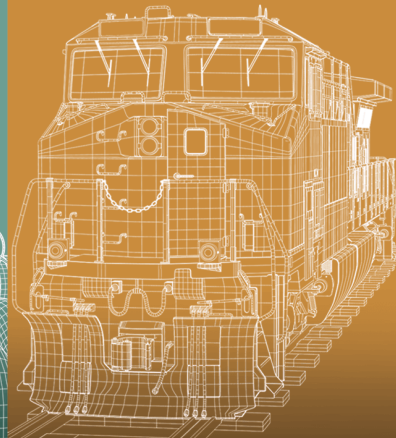
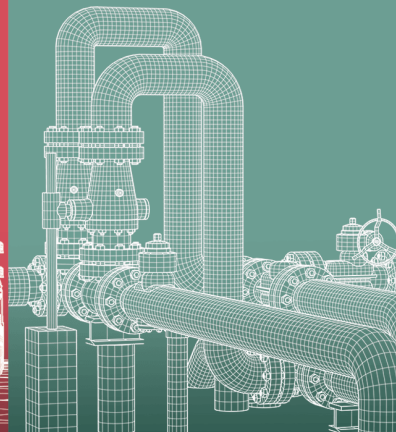




Transportation  
Safety Board  
of Canada

Bureau de la sécurité  
des transports  
du Canada



## STATISTICAL SUMMARY

# Rail Transportation Occurrences in 2020

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*Le présent rapport est également disponible en français.*

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# Statistical Summary

## Rail Transportation Occurrences in 2020

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 2020 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) database at 15 February 2021. Since the occurrence data are constantly being updated in the live database, the statistics may change slightly over time.

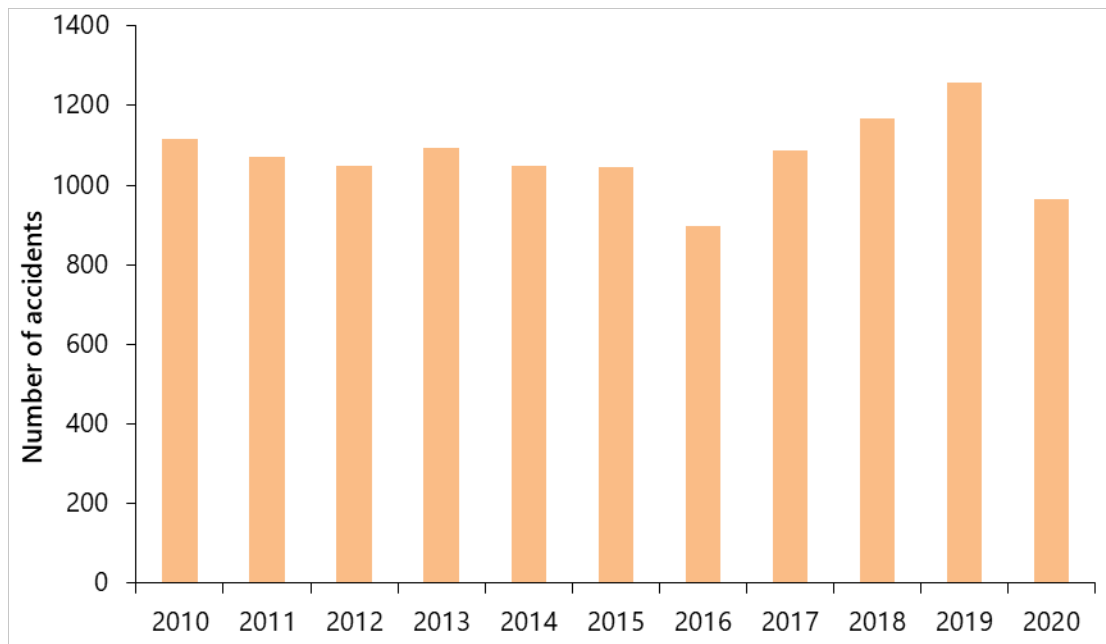
Also, as many occurrences are not formally investigated, information recorded on some occurrences may not have been verified.

# Accidents<sup>1</sup>

## Overview of accidents and casualties

In 2020, 965 rail accidents were reported to the TSB (Figure 1), down from the 2019 total of 1256, and an 11% decrease from the previous 10-year (2010–2019) average of 1083.

Figure 1. Rail accidents, 2010 - 2020



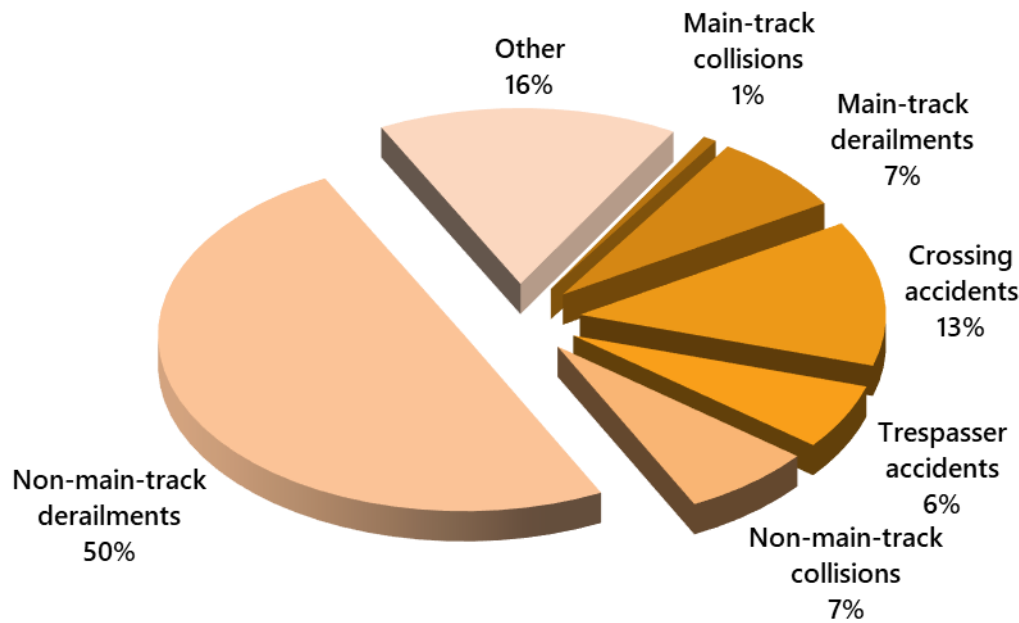
Freight trains accounted for 34% of all trains involved in rail accidents in 2020. Four percent (42 in total) were passenger trains, with the remaining 62% comprising mainly single cars/cuts of cars, locomotives, and track units.

The largest proportion of reported rail accidents comprised non-main-track derailments<sup>2</sup> (50%) (Figure 2). Typically, most non-main-track accidents are minor, occurring during switching operations at speeds of less than 10 mph.

<sup>1</sup> See the Definitions section.

<sup>2</sup> "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, 2020\*



\* 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 2020 (7%) was approximately the same as both the previous year and the 10-year average.

In 2020, 13% of rail accidents involved vehicles or pedestrians at rail crossings, below the 16% average of the previous 10 years. The proportion of other accident types<sup>3</sup> (16%) in 2020 was above the 10-year average (12%).

In 2020, 82 accidents involved dangerous goods,<sup>4</sup> down from 171 in 2019 and below the 10-year average of 131. Three accidents resulted in a dangerous goods release in 2020, compared with 8 in 2019, and the 10-year average of 4.

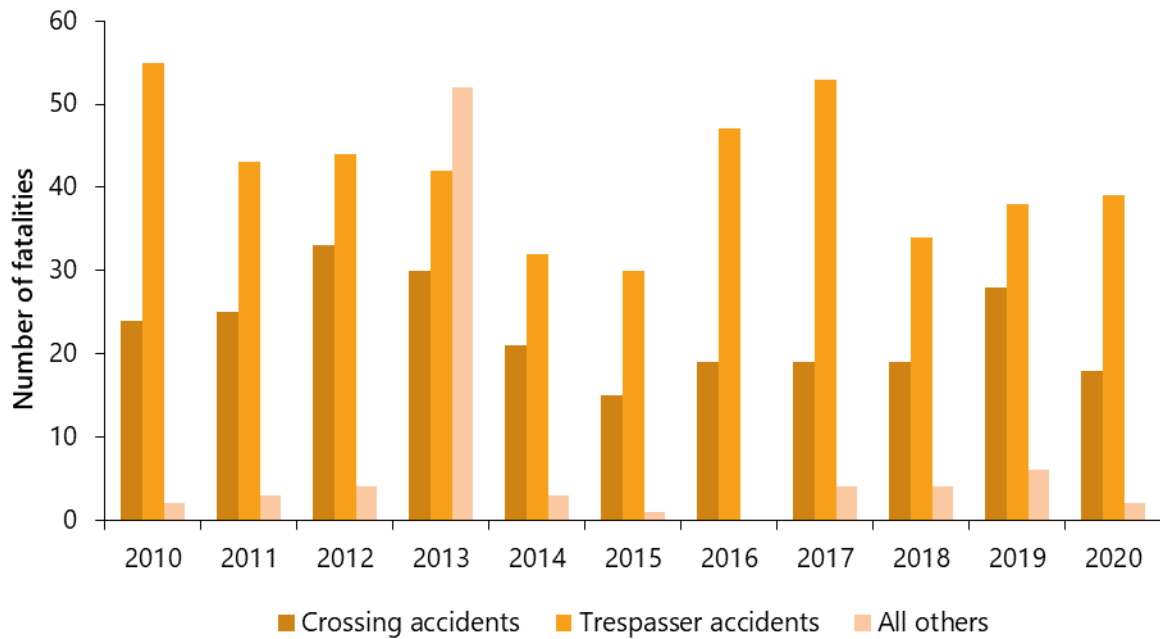
Rail fatalities (Figure 3) totalled 59 in 2020, down from 72 reported last year and below the the previous 10-year average of 73. Crossing fatalities totalled 18 in 2020, down from 28 in 2019 and below the 10-year average of 23. Trespasser<sup>5</sup> fatalities totalled 39 in 2020, up from 38 in the previous year but below the 10-year average of 42. In 2020, 2 railway employees were fatally injured, below the 10-year average of 3 employee fatalities.

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

<sup>4</sup> Accidents involving dangerous goods can also include road vehicles carrying dangerous goods.

<sup>5</sup> 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, 2010 - 2020

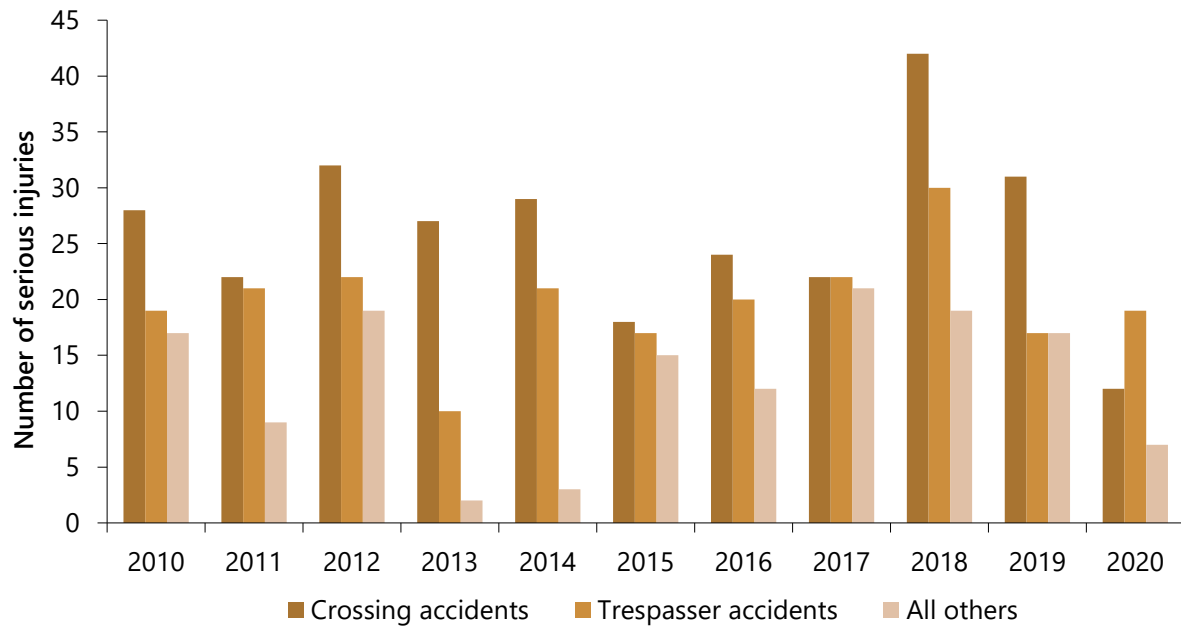


A total of 38 serious injuries resulted from rail occurrences in 2020 (Figure 4), down from 65 in 2019 and below the 10-year average of 61. Trespasser serious injuries totalled 19 in 2020, up from 17 last year but below the 10-year average of 20. Seven railway employees were seriously injured in 2020, down from 16 in 2019 and below the 10-year average of 11. Crossing accidents<sup>6</sup> resulted in 12 serious injuries, down from 31 in 2019 and below the 10-year average of 28.

<sup>6</sup> 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, 2010 - 2020



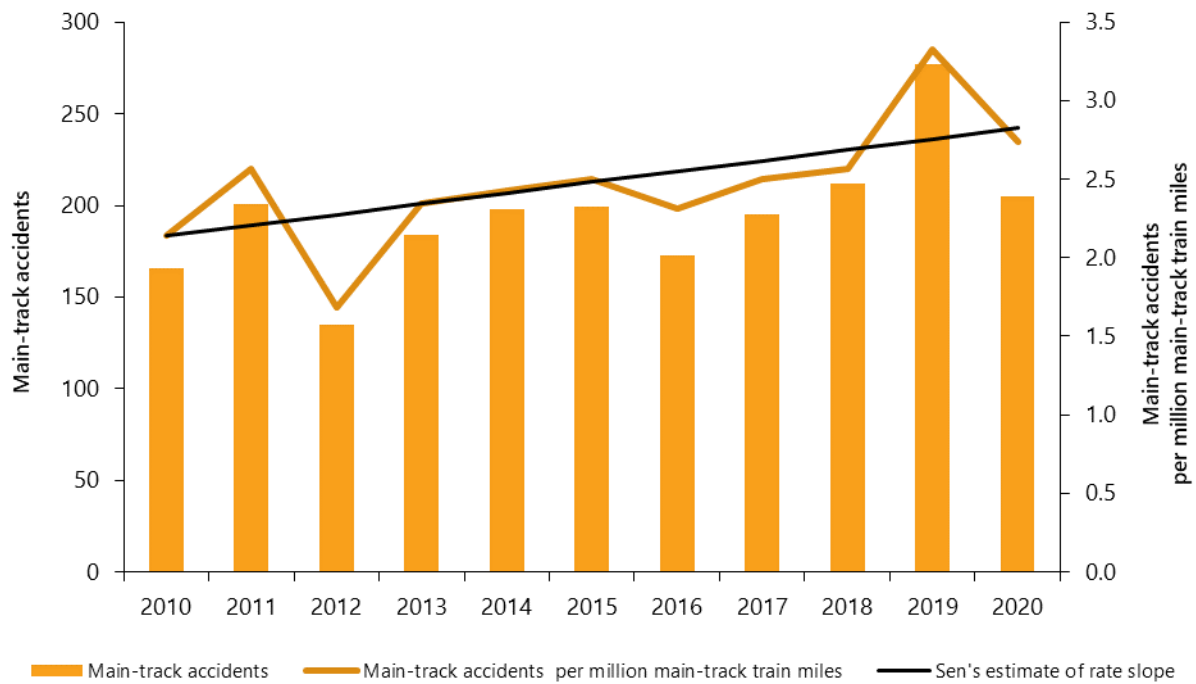
The number of main-track accidents<sup>7</sup> totalled 205 in 2020 (Figure 5), down from 277 in 2019 but 6% above the 10-year average of 194. As in 2019, a portion of main-track accidents in 2020 is due to an unusually high number of right of way fires on main-track reported to the TSB in 2020 (43). Rail activity<sup>8</sup> on main track (i.e., non-yard) decreased by 10% from the previous year. The main-track accident rate in 2020 was 2.7 accidents per million main-track train miles, down from 3.3 in 2019 but 12% above the 10-year average of 2.4.

Kendall's tau-b ( $\tau_b$ ) 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 ( $\tau_b$ ) correlation coefficient is a nonparametric measure of the strength and direction of association that exists between two variables. Kendall's  $\tau_b$  was calculated on the 11-year series of accident rate values by year from 2010 to 2020. There was a moderately strong, positive correlation that indicates an upward trend in accidents per million main-track train miles over the period ( $\tau_b = 0.564$ ,  $p = 0.016$ ). Sen's estimate of slope, the amount of upward rate change per year, was 0.0687 occurrences per million main-track miles per year.

<sup>7</sup> 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).

<sup>8</sup> Transport Canada, Rail Safety Directorate (email dated 17 March 2021).

Figure 5. Main-track accidents and accident rates, 2010 - 2020



## Accidents by type

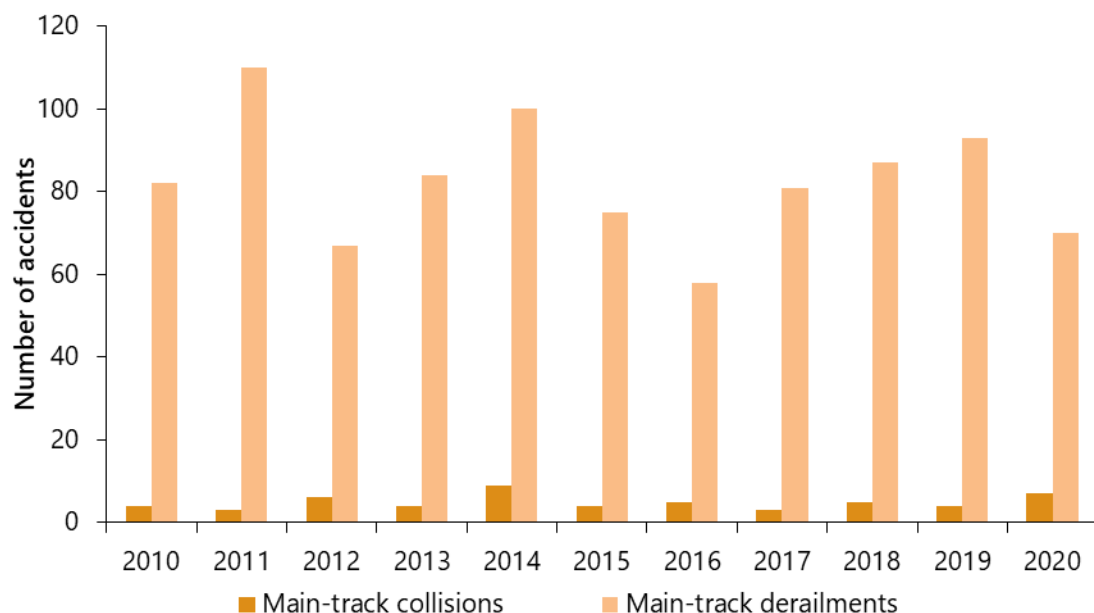
Main-track collisions and derailments are the most serious categories of rail accidents in terms of potential risk to the public and financial loss (e.g., when passenger trains are involved or dangerous goods are released from trains that derail in populated areas).

There were 7 main-track collisions (Table 1 and Figure 6) in 2020, up from the 2019 total of 4 and up from the 10-year average of 5. No fatalities or serious injuries resulted from main-track collisions in 2020. There was no release of dangerous goods as a result of main-track collisions.

A total of 70 main-track derailments (Table 4) were reported in 2020, a decrease from the 2019 total of 93, and 16% below the 10-year average of 84 (Figure 6). Thirty percent of the 70 main-track derailments occurred in British Columbia, 20% occurred in Ontario, and 16% occurred in Alberta.

The number of main-track derailments per million main-track (i.e., non-yard) train miles decreased to 0.93 in 2020 from 1.12 the previous year and below the 10-year average of 1.05.

Figure 6. Main-track collision and derailment accidents, 2010 - 2020



No fatalities or serious injuries resulted from main-track derailments in 2020. Seven main-track derailments involved dangerous goods, down from the 2019 total of 19 and below the 10-year average of 14. Two of these derailments resulted in a release of product (crude oil).

In 2020, 26% of assigned factors<sup>9</sup> for main-track derailments (Table 5) were equipment-related, down from the 10-year average of 31%. Actions-related factors<sup>10</sup> accounted for 25% of assigned factors in 2020, up from the 10-year average of 22%. Track-related factors were reported in 31% of main-track derailments in 2020, below the 10-year average of 37%.

Non-main-track collisions (Table 6 and Figure 7) totalled 67 in 2020, down from the 2019 total of 112, and below the 10-year average of 96. Derailments occurred in 33 non-main-track collisions (49%), and 16 of those derailments involved the derailment of only one car.

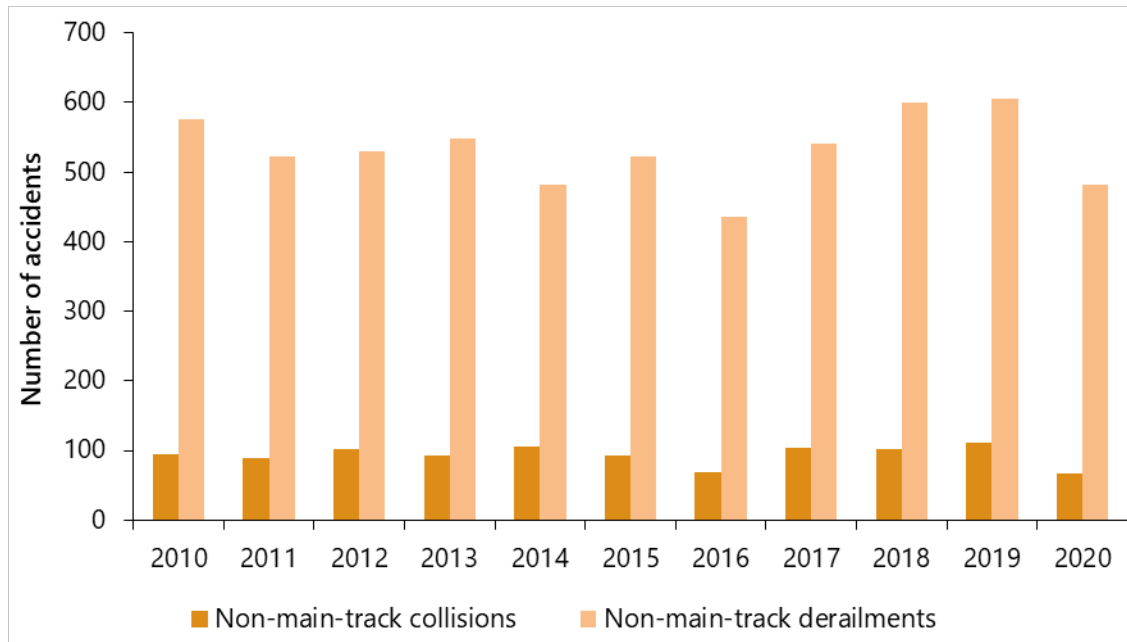
No fatalities or serious injuries resulted from non-main-track collisions in 2020. Dangerous goods were involved in 19% of non-main-track collisions, none of which resulted in a release of product.

Factors assigned to non-main-track collisions were mostly actions-related (85%), 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 (57%) as a factor.

<sup>9</sup> 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.

<sup>10</sup> 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, 2010 - 2020



There were 481 non-main-track derailments<sup>11</sup> in 2020 (Table 8 and Figure 7), down from the 606 last year and 10% below the 10-year average of 536. In 82% of 2020 accidents, 1 or 2 cars derailed. No fatalities or serious injuries resulted from non-main-track derailments in 2020.

Dangerous goods cars were involved in 12% of non-main-track derailment accidents, none of which resulted in a release of product.

In 2020, actions-related factors represented 51% of all assigned factors for non-main-track derailment accidents, above the 10-year average of 47% (Table 9). Track-related factors represented 29% of all assigned factors, below the 10-year average of 33%. Environmental-related factors represented 13% of all assigned factors in 2020, above the 10-year average of 10%.

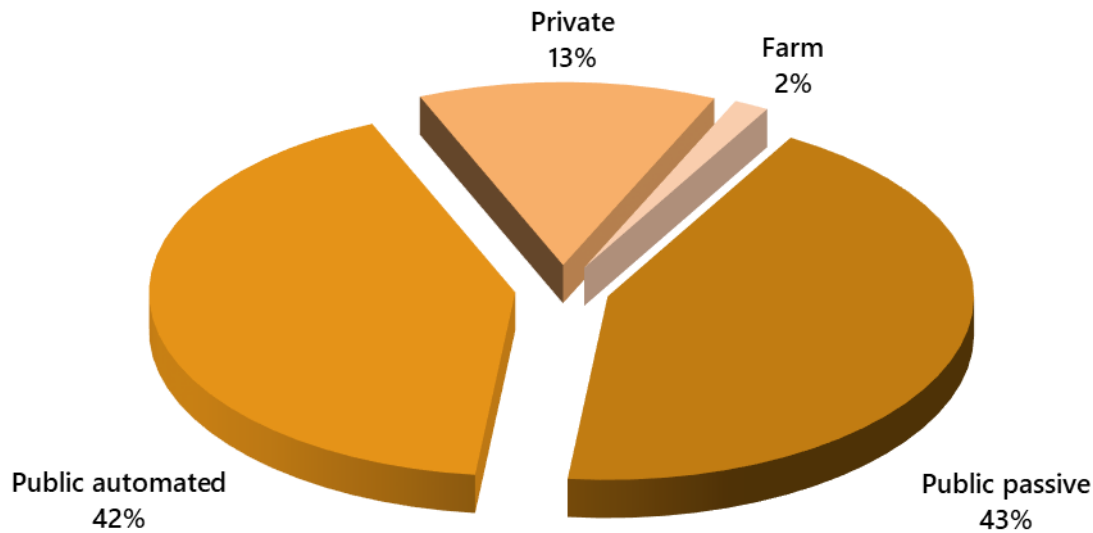
Crossing accidents (tables 10 and 11) represented one of the more serious types of rail accidents in 2020, with 19% of these resulting in serious or fatal injuries.

There were 129 crossing accidents in 2020, a 28% decrease from the 2019 total of 178 and 24% below the 10-year average of 170. The number of accidents at public automated crossings (54) was down from the 2019 total of 87, and below the 10-year average of 86. Accidents at public passive crossings (56) increased from the 2019 total of 49 and were similar to the 10-year average of 57. Accidents at private and farm crossings (19) decreased from the 2019 total of 42 and were 31% below the 10-year average of 27.

In 2020, 42% of crossing accidents occurred at public automated crossings, and 43% at public passive crossings (Figure 8). Although there are nearly twice as many public passive crossings than public automated crossings, the comparable number of accidents occurring at automated crossings is due, in part, to higher vehicle and train traffic volumes at the automated crossings. The TSB is conducting ongoing research to better understand the causes of crossing accidents.

<sup>11</sup> New 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, 2020



There were 16 fatal crossing accidents in 2020, down from the 26 reported in 2019 and below the 10-year average of 21. Crossing-related fatalities totalled 18 in 2020, down from the 28 reported in 2019 and below the 10-year average of 23.

Crossing accidents involving pedestrians accounted for 9% (11) of all crossing accidents in 2020, but 25% (4) of fatal crossing accidents and 22% of crossing-related fatalities.

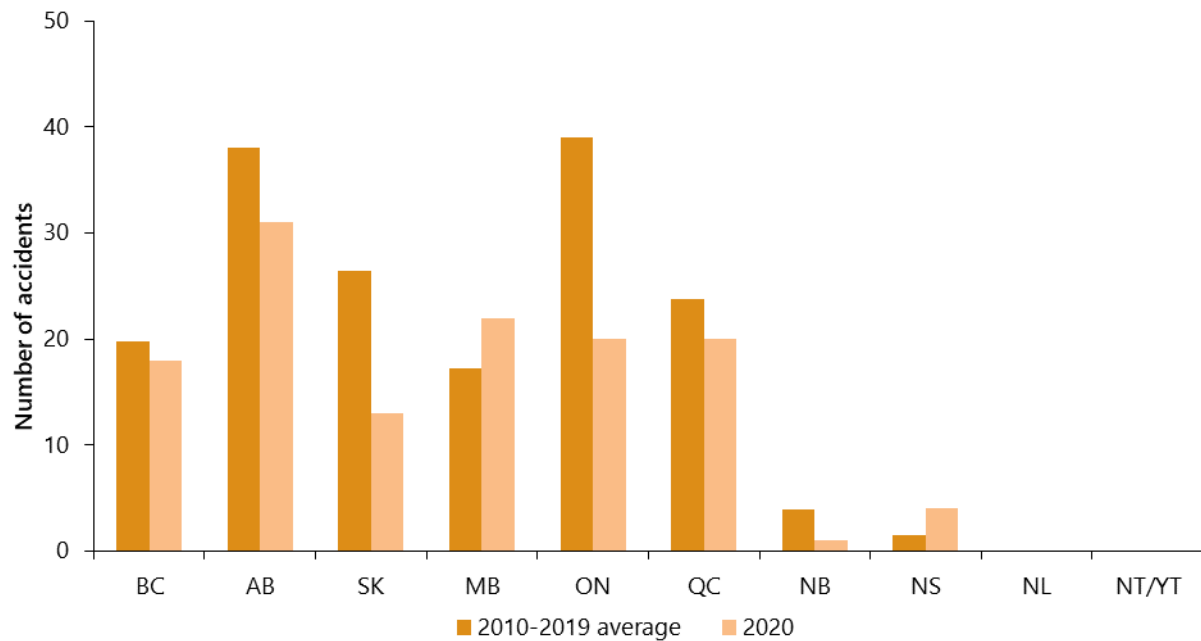
Crossing-related serious injuries totalled 12 in 2020, down from the 2019 total of 31 and below the 10-year average of 28.

In 2020, 3 crossing accidents resulted in a derailment, up from 1 in 2019 but below the 10-year average (5).

One crossing accident resulted in the release of a dangerous good in 2020 (liquified petroleum gas).

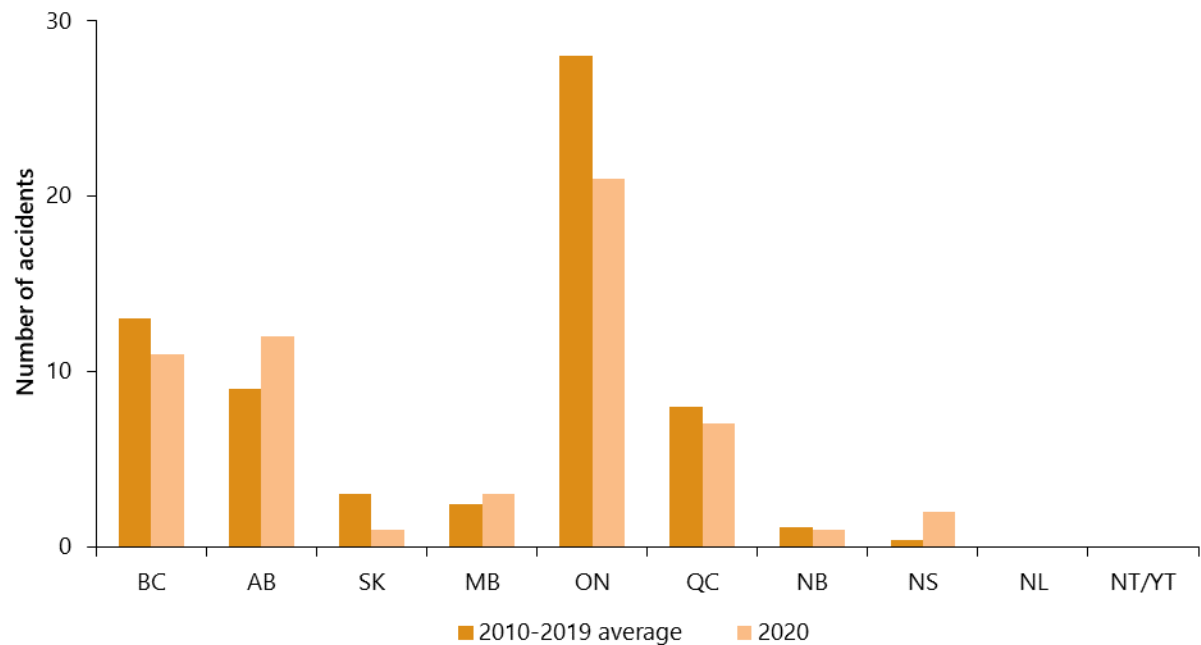
Alberta had the highest proportion (24%) of all crossing accidents in 2020, above its 10-year average of 22%. Manitoba had the second highest total with 17% of crossing accidents, followed by Quebec and Ontario with 16% each, and British Columbia with 14% (Figure 9).

Figure 9. Crossing accidents by province/territory, 2020



Trespasser accidents (Table 12 and Figure 10) totalled 58 in 2020, up from 56 in 2019 but below the 10-year average of 65. Ontario accounted for 36% of trespasser accidents, followed by Alberta with 21%, British Columbia with 19%, and Quebec with 12%.

Figure 10. Trespasser accidents by province/territory, 2020



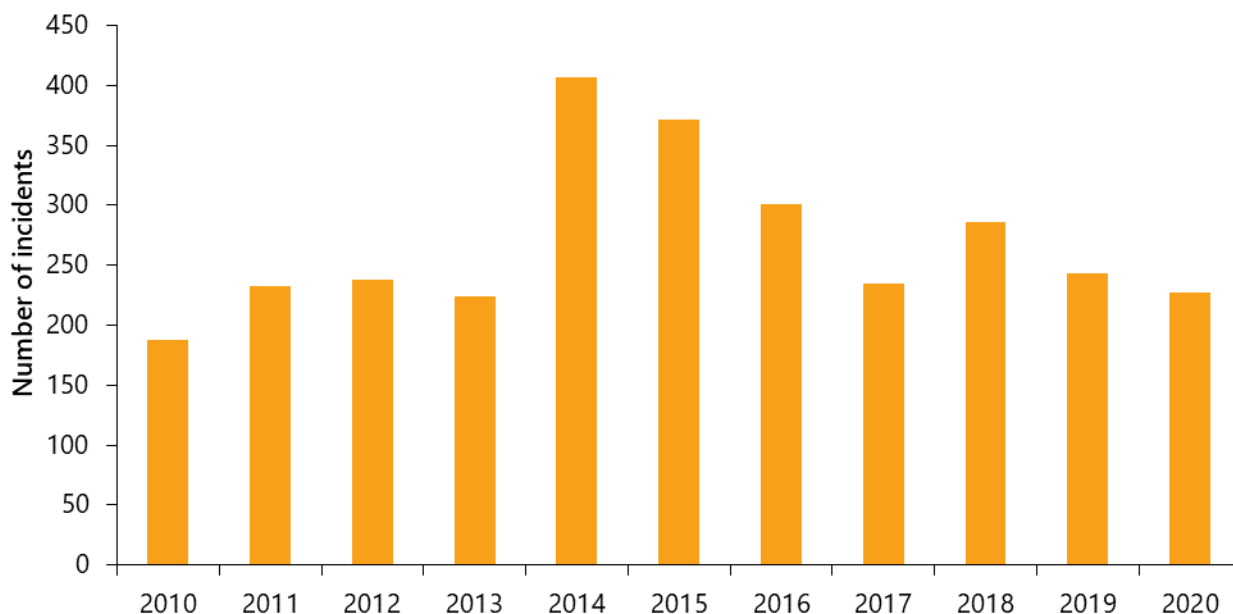
In 2020, the proportion of trespasser accidents that were fatal (67%) was above the 10-year average of 64%. The proportion of trespasser accidents resulting in serious injuries (33%) was above the 10-year average of 31%.

# Incidents<sup>12</sup>

## Overview of incidents

In 2020, there were 227 reported rail incidents (Figure 11), down from 243 in 2019.

Figure 11. Rail incidents,\* 2010 - 2020



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

“Movement exceeds the limit of authority”<sup>13</sup> accounted for 67% of reportable incidents in 2020 (Table 13), followed by “non-main-track train derailments – no damage” (14%), “uncontrolled movement of rolling stock” (8%), and “derailment involving track unit – no damage” (4%).

In 2020 there were 19 “uncontrolled movement of rolling stock” incidents, as well as 1 derailment incident and 1 collision incident that involved an uncontrolled movement of rolling stock. In addition, 29 accidents involved an uncontrolled movement of rolling stock, for a total of 50 occurrences. This is fewer than the total (80) of those occurrences in 2019, and a 17% decrease from the 10-year average of 60.

There were 151 incidents in 2020 where the movement exceeded the limit of authority, an increase from the 136 reported in 2019 and 22% above the 10-year average of 124.

<sup>12</sup> See the Definitions section.

<sup>13</sup> 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

**Table 1. Rail transportation occurrences, by accident/incident type and casualties,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Accidents</b>	<b>1116</b>	<b>1071</b>	<b>1049</b>	<b>1095</b>	<b>1048</b>	<b>1045</b>	<b>897</b>	<b>1088</b>	<b>1168</b>	<b>1256</b>	<b>965</b>
Main-track collisions	4	3	6	4	9	4	5	3	5	4	7
Main-track derailments, 1 or 2 cars <sup>2</sup>	41	49	35	52	44	40	33	48	39	54	40
Main-track train derailments, 3 to 5 cars	11	17	9	13	15	8	7	5	10	6	3
Main-track train derailments, 6 or more cars	30	44	23	19	41	27	18	28	38	33	27
Crossing accidents	180	171	192	184	185	165	133	143	167	178	129
Non-main-track collisions	94	89	101	93	106	92	69	103	101	112	67
Non-main-track derailments, 1 or 2 cars <sup>2</sup>	457	404	424	436	357	410	346	424	476	492	395
Non-main-track derailments, 3 to 5 cars	93	91	77	88	90	87	62	82	100	87	65
Non-main-track derailments, 6 or more cars	26	27	29	25	34	26	27	35	23	27	21
Collisions/derailments involving track units	36	34	25	41	27	43	23	45	48	50	38
Employee/passenger accidents	9	11	7	8	13	15	16	17	13	15	8
Trespasser accidents	81	65	71	56	54	50	68	77	68	56	58
Fires/Explosions	30	23	17	11	36	32	35	33	34	100	76
Other accident types	24	43	33	65	37	46	55	45	46	42	31
<b>Reportable incidents</b>	<b>188</b>	<b>233</b>	<b>238</b>	<b>224</b>	<b>407</b>	<b>372</b>	<b>301</b>	<b>235</b>	<b>286</b>	<b>243</b>	<b>227</b>
Main-track derailments, 1 or 2 cars <sup>2</sup> (no damage)	n/a	n/a	n/a	n/a	2	3	5	3	4	3	1
Non-main-track train collisions (no derailment, no damage)	n/a	n/a	n/a	n/a	8	4	4	2	2	0	1
Non-main-track train derailments, 1 or 2 cars <sup>2</sup> (no damage)	n/a	n/a	n/a	n/a	166	125	97	67	96	58	32
Dangerous goods leaker <sup>3</sup>	68	79	93	94	63	33	7	n/a	n/a	n/a	n/a
Main-track switch in abnormal position	5	10	5	7	6	12	7	12	7	15	3
Movement exceeds limits of authority	101	118	120	98	129	142	133	122	138	136	151
Uncontrolled movement of rolling stock	5	16	13	14	11	14	10	14	15	16	19
Other reportable incidents	9	10	7	11	22	39	38	15	24	15	20
<b>Main-track accidents<sup>4</sup></b>	<b>166</b>	<b>201</b>	<b>135</b>	<b>184</b>	<b>198</b>	<b>199</b>	<b>173</b>	<b>195</b>	<b>212</b>	<b>277</b>	<b>205</b>
<b>Million main-track train miles<sup>5</sup></b>	<b>77.6</b>	<b>78.4</b>	<b>80.1</b>	<b>78.5</b>	<b>81.6</b>	<b>79.6</b>	<b>74.7</b>	<b>78.0</b>	<b>82.6</b>	<b>83.3</b>	<b>74.9</b>
<b>Main-track accidents per million main-track train miles</b>	<b>2.1</b>	<b>2.6</b>	<b>1.7</b>	<b>2.3</b>	<b>2.4</b>	<b>2.5</b>	<b>2.3</b>	<b>2.5</b>	<b>2.6</b>	<b>3.3</b>	<b>2.7</b>
<b>Accidents involving dangerous goods</b>	<b>141</b>	<b>121</b>	<b>120</b>	<b>143</b>	<b>143</b>	<b>127</b>	<b>101</b>	<b>115</b>	<b>125</b>	<b>171</b>	<b>82</b>
Main-track derailments	13	20	6	11	25	12	10	10	17	19	7
Crossing accidents	7	1	4	5	5	4	4	6	7	7	3
Non-main-track collisions	26	21	21	26	36	32	19	39	33	44	13
Non-main-track derailments	88	73	88	96	68	75	60	54	62	95	56
Other accident types	7	6	1	5	9	4	8	6	6	6	3
<b>Accidents with a dangerous goods release</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>4</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>4</b>	<b>8</b>	<b>3</b>
<b>Accidents involving an uncontrolled movement of rolling stock</b>	<b>32</b>	<b>35</b>	<b>43</b>	<b>57</b>	<b>43</b>	<b>41</b>	<b>33</b>	<b>48</b>	<b>47</b>	<b>62</b>	<b>29</b>
<b>Persons fatally injured in reportable occurrences</b>	<b>81</b>	<b>71</b>	<b>81</b>	<b>124</b>	<b>56</b>	<b>46</b>	<b>66</b>	<b>76</b>	<b>57</b>	<b>72</b>	<b>59</b>
Crossing accidents	24	25	33	30	21	15	19	19	19	28	18
Trespasser accidents	55	43	44	42	32	30	47	53	34	38	39
Other occurrence types <sup>6</sup>	2	3	4	52	3	1	0	4	4	6	2
<b>Persons seriously injured in reportable occurrences</b>	<b>64</b>	<b>52</b>	<b>73</b>	<b>39</b>	<b>53</b>	<b>50</b>	<b>56</b>	<b>65</b>	<b>91</b>	<b>65</b>	<b>38</b>
Crossing accidents	28	22	32	27	29	18	24	22	42	31	12
Trespasser accidents	19	21	22	10	21	17	20	22	30	17	19
Other occurrence types <sup>6</sup>	17	9	19	2	3	15	12	21	19	17	7

Data extracted 15 February 2021

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

<sup>2</sup> 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 to 2 cars with no equipment or track damage, no injuries, no fires, and no release of dangerous goods; it also includes 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.

<sup>3</sup> *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.

<sup>4</sup> Accidents that occurred on main track or spurs, excluding crossing and trespasser accidents, and excluding non-main-track collisions and derailments.

<sup>5</sup> Main-track (i.e., non-yard) train miles are estimated (Source: Transport Canada email communication 17 March 2021).

<sup>6</sup> See Table 2 for details on occurrences by type.



**Table 2. Casualties, by accident/incident type and category of person,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Persons fatally injured in reportable occurrences</b>	<b>81</b>	<b>71</b>	<b>81</b>	<b>124</b>	<b>56</b>	<b>46</b>	<b>66</b>	<b>76</b>	<b>57</b>	<b>72</b>	<b>59</b>
Main-track collisions	0	0	0	0	0	0	0	0	0	0	0
Main-track derailments	1	0	3	47	0	0	0	0	1	3	0
Crossing accidents	24	25	33	30	21	15	19	19	19	28	18
Non-main-track collisions	0	0	0	1	0	0	0	0	2	0	0
Non-main-track derailments	0	0	1	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	1	1	0	4	2	1	0	3	1	2	2
Trespasser accidents	55	43	44	42	32	30	47	53	34	38	39
Other accident types	0	2	0	0	1	0	0	0	0	1	0
Reportable incidents	0	0	0	0	0	0	0	1	0	0	0
<b>Persons seriously injured in reportable occurrences</b>	<b>64</b>	<b>52</b>	<b>73</b>	<b>39</b>	<b>53</b>	<b>50</b>	<b>56</b>	<b>65</b>	<b>91</b>	<b>65</b>	<b>38</b>
Main-track collisions	0	0	1	0	0	0	0	0	0	0	0
Main-track derailments	8	0	10	0	0	0	0	0	3	1	0
Crossing accidents	28	22	32	27	29	18	24	22	42	31	12
Non-main-track collisions	0	0	1	0	0	0	0	2	0	2	0
Non-main-track derailments	0	0	0	0	0	0	0	0	0	0	0
Collisions/derailments involving track units	2	1	0	0	0	0	3	0	0	2	1
Employee/passenger accidents	7	7	6	1	2	11	8	16	12	11	5
Trespasser accidents	19	21	22	10	21	17	20	22	30	17	19
Other accident types	0	1	0	0	0	2	1	3	0	1	0
Reportable incidents	0	0	1	1	1	2	0	0	4	0	1
<b>Persons fatally injured</b>	<b>81</b>	<b>71</b>	<b>81</b>	<b>124</b>	<b>56</b>	<b>46</b>	<b>66</b>	<b>76</b>	<b>57</b>	<b>72</b>	<b>59</b>
Employees	1	1	4	5	2	1	0	3	4	5	2
Passengers	1	0	0	0	1	0	0	1	0	0	0
Pedestrians	8	6	17	13	8	3	7	8	10	13	6
Vehicle occupants	15	22	16	17	12	11	12	11	9	16	14
Trespassers	55	42	44	42	32	31	47	53	34	38	36
Other categories of persons	1	0	0	47	1	0	0	0	0	0	1
<b>Persons seriously injured</b>	<b>64</b>	<b>52</b>	<b>73</b>	<b>39</b>	<b>53</b>	<b>50</b>	<b>56</b>	<b>65</b>	<b>91</b>	<b>65</b>	<b>38</b>
Employees	12	8	9	2	7	8	15	19	17	16	7
Passengers	7	0	14	1	1	8	2	3	3	1	0
Pedestrians	4	5	5	3	1	2	0	2	8	6	3
Vehicle occupants	22	18	23	23	21	16	18	18	33	25	9
Trespassers	19	21	22	10	23	16	21	23	30	17	19
Other categories of persons	0	0	0	0	0	0	0	0	0	0	0

Data extracted 15 February 2021

<sup>1</sup> 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,<sup>1,2,3</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Freight trains</b>	<b>842</b>	<b>822</b>	<b>800</b>	<b>834</b>	<b>545</b>	<b>413</b>	<b>338</b>	<b>402</b>	<b>389</b>	<b>448</b>	<b>357</b>
Main-track collisions	6	4	8	7	8	6	6	6	5	4	8
Main-track derailments	76	102	62	79	90	66	48	75	75	78	64
Non-main-track collisions	94	95	94	85	42	27	11	28	20	26	15
Non-main-track derailments	421	401	382	423	187	108	88	95	96	78	56
Crossing accidents	137	132	160	144	139	117	86	94	106	117	94
Trespasser accidents	53	42	51	38	39	36	48	51	40	42	47
Other accident types	55	46	43	58	40	53	51	53	47	103	73
<b>Passenger trains</b>	<b>63</b>	<b>72</b>	<b>47</b>	<b>46</b>	<b>50</b>	<b>46</b>	<b>57</b>	<b>55</b>	<b>68</b>	<b>47</b>	<b>42</b>
Main-track collisions	0	0	0	0	1	0	0	0	1	1	1
Main-track derailments	3	2	1	3	3	2	4	2	2	2	1
Non-main-track collisions	1	5	1	0	1	0	0	0	0	0	5
Non-main-track derailments	8	5	5	4	1	2	1	4	6	3	13
Crossing accidents	21	20	15	17	18	16	11	13	19	15	7
Trespasser accidents	27	23	17	16	12	10	13	23	24	12	4
Other accident types	3	17	8	6	14	16	28	13	16	14	11
<b>Track units</b>	<b>66</b>	<b>61</b>	<b>41</b>	<b>76</b>	<b>50</b>	<b>78</b>	<b>41</b>	<b>71</b>	<b>81</b>	<b>85</b>	<b>62</b>
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	1	0	0	0	0	0	0	0	0	0	0
Crossing accidents	9	7	2	7	2	5	4	5	6	4	3
Trespasser accidents	0	0	0	0	0	0	0	0	0	0	0
Other accident types	56	54	39	69	48	73	37	66	75	81	59
<b>Single car/cut of cars</b>	<b>136</b>	<b>121</b>	<b>131</b>	<b>126</b>	<b>378</b>	<b>476</b>	<b>416</b>	<b>527</b>	<b>595</b>	<b>620</b>	<b>457</b>
Main-track collisions	0	1	2	0	6	0	1	0	2	2	3
Main-track derailments	1	5	1	2	8	2	4	2	7	5	4
Non-main-track collisions	69	53	70	59	114	103	93	119	133	141	82
Non-main-track derailments	57	51	49	51	222	333	278	362	402	415	331
Crossing accidents	0	0	1	1	9	17	17	21	26	25	13
Trespasser accidents	0	0	0	0	1	4	6	1	3	2	2
Other accident types	9	11	8	13	18	17	17	22	22	30	22
<b>Other types of train/rolling stock</b>	<b>140</b>	<b>107</b>	<b>150</b>	<b>111</b>	<b>138</b>	<b>132</b>	<b>126</b>	<b>117</b>	<b>151</b>	<b>169</b>	<b>128</b>
Main-track collisions	1	0	1	0	0	0	2	0	0	1	1
Main-track derailments	2	3	3	1	1	5	2	2	3	8	1
Non-main-track collisions	20	15	27	13	26	15	21	14	18	18	9
Non-main-track derailments	101	69	98	73	78	92	72	82	103	113	85
Crossing accidents	13	12	14	15	17	10	15	10	12	17	12
Trespasser accidents	2	0	3	2	2	0	1	2	1	0	5
Other accident types	1	8	4	7	14	10	13	7	14	12	15

Data extracted 15 February 2021

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

<sup>2</sup> 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.

<sup>3</sup> Under the 2014 *TSB Regulations*, all derailments are reportable.

**Table 4. Main-track derailments, by province and territory and number of derailed cars,<sup>1,2</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Main-track derailments</b>	<b>82</b>	<b>110</b>	<b>67</b>	<b>84</b>	<b>100</b>	<b>75</b>	<b>58</b>	<b>81</b>	<b>87</b>	<b>93</b>	<b>70</b>
Newfoundland and Labrador	3	1	1	1	0	0	0	2	0	0	1
Nova Scotia	0	0	0	1	0	0	1	0	0	0	0
New Brunswick	0	0	0	1	3	2	1	0	0	1	0
Quebec	9	10	8	8	11	9	6	6	9	10	9
Ontario	19	24	7	19	20	21	15	11	14	17	14
Manitoba	9	19	9	3	10	4	4	6	8	14	8
Saskatchewan	14	11	4	13	10	8	6	14	18	12	6
Alberta	14	21	17	19	30	17	13	21	20	17	11
British Columbia	14	24	21	19	16	14	12	21	18	22	21
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
<b>Main-track derailments per million main-track train miles<sup>3</sup></b>	<b>1.06</b>	<b>1.40</b>	<b>0.84</b>	<b>1.07</b>	<b>1.23</b>	<b>0.94</b>	<b>0.78</b>	<b>1.04</b>	<b>1.05</b>	<b>1.12</b>	<b>0.93</b>
<b>Main-track derailments per billion gross ton miles<sup>4</sup></b>	<b>0.18</b>	<b>0.23</b>	<b>0.13</b>	<b>0.16</b>	<b>0.18</b>	<b>0.14</b>	<b>0.11</b>	<b>0.14</b>	<b>0.15</b>	<b>0.16</b>	<b>n/a</b>
<b>Main-track derailments by number of derailed cars</b>	<b>82</b>	<b>110</b>	<b>67</b>	<b>84</b>	<b>100</b>	<b>75</b>	<b>58</b>	<b>81</b>	<b>87</b>	<b>93</b>	<b>70</b>
1 car	30	39	29	47	29	30	26	39	29	43	32
2 cars	11	10	6	5	15	10	7	9	10	11	8
3 cars	2	6	3	5	4	4	2	1	4	2	2
4 cars	3	6	2	6	6	2	2	3	4	3	1
5 to 10 cars	19	29	16	7	22	16	10	13	21	11	10
11 cars or more	17	20	11	14	24	13	11	16	19	23	17

Data extracted 15 February 2021

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

<sup>2</sup> Under the 2014 *TSB Regulations*, all derailments are reportable.

<sup>3</sup> Source of estimated million main-track train miles: Transport Canada email communication 17 March 2021.

<sup>4</sup> Source of billion gross ton miles: Rail Trends 2020, Railway Association of Canada.

**Table 5. Main-track derailments, by assigned factors,<sup>1,2</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Assigned factors<sup>3,4</sup></b>	<b>91</b>	<b>126</b>	<b>68</b>	<b>96</b>	<b>109</b>	<b>80</b>	<b>63</b>	<b>81</b>	<b>88</b>	<b>89</b>	<b>68</b>
Environmental	1	6	4	5	10	2	3	4	7	8	10
Equipment	27	48	19	33	27	23	20	30	23	25	18
Axle	7	11	6	8	4	6	6	10	2	6	3
Brakes	3	7	3	3	4	4	4	4	4	7	4
Draft system	4	4	4	2	5	5	1	4	7	2	2
Superstructure	2	3	2	7	3	1	2	1	4	2	2
Truck	5	7	2	5	6	2	1	5	0	1	0
Wheel	6	16	2	8	5	5	6	6	6	7	7
Track	33	45	28	30	49	33	18	29	24	37	21
Geometry	16	18	14	10	11	8	8	12	11	10	9
Object on track	2	2	0	2	1	0	0	1	0	1	0
Other track material	2	4	2	0	7	2	1	3	2	3	1
Rail	7	12	8	12	17	12	4	8	4	13	4
Roadbed	2	6	4	4	5	7	2	4	4	6	5
Switch	2	1	0	0	6	1	3	0	1	1	1
Turnouts	1	1	0	1	0	0	0	1	1	0	0
Actions	24	19	15	26	18	14	18	17	27	17	17
Failure to protect	2	5	5	5	4	2	4	5	10	9	6
Failure to secure	0	0	1	1	0	0	0	0	0	0	0
Failure to use equipment properly	10	7	2	10	6	5	9	8	13	6	8
Improper loading/lifting	3	0	2	2	3	2	0	2	1	0	0
Improper placement/position for task	4	2	2	6	3	1	4	2	2	1	3
Inadequate/inappropriate maintenance of equipment	1	1	0	0	0	1	0	0	0	0	0
Operating at improper speed	3	3	2	2	2	3	0	0	1	0	0
Vandalism	0	0	0	0	0	0	1	0	0	0	0
Other actions	1	1	1	0	0	0	0	0	0	1	0
Other assigned factors	6	8	2	2	5	8	4	1	7	2	2
<b>Main-track derailments</b>	<b>82</b>	<b>110</b>	<b>67</b>	<b>84</b>	<b>100</b>	<b>75</b>	<b>58</b>	<b>81</b>	<b>87</b>	<b>93</b>	<b>70</b>
One factor assigned	74	98	66	74	94	70	53	75	80	85	66
More than one factor assigned	7	12	1	10	6	4	4	3	3	2	1
No factors assigned	1	0	0	0	0	1	1	3	4	6	3

Data extracted 15 February 2021

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

<sup>2</sup> Under the 2014 *TSB Regulations*, all derailments are reportable.

<sup>3</sup> 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.

<sup>4</sup> 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 collisions, by province and territory and number of derailed cars,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Non-main-track collisions</b>	<b>94</b>	<b>89</b>	<b>101</b>	<b>93</b>	<b>106</b>	<b>92</b>	<b>69</b>	<b>103</b>	<b>101</b>	<b>112</b>	<b>67</b>
Newfoundland and Labrador	0	0	0	0	0	0	0	0	1	0	0
Nova Scotia	0	0	0	0	0	0	0	1	0	0	1
New Brunswick	1	1	1	1	4	0	1	1	2	0	2
Quebec	11	12	8	10	4	10	7	9	5	9	4
Ontario	15	17	10	16	23	20	19	25	19	26	15
Manitoba	15	15	21	14	18	15	10	14	8	15	11
Saskatchewan	3	8	12	11	21	8	5	7	13	11	5
Alberta	29	16	34	28	19	17	19	23	26	29	13
British Columbia	20	20	15	13	17	21	8	23	27	22	16
Northwest Territories and Yukon	0	0	0	0	0	1	0	0	0	0	0
<b>Non-main-track collisions</b>	<b>94</b>	<b>89</b>	<b>101</b>	<b>93</b>	<b>106</b>	<b>92</b>	<b>69</b>	<b>103</b>	<b>101</b>	<b>112</b>	<b>67</b>
No cars derailed	51	50	63	63	63	63	38	64	54	63	34
1 car	24	21	14	18	19	21	14	16	27	27	16
2 cars	7	8	10	7	13	1	7	11	6	11	4
3 cars	4	3	6	2	4	3	4	5	4	6	6
4 cars	4	5	5	0	3	2	2	3	2	0	2
5 to 10 cars	3	2	3	3	3	2	3	4	7	3	5
11 cars or more	1	0	0	0	1	0	1	0	1	2	0

Data extracted 15 February 2021

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

**Table 7. Non-main-track collisions, by assigned factors,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Assigned factors<sup>2,3</sup></b>	<b>111</b>	<b>105</b>	<b>114</b>	<b>113</b>	<b>118</b>	<b>103</b>	<b>81</b>	<b>113</b>	<b>106</b>	<b>115</b>	<b>68</b>
Environmental	1	2	4	1	2	2	2	1	2	3	2
Equipment	1	3	4	5	4	3	3	1	3	3	1
Track	5	1	3	6	8	7	1	3	3	3	3
<b>Actions</b>	<b>96</b>	<b>92</b>	<b>100</b>	<b>95</b>	<b>102</b>	<b>88</b>	<b>70</b>	<b>102</b>	<b>94</b>	<b>102</b>	<b>58</b>
Failure to protect	64	64	63	54	61	59	43	66	59	66	39
Failure to secure	11	10	16	13	11	4	5	7	9	7	7
Failure to use equipment properly	8	9	10	14	16	14	11	19	18	21	7
Improper placement/position for task	2	0	0	2	0	1	0	0	0	0	0
Inadequate/Inappropriate communications	3	4	2	3	2	3	3	1	1	2	2
Inadequate/Inappropriate maintenance of equipment	0	0	0	0	0	0	0	0	0	0	0
Operating at improper speed	7	5	8	8	12	7	8	9	7	4	3
Vandalism	0	0	0	0	0	0	0	0	0	0	0
Other actions	1	0	1	1	0	0	0	0	0	2	0
Other assigned factors	8	7	3	6	2	3	5	6	4	4	4
<b>Non-main-track collisions</b>	<b>94</b>	<b>89</b>	<b>101</b>	<b>93</b>	<b>106</b>	<b>92</b>	<b>69</b>	<b>103</b>	<b>101</b>	<b>112</b>	<b>67</b>
One assigned factor	77	73	88	73	97	83	60	96	97	109	66
More than one assigned factor	17	16	13	20	9	9	9	7	4	3	1
No assigned factor	0	0	0	0	0	0	0	0	0	0	0

Data extracted 15 February 2021

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

<sup>2</sup> 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.

<sup>3</sup> 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 8. Non-main-track derailment accidents, by province and territory and number of derailed cars,<sup>1,2</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Non-main-track derailment accidents</b>	<b>576</b>	<b>522</b>	<b>530</b>	<b>549</b>	<b>481</b>	<b>523</b>	<b>435</b>	<b>541</b>	<b>599</b>	<b>606</b>	<b>481</b>
Newfoundland and Labrador	0	0	1	1	0	6	12	11	9	7	7
Nova Scotia	4	3	4	2	4	3	2	5	6	3	8
New Brunswick	10	14	8	4	12	13	9	9	5	12	6
Quebec	61	64	75	55	48	81	67	85	60	111	69
Ontario	116	108	95	93	93	109	85	115	119	136	92
Manitoba	89	75	68	70	68	71	58	70	65	68	57
Saskatchewan	62	79	68	87	50	49	55	49	83	55	46
Alberta	151	103	144	145	125	91	68	93	131	115	100
British Columbia	83	74	67	91	80	100	79	103	121	99	96
Northwest Territories and Yukon	0	2	0	1	1	0	0	1	0	0	0
<b>Non-main-track derailment accidents</b>	<b>576</b>	<b>522</b>	<b>530</b>	<b>549</b>	<b>481</b>	<b>523</b>	<b>435</b>	<b>541</b>	<b>599</b>	<b>606</b>	<b>481</b>
1 car	316	291	301	334	260	319	265	333	383	403	314
2 cars	141	113	123	102	97	91	81	91	93	89	81
3 cars	56	47	39	48	49	53	31	46	54	39	36
4 cars	17	29	22	25	23	26	22	25	28	32	19
5 to 10 cars	43	37	40	37	46	29	31	43	35	32	29
11 cars or more	3	5	5	3	6	5	5	3	6	11	2

Data extracted 15 February 2021

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

<sup>2</sup> Under the 2014 *TSB Regulations*, all derailments are reportable.

**Table 9. Non main-track derailment accidents, by assigned factors,<sup>1,2</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Assigned factors<sup>3,4</sup></b>	<b>639</b>	<b>578</b>	<b>563</b>	<b>622</b>	<b>517</b>	<b>560</b>	<b>465</b>	<b>572</b>	<b>610</b>	<b>610</b>	<b>484</b>
Environmental	29	58	29	82	30	36	40	59	77	131	62
Equipment	54	57	51	39	41	31	31	34	31	23	28
Axle	0	0	1	0	0	0	0	0	0	1	0
Brakes	14	14	6	7	9	7	4	6	11	1	6
Draft system	16	11	10	5	8	3	5	5	5	5	5
Superstructure	5	11	8	7	7	5	4	8	10	6	5
Truck	9	7	17	14	11	8	11	12	5	6	8
Wheel	9	13	8	6	6	8	7	3	0	4	4
Track	237	175	207	205	202	194	164	162	190	165	139
Appurtenances	0	0	4	1	2	1	1	3	3	2	0
Geometry	107	71	80	73	77	61	72	67	78	76	62
Object on track	1	2	3	2	0	2	1	1	3	3	2
Other track material	14	7	6	5	3	5	6	6	7	2	1
Rail	24	19	30	38	30	30	19	38	24	24	18
Roadbed	15	25	13	10	8	9	4	6	6	6	4
Signals	0	0	0	1	0	1	0	0	0	0	0
Switch	52	35	54	58	59	64	50	30	52	40	39
Turnouts	19	13	12	12	19	16	4	8	12	11	10
Actions	293	255	255	269	226	276	216	301	307	280	249
Failure to protect	176	147	140	140	130	158	109	163	209	176	147
Failure to secure	7	3	11	6	5	2	1	9	10	14	5
Failure to use equipment properly	70	76	77	84	67	72	81	98	66	72	63
Improper loading/lifting	8	8	4	7	3	8	1	7	2	6	7
Improper placement/position for task	8	8	11	8	7	7	6	11	4	6	10
Inadequate/inappropriate communications	3	2	2	3	1	4	1	2	4	0	3
Inadequate/inappropriate maintenance of equipment	2	0	0	1	0	3	0	0	0	0	0
Operating at improper speed	14	4	3	10	13	16	8	8	6	3	9
Vandalism	5	6	3	5	0	5	6	3	5	0	4
Other actions	0	1	4	5	0	1	3	0	1	3	1
Other assigned factors	26	33	21	27	18	23	14	16	5	11	6
<b>Non-main-track derailment accidents</b>	<b>576</b>	<b>522</b>	<b>530</b>	<b>549</b>	<b>481</b>	<b>523</b>	<b>435</b>	<b>541</b>	<b>599</b>	<b>606</b>	<b>481</b>
One assigned factor	516	458	497	479	450	498	414	517	584	602	478
More than one assigned factor	60	60	33	70	31	25	21	24	12	4	3
No assigned factor	0	4	0	0	0	0	0	0	3	0	0

Data extracted 15 February 2021

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

<sup>2</sup> Under the 2014 *TSB Regulations*, all derailments are reportable.

<sup>3</sup> 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.

<sup>4</sup> 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,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Crossing accidents</b>	<b>180</b>	<b>171</b>	<b>192</b>	<b>184</b>	<b>185</b>	<b>165</b>	<b>133</b>	<b>143</b>	<b>167</b>	<b>178</b>	<b>129</b>
Public crossings	154	148	170	172	154	131	105	117	137	136	110
Passive warnings	67	59	73	65	68	52	36	47	51	49	56
Automated warnings	87	89	97	107	86	79	69	70	86	87	54
Flashing lights and bells	56	52	48	56	47	37	39	30	44	43	17
Gates	30	36	49	44	38	42	29	38	41	43	36
Other automated warnings	1	1	0	7	1	0	1	2	1	1	1
Private crossings	24	15	18	10	27	28	24	21	29	39	17
Farm crossings	2	8	4	2	4	6	4	5	1	3	2
<b>Fatal accidents</b>	<b>19</b>	<b>24</b>	<b>28</b>	<b>22</b>	<b>20</b>	<b>15</b>	<b>16</b>	<b>19</b>	<b>18</b>	<b>26</b>	<b>16</b>
<b>Persons fatally injured</b>	<b>24</b>	<b>25</b>	<b>33</b>	<b>30</b>	<b>21</b>	<b>15</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>28</b>	<b>18</b>
Public crossings	23	21	32	30	20	13	19	19	18	25	18
Passive warnings	5	5	14	3	2	2	7	4	2	6	12
Automated warnings	18	16	18	27	18	11	12	15	16	19	6
Flashing lights and bells	8	9	7	7	3	2	5	3	4	5	1
Gates	10	7	11	20	15	9	7	12	12	14	5
Other automated warnings	0	0	0	0	0	0	0	0	0	0	0
Private crossings	1	1	0	0	1	1	0	0	0	3	0
Farm crossings	0	3	1	0	0	1	0	0	1	0	0
<b>Persons seriously injured</b>	<b>28</b>	<b>22</b>	<b>32</b>	<b>27</b>	<b>29</b>	<b>18</b>	<b>24</b>	<b>22</b>	<b>42</b>	<b>31</b>	<b>12</b>
Public crossings	25	20	29	26	22	18	21	18	37	25	11
Passive warnings	14	3	15	7	11	4	5	9	17	6	3
Automated warnings	11	17	14	19	11	14	16	9	20	19	8
Flashing lights and bells	5	9	6	4	6	4	8	3	6	9	2
Gates	6	8	8	13	5	10	8	6	14	10	6
Other automated warnings	0	0	0	2	0	0	0	0	0	0	0
Private crossings	3	1	3	0	7	0	3	3	5	6	1
Farm crossings	0	1	0	1	0	0	0	1	0	0	0
<b>Number of public crossings<sup>2</sup></b>	<b>16,718</b>	<b>16,413</b>	<b>16,229</b>	<b>16,113</b>	<b>15,950</b>	<b>15,724</b>	<b>15,656</b>	<b>16,524</b>	<b>16,447</b>	<b>16,497</b>	<b>16,366</b>
Passive warnings	11,112	10,826	10,628	10,548	10,397	10,173	10,109	10,833	10,671	10,608	10,506
Automated warnings	5,606	5,587	5,601	5,565	5,553	5,551	5,547	5,691	5,776	5,889	5,860
Flashing lights and bells	3,365	3,308	3,288	3,235	3,189	3,156	3,118	3,268	3,267	3,277	3,208
Gates	2,181	2,220	2,254	2,275	2,317	2,351	2,386	2,399	2,484	2,585	2,627
Other automated warnings	61	59	59	55	47	44	43	24	25	27	25

Data extracted 15 February 2021

<sup>1</sup> Data are for federally regulated railways, and include only those occurrences that are reportable under the *TSB Regulations*.<sup>2</sup> Source: Transport Canada IRIS database. The data for 2020 are from 17 March 2021. Figures for previous years are snapshots provided historically by Transport Canada.

**Table 11. Crossing accidents and casualties, by province and territory,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Crossing accidents</b>	<b>180</b>	<b>171</b>	<b>192</b>	<b>184</b>	<b>185</b>	<b>165</b>	<b>133</b>	<b>143</b>	<b>167</b>	<b>178</b>	<b>129</b>
Newfoundland and Labrador	0	2	0	0	0	0	0	0	0	0	0
Nova Scotia	3	0	1	0	0	2	1	3	3	2	4
New Brunswick	5	6	3	2	6	7	4	1	3	2	1
Quebec	21	27	18	16	23	28	29	26	24	25	20
Ontario	52	39	41	40	44	29	26	26	43	50	20
Manitoba	20	7	26	19	17	19	14	15	15	20	22
Saskatchewan	24	23	32	37	34	23	19	26	22	24	13
Alberta	37	47	49	50	40	38	21	28	35	35	31
British Columbia	18	20	22	19	21	19	19	18	22	20	18
Northwest Territories and Yukon	0	0	0	1	0	0	0	0	0	0	0
<b>Crossing accidents on main track<sup>2</sup></b>	<b>174</b>	<b>167</b>	<b>182</b>	<b>171</b>	<b>173</b>	<b>159</b>	<b>122</b>	<b>136</b>	<b>156</b>	<b>166</b>	<b>124</b>
<b>Crossing accidents per million main-track train miles<sup>3</sup></b>	<b>2.2</b>	<b>2.1</b>	<b>2.3</b>	<b>2.2</b>	<b>2.1</b>	<b>2.0</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>2.0</b>	<b>1.7</b>
<b>Crossing accidents with derailment</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>3</b>
<b>Persons fatally injured</b>	<b>24</b>	<b>25</b>	<b>33</b>	<b>30</b>	<b>21</b>	<b>15</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>28</b>	<b>18</b>
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	1	0	0	0	0	0	0	0	0	0	0
New Brunswick	1	2	1	1	0	0	2	0	0	0	0
Quebec	1	4	1	2	9	4	3	7	3	2	3
Ontario	6	9	12	13	5	5	3	7	7	11	2
Manitoba	2	2	3	0	1	1	2	2	0	5	5
Saskatchewan	5	1	8	3	2	0	4	0	1	4	1
Alberta	6	5	6	7	2	3	3	2	3	2	5
British Columbia	2	2	2	4	2	2	2	1	5	4	2
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
<b>Persons seriously injured</b>	<b>28</b>	<b>22</b>	<b>32</b>	<b>27</b>	<b>29</b>	<b>18</b>	<b>24</b>	<b>22</b>	<b>42</b>	<b>31</b>	<b>12</b>
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	2	0	0	0	0	0	0	0	0	2	1
New Brunswick	0	0	0	0	0	0	0	0	0	0	0
Quebec	3	4	1	1	3	2	8	3	10	1	2
Ontario	5	7	8	15	3	0	4	2	8	7	1
Manitoba	5	1	7	0	7	2	3	3	8	0	2
Saskatchewan	2	2	6	5	7	2	2	2	9	7	1
Alberta	8	4	7	5	5	6	6	5	2	9	3
British Columbia	3	4	3	1	4	6	1	7	5	5	2
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
<b>Number of public crossings<sup>4</sup></b>	<b>16,718</b>	<b>16,413</b>	<b>16,229</b>	<b>16,113</b>	<b>15,950</b>	<b>15,724</b>	<b>15,656</b>	<b>16,524</b>	<b>16,447</b>	<b>16,497</b>	<b>16,366</b>
Newfoundland and Labrador	5	5	5	5	5	5	5	4	5	5	5
Nova Scotia	180	180	180	182	182	182	182	181	181	183	168
New Brunswick	340	340	340	342	343	344	344	471	472	432	432
Quebec	1,964	1,966	1,968	1,967	1,921	1,902	1,902	1,694	1,693	1,786	1,788
Ontario	3,996	3,915	3,884	3,792	3,782	3,743	3,728	4,126	4,131	4,158	4,074
Manitoba	2,003	2,002	1,939	1,929	1,914	1,862	1,858	2,046	2,006	1,987	1,983
Saskatchewan	3,933	3,710	3,656	3,652	3,597	3,509	3,504	3,607	3,573	3,546	3,526
Alberta	2,786	2,783	2,777	2,767	2,731	2,724	2,707	2,881	2,894	2,883	2,895
British Columbia	1,485	1,486	1,454	1,451	1,449	1,432	1,404	1,498	1,476	1,502	1,480
Northwest Territories and Yukon	26	26	26	26	26	21	22	16	16	15	15

Data extracted 15 February 2021

<sup>1</sup> Data are for federally regulated railways, and include only those occurrences that are reportable under the *TSB Regulations*.<sup>2</sup> Includes crossing accidents on main track or on spurs.<sup>3</sup> Source of estimated million main-track train miles: Transport Canada email communication 17 March 2021.<sup>4</sup> Source: Transport Canada IRIS database. The data for 2020 are from 17 March 2021. Figures for previous years are snapshots provided historically by Transport Canada.

**Table 12. Trespasser accidents and casualties, by province and territory,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Trespasser accidents</b>	<b>81</b>	<b>65</b>	<b>71</b>	<b>56</b>	<b>54</b>	<b>50</b>	<b>68</b>	<b>77</b>	<b>68</b>	<b>56</b>	<b>58</b>
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	1	0	0	0	0	1	1	0	0	2
New Brunswick	1	2	1	0	0	1	1	0	0	1	1
Quebec	13	8	11	7	6	5	3	12	12	6	7
Ontario	35	32	31	30	21	23	25	34	30	21	21
Manitoba	3	1	2	2	2	1	4	4	3	2	3
Saskatchewan	3	2	6	2	2	4	3	1	1	4	1
Alberta	9	6	9	7	10	4	10	8	10	14	12
British Columbia	17	13	11	8	13	12	21	17	12	8	11
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
<b>Fatal accidents</b>	<b>53</b>	<b>43</b>	<b>43</b>	<b>42</b>	<b>31</b>	<b>30</b>	<b>46</b>	<b>52</b>	<b>34</b>	<b>38</b>	<b>39</b>
<b>Persons fatally injured</b>	<b>55</b>	<b>43</b>	<b>44</b>	<b>42</b>	<b>32</b>	<b>30</b>	<b>47</b>	<b>53</b>	<b>34</b>	<b>38</b>	<b>39</b>
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	0	0	0	0	0	2	1	0	0	0
New Brunswick	0	1	1	0	0	1	0	0	0	0	0
Quebec	10	6	8	4	2	5	2	9	7	4	7
Ontario	27	26	18	26	15	13	19	26	14	16	14
Manitoba	2	1	2	2	1	1	2	1	2	2	1
Saskatchewan	2	1	4	2	1	1	2	1	0	4	1
Alberta	6	2	6	4	5	3	5	5	4	9	10
British Columbia	8	6	5	4	8	6	15	10	7	3	6
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0
<b>Persons seriously injured</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>10</b>	<b>21</b>	<b>17</b>	<b>20</b>	<b>22</b>	<b>30</b>	<b>17</b>	<b>19</b>
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	2
New Brunswick	0	1	0	0	0	0	1	0	0	1	1
Quebec	4	2	2	3	4	0	1	3	5	2	0
Ontario	5	6	13	3	6	8	6	8	13	5	7
Manitoba	1	0	0	0	1	0	2	2	1	0	2
Saskatchewan	1	1	0	0	0	4	1	0	1	0	0
Alberta	3	4	2	1	4	1	4	2	6	4	2
British Columbia	5	7	5	3	6	4	5	7	4	5	5
Northwest Territories and Yukon	0	0	0	0	0	0	0	0	0	0	0

Data extracted 15 February 2021

<sup>1</sup> 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,<sup>1</sup> 2010 to 2020**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Reportable incidents</b>	<b>188</b>	<b>233</b>	<b>238</b>	<b>224</b>	<b>407</b>	<b>372</b>	<b>301</b>	<b>235</b>	<b>286</b>	<b>243</b>	<b>227</b>
Main-track train derailments, 1 or 2 cars <sup>2</sup> (no damage)	n/a	n/a	n/a	n/a	2	3	5	3	4	3	1
Non-main-track train collisions <sup>2</sup> (no derailment, no damage)	n/a	n/a	n/a	n/a	8	4	4	2	2	0	1
Non-main-track train derailments, 1 or 2 cars <sup>2</sup> (no damage)	n/a	n/a	n/a	n/a	166	125	97	67	96	58	32
Dangerous goods leaker <sup>3</sup>	68	79	93	94	63	33	7	n/a	n/a	n/a	n/a
Main-track switch in abnormal position	5	10	5	7	6	12	7	12	7	15	3
Movement exceeds limits of authority	101	118	120	98	129	142	133	122	138	136	151
Uncontrolled movement of rolling stock	5	16	13	14	11	14	10	14	15	16	19
Signal less restrictive than required	4	3	1	1	2	5	1	1	2	0	1
Unprotected overlap of authorities	4	7	5	4	5	6	4	2	11	6	3
Crew member incapacitated	1	0	1	6	1	2	1	4	5	0	1
Derailment involving track unit (no damage)	n/a	n/a	n/a	n/a	7	10	13	5	5	7	9
Rolling stock collision with abandoned vehicle (no derailment, no damage)	n/a	n/a	n/a	n/a	1	5	5	0	1	0	1
Rolling stock collision with object (no derailment, no damage)	n/a	n/a	n/a	n/a	6	10	14	3	0	1	0
<b>Assigned factors<sup>4,5</sup></b>	<b>195</b>	<b>240</b>	<b>245</b>	<b>229</b>	<b>424</b>	<b>392</b>	<b>324</b>	<b>245</b>	<b>291</b>	<b>248</b>	<b>226</b>
Dangerous goods leaker location/component <sup>5</sup>	68	78	92	92	61	32	9	n/a	n/a	n/a	n/a
Equipment	2	1	2	4	13	8	10	9	8	7	9
Individual/Personal	0	0	1	4	1	3	0	3	4	0	0
Track	1	5	2	2	25	36	29	7	13	7	11
Actions	114	144	139	116	250	264	241	191	209	185	175
Failure to protect	35	55	38	33	95	94	88	73	90	66	46
Failure to secure	4	11	4	7	5	11	4	9	2	7	8
Failure to use equipment properly	3	5	1	9	29	25	34	20	20	9	14
Inadequate/Inappropriate communication	8	11	14	8	18	13	14	8	14	12	15
Lap of authority	59	59	75	54	83	98	82	74	72	87	88
Vandalism	1	2	5	1	5	6	6	1	3	2	1
Other actions	4	1	2	4	15	17	13	6	8	2	3
Other assigned factors	10	12	9	11	74	49	35	35	57	49	31
<b>Reportable incidents</b>	<b>188</b>	<b>233</b>	<b>238</b>	<b>224</b>	<b>407</b>	<b>372</b>	<b>301</b>	<b>235</b>	<b>286</b>	<b>243</b>	<b>227</b>
One factor assigned	181	226	230	220	391	358	279	225	280	238	219
More than one factor assigned	7	7	7	4	16	14	21	9	5	5	3
No factor assigned	0	0	1	0	0	0	1	1	1	0	5

Data extracted 15 February 2021

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

<sup>2</sup> 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 to 2 cars with no equipment or track damage, no injuries, no fires, and no release of dangerous goods; it also includes 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.

<sup>3</sup> *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.

<sup>4</sup> 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.

<sup>5</sup> 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.

## Definitions

The following definitions are based on the *Canadian Transportation Accident Investigation and Safety Board Act* and the associated regulations, 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 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,
  - 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
- 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,
- A 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.