

Rail safety statistics

QUARTERLY STATISTICS FOR THE PERIOD ENDED 31 DECEMBER 2012

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

Rail safety statistics

February 2013

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

This quarter there have been:

821	reported occurrences, resulting in
5	deaths
39	injuries
2	deaths in level crossing accidents
2	injuries in level crossing accidents
3	deaths in person on track accidents
2	injuries in person on track accidents
-	deaths in operating accidents
34	injuries in operating accidents

In the last 12 months there have been:

2874	reported occurrences, resulting in
23	deaths
137	injuries
6	deaths in level crossing accidents
10	injuries in level crossing accidents
16	deaths in person on track accidents
6	injuries in person on track accidents
1	death in operating accidents
120	injuries in operating 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	Oct to Dec 2012	Last 12 months
Collisions (between rail vehicles)	12	29
Derailments (of rail vehicles)	80	274
Fires (on trains/by track)	22	66
Level crossing	67	254
Obstruction	83	358
Operating	392	1309
Person on track	86	285
Shunting	7	15
Tram	1	6
Vandalism	62	238
Other	9	40
Total	821	2874

Casualties from rail accidents

Accident category	Oct to Dec 2012			Last 12 months		
	Deaths	Serious injuries	Minor injuries	Deaths	Serious injuries	Minor injuries
Collisions (between rail vehicles)	.	.	.	.	.	.
Derailments (of rail vehicles)	.	.	.	.	.	.
Fires (on trains/by track)	.	.	1	.	.	1
Level crossing	2	.	2	6	3	7
Obstruction	.	.	.	.	.	.
Operating	.	.	34	1	1	119
Person on track	3	2	.	16	5	1
Shunting	.	.	.	.	.	.
Tram	.	.	.	.	.	.
Vandalism	.	.	.	.	.	.
Other	.	.	.	.	.	.
Total number of casualties	5	2	37	23	9	128

Rail occurrences by local government region

Local govt region	Oct to Dec 2012	Last 12 months
Northland	7	35
Auckland	192	645
Waikato	64	227
Bay of Plenty	39	129
Gisborne	1	3
Hawke's Bay	14	72
Taranaki	19	61
Manawatu-Wanganui	92	323
Wellington	170	626
Nelson-Marlborough-Tasman	24	77
West Coast	37	119
Canterbury	101	388
Otago	40	107
Southland	21	62
Total	821	2874

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 property damage or injury.

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	Oct to Dec 2012	Last 12 months
Level crossing – collision with motor vehicle	5	22
Level crossing – near collision with motor vehicle	46	180
Level crossing – collision involving a pedestrian or pedal cyclist	2	7
Level crossing – near collision involving a pedestrian or pedal cyclist	4	10
Level crossing – other	10	35
TOTAL	67	254

Type of protection present and working for level crossing occurrences

Protection type	Oct to Dec 2012		Last 12 months	
	Present	Working	Present	Working
Flashing lights & bells (FLB)	17	16	92	91
Half arm barriers with lights and bells (HAB)	22	21	91	86
Stop signs/St Andrews signs	7	7	27	27
TOTAL	46	44	210	204

None	7	-	13	-
Not known	14	-	31	-

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

Protection type	Oct to Dec 2012		Last 12 months	
	Present	Working	Present	Working
Flashing lights & bells (FLB)	-	-	4	4
Half arm barriers with lights and bells (HAB)	-	-	2	2
Stop signs/St Andrews signs	3	3	9	9
TOTAL	3	3	15	15

None	2	-	4	-
Not known	-	-	3	-

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

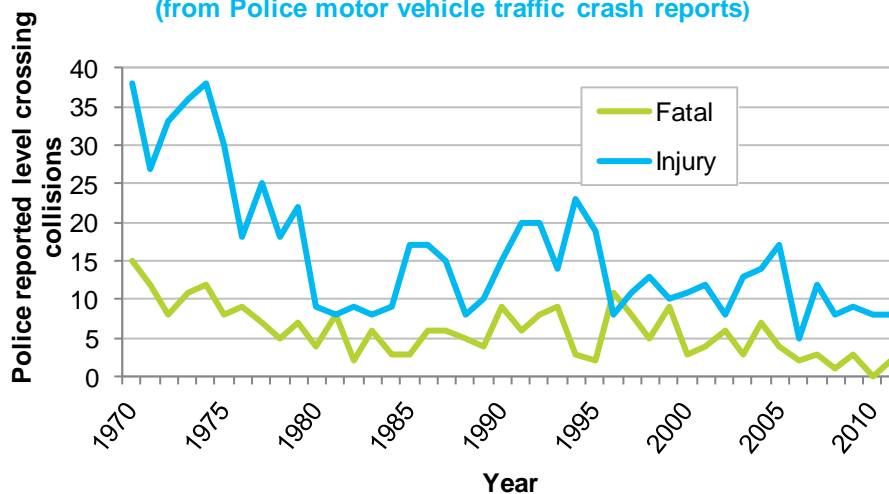
Data derived from Police traffic crash reports of collisions with motor vehicles at level crossings.

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*		2	2		

*The latest annual injury crash data available from the crash analysis system is for 2011.

Level crossing collisions by crash severity (1970–2011)

(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.

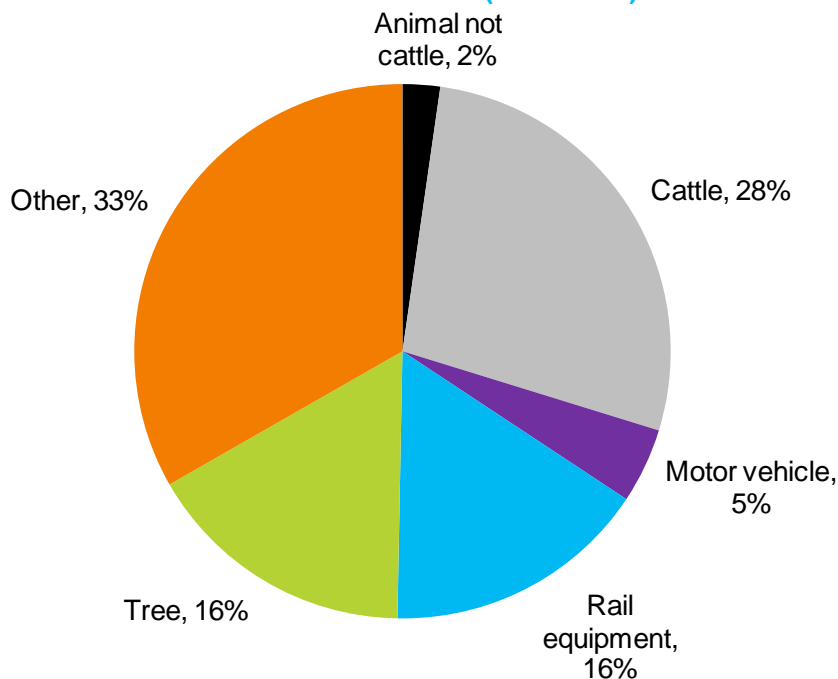
Overall there were 358 obstruction occurrences recorded for the last 12 months, with 198 of these being collisions.

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

Type of object struck	Oct to Dec 2012	Last 12 months
Animal not cattle	-	7
Cattle	14	57
Motor vehicle	2	11
Rail equipment	9	34
Rocks or stones	-	1
Slip	1	6
Tree	6	25
Other	12	54
TOTAL	46	198

Note: total may include unknown objects

Type of object struck by a train by percentage of reported obstruction – collisions (2010–2012)



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	Oct to Dec 2012	Last 12 months
Person on track – collision	5	20
Person on track – near collision	71	217
Person on track – other	10	48
TOTAL	86	285

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

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	Oct to Dec 2012	Last 12 months
Vandalism – object placed on track	6	20
Vandalism – object thrown at train	23	68
Vandalism – rail property vandalised	16	44
Vandalism – tagging	5	47
Vandalism – theft of rail property	9	25
Vandalism - other	3	34
TOTAL	62	238

Vandalism – object thrown at train

Object thrown at train	Oct to Dec 2012	Last 12 months
Bottles	1	1
Rocks or stones	21	62
Unknown objects	-	4
Other	1	1
TOTAL	23	68

Fire

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

Fire location	Oct to Dec 2012	Last 12 months
Trackside fire	16	43
Fire on board a rail vehicle	6	23
Total	22	66

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	Oct to Dec 2012		Last 12 months	
	On mainline	In yard	On mainline	In yard
Hi rail vehicle	1	6	3	11
Lead bogie	1	7	2	25
Locomotive	1	6	13	31
Shunt	1	7	1	32
Trailing bogie	1	4	1	22
Tram	-	-	1	0
Wagon	1	44	5	126
Other	-	-	0	1
TOTAL	6	74	26	248

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	Oct to Dec 2012	Last 12 months
Illegal passenger on train	7	15
Infrastructure	160	459
Level crossing alarm failure	5	22
Load related	29	76
Near collision	4	11
Rolling stock	16	32
SPAD related	50	213
Track warrant irregularity	5	26
Track occupancy irregularity	13	69
Other	103	386
TOTAL	392	1309

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										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Motor vehicle level crossing casualties	Deaths	6	3	8	4	2	5	1	4	-	2	2
	Injuries	11	17	18	22	7	19	13	14	11	13	*

*The latest annual injury crash data available from the CAS is for 2011.

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										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Motor vehicle level crossing casualties	Deaths	8	4	7	5	2	6	3	4	0	2	2
	Injuries	14	10	16	18	6	14	8	8	9	13	7
Pedestrian level crossing casualties	Deaths	2	2	4	3	2	1	1	0	1	0	4
	Injuries	0	1	0	0	0	0	2	0	0	0	1
Pedal cyclist level crossing casualties	Deaths	0	0	0	0	0	0	0	0	0	0	0
	Injuries	1	1	1	0	0	0	0	0	1	0	2
Person on track casualties	Deaths	10	14	5	9	14	3	7	7	9	11	16
	Injuries	7	8	1	1	8	7	4	3	1	5	6
Other casualties - members of the public	Deaths	0	1	0	0	0	0	2	1	0	0	1
	Injuries	18	24	22	14	22	1	4	13	25	27	16
Other casualties - rail employees	Deaths	2	0	0	0	0	1	0	0	0	0	0
	Injuries	13	31	14	19	17	11	12	10	15	42	105
All rail accident deaths and injuries	Deaths	22	21	16	17	18	11	13	12	10	13	23
	Injuries	53	75	54	52	53	33	30	34	51	87	137

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