



Station safety performance report

This report is issued by:

Colin Dennis

Head of Risk and Safety Intelligence
Rail Safety and Standards Board

If you would like to give feedback on any of the material contained in this report, or if you have any suggestions for future editions, please contact:

Adrian Smith

Safety Intelligence Analyst
Rail Safety and Standards Board
Evergreen House
160 Euston Road
London NW1 2DX
0207 904 7521
adrian.smith@rssb.co.uk

The report may be downloaded at no cost from the RSSB website www.rssb.co.uk.

Additional hard copies may be ordered at cost price by contacting the RSSB enquiry desk on 020 7904 7518.

Executive summary	4
1 Introduction	6
2 Aims and objectives	6
3 Scope and structure	7
3.1 Report scope	7
3.2 Report structure	7
4 Safety performance	8
4.1 Overview of safety performance	8
4.1.1 Trespass at stations	9
4.1.2 Injuries at stations	10
4.1.3 Crime at stations	11
4.1.4 Train accidents at stations	12
4.2 Safety performance at stations in detail	13
4.2.1 Trespassing at stations	13
4.2.2 Injuries at stations	15
4.2.3 Station usage	21
4.2.4 Suicides at stations	22
4.2.5 Crime at stations	22
4.2.6 Train accidents at stations	26
4.2.7 Signals passed at danger at stations	29
5 Risk profile	31
5.1 Overall risk	31
5.2 Breakdown of station risk by passenger, workforce and MOP	33
5.2.1 Passenger risk profile at stations	34
5.2.2 Workforce risk profile at stations	35
5.2.3 MOP risk profile at stations	37
5.3 Risk reduction at station from the removal of Mark 1 slam door rolling stock	37
5.4 Risk profile summary	39
6 Initiatives	40
6.1 National initiatives	40
6.1.1 Rail Personal Security Group	40
6.1.2 Community Safety Support Unit	42
6.1.3 The Rail Fatality Management Group	42
6.2 Current research	42
6.3 Local initiatives	42
6.3.1 <i>Spotlight:</i> Network Rail – major station operators	42
6.3.2 About the team	44
6.3.3 Best practice information – stations	44
6.3.4 Example of local initiatives	46
Appendix 1. Station safety-research projects	55
Appendix 2. Injuries at stations	59

Appendix 3.	Fatalities at stations	60
Appendix 4.	SPADs at stations	61
Appendix 5.	Collisions, derailments and buffer stop collisions at stations	62
Appendix 6.	List of hazardous events at stations	63
Appendix 7.	Definitions	67
Appendix 8.	Glossary	71

Executive summary

With well over a billion passenger journeys through stations every year, a significant potential exists for hazardous events to arise that can lead to fatalities or injuries. Indeed, 39% of the overall risk on the railway (excluding suicides) is predicted to occur at stations.

This Safety Performance Report (SPR) considers all aspects of station safety and includes information up to 30 June 2006.

To help disseminate good practice throughout the industry, Rail Safety and Standards Board (RSSB) has taken a close look at the initiatives employed to improve safety at stations at both local and national level. Information was received from Network Rail and a wide range of train operating companies (TOCs), which we have tabulated in section 6.3. We also include a Spotlight feature on Network Rail's station advisory team, detailing some of the schemes it has in place for managing the company's portfolio of stations.

Some of the key safety facts presented in this report are as follows:

- In the year to the end of June 2006, there were six passenger fatalities in stations.
- In a period of ever-increasing passenger numbers, harm – in terms of fatalities and weighted injuries (FWI) – has remained largely constant at stations. The risk in terms of FWI per passenger journey has therefore decreased, representing an overall improvement in safety at the interface.
- Slips, trips and falls continue to be the main source of station risk. They occur mainly on station stairs and platforms, although a significant number of injuries also occur on escalators, even though these are only to be found at a very small number of stations. The analysis in the report has shown that the peak time for injuries on escalators is between 11:00am and midday, the only station area that does not show two daily peaks (during the morning and evening rush hours). Another significant fact is that over 70% of injuries sustained from falls on escalators are suffered by passengers over the age of 50 (half of those being over 70).
- During 2005 and 2006, there has been a significant reduction in the number of injuries resulting from the boarding and alighting of trains. The removal of Mark 1 stock has had a positive impact on this area, details of which may be found later in this report.
- Injuries due to trespassing in stations showed a yearly improvement from 2001 to 2004. Although the level of harm to station trespassers remained the same in 2005, this level rose by 32% in the half-year to June 2006, compared to the same period in the previous year. This figure may decrease as some fatalities are re-classified from trespasser to suicide on completion of investigations, which sometimes take several months to finalise.
- The most common injuries suffered by workforce members in the station environment continue to be incurred via assaults. This is followed by slips, trips and falls and being struck by/coming into contact with an object in the platform area. Manual handling injuries also occur quite frequently.

- According to data from British Transport Police (BTP), incidents of robbery and sexual offences both showed a reduction in 2005, compared to 2004 – a trend which has also prevailed in the first half of 2006. Contra to this, assaults in stations have continued to show a yearly increase, albeit at a lower rate than previously seen. Furthermore, instances of public disorder recorded at stations show no sign of abating, with a 20% increase in 2005 and, in the half-year thus far, a further increase of 27% (compared to the same period in 2005).
- Train accidents recorded in stations, which mainly comprise buffer stop collisions, collisions between trains and derailments, have also increased in the half-year to June 2006, compared to the same period in 2005. There were two derailments in the first six months of the year: one at York station, the other at Sheffield. Of the nine collisions at stations in 2006, one caused several injuries when a passenger unit collided with a stationary train at Blackpool North.
- The number of train protection warning system (TPWS) brake demands at buffer stops has been steadily decreasing since the end of 2002, and more markedly over the second half of 2005. The fall at the end of 2002 coincided with the completion of the mini-loop fitment programme. However, there has been a rise in the numbers of these brake demands over recent months. The reason for this is unclear. These numbers will continue to be monitored over the next quarter to ascertain whether an underlying trend is in evidence.

1 Introduction

There are over 2,500 stations on the mainline network, from which more than a billion journeys begin and end each year. Despite the perceived risk from train accidents, the onus is very much on the individual in the station environment. The industry can advise and educate regarding appropriate behaviour and proper use, but there are a number of human factors that will always be at play. Most slips, trips and falls, for example, occur due to running on stairs or the platform; most assaults take place in connection with ticket or train time disputes. Alcohol can be an inflammatory factor in both types of incident.

This report presents the levels of risk to passengers, the workforce and members of the public at stations. Recent trends are identified, in order to highlight areas of changing safety performance. The report also outlines the underlying causes that contribute to the current level of risk, along with the initiatives and research projects that are in hand to improve safety further.

Fatalities and injuries are discussed throughout this document. Fatalities that have occurred in a particular event, or group of events, are first considered separately. The major and minor injuries that arose are then taken into account. This enables injuries to be weighted in accordance with their relatively less serious outcome. The current weighting is 0.1 for each major injury and 0.005 for each minor injury, the combined measure being deemed 'fatalities and weighted injuries'.

We would appreciate your views on the content of this document, along with any ideas about additional information that you would like to see in future editions. Please send your feedback to Adrian Smith, whose contact details are on the title page.

2 Aims and objectives

RSSB's safety performance reports support the industry's Strategic Safety Plan (SSP) by presenting detailed information on targeted topics. They are updated periodically, so that trends in risk may be observed as the industry addresses areas of particular concern.

The key aim of this report is to present information on the risk from all hazardous events involving stations. This will help station operators gain a greater understanding of the potential dangers and should help them focus on areas requiring further risk reduction. The report also details the many steps already being undertaken to achieve this.

3 Scope and structure

3.1 Report scope

This report considers the rail network of Great Britain in relation to the following types of event, using safety data up to the end of June 2006:

- Trespass at stations.
- Injuries at stations: this includes slips, trips and falls, and boarding and alighting incidents.
- Station crime: assaults, vandalism and robbery.
- Train accidents: rollback collisions, buffer stop collisions, derailments and train fires. Signals passed at danger (SPAD) incidents are also covered.

Note that the *Risk profile* section has been compiled using data from version 5 of the Safety Risk Model (SRM).

3.2 Report structure

This report is in four main sections:

Safety performance – here, key findings on trespass, injuries, station crime and train accidents are presented, with an emphasis on current trends.

Risk profile – this section provides the results of the SRM relevant to station safety.

Current initiatives – national and local initiatives intended to minimise the risk from station hazards are presented in this section.

Appendices – there are six main appendices, covering injuries at stations, fatalities at stations, SPADs at stations, train accidents at stations and relevant research projects. A glossary and table of definitions are also provided.

4 Safety performance

4.1 Overview of safety performance

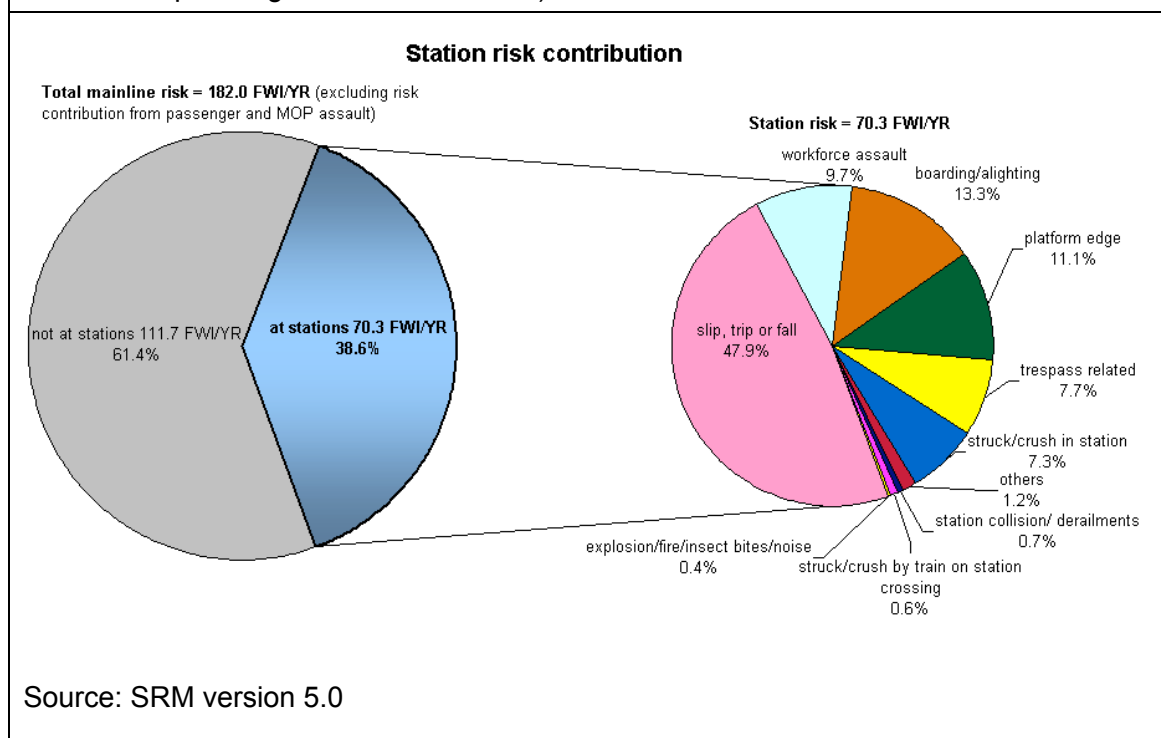
This section presents a general overview of safety performance relevant to station safety. A detailed assessment of the performance in each area is presented in the sections that follow.

Chart 1 shows station risk in the context of overall railway risk, as measured by version 5 of RSSB's SRM. Note that just below 39% of the total railway risk is at stations, excluding the estimated risk contribution from passenger and public assaults, which is in the region of 20 FWI/yr. Station risk is estimated to be 70.3 FWI/yr and the chart illustrates how this is broken down by accident type, showing the three main areas of risk to be:

- Slips, trips and falls – 47.9%.
- Boarding/alighting accidents – 13.3%.
- Platform edge – 11.1%.

Assaults, as well as trespass-related incidents and persons struck/crushed by objects in the station, also register a risk of over 7% of all station risk.

Chart 1. Station safety risk in context of overall railway risk (excl. suicide, and passenger and MOP assault)



RSSB is working closely with BTP to research and understand the differences in how assault-related data is recorded within Safety Management Information System (SMIS) and by BTP itself.

The two systems were designed for different purposes: BTP records and categorises criminal assaults in accordance with Home Office rules, whereas SMIS records

incidents reported by rail staff where *'in circumstances related to their work, a member of staff is assaulted, threatened or abused, thereby affecting their health, safety or welfare.'* Although SMIS does contain some records relating to assaults on passengers and members of the public, the vast majority of assaults recorded in SMIS are assaults on railway employees. Conversely, just 17.5% of assaults recorded by BTP are assaults on rail staff.

BTP figures indicate that the number of passenger and public assaults per year is much higher than SMIS suggests. The data also suggest that, rather than around three FWI/yr (as profiled in version 4 of the SRM), the risk associated with these assaults could be nearer to 20 FWI/yr, with close to 13 of these estimated to be at stations. However, as the BTP data does not provide any classification of injuries for assaults, these risk estimates for passenger and member of the public (MOP) assaults are very uncertain and are therefore not incorporated into the overall mainline risk profile for this report.¹

A full breakdown of the SRM precursors that make up the total station risk of 70.3 FWI/yr may be found in Appendix 6.

Excluding cases of trespass, suicide and death by natural causes, there were six accidental fatalities in stations during the first half of 2006:

- On 8 January, a man was fatally assaulted at Welwyn Garden City station (LNE).
- On 8 February, a woman fell down the stairs at Manor Park station (LNW). She later died of her injuries in hospital.
- On 14 March, a person came into contact with the conductor rail at St Denys (SE) station (SE). Alcohol was a contributory factor in the incident.
- On 25 March, a woman tripped and fell onto the track at Pembrey & Burry Port station (W) and was struck and killed by a train. Alcohol was a contributory factor in the incident.
- On 29 May, a female passenger fell down the stairs at Stamford station (M). She was taken to hospital, but died of her injuries.
- On 29 June, a male passenger alighted from a train at Hersham (SE) with a heavily laden bicycle. He ventured too close to the platform edge, fell onto the track and was electrocuted by the conductor rail.

In addition, a number of people commit suicide or lose their lives trespassing at overland railway stations every year.

4.1.1 Trespass at stations

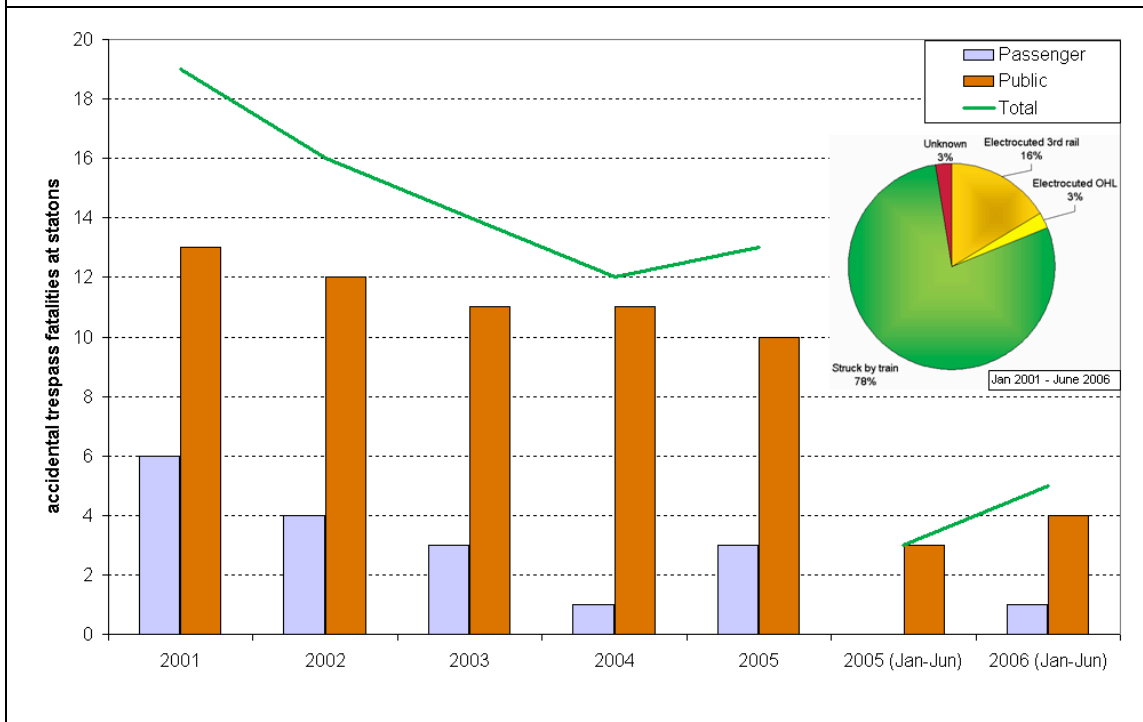
Stations offer an open interface with the track. This increases their potential to be used for illegal access to railway property.

Chart 2 looks at all accidental trespasser fatalities at stations since January 2001. It is quite clear that the number of trespassers killed in stations has been dropping in recent years, although 2005's figure was one greater than that for 2004. Fatalities predominantly occur as a result of a person being electrocuted or stuck by a train, although other fatality types are not unknown. In the first half of 2006, there were five

¹ These are reported separately in the Risk Profile Bulletin.

fatalities to persons trespassing at stations, compared to only three in the same period of 2005.

Chart 2. All accidental trespasser fatalities at stations

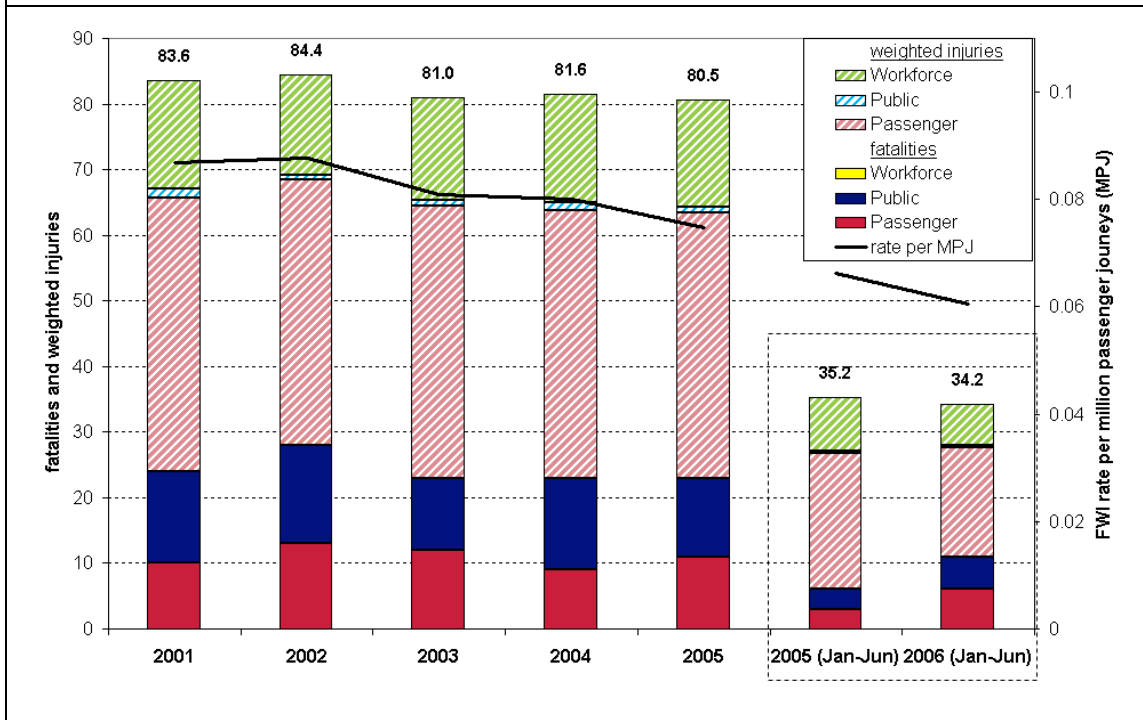


4.1.2 Injuries at stations

Almost half of all the harm that takes place on the railway each year does so in stations. With high numbers of passengers and staff using and working in this environment, and a plethora of hazards in evidence, accidents can and do occur. In many cases, however, injuries could be avoided if more care and attention were taken (during daily activities).

Chart 3 provides a view of the overall trend of FWIs that have occurred at stations each year since January 2001. We can see that the level of harm has remained largely the same in the analysis period, with 2005 displaying a reduction of just over 1%. With a 3% drop compared to the first half of 2005, the first half of 2006 also saw a small reduction in the total harm at stations. Whilst these changes are not statistically significant, it is important to note that this level has stayed largely the same at a time when passenger and journey numbers have increased substantially. According to statistics from the Office of Rail Regulation (ORR), if one compares the total passenger journeys made in Jan-Jun 2001 to those made in Jan-Jun 2006, there has been an increase of 20%. Therefore, it is fair to say that safety has improved by that amount over the period in question when measured on a per passenger journey basis, as shown by the FWI rate per million passenger journeys line in Chart 3.

Chart 3. Total accidental FWIs at stations (excl. suicide)



4.1.3 Crime at stations

As with injuries, most crimes committed on Network Rail controlled infrastructure (NRCI) also occur at stations. Offences can range from verbal assault to robbery and even murder.

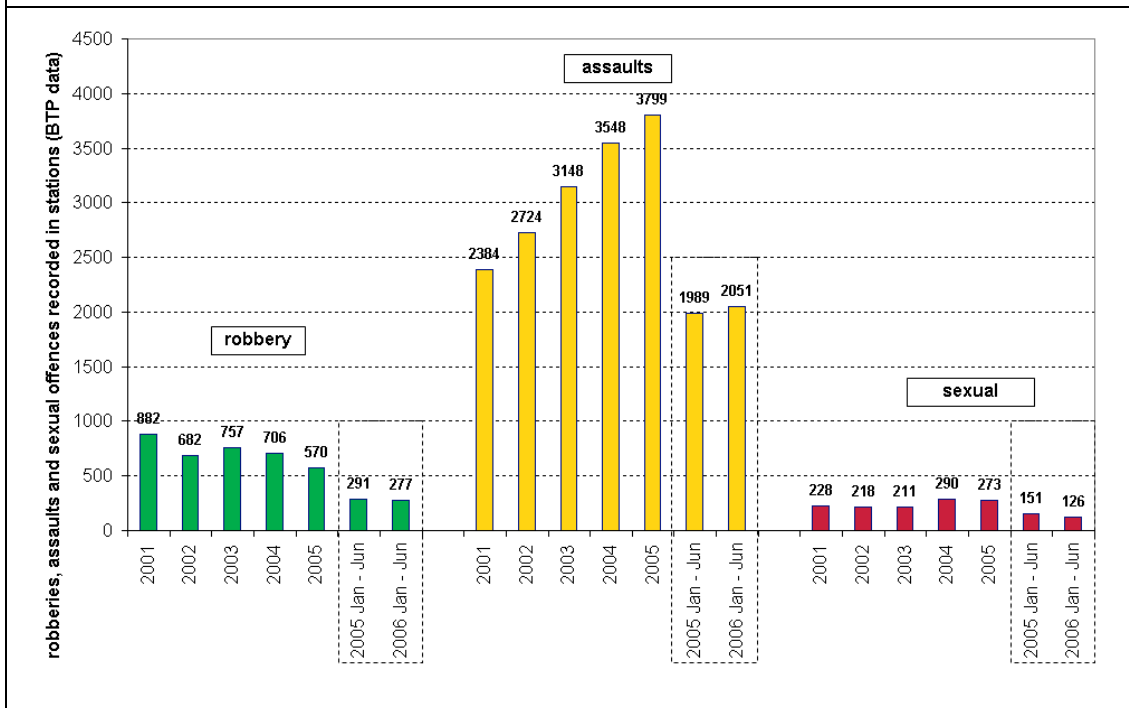
Data on crimes that occur at stations are collected by BTP. Chart 4 illustrates the yearly trends in such offences from January 2001 to June 2006.

It shows that robberies have fallen for the last three years, and – when viewing the recorded crimes for the first half of 2006 compared to the same period in 2005 – have shown a 5% decrease.

Recorded instances of assault have risen each year in the review period, although the percentage increase in 2005 fell to 7%. Assaults rose 60% from January 2001 to December 2005; however, a change in recording practices is largely responsible for this (for further details, see the more in-depth section on station crime later in this report).

After a significant increase in 2004, sexual offences dropped in 2005, and have shown a 17% decrease, when Jan-Jun 2006 is compared to Jan-Jun 2005.

Chart 4. Crimes recorded at stations by BTP



4.1.4 Train accidents at stations

A small number of incidents involving train operations also occur at stations and have the potential to cause harm to passengers, staff and members of the public. The nature of these accidents can be split into four main categories: buffer stop collisions, train collisions, derailments and train fires.

Details of train accidents that have occurred over the analysis period, along with some analysis of trends for these types of incidents, may be found in the following section.

4.2 Safety performance at stations in detail

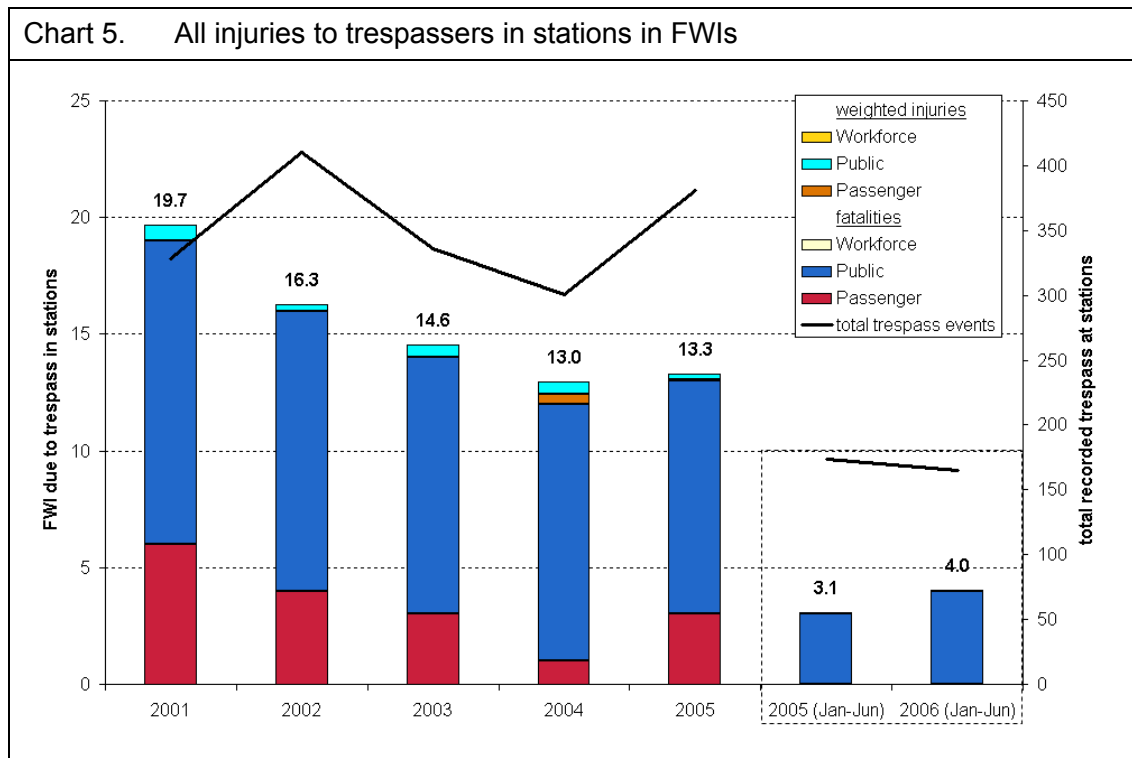
4.2.1 Trespassing at stations

Research shows that, despite the increased likelihood of being ‘caught in the act’, it is relatively easy for members of the public to gain access to prohibited areas if they are intent on doing so. This is especially true at small, unstaffed halts, although bigger installations are also prone to the problem.

There are many reasons why someone might wish to flout the rules in this way: some chose the station as the starting point for a suicide attempt; some play ‘chicken’ or cross the tracks between platforms; others prefer to launch graffiti attacks from the platform ends (as the relay boxes and signals around almost any station in Britain will testify).

Chart 5 provides the reader with an overall view of both the number of instances of trespass at stations between January 2001 and June 2006, and the total harm, in FWIs, suffered by trespassers at stations in the same period. The number of reported trespassers at stations fell by 27% from 2002 to 2004, when it rose significantly again – back to almost the same level. In the first half of 2006, the number of trespassers at stations was slightly less than that seen during the same period in 2005. Note that the level of harm in the same period of 2006 is slightly more than that in 2005, due to there having been one more fatality to a trespasser in a station.

The bar chart within Chart 5 indicates a similar trend, with the total harm having fallen from 2001 to 2004. There was a slight increase in the harm to trespassers at stations in 2005, but it is very small and not statistically significant. What is significant, however, is that whilst the total recorded instances of trespass at stations rose by a quarter, the harm suffered by the trespassers involved stayed largely the same.



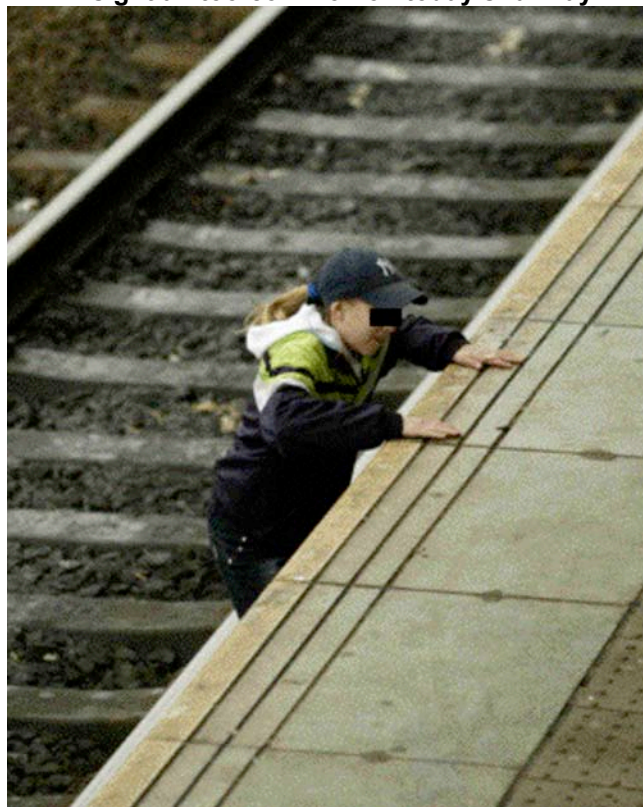
Incidents of trespass at stations account for around 3% of all instances of trespass on NRCI. The level of trespass not at stations tends to stay at about the same level, with never more or less than 4% increase or decrease from year to year, unlike that seen at stations, which fluctuates more from year to year, as the table below shows.

	Stations	Not at stations	% at stations
2001	328	10891	2.92%
2002	410	11351	3.49%
2003	336	11405	2.86%
2004	301	11197	2.62%
2005	381	11268	3.27%
2005 Jan - Jun	174	6287	2.69%
2006 Jan - Jun	165	6624	2.43%

Station monitoring has developed considerably in recent years. With the introduction of CCTV at many installations (along with a number of other local initiatives), incident levels should start to fall as the ease with which trespassers are apprehended grows. Such improvements also act as a deterrent to those who present the highest re-offending risk; this sends the message to potential perpetrators that these issues are being taken seriously by the industry – indeed, trespassers are now more likely to be challenged than they have been in recent years.

Details of local – and national – station initiatives may be found in section 6.

A sight all-too-common on today's railway.



4.2.2 Injuries at stations

As Chart 1 illustrated, 38.6% of all the harm suffered on NRCI is incurred at stations. This high concentration derives from a high level of passenger and staff use, with over a billion passenger journeys taking place every year, each involving transits through at least two stations. Many people also make daily visits to station concourses, in order to use the ever-expanding selection of retail facilities. The hazards within stations thus cover a diverse range of risk, involving boarding and alighting trains, progress around stations, interaction between passengers and staff, and the movement of trains. These elements lend a certain inevitability to those accidents that can lead to injury.

Chart 6. Total number of injuries occurring at stations (excl. incidents of shock and passenger and MOP assault)

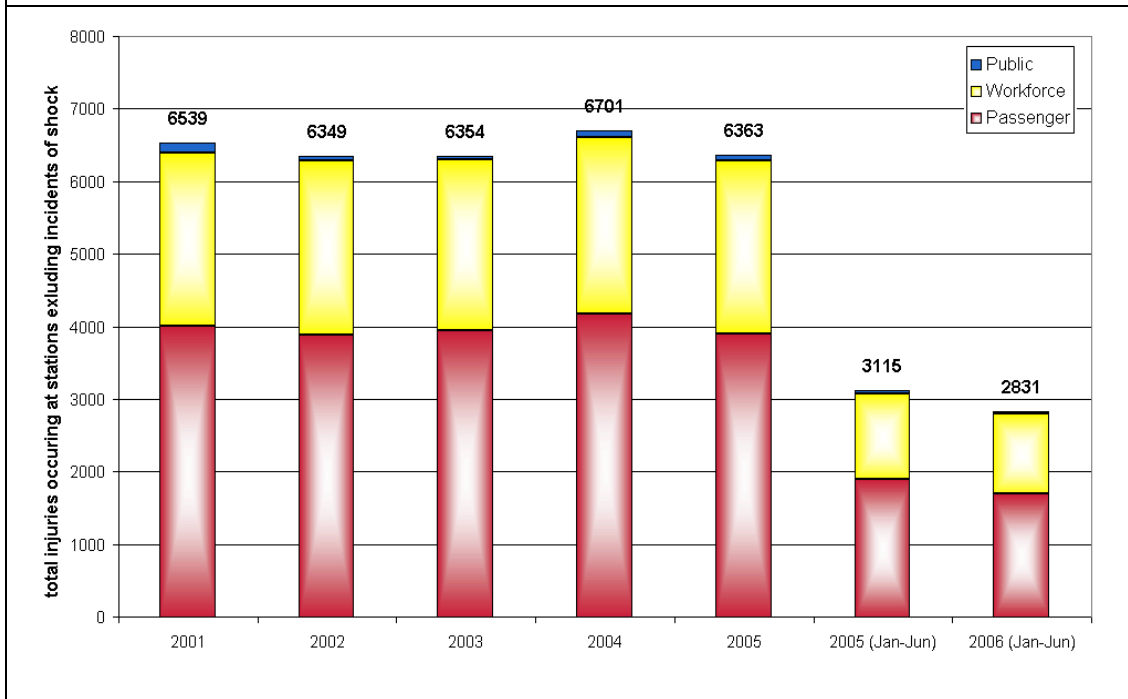


Chart 7 provides a breakdown of the most frequent type of incidents leading to passenger injuries in stations. One can see that station slips, trips and falls occur very often and account for 65% of harm (FWI) to passengers at stations. Being struck by/contact with/trapped in an object on the station also causes many injuries, as do incidents involving boarding and alighting, train doors and assault.

Chart 7. Injuries to passengers at stations > 50 injuries between Jan 2001 and Jun 2006 (excl. incidents of shock)

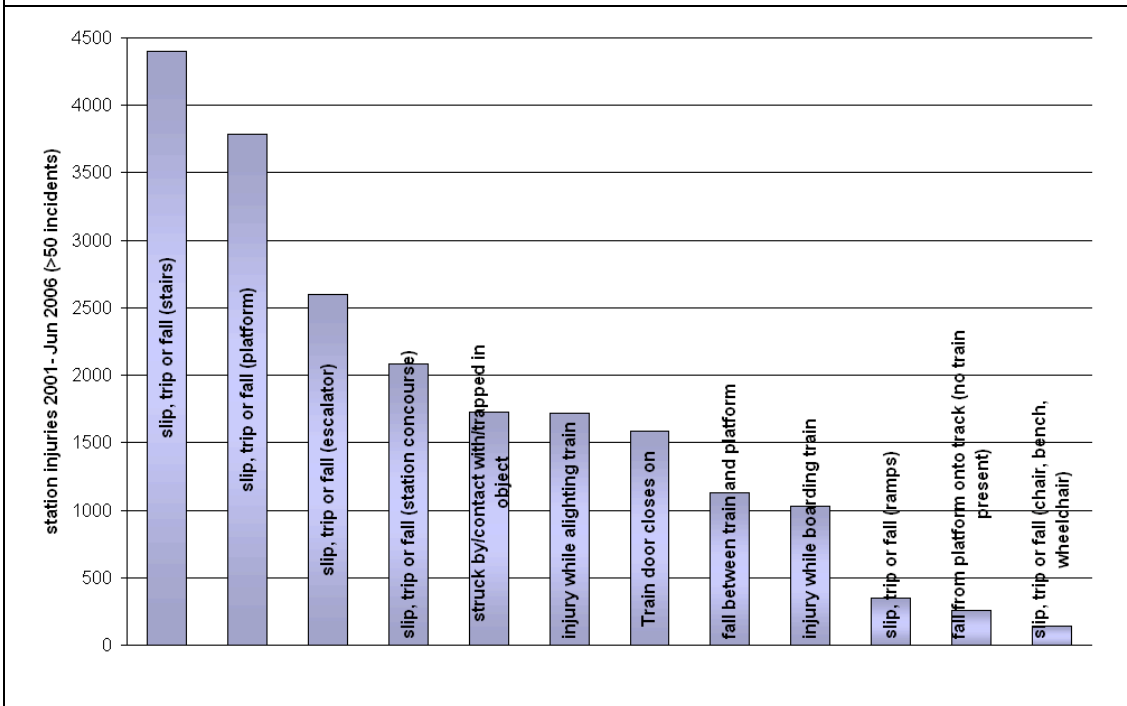
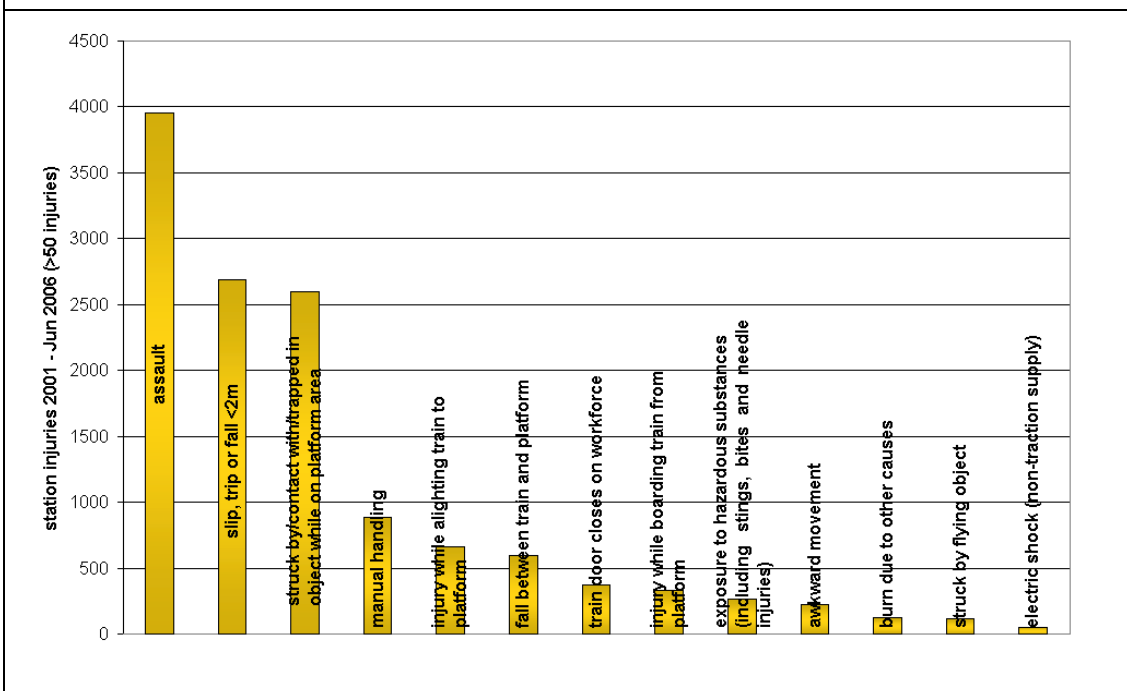


Chart 8 looks at the most frequent types of incident that result in injury to members of the workforce at stations. Assault is by far the most recurrent over the five-year period, comprising 28% of all injuries sustained by staff at stations. Injuries as a result of slips, trips and falls and being struck/contact with/trapped an object are also quite frequent and show very similar occurrence rates during the analysis period.

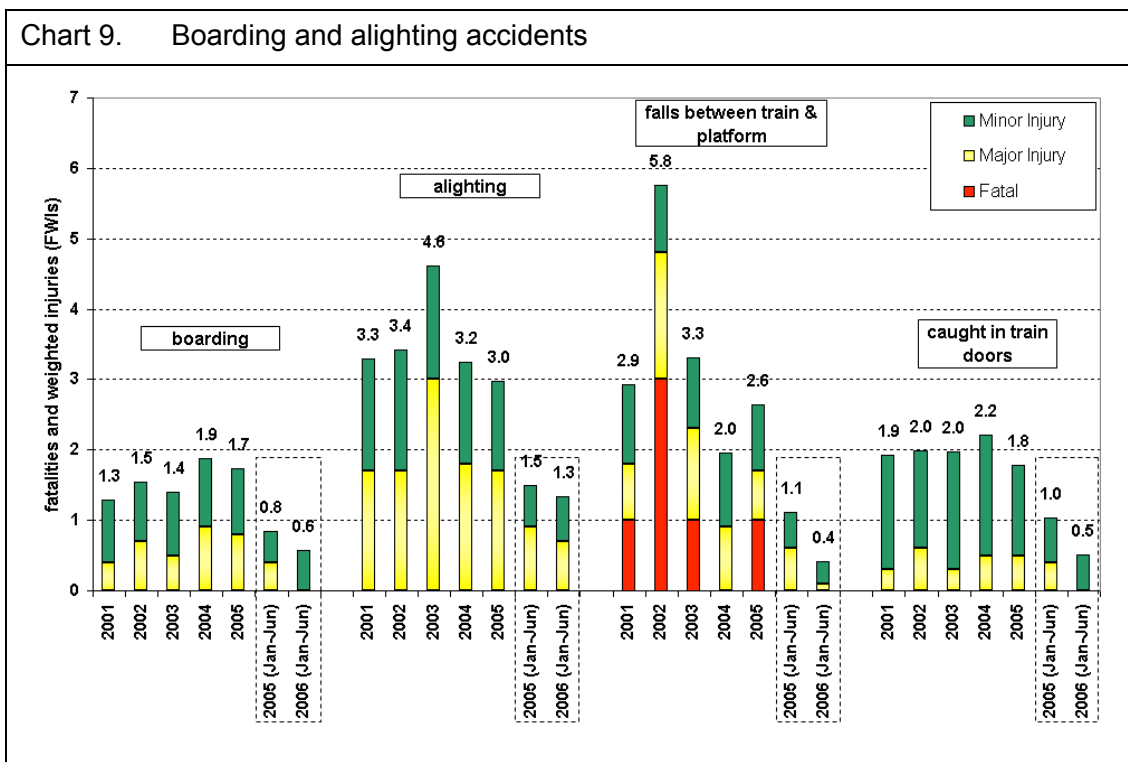
Chart 8. Injuries to members of the workforce at stations > 50 injuries between Jan 2001 and June 2006 (excl. incidents of shock)



Owing to a lack of central locking on some trains, passengers in the past were able to board or alight moving trains – a practice that resulted in many serious injuries. The removal of Mark 1 rolling stock, and its replacement by trains with interlocking doors, has largely eradicated this source of risk.

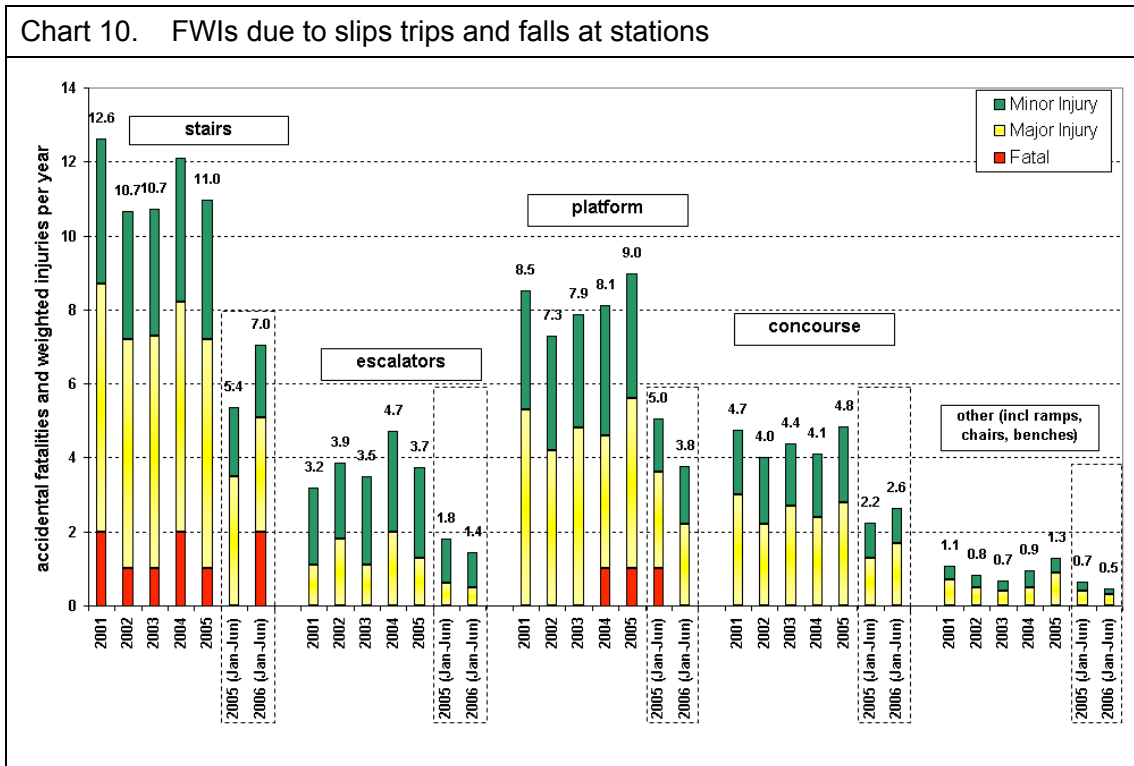
The stepping distance between the platform and the train door can also present a material hazard. This can be substantially greater at some stations than others, due to the railway’s complex history regarding gauging and rolling stock types. This can compound the hazard and increase the chance of falling between the train and the platform. Improvements beyond signage and audible warnings are not usually deemed to be reasonably practicable, however.

Chart 9 shows the level of harm arising from boarding and alighting accidents (including falls between the train and the platform and automatic doors closing on passengers). Overall, the harm from boarding and alighting was around 2% lower in Jan-Jun 2005 than Jan-Jun 2004 – this, despite a fatality being recorded in 2005 when none were recorded the previous year. Between January 2006 and June 2006, the overall harm recorded due to boarding and alighting incidents had fallen by 36%, compared to the same period in 2005. The chart clarifies that the main source of improvement has been fewer serious falls between trains and platforms, and fewer injuries to persons caught in train doors. Again, the removal of Mark 1 rolling stock would certainly have been instrumental in effecting this reduction.



Slips, trips and falls account for a large proportion of the injuries that occur in stations each year, with more than 65% of weighted injuries to passengers in stations deriving from these accidents. Most of the injuries sustained are minor, although fatalities do occur. In 2006 alone there have already been two fatalities due to falls in stations (excluding falls from height and falls from the platform edge). Wet and slippery surfaces, crowding, running, alcohol, obstructions and infirmity can all contribute to the likelihood of slipping, tripping and falling in the station.

Chart 10 (below) shows where these incidents take place in stations, along with their seriousness in terms of FWIs. It is clear that most harm is experienced on stairs, with on average around 11 FWIs occurring per year, representing around 37% of the harm arising from slips, trips and falls in stations. Since 2001, there has been at least one fatality per year due to falls on stairs.



It is worth considering that, whilst the overall risk in terms of FWIs due to slips, trips and falls on escalators is lower than that for stairs, platforms and the concourse, there are much fewer stations with escalators compared to those with stairs.

Chart 11 illustrates the number of injuries sustained due to slips, trips and falls on escalators from January 2001 to June 2006. Between June 2004 and June 2005 there was an increase in the number of injuries reported due to these incidents. Since June 2005, however, there has been a decrease in the number of injuries reported, with the annual moving average now at the level it was at the end of 2002. This represents a significant improvement over the last year, especially when considering the fact that passenger numbers have increased over the period.

Chart 11. All injuries resulting from slips, trips and falls on escalators

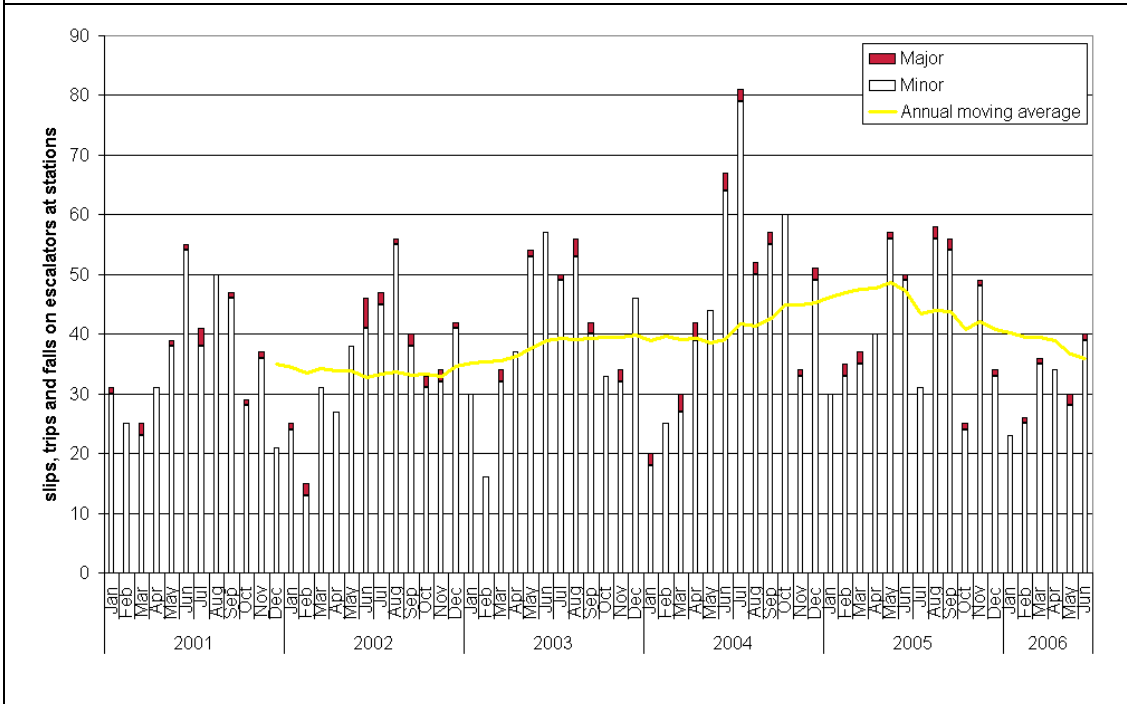


Chart 12 illustrates the age profile of persons injured on escalators between January 2001 and June 2006. Unfortunately, as the chart shows, only about half the ages of injured persons are recorded, although this situation is starting to improve. However, the remainder shows that a large proportion of injured persons are over the age of 50 (68%). This may be due to the fragility of older persons, coupled with a willingness to report an injury rather than just continue with their journey. Another point to note is that moving equipment is much harder to negotiate than stationary equipment, something which the elderly (over 70 years) find particularly challenging.

Chart 12. Slips trips and falls on escalators by age group

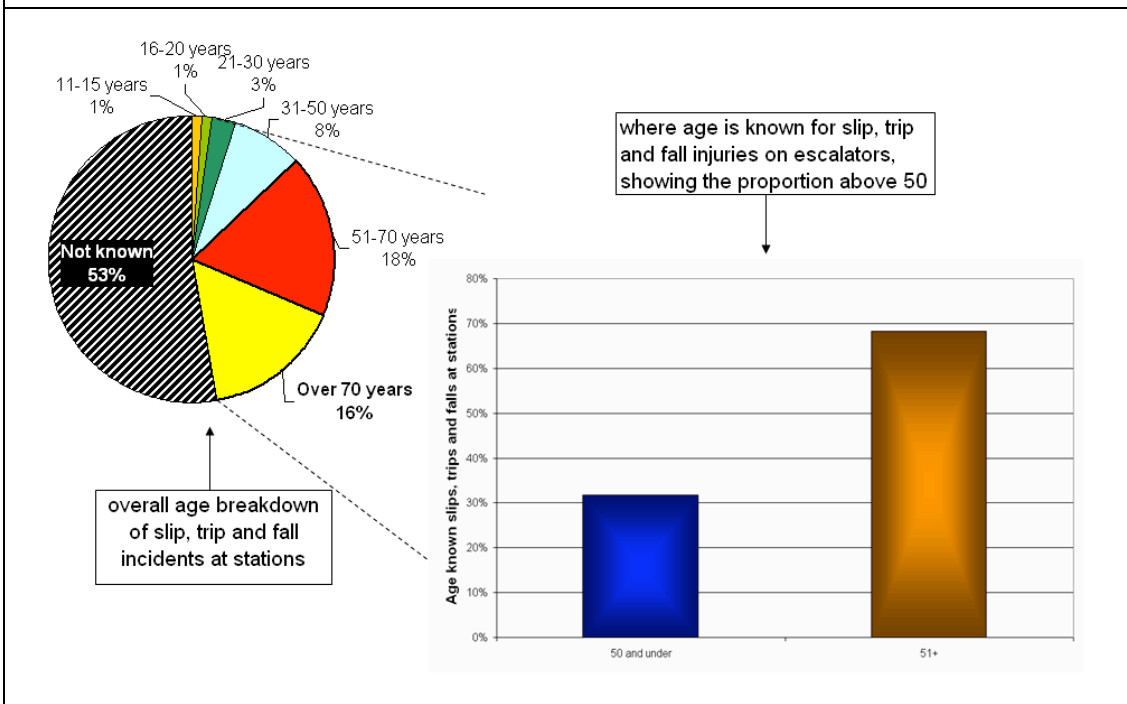


Chart 13 provides the reader with a breakdown, by injury type, of the recorded reasons for injuries due to slips, trips and falls on escalators. Once again, just over half have been allotted 'no specific cause'. However, the remainder indicate that alcohol/drug abuse is by far the largest contributory factor in these cases.

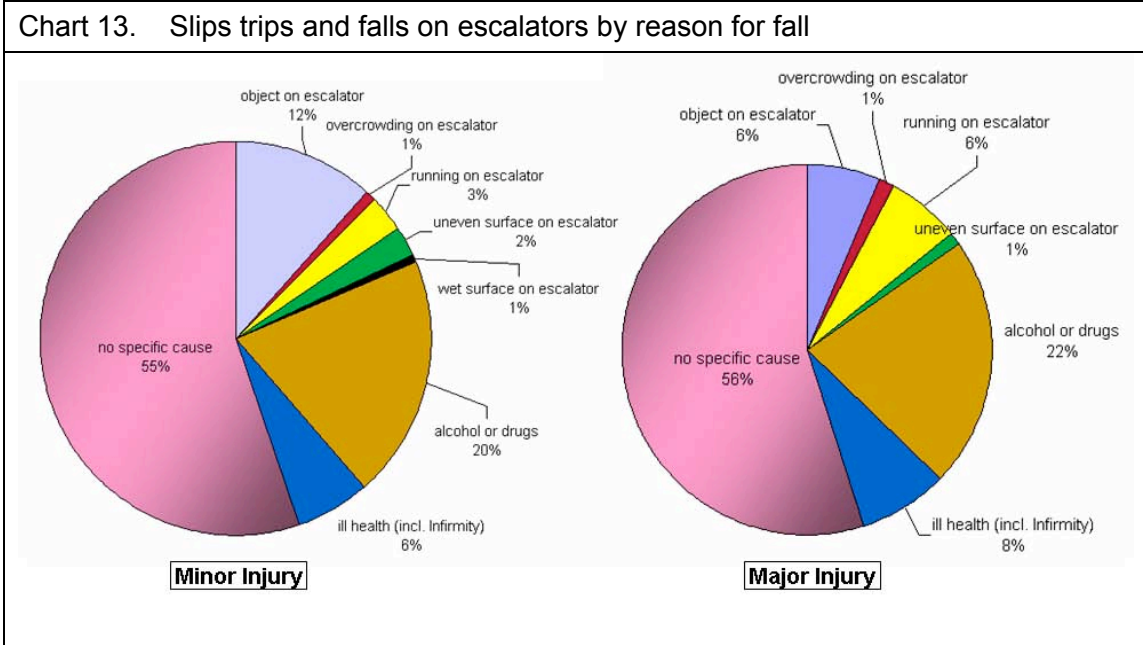
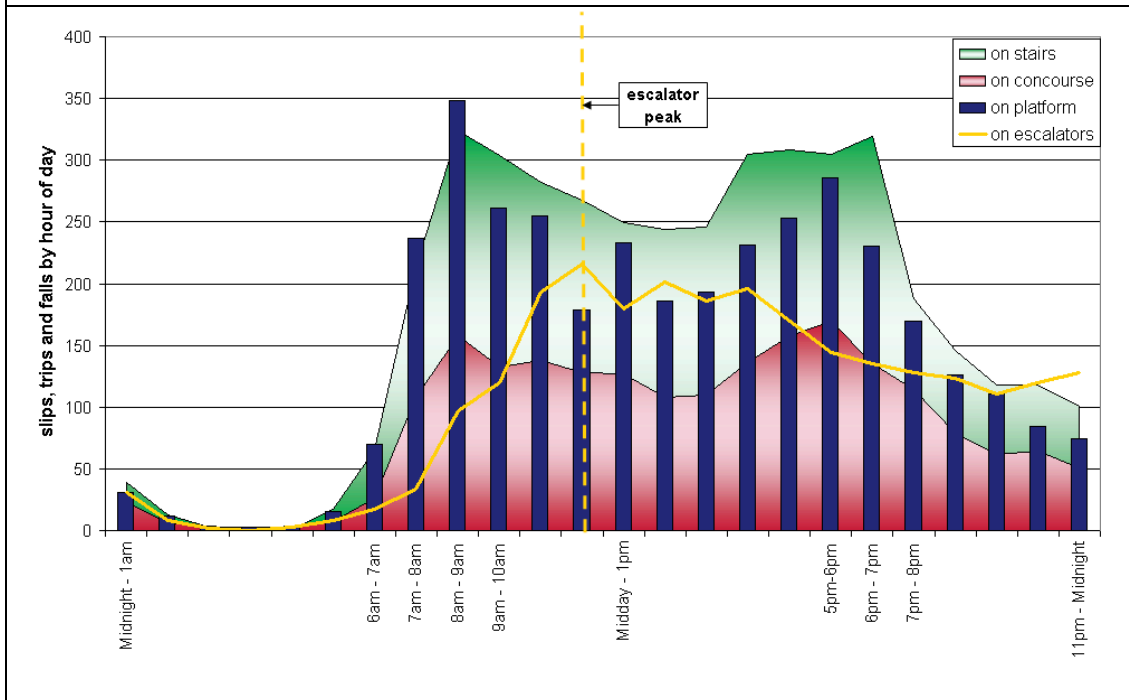


Chart 14 depicts the daily time profile of all slips, trips and falls between January 2001 and June 2006 by station area. As expected, slips, trips and falls on stairs, concourses and platforms show two clear peaks during a 24-hour period: one during the morning and one during the evening (when passengers are travelling to – and from work). However, note that slips, trips and falls on escalators see only one daily peak, which corresponds to neither those noted for the other categories. Falls on escalators increase steadily during the morning and reach a summit between 11:00 hrs and midday, after which they slowly tail off through the afternoon and into the evening. The level until midnight remains reasonably constant. This suggests a group of people who generally prefer to travel at 'off-peak' periods. Given the data on slipping, tripping and falling on escalators presented in Chart 12, it seems most likely that those concerned are also of 'retirement age' – a group that is expected to increase by about 40% over the next two decades.

Chart 14. Slips, trips and falls by time of day (Jan 01 – June 06)



4.2.3 Station usage

The ORR recently published (July 2006) information regarding station usage. The station usage data consists of estimates of the total numbers of people entering, exiting and interchanging at stations. The latest station usage information is based on ticket sales in the financial year 2004/05 and covers all National Rail stations throughout England, Scotland and Wales.

Chart 15. Rate of slip, trip and fall injuries normalised by average station usage (entries, exits and interchanges)

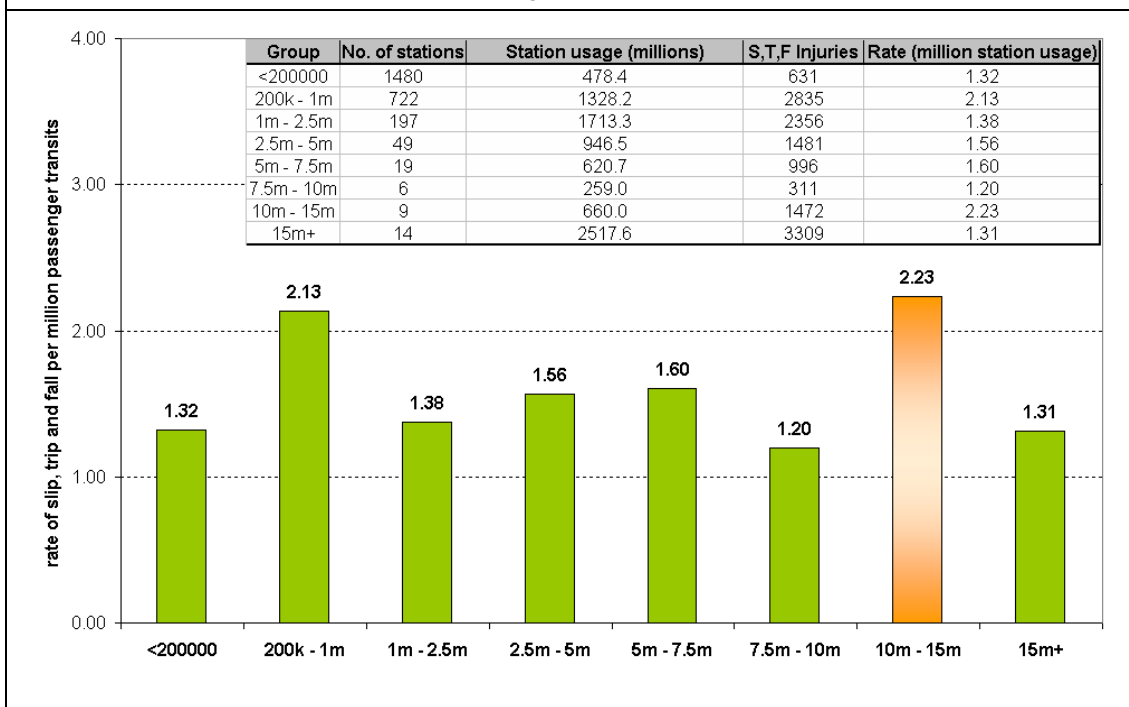
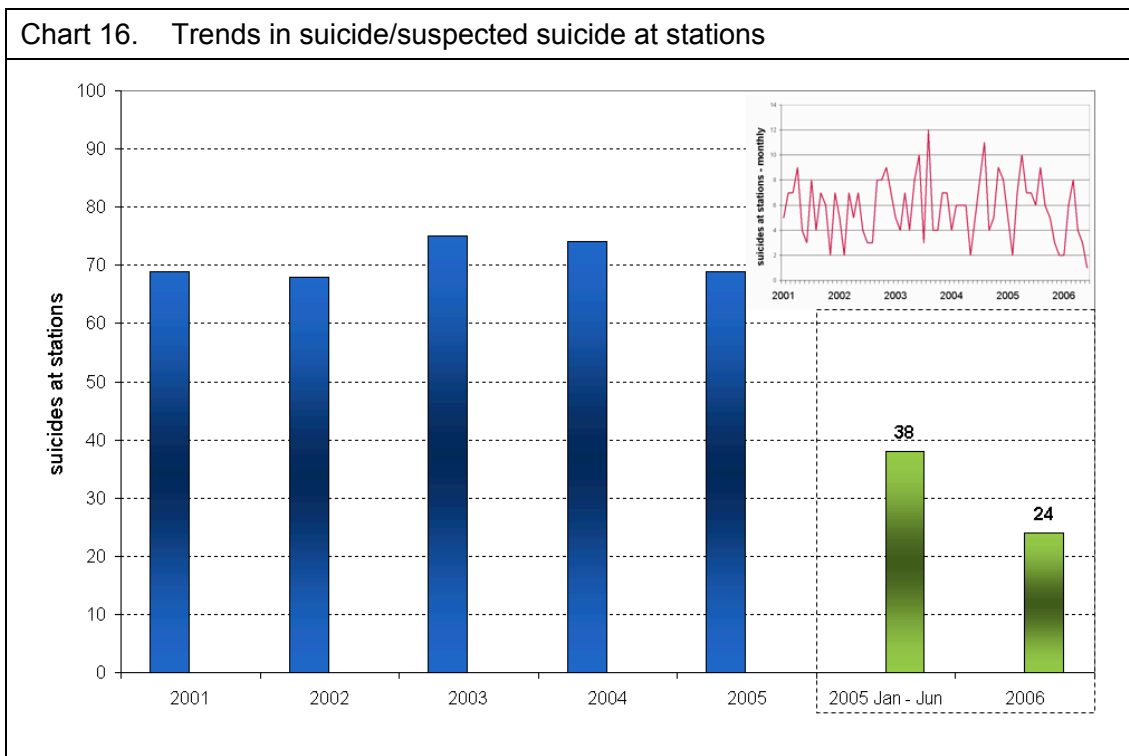


Chart 15 shows the rate of injuries due to slips, trip and falls in stations by station usage. Stations have been grouped into a number of categories, comprising estimates of entries, exits and interchanges at stations. There is also an embedded table within the chart that provides the actual data used about these injuries. The chart suggests that rail users who pass through smaller stations are just as likely to be injured in a slip, trip or fall incident than those who travel to or from, or pass through, busier stations. There may also be an issue of less reporting at smaller unmanned stations.

4.2.4 Suicides at stations

In 2005, there were 69 suicides or suspected suicides at stations (from a total of 202 on the railway). In the first half of 2006, there were 24 suicides at stations, compared to 38 during the same period in 2005, representing an improvement of 37%. This is illustrated in Chart 16, which also plots the yearly and monthly numbers of suicides and suspected suicides at stations since January 2001.



With a relatively high number of railway suicides overall in the first half of the year, this suggests that a smaller proportion of people are choosing to take their own lives in the station environment. Another possible reason for the drop in station suicides is that some TOCs have been training station staff to be aware of possible irrational behaviour – particularly in relation to the platform area. It is also important to note that classification of some fatalities may change as the outcome of investigations are finalised. Some trespasser fatalities change to suicides and vice versa, so the reduction on suicides may not be as much as is reported here as these investigations sometimes take several months to be completed.

4.2.5 Crime at stations

The vast majority of railway journeys are completed without incident. However, crimes such as assaults, robberies and sexual offences are committed in stations every year. While these often reflect what is happening in society at large, the industry is not

powerless and constantly strives to improve the situation for passengers, staff and members of the public.

The analysis of trends in robbery, assault and sexual offences in stations, and station disorder is based on data from BTP. The Home Office introduced a National Crime Recording Standard (NCRS) that all police forces across England and Wales (not Scotland) were required to adopt. It was implemented by BTP on 1 April 2002. The basic principle of NCRS is that if, on the balance of probability, a crime has been committed, then it is recorded as such. This has made crime recording more victim-focussed. However, crime statistics are not always accurate indicators of levels of crime: police activity to target particular offences, changes in reporting patterns and other factors can all affect the figures involved.

Chart 17 provides a breakdown of robbery, assault and sexual crimes recorded by BTP since January 2001 in stations, but not those which occurred within third party/tenant-occupied areas. The chart also shows the performance of the same crimes in the first half of 2006, compared with the first half of 2005.

It is clear that robberies in stations have fallen in each of the past three years, with 2005 recording a reduction of 19% in those reported compared with the previous year. The first half of 2006 saw an almost identical number of robberies recorded to the first half of 2005.

The chart also shows that recorded assaults within stations have risen each year since 2001. Violent and common assault account for most of the assault crimes recorded, although it is evident that recorded racially aggravated harassment incidents have risen significantly since 2003, displaying a yearly increase of 60% in 2005 after an increase of 86% the previous year.

Chart 17. Robbery, assault and sexual offences recorded in stations (excl. 3rd party locations) - BTP data.

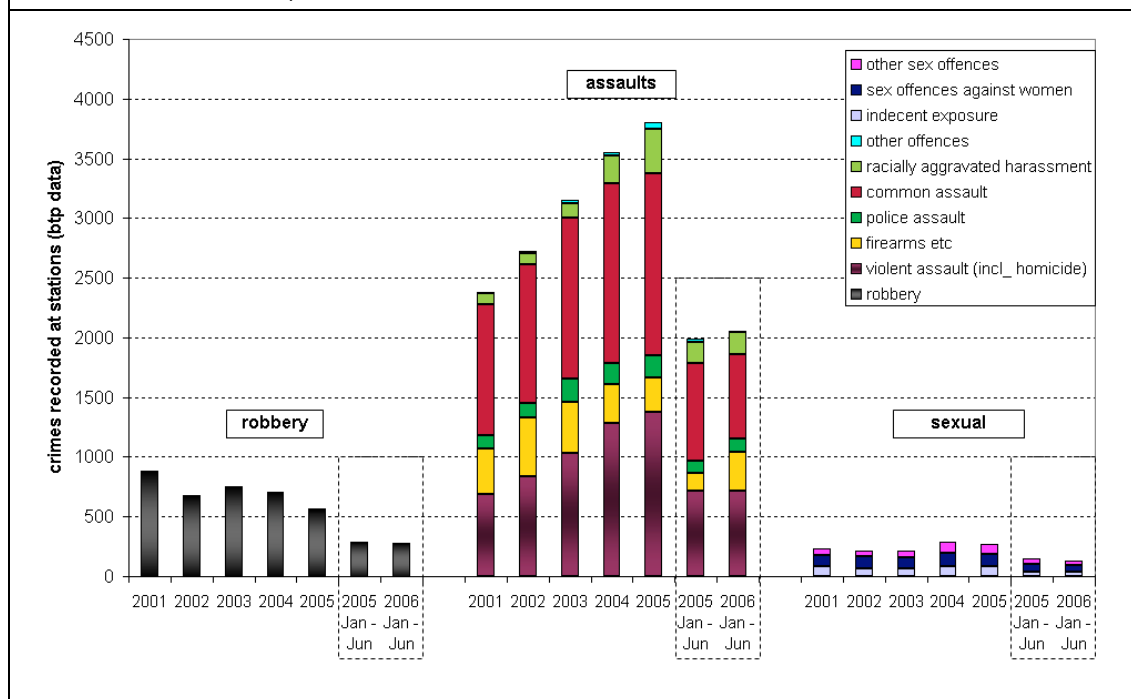


Chart 18 shows reported workforce assaults in stations between January 2001 and June 2006. The orange line depicts the total number of assaults reported in stations

has risen significantly in the analysis period, however this is largely due to an increase reporting of incidents, rather than an actual significant increase in assaults. There have been many initiatives to reduce instances of workforce assault, which has led to more awareness and the reporting of all assaults that take place. The greatest increase in reporting has been seen in verbal assaults.

As the chart shows, the number of injuries, depicted by harm sustained in terms of FWIs, has remained largely the same over the period. This re-enforces the view that these incidents have not increased, the industry being now more aware of the actual numbers taking place.

Chart 18. Workforce assaults at stations

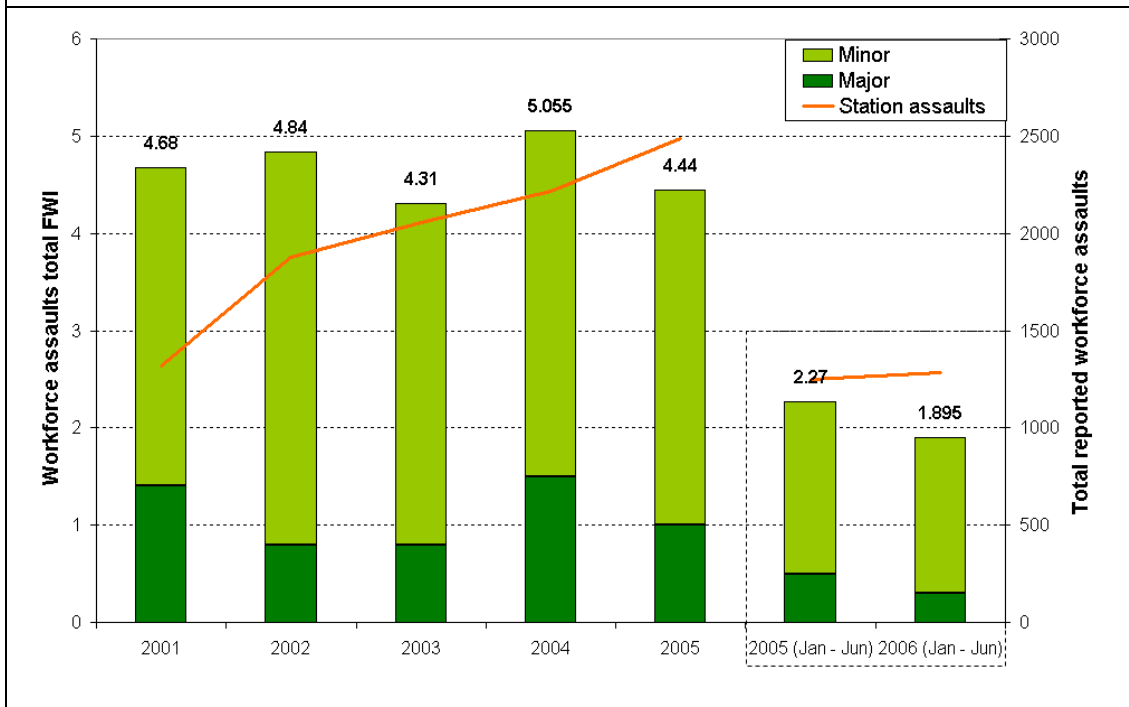


Chart 19 illustrates the trend in recorded public disorder offences in the same period. It is clear that recorded levels of these crimes have been increasing year on year, although 2004 saw a marginal decrease in the number of offences recorded at stations. After this, the largest yearly increase took place in 2005, when recorded offences rose by 20%. This trend seems to have continued into 2006, as the first half of the year saw an increase of 27% in the number of disorder offences recorded at stations, compared to Jan-Jun 2005. In fact, one can see from the chart that the level from January 2006 to June 2006 is almost as high as that for the whole of 2001.

Once again, changes in recording practice will have had an impact on the increase in recorded disorder offences. Another possible factor is the number of BTP officers assigned to station patrols, which increased in 2005. The introduction of CCTV and other initiatives to combat these offences may also have led to higher identification rates and thus a higher level of recording in the incident database.

Chart 19. Public disorder recorded at stations

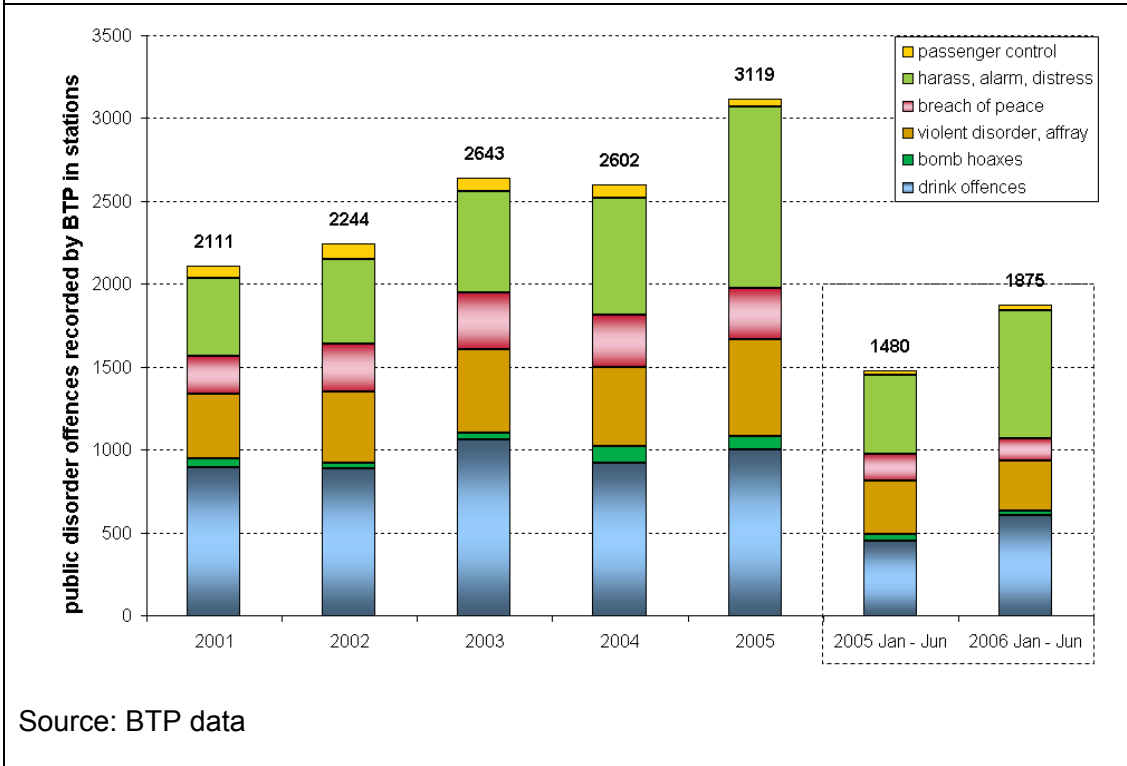


Chart 20 uses information captured in SMIS to illustrate the trend of vandalism incidents in stations from January 2001 to June 2006. It is evident by looking at the annual moving average (AMA) (red line), that reported vandalism incidents have been increasing since the beginning of the review period, with the 2006 average almost double its 2001 level. Vandalism of equipment and graffiti attacks represent the vast majority of these incidents.

Chart 20. Recorded instances of vandalism at stations

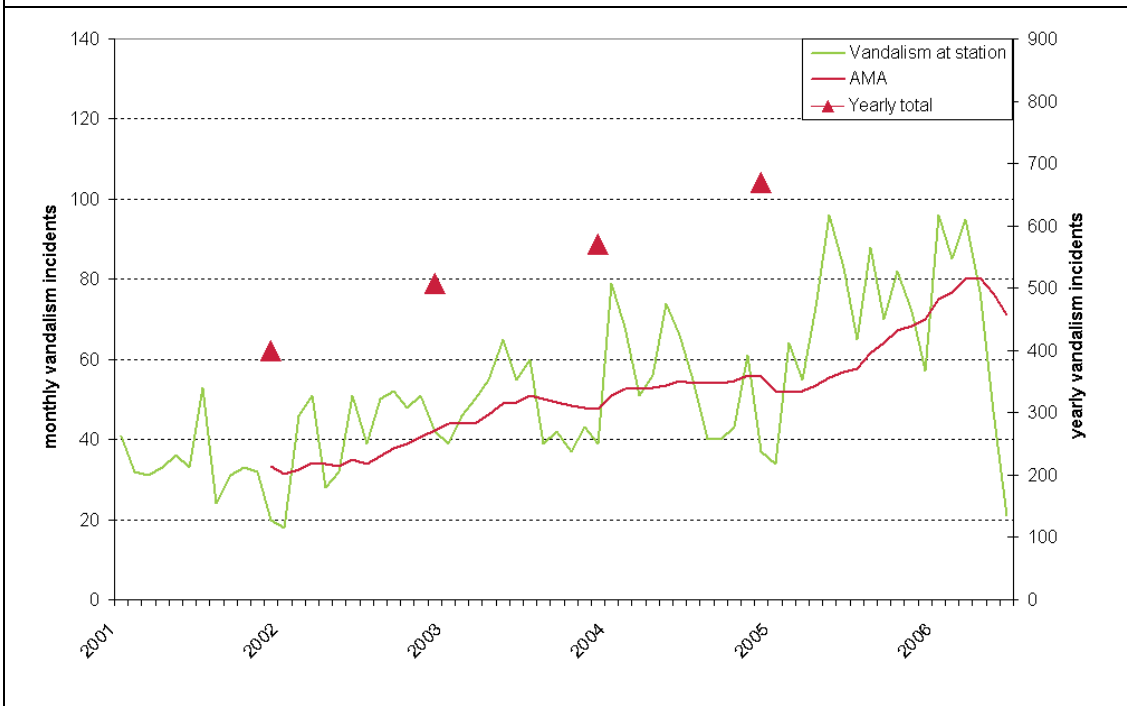
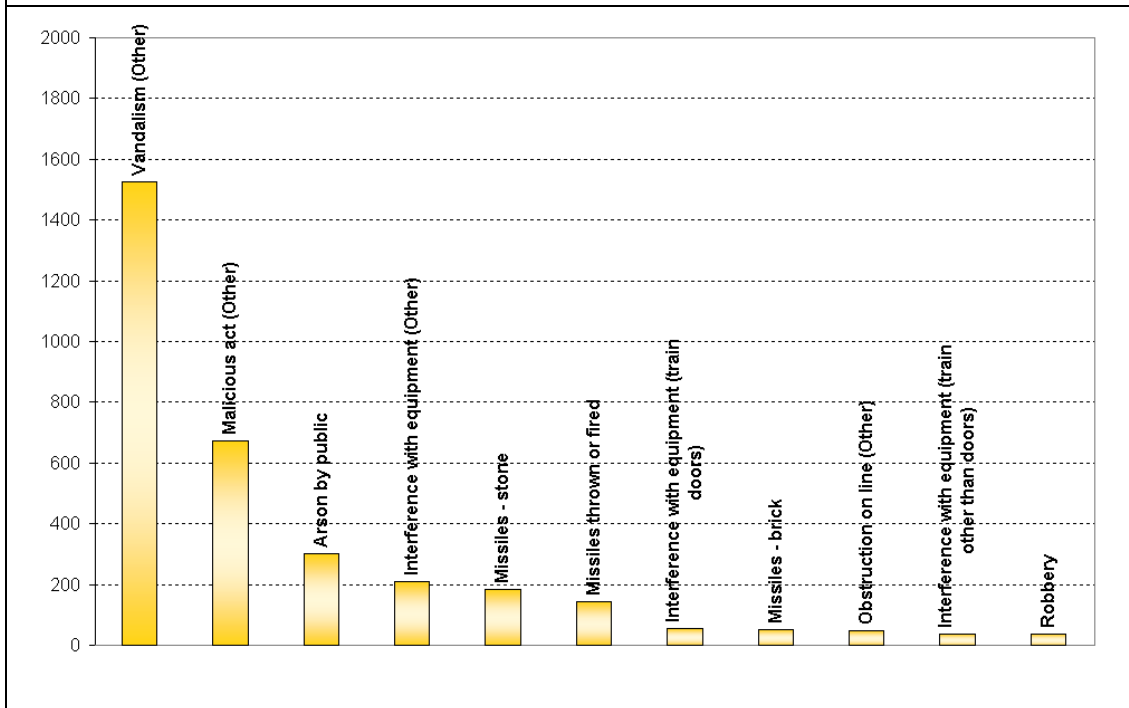


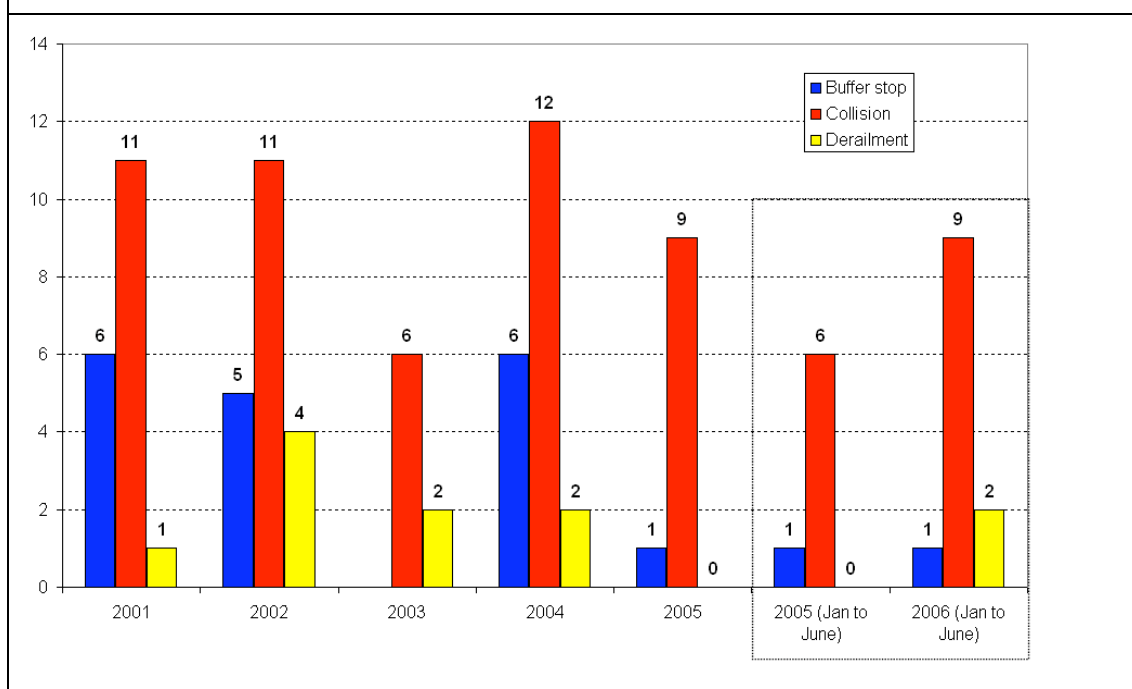
Chart 21 illustrates the nature of these events, depicting all types of vandalism in stations with more than 30 events since 2001. The first two categories comprise of general types of vandalism (such as graffiti and so on), whilst arson and vandalism of equipment follow in the list of the highest number of events.

Chart 21. Types of vandalism – Jan 2001-Jun 2006 – more than 30 incidents.



4.2.6 Train accidents at stations

Chart 22. Occurrence of train accidents at stations



During the first half of 2006, there were 12 RIDDOR-reportable train accidents at stations. This is two more than for the whole of 2005. Of the nine collisions, seven were rollbacks and two occurred as the train was coming into the station.

One of the nine collisions caused numerous injuries:

- On 15 March, a passenger unit collided with a stationary train at Blackpool North (LNW). One member of staff was knocked unconscious; another member of staff and four passengers sustained minor injuries.

In addition, the first six months of 2006 saw the occurrence of a buffer stop collision. This also resulted in a number of injuries:

- On 27 January, a passenger train collided with the buffer stops at Sudbury (SE), causing damage to the unit's snowplough, buffers and gangway connection. Sixteen passengers and one member of the workforce received minor injuries.

During the first six months of 2006, two derailments occurred in stations. These were the first since August 2004. The details of the accidents are as follows:

- On 18 January, a freight train derailed and then re-railed at York station, causing considerable damage to track circuit cables and TPWS equipment (LNE). The accident was caused by collapsed suspension on the train.
- On 11 May, a shunting locomotive passed a signal at danger in the sidings and derailed as it headed towards platform 3 at Sheffield station (LNW) before the signal was cleared.

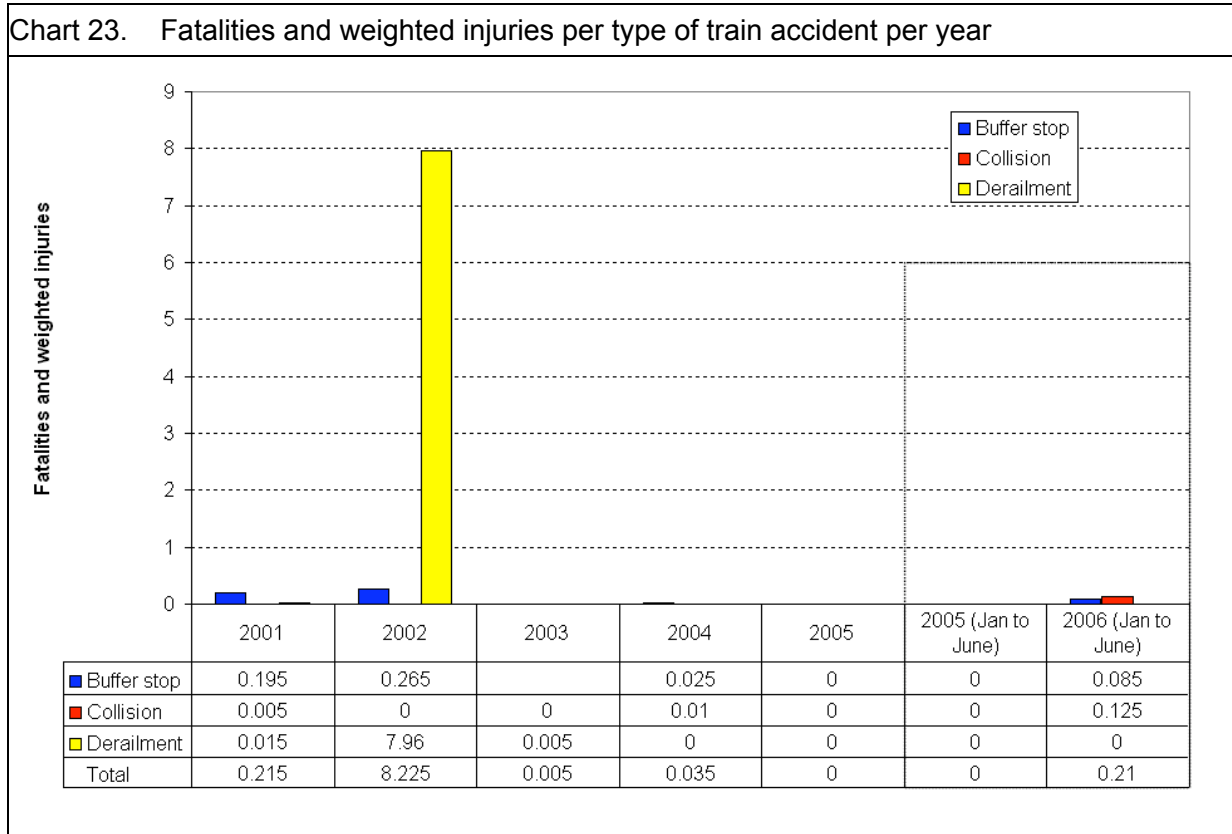
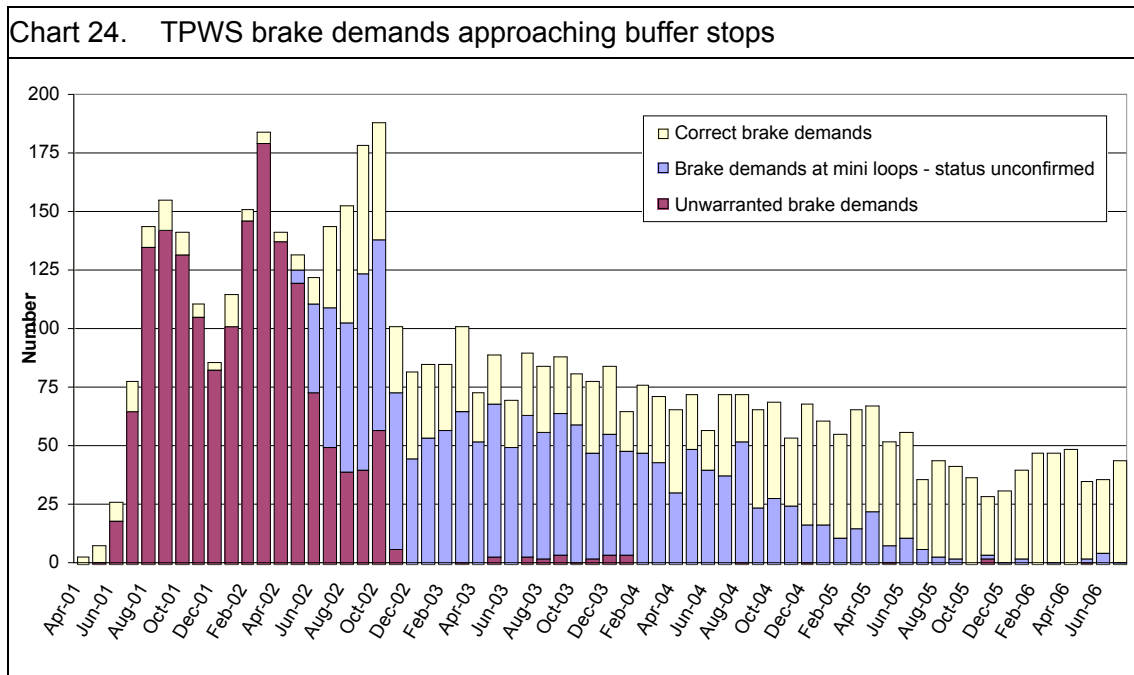


Chart 23 shows the number of fatalities and weighted injuries that have occurred from collisions, derailments and buffer stop collisions. It reveals that the majority of train accidents in stations do not result in many injuries. The exception, as shown on the chart, was the accident at Potters Bar in 2002, where a through train derailed and collided with station infrastructure.



The number of brake demands at buffer stops has been steadily decreasing since the end of 2002, and more markedly over the second half of 2005. The fall at the end of 2002 coincided with the completion of the mini-loop fitment programme. However, there has been a rise in the numbers of these brake demands over recent months. The reason for this is unclear. The numbers will continue to be monitored over the next quarter to ascertain whether an underlying trend is in evidence.

It is possible that, due to the known problem of full-size buffer stop overspeed sensor (OSS) loops causing brake demands at low speeds, a number of correct brake demands may have been reported as unwarranted (but only prior to the completion of the mini-loop fitment programme). It should be noted, however, that there have only been five confirmed unwarranted brake demands at the OSS loops on the approaches to buffer stops since February 2004. One was caused by a displaced OSS loop, two by incorrectly positioned loops and two by reasons unknown (but probably relate to rolling stock issues).

Network Rail is initiating a further modification to the TPWS fitment at buffer stops. This will reduce the number of unnecessary brake demands at buffer stops without significantly reducing the effectiveness of the system.

Chart 25. Reportable buffer stop collisions

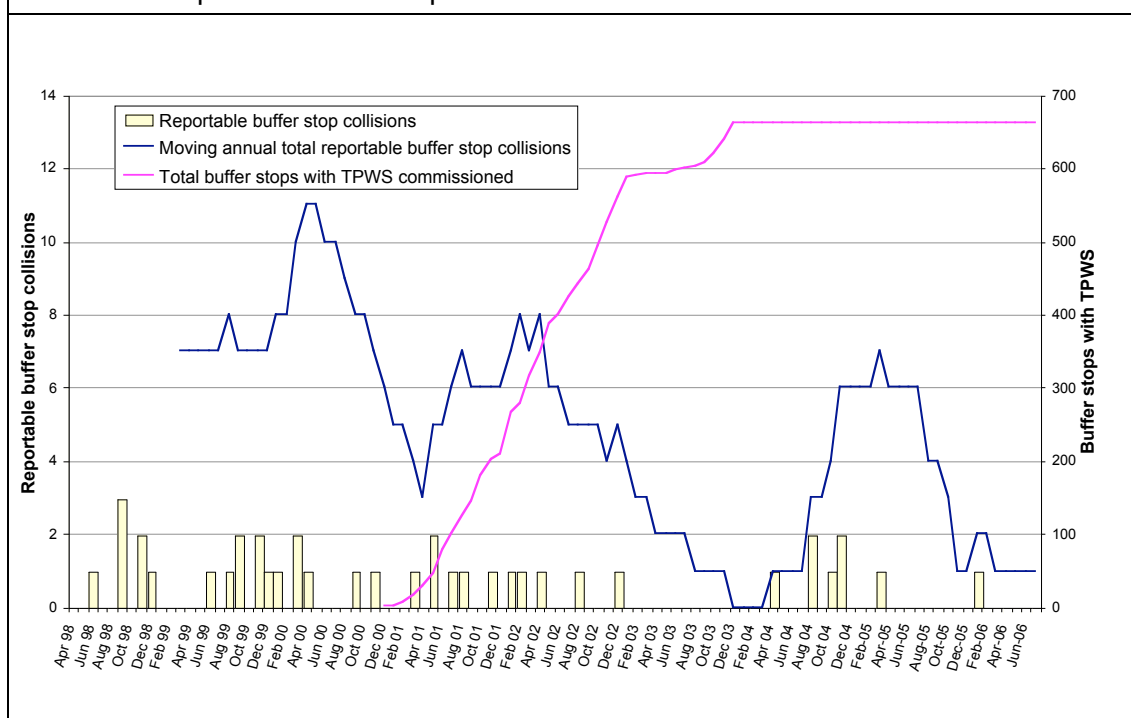


Chart 25 shows the number of reportable buffer stop collisions per month over the past eight-and-a-half years, together with the moving annual total and the progress of the TPWS buffer stop OSS fitment programme. The reduction in reportable buffer stop collisions appears to be related to the TPWS buffer stop fitment programme; indeed, there were none recorded for over a year from January 2003 to March 2004. It may be inferred that the effect was due to the change in driving technique approaching buffer stops brought about by TPWS.

There were eight reportable buffer stop collisions since March 2004, none of which were TPWS-preventable, although only one in the last 12 months.

4.2.7 Signals passed at danger at stations

Signals being passed at danger as trains depart from station platforms are known as start against signal SPADs (SASSPADs). These have long been accepted as potentially high-risk events, and accidents caused by them have led to loss of life in the past. The last two recorded fatal SASSPADs were on 6 March 1989, when two people died at Bellgrove, and on 21 July 1991, when four were killed at Newton Junction. These accidents resulted in changes to train despatch procedures and the introduction of the Driver Reminder Appliance (DRA), which was developed as a visual aid for drivers to set on arrival in a platform to remind them when the departure signal is at danger. Since completion of DRA fitment to all passenger trains in the late 1990s, the number of SASSPADs at platforms has reduced considerably. Between 1994 and 1999, there were on average 52 events per year. The current annual total is approximately half that level.

Since January 2003, there have been 35 instances of 'at platform' SASSPADs where DRA is fitted and used. Twenty-two (63%) of these involved passenger trains. In contrast, there have been 62 instances of 'at platform' SASSPADs where DRA is not fitted, fitted but not used, or status unknown. Forty-three (69%) of these involved passenger trains.

Table 2. Signals passed at danger at stations – DRA fitment

	Platform								Total
	Passenger trains				Non passenger trains				
	Not fitted	Fitted and used	Fitted and not used	Status unknown	Not fitted	Fitted and used	Fitted and not used	Status unknown	
2003	2	8	9	3	2	4	0	0	28
2004	0	7	6	2	5	5	3	1	29
2005	3	6	10	2	2	2	1	3	29
2006 (Jan to June)	1	3	1	1	0	2	2	1	11

5 Risk profile

With well over a billion passengers passing through stations every year, the potential for risk at the interface is significant. Indeed, stations are predicted to represent 38.6% of the overall railway risk profile.

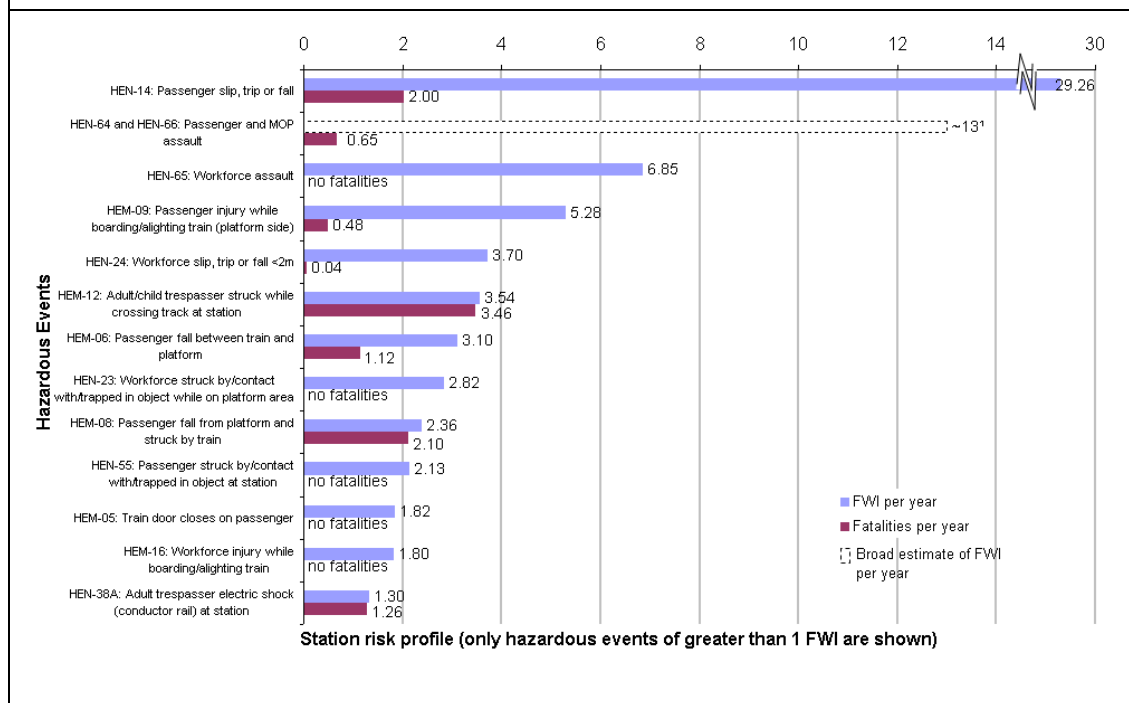
The station risk profile has been derived from version 5 of RSSB's SRM. The SRM is the quantification of risk resulting from hazardous events occurring on the main line railway that have the potential to lead to fatalities, major injuries or minor injuries to passengers, staff or MOPs.

Version 5 of the SRM was completed in August 2006, the results being published in Issue 5 of the Risk Profile Bulletin (RPB). The Station SPR is one of the first SPRs to utilise its data.

5.1 Overall risk

The total average risk at stations is 70.3² FWI per year (13.1 fatalities, 251.2 major injuries and 6,418.9 minor injuries). This forms 38.6% of the overall main line risk as shown in Chart 1. The most significant risk contributions are from movement and non-movement accidents, resulting in 28.3% and 70.9% of the total station risk respectively. Train accidents contribute just 0.8% of station risk; of those that occur at stations, the greatest level of risk is from buffer stop collisions, which result in 0.14 FWI per year, or 0.2% of the total station risk. The list of the hazardous events which form the basis of the station risk profile is presented in Appendix 6.

Chart 26. Station risk profile (only hazardous events with > 1 FWI per year are shown)



² While SMIS contains good data in relation to workforce assault, the majority of passenger and MOP assaults are reported to the BTP and recorded in PINS. PINS has limitations, and in particular we are currently unable to estimate accurately the average consequences of such assaults from its data. Therefore the potential risk contributions from passenger and MOP assaults are not quoted in the overall station risk figure.

Chart 26 shows the hazardous events occurring at stations that provide a contribution of more than one FWI per year. The risk contributions are shown both in FWI per year and fatalities per year. This highlights hazardous events where a major component of risk is from fatal injuries, such as HEM-12 *Adult/child trespasser struck while crossing track at station*.

Initial estimates, taking BTP data into account, indicate that the station risk from HEN-64 and HEN-66 *Passenger and MOP assault* is in the region of 13 FWI per year. The uncertainty in this estimate is due to the fact that there is no distinction between major and minor injuries for non-fatal assaults in BTP’s figures. As a result, the risk estimates from HEN-64 and HEN-66 will not be used as basis for comparison in this section. Refer to section 4.2.5 for more detail about crime at stations.

HEN-14 *Passenger slip, trip or fall* is the largest contributor to station risk in terms of FWI per year. The risk contribution from HEN-14 is 29.26 FWI per year or 41.6% of the station risk. The second largest risk contributor is HEN-65 *Workforce assault*, with 6.85 FWI per year, or 9.7% of the total station risk. HEN-09 *Passenger injury while boarding/alighting train (platform side)* and HEN-24 *Workforce slip, trip or fall <2m* are the third and fourth largest contributors, with 5.28 and 3.70 FWI per year respectively. Together, risk contributions from these hazardous events make up 64.1% of the total station risk. However, the risk is mainly associated with major and minor injuries.

The risk from HEM-12 *Adult/child trespasser struck while crossing track at station*, HEM-08 *Passenger fall from platform and struck by train*, and HEM-38A *Adult trespasser electric shock (conductor rail) at station*, is (for the most part) fatal. Despite this, these three hazardous events contribute just 10.2% of the total station risk.

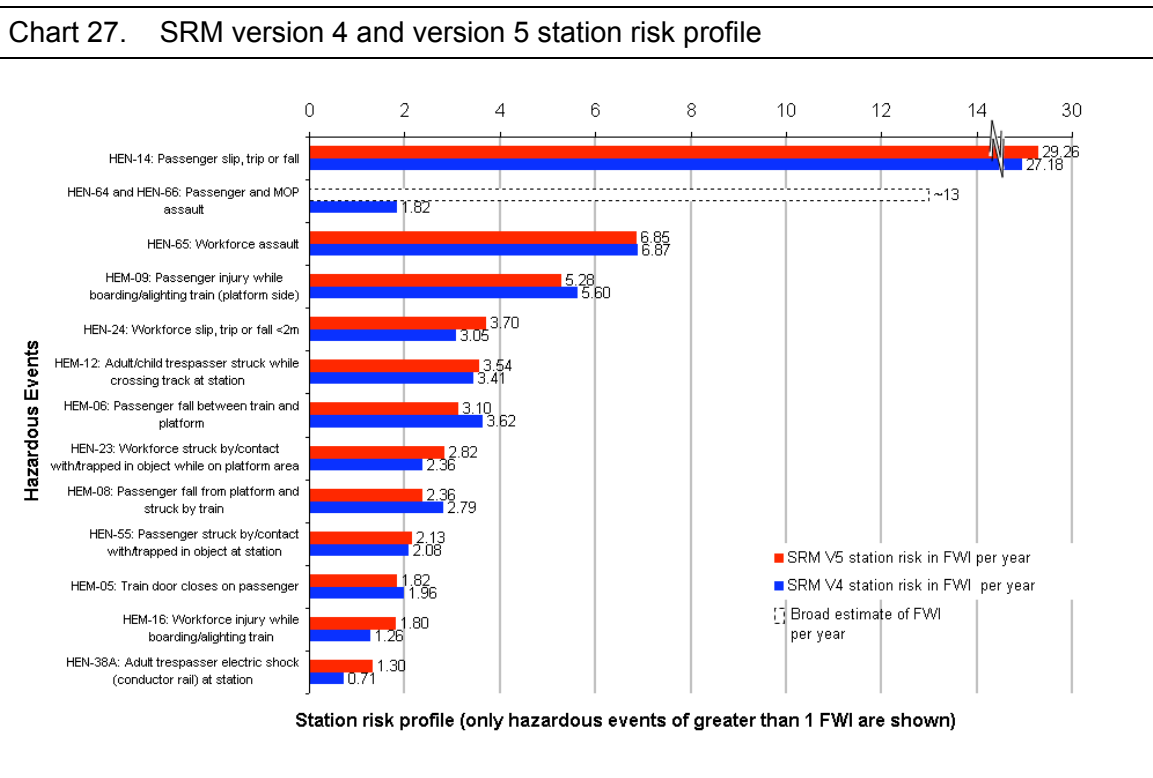


Chart 27 compares the station risk profile between version 4 and version 5 of the SRM. For the reasons stated above, the risk estimates from HEN-64 and HEN-66 will not be used as a basis for comparison.

There has been a slight increase in the overall station risk between version 4 and version 5 of the SRM; from 69 FWI per year to 70.3 FWI per year, which is considered not significant.

HEN-14 *Passenger slip, trip or fall*, saw a risk increase of 2.08 FWI per year, or 7.7% (from 27.2 to 29.3 FWI per year). The rise in the risk associated with HEN-14 is due to the actual increase in the number of passenger slip, trip and falls per year. Passenger journeys per year have increased by 7.7% between versions 4 and 5 of the SRM; this is a key contributory factor to the increase in the frequency of events of this nature.

The risk reduction for HEM-05 *Train door closes on passenger*, HEM-06 *Passenger fall between train and platform*, and HEM-09 *Passenger injury while boarding/alighting train (platform side)* is largely due to the replacement of Mark 1 slam door rolling stock with post Mark 1 rolling stock, the effects of which are as follows (see section 5.3 for further detail):

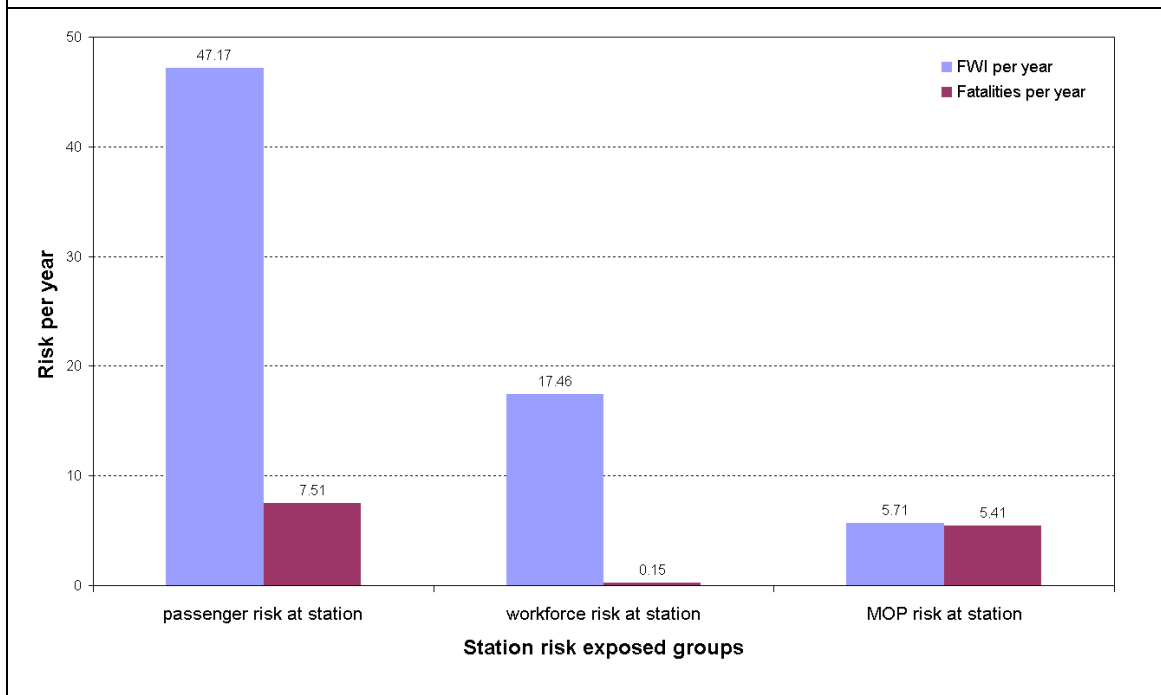
- Passenger injuries associated with the slam doors of the Mark 1 rolling stock have essentially been eliminated (HEM-05).
- The post-Mark 1 rolling stock has improved stepping characteristics. This reduces the likelihood for boarding and alighting injuries, as well as passengers falling between the train and platform (HEM-06 and HEM-09).
- It is now less likely that passengers attempt to board or alight a moving train (HEM-09).

Indeed, there has been a general reduction of the accidents related to HEM-05, HEM-06 and HEM-09 as demonstrated in Chart 9 of section 4.2.2

5.2 Breakdown of station risk by passenger, workforce and MOP

Chart 28 below shows the risk profile for each exposed group. As one might expect, passenger-related risk is the highest contributor to station risk, forming 67.1% of the total (47.17 FWI per year). Workforce and MOP-related risk form 24.8% and 8.1% of the total risk at stations respectively.

Chart 28. Breakdown of station risk by passenger, workforce and MOP³



The chart shows that fatality risk is the major component of the overall MOP risk at stations. However, those for passengers and workforce members consist mainly of the risk associated with major and minor injuries. This is because *trespass related fatal accident* is the dominant contributor to the overall MOP risk at stations. This is shown in Chart 26 as HEM-12 *Adult/child trespasser struck while crossing track at station* and HEM-38A *Adult trespasser electric shock (conductor rail) at station*.

The passenger fatality risk in stations is 7.51 fatalities per year, making it the most significant contributor (57.5%) to fatal risk at stations; MOP fatality risk in stations is 5.41 fatalities per year, constituting 41.4% of station fatality risk, while workforce contributes 0.15 fatalities per year (just 1.1% of the total station fatality risk). The fatality risk distribution across the exposed groups gives a different perspective from that of FWI per year. Although the passenger contribution is still the greatest, the MOP contribution is a close second.

5.2.1 Passenger risk profile at stations

Chart 29 below shows the passenger risk profile at stations by hazardous event grouping in terms of FWI per year and fatalities per year. The top three groupings that contribute to passenger risk at station are listed below:

- *Slip, trip or fall*, with 29.26 FWI per year or 62.1% of total passenger risk at stations.
- *Platform edge incidents*, with 7.25 FWI per year or 15.4% of total passenger risk at stations.

³ While SMIS contains good data in relation to workforce assault, the majority of passenger and MOP assaults are reported to the BTP and recorded in PINS. PINS has limitations, and in particular we are currently unable to estimate accurately the average consequences of such assaults from its data. Therefore the potential risk contributions from passenger and MOP assaults are not included in this chart.

- *Boarding or alighting incidents*, with 7.11 FWI per year or 15.1% of total passenger risk at stations.

The passenger fatality risk in stations is 7.51 fatalities per year. This contributes 15.9 % to the total passenger risk at stations. It may be seen that, in the following groupings, fatalities contribute to the majority of the risk:

- Platform edge incidents.
- Struck/ crush by train at station crossing.
- Station collision/ derailment.
- Explosion/ fire/ insect bite/ noise.

These four groupings, together with *Slip, trip or fall*, contribute 7.01 fatalities per year, or 93.3% of passenger fatality risk.

5.2.2 Workforce risk profile at stations

Chart 30 below shows the workforce risk profile at stations by hazardous event groupings in terms of FWI per year and fatalities per year. The top three groupings that contribute to workforce risk at station are listed below:

- *Assault*, with 6.85 FWI per year or 39.2% of total workforce risk at stations.
- *Slip, trip or fall*, with 3.91 FWI per year or 22.4 % of total workforce risk at stations.
- *Struck or crush at station premises*, with 2.87 FWI per year or 16.4% of total workforce risk at stations.

The workforce fatality risk at stations is 0.15 fatalities per year, which contributes just 1.2% to the total workforce risk at stations. With the exception of *Station collision/ derailment*, the risk from each of the groupings is mainly associated with major and minor injuries.

Chart 29. Passenger risk profile at station across hazardous event groupings⁴

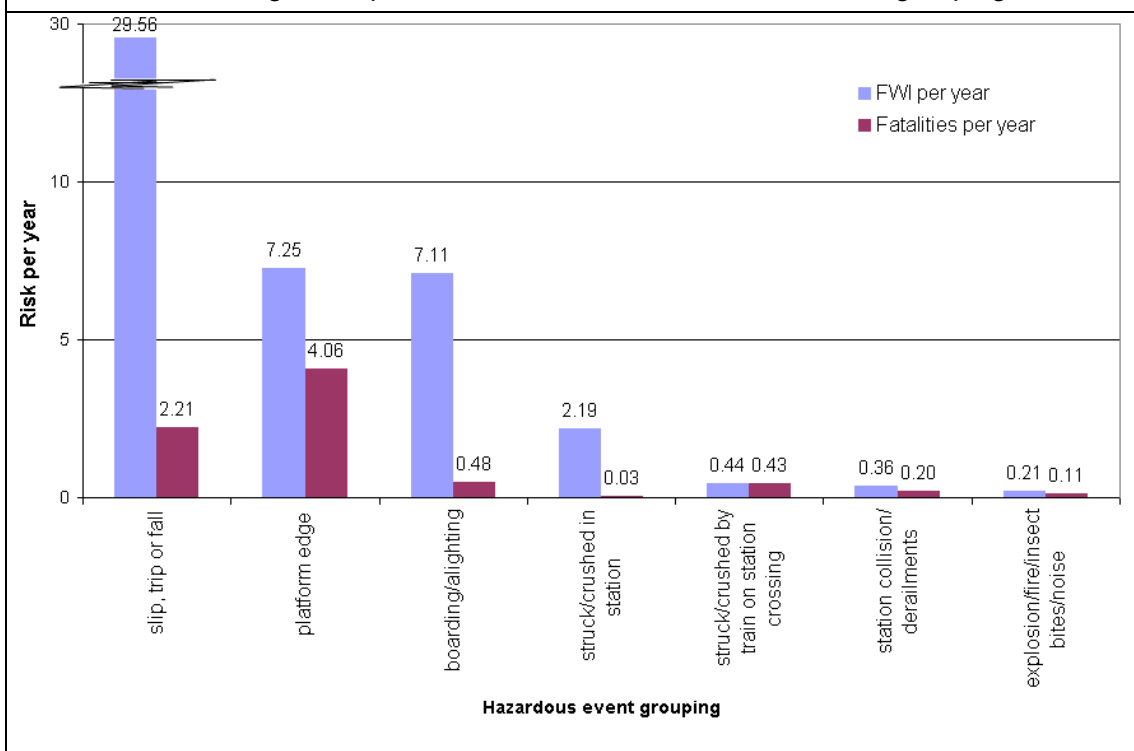
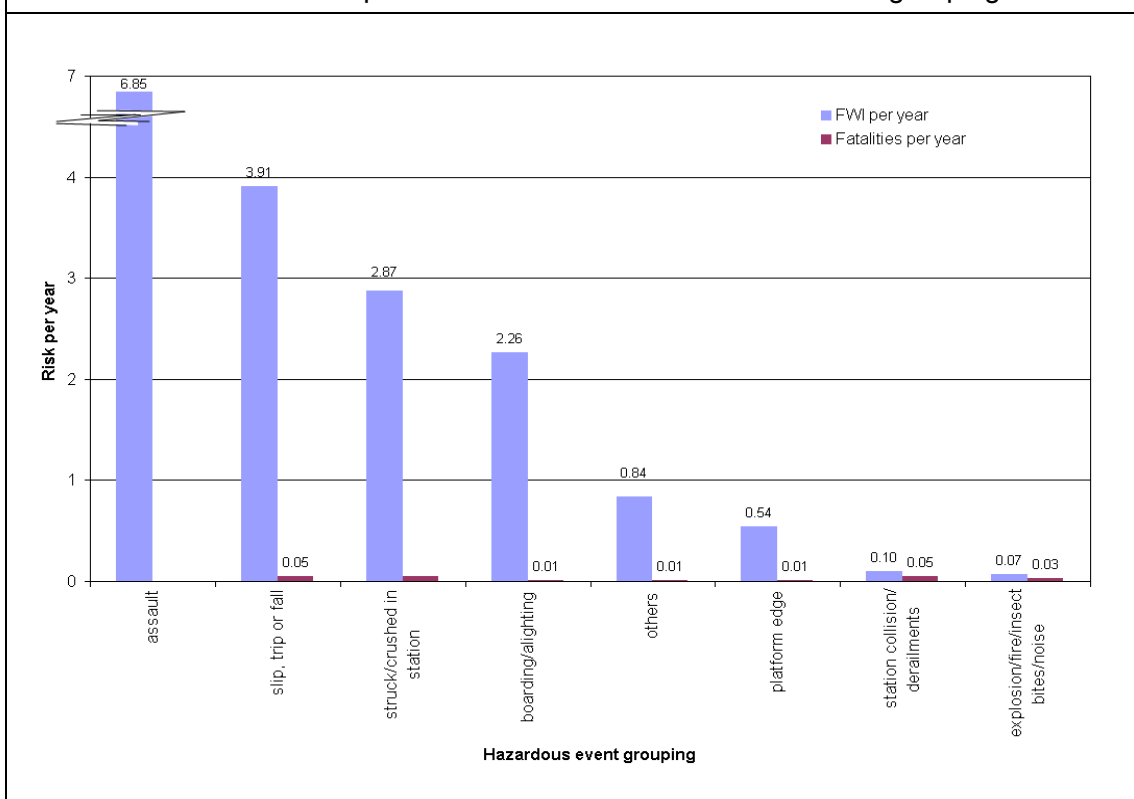


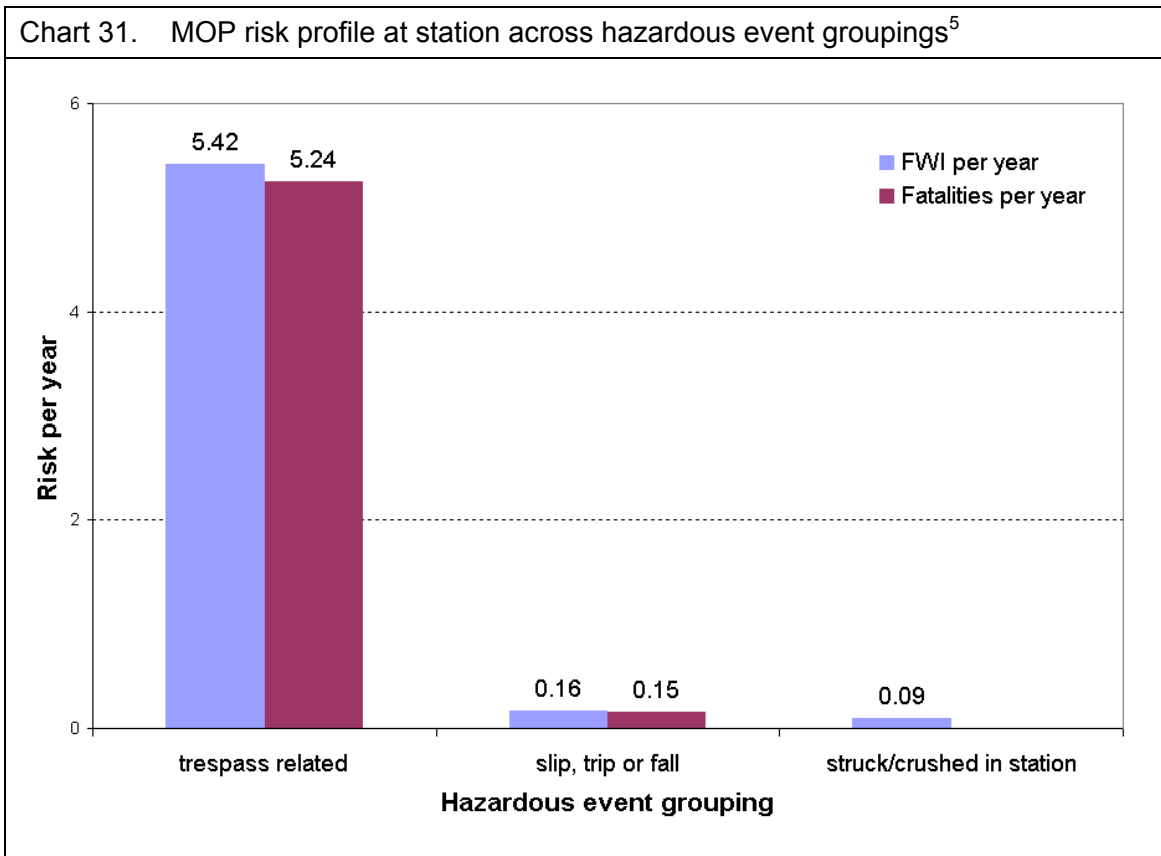
Chart 30. Workforce risk profile at station across hazardous event groupings



⁴ While SMIS contains good data in relation to workforce assault, the majority of passenger and MOP assaults are reported to the BTP and recorded in PINS. PINS has limitations, and in particular we are currently unable to estimate accurately the average consequences of such assaults from its data. Therefore the potential risk contribution from passenger assaults is not included in this chart.

5.2.3 MOP risk profile at stations

Chart 31 below shows the MOP risk profile at stations by hazardous event groupings in terms of FWI per year and fatalities per year. The risk from *trespass related* hazardous events is the most significant contributor to the total MOP station risk. It is 5.42 FWI per year, which contributes to 94.8% of the total MOP station risk. It may be seen in Chart 31 that the vast majority of MOP risk comes from fatal accidents related to *trespass*, and *slip, trip or fall*. These hazardous events contribute 5.39 fatalities per year, or 99.6% of the total MOP fatal risk at stations. The MOP risk related to *platform edge incidents, station collision/ derailments* and *others*, are not shown in Chart 31 as the values are too small to be represented. Combined, they make up just 0.04 FWI per year.



5.3 Risk reduction at station from the removal of Mark 1 slam door rolling stock

The vast majority of Mark 1 slam door stock was removed from the network in September 2005. However, three electric multiple units still work the Brockenhurst to Lymington branch, while some heritage stock is also used on the main line network for enthusiast specials. Version 5 of the SRM has been modelled to account for the removal of Mark 1 slam door stock, but also includes these exceptions. In addition, the Class 142 and 143 Pacer units (approximately 4.6% of all passenger train miles) are considered to have similar crashworthiness characteristics to Mark 1 stock and are modelled explicitly as such in the SRM.

⁵ While SMIS contains good data in relation to workforce assault, the majority of passenger and MOP assaults are reported to the BTP and recorded in PINS. PINS has limitations, and in particular we are currently unable to estimate accurately the average consequences of such assaults from its data. Therefore the potential risk contribution from MOP assaults is not included in this chart.

For train accidents, there were three main factors that gave rise to a different level of risk for Mark 1 slam door rolling stock, compared to post-Mark 1 rolling stock, namely:

- Vehicle crashworthiness.
- Fire properties.
- Ability to evacuate following a fire.

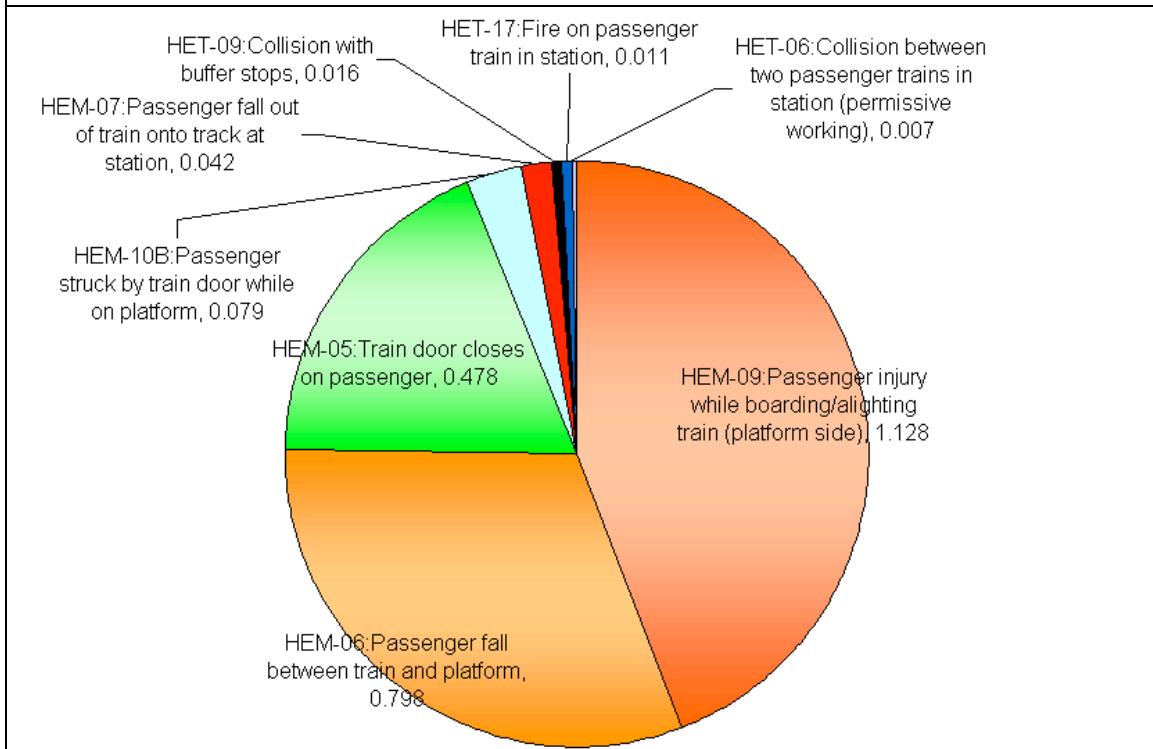
For movement and non-movement accidents, the main factors that gave rise to a different level of risk for Mark 1 slam door rolling stock, compared to post-Mark 1 rolling stock, were:

- Slam door & door locking.
- Droplight windows.
- Stock characteristics (ie, improved internal layout, more ergonomically designed etc).
- Manual coupling.

The risk reduction due to the removal of Mark 1 slam door rolling stock, which affects hazardous events occurring wholly at station, is estimated to be approximately 2.5 FWI per year. Table 3 below provides a breakdown according to the relevant hazardous events. Assessing the precise risk contribution from Mark 1 slam door stock is challenging and therefore the results presented in Table 3 are approximate. However, they do give a broad indication of the likely benefit achieved through the removal of the Mark 1 slam door stock.

HE number	HE description	SRM V5 risk without MK1 (FWI)	Estimated SRM V5 risk with MK1 (FWI)	Risk reduction due to MK 1 removal (FWI)	% Risk reduction
HET-06	Collision between two passenger trains in station (permissive working)	0.0741	0.0812	0.00712	8.8%
HET-09	Collision with buffer stops	0.144	0.160	0.0157	9.8%
HET-17	Fire on passenger train in station	0.0439	0.0549	0.0109	20.0%
HEM-05	Train door closes on passenger	1.82	2.30	0.477	20.8%
HEM-06	Passenger fall between train and platform	3.10	3.89	0.798	20.5%
HEM-07	Passenger fall out of train onto track at station	0.0106	0.0527	0.0421	79.8%
HEM-09	Passenger injury while boarding/alighting train (platform side)	5.28	6.40	1.12	17.6%
HEM-10B	Passenger struck by train door while on platform	0.000196	0.0787	0.0785	99.8%

Chart 32. Approximate risk reduction due to the removal of Mark 1 slam door rolling stock (FWI per year)



The approximate risk reduction described in Table 3 is presented in Chart 32 above. Note that HEM-09 *Passenger injury while boarding/alighting train (platform side)* has the largest risk reduction due to the removal of Mark 1 slam door rolling stock; followed by HEM-06 *Passenger fall between train and platform*; and HEM-05 *Train door closes on passenger*. Together they represent 96.1% of the station risk reduction attributable to the Mark 1 slam door rolling stock removals. As demonstrated in Chart 9 of section 4.2.2 regarding safety performance, there has been a general reduction in the number of accidents related to HEM-05, HEM-06 and HEM-09 over the last three years. It is thus considered that the predicted level of risk reduction via the SRM has been reflected in the subsequent safety performance of the railway.

5.4 Risk profile summary

When comparing versions 4 and 5 of the SRM there has been a slight increase in risk, from 69FWI/yr to 70.3 FWI/yr. The main factor giving rise to the increase in risk is the 7.7% increase in the number of passenger journeys leading to a direct increase in the number of slips, trips and falls. This increase has however been offset by the reduction in risk associated with the removal of Mark 1 rolling stock.

6 Initiatives

6.1 National initiatives

National initiatives have recently been refocused to form two groups: those addressing operational risk and those addressing public behaviour. The latter is aimed at reducing the risks and costs posed by crime, disorder and other forms of inappropriate conduct – such as trespass, vandalism, graffiti, assaults, suicides and level crossing misuse. Staff and public safety also fall into this category.

The new structure provides a framework for joint strategic direction, led by the Community Safety Steering Group (CSSG), which meets twice a year. Tactical counter-measures will be mostly managed at local level, where new cross-industry Community Safety Partnership Groups (CSPGs) are being established to look at the entire range of community safety activities (working with local communities where possible).

6.1.1 Rail Personal Security Group

Contact Alan Davies on 020 7904 7964 or alan.davies@rssb.co.uk.

The Rail Personal Security Group (RPSG) was established in August 2003 to raise the profile of personal security on the railway. It also encourages the sharing of good practice and local decision-making regarding the reduction of physical and verbal assaults on staff and passengers. The group will now operate under the strategic direction of the CSSG.

The group has achieved considerable success, having:

- Published a good practice guide for staff members, encouraging them to record and report assaults (May 2004). This ensures that, for the first time, there is consistency in the definitions used by TOCs to describe assaults, threats and abuse on staff. This has a knock-on effect on the data input into SMIS and the way it is analysed. The RPSG will monitor both the quality of data from TOCs and assault reporting levels.
- Managed a national poster campaign at stations to show the public that the industry will not tolerate verbal or physical attacks on staff. An evaluation in December 2005 indicated that the campaign has been successful, the public retaining a high level of understanding and recall of the posters in question.
- Created a personal security website within www.railwaycrime.org, where staff can be made aware of the RPSG's work. This also allows TOCs to publish information about initiatives that have been successful in dealing with crime, so that others may learn from their experiences.

- Acted as the stakeholder group for research carried out by RSSB:

Research	Date
Fears and experiences of assault and abuse on the railway	January 2004
Conflict Management training for front line railway staff ⁶	August 2006
Management of football fans on the railway	August 2006

- Disseminated information and training materials from the BTP and Southern regarding the use of DNA-testing swab kits.
- Promoted a co-ordinated approach to combating graffiti in conjunction with the National Railway Crime Group, recognising the impact that graffiti has on our fear of crime.

The RPSG business plan for 2006 includes the following tasks:

- Producing a staff training DVD about managing conflict to help frontline staff deal with potentially confrontational situations. This will be launched to the industry in September 2006.
- Developing practical guidance aimed at improving understanding and relationships between rail businesses and local Crime and Disorder Reduction Partnerships (CDRP). This was led by the Community Safety Support Unit (CSSU) and involved the Home Office and regional Government Offices.
- Reviewing the differences between SMIS and PINS data and providing guidance to assist rail businesses in assessing the risk from violence towards staff and passengers more accurately. (This project was led by the CSSU.)
- Working with BTP, the Crown Prosecution Service, the Sentencing Advisory Panel and the Magistrates Association to ensure that rail staff victims are recognised as 'persons serving the public'. This means that an assault against a workforce member is considered a 'public interest aggravating factor' when decisions are made on cautioning, prosecuting and sentencing offenders. (This project was led by the CSSU.)
- Monitoring the Rail Safety Accreditation Scheme pilot introduced by South East Trains and other TOCs, by which Accredited Officers are employed by TOCs and supported by the BTP. Information on the benefits and experiences gained is disseminated to other train operators, making use of passenger surveys where appropriate.
- Examining the use and effectiveness of Anti-Social Behaviour Orders for offenders within the rail industry, while assessing the outcome of the national Home Office review of this area.

The RPSG's value lies in the willingness of its members to share both successful and unsuccessful measures, with the aim of improving personal security and reducing anti-social behaviour on the railway.

⁶ The CSSG is currently reviewing the outcome of this research project.

6.1.2 Community Safety Support Unit

Contact Maurice Wilsdon on 020 7904 7510 or maurice.wilsdon@rssb.co.uk.

The CSSU was a two-year research project, funded by RSSB to support the work of the public behaviour national initiative groups. Until closure in April 2006, it had completed a great deal of work, particularly in the fields of education, communication and enforcement, drawing out the synergies between the groups involved. This included organising the annual National Community Safety Forum and preparing a regular community safety newsletter, both of which will be continued by RSSB.

6.1.3 The Rail Fatality Management Group

Contact Maurice Wilsdon on 020 7904 7510 or maurice.wilsdon@rssb.co.uk.

The Rail Fatality Management Group (RFMG) has also been discontinued. Its work will be adopted by the local CSPGs. Before disbanding, the RFMG presented TOCs with a presentation of the options that could assist in reducing suicides at stations. These include the use of signage, staff training, posters and media guidelines. Ten TOCs have been visited, including some that were identified as managing stations with a recent history of more than one suicide.

The Samaritans will convert the presentation into a readily available information pack.

6.2 Current research

RSSB has started a research project to look at personal security at stations. The aim is to understand how effective various countermeasure investments are in improving safety and security for passengers and staff at railway stations and on trains.

Another RSSB research project examines the various 'adopt a station' schemes initiated by TOCs to encourage local communities to help provide a clean and pleasant environment at smaller stations.

For a printed copy of any research projects undertaken by RSSB, please contact our enquiry desk on 020 7557 7518 (085 77518) or email enquirydesk@rssb.co.uk. The research reports may be downloaded free of charge from the publications section of RSSB's website: www.rssb.co.uk.

A list of station-related research commissioned for the industry by RSSB is given in Appendix 1.

6.3 Local initiatives

The following are amongst the successful initiatives that individual railway companies have adopted to improve station safety for staff and passengers.

6.3.1 *Spotlight*: Network Rail – major station operators

RSSB invited Network Rail to be this report's *Spotlight* due to its notable efforts in improving station safety. We have also listed the responses from some of the TOCs in section 6.3.4, in order to promote the sharing of best practice ideas and communicate the work being done by those who actively confront station safety issues. These companies not only help promote and improve safety for their own staff, but also anyone who comes into contact with the railway infrastructure at any time.

More than half of all passenger journeys start or finish at a Network Rail station, with over 650 million people passing through them every year.⁷

Part of Network Rail’s continued success in safety has been the production of a suite of workforce-related violence papers, which provide guidance in the following areas:

- *Company policy* – The current Network Rail company policy avoids ambiguity by laying out exactly what it expects from its employees.
- *Conflict awareness, situation management guidance* – This paper provides staff with guidance on how best to deal with difficult situations. It breaks down general rules for approaching possible areas of conflict and offers advice on aggression avoidance, dealing with aggressive passengers and providing post-event evaluations.
- *Workplace-related violence* – This procedure deals with ways to reduce the likelihood of assault through risk assessments, local work safe procedures, improvements to the station environment, equipment / technology and training. Violence is a significant risk faced by Network Rail employees in the workplace, this measure being designed to provide a consistent framework to manage and reduce the associated risk. It covers the following topics:

Publicity
Training and guidance
Processes and procedures
Monitoring and reporting
Information/equipment
Maintenance/improvements
Reporting

- *Post-assault procedures* – These detail the investigation of incidents, responsibilities, medical assistance, domestic arrangements and legal ramifications. Assaults on staff members in stations are common on the railway infrastructure. Those involved in incidents at stations can be traumatised and require time off work. Network Rail’s post-assaults procedure provides a consistent framework to ensure employees are offered, and are made aware of, all the services available to them, including: automatic notification to Human Resources and the Legal Department; supplying further information on how to carry out a thorough investigation and providing a post-assault monitoring checklist to help ensure that each part of the process has been performed, completed and / or closed out in timely fashion.

⁷ Source: <http://www.networkrail.co.uk/asp/765.aspx>.

6.3.2 About the team

There are currently three members of the Network Rail team, each managing six to seven stations, each responsible for a wide range of activities, including:

- Reviewing and updating all procedures.
- Completing a compliance workbook to assist in auditing stations on all their procedures annually (procedures that cover high-risk activities are audited twice a year).
- Producing risk assessments.
- Reviewing planned site changes.
- Gathering and disseminating details of best practice.
- Undertaking periodic safety tours of station premises, checking on conditions and unsafe practices (these are incorporated within a checklist to ensure all areas are dealt with and documented).
- Providing additional support for major accident or near miss investigation.

The team also attends various internal/external meetings and seminars to review performance figures and discuss any current issues that have arisen.

Monthly one-to-one meetings are held with station managers, which allow all non-compliance issues and best practices to be shared. These are stored on a database and are posted to a knowledge hub on the Network Rail intranet.

6.3.3 Best practice information – stations

Workstations – This is an Excel-based programme which links the user to all the documents and spreadsheets that are used on a day-to-day basis; it takes the form of a 'home page', which is laid out in a way that ensures tasks are completed on time.

Accident and Incident spreadsheet – This provides an easy, local way of recording all accidents, incidents and near misses using drop down list boxes to avoid repetitive typing and ensure that text is consistent. Graphs that are ready for local trend analysis may be produced automatically.

Firms – This is an easy-to-use database, in which all locally-reported faults are recorded to ensure attendance and faults are rectified quickly (it also allows for easy system interrogation and timely analysis of reported faults).

For more information about any of these papers or best practice, please contact Zach Mendelsohn at Network Rail: zach.mendelsohn@networkrail.co.uk.

Zach Mendelsohn of Network Rail.



6.3.4 Example of local initiatives

Company	Initiative	Contact
Network Rail	<p>Boarding and alighting</p> <p>Workshops held on boarding and alighting, the results being fed back to station managers' meetings.</p> <p>Personal security</p> <p>Production of two papers on personal security, which were reviewed by the TSG. One details methods to be used to reduce work related violence; the other is a procedure to manage staff effectively and consistently post-assault.</p>	<p>zach.mendelsohn@networkrail.co.uk</p>
Network Rail	<p>Initiatives</p> <p>Crowd control workshops held, with outputs in the form of templates for operations and emergency plan updates if needed.</p>	<p>paul.ashton@networkrail.co.uk</p>
Arriva Trains Wales	<p>Station security</p> <p>Arriva Trains Wales (ATW) continues in its programme of installing CCTV at stations, and is currently fitting digital on-train CCTV to its whole fleet.</p> <p>Thanks to a joint initiative between ATW, the Welsh Assembly and the BTP, 21 Police Community Support Officers (PCSO) will start patrols, in order to provide a visible and reassuring presence on the ATW network. This will address passenger and staff concerns about crime, disorder and anti-social behaviour within the railway environment. The PCSOs will be deployed in neighbourhood policing teams to assist in maintaining a safe and effective transport network across Wales.</p> <p>Secure stations</p> <p>A further six stations have recently been awarded accreditation under this scheme. It is hoped that another group of stations (including Shrewsbury, Bangor and Llandudno) will also achieve the award within the next few months.</p> <p>Boarding and alighting</p> <p>ATW is introducing a boarding and alighting tool kit, which has been devised in-house to enable stations to be evaluated consistently.</p> <p>Staff initiatives</p> <p>A 'walk in my shoes' initiative has been completed by ATW's Assaults Reduction Team (ART). From staff suggestions, ATW senior managers and directors travel on late night trains and visit stations to talk directly to workforce members.</p>	<p>Catherine.Tryon@arrivatw.co.uk</p>

	<p>Employee suggestion scheme</p> <p>ATW launched a suggestion scheme in June 2006 which allows employees to identify an area of the business and make a recommendation to improve it. Each suggestion is evaluated for its worth and, if savings prove to be identifiable, the employee is able to receive a reward payment.</p> <p>The value of reward is not high, it being more important that employees are able to be recognised, feel valued and are able to make a contribution to the business. This can be in direct financial or non-financial ways, such as improving customer service, improving the company image, safety or environmental issues, and so on.</p> <p>2006 safety culture survey</p> <p>The survey has been compiled by Competence Assurance Solutions (CAS), to assess the level of safety culture within ATW. The submissions are independently reviewed by CAS who will complete a report from the analysis of the returned surveys.</p> <p>Adopt a station initiative</p> <p>ATW has adopted an 'adopt a station' scheme, which helps to improve links with local communities and customers living near the company's un-staffed railway stations.</p> <p>Of the 187 un-staffed stations managed by the company, 135 have already been adopted (with more waiting in the wings).</p>	
'one'	<p>Station safety</p> <p>Extensive work has been undertaken in order to improve train dispatch at Liverpool Street, including the development of a 'one' specific train dispatch training video for employees.</p> <p>A proforma has been developed to aid station managers in assessing each station under their responsibility, to aid them in prioritising when platform white/yellow lining needs to be undertaken. This proforma includes factors such as crowding, typical numbers of passengers on platforms, the distance of the lining from the edge of the platform.</p> <p>Secure station accreditation has recently been awarded to Ipswich, Diss, Stowmarket and Harwich International stations.</p> <p>A review of all station barrow/foot crossings has been undertaken and 'one' is working with Network Rail to reduce the risk from trespass at these crossings.</p> <p>Slip, trips and falls</p> <p>National Express Trains Division is currently undertaking work with Rossmore to develop a 'slips, trips and falls toolkit'.</p>	<p>Joanne.Beesley@onerailway.com</p>

	<p>This is primarily aimed at station managers, in order to provide them with initiatives, in order to reduce the risk (and occurrence) of slip, trip, fall injuries. The toolkit will include a risk assessment process to enable the identification of those areas with a high potential for slips (using, amongst others, historical data, considering crowding issues, types of surface and the effects of weather). The toolkit also considers behavioural safety of passengers, types of approved equipment for assessing station slip risk, and this will be incorporated into a training programme for their station managers.</p> <p>CCTV</p> <p>A CCTV Project Group has been established, with representatives from each 'one' route, to develop a company-wide strategy on CCTV management, both at stations and on trains. This will lead to the production of a company-wide CCTV standard and a review of the operational controls for camera use. As part of the improvements to CCTV, Transport for London funding is also being sought for the establishment of a CCTV Control Centre at Hackney Downs.</p>	
South-eastern Railway	<p>Station security</p> <p>Recent arrests in London and elsewhere have led to the threat to the UK being raised to a level known as 'CRITICAL', which means that an attack is imminent. Southeastern immediately implemented enhanced baggage reconciliation checks on all staffed trains. It also encouraged managers (who were using trains either on or off duty) to walk through carriages to identify baggage to individuals where appropriate. Additionally, working together with Southern, Southeastern increased visible uniform presence on trains and stations serving international airports, (Gatwick being the prime focus), as well as increasing visibility at its major stations. Rail enforcement officers, revenue protection officers and conductor staff all played a key role in this.</p> <p>The purpose of these actions was not only to act as a deterrent, but also to reassure customers that enhanced security was being put in place in response to the changing situation.</p> <p>Vigilance briefings were given a high priority, including bringing forward the programme of rolling out the viewing of the new TRANSEC Security Film to frontline staff.</p> <p>Whilst there has since been some relaxation following the threat level reverting to 'SEVERE', an attack is still 'highly likely'; staff vigilance thus remains a top priority.</p> <p>The Accredited Rail Enforcement Officers have continued to have a very high interaction with station users. Since April this year, they have carried out nearly 14,000 personal pro-</p>	<p>Paul.Nicholas@southeasternrailway.co.uk</p>

	<p>active interventions with persons on stations and in trains.</p> <p>The new owners of the company have continued senior commitment by agreeing to extend their numbers even further, new posts having been created to provide closer dedicated attention to the coastal areas around Ramsgate and Margate.</p> <p>G4S Security has also been re-instated at some gatelines in the same area in an effort to reduce the ticket-less travel that so often leads to confrontation with conductor staff on trains. Emerging evidence is currently showing that this is having a positive impact.</p>	
First Capital Connect	<p>Injury protection programme</p> <p>First Capital Connect (FCC) is in the process of introducing an Injury Protection Programme (IPP) to improve safety awareness amongst its staff. FCC is improving its safety culture by empowering staff to take a more active role in safety conversations. The process involves managers and staff meeting to discuss specific and general safety issues during planned and unplanned events. A record of conversations held and decisions taken are recorded in a dedicated IPP handbook. Evidence suggests that a 20% reduction in staff accidents could be achieved through the introduction of this process.</p> <p>Suicides</p> <p>FCC has secured the service of the Samaritans to run a series of courses for platform staff to educate them and make them aware on how to recognise and manage potentially suicidal people. The aim is make platform staff more confident in dealing with suicidal people and the effects of dealing with the outcome of a suicide.</p>	Ian.Lee@firstgroup.com
Chiltern Railways	<p>Station security</p> <p>Chiltern Railways has introduced a revised capture procedure for CCTV and continued to train staff on conflict avoidance.</p> <p>Slips, trips and falls</p> <p>The company has also carried out a study into the main reasons for slips, trips and falls to raise staff-awareness of such incidents.</p> <p>Train despatch</p> <p>Due the introduction of two new platforms at Marylebone, a new system of train despatch has been introduced.</p>	Roger.Cook@chilternrailways.co.uk

<p>First Great Western</p>	<p>Boarding and alighting</p> <p>In order to minimise boarding and alighting accidents, First Great Western (FGW) is painting white and yellow 'mind the gap' signs on all platforms. This is particularly relevant on those which curve and have a gap that is wider. The measure is combined with regular station and on-train announcements advising of the dangers.</p> <p>Train dispatch</p> <p>The dangers of boarding and alighting trains are also taken into account as part of the dispatch procedure, which ensures that train doors are locked 30 seconds before train departure. This discourages passengers from rushing unnecessarily. The competency of train dispatchers is checked on a regular basis by Competence Managers. This ensures that the correct and safe procedures are followed in all aspects of dispatch. Any unsafe or irregular incidents are fully investigated by local managers, who put corrective actions into place to prevent reoccurrence and make sure that mistakes lead to lessons learned.</p> <p>Station safety</p> <p>This is managed by conducting hourly searches of both customer and staff areas of the station. All staff members have been briefed and are fully aware of the HOT procedure, which enables them to identify suspicious articles and (more importantly) advises them on what to do next. This is linked to the secure station accreditation scheme, which has now been achieved by most eligible stations.</p> <p>All accidents are reported via the accident reporting procedure. These are analysed by the local management team, in order to identify patterns and particular areas of concern. Corrective actions are then taken to prevent reoccurrence. FGW is also very keen to include staff in ensuring that its stations are safe <i>and</i> secure. FGW sees its staff as its 'eyes and ears'. It also ensures that staff are involved in longer-term initiatives; this is achieved via the appointment of a Health and Safety representative, who takes part in monthly 'walkarounds'. These not only identify areas that need attention, but also suggest ways to improve existing practises through their experiences whilst working on the station.</p>	<p>Michael.Holmes@Firstgroup.com</p>
<p>Central Trains</p>	<p>Initiatives</p> <p>Central Trains has recently launched a 'Stop it, see it, report it' campaign. This is a joint initiative with BTP, publicising a free telephone number for customers to confidentially report any acts of vandalism, anti-social behaviour on their trains and at stations.</p> <p>Train dispatch</p> <p>Central Trains has reviewed its train despatch competence</p>	<p>Paul.Frost@centralthetrains.co.uk</p>

	<p>management system (including better training etc).</p> <p>Station safety</p> <p>Central Trains has also created a training brief and supporting booklet for non-safety critical station staff. Traditionally, booking office staff were not given operational training. However, in light of an accident a Lea Hall, the company has enhanced its non-safety critical staff training so that staff members are competent in stopping the passage of trains if safety is compromised for any reason.</p>	
Midland Mainline	<p>Safety performance</p> <p>Midland Mainline (MML) measures the number of passenger accidents (movement and non-movement) on a period basis against its safety plan Key Performance Indicators (KPI).</p> <p>Each passenger accident is reviewed to see what control MML has in being able to eliminate or reduce the associated risk.</p> <p>From this work, it may be seen that a number of accidents are caused initially by the injured party, drunkenness, running down stairs etc.</p> <p>Initiatives</p> <p>Some of the initiatives MML is proposing, to reduce this number are as follows:</p> <p>Training all frontline staff in accident investigation (supported by a tool kit).</p> <p>Supporting BTP in the introduction of PCSOs.</p> <p>Ensuring that the seven managed stations MML control gain 'secure station' status, along with the associated car parks.</p> <p>Discussing with the landlord, Network Rail, where major repairs are required to station infrastructure.</p> <p>Looking at station signage to see if it can be improved (such as 'Mind The Gap' signs etc).</p>	<p>roger.walton@midlandmainline.com</p>
Mersey-rail	<p>Operational security</p> <p>Merseyrail has implemented a series of operational exercises, based on the shared findings from a visit to New York with its Dutch sister company Nedrail.</p> <p>TOMS (Train Order Maintenance Sweeps) – These are carried out by security staff and is a high-profile operation, showing visibility and providing public reassurance through a series of 'Stepping on and Stepping off' initiatives. Stations targeted are generally high passenger volume locations (to maximise security visibility). Each train is met (6 security guards to a 6 car train) as it enters into a platform:</p>	<p>MCarroll@merseyrail.org</p>

	<p>as the train doors open, a security guard steps onto the train, carries out an observational sweep of the carriage and then steps back off. It demonstrates a presence, shows visibility and provides reassurance to passengers on trains and on the platform.</p> <p>Station security</p> <p>A trial is under way at four locations on the Merseyrail network known as 'Safer Zones'. These are demarcated areas on a station platform which are monitored by CCTV, have enhanced lighting and signs to advise customers of the existence of the area and that it exists for their comfort and security. Customer feedback (via the Merseyrail website) will be made available to provide information on the scheme's success.</p> <p>Secure station accreditation</p> <p>Merseyrail now has 55% of its network accredited to Secure Station status. The company is committed to continuing with this programme, aiming for 60% by December 2006 and then onward throughout 2007.</p>	
Southern	<p>Secure stations</p> <p>Southern has 36 Stations on the Secure Station Accreditation (from BTP/DfT). There is a progressive plan to achieve accreditation at a number of further stations. It is expected to have one third of southern stations (53) accredited by Christmas 2006.</p> <p>White lighting</p> <p>£500k has been spent installing high-quality white lighting throughout the London Metro area and on the Brighton main line. This has enhanced station security and has complimented the major investment in CCTV and passenger Help Points.</p> <p>'Shop a Yob' initiative</p> <p>Another development linked to Southern's CCTV security system is the 'Shop a Yob' initiative. Working with the local press, Southern provides CCTV pictures of individuals causing damage to its property. In one case, within hours of a story hitting the news stands, calls were received from members of the public, which led to offenders being identified and arrested by BTP officers.</p> <p>Hove CCTV Centre</p> <p>The refurbished CCTV Control Room at Hove opened in late 2005. It has direct access to 374 cameras.</p> <p>Hove Control Room incorporates the monitor/profilers as CCTV evidence-gatherers. These act as the point of contact for officers from all police forces, who wish to request CCTV evidence. If requested, the Data Profilers are able to provide</p>	<p>rob.ashplant@southernrailway.com</p>

	<p>a full evidence pack for any given incident which consists of still images, master DVD copies and working composite copies. This eliminates the need for an officer to then spend time viewing the CCTV for an incident. Due to the nature of this work, Data Profilers will attend court if required to do so.</p> <p>The Hove and Streatham Hill Control Centres together cover 72 stations (out of 134). There are 80 Southern stations that still have standalone systems feeding to a local VHS tape(s).</p> <p>From 30 November 2005 to 1 May 2006, Southern has supplied CCTV evidence in 638 cases from Hove and, from the 24 July 2005 to 29 April 2006 1,037 downloads from its Streatham Hill CCTV Centre. This equates to an average of 2,913 cases a year.</p> <p>Boarding and alighting</p> <p>Southern is looking to improve power doors on its new trains. The company is currently in the process of formalising questions for a passenger survey to try to identify the level of understanding of how the power doors work. Once completed, Southern hopes to develop practical steps to reduce the level of passenger accidents when boarding or alighting its trains.</p>	
Eurostar	<p>Initiatives – escalator accidents</p> <p>Initiatives at Eurostar’s international stations at Waterloo and Ashford include the use of floor signage to give passengers basic safety messages and direct them to lifts and travelators, in order to reduce escalator usage (particularly by more vulnerable groups). Around 85% of all Eurostar’s escalator accidents occur to passengers over the age of 70. Alcohol has very little impact in these accident figures, luggage being the second biggest factor after age. Staff carry out ticket checks in the departures area, and they are to be briefed on being more proactive in giving passengers advice about the location of lifts rather than using more obvious escalators. Posters are also being printed and will be placed at strategic points to provide another source of information to passengers.</p> <p>Staff accidents</p> <p>Waterloo workforce falls (on level ground, less than two metres and on fixed stairs) and Ashford International and manual handling will both be addressed through the use of revised training and information media.</p>	<p>Scott.Noble@eurostar.co.uk</p>

<p>Trans-Pennine Express</p>	<p>Slips, trips and falls</p> <p>In December 2005, First TransPennine (TPE) Safety Systems commenced the Slip, Trip, Fall (STF) campaign, in order to target locations where it was recording cases of these accidents at an atypically high frequency. Dressed in festive attire, the team visited Hull Paragon, Huddersfield and Manchester Airport Stations and handed out STF-branded merchandise to passengers. Accompanying posters were adorned with related hard-hitting statistics to highlight the potential consequences of slips, trips and falls. The campaign was featured in various media, and has been successful in that the company has seen a 15% reduction in passenger accidents of this type across its network. The campaign will continue, targeted at employees, in 2006/07.</p> <p>Spit kits</p> <p>Additionally, <i>Safety Matters</i> (TPE's safety publication) notified employees that the use of a DNA 'Spit Kit' played a crucial role in charges being brought against offenders. In March 2006, a regular fare-evader assaulted the conductor of a TPE service at Dewsbury. Following a ticket irregularity, she spat at and attempted to strike the member of staff before running away. The conductor presented her confiscated Metrocard to the BTP, which was used to track her down successfully. She was subsequently confronted with DNA evidence resulting from the use of the Spit Kit, and this led to her confessing to actual bodily harm. She received a custodial sentence.</p>	<p>Paul.Russell@Firstgroup.com</p>
------------------------------	--	---

Appendix 1. Station safety-research projects

RSSB's Research and Development (R&D) programme is responsible for the development and delivery of the railway industry's safety-related research projects. It recognises that safety management is one element of managing business risk and is therefore aimed at providing and implementing viable business improvements for the industry. R&D's principle objectives are to identify and shape ways of reducing safety risk and the cost of delivering a safe railway, and to improve the quality and cost-effectiveness of safety management across the network.

R&D is being conducted across twelve topics, ranging from the engineering of the wheel-rail interface to human factors and operational research policy issues, such as risk tolerability. The following section presents the research projects that are connected with station safety. The table below summarises the types of accidents under scrutiny:

Table 4. Station safety research by accident type

Project	Access and egress	Assaults	Boarding and alighting	Objects falling from height	Overcrowding	Railway crime	Slips, trips and falls	Station security
T038				X				
T039		X						
T047		X						
T061a		X	X					
T061b		X	X					
T061c		X	X					
T061d		X	X					
T062a						X		
T157a							X	
T157b							X	
T158a			X				X	
T158b			X				X	
T161					X			
T321	X		X					
T322						X		
T425			X					
T426			X					
T532							X	
T542			X					
T555						X		
T592					X			
T639								X
T667								X

Each of these research areas is summarised in the following table. The full reports (where available) may be downloaded from the RSSB website at www.rssb.co.uk. For further information on the research programme, or to provide comments on it, please e-mail the research team at research@rssb.co.uk.

Table 5. Station safety research details

Number	Title	Brief description	Status
T038	Glazing materials at height in stations and other public buildings	Providing advice on all safety aspects of the use of glazing materials at height within public buildings (including stations). Developing risk assessment guidelines for design, specification, installation, operation, maintenance and refurbishment.	Published
T039	Reducing assaults on railway staff	Understanding the size of the growing problem of assaults on railway staff, and identifying measures to counteract it.	Published
T047	Fears and experiences of assault and abuse on the railway	Investigating the fears and experiences of railway staff and customers in relation to assault and abuse on the railway. Identifying measures to improve personal security - better data, risk analysis, best practice and partnerships.	Published
T061a	Maximising benefits from CCTV on the railways - executive summary	Summarising the research work undertaken into the use of CCTV on the railway. This comprises separate projects on existing CCTV systems, new and emerging technologies and pilot project proposals.	Published
T061b	Maximising benefits from CCTV on the railway - existing systems	Identifying the current uses of CCTV systems on the railway and simple means of improving their effectiveness.	Published
T061c	Advanced CCTV pilot projects	Identification of three advanced CCTV systems to assess their suitability for use in the rail environment: intelligent station surveillance, digital video recording and wireless CCTV.	Published
T061d	New and emerging CCTV technology	Assessing the type, availability, potential railway applications and benefits of new CCTV technology. Maximising benefits from existing and future systems to counter vandalism and other security problems.	Published
T062a	Evaluation handbook for route crime and other initiatives	Developing a single methodology to evaluate the effectiveness of anti-vandalism and other schemes on the railway. Determining which of the schemes work and which do not.	Published

Number	Title	Brief description	Status
T157a	The best flooring materials for stations - Phase 1	Reviewing literature on reducing slips and other hazards relating to flooring materials used at stations. Understanding the physical and behavioural causes of slips, trips and falls. Assessing potential mitigation measures.	Published
T157b	Safer surfaces to walk on - reducing the risk of slipping	Reducing slips and other hazards relating to flooring materials used at stations. Understanding the physical and behavioural causes of slips, trips and falls. Assessing potential mitigation measures.	Published
T158a	Station tactile surfaces - Phase 1	Reviewing literature on potential new materials for tactile surfaces at stations, the benefits and risk of extending their use to stair and escalator tops and as guideways for people with disabilities.	Published
T158b	Station tactile surfaces - Phase 2	Investigating the use and location of tactile surfaces at stations. Reviewing potential new materials. Assessing benefits and risk of extending their use to stair and escalator tops and as guideways for people with disabilities.	Published
T161	Managing large events and perturbations at stations	Evaluating techniques, including modelling and contingency planning, for improving crowd management for large events and major perturbations at stations.	Published
T321	Research into safety and other signage at stations	Assessing the benefits, costs and issues associated with standardising station signage. Investigating the possibility of developing standards / guidance for non-safety signage and the need for a signage hierarchy. Considering signage placement and lighting.	Published
T322	An investigation into trespass and access via the platform ends at railway stations	Investigating causal factors of trespass via station platform ends, and legitimate access requirements of authorised persons. Developing options for measures to mitigate the former without impeding the latter.	Published

Number	Title	Brief description	Status
T425	Effective management of risk from slipstream effects at trackside and platforms	This work investigates the effect of train slipstreams to determine whether the current methods of defining safe distances for track workers and passengers on platforms are unduly restrictive or inadequate to effectively manage the risk.	In progress
T426	Minimisation of accidents at the platform / train interface	The research investigates accidents that happen at the platform / train interface, exploring the primary causes of such accidents and the extent to which they can be reduced in number and severity by modification to vehicle / platform design and operations.	Published
T532	Evaluating frost, ice and snow precautions at stations	Identifying the most appropriate de-icing products for use on and around stations, including on platforms, footbridges, footpaths and car parks, in terms of their suitability and their functional and cost-effectiveness.	Published
T542	Personal security - conflict avoidance training for front line railway staff	This project seeks to examine and evaluate the conflict avoidance training packages within the rail and other industries, in order to recommend a good practice approach.	Published
T555	Improving the content and placement of anti-trespass signs	Establishing the effectiveness of anti-trespass signs and patterns of unauthorised access to the railway, especially by young people.	Published
T592	Public Behaviour-management of football fans on the railway	Evaluating the risk from travelling football fans and the violence, drunkenness, anti-social behaviour and disruption they cause to the railway industry, its staff and passengers.	In progress
T639	Good practise in station adoption schemes	The project will produce a good practice guide for 'Station Adoption' schemes throughout the railway industry.	In progress
T667	Research into security at stations	Understanding the nature and extent of crime on stations and trains and the measures effective in controlling it.	In progress

Appendix 2. Injuries at stations

All injuries occurring at stations by person type							
	Annual totals						
	2001	2002	2003	2004	2005	2005 (to June)	2006 (to June)
Passenger fatalities	4	9	9	8	8	3	6
Public fatalities	20	19	14	15	15	3	5
Workforce fatalities	0	2	0	0	0	0	0
Passenger major injuries	228	222	229	205	221	119	86
Public major injuries	8	5	7	14	5	1	1
Workforce major injuries	48	34	41	46	46	24	9
Pasenger minor injuries	3767	3647	3708	3949	3666	1772	1610
Public minor injuries	129	35	36	74	61	32	29
Workforce minor injuries	2335	2378	2310	2390	2341	1161	1085
Accidental FWIs	103.555	105.4	94.97	96.565	95.54	38.225	39.220

Appendix 3. Fatalities at stations

Fatalities at stations January 2006 – June 2006 (excluding suicide/suspected suicide)				
Date	Location	Territory	Person type	Hazardous Event
08/01/2006	Welwyn Garden City	LNE	Passenger	Passenger assault
22/01/2006	Althorne	SE	Public	Adult trespasser struck/crushed while on the mainline railway
08/02/006	Manor park	LNW	Passenger	Passenger slip, trip or fall (stairs)
18/02/2006	Hatfield	LNE	Public	Trespasser struck while crossing track at station
07/03/2006	Romford	SE	Public	Adult trespasser struck/crushed while on the mainline railway
14/03/2006	St. Denys	SE	Passenger	Passenger electric shock at station (conductor rail)
25/03/2006	Pembrey & Burry Port	W	Passenger	Passenger fall from platform and struck by train
24/04/2006	Weston-super-Mare	W	Public	Adult trespasser struck/crushed while on the mainline railway
29/05/2006	Stamford	LNE	Passenger	Passenger slip, trip or fall (stairs)
25/06/2006	Habrough	LNE	Public	MOP struck by train while standing too close to the platform edge
29/06/2006	Hersham	SE	Passenger	Passenger electric shock at station (conductor rail)

Appendix 4. SPADs at stations

Chart 33. SPADs at stations July 2005 – June 2006

Date	Time	Signal	Location	Route	Duty holder	Class	Overrun (metric)	Conflict point (metric)	TPWS operation	SAS SPAD	Risk rank
03/08/2005	08:44	WH425	Kentish Town	LINE	First Capital Connect (Thameslink)	2	3	188	A	P-FNU	NH16
13/08/2005	17:56	WS17	Kensal Green	LNW	London Underground	2	5	650	N	P-DNF	NH16
29/08/2005	13:20	A82	Aberdeen	Scotland	First ScotRail	5	3	90	I	P-FAU	NH13
30/08/2005	00:26	SN13	Paddington	Western	Heathrow Express	5	23	79	N	P-DNF	NH14
31/08/2005	11:22	UR274	Pitsea	Anglia	c2c	1	40	543	A	P-FNU	NH11
19/09/2005	08:21	VS192	Bromley South	Kent	South Eastern Trains	2	5	290	A	P-NE	NH15
25/09/2005	15:17	PK476	Ardrossan South Beach	Scotland	First ScotRail	2	10	776	A	P-FNU	NH13
06/10/2005	15:25	ME162	Princes Risborough	LNW	Chiltern Railways	2	23	579	I	P-FNU	NH15
11/10/2005	14:02	M693	Sherburn-in-Elmet	LINE	Freightliner	4	20	606	I	P-DNF	NH8
15/10/2005	18:00	L65	Cannon Street	Kent	South Eastern Trains	2	20	97	I	P-FNU	YH10
31/10/2005	15:24	LR461	Syston East Jcn	LINE	English Welsh and Scottish	1	20	300	I	P-DNF	NH14
07/11/2005	14:49	L592	Wickford	Anglia	One	2	13	531	I	P-FNU	NH14
29/11/2005	12:04	L495	Shenfield	Anglia	One	2	3	662	A	P-FNU	NH12
21/12/2005	15:55	Y223	York	LINE	English Welsh and Scottish	0	20	81	I	P-NE	NH14
23/12/2005	23:37	C116	Cardiff Central	Western	Arriva Trains Wales	5	5	91	A	P-FAU	NH7
29/12/2005	16:13	WS55	Harrow & Wealdstone	LNW	London Underground	2	12	251	N	P-DNF	NH5
05/01/2006	01:32	VS11	Victoria Station	Kent	South Eastern Trains	5	3	56	N	P-FNU	NH17
08/02/2006	12:17	VS358	Blackfriars	Kent	First Capital Connect (Thameslink)	2	10	213	I	P-FNU	NH0
09/02/2006	13:33	MV31	Kempston Hardwick AHB LC	LNW	Silverlink	2	3910	3910	N	P-FAU	NH21
23/03/2006	12:24	SJ87	Stourbridge Jcn	LNW	Central Trains	2	46	482	I	P-FAU	NH14
31/03/2006	22:34	GB22	Richmond	Anglia	London Underground	2	1	65	N	P-DNF	NH14
03/04/2006	20:26	K949	Letchworth	LINE	First Capital Connect (GN)	5	33	151	I	P-NE	NH11
12/04/2006	12:30	BH13	Brockenhurst	Wessex	South West Trains	1		0	I	P-NE	NH0
11/05/2006	19:18	CB4	Canterbury East	Kent	South Eastern Trains	5	10	12000	N	P-FNU	NH7
20/05/2006	20:35	ML202	Kirkdale TMD	LNW	Merseyrail	5	15	110	N	P-FAU	NH9
28/05/2006	01:28	FN10A	Farnham	Wessex	South West Trains	5	177	851	N	P-FAU	NH16
29/06/2006	20:19	VS386	Elephant & Castle	Kent	South Eastern Trains	2	6	226	I	P-FAU	NH15

Appendix 5. Collisions, derailments and buffer stop collisions at stations

(January 2006 – June 2006)

Date	Location	Accident type	Passenger train?	Duty holder	Collision type
18/01/2006	York	Derailment	No	English, Welsh and Scottish	n/a
27/01/2006	Sudbury	Buffer stop	Yes	One	n/a
27/01/2006	Gospel Oak	Collision	Yes	Silverlink	Coming into stn
15/02/2006	Liverpool Lime Street	Collision	Yes	Northern Rail	Roll back
28/02/2006	Redhill	Collision	Yes	Southern	Roll back
04/03/2006	Waterloo	Collision	Yes	South West Trains	Roll back
15/03/2006	Blackpool North	Collision	Yes	Northern Rail	Coming into stn
03/05/2006	Faversham	Collision	Yes	South Eastern Trains	Roll back
11/05/2006	Sheffield	Derailment	No	Northern Rail	n/a
28/05/2006	Waterloo	Collision	Yes	South West Trains	Roll back
09/06/2006	Dover Priory	Collision	Yes	South Eastern Trains and Southern	Roll back
16/06/2006	Ashford	Collision	Yes	South Eastern Trains	Roll back

Appendix 6. List of hazardous events at stations

HE No.	Hazardous Event Description	Freq per year	Risk (FWI per year)	% contribution
HEN-14	Passenger slip, trip or fall	2524.25	29.27	41.61%
HEN-65	Workforce assault	1169.67	6.85	9.74%
HEM-09	Passenger injury while boarding/alighting train (platform side)	483.32	5.28	7.50%
HEN-24	Workforce slip, trip or fall <2m	422.64	3.70	5.26%
HEM-12	Adult/child trespasser struck while crossing track at station	5.00	3.54	5.03%
HEM-06	Passenger fall between train and platform	204.35	3.10	4.41%
HEN-23	Workforce struck by/contact with/trapped in object while on platform area	473.67	2.82	4.00%
HEM-08	Passenger fall from platform and struck by train	5.67	2.36	3.36%
HEN-55	Passenger struck by/contact with/trapped in object at station	317.33	2.13	3.03%
HEM-05	Train door closes on passenger	290.44	1.82	2.59%
HEM-16	Workforce injury while boarding/alighting train	245.00	1.80	2.55%
HEN-38A	Adult trespasser electric shock (conductor rail) at station	3.00	1.30	1.85%
HEN-74	Workforce manual handling	152.00	0.83	1.17%
HEN-13	Passenger fall from platform onto track (no train present)	51.67	0.73	1.04%
HEN-10	Passenger electric shock at station (conductor rail)	1.67	0.54	0.76%
HEM-10	Passenger struck by train while on platform	6.70	0.52	0.74%
HEM-21	Workforce fall between train and platform	74.00	0.46	0.66%
HEM-23	Train door closes on workforce	68.30	0.45	0.64%
HEM-11	Passenger struck while crossing track at station on crossing	0.51	0.44	0.63%

HE No.	Hazardous Event Description	Freq per year	Risk (FWI per year)	% contribution
HEN-42	Child trespasser electric shock (conductor rail)	1.33	0.39	0.56%
HEN-15	Passenger fall from overbridge at station	1.67	0.29	0.42%
HEN-25	Workforce slip, trip or fall >2m	5.67	0.21	0.29%
HEN-68	MOP non-trespasser fall in stations	2.00	0.16	0.23%
HEN-37	Adult trespasser electric shock (OHL)	0.33	0.15	0.22%
HEN-05	Explosion at station	0.05	0.15	0.21%
HET-09	Collision with buffer stops	11.21	0.14	0.21%
HET-14	Derailment of passenger train at station	0.13	0.11	0.16%
HEN-59	MOP trapped at station	11.33	0.092	0.13%
HET-01 & 02P	Passenger train SPAD resulting in train collision – only SPADs against platform signal have been included.	0.06	0.091	0.13%
HET-06	Collision between two passenger trains in station (permissive working)	12.83	0.074	0.11%
HEN-09	Passenger electric shock at station (OHL)	0.07	0.067	0.09%
HEM-14B	Workforce (not track worker) struck/crushed by train outside possession (error during coupling)	0.20	0.056	0.08%
HEN-41	Child trespasser electric shock (OHL)	0.33	0.045	0.06%
HET-17	Fire on passenger train at station	16.80	0.044	0.06%
HET-22	Structural collapse at station	0.01	0.039	0.06%
HET-15	Derailment of non-passenger train at station	0.22	0.038	0.05%
HEN-07	Passenger exposure to hazardous substances	3.53	0.034	0.05%
HEN-57	Passenger burn (not on train)	6.33	0.032	0.05%
HEN-17	Passenger crushing caused by crowding at station	1.00	0.029	0.04%
HEM-40	MOP struck by train due to standing too close to platform edge	0.33	0.026	0.04%

HE No.	Hazardous Event Description	Freq per year	Risk (FWI per year)	% contribution
HEM-19	Track worker struck/crushed by train	0.05	0.022	0.03%
HEN-73	Passenger manual handling	3.33	0.017	0.02%
HEM-22	Workforce crew fall out of train onto track at station	0.10	0.015	0.02%
HET-03 & 02NP	Non-passenger train SPAD resulting in train collision – only SPADs against platform signal have been included.	0.01	0.014	0.02%
HEN-03	Fire in station	0.67	0.011	0.02%
HEM-07	Passenger fall out of train onto track at station	0.68	0.011	0.02%
HET-25	Train divisions	9.00	0.0066	0.01%
HEN-11	Passenger electric shock at station (non-traction supplies)	0.67	0.0065	0.01%
HEN-67	MOP under influence of alcohol/drugs fall from platform onto track (no train present)	0.33	0.0047	0.01%
HEN-02	Lineside fire in station	0.40	0.0039	0.01%
HEN-53	MOP electric shock (non-traction supplies)	0.33	0.0033	0.00462%
HEN-08	Passenger exposed to electrical arcing at station	0.20	0.0029	0.00412%
HEN-16	Passenger fall during evacuation at station	0.05	0.0029	0.00407%
HEN-61	Passenger exposure to noise (not on train)	0.33	0.0017	0.00237%
HEN-43	Child trespasser electric shock (non-traction supply)	0.14	0.0014	0.00198%
HEN-33B	Workforce asphyxiation at station	0.09	0.0012	0.00175%
HEN-39	Adult trespasser electric shock (non-traction supply)	0.09	0.00091	0.00129%
HEN-12	Passenger at station exposed to smoke or fumes	0.05	0.00049	0.00069%
HET-04	Collision of train with object on line (not resulting in derailment)	0.70	2.55E-05	0.00004%
HEM-14	Workforce (not track worker) struck/crushed by train	-	-	-

HE No.	Hazardous Event Description	Freq per year	Risk (FWI per year)	% contribution
Total			70.34	100.00%

Appendix 7. Definitions

Term	Definition
Accident	An unexpected, unplanned occurrence, resulting in physical harm to an individual, damage to property, a loss or any combination of these effects.
Accidental death	Such has occurred if the victim had no intention to take his/her own life or cause self-injury. Note that if reasonable doubt exists, the death is treated as accidental, and not a suspected or attempted suicide. Accidental death can occur to those engaging in dangerous activities, including trespass, as well as those going about their legitimate business.
Automatic train protection (ATP)	This system provides either a continuous or regular update of speed monitoring for each train and causes the brakes to apply if the driver fails to bring the speed within the required limit. It can minimise – but not eradicate - the chances of a train passing a signal at danger.
Child	A person aged 15 years or below.
Detection rate	The rate at which the police identify perpetrators of crime (leading to several possible outcomes, including convictions and cautions).
Fatality	Including where death occurs within one year of an incident.
Major injury	This is as defined in RIDDOR 1995, and applies to passengers, staff and members of the public. Injuries such as fractures, amputations, loss of sight or those resulting in admittance to hospital for a period of more than 24 hours are included in this category.
Minor injury	This is defined as injuries to passengers, staff or members of the public that are not major injuries. Note that while shock is not classified as a minor injury in RIDDOR 1995, it has been included as such in the Safety Risk Model.
Movement accidents	These are accidents to people involving trains (in motion or stationary), but excluding injuries sustained in train accidents.
Network Rail Controlled Infrastructure (NRCI)	This falls within the boundaries of Network Rail's operational railway and includes the permanent way, land within the lineside fence, and plant used for signalling or exclusively for supplying electricity for operational purposes to the railway. It does not include stations, depots, yards or sidings that are owned by, or leased to, other parties. However, it does include the permanent way at stations and plant within these locations used for signalling or exclusively for supplying electricity for operational purposes to the railway.
Network Rail: under contract	Persons working under contract to Network Rail, either as direct employees of organisations within the Railway Group (for example, infrastructure companies), or contractors to such organisations (like Mowlem).
Non-movement accidents	These are accidents unconnected with the movement of trains, occurring to people on railway premises.
Older adult	A person aged 30 years or above.
On-track plant	This refers to rail-borne vehicles used to repair/maintain the track (such as rail grinders, ballast tampers and on-track machines).
Passenger	A person travelling or intending to travel whether in possession of a ticket or not. Passengers who are trespassing are not included – these are treated as members of the public.
Permissible speed	The maximum speed at which trains are permitted to run over a section of line.

Term	Definition
Permissive working	A method of working that allows running movements into an occupied section of track on designated lines and platforms.
PHRTA	This stands for 'potentially higher risk train accident' and refers to accidents that have the potential to result in harm to any or all person types on the railway. PHRTAs comprise train derailments (excluding road vehicle strikes on level crossings), train collisions (excluding roll backs), trains striking buffer stops, trains striking road vehicles at level crossings (including derailments), and trains running into road vehicles not at level crossings (with no derailment).
Possession	The complete stoppage of all normal train movements on a running line or siding for engineering purposes.
Precursor Indicator Model (PIM)	An RSSB-devised means of assessing the underlying risk from train accidents by calculating the monthly risk from 84 distinct precursors.
Public (members of)	Persons other than passengers or workforce members (that is, trespassers, persons on business and other persons). This includes passengers who are trespassing (when crossing tracks between platforms, for example).
Multi-SPAD signal	A signal that has experienced two or more category A SPADs in the last five years.
RIDDOR	This, the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, 1995, is a set of health and safety regulations that require any major injuries, illnesses or accidents occurring in the workplace to be formally reported to the enforcing authority. It defines major injuries and lists notifiable diseases - many of which can be occupational in origin. It also defines notifiable dangerous occurrences - such as explosions, structural collapse, electrical overloads, fires, and so on - where no injury occurs but subsequent investigations may be needed.
Road vehicle	All vehicles that travel on the highway, including motorcycles, but not pedal cycles.
Robbery	Robbery and assault with intent to rob. This excludes theft of passenger property (such as luggage), and pick-pocketing offences.
Roll-back collision	This is when a train rolls back (while not under power) into a train on the same line (including one from which it has decoupled).
Safety Risk Model (SRM)	A quantitative representation of the safety risk that can result from the operation and maintenance of Britain's railway network. It comprises 120 individual computer-based models, each representing a type of hazardous event (defined as an event or incident that has the potential to result in injuries or fatalities).
Setting back collision	This occurs when a train making a reversing movement under power collides with a train on the same line, usually as part of a decoupling manoeuvre.
Sex crimes	These are sexual offences against males and females, including indecent exposure and other related offences.
Shunting collision at station	This arises when the locomotive or unit causing a collision is engaged in marshalling arrangements. While it characteristically occurs at low speed and involves the rolling stock with which the locomotive or unit is to be coupled, the accident may involve a different train that could be travelling more quickly.

Term	Definition
SMIS	This, the Safety Management Information System, is a national database used by Railway Group members to record any safety related events that occur on the railway. SMIS data is accessible to all members, so that it may be used to analyse risk, predict trends and focus action on major areas of safety concern.
SPAD	Signal passed at danger (without authority).
SPAD category A	Any occasion where a train passes a signal at danger without authority, other than defined below as category B, C or D.
SPAD category B	Any occasion where a train passes a signal at danger without authority because a stop aspect or indication was not displayed with sufficient time for the driver to stop safely at the signal (due to a signalling or level crossing equipment failure, or because a signal was returned to danger in error).
SPAD category C	Any occasion where a train passes a signal at danger without authority because a stop aspect or indication was not displayed with sufficient time for the driver to stop safely at the signal because it was returned to danger in an emergency in compliance with rules and regulations.
SPAD category D	Any occasion when vehicles without any traction unit attached (or a train that is unattended) run away past a signal at danger.
SPAD on or affecting a running line	This is the definition of a reportable SPAD to the HMRI under RIDDOR 1995. It is a subset of NRCI SPADs, as some signals are on NRCI, but do not affect a running line.
Station accidents	These are movement, non-movement and train accidents ascribed to stations. Movement accidents are those associated with platform management (occurring during boarding or alighting, for example).
Suicide	Where a Coroner's verdict is suicide.
Suspected suicide/ Attempted suicide	Where objective evidence of suicide exists (other than a Coroner's verdict). This is an assessment based on the application of Ovenstone criteria adapted for the railways. These are based on the findings of a 1970 research project into rail suicides and cover aspects such as the presence (or not) of a suicide note, the clear intent to commit suicide, behavioural patterns, previous suicide attempts, prolonged bouts of depression and instability levels.
Train Protection and Warning System (TPWS)	A safety system that automatically applies the brakes on a train which either passes a signal at danger, or exceeds a given speed when approaching a signal at danger, a permissible speed reduction or the buffer stops in a terminal platform. A 'TPWS activation' is where the system applies the train's brakes after the driver has already initiated braking. A 'TPWS intervention' occurs when the system applies the train's brakes without this action having been taken by the driver first.
Train accidents	In general, this refers to accidents occurring to trains and rolling stock, as reportable under RIDDOR 1995. However, non-RIDDOR reportable incidents that occur in yards, depots or sidings (such as shunting derailments that do not foul a running line) are also classed as 'train accidents'.
Trespass	The term 'trespass' is defined as occurring when people go where they are never authorised to be, rather than where they behave inappropriately (either from error or violation) at places where they are allowed to be at certain times and under certain conditions (such as level crossings).

Term	Definition
Violent assaults	These include homicide, attempted murder and serious assault (that is, grievous bodily harm, wounding, threats to kill and actual bodily harm).
Workforce	All persons working for the Railway Group (either as direct employees or contractors).
Weighted injury	In this document, the numbers of major and minor injuries are weighted in recognition of their relatively less serious outcome in comparison to a fatality. The current weighting is 0.1 of a fatality for each major injury and 0.005 for each minor injury. The combined measure is designated 'fatalities and weighted injuries' (FWI).
Young adult	A person aged between 16 and 29 years.

Appendix 8. Glossary

Acronym	Expansion
AMA	annual moving average
ATW	Arriva Trains Wales
ART	assaults reduction team
BTP	British Transport Police
CAS	Competence Assurance Solutions
CCTV	closed-circuit television
CDRP	crime and disorder reduction partnerships
CSPG	Community Safety Partnership Group
CSSG	Community Safety Steering Group
CSSU	Community Safety Support Unit
DfT	Department for Transport
DRA	driver reminder appliance
FCC	First Capital Connect
FGW	First Great Western
FWI	fatalities and weighted injuries
GB	Great Britain
HEM	hazardous event movement
HEN	hazardous event non-movement
HET	hazardous event train
HMRI	Her Majesty's Railway Inspectorate
IPP	injury protection programme
KPI	key performance indicator
LNE	London North East
LNW	London North West
M	Midland
MML	Midland Mainline
MOP	member of the public
MPJ	million passenger journeys
MTM	million train miles
NCRS	National Crime Recording Standard
NRCI	Network Rail controlled infrastructure
ORR	Office of Rail Regulation
OSS	overspeed sensor
PCSO	Police Community Support Officer
PIM	Precursor Indicator Model
PINS	Police Information System
R&D	Research and Development
RFMG	Rail Fatalities Management Group
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RPB	Risk Profile Bulletin
RPSG	Rail Personal Security Group
RSSB	Rail Safety and Standards Board
SASSPAD	start against signal SPAD
SC	Scotland
SE	South East
SMIS	Safety Management Information System
SPAD	signal passed at danger
SPR	safety performance report
SRM	Safety Risk Model
SSP	Strategic Safety Plan
STF	Slip, trip and fall
TOC	train operating company

Acronym	Expansion
TPE	Trans-Pennine Express
TPWS	train protection and warning system
W	Western