



Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



STATISTICAL SUMMARY
RAIL TRANSPORTATION OCCURRENCES IN 2019

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Statistical summary: Rail transportation occurrences in 2019

Cat. No. TU1-20E-PDF
ISSN 2562-6698

This document is available on the website of the
Transportation Safety Board of Canada at www.tsb.gc.ca

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Statistical Summary

Rail Transportation Occurrences in 2019

The TSB gathers and uses transportation occurrence data during the course of its investigations to analyze safety deficiencies and identify risks in the Canadian rail transportation system.

This summary covers federally regulated railways only. Non-federally regulated data reported to the TSB are not included in this report.

It should be noted that certain characteristics of the data constrain statistical analysis and identification of emerging trends. These include the small totals of accidents and incidents, the large variability in the data from year to year, and changes to regulations and definitions. The reader is cautioned to keep these limitations in mind when viewing this summary to avoid drawing conclusions that cannot be supported by statistical analysis.

The 2019 data were collected according to the reporting requirements described in the TSB Regulations in force during that calendar year.

The statistics presented here reflect the TSB Railway Occurrence Database System (RODS) database at 2 March 2020. Since the occurrence data are constantly being updated in the live database, the statistics may change slightly over time.

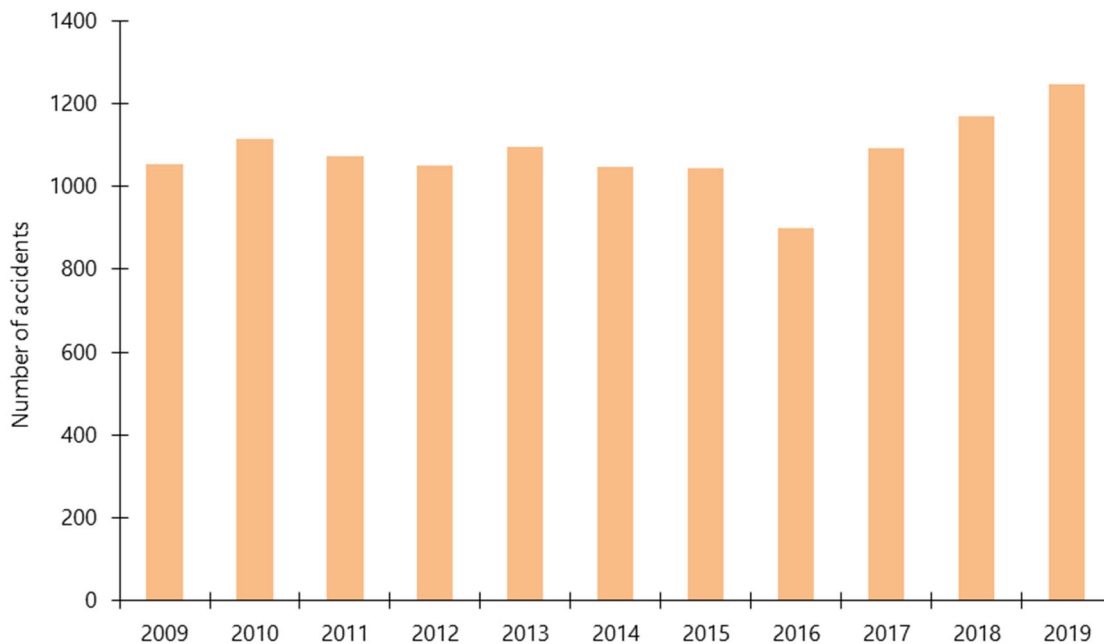
Also, as many occurrences are not formally investigated, information recorded on some occurrences may not have been verified.

Accidents¹

Overview of accidents and casualties

In 2019, 1246 rail accidents were reported to the TSB (Figure 1), up from the 2018 total of 1169, and a 17% increase from the previous 10-year (2009–2018) average of 1064.

Figure 1. Number of rail accidents, 2009 to 2019



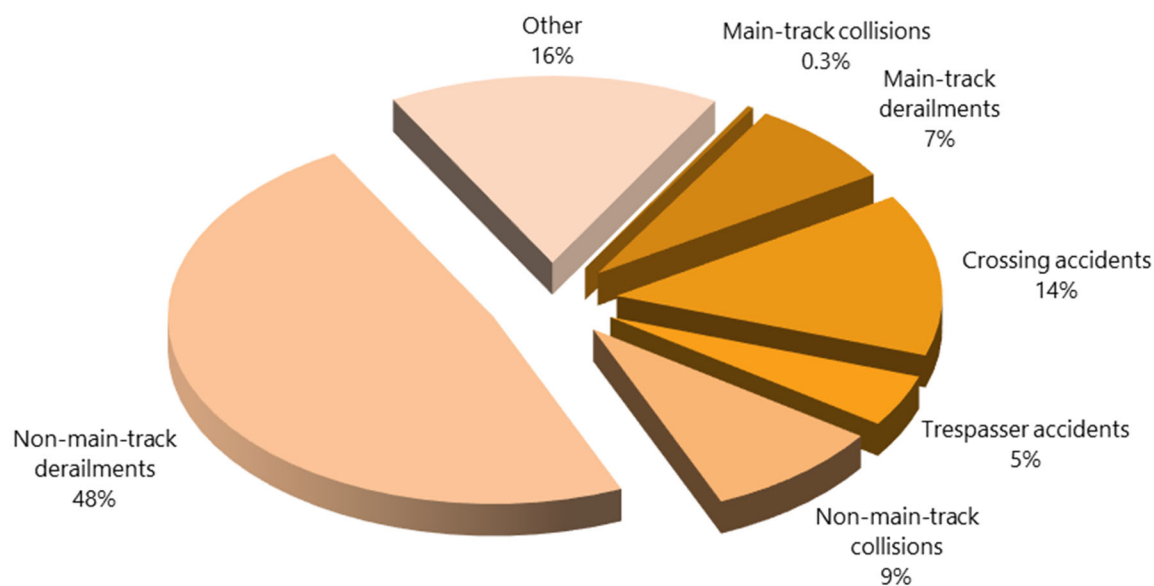
Freight trains accounted for 33% of all trains involved in rail accidents in 2019. Three percent (47 in total) were passenger trains, with the remaining 64% comprising mainly single cars/cuts of cars, locomotives, and track units.

The largest proportion of reported rail accidents comprised non-main-track derailments² (48%) (Figure 2). Typically, most non-main-track accidents are minor, occurring during switching operations at speeds of less than 10 mph.

¹ See the Definitions section.

² "Derailment" means any instance where one or more wheels of rolling stock have come off the normal running surface of the rail.

Figure 2. Percentage of rail accidents by type, 2019*



* Due to rounding of percentages in category labels, additions across accident types should be calculated from Table 1 data rather than by adding percentages shown in Figure 2.

The proportion of accidents that were main-track derailments in 2019 (7%) was approximately the same as both the previous year and the 10-year average.

In 2019, 14% of rail accidents involved vehicles or pedestrians at rail crossings, below the 16% average of the previous 10 years. The proportion of other accident types³ (21%) in 2019 is above the 10-year average (18%).

In 2019, 169 accidents involved dangerous goods,⁴ up from 125 in 2018 and above the 10-year average of 127. Eight accidents resulted in a dangerous goods release in 2019, compared with 4 in 2018, and the 10-year average of 4.

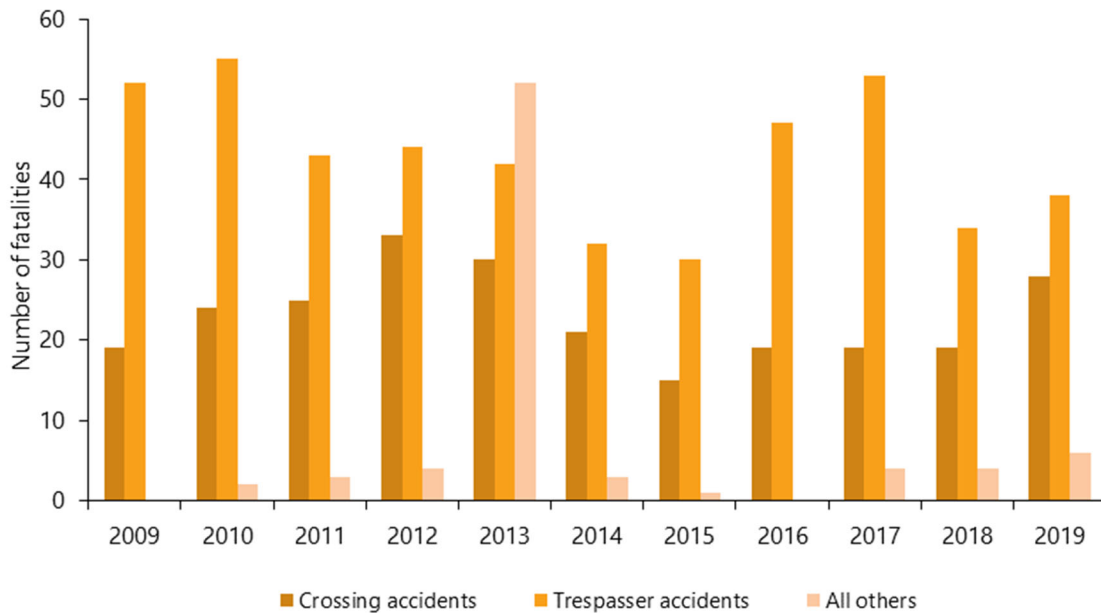
Rail fatalities (Figure 3) totalled 72 in 2019, up from 57 reported last year and approximately the same as the previous 10-year average of 73. Crossing fatalities totalled 28 in 2019, up from 19 in 2018 and above the 10-year average of 22. Trespasser⁵ fatalities totalled 38 in 2019, up from 34 in the previous year but below the 10-year average of 43. In 2019, 5 railway employees were fatally injured, above the 10-year average of 2 employee fatalities.

³ Other accident types include but are not limited to collisions/derailments involving track units, rolling stock collision with object, and employee/passenger accidents.

⁴ Accidents involving dangerous goods can also include road vehicles carrying dangerous goods.

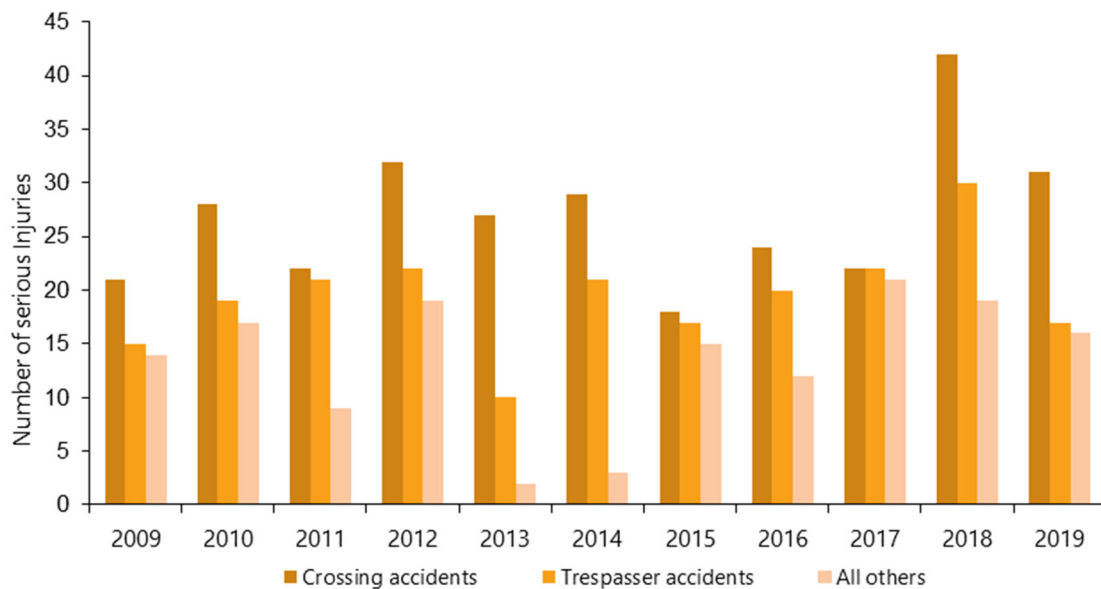
⁵ Trespasser accidents involve persons, primarily pedestrians, who are struck by rolling stock while they are on railway rights-of-way (other than railway crossings) that they are not authorized to occupy.

Figure 3. Number of fatalities, by type of occurrence, 2009 to 2019



A total of 64 serious injuries resulted from rail occurrences in 2019 (Figure 4), down from 91 in 2018 but above the 10-year average of 59. Trespasser injuries totalled 17 in 2019, down from 30 last year and below the 10-year average of 20. Fifteen railway employees were seriously injured in 2019, down from 17 in 2018 but above the 10-year average of 11. Crossing accidents⁶ resulted in 31 serious injuries, down from 42 in 2018 but above the 10-year average of 27.

Figure 4. Number of serious injuries, by type of occurrence, 2009 to 2019

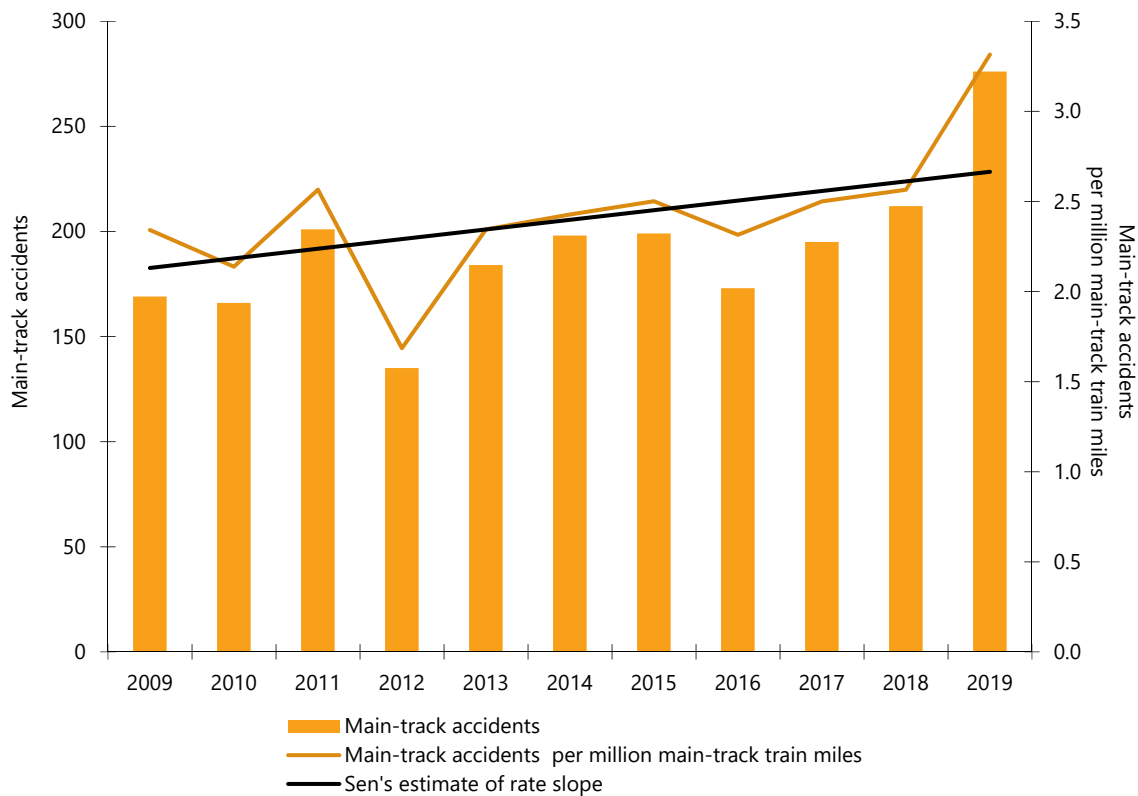


⁶ A crossing accident occurs when railway rolling stock is involved in a grade-crossing collision with a motor vehicle or with a pedestrian, resulting in death, serious injury or property damage.

The number of main-track accidents⁷ totalled 276 in 2019 (Figure 5), up from 212 in 2018 and 51% above the 10-year average of 183. A portion of this increase in main-track accidents is due to the unusually high number of right of way fires on main-track reported to the TSB in 2019 (42). Rail activity⁸ on main track (i.e., non-yard) increased by 1% from the previous year. The main-track accident rate in 2019 was 3.3 accidents per million main-track train miles, up from 2.6 in 2018 and 42% above the 10-year average of 2.3.

Kendall's tau-b correlation and Sen's estimate of slope were used to quantify the trend in main track accidents and accident rates shown in Figure 5. Kendall's tau-b (τ_b) correlation coefficient is a nonparametric measure of the strength and direction of association that exists between two variables. Kendall's τ_b was calculated on the 11-year series of accident rate values by year from 2009 to 2019. There was a moderately strong, positive correlation that indicates an upward trend in accidents per million main-track train miles over the period ($\tau_b = 0.491$, $p = 0.036$). Sen's estimate of slope, the amount of upward rate change per year, was 0.0534 occurrences per million main-track miles per year.

Figure 5. Number of main-track accidents and accident rates, 2009 to 2019



⁷ Accidents which occur on main-track or spurs (not including crossing accidents, trespasser accidents, and non-main-track collisions and derailments) are combined in order to match the figures used in the activity data, which is the total of main track and spur million train miles (i.e., non-yard).

⁸ Transport Canada, Rail Safety Directorate (email dated 27 March 2020).

Accidents by type

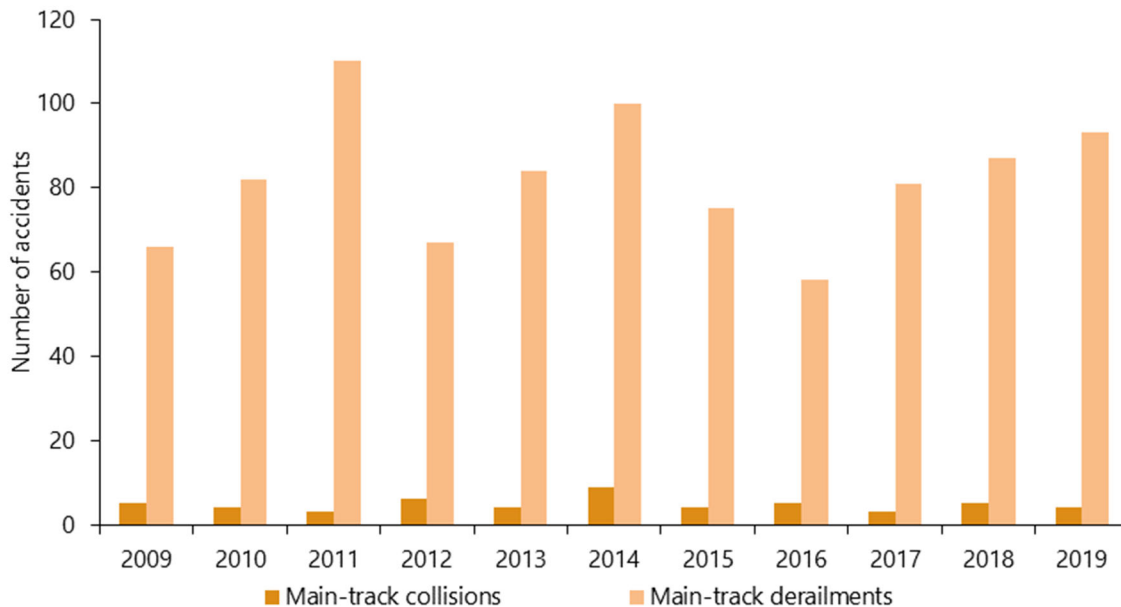
Main-track collisions and derailments are the most serious categories of rail accidents in terms of potential risk to the public and financial loss (e.g., when passenger trains are involved or dangerous goods are released from trains that derail in populated areas).

There were 4 main-track collisions (Figure 6) in 2019, down from the 2018 total of 5 and down from the 10-year average of 5. No fatalities or serious injuries resulted from main-track collisions in 2019. There was no release of dangerous goods as a result of main-track collisions.

A total of 93 main-track derailments (Table 4) were reported in 2019, an increase from the 2018 total of 87, and 15% above the 10-year average of 81 (Figure 6). Twenty-four percent of the 93 main-track derailments occurred in British Columbia, 18% occurred in Alberta, and 18% occurred in Ontario.

The number of main-track derailments per million main-track (i.e., non-yard) train miles increased to 1.12 in 2019 from 1.05 the previous year and above the 10-year average of 1.03.

Figure 6. Number of main-track collision and derailment accidents, 2009 to 2019



Three fatalities and 1 serious injury resulted from main-track derailments in 2019. Nineteen main-track derailments involved dangerous goods, up from the 2018 total of 17 and above the 10-year average of 14. Six of these derailments resulted in release of product (2 crude oil, 1 diesel fuel and octanes, 1 octanes, 1 methanol, and 1 sulphuric acid).

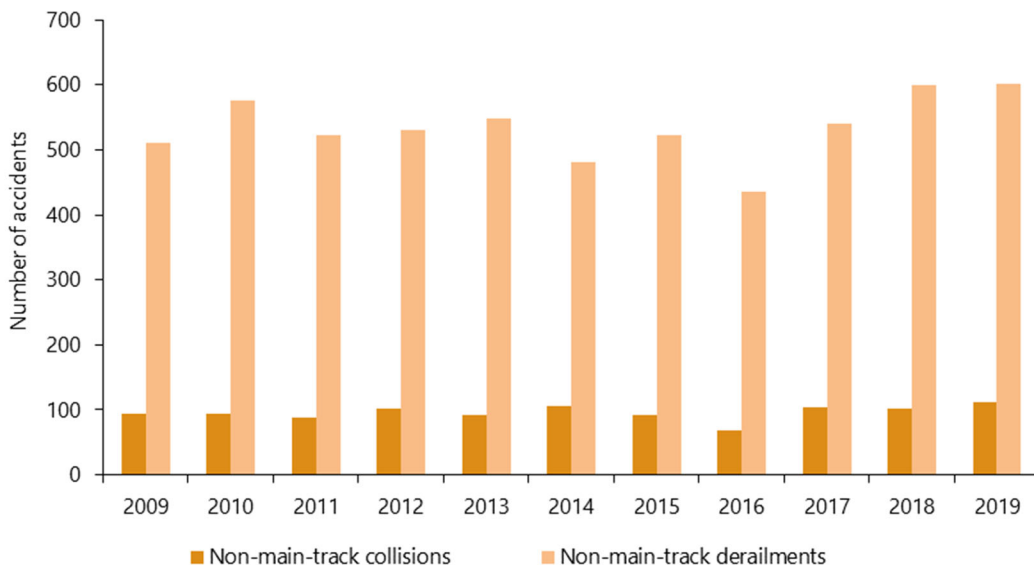
In 2019, 27% of assigned factors⁹ for main-track derailments were equipment-related, down from the 10-year average of 31%. Actions-related factors¹⁰ accounted for 21% of assigned factors in 2019, the same as the 10-year average. Track-related factors were reported in 41% of main-track derailments in 2019, above the 10-year average of 37%.

Non-main-track collisions (Table 6 and Figure 7) totalled 111 in 2019, up from the 2018 total of 101, and above the 10-year average of 94. Derailments occurred in 43% of non-main-track collisions, and 56% of the derailments resulting from non-main-track collisions involved the derailment of one car.

Non-main-track collisions resulted in no fatalities and 2 serious injuries in 2019. Dangerous goods were involved in 40% of non-main-track collisions, none of which resulted in a release of product.

Factors assigned to non-main-track collisions were mostly actions-related (90%), comparable to the 10-year average of 86% (Table 7). Failure to protect, such as improper positioning of movements and handling of switches, was assigned most often (58%) as a factor.

Figure 7. Number of non-main-track collision and derailment accidents, 2009 to 2019



There were 601 non-main-track derailments¹¹ in 2019 (Table 8 and Figure 7), similar to the 599 last year but 14% above the 10-year average of 527. In 81% of these accidents, 1 or 2 cars derailed. No fatalities or serious injuries resulted from non-main-track derailments in 2019.

Dangerous goods cars were involved in 16% of non-main-track derailment accidents, none of which resulted in a release of product.

⁹ Occurrences are normally reported to TSB with one assigned factor. Since multiple factors can contribute to an occurrence, the TSB may assign additional factors to an occurrence. Note that when multiple factors are assigned to an accident, they are considered to have acted in combination to contribute to the occurrence.

¹⁰ Actions-related factors include, but are not limited to, departure from prescribed procedures, such as failure to protect or failure to secure.

¹¹ New TSB regulations came into effect on 1 July 2014. The new regulations require that all derailments be reported, including minor derailments where there were no injuries and no damage to track or equipment.

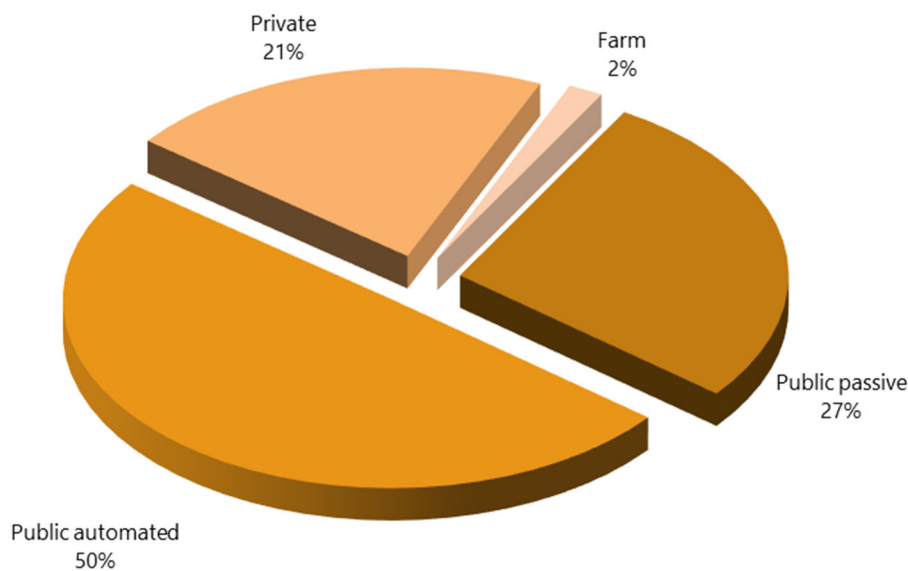
In 2019, actions-related factors represented 47% of all assigned factors for non-main-track derailment accidents, similar to the 10-year average of 46% (Table 9). Track-related factors represented 25% of all assigned factors, below the 10-year average of 34%. Environmental-related factors represented 22% of all assigned factors in 2019, above the 10-year average of 8%.

Crossing accidents (tables 10 and 11) represented one of the more serious types of rail accidents in 2019, with 29% of these resulting in either serious or fatal injuries.

There were 175 crossing accidents in 2019, a 5% increase from the 2018 total of 167 and 2% above the 10-year average of 171. The number of accidents at public automated crossings (87) was similar to the 2018 total of 86, and the same as 10-year average of 87. Accidents at public passive crossings (48) decreased from the 2018 total of 52 and were 17% below the 10-year average of 58. Accidents at private and farm crossings (40) increased from the 2018 total of 29 and were 53% above the 10-year average of 26.

In 2019, the proportion of crossing accidents that occurred at public automated crossings was 50%, compared with 27% at public passive crossings (Figure 8). Although there are nearly twice as many public passive crossings than public automated crossings, the higher number of accidents occurring at automated crossings is due, in part, to higher vehicle and train traffic volumes at these crossings. The TSB is conducting ongoing research to better understand crossing accident data.

Figure 8. Percentage of crossing accidents by type of crossing, 2019



There were 26 fatal crossing accidents in 2019, up from the 18 reported in 2018 and above the 10-year average of 20. Crossing-related fatalities totalled 28 in 2019, up from the 19 reported in 2018 and up from the 10-year average of 22.

Although crossing accidents involving pedestrians accounted for only 11% (19) of all crossing accidents in 2019, they accounted for 50% (13) of fatal crossing accidents and 46% of crossing-related fatalities.

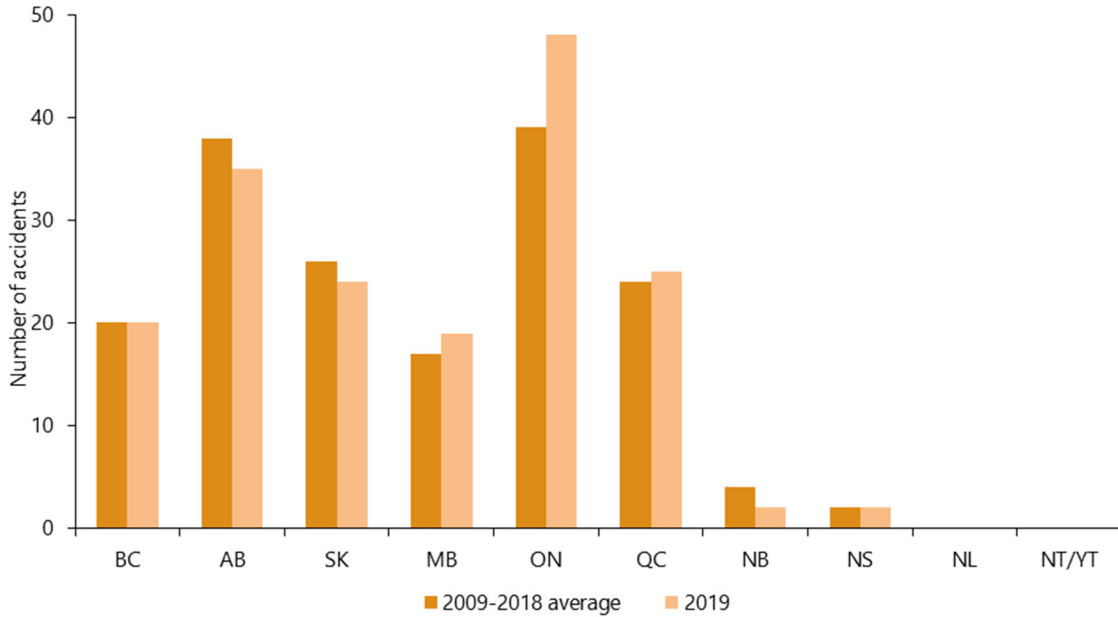
Crossing-related serious injuries totalled 31 in 2019, down from the 2018 total of 42 but above the 10-year average of 27.

In 2019, 1 crossing accident resulted in a derailment, down from the 2018 total of 7 and below the 10-year average of 6.

No crossing accidents resulted in release of dangerous goods product in 2019.

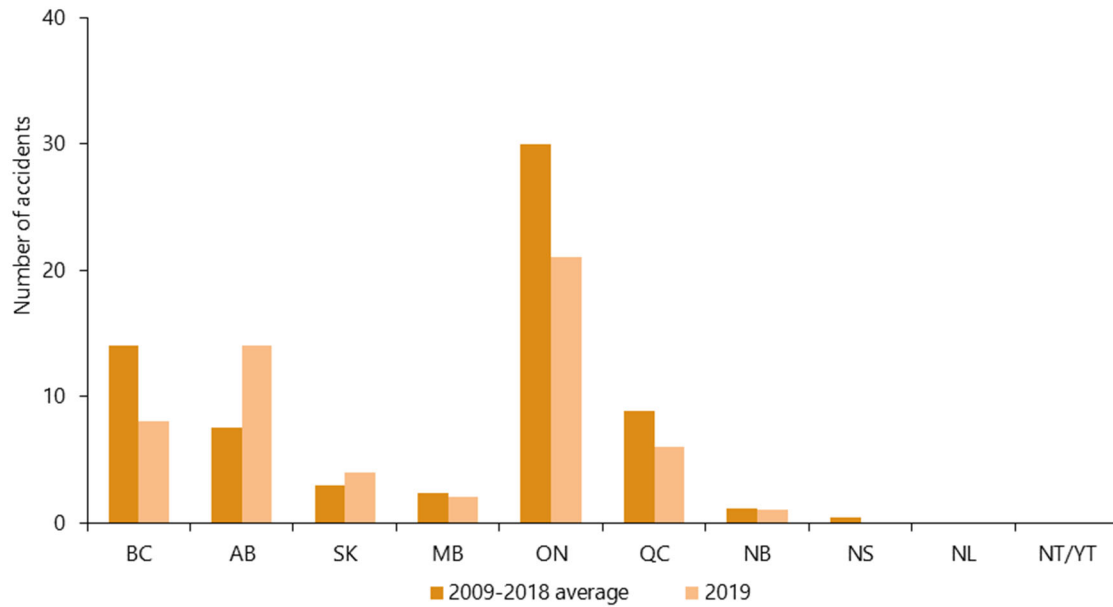
Ontario had the highest proportion (27%) of all crossing accidents in 2019, above its 10-year average of 23%. Alberta had the second highest total with 20% of crossing accidents, followed by Quebec and Saskatchewan with 14%, and British Columbia and Manitoba with 11% (Figure 9).

Figure 9. Number of crossing accidents by province/territory, 2019



Trespasser accidents (Table 12 and Figure 10) totalled 56 in 2019, down from 69 in 2018 and below the 10-year average of 67. Ontario accounted for 38% of trespasser accidents, followed by Alberta with 25%, British Columbia with 14%, and Quebec with 11%.

Figure 10. Number of trespasser accidents by province/territory, 2019



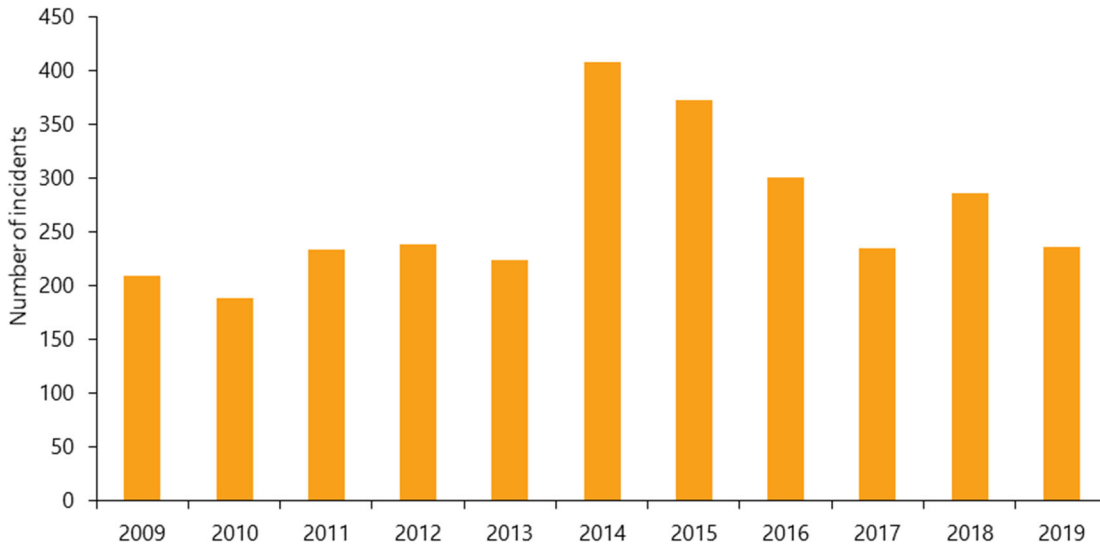
In 2019, the proportion of trespasser accidents that were fatal (68%) was above the 10-year average of 64%. The proportion of trespasser accidents resulting in serious injuries (30%) was comparable to the 10-year average of 29%.

Incidents¹²

Overview of incidents

In 2019, there were 236 reported rail incidents (Figure 11), down from 286 in 2018, and down from the 5-year average of 320.

Figure 11. Number of rail incidents,* 2009 to 2019



* New TSB Regulations came into effect on 1 July 2014.

"Movement exceeds the limit of authority"¹³ accounted for 57% of reportable incidents in 2019 (Figure 12), followed by "non-main-track train derailments – no damage" (23%), "uncontrolled movement of rolling stock" (7%), and "main-track switch in abnormal position" (6%).

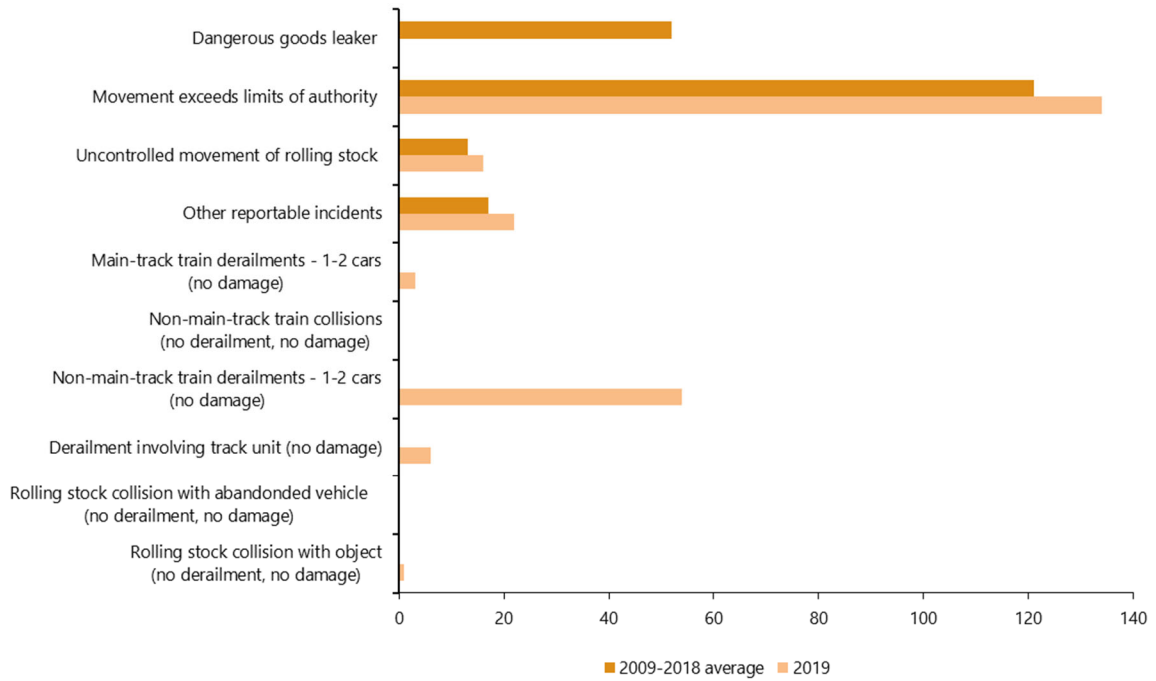
In addition to the 16 "uncontrolled movement of rolling stock" incidents and 2 other derailment incidents involving an "uncontrolled movement of rolling stock" in 2019, there were 60 accidents involving an "uncontrolled movement of rolling stock," for a total of 78 occurrences. This is more than the total (66) of those occurrences in 2018, and a 36% increase from the 10-year average of 57.

There were 134 incidents in 2019 where the movement exceeded the limit of authority, a decrease from the 138 reported in 2018 but 11% above the 10-year average of 121.

¹² See the Definitions section.

¹³ A movement exceeds limits of authority incident occurs when rolling stock occupies a main track or subdivision track, or track work takes place, in contravention of the Rules or any regulations made under the *Railway Safety Act*.

Figure 12. Number of rail incidents by type, 2019



Data tables

Table 1. Railway occurrences and casualties, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Accidents	1055	1116	1072	1049	1095	1047	1045	899	1091	1169	1246
Main-track collisions	5	4	3	6	4	9	4	5	3	5	4
Main-track derailments - 1-2 cars ¹	38	41	49	35	52	44	40	33	48	39	54
Main-Track Train Derailments - 3-5 cars	6	11	17	9	13	15	8	7	5	10	6
Main-Track Train Derailments - 6 or more cars	22	30	44	23	19	41	27	18	28	38	33
Crossing accidents	188	180	171	192	184	185	165	133	143	167	175
Non-main-track collisions	95	94	89	101	93	106	92	69	103	101	111
Non-main-track derailments - 1-2 cars ¹	396	457	404	424	436	357	410	346	424	476	487
Non-Main-Track Train Derailments - 3-5 cars	89	93	91	77	88	90	87	62	82	100	87
Non-Main-Track Train Derailments - 6 or more cars	25	26	27	29	25	34	26	27	35	23	27
Collisions/Derailments involving track units	50	36	34	25	41	27	43	23	45	48	49
Employee/Passenger accidents	12	9	11	7	8	12	15	16	17	13	14
Trespasser accidents	71	81	66	71	56	54	50	70	80	69	56
Fires/Explosions	20	30	23	17	11	36	32	35	33	34	100
Other accident types	38	24	43	33	65	37	46	55	45	46	42
Reportable incidents	209	188	233	238	224	408	372	301	235	286	236
Main-track train derailments - 1-2 cars ¹ (no damage)	n/a	n/a	n/a	n/a	n/a	2	3	5	3	4	3
Non-main-track train collisions ¹ (no derailment, no damage)	n/a	n/a	n/a	n/a	n/a	8	4	4	2	2	0
Non-main-track train derailments - 1-2 cars ¹ (no damage)	n/a	n/a	n/a	n/a	n/a	166	125	97	67	96	54
Dangerous goods leaker ²	78	68	79	93	94	63	33	7	0	0	0
Main-track switch in abnormal position	4	5	10	5	7	6	12	7	12	7	15
Movement exceeds limits of authority	106	101	118	120	98	129	142	133	122	138	134
Uncontrolled movement of rolling stock	13	5	16	13	14	11	14	10	14	15	16
Other reportable incidents	8	9	10	7	11	23	39	38	15	24	14
Main-track accidents³	169	166	201	135	184	198	199	173	195	212	276
Million main-track train-miles⁴ (MMTTM)	72.2	77.6	78.4	80.1	78.5	81.6	79.6	74.7	78.0	82.6	83.3
Main-track accidents/MMTTM	2.3	2.1	2.6	1.7	2.3	2.4	2.5	2.3	2.5	2.6	3.3
Accidents involving dangerous goods	133	141	121	120	143	143	127	101	115	125	169
Main-track derailments	11	13	20	6	11	25	12	10	10	17	19
Crossing accidents	3	7	1	4	5	5	4	4	6	7	6
Non-main-track collisions	32	26	21	21	26	36	32	19	39	33	44
Non-main-track derailments	81	88	73	88	96	68	75	60	54	62	94
Other accident types	6	7	6	1	5	9	4	8	6	6	6
Accidents with a dangerous goods release	3	3	3	2	7	4	6	1	5	4	8
Accidents involving an uncontrolled movement of rolling stock	39	32	35	43	57	43	41	33	48	47	60
Fatalities for reportable occurrences	71	81	71	81	124	56	46	66	76	57	72
Crossing accidents	19	24	25	33	30	21	15	19	19	19	28
Trespasser accidents	52	55	43	44	42	32	30	47	53	34	38
Other occurrence types ⁵	0	2	3	4	52	3	1	0	4	4	6
Serious injuries for reportable occurrences	50	64	52	73	39	53	50	56	65	91	64
Crossing accidents	21	28	22	32	27	29	18	24	22	42	31
Trespasser accidents	15	19	21	22	10	21	17	20	22	30	17
Other occurrence types ⁵	14	17	9	19	2	3	15	12	21	19	16

Data extracted 2 March 2020

Data are for federally regulated railways.

¹ New TSB regulations came into effect on 1 July 2014. Under the new reporting requirements all derailments are reportable. The TSB has reviewed derailments and collisions back to 1 January 2014 and recategorized occurrences with minimal consequences as reportable incidents including, derailments involving 1 to 2 cars with no equipment or track damage, no injuries, no fires and no release of dangerous goods; non-main-track collisions with no equipment or track damage, no injuries, no fires, no release of dangerous goods, and did not foul the main track.

- ² TSB Regulations have been harmonized with Section 8.4 of the Transportation of Dangerous Goods Regulations, under which TSB DG leaker incidents are only reportable if they result in death or serious injury, evacuation, or the closure of a DG loading facility, a road, a main railway line, or a main waterway.
- ³ Accidents which occurred on main-track or spurs, excluding crossing and trespasser accidents, and excluding non-main-track collisions and derailments.
- ⁴ Main-track (i.e., non-yard) train-miles are estimated (Source: Transport Canada).
- ⁵ See Table 2 for details on occurrences by type.

Table 2. Fatalities and serious injuries, by type of occurrence and person type, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Fatalities for reportable occurrences	71	81	71	81	124	56	46	66	76	57	72
Main-track collisions	0	0	0	0	0	0	0	0	0	0	0
Main-track derailments	0	1	0	3	47	0	0	0	0	1	3
Crossing accidents	19	24	25	33	30	21	15	19	19	19	28
Non-main-track collisions	0	0	0	0	1	0	0	0	0	2	0
Non-main-track derailments	0	0	0	1	0	0	0	0	0	0	0
Collisions/Derailments involving track units	0	0	0	0	0	0	0	0	0	0	0
Employee/Passenger accidents	0	1	1	0	4	2	1	0	3	1	2
Trespasser accidents	52	55	43	44	42	32	30	47	53	34	38
Other accident types	0	0	2	0	0	1	0	0	0	0	1
Reportable incidents	0	0	0	0	0	0	0	0	1	0	0
Serious injuries for reportable occurrences	50	64	52	73	39	53	50	56	65	91	64
Main-track collisions	0	0	0	1	0	0	0	0	0	0	0
Main-track derailments	0	8	0	10	0	0	0	0	0	3	1
Crossing accidents	21	28	22	32	27	29	18	24	22	42	31
Non-main-track collisions	0	0	0	1	0	0	0	0	2	0	2
Non-main-track derailments	0	0	0	0	0	0	0	0	0	0	0
Collisions/Derailments involving track units	2	2	1	0	0	0	0	3	0	0	2
Employee/Passenger accidents	8	7	7	6	1	1	11	8	16	12	10
Trespasser accidents	15	19	21	22	10	21	17	20	22	30	17
Other accident types	4	0	1	0	0	0	2	1	3	0	1
Reportable incidents	0	0	0	1	1	2	2	0	0	4	0
Fatalities by person type	71	81	71	81	124	56	46	66	76	57	72
Employees	0	1	1	4	5	2	1	0	3	4	5
Passengers	0	1	0	0	0	1	0	0	1	0	0
Pedestrians	3	8	6	17	13	8	3	7	8	10	13
Vehicle occupants	17	15	22	16	17	12	11	12	11	9	16
Trespassers	50	55	42	44	42	32	31	47	53	34	38
Other person types	1	1	0	0	47	1	0	0	0	0	0
Serious injuries by person type	50	64	52	73	39	53	50	56	65	91	64
Employees	13	12	8	9	2	7	8	15	19	17	15
Passengers	1	7	0	14	1	1	8	2	3	3	1
Pedestrians	0	4	5	5	3	1	2	0	2	8	6
Vehicle occupants	22	22	18	23	23	21	16	18	18	33	25
Trespassers	14	19	21	22	10	23	16	21	23	30	17
Other person types	0	0	0	0	0	0	0	0	0	0	0

Data extracted 2 March 2020

Data are for federally regulated railways.

Table 3. Number of trains (rolling stock) involved in accidents, by train type and accident type, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Freight trains	808	842	823	800	834	544	413	339	405	390	447
Main-track collisions	8	6	4	8	7	8	6	6	6	5	4
Main-track derailments	63	76	102	62	79	90	66	48	75	75	78
Non-main-track collisions	82	94	95	94	85	42	27	11	28	20	26
Non-main-track derailments	406	421	401	382	423	187	108	88	95	96	78
Crossing accidents	148	137	132	160	144	139	117	86	94	106	117
Trespasser accidents	50	53	43	51	38	39	36	49	54	41	41
Other accident types	51	55	46	43	58	39	53	51	53	47	103
Passenger trains	69	63	72	47	46	50	46	57	55	68	47
Main-track collisions	0	0	0	0	0	1	0	0	0	1	1
Main-track derailments	0	3	2	1	3	3	2	4	2	2	2
Non-main-track collisions	1	1	5	1	0	1	0	0	0	0	0
Non-main-track derailments	11	8	5	5	4	1	2	1	4	6	3
Crossing accidents	26	21	20	15	17	18	16	11	13	19	15
Trespasser accidents	20	27	23	17	16	12	10	13	23	24	12
Other accident types	11	3	17	8	6	14	16	28	13	16	14
Track units	82	66	61	41	76	50	78	41	71	81	83
Main-track collisions	0	0	0	0	0	0	0	0	0	0	0
Main-track derailments	0	0	0	0	0	0	0	0	0	0	0
Non-main-track collisions	0	0	0	0	0	0	0	0	0	0	0
Non-main-track derailments	0	1	0	0	0	0	0	0	0	0	0
Crossing accidents	4	9	7	2	7	2	5	4	5	6	4
Trespasser accidents	0	0	0	0	0	0	0	0	0	0	0
Other accident types	78	56	54	39	69	48	73	37	66	75	79
Single car/Cut of cars	141	136	121	131	126	378	476	416	527	595	608
Main-track collisions	1	0	1	2	0	6	0	1	0	2	2
Main-track derailments	1	1	5	1	2	8	2	4	2	7	5
Non-main-track collisions	89	69	53	70	59	114	103	93	119	133	136
Non-main-track derailments	42	57	51	49	51	222	333	278	362	402	411
Crossing accidents	2	0	0	1	1	9	17	17	21	26	23
Trespasser accidents	0	0	0	0	0	1	4	6	1	3	2
Other accident types	6	9	11	8	13	18	17	17	22	22	29
Other train/rolling stock types	86	140	107	150	111	138	132	127	117	151	169
Main-track collisions	0	1	0	1	0	0	0	2	0	0	1
Main-track derailments	2	2	3	3	1	1	5	2	2	3	8
Non-main-track collisions	8	20	15	27	13	26	15	21	14	18	18
Non-main-track derailments	61	101	69	98	73	78	92	72	82	103	112
Crossing accidents	8	13	12	14	15	17	10	15	10	12	16
Trespasser accidents	1	2	0	3	2	2	0	2	2	1	1
Other accident types	6	1	8	4	7	14	10	13	7	14	13

Data extracted 2 March 2020

Data are for federally regulated railways.

As some accidents may involve more than one train (rolling stock), the number of trains involved may differ from the total number of accidents.

New TSB regulations came into effect on 1 July 2014. Under the new reporting requirements all derailments are reportable.

Table 4. Main-track derailments by province/territory and number of derailed cars, and derailment rates, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Main-track derailments by province	66	82	110	67	84	100	75	58	81	87	93
Newfoundland & Labrador	0	3	1	1	1	0	0	0	2	0	0
Nova Scotia	1	0	0	0	1	0	0	1	0	0	0
New Brunswick	1	0	0	0	1	3	2	1	0	0	1
Quebec	8	9	10	8	8	11	9	6	6	9	10
Ontario	21	19	24	7	19	20	21	15	11	14	17
Manitoba	4	9	19	9	3	10	4	4	6	8	14
Saskatchewan	9	14	11	4	13	10	8	6	14	18	12
Alberta	12	14	21	17	19	30	17	13	21	20	17
British Columbia	10	14	24	21	19	16	14	12	21	18	22
Northwest Territories/Yukon	0	0	0	0	0	0	0	0	0	0	0
Derailments per million main-track train-miles¹	0.91	1.06	1.40	0.84	1.07	1.23	0.94	0.78	1.04	1.05	1.12
Derailments per billion gross ton-miles²	0.17	0.18	0.23	0.14	0.16	0.18	0.14	0.11	0.14	0.15	n/a
Derailments by number of derailed cars	66	82	110	67	84	100	75	58	81	87	93
1 car	28	30	39	29	47	29	30	26	39	29	43
2 cars	10	11	10	6	5	15	10	7	9	10	11
3 cars	3	2	6	3	5	4	4	2	1	4	2
4 cars	3	3	6	2	6	6	2	2	3	4	3
5 to 10 cars	12	19	29	16	7	22	16	10	13	21	11
11 cars or more	10	17	20	11	14	24	13	11	16	19	23

Data extracted 2 March 2020

Data are for federally regulated railways.

¹ Estimates of million main-track (i.e., non-yard) train miles (Source: Transport Canada)

² Billion gross ton-miles (Source: Railway Association of Canada)

New TSB regulations came into effect on 1 July 2014. Under the new reporting requirements all derailments are reportable.

Table 5. Main-track derailments, by assigned factors, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total number of assigned factors	80	91	126	68	96	109	80	63	81	88	81
Environmental	6	1	6	4	5	10	2	3	4	7	7
Equipment	23	27	48	19	33	27	23	20	30	23	22
Axle	5	7	11	6	8	4	6	6	10	2	6
Brakes	6	3	7	3	3	4	4	4	4	4	6
Draft system	4	4	4	4	2	5	5	1	4	7	2
Superstructure	0	2	3	2	7	3	1	2	1	4	2
Truck	1	5	7	2	5	6	2	1	5	0	0
Wheel	7	6	16	2	8	5	5	6	6	6	6
Track	34	33	45	28	30	49	33	18	29	24	33
Geometry	12	16	18	14	10	11	8	8	12	11	10
Object on track	1	2	2	0	2	1	0	0	1	0	1
Other track material	5	2	4	2	0	7	2	1	3	2	2
Rail	7	7	12	8	12	17	12	4	8	4	11
Roadbed	5	2	6	4	4	5	7	2	4	4	5
Switch	2	2	1	0	0	6	1	3	0	1	1
Turnouts	0	1	1	0	1	0	0	0	1	1	0
Actions	9	24	19	15	26	18	14	18	17	27	17
Failure to protect	2	2	5	5	5	4	2	4	5	10	9
Failure to secure	1	0	0	1	1	0	0	0	0	0	0
Failure to use equipment properly	5	10	7	2	10	6	5	9	8	13	6
Improper loading/lifting	1	3	0	2	2	3	2	0	2	1	0
Improper placement/position for task	0	4	2	2	6	3	1	4	2	2	1
Inadequate/Inappropriate maintenance of equipment	0	1	1	0	0	0	1	0	0	0	0
Operating at improper speed	0	3	3	2	2	2	3	0	0	1	0
Vandalism	0	0	0	0	0	0	0	1	0	0	0
Other actions	0	1	1	1	0	0	0	0	0	0	1
Other assigned factors	8	6	8	2	2	5	8	4	1	7	2
Derailments by number of assigned factors	66	82	110	67	84	100	75	58	81	87	93
One factor assigned	57	74	98	66	74	94	70	53	75	80	77
More than one factor assigned	9	7	12	1	10	6	4	4	3	3	2
No factor assigned	0	1	0	0	0	0	1	1	3	4	14

Data extracted 2 March 2020

Data are for federally regulated railways.

TSB does not investigate all occurrences; therefore, assigned factors may not represent TSB findings. Occurrences are normally reported to TSB with one assigned factor. The TSB may assign additional factors.

Some factors are assigned by highest category (e.g. Equipment or Track), therefore the breakdowns may not sum up to the category total.

New TSB regulations came into effect on 1 July 2014. Under the new reporting requirements all derailments are reportable.

Table 6. Non-main-track collisions, by province/territory and number of derailed cars, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Non-main-track collisions by province	95	94	89	101	93	106	92	69	103	101	111
Newfoundland & Labrador	0	0	0	0	0	0	0	0	0	1	0
Nova Scotia	0	0	0	0	0	0	0	0	1	0	0
New Brunswick	1	1	1	1	1	4	0	1	1	2	0
Quebec	6	11	12	8	10	4	10	7	9	5	8
Ontario	24	15	17	10	16	23	20	19	25	19	26
Manitoba	15	15	15	21	14	18	15	10	14	8	15
Saskatchewan	5	3	8	12	11	21	8	5	7	13	11
Alberta	25	29	16	34	28	19	17	19	23	26	29
British Columbia	19	20	20	15	13	17	21	8	23	27	22
Northwest Territories/Yukon	0	0	0	0	0	0	1	0	0	0	0
Collisions by number of derailed cars	95	94	89	101	93	106	92	69	103	101	111
No cars derailed	49	51	50	63	63	63	63	38	64	54	63
1 car	26	24	21	14	18	19	21	14	16	27	27
2 cars	8	7	8	10	7	13	1	7	11	6	11
3 cars	5	4	3	6	2	4	3	4	5	4	6
4 cars	3	4	5	5	0	3	2	2	3	2	0
5 to 10 cars	3	3	2	3	3	3	2	3	4	7	3
11 cars or more	1	1	0	0	0	1	0	1	0	1	1

Data extracted 2 March 2020

Data are for federally regulated railways.

Table 7. Non-main-track collisions, by assigned factors, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total number of assigned factors	107	111	105	114	113	118	103	81	113	106	112
Environmental	4	1	2	4	1	2	2	2	1	2	2
Equipment	2	1	3	4	5	4	3	3	1	3	2
Track	6	5	1	3	6	8	7	1	3	3	3
Actions	83	96	92	100	95	102	88	70	102	94	101
Failure to protect	55	64	64	63	54	61	59	43	66	59	65
Failure to secure	12	11	10	16	13	11	4	5	7	9	7
Failure to use equipment properly	11	8	9	10	14	16	14	11	19	18	21
Improper placement/position for task	0	2	0	0	2	0	1	0	0	0	0
Inadequate/Inappropriate communications	1	3	4	2	3	2	3	3	1	1	2
Inadequate/Inappropriate maintenance of equipment	0	0	0	0	0	0	0	0	0	0	0
Operating at improper speed	4	7	5	8	8	12	7	8	9	7	4
Vandalism	0	0	0	0	0	0	0	0	0	0	0
Other actions	0	1	0	1	1	0	0	0	0	0	2
Other assigned factors	12	8	7	3	6	2	3	5	6	4	4
Collisions by number of assigned factors	95	94	89	101	93	106	92	69	103	101	111
One factor assigned	83	77	73	88	73	97	83	60	96	97	106
More than one factor assigned	12	17	16	13	20	9	9	9	7	4	3
No factor assigned	0	0	0	0	0	0	0	0	0	0	2

Data extracted 2 March 2020

Data are for federally regulated railways.

TSB does not investigate all occurrences; therefore, assigned factors may not represent TSB findings. Occurrences are normally only reported to TSB with one assigned factor. The TSB may assign additional factors.

Some factors are assigned by highest category (e.g. Actions), therefore the breakdowns may not sum up to the category total.

Table 8. Non-main-track derailments, by province/territory and number of derailed cars, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Non-main-track derailment accidents by province	510	576	522	530	549	481	523	435	541	599	601
Newfoundland & Labrador	2	0	0	1	1	0	6	12	11	9	7
Nova Scotia	5	4	3	4	2	4	3	2	5	6	3
New Brunswick	8	10	14	8	4	12	13	9	9	5	12
Quebec	52	61	64	75	55	48	81	67	85	60	111
Ontario	110	116	108	95	93	93	109	85	115	119	134
Manitoba	75	89	75	68	70	68	71	58	70	65	68
Saskatchewan	44	62	79	68	87	50	49	55	49	83	54
Alberta	131	151	103	144	145	125	91	68	93	131	115
British Columbia	81	83	74	67	91	80	100	79	103	121	97
Northwest Territories/Yukon	2	0	2	0	1	1	0	0	1	0	0
Deraillments by number of derailed cars	510	576	522	530	549	481	523	435	541	599	601
1 car	291	316	291	301	334	260	319	265	333	383	398
2 cars	105	141	113	123	102	97	91	81	91	93	89
3 cars	40	56	47	39	48	49	53	31	46	54	39
4 cars	32	17	29	22	25	23	26	22	25	28	32
5 to 10 cars	41	43	37	40	37	46	29	31	43	35	32
11 cars or more	1	3	5	5	3	6	5	5	3	6	11

Data extracted 2 March 2020

Data are for federally regulated railways.

New TSB regulations came into effect on 1 July 2014. Under the new reporting requirements all derailments are reportable.

Table 9. Non-main-track derailments, by assigned factors, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total number of assigned factors	547	639	578	563	622	517	560	465	572	610	585
Environmental	24	29	58	29	82	30	36	40	59	77	130
Equipment	50	54	57	51	39	41	31	31	34	31	22
Axle	0	0	0	1	0	0	0	0	0	0	1
Brakes	18	14	14	6	7	9	7	4	6	11	1
Draft system	15	16	11	10	5	8	3	5	5	5	4
Superstructure	5	5	11	8	7	7	5	4	8	10	6
Truck	4	9	7	17	14	11	8	11	12	5	6
Wheel	8	9	13	8	6	6	8	7	3	0	4
Track	209	237	175	207	205	202	194	164	162	190	149
Appurtenances	1	0	0	4	1	2	1	1	3	3	2
Geometry	95	107	71	80	73	77	61	72	67	78	64
Object on track	5	1	2	3	2	0	2	1	1	3	2
Other track material	11	14	7	6	5	3	5	6	6	7	1
Rail	26	24	19	30	38	30	30	19	38	24	23
Roadbed	5	15	25	13	10	8	9	4	6	6	6
Signals	0	0	0	0	1	0	1	0	0	0	0
Switch	37	52	35	54	58	59	64	50	30	52	40
Turnouts	25	19	13	12	12	19	16	4	8	12	10
Actions	225	293	255	255	269	226	276	216	301	307	273
Failure to protect	152	176	147	140	140	130	158	109	163	209	169
Failure to secure	3	7	3	11	6	5	2	1	9	10	14
Failure to use equipment properly	47	70	76	77	84	67	72	81	98	66	72
Improper loading/lifting	2	8	8	4	7	3	8	1	7	2	6
Improper placement/position for task	9	8	8	11	8	7	7	6	11	4	6
Inadequate/Inappropriate communications	2	3	2	2	3	1	4	1	2	4	0
Inadequate/Inappropriate maintenance of equipment	0	2	0	0	1	0	3	0	0	0	0
Operating at improper speed	6	14	4	3	10	13	16	8	8	6	3
Vandalism	4	5	6	3	5	0	5	6	3	5	0
Other actions	0	0	1	4	5	0	1	3	0	1	3
Other assigned factors	39	26	33	21	27	18	23	14	16	5	11
Derailments by number of assigned factors	510	576	522	530	549	481	523	435	541	599	601
One factor assigned	478	516	458	497	479	450	498	414	517	584	577
More than one factor assigned	32	60	60	33	70	31	25	21	24	12	4
No factor assigned	0	0	4	0	0	0	0	0	0	3	20

Data extracted 2 March 2020

Data are for federally regulated railways.

TSB does not investigate all occurrences; therefore, assigned factors may not represent TSB findings. Occurrences are normally only reported to TSB with one assigned factor. The TSB may assign additional factors.

Some factors are assigned by highest category (e.g. Actions), therefore the breakdowns may not sum up to the category total.

New TSB regulations came into effect on 1 July 2014. Under the new reporting requirements all derailments are reportable.

Table 10. Crossing accidents, by type and protection, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Crossing accidents	188	180	171	192	184	185	165	133	143	167	175
Public crossings	157	154	148	170	172	154	131	105	117	138	135
Passive warnings	56	67	59	73	65	68	52	36	47	52	48
Automated warnings	101	87	89	97	107	86	79	69	70	86	87
Flashing lights & bells	55	56	52	48	56	47	37	39	30	44	43
Gates	44	30	36	49	44	38	42	29	38	41	43
Other automated warnings	2	1	1	0	7	1	0	1	2	1	1
Private crossings	30	24	15	18	10	27	28	24	21	28	37
Farm crossings	1	2	8	4	2	4	6	4	5	1	3
Fatal accidents	17	19	24	28	22	20	15	16	19	18	26
Fatalities	19	24	25	33	30	21	15	19	19	19	28
Public crossings	18	23	21	32	30	20	13	19	19	18	25
Passive warnings	6	5	5	14	3	2	2	7	4	2	6
Automated warnings	12	18	16	18	27	18	11	12	15	16	19
Flashing lights & bells	6	8	9	7	7	3	2	5	3	4	5
Gates	6	10	7	11	20	15	9	7	12	12	14
Other automated warnings	0	0	0	0	0	0	0	0	0	0	0
Private crossings	1	1	1	0	0	1	1	0	0	0	3
Farm crossings	0	0	3	1	0	0	1	0	0	1	0
Serious injuries	21	28	22	32	27	29	18	24	22	42	31
Public crossings	20	25	20	29	26	22	18	21	18	37	25
Passive warnings	9	14	3	15	7	11	4	5	9	17	6
Automated warnings	11	11	17	14	19	11	14	16	9	20	19
Flashing lights & bells	8	5	9	6	4	6	4	8	3	6	9
Gates	3	6	8	8	13	5	10	8	6	14	10
Other automated warnings	0	0	0	0	2	0	0	0	0	0	0
Private crossings	1	3	1	3	0	7	0	3	3	5	6
Farm crossings	0	0	1	0	1	0	0	0	1	0	0
Number of public crossings¹	17,425	16,718	16,413	16,229	16,113	15,950	15,724	15,656	16,524	16,447	16,497
Passive warnings	11,722	11,112	10,826	10,628	10,548	10,397	10,173	10,109	10,833	10,671	10,608
Automated warnings	5,703	5,606	5,587	5,601	5,565	5,553	5,551	5,547	5,691	5,776	5,889
Flashing lights & bells	3,526	3,365	3,308	3,288	3,235	3,189	3,156	3,118	3,268	3,267	3,277
Gates	2,116	2,181	2,220	2,254	2,275	2,317	2,351	2,386	2,399	2,484	2,585
Other automated warnings	61	61	59	59	55	47	44	43	24	25	27

Data extracted 2 March 2020

Data are for federally regulated railways.

¹ Source: Transport Canada IRIS database. The data for 2019 are from 26 March 2020. Figures for previous years are snapshots provided historically by Transport Canada.

Table 11. Crossing accidents, by province/territory, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Crossing accidents	188	180	171	192	184	185	165	133	143	167	175
Newfoundland & Labrador	0	0	2	0	0	0	0	0	0	0	0
Nova Scotia	3	3	0	1	0	0	2	1	3	3	2
New Brunswick	4	5	6	3	2	6	7	4	1	3	2
Quebec	28	21	27	18	16	23	28	29	26	24	25
Ontario	48	52	39	41	40	44	29	26	26	43	48
Manitoba	18	20	7	26	19	17	19	14	15	15	19
Saskatchewan	24	24	23	32	37	34	23	19	26	22	24
Alberta	36	37	47	49	50	40	38	21	28	35	35
British Columbia	25	18	20	22	19	21	19	19	18	22	20
Northwest Territories/Yukon	2	0	0	0	1	0	0	0	0	0	0
Crossing accidents on main-track¹	180	174	167	182	171	173	159	122	136	156	161
Crossing accidents per million main-track train-miles²	2.5	2.2	2.1	2.3	2.2	2.1	2.0	1.6	1.7	1.9	1.9
Crossing accidents with derailment	6	3	4	3	6	9	6	6	5	7	1
Fatalities	19	24	25	33	30	21	15	19	19	19	28
Newfoundland & Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	1	1	0	0	0	0	0	0	0	0	0
New Brunswick	0	1	2	1	1	0	0	2	0	0	0
Quebec	1	1	4	1	2	9	4	3	7	3	2
Ontario	3	6	9	12	13	5	5	3	7	7	11
Manitoba	3	2	2	3	0	1	1	2	2	0	5
Saskatchewan	5	5	1	8	3	2	0	4	0	1	4
Alberta	3	6	5	6	7	2	3	3	2	3	2
British Columbia	3	2	2	2	4	2	2	2	1	5	4
Northwest Territories/Yukon	0	0	0	0	0	0	0	0	0	0	0
Serious injuries	21	28	22	32	27	29	18	24	22	42	31
Newfoundland & Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	2	0	0	0	0	0	0	0	0	2
New Brunswick	0	0	0	0	0	0	0	0	0	0	0
Quebec	3	3	4	1	1	3	2	8	3	10	1
Ontario	3	5	7	8	15	3	0	4	2	8	7
Manitoba	3	5	1	7	0	7	2	3	3	8	0
Saskatchewan	4	2	2	6	5	7	2	2	2	9	7
Alberta	5	8	4	7	5	5	6	6	5	2	9
British Columbia	3	3	4	3	1	4	6	1	7	5	5
Northwest Territories/Yukon	0	0	0	0	0	0	0	0	0	0	0
Number of public crossings³	17,425	16,718	16,413	16,229	16,113	15,950	15,724	15,656	16,524	16,447	16,497
Newfoundland & Labrador	5	5	5	5	5	5	5	5	4	5	5
Nova Scotia	180	180	180	180	182	182	182	182	181	181	183
New Brunswick	347	340	340	340	342	343	344	344	471	472	432
Quebec	1,958	1,964	1,966	1,968	1,967	1,921	1,902	1,902	1,694	1,693	1,786
Ontario	4,312	3,996	3,915	3,884	3,792	3,782	3,743	3,728	4,126	4,131	4,158
Manitoba	2,027	2,003	2,002	1,939	1,929	1,914	1,862	1,858	2,046	2,006	1,987
Saskatchewan	4,065	3,933	3,710	3,656	3,652	3,597	3,509	3,504	3,607	3,573	3,546
Alberta	3,009	2,786	2,783	2,777	2,767	2,731	2,724	2,707	2,881	2,894	2,883
British Columbia	1,507	1,485	1,486	1,454	1,451	1,449	1,432	1,404	1,498	1,476	1,502
Northwest Territories/Yukon	15	26	26	26	26	26	21	22	16	16	15

Data extracted 2 March 2020

Data are for federally regulated railways.

¹ Includes crossing accidents on main track or on spurs.

² Estimates of million main-track (i.e., non-yard) train miles (Source: Transport Canada)

³ Source: Transport Canada IRIS database. The data for 2019 are from 26 March 2020. Figures for previous years are snapshots provided historically by Transport Canada.

Table 12. Trespasser accidents, by province/territory, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Trespasser accidents	71	81	66	71	56	54	50	70	80	69	56
Newfoundland & Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	0	1	0	0	0	0	1	1	0	0
New Brunswick	3	1	2	1	0	0	1	1	0	0	1
Quebec	12	13	8	11	7	6	5	3	12	12	6
Ontario	35	35	32	31	30	21	23	25	36	31	21
Manitoba	1	3	1	2	2	2	1	4	4	3	2
Saskatchewan	4	3	2	6	2	2	4	3	1	1	4
Alberta	4	9	7	9	7	10	4	11	8	10	14
British Columbia	12	17	13	11	8	13	12	22	18	12	8
Northwest Territories/Yukon	0	0	0	0	0	0	0	0	0	0	0
Fatal accidents	52	53	43	43	42	31	30	46	52	34	38
Fatalities	52	55	43	44	42	32	30	47	53	34	38
Newfoundland & Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	0	0	0	0	0	0	2	1	0	0
New Brunswick	3	0	1	1	0	0	1	0	0	0	0
Quebec	7	10	6	8	4	2	5	2	9	7	4
Ontario	30	27	26	18	26	15	13	19	26	14	16
Manitoba	1	2	1	2	2	1	1	2	1	2	2
Saskatchewan	2	2	1	4	2	1	1	2	1	0	4
Alberta	3	6	2	6	4	5	3	5	5	4	9
British Columbia	6	8	6	5	4	8	6	15	10	7	3
Northwest Territories/Yukon	0	0	0	0	0	0	0	0	0	0	0
Serious injuries	15	19	21	22	10	21	17	20	22	30	17
Newfoundland & Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	0	0	0	0	0	0	0	0	0	0
New Brunswick	0	0	1	0	0	0	0	1	0	0	1
Quebec	3	4	2	2	3	4	0	1	3	5	2
Ontario	5	5	6	13	3	6	8	6	8	13	5
Manitoba	0	1	0	0	0	1	0	2	2	1	0
Saskatchewan	1	1	1	0	0	0	4	1	0	1	0
Alberta	1	3	4	2	1	4	1	4	2	6	4
British Columbia	5	5	7	5	3	6	4	5	7	4	5
Northwest Territories/Yukon	0	0	0	0	0	0	0	0	0	0	0

Data extracted 2 March 2020

Data are for federally regulated railways.

Table 13. Reportable incidents, by incident type and assigned factors, 2009 to 2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Reportable incidents	209	188	233	238	224	408	372	301	235	286	236
Main-track train derailments - 1-2 cars ¹ (no damage)	n/a	n/a	n/a	n/a	n/a	2	3	5	3	4	3
Non-main-track train collisions ¹ (no derailment, no damage)	n/a	n/a	n/a	n/a	n/a	8	4	4	2	2	0
Non-main-track train derailments - 1-2 cars ¹ (no damage)	n/a	n/a	n/a	n/a	n/a	166	125	97	67	96	54
Dangerous goods leaker ²	78	68	79	93	94	63	33	7	0	0	0
Main-track switch in abnormal position	4	5	10	5	7	6	12	7	12	7	15
Movement exceeds limits of authority	106	101	118	120	98	129	142	133	122	138	134
Uncontrolled movement of rolling stock	13	5	16	13	14	11	14	10	14	15	16
Signal less restrictive than required	1	4	3	1	1	2	5	1	1	2	0
Unprotected overlap of authorities	7	4	7	5	4	5	6	4	2	11	6
Crew member incapacitated	0	1	0	1	6	2	2	1	4	5	0
Derailment involving track unit (no damage)	n/a	n/a	n/a	n/a	n/a	7	10	13	5	5	6
Rolling Stock collision with abandoned vehicle (no derailment, no damage)	n/a	n/a	n/a	n/a	n/a	1	5	5	0	1	0
Rolling Stock collision with object (no derailment, no damage)	n/a	n/a	n/a	n/a	n/a	6	10	14	3	0	2
Total assigned factors	214	195	240	245	229	425	392	324	245	287	238
Dangerous goods leaker location/component	77	68	78	92	92	61	32	9	0	0	0
Equipment	2	2	1	2	4	13	8	10	9	8	3
Individual/Personal	0	0	0	1	4	1	3	0	3	4	0
Track	2	1	5	2	2	25	36	29	7	13	5
Actions	131	114	144	139	116	250	264	241	191	205	181
Failure to protect	34	35	55	38	33	95	94	88	73	89	64
Failure to secure	7	4	11	4	7	5	11	4	9	2	7
Failure to use equipment properly	4	3	5	1	9	30	25	34	20	19	9
Inadequate/Inappropriate communication	8	8	11	14	8	18	13	14	8	13	12
Lap of authority	72	59	59	75	54	83	98	82	74	71	85
Vandalism	3	1	2	5	1	4	6	6	1	3	2
Other actions	3	4	1	2	4	15	17	13	6	8	2
Other assigned factors	2	10	12	9	11	75	49	35	35	57	49
Incidents by number of assigned factors	209	188	233	238	224	408	372	301	235	286	236
One factor assigned	204	181	226	230	220	392	358	279	225	279	228
More than one factor assigned	5	7	7	7	4	16	14	21	9	4	5
No factor assigned	0	0	0	1	0	0	0	1	1	3	3

Data extracted 2 March 2020

Data are for federally regulated railways.

TSB does not investigate all occurrences; therefore, assigned factors may not represent TSB findings. Occurrences are normally reported to TSB with one assigned factor. The TSB may assign additional factors.

Some factors are assigned by highest category (e.g. Actions), therefore the breakdowns may not sum up to the category total.

¹ New TSB regulations came into effect on 1 July 2014. Under the new reporting requirements all derailments are reportable. The TSB has reviewed derailments and collisions back to 1 January 2014 and recategorized occurrences with minimal consequences as reportable incidents including, derailments involving 1 to 2 cars with no equipment or track damage, no injuries, no fires and no release of dangerous goods; non-main-track collisions with no equipment or track damage, no injuries, no fires, no release of dangerous goods, and did not foul the main track.

² TSB Regulations have been harmonized with Section 8.4 of the Transportation of Dangerous Goods Regulations, under which TSB DG leaker incidents are only reportable if they result in death or serious injury, evacuation, or the closure of a DG loading facility, a road, a main railway line, or a main waterway.

Definitions

The following definitions apply to rail transportation occurrences that are required to be reported pursuant to the *Canadian Transportation Accident Investigation and Safety Board Act* and the associated regulations.

Occurrence

- Any accident or incident associated with the operation of rolling stock on a railway
- Any situation or condition that the Board has reasonable grounds to believe could, if left unattended, induce an accident or incident described below

Reportable accident

- A person is killed or sustains a serious injury as a result of
 - getting on or off or being on board the rolling stock, or
 - coming into contact with any part of the rolling stock or its contents
- The rolling stock or its contents
 - sustain damage that affects the safe operation of the rolling stock,
 - cause or sustain a fire or explosion, or
 - cause damage to the railway that poses a threat to the safe passage of rolling stock or to the safety of any person, property or the environment

Reportable incident

- A risk of collision occurs between rolling stock
- An unprotected main track switch or subdivision track switch is left in an abnormal position
- A railway signal displays a less restrictive indication than that required for the intended movement of rolling stock
- Rolling stock occupies a main track or subdivision track, or track work takes place, in contravention of the Rules or any regulations made under the *Railway Safety Act*
- Rolling stock passes a signal indicating stop in contravention of the Rules or any regulations made under the *Railway Safety Act*
- There is an unplanned and uncontrolled movement of rolling stock
- A crew member whose duties are directly related to the safe operation of the rolling stock is unable to perform their duties as a result of a physical incapacitation which poses a threat to the safety of persons, property or the environment, or
- There is an accidental release on board or from a rolling stock which results in any of the events listed in subsection 8.4(2) of the Transportation of Dangerous Goods Regulations, under which TSB DG leaker incidents are only reportable if they result in death or serious injury, evacuation, or the closure of a DG loading facility, a road, a main railway line, or a main waterway.
- Derailment or non-main track collision (involving one to two cars) occurs without damage or injury

Serious injury

- A fracture of any bone, except simple fractures of fingers, toes or the nose
- Lacerations that cause severe hemorrhage or nerve, muscle or tendon damage
- An injury to an internal organ
- Second or third degree burns, or any burns affecting more than 5% of the body surface
- A verified exposure to infectious substances or injurious radiation, or
- An injury that is likely to require hospitalization

Dangerous goods involvement

"Dangerous goods" has the same meaning as in section 2 of the *Transportation of Dangerous Goods Act*. An accident is considered to have dangerous goods involvement if any car in the consist carrying (or having last contained) a dangerous good derails, strikes or is struck by any other rolling stock or object. It does not mean that there was any release of any product. Also included are crossing accidents in which the motor vehicle involved (e.g., tanker truck) is carrying a dangerous good.

Derailment

Any instance where one or more wheels of rolling stock have come off the normal running surface of the rail, including occurrences where there are no injuries and no damage to track or equipment.