consequence of other EU rules.

See Table 2 in Annex B.

G. APPLICATION OF THE CSM ON RISK ASSESSMENT

G.1 The safety authority's experience

Technology – Railway is the section that has experience applying the common safety methods on risk assessment (CSM RA), which takes place in the context of technical subsystem approval applications. Their experience with this safety method is described below.

Describe whether the assessment of the degree of the safety impact from the change for undertakings is well-founded.
Generally speaking, the undertakings make good assessments, but small undertakings tend to deem the changes as less safety-sensitive/substantial than they might actually be.

Describe the undertakings' application of the risk management process.

The undertakings have usually used codes of practice or reference systems.

To what extent are limited-liability companies involved?

On a few occasions.

Interface management?
Unfortunately, we do not have any examples in this case.

G.2 Feedback from the operators

Describe how the operators, railway undertakings, and infrastructure managers can express their experience of applying the common safety methods for risk assessment (CSM RA).

Summarise the operators' experience and describe any Swedish Transport Agency actions taken in response to the findings.

Since operating year 2011, the annual safety reports from railway undertakings and infrastructure managers include their experiences of applying the common safety method for risk evaluation and risk assessment as set out in Regulation (EC) 352/2009.

In this year's safety reporting, some of the operators describe the method as good. They think that it is good to have a common safety method, partly because it leads to the establishment of a common conceptual structure and partly because it entails a structured approach. Those who have not applied the method feel that their railway operations are so small in scope that the method is not needed. They use other methods to evaluate risks, such as when an operational change is planned. The majority of those who submitted a safety report did not report anything about their experiences in implementing CSM RA; approximately 127 out of 174 safety reports received.

G.3 Revision of safety rules that observe the CSM for risk assessment

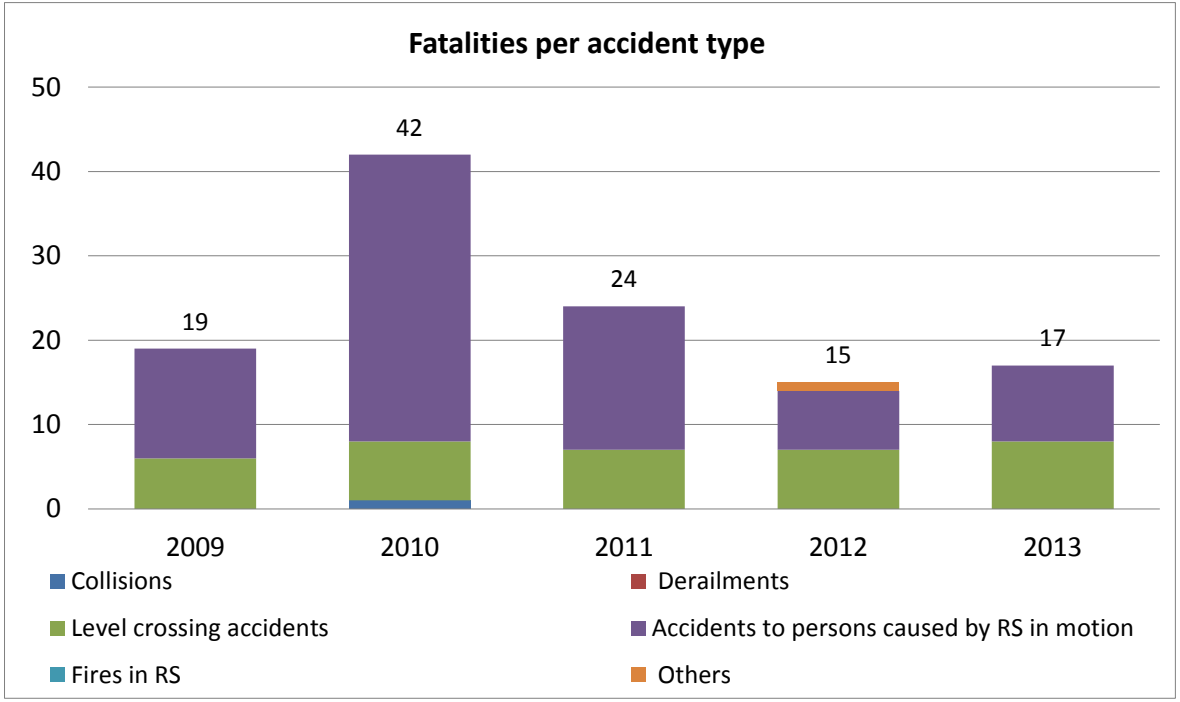
In March 2012, the Swedish Transport Agency began a revision of *the Swedish Rail Agency traffic regulations (JvSFS 2008:7),* or 'JTF'. JTF contains operational rules for railway undertakings and infrastructure managers and constitutes national safety regulations. The revision is underway and scheduled for completion in 2015. The purpose of the revision is to revise and cut down the national safety regulations. The railway undertakings and infrastructure managers are informed of and contribute to the ongoing efforts. Once the revision is complete, the operational rules in JTF will be managed within the safety management systems of the railway undertakings and infrastructure managers.

H. GRANTED EXEMPTIONS FROM THE REGULATION ON ECM

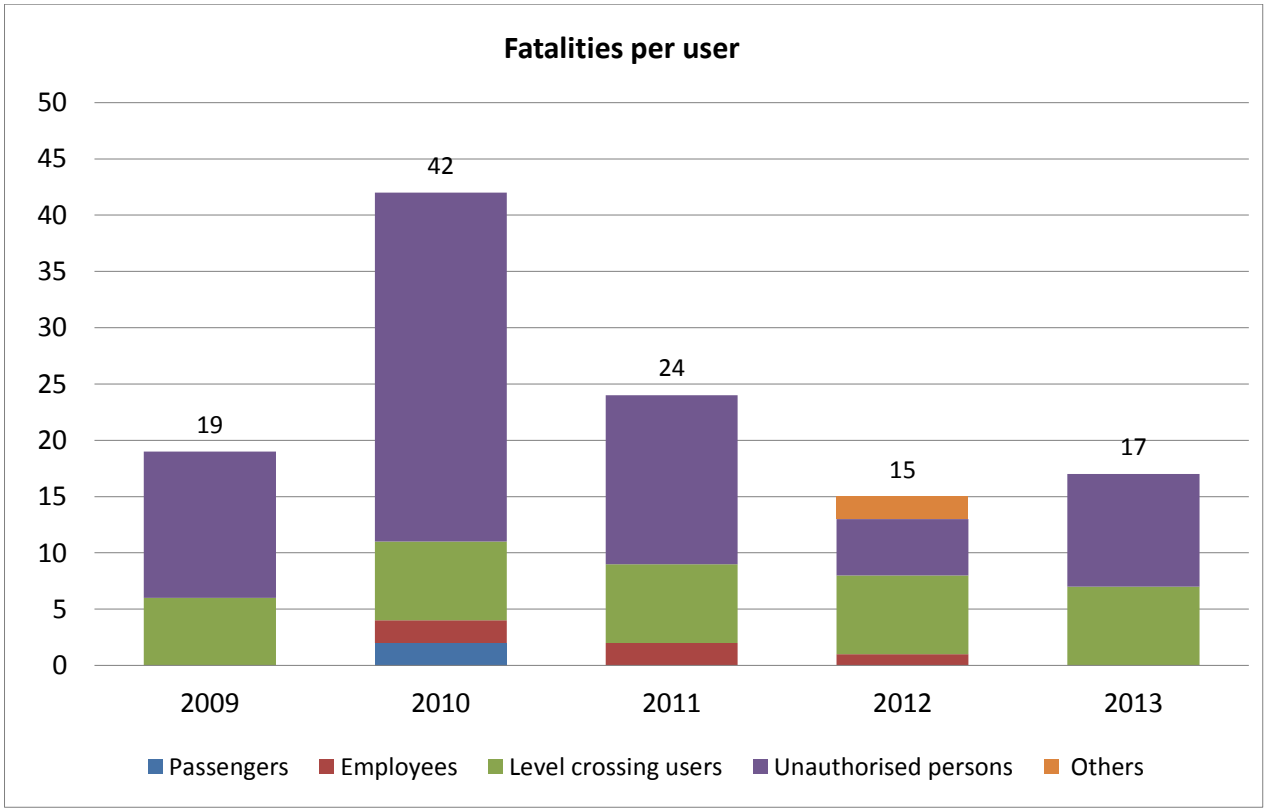
The Swedish Transport Agency has not granted any exemptions for ECM in 2013, in accordance with Article 14a(8) of Directive 2008/110/EC.

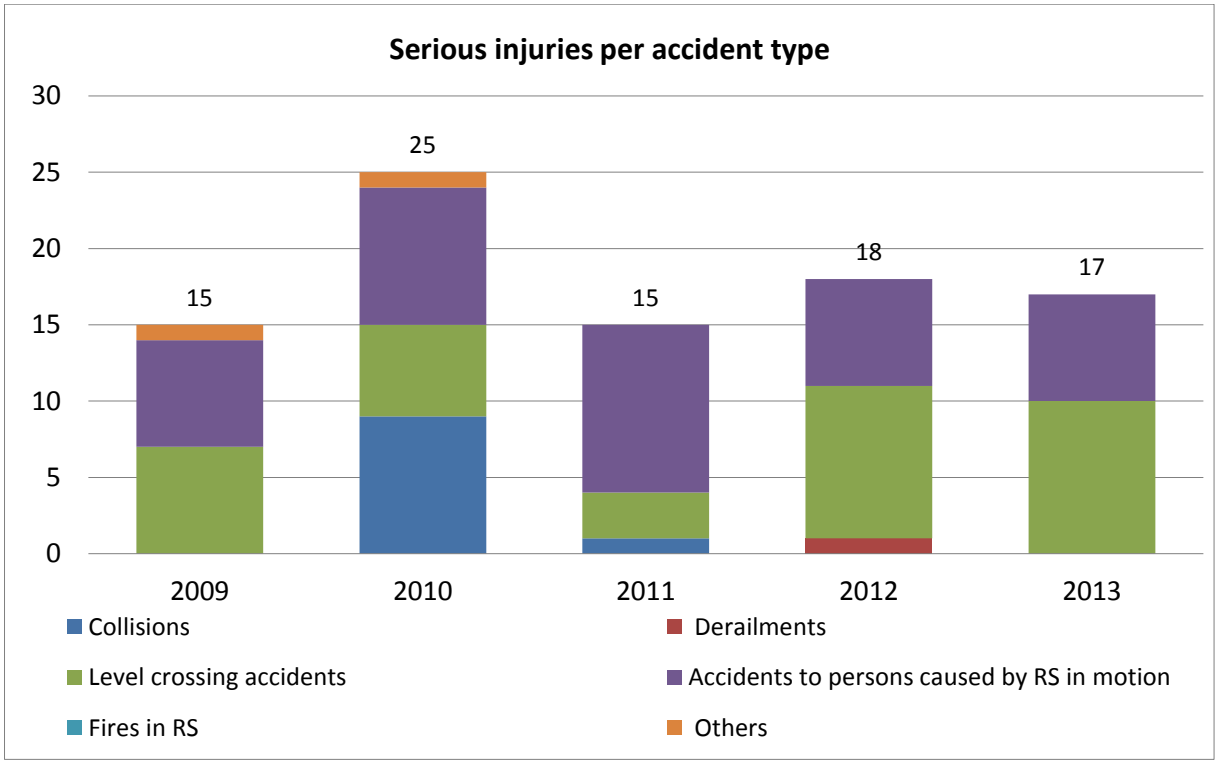
Annex A
Common safety indicators

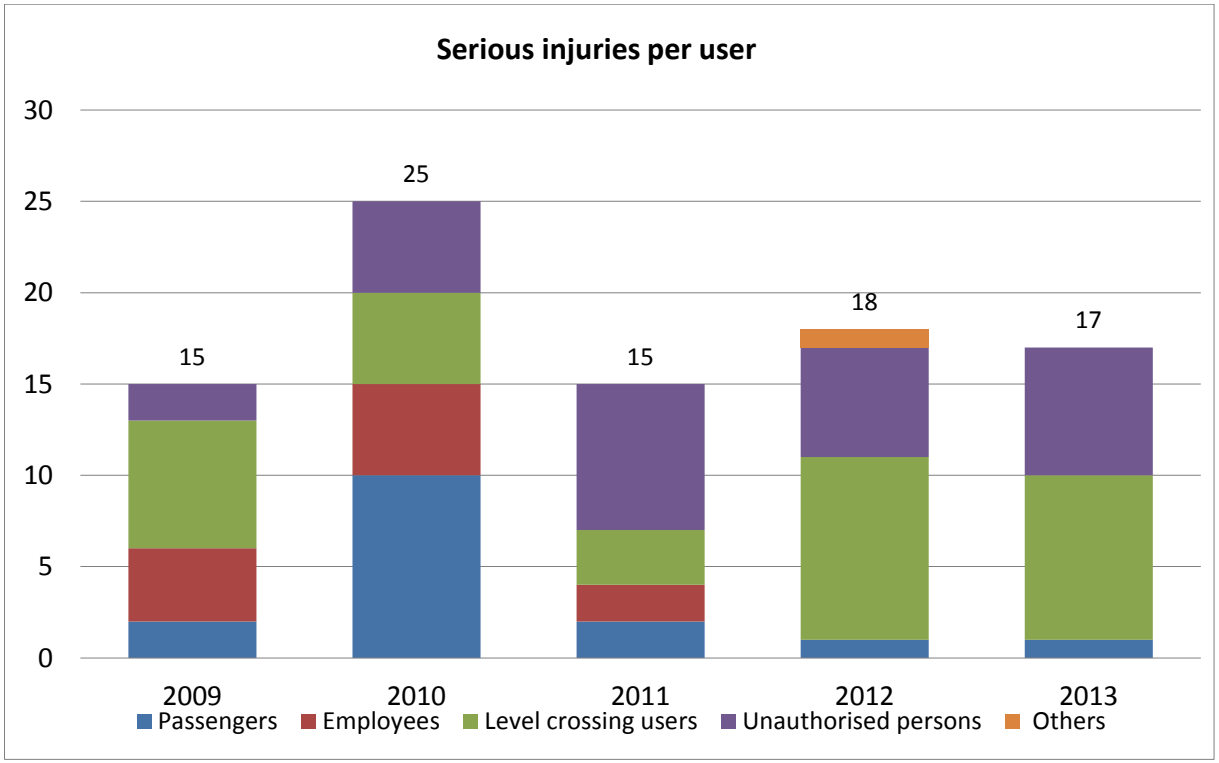
That which follows below are selected common safety indicators that are reported to ERA and calculated by the ERA system for accidents; ERAIL[19].

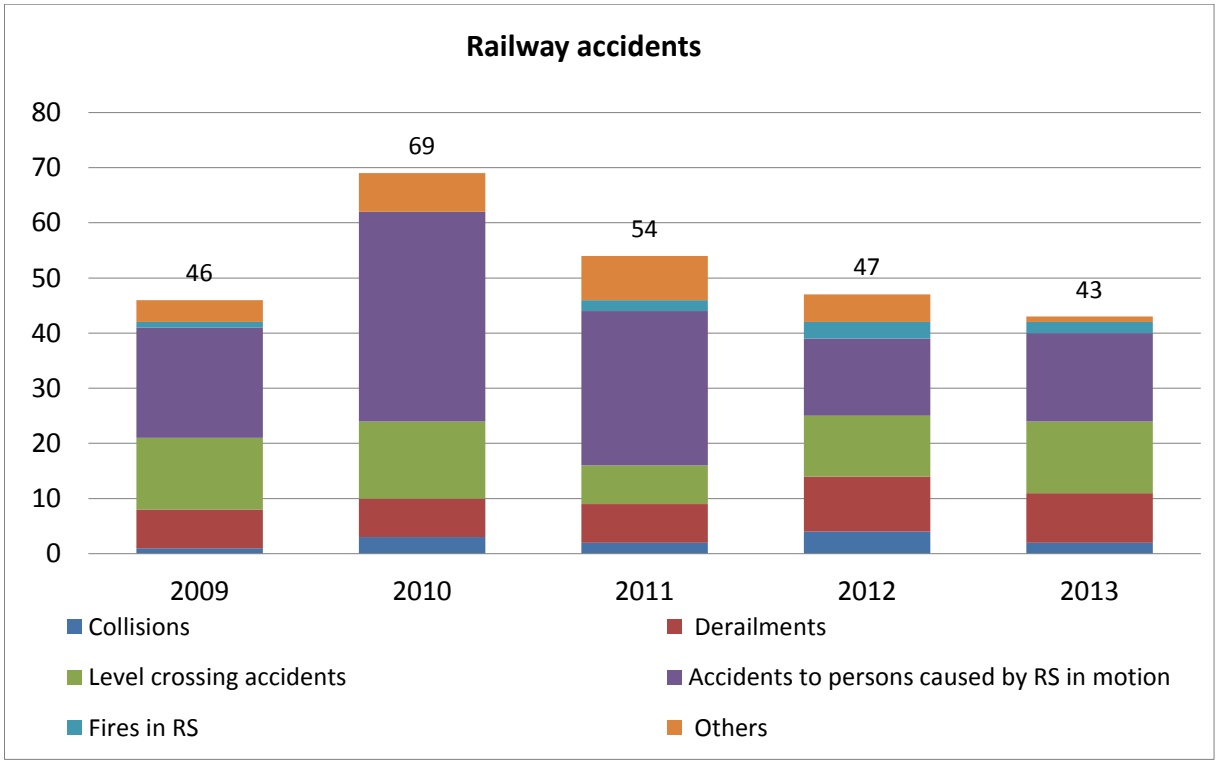


[19] http://erail.era.europa.eu/my-homepage.aspx


Fatalities per user
50
45
40
35
30
25
20
15
10
5
0
19
42
24
15
17
2009
2010
2011
2012
2013
Passengers
Employees
Level crossing users
Unauthorised persons
Others


Serious injuries per accident type
30
25
20
15
10
5
0
15
25
15
18
17
2009
2010
2011
2012
2013
Collisions
Derailments
Level crossing accidents
Accidents to persons caused by RS in motion
Fires in RS
Others


Serious injuries per user
30
25
20
15
10
5
0
15
25
15
18
17
2009
2010
2011
2012
2013
Passengers
Employees
Level crossing users
Unauthorised persons
Others


Railway accidents
80
70
60
50
40
30
20
10
0
46
69
54
47
43
2009
2010
2011
2012
2013
Collisions
Derailments
Level crossing accidents
Accidents to persons caused by RS in motion
Fires in RS
Others

Annex A1

Allvarliga olyckshändelser vid järnvägsdrift 1991-2013 / *Serious accidents in railway operations 1991-2013*

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Accidents																							
Derailments of train movements	46	45	40	30	16	16	18	11	12	2	21	9	8	12	2	12	11	14	7	8	7	10	9
Collisions during train movement	12	10	11	5	2	8	2	3	3	1	7	7	8	5	9	7	1	4	1	3	2	4	3
Collisions at level crossings	83	75	54	51	60	37	37	15	20	12	12	10	10	19	21	18	15	6	16	16	9	12	14
Derailments and collisions during shunting	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	6	4	5	6	4	1
Other accidents	35	29	18	13	20	16	7	25	14	15	19	30	38	36	22	25	26	20	21	41	32	18	19
Total accidents	**176**	**159**	**123**	**99**	**98**	**77**	**64**	**54**	**49**	**30**	**59**	**56**	**64**	**72**	**54**	**62**	**59**	**50**	**49**	**73**	**56**	**48**	**46**
Suicides and suicide attempts	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**54**	**65**	**65**	**62**	**58**	**46**	**69**	**79**	**73**	**68**	**68**	**62**	**85**	**94**
Deaths																							
Passengers	1	–	–	1	2	–	2	–	–	–	–	–	1	3	–	–	–	–	–	2	–	–	–
– of which women	..	–	–	..	..	–	..	–	–	–	–	–	..	..	–	–	–	–	–	2	–	–	–
– of which men	..	–	–	..	..	–	..	–	–	–	–	–	..	..	–	–	–	–	–	–	–	–	–
Railway employees	–	1	3	1	–	–	8	1	1	–	1	3	–	2	–	–	–	–	–	2	2	1	–
– of which women	–	..	..	..	–	–	..	..	..	–	..	..	–	..	–	–	–	–	–	–	–	1	–
– of which men	–	..	..	..	–	–	..	..	..	–	..	..	–	..	–	–	–	–	–	2	2	–	–
Level crossing users	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	9	9	4	6	9	8	7	8
– of which women	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	2	1	2
– of which men	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	7	6	6	6
Unauthorised in the track area	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10	16	10	13	32	15	5	10
– of which women	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	6	6	1	4
– of which men	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	26	9	4	6
Others	25	30	16	16	17	16	14	24	21	19	14	15	19	21	14	–	–	1	–	–	–	2	–
– of which women	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	–	–	–	1	–
– of which men	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	–	–	–	1	–
Total	**26**	**31**	**19**	**18**	**19**	**16**	**24**	**25**	**22**	**19**	**15**	**18**	**20**	**26**	**21**	**19**	**25**	**15**	**19**	**45**	**25**	**15**	**18**
– of which women	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**8**	**10**	**8**	**4**	**6**
– of which men	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**11**	**35**	**17**	**11**	**12**
Suicide	**..**	**..**	**..**	**27**	**46**	**..**	**28**	**45**	**58**	**53**	**63**	**63**	**59**	**58**	**47**	**65**	**76**	**72**	**65**	**66**	**57**	**84**	**93**
– of which women	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**30**	**17**	**17**	**22**	**35**
– of which men	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**35**	**49**	**40**	**62**	**58**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Seriously injured																							
Passengers	14	70	3	7	4	4	3	–	1	2	1	3	8	10	1	1	1	3	2	10	2	1	1
– of which women	..	..	..	..	..	..	..	–	..	..	..	..	..	..	..	..	..	..	2	6	1	–	1
– of which men	..	..	..	..	..	..	..	–	..	..	..	..	..	..	..	..	..	..	–	4	1	–	–
– of which unknown gender	..	..	..	..	..	..	..	–	..	..	..	..	..	..	..	..	..	..	–	–	–	1	–
Railway employees	10	1	6	9	2	6	11	8	1	4	7	3	2	4	4	1	3	1	4	5	1	1	–
– of which women	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	–	–	–	–	–
– of which men	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	5	1	1	–
Level crossing users	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	8	9	1	10	5	3	10	9
– of which women	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	2	1	2
– of which men	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	3	1	9	7
Unauthorised in the track area	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	3	2	5	8	6	7
– of which women	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	–	1	2	2	3
– of which men	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	4	6	4	4
Others	31	23	9	12	16	7	22	13	14	12	11	5	13	9	3	2	–	–	–	–	–	1	1
– of which women	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	–	–	–	–	–	–	1
– of which men	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	–	–	–	–	–	1	–
Total	**55**	**94**	**18**	**28**	**22**	**17**	**36**	**21**	**16**	**18**	**19**	**11**	**23**	**23**	**19**	**16**	**15**	**8**	**18**	**25**	**14**	**19**	**18**
– of which women	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**4**	**9**	**5**	**3**	**7**
– of which men	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**14**	**16**	**9**	**15**	**11**
– of which unknown gender	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**–**	**–**	**–**	**1**	**–**
Suicide attempt	**..**	**..**	**..**	**..**	**2**	**..**	**4**	**6**	**–**	**1**	**2**	**2**	**3**	**–**	**2**	**4**	**3**	**1**	**3**	**2**	**5**	**1**	**1**
– of which women	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**–**	**..**	**..**	**..**	**..**	**–**	**..**	**..**	**..**	**..**	**2**	**1**	**4**	**–**	**1**
– of which men	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**–**	**..**	**..**	**..**	**..**	**–**	**..**	**..**	**..**	**..**	**1**	**1**	**1**	**1**	**–**

Källa: Trafikanalys, Transportstyrelsen

Source: Transport Analysis, Swedish Transport Agency

Annex B
Changes in the regulatory framework

Table 1

Amendments to the Railway Safety Directive	**Transposed (Yes/No)**	**Legal reference**	**Date legislation enters into force**
Directive 2008/57/EC	Yes	The Railway Act SFS 2004:519 (Järnvägslagen)	
Directive 2008/110/EC	Yes		
Commission Directive 2009/149/EC	Yes	TSFS 2011:86	17/10/2011

Table 2

Laws and other national rules	Legal reference	Date legislation enters into force	Description of change	Reason for the introduction/change
Concerning national safety authority	No change			
Concerning notified body, assessor, third party entities for registration, examination, etc.	TSFS 2013:73	01/10/2013	Amendment to the Swedish Transport Agency Regulations (TSFS 2010:167) on technical specification for interoperability of the subsystem 'Rolling stock – Freight wagons' of the rail system for conventional trains.	TSI amendment
	TSFS 2013:74	01/01/2014	Repeal of the Swedish Transport Agency Regulations (TSFS 2010:167) on technical specification for interoperability of the subsystem 'Rolling stock – Freight wagons' of the rail system for conventional trains.	New regulation
Concerning railway undertakings, infrastructure managers, Entity in Charge of Maintenance (ECM)	TSFS 2013:43	01/09/2013	Consolidation of multiple regulations into one.	Simplification of the regulatory framework for infrastructure managers.
Inclusion of other EU requirements (if they concern railway safety)	TSFS 2013:53	01/09/2013	The Swedish Transport Agency's regulations amending the Swedish Rail Agency traffic regulations (JvSFS 2008:7).	Amendment
	TSFS 2013:52	01/07/2013	Regulations amending the Swedish Transport Agency's regulations on health requirements, etc. according to the Act (2011:725) on train driver qualifications.	Amendment
	TSFS 2013:51	01/07/2013	Regulations amending the Swedish Transport Agency's regulations (TSFS 2011:58) on driver's licences and supplementary endorsements.	Amendment
	TSFS 2013:50	01/07/2013	The Swedish Transport Agency's regulations to amend the Swedish Railway Inspectorate's Regulations (BV-FS 2000:4) on medical examinations and the physical condition of personnel with duties of importance to traffic safety.	Amendment