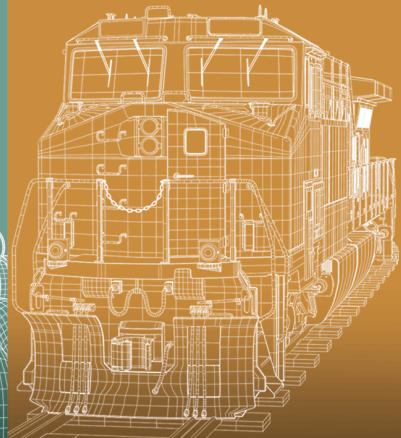
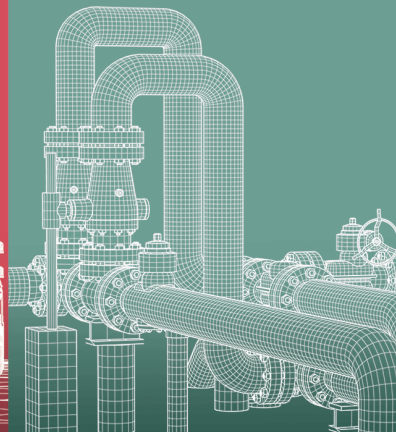
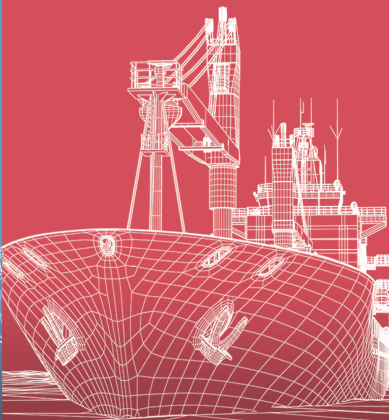




Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



STATISTICAL SUMMARY

Rail transportation occurrences in 2022

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Statistical summary: Rail transportation occurrences in 2022

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Table of contents

Accidents.....	2
Overview of accidents and casualties	2
Accidents by type.....	6
Incidents	11
Overview of incidents.....	11
Data tables.....	12
Definitions.....	26
Occurrence.....	26
Reportable accident.....	26
Reportable incident.....	26
Serious injury	27
Dangerous goods involvement	27
Derailment	27

Statistical Summary

Rail transportation occurrences in 2022

The Transportation Safety Board of Canada (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 statistical summary covers federally regulated railways only. Non-federally regulated data reported to the TSB are not included in this report.

This summary serves to describe the accident, incident, and injury counts¹ that are presented in the included tables. It provides limited discussion and some context but is not intended to be an in-depth analysis of the data.

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 2022 data were collected according to the reporting requirements described in the *Transportation Safety Board Regulations* in force during that calendar year.

The statistics presented here reflect the TSB Railway Occurrence Database System (RODS) data at 27 February 2023. Since the occurrence data are constantly being updated in the live database, the statistics may change slightly over time.

Also, as many occurrences are limited to data gathering, information recorded on some occurrences may not have been verified.

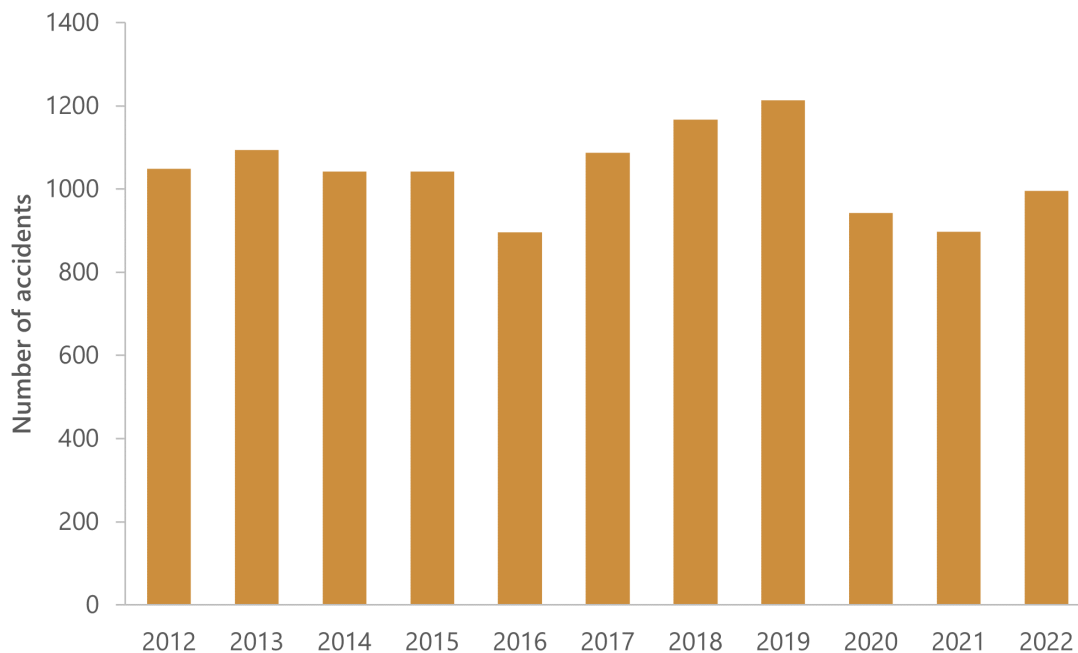
¹ See the Definitions section.

Accidents

Overview of accidents and casualties

In 2022, 995² rail accidents³ were reported to the TSB (Figure 1 and Table 1), up from the 2021 total of 898, but a 5% decrease from the previous 10-year (2012 to 2021) average of 1043.

Figure 1. Rail accidents, 2012 to 2022



Freight trains accounted for 32% of all rolling stock involved in rail accidents in 2022. Five percent (54 in total) were passenger trains, with the remaining 63% comprising mainly single cars/cuts of cars, locomotives, and track units (Table 3).

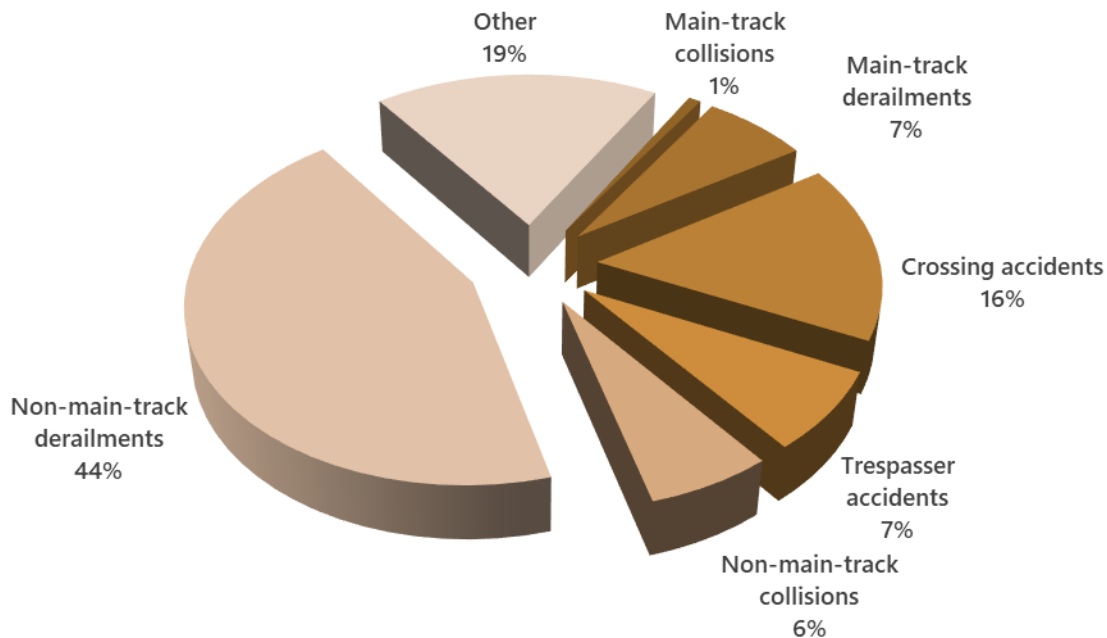
The largest proportion of reported rail accidents comprised non-main-track derailments⁴ (44%) (Figure 2 and Table 1). Typically, most non-main-track derailment accidents are minor, occurring during switching operations at speeds of less than 10 mph.

² The TSB has reviewed reported occurrences since January 2012 and reclassified fire occurrences into fires on-board rolling stock as reportable accidents and fires on railway right-of-way as reportable incidents.

³ See the Definitions section.

⁴ "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, 2022*



* Due to rounding of percentages within categories, 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 2022 (7%) was approximately the same as both the previous year and the 10-year average.

In 2022, 16% of rail accidents involved vehicles or pedestrians at rail crossings, comparable to the 15% average of the previous 10 years.

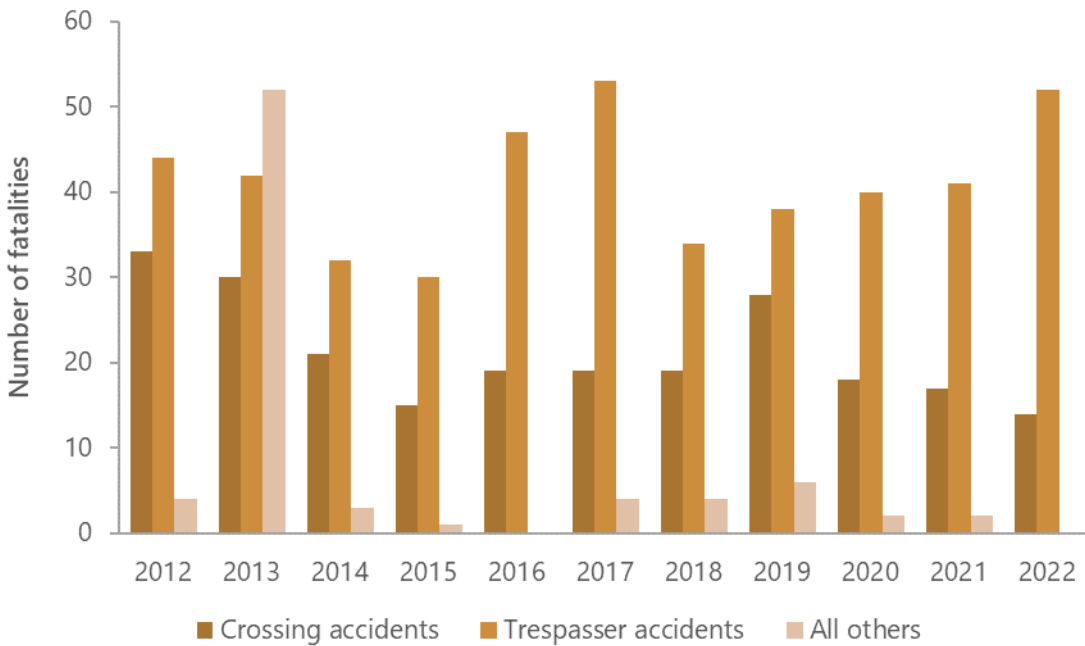
In 2022, 111 accidents involved dangerous goods (Table 1),⁵ up from 86 in 2021 but below the 10-year average of 121. Two accidents resulted in a dangerous goods release in 2022, the same as the previous year, but below the 10-year average of 4.

Rail fatalities (Figure 3 and Table 1) totalled 66 in 2022, up from 60 last year but below the 10-year average of 70. Crossing fatalities totalled 14 in 2022, down from 17 in 2021 and below the 10-year average of 22. Trespasser⁶ fatalities totalled 52 in 2022, up from 41 in the previous year and above the 10-year average of 40. In 2022, no railway employee was fatally injured, below the 10-year average of 3 employee fatalities per year.

⁵ Accidents involving dangerous goods can also include road vehicles carrying dangerous goods.

⁶ 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, resulting in death, serious injury or property damage.

Figure 3. Rail fatalities, by type of occurrence, 2012 to 2022

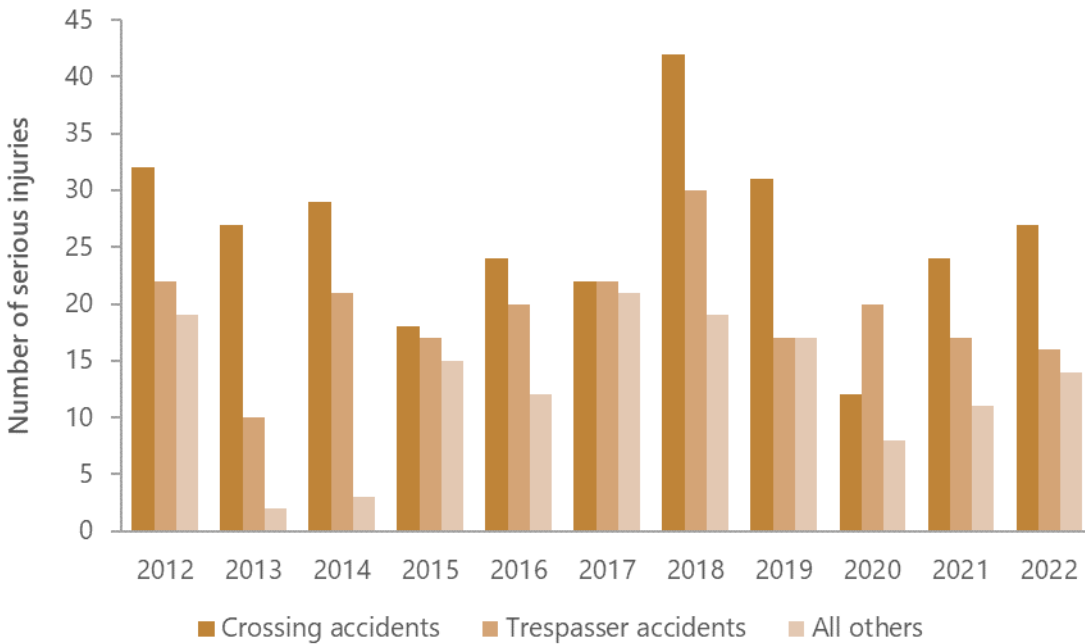


A total of 57 serious injuries⁷ resulted from rail occurrences in 2022 (Figure 4 and Table 1), up from 52 in 2021 but below the 10-year average of 58. Crossing accidents⁸ resulted in 27 serious injuries, up from 24 in 2021 and above the 10-year average of 26. Serious injuries to trespassers totalled 16 in 2022, down from 17 last year and below the 10-year average of 20. Ten railway employees were seriously injured in 2022, up from 7 in 2021 but below the 10-year average of 11 (Table 2).

⁷ See the Definitions section.

⁸ 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.

Figure 4. Rail serious injuries, by type of occurrence, 2012 to 2022



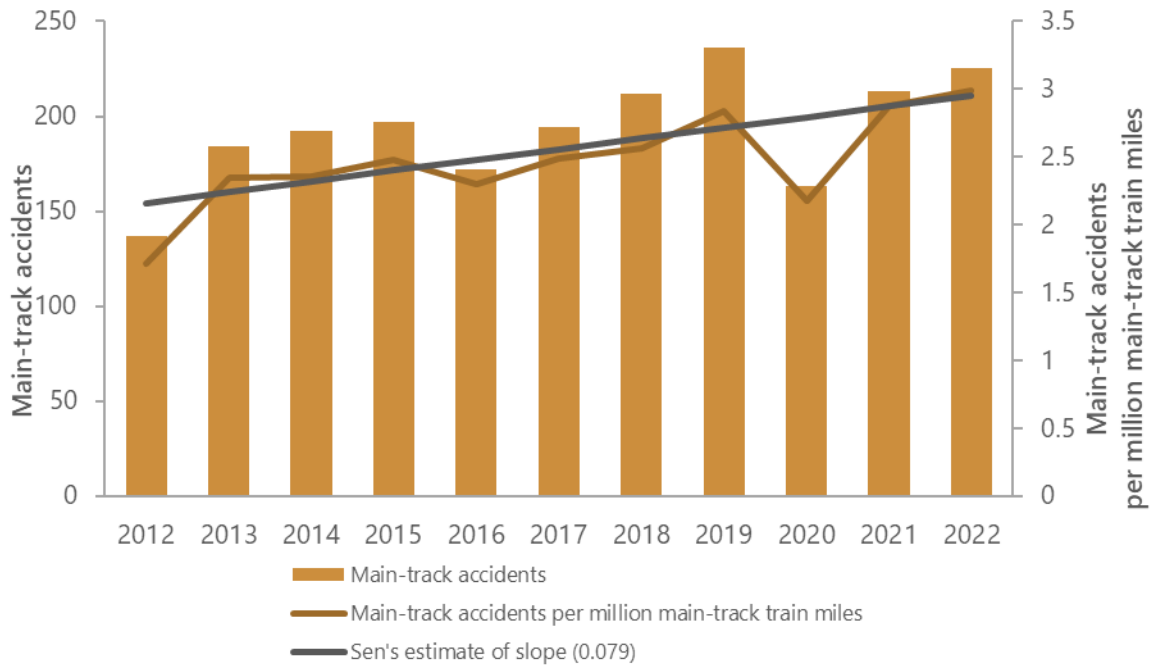
The number of main-track accidents⁹ totalled 225 in 2022 (Figure 5 and Table 1), up from 213 in 2021 and 18% above the 10-year average of 190. Rail activity¹⁰ on main track (i.e., non-yard activity) increased by 2% from the previous year. The main-track accident rate in 2022 was 3.0 accidents per million main-track train miles, up from 2.9 in 2021 and 24% above the 10-year average of 2.4.

To test whether the change in rate was statistically significant, Kendall's tau-b (τ_b) correlation and Sen's estimate of slope were used to quantify the trend in accident rate. Kendall's 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 2012 to 2022. There was a strong, positive correlation that indicates an upward trend in accidents per million main-track train miles over the period ($\tau_b = 0.63$, $p < 0.01$). Sen's estimate of slope, the amount of upward rate change per year, was 0.079 occurrences per million main-track miles per year.

⁹ Accidents that occur on the 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 (i.e., non-yard) million train miles.

¹⁰ Transport Canada, Rail Safety Directorate (email dated 13 March 2023).

Figure 5. Main-track accidents and accident rates, 2012 to 2022



Accidents by type

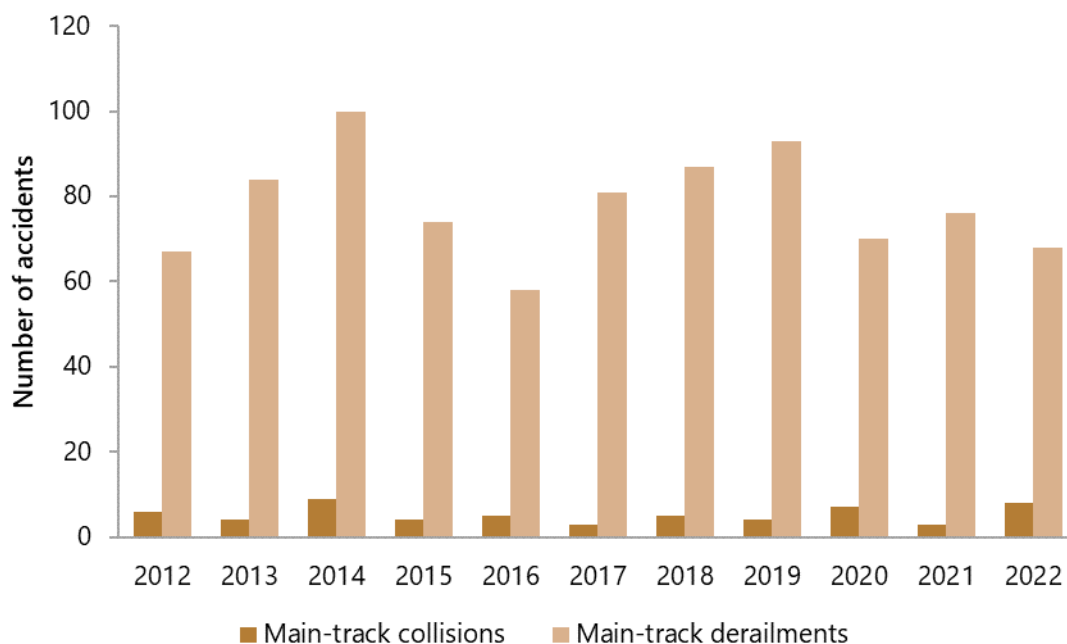
Main-track collisions and derailments are the most serious categories of rail accidents in terms of potential risk to the public and financial loss (e.g., when passenger trains are involved or dangerous goods are released from trains that derail in populated areas).

There were 8 main-track collisions (Table 1 and Figure 6) in 2022, up from the 2021 total of 3 and also above the 10-year average of 5. No fatalities or serious injuries resulted from main-track collisions in 2022. There was no release of dangerous goods as a result of main-track collisions in 2022.

A total of 68 main-track derailments (Table 4) were reported in 2022, a decrease from the 2021 total of 76, and 14% below the 10-year average of 79 (Figure 6). Twenty-six percent of the 68 main-track derailments occurred in British Columbia, 18% occurred in Saskatchewan, and 15% occurred in each of Alberta and Quebec.

The number of main-track derailments per million main-track (i.e., non-yard) train miles (Table 4) decreased to 0.90 in 2022 from 1.03 the previous year and was below the 10-year average of 1.00.

Figure 6. Main-track collision and derailment accidents, 2012 to 2022



No fatalities or serious injuries resulted from main-track derailments in 2022 (Table 2). Eleven main-track derailments involved dangerous goods, down from the 2021 total of 16 and below the 10-year average of 13. One of these derailments resulted in the release of dangerous goods (liquefied petroleum gas).

In 2022, 17% of assigned factors¹¹ for main-track derailments (Table 5) were equipment-related, down from the 10-year average of 29%. Actions-related factors¹² accounted for 46% of assigned factors in 2022, up from the 10-year average of 22%. Track-related factors were reported in 22% of main-track derailments in 2022, below the 10-year average of 37%.

Non-main-track collisions (Table 6 and Figure 7) totalled 63 in 2022, up from the 2021 total of 62, but below the 10-year average of 91. Derailments occurred in 31 non-main-track collisions (49%), and 13 of those collisions involved the derailment of a single car.

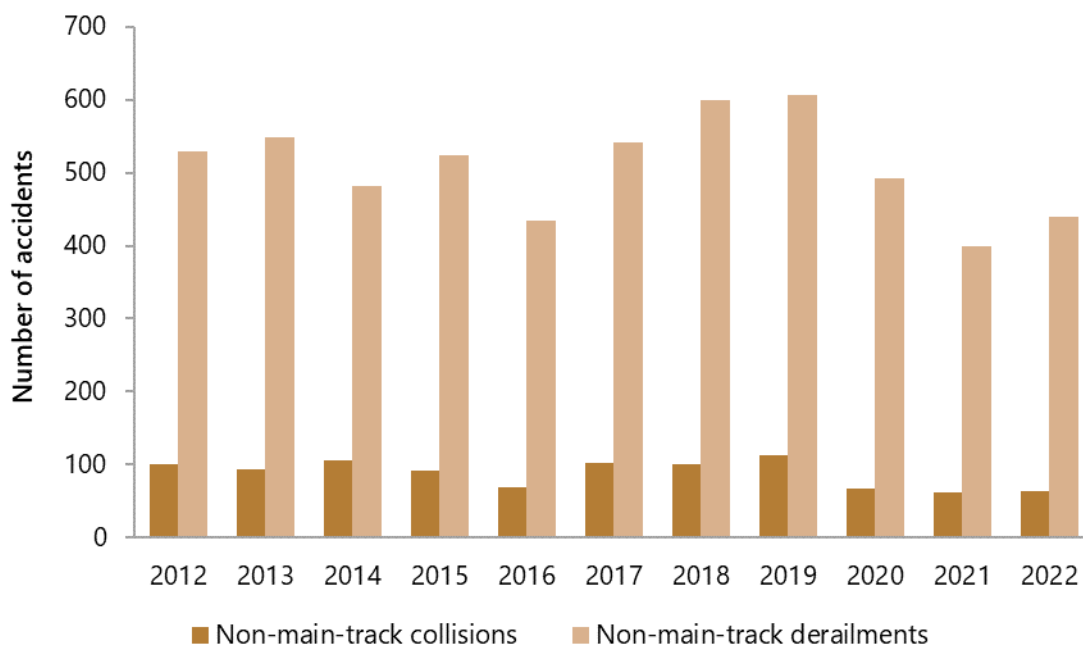
Non-main-track collisions resulted in no fatalities and 1 serious injury in 2022 (Table 2). Dangerous goods were involved in 48% of non-main-track collisions, none of which resulted in a release of product.

Factors assigned to non-main-track collisions were mostly actions-related (86%), comparable to the 10-year average of 87% (Table 7). Failure to protect, such as improper positioning of movements and handling of switches, was assigned most often (54%) as a factor.

¹¹ 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.

¹² Actions-related factors include, but are not limited to, departure from prescribed procedures, such as failure to protect or failure to secure.

Figure 7. Non-main-track collision and derailment accidents, 2012 to 2022



There were 440 non-main-track derailments¹³ in 2022 (Table 8 and Figure 7), up from 400 last year but 15% below the 10-year average of 516. In 82% of 2022 accidents, 1 or 2 cars derailed. No fatalities or serious injuries resulted from non-main-track derailments in 2022 (Table 2).

Dangerous goods cars were involved in 14% of non-main-track derailment accidents, none of which resulted in a release of product.

In 2022, actions-related factors represented 50% of all assigned factors for non-main-track derailment accidents, above the 10-year average of 48% (Table 9). Track-related factors represented 26% of all assigned factors, below the 10-year average of 32%. Environmental-related factors represented 18% of all assigned factors in 2022, above the 10-year average of 11%.

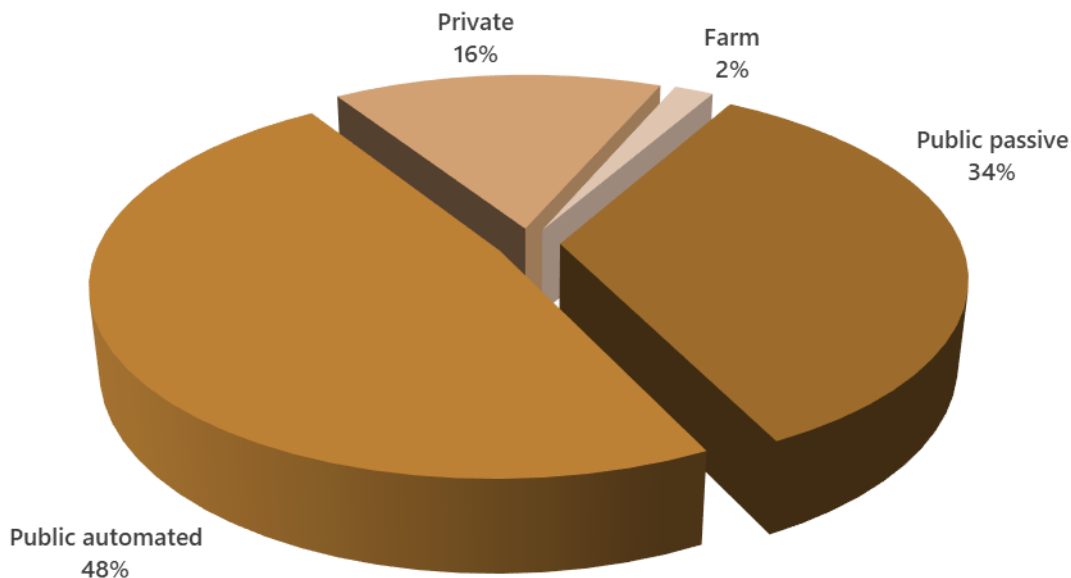
Crossing accidents (tables 10 and 11) represented one of the more serious types of rail accidents in 2022, with 23% of these resulting in serious or fatal injuries.

There were 160 crossing accidents in 2022, an 18% increase from the 2021 total of 136 and comparable to the 10-year average of 161. The number of accidents at public automated crossings (77) was up from the 2021 total of 58, but below the 10-year average of 79. The number of accidents at public passive crossings (55) was 1 fewer than the 2021 total but the same as the 10-year average. Accidents at private and farm crossings (28) increased from the 2021 total of 22 and were comparable to the 10-year average of 27.

In 2022, 48% of crossing accidents occurred at public automated crossings, and 34% at public passive crossings (Figure 8). Although there are nearly one and a half times as many public passive crossings as public automated crossings, the higher number of accidents occurring at automated crossings is due, in part, to higher vehicle and train traffic volumes at the automated crossings.

¹³ The amended TSB Regulations came into effect on 1 July 2014 requiring that all derailments be reported, including minor derailments where there were no injuries and no damage to track or equipment.

Figure 8. Percentage of crossing accidents by type of crossing, 2022



There were 14 fatal crossing accidents in 2022, down from 16 reported in 2021 and below the 10-year average of 20. Crossing-related fatalities totalled 14 in 2022, down from 17 reported in 2021 and below the 10-year average of 22.

Crossing accidents involving pedestrians accounted for 6% (9) of all crossing accidents in 2022, but accounted for 36% (5) of fatal crossing accidents and 36% of crossing-related fatalities.

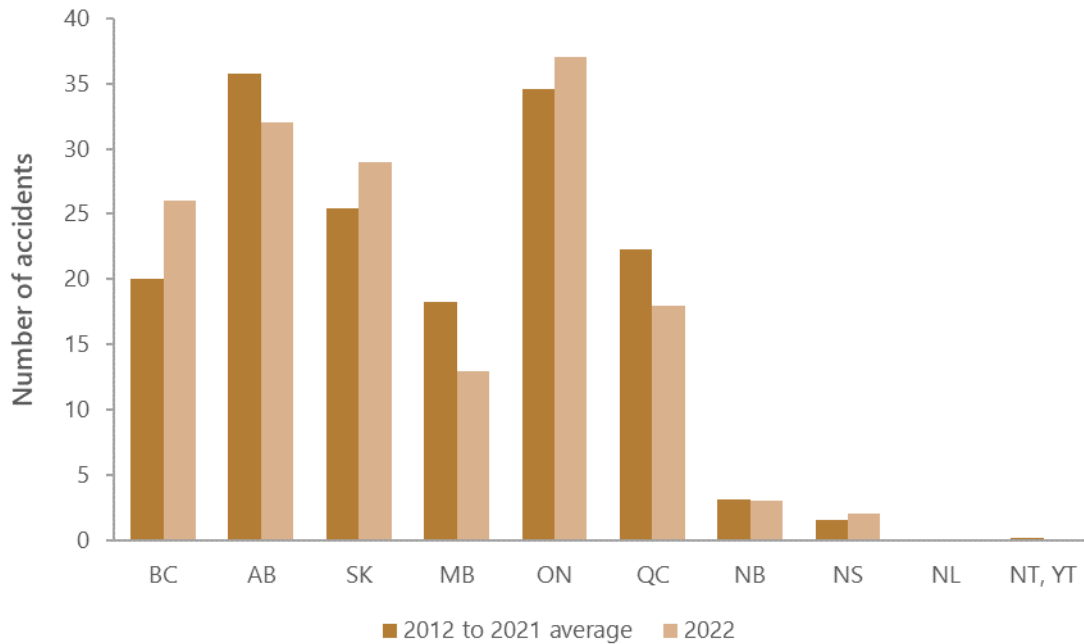
Crossing-related serious injuries totalled 27 in 2022, up from the 2021 total of 24 and above the 10-year average of 26.

In 2022, 4 crossing accidents resulted in a train derailment, up from 2 in 2021 but below the 10-year average (5).

One crossing accident resulted in the release of dangerous goods (gasoline) in 2022.

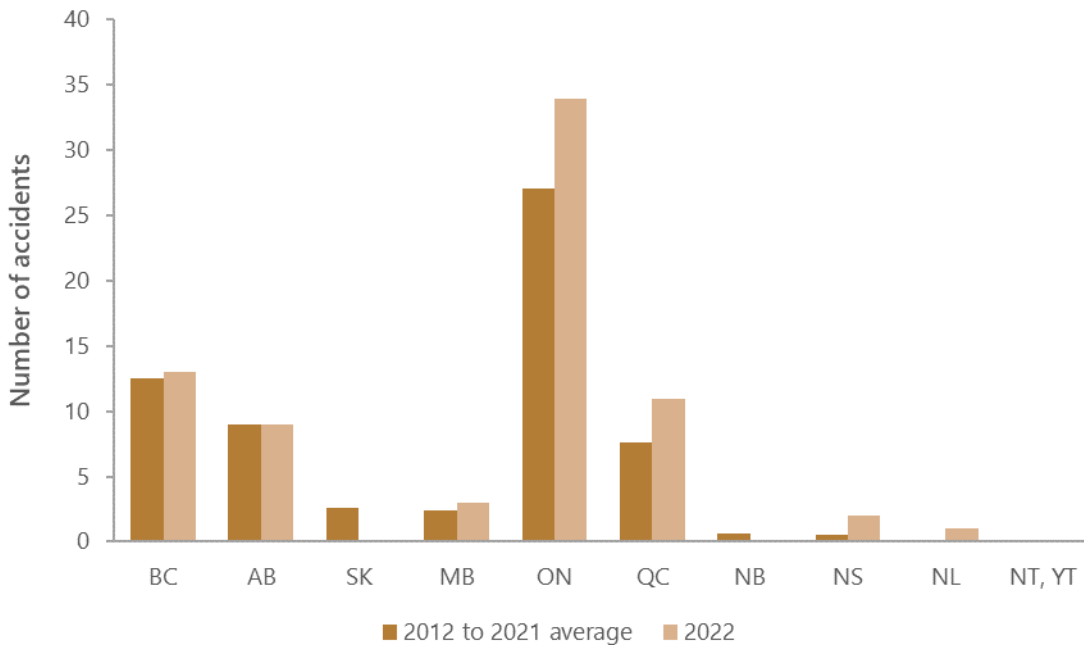
Ontario had the highest proportion (23%) of all crossing accidents in 2022. Alberta had the second highest total with 20% of crossing accidents, followed by Saskatchewan with 18%, and British Columbia with 16% (Figure 9).

Figure 9. Crossing accidents by province/territory, 2022



Trespasser accidents (Table 12 and Figure 10) totalled 73 in 2022, up from 63 in 2021 and above the 10-year average of 62. Ontario accounted for 47% of trespasser accidents, followed by British Columbia with 18%, Quebec with 15%, and Alberta with 12%.

Figure 10. Trespasser accidents by province/territory, 2022



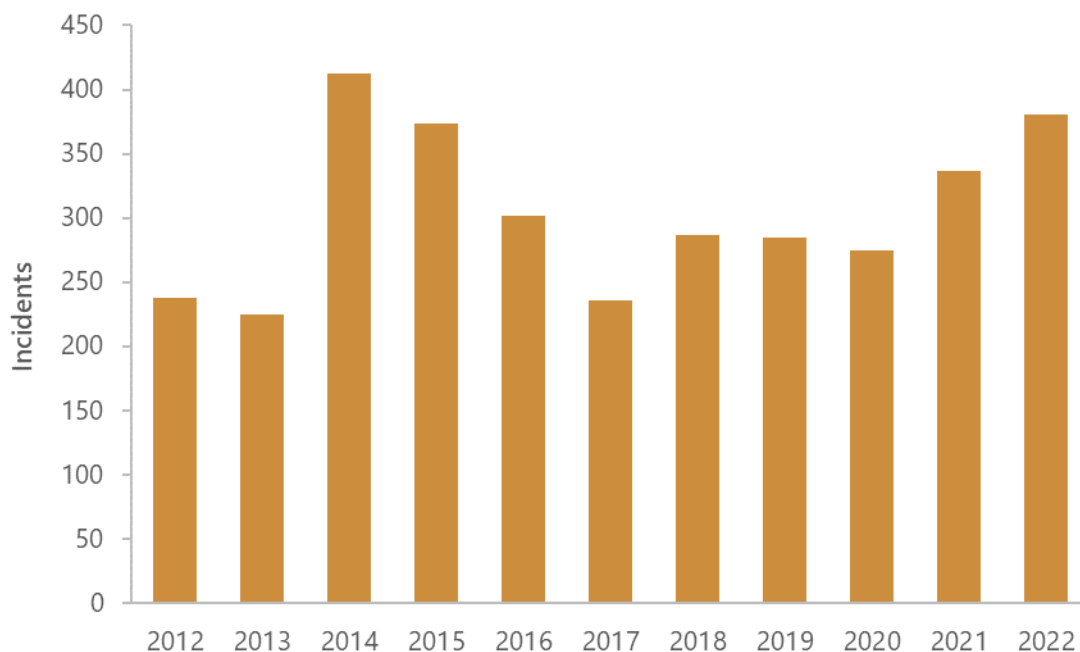
In 2022, the proportion of trespasser accidents that were fatal (71%) was above the 10-year average of 64%. The proportion of trespasser accidents resulting in serious injuries (22%) was below the 10-year average of 31%.

Incidents

Overview of incidents

In 2022, there were 381 reported rail incidents¹⁴ (Figure 11 and Table 1), up from 337 in 2021.

Figure 11. Rail incidents,* 2012 to 2022



* The amended TSB Regulations came into effect on 1 July 2014.

The movement exceeds limits of authority¹⁵ incident type accounted for 35% of reportable incidents in 2022 (Table 13), followed by non-main-track train derailments, 1 or 2 cars (no damage) at 32%, and fires on railway right-of-way (23%).

In 2022, there were 9 uncontrolled movement of rolling stock incidents, as well as 3 derailment incidents, 2 collision incidents, and 1 movement exceeds limits of authority incident that involved an uncontrolled movement of rolling stock. In addition, 37 accidents involved an uncontrolled movement of rolling stock (Table 1), for a total of 52 occurrences. This is up compared to the total of these occurrences in 2021 (48), but a 14% decrease from the 10-year average of 61.

There were 134 movement exceeds limits of authority incidents in 2022, an increase from 109 reported in 2021 and 5% above the 10-year average of 128 (Table 1).

¹⁴ See the Definitions section.

¹⁵ 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*.

Data tables

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Table 1. Rail transportation occurrences, by accident/incident type and casualties,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Accidents	1049	1094	1042	1042	896	1087	1167	1214	942	898	995
Main-track collisions	6	4	9	4	5	3	5	4	7	3	8
Main-track derailments, 1 or 2 cars ²	35	52	44	39	33	48	39	54	40	39	32
Main-track train derailments, 3 to 5 cars	9	13	15	8	7	5	10	6	3	3	8
Main-track train derailments, 6 or more cars	23	19	41	27	18	28	38	33	27	34	28
Crossing accidents	192	184	185	165	133	143	167	178	130	136	160
Non-main-track collisions	101	93	106	92	69	103	101	112	67	62	63
Non-main-track derailments, 1 or 2 cars ²	424	436	357	410	346	424	476	492	406	327	360
Non-main-track derailments, 3 to 5 cars	77	88	90	87	62	82	100	87	65	58	57
Non-main-track derailments, 6 or more cars	29	25	34	26	27	35	23	27	21	15	23
Collisions/derailments involving track units	25	41	27	43	23	45	48	50	39	50	64
Employee/passenger accidents	7	8	13	15	16	17	13	15	9	11	10
Trespasser accidents	71	56	54	50	68	77	68	56	60	63	73
Fires/explosions on board rolling stock	17	10	30	30	34	32	33	58	33	46	46
Other accident types	33	65	37	46	55	45	46	42	35	51	63
Reportable incidents	238	225	413	374	302	236	287	285	275	337	381
Main-track derailments, 1 or 2 cars ² (no damage)	n/a	n/a	2	3	5	3	4	3	1	2	1
Non-main-track train collisions (no derailment, no damage)	n/a	n/a	8	4	4	2	2	0	1	2	4
Non-main-track train derailments, 1 or 2 cars ² (no damage)	n/a	n/a	166	125	97	67	96	58	32	39	121
Fires on railway right-of-way	0	1	6	2	1	1	1	42	46	143	87
Main-track switch in abnormal position	5	7	6	12	7	12	7	15	3	13	8
Movement exceeds limits of authority	120	98	129	142	133	122	138	136	149	109	134
Uncontrolled movement of rolling stock	13	14	11	14	10	14	15	16	19	13	9
Other reportable incidents	100	105	85	72	45	15	24	15	24	16	17
Main-track accidents³	137	184	192	197	172	194	212	236	163	213	225
Million main-track train miles⁴	80.1	78.5	81.6	79.6	74.7	78.0	82.6	83.3	74.9	74.1	75.4
Main-track accidents per million main-track train miles	1.7	2.3	2.4	2.5	2.3	2.5	2.6	2.8	2.2	2.9	3.0
Accidents involving dangerous goods	120	143	143	127	101	115	125	171	82	86	111
Main-track derailments	6	11	25	12	10	10	17	19	7	16	11
Crossing accidents	4	5	5	4	4	6	7	7	3	2	5
Non-main-track collisions	21	26	36	32	19	39	33	44	13	19	30
Non-main-track derailments	88	96	68	75	60	54	62	95	56	45	60
Other accident types	1	5	9	4	8	6	6	6	3	4	5
Accidents with a dangerous goods release	2	7	4	6	1	5	4	8	3	2	2
Accidents involving an uncontrolled movement of rolling stock	43	57	43	41	33	48	47	62	28	32	37
Persons fatally injured in reportable occurrences	81	124	56	46	66	76	57	72	60	60	66
Crossing accidents	33	30	21	15	19	19	19	28	18	17	14
Trespasser accidents	44	42	32	30	47	53	34	38	40	41	52
Other occurrence types ⁵	4	52	3	1	0	4	4	6	2	2	0
Persons seriously injured in reportable occurrences	73	39	53	50	56	65	91	65	40	52	57
Crossing accidents	32	27	29	18	24	22	42	31	12	24	27
Trespasser accidents	22	10	21	17	20	22	30	17	20	17	16
Other occurrence types ⁵	19	2	3	15	12	21	19	17	8	11	14

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.² Under the TSB Regulations that came into effect in 2014, all derailments are reportable. Derailments and collisions with minimal consequences are reportable incidents; these include derailments involving 1 or 2 cars with no equipment or track damage, no injuries, no fires, and no release of dangerous goods; they also include non-main-track collisions with no equipment or track damage, no injuries, no fires, no release of dangerous goods, and that did not foul the main track.³ Main-track accidents are accidents that occurred on the 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 email communication 13 March 2023).⁵ See Table 2 for details on occurrences by type.

Table 2. Casualties, by accident/incident type and category of person,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Persons fatally injured in reportable occurrences	81	124	56	46	66	76	57	72	60	60	66
Main-track collisions	0	0	0	0	0	0	0	0	0	0	0
Main-track derailments	3	47	0	0	0	0	1	3	0	0	0
Crossing accidents	33	30	21	15	19	19	19	28	18	17	14
Non-main-track collisions	0	1	0	0	0	0	2	0	0	0	0
Non-main-track derailments	1	0	0	0	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	4	2	1	0	3	1	2	2	2	0
Trespasser accidents	44	42	32	30	47	53	34	38	40	41	52
Other accident types	0	0	1	0	0	0	0	1	0	0	0
Reportable incidents	0	0	0	0	0	1	0	0	0	0	0
Persons seriously injured in reportable occurrences	73	39	53	50	56	65	91	65	40	52	57
Main-track collisions	1	0	0	0	0	0	0	0	0	0	0
Main-track derailments	10	0	0	0	0	0	3	1	0	0	0
Crossing accidents	32	27	29	18	24	22	42	31	12	24	27
Non-main-track collisions	1	0	0	0	0	2	0	2	0	0	1
Non-main-track derailments	0	0	0	0	0	0	0	0	0	0	0
Collisions/derailments involving track units	0	0	0	0	3	0	0	2	1	1	1
Employee/passenger accidents	6	1	2	11	8	16	12	11	6	8	10
Trespasser accidents	22	10	21	17	20	22	30	17	20	17	16
Other accident types	0	0	0	2	1	3	0	1	0	2	2
Reportable incidents	1	1	1	2	0	0	4	0	1	0	0
Persons fatally injured	81	124	56	46	66	76	57	72	60	60	66
Employees	4	5	2	1	0	3	4	5	2	1	0
Passengers	0	0	1	0	0	1	0	0	0	1	0
Pedestrians	17	13	8	3	7	8	10	13	7	5	5
Vehicle occupants	16	17	12	11	12	11	9	16	14	10	9
Trespassers	44	42	32	31	47	53	34	38	36	43	52
Other categories of persons	0	47	1	0	0	0	0	0	1	0	0
Persons seriously injured	73	39	53	50	56	65	91	65	40	52	57
Employees	9	2	7	8	15	19	17	16	8	7	10
Passengers	14	1	1	8	2	3	3	1	0	2	2
Pedestrians	5	3	1	2	0	2	8	6	3	8	6
Vehicle occupants	23	23	21	16	18	18	33	25	9	20	23
Trespassers	22	10	23	16	21	23	30	17	20	15	16
Other categories of persons	0	0	0	0	0	0	0	0	0	0	0

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

Table 3. Trains and other rolling stock involved in accidents, by accident type,^{1,2,3} 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Freight trains	800	833	542	412	338	402	389	418	328	329	341
Main-track collisions	8	7	8	6	6	6	5	4	8	6	13
Main-track derailments	62	79	90	66	48	75	75	78	64	66	57
Non-main-track collisions	94	85	42	27	11	28	20	26	15	12	7
Non-main-track derailments	382	423	187	108	88	95	96	78	56	36	31
Crossing accidents	160	144	139	117	86	94	106	117	94	90	116
Trespasser accidents	51	38	39	36	48	51	40	42	49	51	51
Other accident types	43	57	37	52	51	53	47	73	42	68	66
Passenger trains	47	46	50	46	56	55	68	47	40	42	54
Main-track collisions	0	0	1	0	0	0	1	1	1	0	0
Main-track derailments	1	3	3	2	4	2	2	2	1	3	0
Non-main-track collisions	1	0	1	0	0	0	0	0	5	0	1
Non-main-track derailments	5	4	1	2	1	4	6	3	13	3	2
Crossing accidents	15	17	18	16	11	13	19	15	7	12	9
Trespasser accidents	17	16	12	10	13	23	24	12	4	10	18
Other accident types	8	6	14	16	27	13	16	14	9	14	24
Track units	41	76	48	77	41	71	81	81	63	91	99
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	0	0	0	0	0	0	0	0	0	0
Crossing accidents	2	7	2	5	4	5	6	4	3	7	9
Trespasser accidents	0	0	0	0	0	0	0	0	0	0	0
Other accident types	39	69	46	72	37	66	75	77	60	84	90
Single car/cut of cars	131	126	378	476	416	526	594	616	467	413	468
Main-track collisions	2	0	6	0	1	0	2	2	3	1	1
Main-track derailments	1	2	8	2	4	2	7	5	4	3	5
Non-main-track collisions	70	59	114	103	93	119	133	141	82	83	83
Non-main-track derailments	49	51	222	333	278	362	402	415	339	294	343
Crossing accidents	1	1	9	17	17	21	26	25	13	15	10
Trespasser accidents	0	0	1	4	6	1	3	2	2	1	0
Other accident types	8	13	18	17	17	21	21	26	24	16	26
Other types of train/rolling stock	150	111	137	131	126	117	151	165	125	104	118
Main-track collisions	1	0	0	0	2	0	0	1	1	0	1
Main-track derailments	3	1	1	4	2	2	3	8	1	4	7
Non-main-track collisions	27	13	26	15	21	14	18	18	9	8	15
Non-main-track derailments	98	73	78	92	72	82	103	113	88	69	64
Crossing accidents	14	15	17	10	15	10	12	17	13	13	16
Trespasser accidents	3	2	2	0	1	2	1	0	5	1	4
Other accident types	4	7	13	10	13	7	14	8	8	9	11

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

² As some accidents may involve more than one train or other rolling stock, the number of trains/rolling stock involved may differ from the total number of accidents.

³ Under the 2014 TSB Regulations, all derailments are reportable.

Table 4. Main-track derailment accidents, by province and territory and number of derailed cars,^{1,2} 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Main-track derailment accidents	67	84	100	74	58	81	87	93	70	76	68
Newfoundland and Labrador	1	1	0	0	0	2	0	0	1	2	2
Nova Scotia	0	1	0	0	1	0	0	0	0	0	1
New Brunswick	0	1	3	2	1	0	0	1	0	3	1
Quebec	8	8	11	9	6	6	9	10	9	3	10
Ontario	7	19	20	21	15	11	14	17	14	13	9
Manitoba	9	3	10	4	4	6	8	14	8	5	5
Saskatchewan	4	13	10	8	6	14	18	12	6	9	12
Alberta	17	19	30	16	13	21	20	17	11	17	10
British Columbia	21	19	16	14	12	21	18	22	21	24	18
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
Main-track derailment accidents per million main-track train miles³	0.84	1.07	1.23	0.93	0.78	1.04	1.05	1.12	0.93	1.03	0.90
Main-track derailment accidents per billion gross ton miles⁴	0.14	0.17	0.18	0.14	0.11	0.14	0.15	0.16	0.12	0.13	n/a
Main-track derailment accidents by number of derailed cars	67	84	100	74	58	81	87	93	70	76	68
1 car	29	47	29	29	26	39	29	43	32	33	26
2 cars	6	5	15	10	7	9	10	11	8	6	6
3 cars	3	5	4	4	2	1	4	2	2	1	1
4 cars	2	6	6	2	2	3	4	3	1	1	4
5 to 10 cars	16	7	22	16	10	13	21	11	10	10	17
11 cars or more	11	14	24	13	11	16	19	23	17	25	14

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

² Under the 2014 TSB Regulations, all derailments are reportable.

³ Source of estimated million main-track train miles: Transport Canada email communication 13 March 2023.

⁴ Source of billion gross ton miles: *Rail Trends 2022*, Railway Association of Canada.

Table 5. Main-track derailment accidents, by assigned factors,^{1,2} 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Assigned factors^{3,4}	68	96	109	80	63	84	89	89	68	75	69
Environmental	4	5	10	2	3	4	7	8	10	9	7
Equipment	19	33	27	23	20	30	24	25	18	19	12
Axle	6	8	4	6	6	10	2	6	3	6	1
Brakes	3	3	4	4	4	4	4	7	4	1	2
Draft system	4	2	5	5	1	4	7	2	2	4	0
Superstructure	2	7	3	1	2	1	4	2	2	0	3
Truck	2	5	6	2	1	5	0	1	0	4	3
Wheel	2	8	5	5	6	6	7	7	7	4	3
Track	28	30	49	33	18	32	24	37	21	32	15
Geometry	14	10	11	8	8	14	11	10	9	9	4
Object on track	0	2	1	0	0	1	0	1	0	0	0
Other track material	2	0	7	2	1	3	2	3	1	2	0
Rail	8	12	17	12	4	9	4	13	4	13	6
Roadbed	4	4	5	7	2	4	4	6	5	6	1
Switch	0	0	6	1	3	0	1	1	1	1	2
Turnouts	0	1	0	0	0	1	1	0	0	1	0
Actions	15	26	18	14	18	17	27	17	17	13	32
Failure to protect	5	5	4	2	4	5	10	9	6	4	14
Failure to secure	1	1	0	0	0	0	0	0	0	0	0
Failure to use equipment properly	2	10	6	5	9	8	13	6	8	5	14
Improper loading/lifting	2	2	3	2	0	2	1	0	0	2	1
Improper placement/position for task	2	6	3	1	4	2	2	1	3	1	2
Inadequate/inappropriate maintenance of equipment	0	0	0	1	0	0	0	0	0	0	0
Operating at improper speed	2	2	2	3	0	0	1	0	0	1	1
Vandalism	0	0	0	0	1	0	0	0	0	0	0
Other actions	1	0	0	0	0	0	0	1	0	0	0
Other assigned factors	2	2	5	8	4	1	7	2	2	2	3
Main-track derailment accidents	67	84	100	74	58	81	87	93	70	76	68
One factor assigned	66	74	94	70	53	76	81	85	66	73	61
More than one factor assigned	1	10	6	4	4	4	3	2	1	1	4
No factors assigned	0	0	0	0	1	1	3	6	3	2	3

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

² Under the 2014 TSB Regulations, all derailments are reportable.

³ Since the TSB does not investigate all occurrences, assigned factors may not be TSB findings. Occurrences are normally reported to the TSB with one assigned factor. The TSB may assign additional factors.

⁴ Some factors are assigned by parent category (e.g., Equipment is the parent of Axle); therefore, the breakdowns may not sum to the category total.

Table 6. Non-main-track collision accidents, by province and territory and number of derailed cars,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Non-main-track collision accidents	101	93	106	92	69	103	101	112	67	62	63
Newfoundland and Labrador	0	0	0	0	0	0	1	0	0	0	0
Nova Scotia	0	0	0	0	0	1	0	0	1	0	1
New Brunswick	1	1	4	0	1	1	2	0	2	1	0
Quebec	8	10	4	10	7	9	5	9	4	3	5
Ontario	10	16	23	20	19	25	19	26	15	9	24
Manitoba	21	14	18	15	10	14	8	15	11	8	7
Saskatchewan	12	11	21	8	5	7	13	11	5	4	2
Alberta	34	28	19	17	19	23	26	29	13	16	12
British Columbia	15	13	17	21	8	23	27	22	16	21	12
Northwest Territories and Yukon	0	0	0	1	0	0	0	0	0	0	0
Non-main-track collision accidents by number of derailed cars	101	93	106	92	69	103	101	112	67	62	63
No cars derailed	63	63	63	63	38	64	54	63	34	35	32
1 car	14	18	19	21	14	16	27	27	16	11	13
2 cars	10	7	13	1	7	11	6	11	4	6	9
3 cars	6	2	4	3	4	5	4	6	6	3	2
4 cars	5	0	3	2	2	3	2	0	2	2	1
5 to 10 cars	3	3	3	2	3	4	7	3	5	4	6
11 cars or more	0	0	1	0	1	0	1	2	0	1	0

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

Table 7. Non-main-track collision accidents, by assigned factors,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Assigned factors^{2,3}	114	113	118	103	81	113	106	115	68	63	69
Environmental	4	1	2	2	2	1	2	3	2	4	1
Equipment	4	5	4	3	3	1	3	3	1	3	2
Track	3	6	8	7	1	3	3	3	3	3	7
Actions	100	95	102	88	70	102	94	102	58	50	59
Failure to protect	63	54	61	59	43	66	59	66	39	29	37
Failure to secure	16	13	11	4	5	7	9	7	7	8	6
Failure to use equipment properly	10	14	16	14	11	19	18	21	7	7	7
Improper placement/position for task	0	2	0	1	0	0	0	0	0	1	0
Inadequate/inappropriate communications	2	3	2	3	3	1	1	2	2	3	0
Inadequate/inappropriate maintenance of equipment	0	0	0	0	0	0	0	0	0	0	0
Operating at improper speed	8	8	12	7	8	9	7	4	3	1	8
Vandalism	0	0	0	0	0	0	0	0	0	0	1
Other actions	1	1	0	0	0	0	0	2	0	1	0
Other assigned factors	3	6	2	3	5	6	4	4	4	3	0
Non-main-track collision accidents	101	93	106	92	69	103	101	112	67	62	63
One assigned factor	88	73	97	83	60	96	97	109	66	59	58
More than one assigned factor	13	20	9	9	9	7	4	3	1	2	5
No assigned factor	0	0	0	0	0	0	0	0	0	1	0

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

² Since the TSB does not investigate all occurrences, assigned factors may not be TSB findings. Occurrences are normally reported to the TSB with one assigned factor. The TSB may assign additional factors.

³ Some factors are assigned by parent category (e.g., Actions is the parent of Failure to protect); therefore, the breakdowns may not sum to the category total.

Table 8. Non-main-track derailment accidents, by province and territory and number of derailed cars,^{1,2} 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Non-main-track derailment accidents	530	549	481	523	435	541	599	606	492	400	440
Newfoundland and Labrador	1	1	0	6	12	11	9	7	7	10	6
Nova Scotia	4	2	4	3	2	5	6	3	8	6	7
New Brunswick	8	4	12	13	9	9	5	12	7	6	10
Quebec	75	55	48	81	67	85	60	111	70	60	79
Ontario	95	93	93	109	85	115	119	136	93	89	84
Manitoba	68	70	68	71	58	70	65	68	59	44	53
Saskatchewan	68	87	50	49	55	49	83	55	47	42	60
Alberta	144	145	125	91	68	93	131	115	101	71	75
British Columbia	67	91	80	100	79	103	121	99	100	72	65
Northwest Territories and Yukon	0	1	1	0	0	1	0	0	0	0	1
Non-main-track derailment accidents by number of derailed cars	530	549	481	523	435	541	599	606	492	400	440
1 car	301	334	260	319	265	333	383	403	323	250	263
2 cars	123	102	97	91	81	91	93	89	83	77	97
3 cars	39	48	49	53	31	46	54	39	36	30	34
4 cars	22	25	23	26	22	25	28	32	19	18	16
5 to 10 cars	40	37	46	29	31	43	35	32	29	24	27
11 cars or more	5	3	6	5	5	3	6	11	2	1	3

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

² Under the 2014 TSB Regulations, all derailments are reportable.

Table 9. Non-main-track derailment accidents, by assigned factors,^{1,2} 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Assigned factors^{3,4}	563	622	517	560	465	572	610	610	496	399	449
Environmental	29	82	30	36	40	59	77	131	63	53	79
Equipment	51	39	41	31	31	34	31	23	29	25	26
Axle	1	0	0	0	0	0	0	1	0	0	0
Brakes	6	7	9	7	4	6	11	1	6	5	3
Draft system	10	5	8	3	5	5	5	5	5	7	4
Superstructure	8	7	7	5	4	8	10	6	6	2	3
Truck	17	14	11	8	11	12	5	6	8	7	12
Wheel	8	6	6	8	7	3	0	4	4	4	4
Track	207	205	202	194	164	162	190	165	143	115	116
Appurtenances	4	1	2	1	1	3	3	2	0	1	1
Geometry	80	73	77	61	72	67	78	76	63	56	63
Object on track	3	2	0	2	1	1	3	3	2	1	0
Other track material	6	5	3	5	6	6	7	2	1	4	4
Rail	30	38	30	30	19	38	24	24	18	14	16
Roadbed	13	10	8	9	4	6	6	6	4	4	3
Signals	0	1	0	1	0	0	0	0	0	0	0
Switch	54	58	59	64	50	30	52	40	41	30	23
Turnouts	12	12	19	16	4	8	12	11	11	3	3
Actions	255	269	226	276	216	301	307	280	255	197	223
Failure to protect	140	140	130	158	109	163	209	176	148	111	128
Failure to secure	11	6	5	2	1	9	10	14	5	7	9
Failure to use equipment properly	77	84	67	72	81	98	66	72	68	60	73
Improper loading/lifting	4	7	3	8	1	7	2	6	7	2	2
Improper placement/position for task	11	8	7	7	6	11	4	6	10	7	3
Inadequate/inappropriate communications	2	3	1	4	1	2	4	0	3	2	2
Inadequate/inappropriate maintenance of equipment	0	1	0	3	0	0	0	0	0	0	0
Operating at improper speed	3	10	13	16	8	8	6	3	9	7	4
Vandalism	3	5	0	5	6	3	5	0	4	1	2
Other actions	4	5	0	1	3	0	1	3	1	0	0
Other assigned factors	21	27	18	23	14	16	5	11	6	9	5
Non-main-track derailment accidents	530	549	481	523	435	541	599	606	492	400	440
One assigned factor	497	479	450	498	414	517	584	602	486	393	428
More than one assigned factor	33	70	31	25	21	24	12	4	5	3	10
No assigned factor	0	0	0	0	0	0	3	0	1	4	2

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.² Under the 2014 TSB Regulations, all derailments are reportable.³ Since the TSB does not investigate all occurrences, assigned factors may not be TSB findings. Occurrences are normally reported to the TSB with one assigned factor. The TSB may assign additional factors.⁴ Some factors are assigned by parent category (e.g., Equipment is the parent of Axle); therefore, the breakdowns may not sum to the category total.

Table 10. Crossing accidents, by type of crossing, crossing protection, and casualties,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Crossing accidents	192	184	185	165	133	143	167	178	130	136	160
Public crossings	170	172	154	131	105	117	136	135	110	114	132
Passive warnings	73	65	68	52	36	47	50	49	56	56	55
Automated warnings	97	107	86	79	69	70	86	86	54	58	77
Flashing lights and bells	48	56	47	37	39	30	44	43	17	24	27
Gates	49	44	38	42	29	38	41	42	36	34	50
Other automated warnings	0	7	1	0	1	2	1	1	1	0	0
Private crossings	18	10	27	28	24	21	30	40	18	22	25
Farm crossings	4	2	4	6	4	5	1	3	2	0	3
Fatal accidents	28	22	20	15	16	19	18	26	16	16	14
Persons fatally injured	33	30	21	15	19	19	19	28	18	17	14
Public crossings	32	30	20	13	19	19	18	25	18	17	14
Passive warnings	14	3	2	2	7	4	2	6	12	5	2
Automated warnings	18	27	18	11	12	15	16	19	6	12	12
Flashing lights and bells	7	7	3	2	5	3	4	5	1	5	2
Gates	11	20	15	9	7	12	12	14	5	7	10
Other automated warnings	0	0	0	0	0	0	0	0	0	0	0
Private crossings	0	0	1	1	0	0	0	3	0	0	0
Farm crossings	1	0	0	1	0	0	1	0	0	0	0
Persons seriously injured	32	27	29	18	24	22	42	31	12	24	27
Public crossings	29	26	22	18	21	18	37	25	11	23	26
Passive warnings	15	7	11	4	5	9	17	6	3	11	6
Automated warnings	14	19	11	14	16	9	20	19	8	12	20
Flashing lights and bells	6	4	6	4	8	3	6	9	2	6	6
Gates	8	13	5	10	8	6	14	10	6	6	14
Other automated warnings	0	2	0	0	0	0	0	0	0	0	0
Private crossings	3	0	7	0	3	3	5	6	1	1	1
Farm crossings	0	1	0	0	0	1	0	0	0	0	0
Number of public crossings²	16 229	16 113	15 950	15 724	15 656	16 524	16 447	16 497	16 366	15 434	14 124
Passive warnings	10 628	10 548	10 397	10 173	10 109	10 833	10 671	10 608	10 506	9 561	8 210
Automated warnings	5 601	5 565	5 553	5 551	5 547	5 691	5 776	5 889	5 860	5 873	5 914
Flashing lights and bells	3 288	3 235	3 189	3 156	3 118	3 268	3 267	3 277	3 208	3 163	3 136
Gates	2 254	2 275	2 317	2 351	2 386	2 399	2 484	2 585	2 627	2 685	2 760
Other automated warnings	59	55	47	44	43	24	25	27	25	25	18

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

² Source: Transport Canada Rail Safety Integrated Gateway (RSIG) database. The data for 2022 are from 13 March 2023. Figures for previous years are snapshots provided historically by Transport Canada.

Table 11. Crossing accidents and casualties, by province and territory,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Crossing accidents	192	184	185	165	133	143	167	178	130	136	160
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	1	0	0	2	1	3	3	2	4	0	2
New Brunswick	3	2	6	7	4	1	3	2	1	2	3
Quebec	18	16	23	28	29	26	24	25	20	14	18
Ontario	41	40	44	29	26	26	43	50	20	27	37
Manitoba	26	19	17	19	14	15	15	20	22	16	13
Saskatchewan	32	37	34	23	19	26	22	24	13	24	29
Alberta	49	50	40	38	21	28	35	35	31	31	32
British Columbia	22	19	21	19	19	18	22	20	19	21	26
Northwest Territories and Yukon	0	1	0	0	0	0	0	0	0	1	0
Crossing accidents on main track²	184	178	173	159	122	137	156	166	124	127	148
Crossing accidents per million main-track train miles³	2.3	2.3	2.1	2.0	1.6	1.8	1.9	2.0	1.7	1.7	2.0
Crossing accidents with derailment	3	6	9	6	6	5	7	1	3	2	4
Persons fatally injured	33	30	21	15	19	19	19	28	18	17	14
Newfoundland and 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	1	1	0	0	2	0	0	0	0	0	0
Quebec	1	2	9	4	3	7	3	2	3	3	0
Ontario	12	13	5	5	3	7	7	11	2	7	4
Manitoba	3	0	1	1	2	2	0	5	5	1	0
Saskatchewan	8	3	2	0	4	0	1	4	1	0	5
Alberta	6	7	2	3	3	2	3	2	5	6	0
British Columbia	2	4	2	2	2	1	5	4	2	0	5
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
Persons seriously injured	32	27	29	18	24	22	42	31	12	24	27
Newfoundland and 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	0	0	0	0	0	0	0	0	0	0	0
Quebec	1	1	3	2	8	3	10	1	2	1	2
Ontario	8	15	3	0	4	2	8	7	1	7	4
Manitoba	7	0	7	2	3	3	8	0	2	3	4
Saskatchewan	6	5	7	2	2	2	9	7	1	1	6
Alberta	7	5	5	6	6	5	2	9	3	8	8
British Columbia	3	1	4	6	1	7	5	5	2	4	3
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
Number of public crossings⁴	16 229	16 113	15 950	15 724	15 656	16 524	16 447	16 497	16 366	15 434	14 124
Newfoundland and Labrador	5	5	5	5	5	4	5	5	5	6	6
Nova Scotia	180	182	182	182	182	181	181	183	168	103	103
New Brunswick	340	342	343	344	344	471	472	432	432	274	274
Quebec	1 968	1 967	1 921	1 902	1 902	1 694	1 693	1 786	1 788	1 664	1 417
Ontario	3 884	3 792	3 782	3 743	3 728	4 126	4 131	4 158	4 074	3 797	3 048
Manitoba	1 939	1 929	1 914	1 862	1 858	2 046	2 006	1 987	1 983	1 970	1 925
Saskatchewan	3 656	3 652	3 597	3 509	3 504	3 607	3 573	3 546	3 526	3 518	3 473
Alberta	2 777	2 767	2 731	2 724	2 707	2 881	2 894	2 883	2 895	2 852	2 644
British Columbia	1 454	1 451	1 449	1 432	1 404	1 498	1 476	1 502	1 480	1 220	1 204
Northwest Territories and Yukon	26	26	26	21	22	16	16	15	15	30	30

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

² Includes crossing accidents on main track or on spurs.

³ Source of estimated million main-track train miles: Transport Canada email communication 13 March 2023.

⁴ Source: Transport Canada RSIG database. The data for 2022 are from 13 March 2023. Figures for previous years are snapshots provided historically by Transport Canada.

Table 12. Trespasser accidents and casualties, by province and territory,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Trespasser accidents	71	56	54	50	68	77	68	56	60	63	73
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	1
Nova Scotia	0	0	0	0	1	1	0	0	2	1	2
New Brunswick	1	0	0	1	1	0	0	1	1	1	0
Quebec	11	7	6	5	3	12	12	6	8	6	11
Ontario	31	30	21	23	25	34	30	21	21	35	34
Manitoba	2	2	2	1	4	4	3	2	3	1	3
Saskatchewan	6	2	2	4	3	1	1	4	1	2	0
Alberta	9	7	10	4	10	8	10	14	12	6	9
British Columbia	11	8	13	12	21	17	12	8	12	11	13
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
Fatal accidents	43	42	31	30	46	52	34	38	40	41	52
Persons fatally injured	44	42	32	30	47	53	34	38	40	41	52
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	0	0	0	2	1	0	0	0	0	0
New Brunswick	1	0	0	1	0	0	0	0	0	0	0
Quebec	8	4	2	5	2	9	7	4	8	4	8
Ontario	18	26	15	13	19	26	14	16	14	28	30
Manitoba	2	2	1	1	2	1	2	2	1	1	2
Saskatchewan	4	2	1	1	2	1	0	4	1	1	0
Alberta	6	4	5	3	5	5	4	9	10	2	8
British Columbia	5	4	8	6	15	10	7	3	6	5	4
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
Persons seriously injured	22	10	21	17	20	22	30	17	20	17	16
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	1
Nova Scotia	0	0	0	0	0	0	0	0	2	0	1
New Brunswick	0	0	0	0	1	0	0	1	1	1	0
Quebec	2	3	4	0	1	3	5	2	0	1	2
Ontario	13	3	6	8	6	8	13	5	7	6	3
Manitoba	0	0	1	0	2	2	1	0	2	0	1
Saskatchewan	0	0	0	4	1	0	1	0	0	0	0
Alberta	2	1	4	1	4	2	6	4	2	2	1
British Columbia	5	3	6	4	5	7	4	5	6	7	7
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.

Table 13. Reportable incidents, by type and assigned factors,¹ 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Reportable incidents	238	225	413	374	302	236	287	285	275	337	381
Main-track train derailments, 1 or 2 cars ² (no damage)	n/a	n/a	2	3	5	3	4	3	1	2	1
Non-main-track train collisions ² (no derailment, no damage)	n/a	n/a	8	4	4	2	2	0	1	2	4
Non-main-track train derailments, 1 or 2 cars ² (no damage)	n/a	n/a	166	125	97	67	96	58	32	39	121
Dangerous goods leaker ³	93	94	63	33	7	n/a	n/a	n/a	n/a	n/a	n/a
Main-track switch in abnormal position	5	7	6	12	7	12	7	15	3	13	8
Movement exceeds limits of authority	120	98	129	142	133	122	138	136	149	109	134
Uncontrolled movement of rolling stock	13	14	11	14	10	14	15	16	19	13	9
Signal less restrictive than required	1	1	2	5	1	1	2	0	1	0	6
Unprotected overlap of authorities	5	4	5	6	4	2	11	6	5	4	2
Crew member incapacitated	1	6	1	2	1	4	5	0	1	0	0
Derailment involving track unit (no damage)	n/a	n/a	7	10	13	5	5	7	9	4	4
Rolling stock collision with abandoned vehicle (no derailment, no damage)	n/a	n/a	1	5	5	0	1	0	1	1	0
Rolling stock collision with object (no derailment, no damage)	n/a	n/a	6	10	14	3	0	1	2	6	5
Fires on railway right-of-way	0	1	6	2	1	1	1	42	46	143	87
Assigned factors^{4,5}	245	230	430	394	325	246	292	290	278	337	394
Dangerous goods leaker location/component	92	92	61	32	9	0	0	0	0	0	0
Equipment	2	5	17	10	11	10	8	48	49	113	35
Individual/personal	1	4	1	3	0	3	4	0	0	0	2
Track	2	2	25	36	29	7	13	7	13	16	28
Actions	139	116	250	264	241	191	209	185	176	154	213
Failure to protect	38	33	95	94	88	73	90	66	46	65	98
Failure to secure	4	7	5	11	4	9	2	7	8	5	6
Failure to use equipment properly	1	9	29	25	34	20	20	9	15	11	20
Inadequate/inappropriate communication	14	8	18	13	14	8	14	12	15	4	4
Lap of authority	75	54	83	98	82	74	72	87	88	61	75
Vandalism	5	1	5	6	6	1	3	2	1	3	2
Other actions	2	4	15	17	13	6	8	2	3	5	8
Other assigned factors	9	11	76	49	35	35	58	50	40	54	116
Reportable incidents	238	225	413	374	302	236	287	285	275	337	381
One factor assigned	230	221	397	360	280	226	281	280	271	337	368
More than one factor assigned	7	4	16	14	21	9	5	5	3	0	11
No factor assigned	1	0	0	0	1	1	1	0	1	0	2

Data extracted 27 February 2023

¹ Data are for federally regulated railways, and include only those occurrences that are reportable under the TSB Regulations.² Under the 2014 TSB Regulations, all derailments are reportable.³ TSB Regulations have been harmonized with Section 8.4 of the *Transportation of Dangerous Goods Regulations*, under which an accidental release of a dangerous good is only reportable (as an accident) if it results in death or serious injury, evacuation, or the closure of a dangerous goods loading facility, a road, a main railway line, or a main waterway.⁴ Since the TSB does not investigate all occurrences, assigned factors may not be TSB findings. Occurrences are normally reported to the TSB with one assigned factor. The TSB may assign additional factors.⁵ Some factors are assigned by parent category (e.g., Actions is the parent of Failure to protect); therefore, the breakdowns may not sum to the category total.

Definitions

The following definitions are based on the *Canadian Transportation Accident Investigation and Safety Board Act* and the associated regulations, as well as the TSB Policy on Occurrence Classification, and apply to the rail transportation occurrences reported pursuant to them.

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 direct contact with any part of the rolling stock or its contents
- The rolling stock or its contents
 - are involved in a collision and/or a derailment resulting in damages to rolling stock and/or track infrastructure,
 - sustain damage that affects the safe operation of the rolling stock,
 - 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
- There is an accidental release on board or from rolling stock that results in any of the events listed in subsection 8.4(2) of the *Transportation of Dangerous Goods Regulations*.

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,
- The rolling stock is involved in a minor collision and/or minor derailment (1 or 2 cars) resulting in no damages; or
- Rolling stock or its contents cause a fire along, or adjacent to, a railway right-of-way.

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.