



Rail safety statistics

STATISTICS FOR THE SIX MONTHS PERIOD ENDED 31 DECEMBER 2013

Prepared by Financial, Economic and Statistical Analysis, Ministry of Transport

Rail safety statistics

January 2014

This report is based on rail occurrence reports provided by rail operators. These reports cover a wide range of occurrences including both accidents (events that caused death, injury or significant property damage) and incidents (events that placed, or could have placed, someone or something at risk of death, injury or significant property damage). Only a relatively small number of occurrences result in injury or significant property damage. The less serious occurrences are useful for identifying potential safety issues. This report presents both the number of occurrences and the number of deaths and injuries from accidents.

Key points

For the six months period 1 July – 31 December 2013 there were:

1483	reported occurrences, resulting in
5	deaths
46	injuries
3	deaths in level crossing accidents
12	injuries in level crossing accidents
2	deaths in person on track accidents
1	injury in person on track accidents
0	deaths in operating and other accidents
33	injuries in operating and other accidents

In the 12 months from 1 January – 31 December 2013 there were:

3004	reported occurrences, resulting in
11	Deaths
126	Injuries
5	deaths in level crossing accidents
15	injuries in level crossing accidents
6	deaths in person on track accidents
2	injuries in person on track accidents
0	deaths in operating and other accidents
109	injuries in operating and other accidents

Note that rail deaths can include suicides.

NOTES:

- A database was initiated during 1993 to collate information about rail occurrences. Previously the only rail safety data collected at a national level was for level crossing motor vehicle crashes attended by the Police.
- Occurrence reports are provided to the Ministry of Transport and the NZ Transport Agency by rail operators, usually within 72 hours of the occurrence or when enough information has been compiled.
- Caution should be exercised in interpreting the statistics in this report given the small number in some categories and the short time periods involved.

Rail occurrences in New Zealand reported by rail operators

Rail occurrences

Occurrence category	Jul – Dec 2013	Jan – Dec 2013
Collisions (between rail vehicles)	28	45
Derailments (of rail vehicles)	103	214
Fires (on trains/by track)	47	116
Level crossing	137	254
Obstruction	150	302
Operating	714	1516
Person on track	193	341
Shunting	3	5
Tram	0	0
Vandalism	84	165
Other	24	46
Total	1483	3004

Casualties from rail accidents

Accident category	Jul – Dec 2013			Jan – Dec 2013		
	Deaths	Serious injuries	Minor injuries	Deaths	Serious injuries	Minor injuries
Collisions (between rail vehicles)	.	.	.	.	.	1
Derailments (of rail vehicles)	.	.	.	.	.	4
Fires (on trains/by track)	.	.	.	.	.	.
Level crossing	3	4	8	5	6	9
Obstruction	.	.	.	.	.	1
Operating	.	1	31	.	1	101
Person on track	2	1	.	6	2	.
Shunting	.	.	.	.	.	.
Tram	.	.	.	.	.	.
Vandalism	.	.	1	.	.	1
Other	.	.	.	.	.	.
Total number of casualties	5	6	40	11	9	117

Rail occurrences by local government region

Local govt region	Jul – Dec 2013	Jan – Dec 2013
Northland	18	38
Auckland	343	710
Waikato	106	194
Bay of Plenty	56	108
Gisborne	.	5
Hawke's Bay	43	70
Taranaki	30	71
Manawatu-Wanganui	161	351
Wellington	384	764
Nelson-Marlborough-Tasman	42	76
West Coast	50	113
Canterbury	197	386
Otago	34	71
Southland	19	47
Total	1483	3004

Reporting of occurrences

Since late 2011 the NZ Transport Agency and rail operators have been working together to improve the reporting of all occurrences, including near misses and behaviour or situations that could lead to accidents. This helps to identify safety issues before they result in accidents that cause injury or property damage.

It is likely that some of the increase in reported occurrences from previous reports is due to this focus on improved reporting, rather than a decrease in safety, but this has not been analysed in detail.

Level crossings

Definition: occurrences at a level crossing (public or private) involving a motor vehicle, a pedestrian or a pedal cyclist. Occurrence reports may include information about the type of protection present at the level crossing.

Number of level crossing occurrences

Occurrence type	Jul – Dec 2013	Jan – Dec 2013
Level crossing – collision with motor vehicle	13	21
Level crossing – near collision with motor vehicle	77	141
Level crossing – collision involving a pedestrian or pedal cyclist	2	4
Level crossing – near collision involving a pedestrian or pedal cyclist	5	9
Level crossing – other	40	79
TOTAL	137	254

Type of protection present and working for level crossing occurrences

Protection type	Jul – Dec 2013		Jan – Dec 2013	
	Present	Working	Present	Working
Flashing lights and bells (FLB)	32	30	58	56
Half arm barriers with lights and bells (HAB)	42	39	71	67
Stop signs/St Andrews signs	27	27	38	38
TOTAL	101	96	167	161

None	2	-	5	-
Not known	34	-	82	-

Type of protection present and working for level crossing collision with motor vehicle

Protection type	Jul – Dec 2013		Jan – Dec 2013	
	Present	Working	Present	Working
Flashing lights and bells (FLB)	4	4	6	6
Half arm barriers with lights and bells (HAB)	1	1	1	1
Stop signs/St Andrews signs	8	8	10	10
TOTAL	13	13	17	17

None	-	-	2	-
Not known	-	-	2	-

Crashes and casualties for level crossing collisions with motor vehicles (Crash Analysis System) ⁽¹⁾

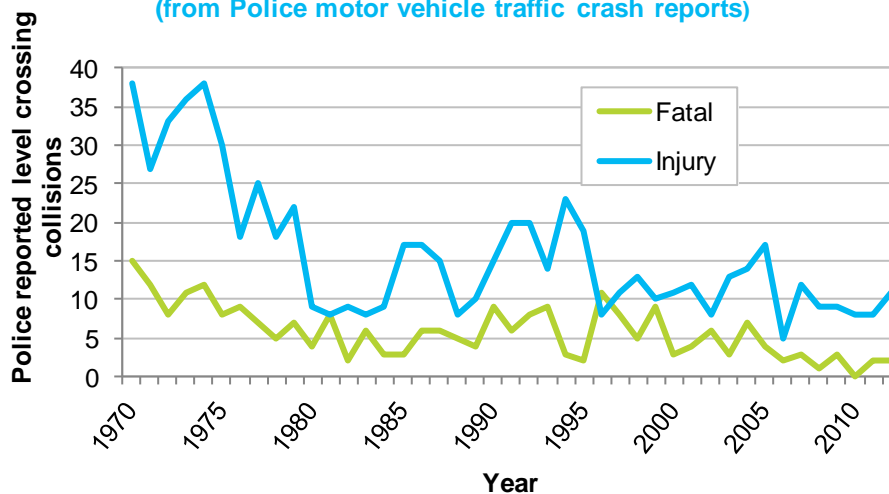
Data derived from Police traffic crash reports of collisions with motor vehicles at level crossings.

Year	Crashes		Casualties		
	Total	Fatal	Deaths	Serious injuries	Minor injuries
2000	14	3	4	7	8
2001	16	4	4	-	18
2002	14	6	6	4	7
2003	16	3	3	10	7
2004	21	7	8	7	11
2005	21	4	4	8	14
2006	7	2	2	6	1
2007	15	3	5	6	13
2008	10	1	1	5	8
2009	12	3	4	8	6
2010	8	-	-	4	7
2011	10	2	2	5	8
2012	13	2	2	4	9

The latest annual injury crash data available from the crash analysis system is for 2012.

Level crossing collisions by crash severity (1970–2012)

(from Police motor vehicle traffic crash reports)



Note: pre-1980 data are derived from historical records.

(1) the Crash Analysis System (CAS) is a tool available to registered users that manages, analyses and maps traffic crash and related data, based on Police traffic crash reports (TCR) forwarded to the NZ Transport Agency.

Obstruction

Definition: occurrences where an object obstructing the rail corridor has been struck by a train or nearly been struck by a train. This excludes level crossing collisions.

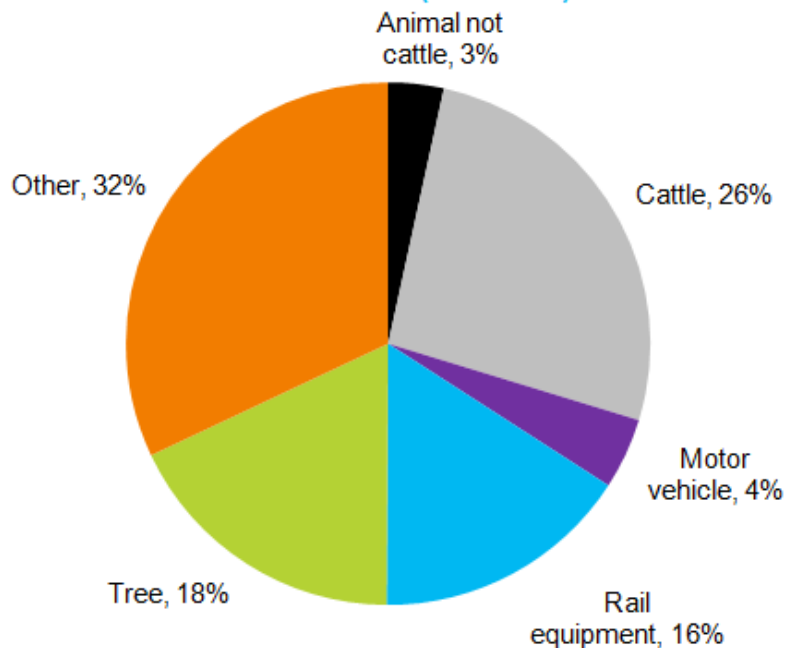
Overall there were 302 obstruction occurrences recorded for the last 12 months, with 184 of these being collisions.

Obstruction 'collision with object' occurrences by type of object struck

Type of object struck	Jul – Dec 2013	Jan – Dec 2013
Animal not cattle	5	9
Cattle	17	41
Motor vehicle	4	10
Rail equipment	8	24
Rocks or stones	4	8
Slip	7	15
Tree	19	41
Other	21	36
TOTAL	85	184

Note: total may include unknown objects

Type of object struck by a train by percentage of reported obstruction – collisions (2011–2013)



Note: percentages have been rounded and may not add up to 100%

The 'Other' category covers a wide range of different objects including: shopping trolley, bicycle, ladder, metal scrap, rake, tyre and many others.

Person on track

Definition: occurrences where a person on track (defined as being on or obstructing the rail corridor not at a level crossing) has been struck by a train, nearly struck by a train or observed to be present without a train being in the vicinity. These occurrences relate to members of the public trespassing in the rail corridor and can include suicides. Rail operator staff or contractors are included in the 'Operating' category.

Number of occurrences

Occurrence type	Jul – Dec 2013	Jan – Dec 2013
Person on track – collision	6	10
Person on track – near collision	112	217
Person on track – other	75	114
TOTAL	193	341

Historical time series of reported casualties by calendar year for person on track collisions

Year	Deaths	Serious injuries	Minor injuries
2000	17	2	1
2001	11	2	3
2002	10	5	2
2003	14	5	3
2004	5	-	1
2005	9	-	1
2006	14	7	1
2007	3	6	1
2008	7	3	1
2009	7	2	1
2010	9	1	-
2011	11	2	3
2012	16	5	1
2013	6	2	-

Vandalism

Definition: occurrences where an object has been thrown at a train, an object has been deliberately placed on the track, or rail property has been altered deliberately or stolen.

Number of occurrences

Occurrence type	Jul – Dec 2013	Jan – Dec 2013
Vandalism – object placed on track	-	5
Vandalism – object thrown at train	34	64
Vandalism – rail property vandalised	30	54
Vandalism – tagging	12	25
Vandalism – theft of rail property	7	14
Vandalism - other	1	3
TOTAL	84	165

Vandalism – object thrown at train

Object thrown at train	Jul – Dec 2013	Jan – Dec 2013
Bottles	-	-
Rocks or stones	32	59
Unknown objects	1	4
Other	1	1
TOTAL	34	64

Fire

Definition: occurrences where there was a fire either trackside by the rail corridor or on board a rail vehicle.

Fire location	Jul – Dec 2013	Jan – Dec 2013
Trackside fire	31	82
Fire on board a rail vehicle	16	34
Total	47	116

Derailment

Definition: occurrences where a train or rail vehicle has derailed while moving along a rail track. The type of rail vehicle that derailed is identified as best as possible from occurrence reports. Note: many of these derailments occur in rail yards during loading and shunting operations.

Derailments by type of rail vehicle (including bogies)

Type of rail vehicle	Jul – Dec 2013		Jan – Dec 2013	
	On mainline	In yard	On mainline	In yard
Hi rail vehicle	3	2	7	5
Lead bogie	3	10	4	22
Locomotive	3	22	4	43
Passenger rail vehicle	-	-	2	1
Shunt	-	8	-	12
Trailing bogie	2	6	3	20
Tram	-	-	-	-
Wagon	3	41	7	84
Other	-	-	-	-
TOTAL	14	89	27	187

Note: a Hi rail vehicle is a general purpose rail capable truck, utility, car, bus or van, used to transport people, equipment or materials to a site, or to carry out on-rail tasks such as inspection, grease dispensing, weed spraying, drain cleaning etc. For more detail, please go to <http://www.kiwirail.co.nz/glossary-of-terms.html>

Operating

Definition: occurrences that occur during the course of rail operations in motion but excludes those categorised as derailments, collisions or shunting occurrences.

Operating occurrences by type

Occurrence type	Jul – Dec 2013	Jan – Dec 2013
Illegal passenger on train	17	28
Infrastructure	267	590
Level crossing alarm failure	9	29
Load related	70	135
Near collision	11	21
Rolling stock	9	24
SPAD related	138	268
Track warrant irregularity	7	16
Track occupancy irregularity	19	38
Other	167	367
TOTAL	714	1516

Note: SPAD = signals passed at danger.

Time series casualty data

Deaths and reported injuries for motor vehicle crashes at a level crossing in the Crash Analysis System (CAS)

		Year										
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Motor vehicle level crossing casualties	Deaths	3	8	4	2	5	1	4	0	2	2	2
	Injuries	17	18	22	7	19	13	14	11	13	13	-

The latest annual injury crash data available from the CAS is for 2012.

Note: The number of level crossing deaths in CAS may be lower than the number in the rail occurrence database as CAS includes only official road deaths. Deaths determined by the coroner to be a result of medical events or suicide are not included as official road deaths.

Reported injury numbers may differ between the two systems. CAS includes road crashes attended and reported by Police.

Deaths and reported injuries for grouped rail accident types in the rail occurrence database

		Year										
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Motor vehicle level crossing casualties	Deaths	4	7	5	2	6	3	4	0	2	2	2
	Injuries	10	16	18	6	14	8	8	9	13	7	14
Pedestrian level crossing casualties	Deaths	2	4	3	2	0	1	0	1	0	4	3
	Injuries	1	0	0	0	0	2	0	0	0	0	1
Pedal cyclist level crossing casualties	Deaths	0	0	0	0	1	0	0	0	0	0	0
	Injuries	1	1	0	0	0	0	0	1	0	2	0
Person on track casualties	Deaths	14	5	9	14	3	7	7	9	11	16	6
	Injuries	8	1	1	8	7	4	3	1	5	6	2
Other casualties - members of the public	Deaths	1	0	0	0	1	2	1	0	0	1	1
	Injuries	24	22	14	22	1	4	13	24	27	16	15
Other casualties - rail employees	Deaths	0	0	0	0	0	0	0	0	0	0	0
	Injuries	31	14	19	17	13	12	10	13	42	106	94
All rail accident deaths and injuries	Deaths	21	16	17	18	11	13	12	10	13	23	11
	Injuries	75	54	52	53	35	30	34	48	87	138	126

Statistics prepared by Financial, Economic and Statistical Analysis, Ministry of Transport. Enquiries regarding these statistics may be directed to Financial, Economic and Statistical Analysis, Ministry of Transport, PO Box 3175, Wellington or by email on info@transport.govt.nz.

For further information on crash statistics see *Motor Vehicle Crashes in New Zealand*, the annual statistical statement produced by the Ministry of Transport. This publication is available online at www.transport.govt.nz