

# Appendix A Rail Safety Trends

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### Main-Track Derailments in Canada (Assigned Factors) 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Total number of assigned factors</b>	<b>173</b>	<b>182</b>	<b>153</b>	<b>81</b>	<b>91</b>	<b>126</b>	<b>69</b>	<b>95</b>	<b>108</b>	<b>79</b>
Environmental	8	17	12	6	1	6	4	5	11	3
Equipment	54	61	42	23	27	48	19	33	26	23
Axle	5	14	11	5	7	11	6	8	3	6
Brakes	8	8	3	6	3	7	3	3	4	4
Draft system	5	10	4	4	4	4	4	2	5	5
Superstructure	6	8	5	0	2	3	2	7	3	1
Truck	8	5	5	1	5	7	2	5	6	2
Wheel	21	16	12	7	6	16	2	8	5	5
Track	67	59	62	34	33	45	28	30	47	31
Geometry	24	25	23	12	16	18	14	10	11	8
Object on track	2	1	1	1	2	2	0	2	1	0
Other track material	4	2	6	5	2	4	2	0	7	1
Rail	25	18	27	7	7	12	8	12	16	11
Roadbed	8	3	4	5	2	6	4	4	5	7
Switch	2	0	1	2	2	1	0	0	5	1
Turnouts	0	6	0	0	1	1	0	1	0	0
Actions	21	20	20	10	24	19	16	25	18	14
Failure to protect	3	4	8	3	2	5	5	5	4	3
Failure to secure	0	0	0	1	0	0	1	1	0	0
Failure to use equipment properly	6	6	6	5	10	7	2	9	6	5
Improper loading/lifting	2	3	1	1	3	0	2	2	3	2
Improper placement/position for task	1	2	1	0	4	2	2	6	3	1
Inadequate/Inappropriate maintenance of equipment	4	1	3	0	1	1	0	0	0	1
Operating at improper speed	5	1	1	0	3	3	2	2	2	2
Vandalism	0	2	0	0	0	0	1	0	0	0
Other actions	0	1	0	0	1	1	1	0	0	0
Other assigned factors	23	25	17	8	6	8	2	2	6	8
<b>Derailments by number of assigned factors</b>	<b>139</b>	<b>160</b>	<b>129</b>	<b>67</b>	<b>82</b>	<b>110</b>	<b>68</b>	<b>84</b>	<b>102</b>	<b>77</b>
One factor assigned	119	146	117	58	74	98	67	73	93	69
More than one factor assigned	18	12	12	9	7	12	1	10	6	4
No factor assigned	2	2	0	0	1	0	0	1	3	4
Data extracted April 21, 2016.										
Federally regulated railway occurrences.										
TSB does not investigate all occurrences; therefore, assigned factors may not represent TSB findings. Occurrences are normally only reported to TSB with one assigned factor. The TSB may assign additional factors.										
Some factors are assigned by highest category (e.g. Equipment or Track), therefore the breakdowns may not sum up to the category total.										
New TSB regulations came into effect on July 1, 2014. Under the new reporting requirements all derailments are reportable.										

(Source: Transportation Safety Board of Canada, Statistical Summary – Railway Occurrences 2015 – Data Tables, <http://www.tsb.gc.ca/eng/stats/rail/2015/sser-ssro-2015-tbls.asp>, accessed July 5, 2017.)

### Non Main-Track Derailments in Canada (Assigned Factors) 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Total number of assigned factors</b>	<b>741</b>	<b>671</b>	<b>622</b>	<b>546</b>	<b>639</b>	<b>577</b>	<b>563</b>	<b>619</b>	<b>686</b>	<b>692</b>
Environmental	18	40	47	24	29	57	29	81	91	62
Equipment	52	54	41	50	54	57	51	39	50	35
Axle	1	3	1	0	0	0	1	0	0	0
Brakes	13	9	12	18	14	14	6	7	10	8
Draft system	8	11	9	15	16	11	10	5	10	3
Superstructure	9	10	7	5	5	11	8	7	10	5
Truck	11	7	4	4	9	7	17	14	12	9
Wheel	10	10	5	8	9	13	8	6	8	10
Track	282	243	238	209	237	175	207	203	218	213
Appurtenances	2	1	1	1	0	0	4	1	2	1
Geometry	97	102	90	95	107	71	80	72	82	69
Object on track	14	1	6	5	1	2	3	2	1	3
Other track material	25	14	8	11	14	7	6	5	3	5
Rail	32	30	31	26	24	19	30	37	31	30
Roadbed	6	8	9	5	15	25	13	10	9	10
Signals	0	1	1	0	0	0	0	1	0	1
Switch	48	37	58	37	52	35	54	58	66	70
Turnouts	48	33	27	25	19	13	12	12	20	18
Actions	329	286	264	224	293	255	255	269	307	351
Failure to protect	193	184	170	150	176	147	140	140	180	201
Failure to secure	7	9	9	3	7	3	11	6	8	3
Failure to use equipment properly	93	66	49	47	70	76	77	84	85	93
Improper loading/lifting	3	0	8	2	8	8	4	7	5	8
Improper placement/position for task	10	6	4	9	8	8	11	8	9	9
Inadequate/Inappropriate communications	4	1	6	2	3	2	2	3	4	5
Inadequate/Inappropriate maintenance of equipment	5	7	0	0	2	0	0	1	0	3
Operating at improper speed	6	5	11	6	14	4	3	10	14	21
Vandalism	7	5	5	4	5	6	3	5	1	7
Other actions	1	3	2	1	0	1	4	5	1	1
Other assigned factors	60	48	32	39	26	33	21	27	20	31
<b>Derailments by number of assigned factors</b>	<b>703</b>	<b>641</b>	<b>589</b>	<b>509</b>	<b>576</b>	<b>522</b>	<b>530</b>	<b>551</b>	<b>647</b>	<b>647</b>
One factor assigned	630	597	557	477	516	457	497	476	613	612
More than one factor assigned	51	36	31	32	60	60	33	70	34	32
No factor assigned	22	8	1	0	0	5	0	5	0	3
Data extracted April 21, 2016.										
Federally regulated railway occurrences.										
TSB does not investigate all occurrences; therefore, assigned factors may not represent TSB findings. Occurrences are normally only reported to TSB with one assigned factor. The TSB may assign additional factors.										
Some factors are assigned by highest category (e.g. Equipment or Track), therefore the breakdowns may not sum up to the category total.										
New TSB regulations came into effect on July 1, 2014. Under the new reporting requirements all derailments are reportable.										

(Source: Transportation Safety Board of Canada, Statistical Summary – Railway Occurrences 2015 – Data Tables, <http://www.tsb.gc.ca/eng/stats/rail/2015/sser-ssro-2015-tbls.asp>, accessed July 5, 2017.)

### Non Main-Track Collisions in Canada (Assigned Factors) 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Total number of assigned factors</b>	<b>129</b>	<b>122</b>	<b>99</b>	<b>107</b>	<b>112</b>	<b>105</b>	<b>114</b>	<b>113</b>	<b>129</b>	<b>104</b>
Environmental	1	4	1	4	1	2	4	1	2	2
Equipment	1	4	1	2	1	3	4	5	5	2
Track	2	2	4	6	5	1	3	6	8	7
<b>Actions</b>	<b>109</b>	<b>92</b>	<b>73</b>	<b>83</b>	<b>97</b>	<b>92</b>	<b>100</b>	<b>95</b>	<b>112</b>	<b>91</b>
Failure to protect	64	61	49	55	64	64	63	54	68	61
Failure to secure	26	18	7	12	11	10	16	13	11	5
Failure to use equipment properly	6	5	10	11	9	9	10	14	18	14
Improper placement/position for task	1	0	0	0	2	0	0	2	0	1
Inadequate/Inappropriate communications	2	3	0	1	3	4	2	3	2	3
Inadequate/Inappropriate maintenance of equipment	1	0	0	0	0	0	0	0	0	0
Operating at improper speed	8	5	7	4	7	5	8	8	13	7
Vandalism	1	0	0	0	0	0	0	0	0	0
Other actions	0	0	0	0	1	0	1	1	0	0
Other assigned factors	16	20	20	12	8	7	3	6	2	2
<b>Collisions by number of assigned factors</b>	<b>110</b>	<b>105</b>	<b>92</b>	<b>95</b>	<b>95</b>	<b>89</b>	<b>101</b>	<b>94</b>	<b>114</b>	<b>95</b>
One factor assigned	92	92	87	83	78	73	88	73	103	86
More than one factor assigned	17	13	4	12	17	16	13	20	11	8
No factor assigned	1	0	1	0	0	0	0	1	0	1
Data extracted April 21, 2016.										
Federally regulated railway occurrences.										
TSB does not investigate all occurrences; therefore, assigned factors may not represent TSB findings. Occurrences are normally only reported to TSB with one assigned factor. The TSB may assign additional factors.										
Some factors are assigned by highest category (e.g. Actions), therefore the breakdowns may not sum up to the category total.										

(Source: Transportation Safety Board of Canada, Statistical Summary – Railway Occurrences 2015 – Data Tables, <http://www.tsb.gc.ca/eng/stats/rail/2015/sser-ssro-2015-tbls.asp>, accessed July 5, 2017.)