



Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



STATISTICAL SUMMARY
MARINE TRANSPORTATION OCCURRENCES IN 2018

Transportation Safety Board of Canada
Place du Centre
200 Promenade du Portage, 4th floor
Gatineau QC K1A 1K8
819-994-3741
1-800-387-3557
www.tsb.gc.ca
communications@tsb.gc.ca

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Statistical summary: marine transportation occurrences in 2018

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Le présent rapport est également disponible en français.

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Statistical Summary

Marine Transportation Occurrences in 2018

This document is a summary of selected 2018 marine transportation safety data.

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

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 2018 data were collected according to the reporting requirements described in the TSB Regulations in force during that calendar year.

The statistics presented here reflect the TSB MARSIS database at 15 February 2019. 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

Overview of accidents and casualties

In 2018, 282 marine accidents¹ were reported to the TSB, up from the 2017 total of 279, but below the 10-year (2008–2017) average of 307 (Figure 1). In 2018, and over the past 10 years, the proportion of shipping accidents (vs. accidents aboard ship) has remained constant, at 83%.

There were 233 shipping accidents in 2018, unchanged from the 2017 total of 233 and down 9% from the 2008–2017 average of 255. The majority of shipping accidents involved fishing vessels (28%), followed by solid cargo vessels (18%).

Figure 1. Accidents aboard ship and shipping accidents, 2008 to 2018



In 2018, there were 49 accidents aboard ship, up from 46 in 2017 but down from the 2008–2017 average of 52. The majority of accidents aboard ship occurred on fishing vessels (38%) and cargo vessels (34%).

Casualties (tables 6 and 7)

Marine fatalities totalled 20 in 2018: 14 were the result of 8 shipping accidents, while the remaining 6 fatalities resulted from 6 accidents aboard ship (Figure 2). This total is up from the 11 fatalities reported in 2017, and above the annual average of 16 in 2008–2017. All 14 of the shipping accident fatalities (and all 8 fatal shipping accidents) involved Canadian-flag fishing vessels, and 4 of the 6 accident aboard ship fatalities occurred aboard fishing vessels. The total of 18 fishing vessel fatalities in 2018 was nearly double

¹ See the Definitions section.

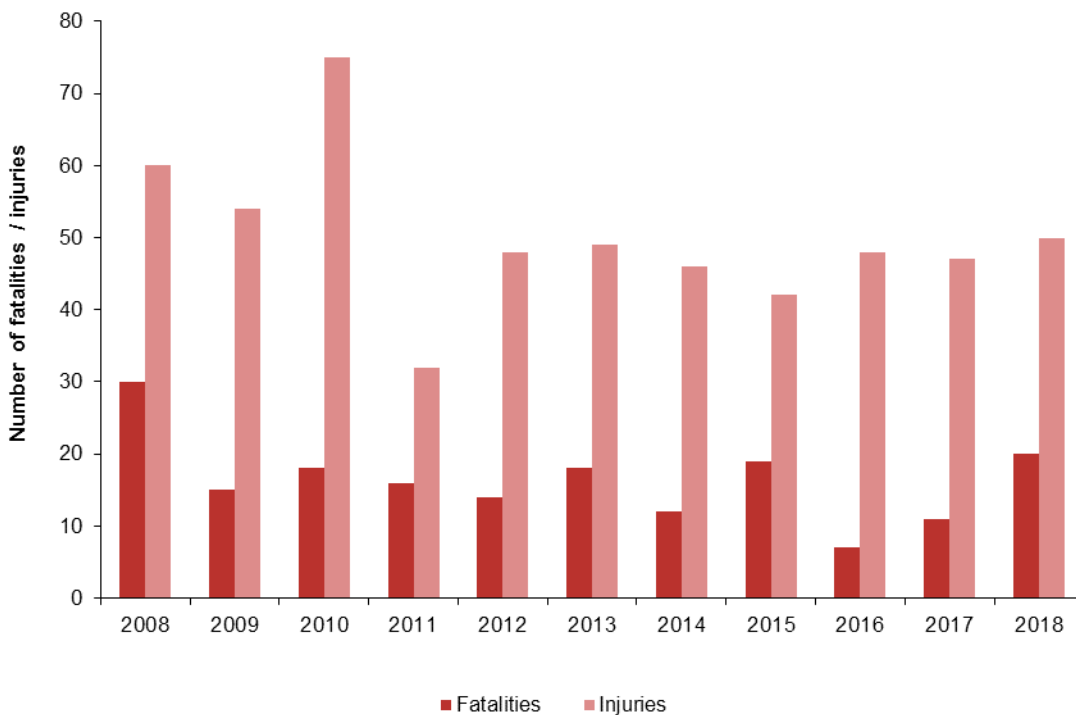
² ■ Statistical Summary: Marine Transportation Occurrences in 2018

the annual average of 9.7 in 2008–2017.² Two accident aboard ship fatalities occurred aboard cargo vessels.

Overall, although the number of fishing vessels involved in accidents was lower than the previous year, 12 of the 14 fatal marine accidents (8 shipping accidents and 4 accidents aboard ship) and 18 of the 20 marine fatalities were related to the commercial fishing industry. Clearly, more needs to be done to improve safety in this industry. That is why commercial fishing safety will remain on the TSB Watchlist of key safety issues until more positive change is achieved.

Serious injuries in 2018 totalled 50, up from 47 in 2017 and unchanged from the annual average of 50 in 2008–2017. Forty-five of the 50 serious injuries (90%) resulted from accidents aboard ship.

Figure 2. Marine fatalities and serious injuries, 2008 to 2018



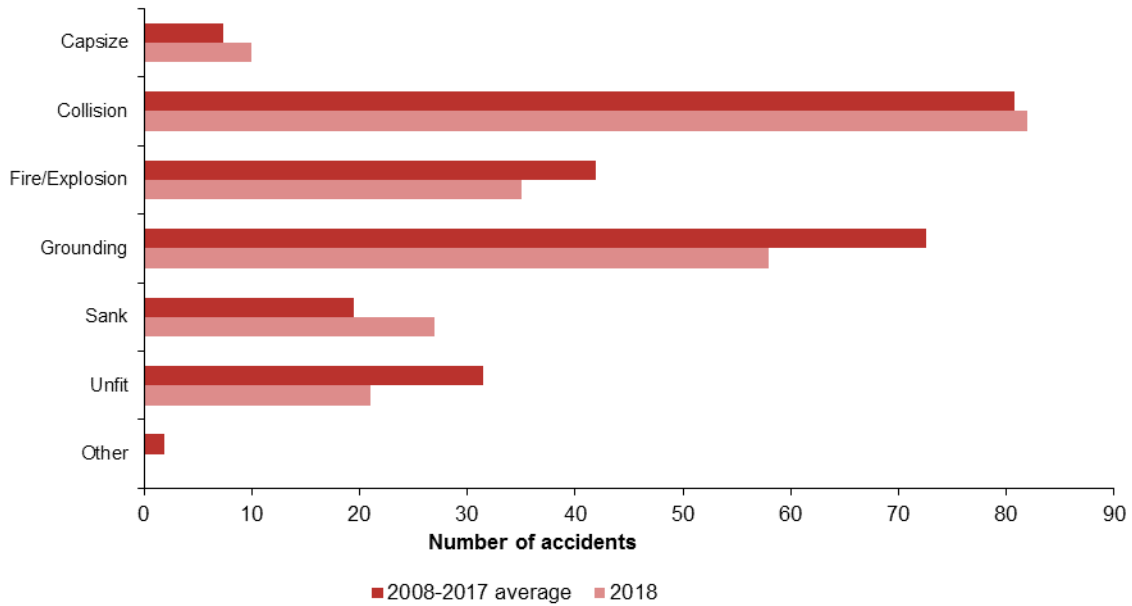
Shipping accidents

Type of accident (Table 1)

As illustrated in Figure 3, the most frequent types of shipping accidents in 2018 were collision (35%), grounding (25%), fire/explosion (15%), and sinking (12%). The total number of collisions (82) was 2% more than the prior 10-year average of 81, and the number of groundings (58) was 20% below the 10-year average of 73. The number of sinking accidents (27) was 38% above the 10-year average of 20.

² TSB Watchlist 2018, Commercial fishing safety

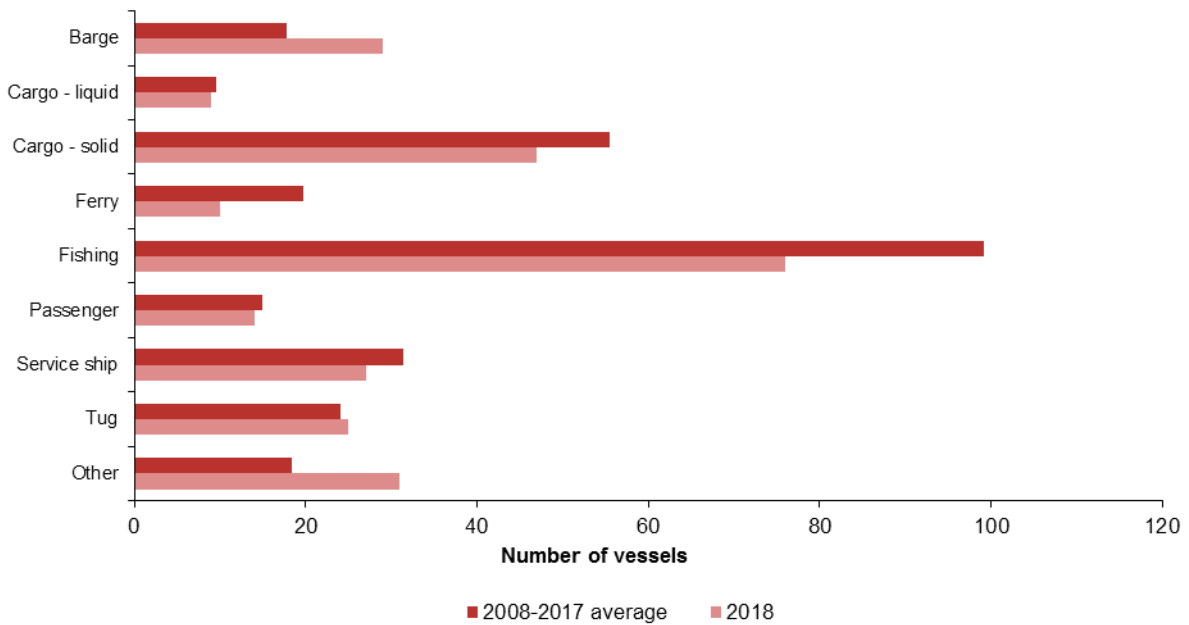
Figure 3. Shipping accidents by accident type, 2008–2017 average and 2018



Type of vessel (Table 1)

Seventy-six fishing vessels (28% of all vessels involved in shipping accidents) were involved in shipping accidents down from 88 in 2017 and from the 2008–2017 average of 99 (Figure 4).

Figure 4. Shipping accidents by vessel type, 2008–2017 average and 2018

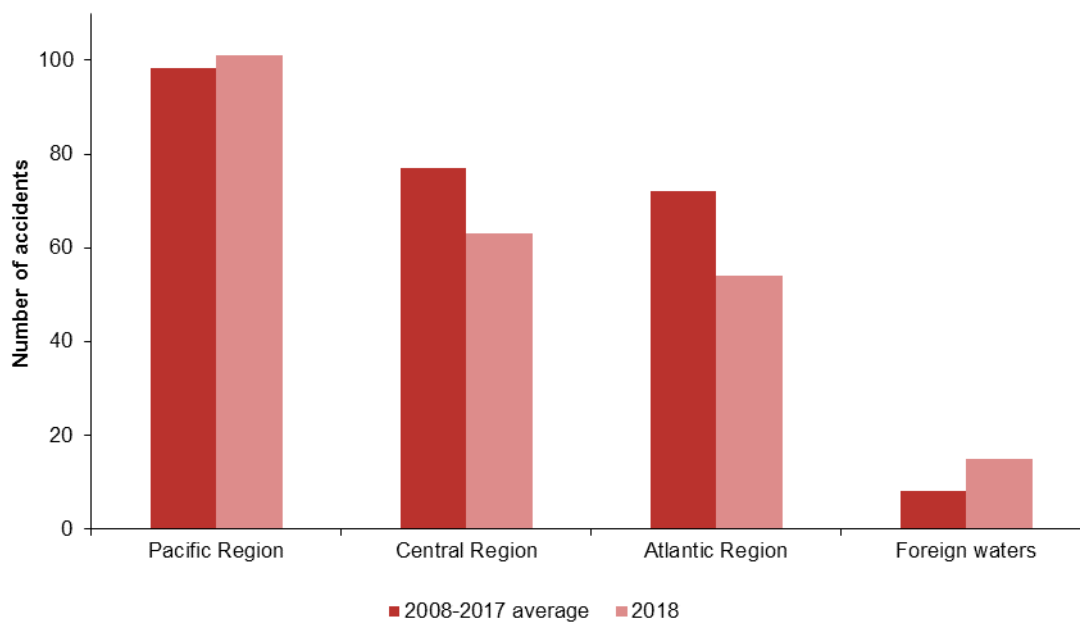


Geographical region (Table 2)

In 2018, 43% of shipping accidents occurred in the Pacific region, 27% in the Central region, 23% in the Atlantic region, and the remaining 6% of shipping accidents took place in foreign waters.³ In the Pacific region in 2018, shipping accidents were 3% above the 2008–2017 average, in the Central region shipping accidents were 18% below the 2008–2017 average, and in the Atlantic region shipping accidents were 25% below the 2008–2017 average (Figure 5).

Thirty-six fishing vessels were involved in shipping accidents in the Atlantic region, which is below the 2008–2017 average of 52 fishing vessels. Thirty fishing vessels were involved in shipping accidents in the Pacific region, below the 2008–2017 average of 38 fishing vessels (Table 2).

Figure 5. Shipping accidents by geographical region, 2008–2017 average and 2018



Vessel flag (tables 1, 3, and 4)

In 2018, 85% of the 268 vessels involved in shipping accidents reported to the TSB were Canadian-flag vessels. Of these, 51% were commercial non-fishing vessels and 35% were fishing vessels; the remaining 14% were non-commercial vessels, pleasure craft or service vessels.

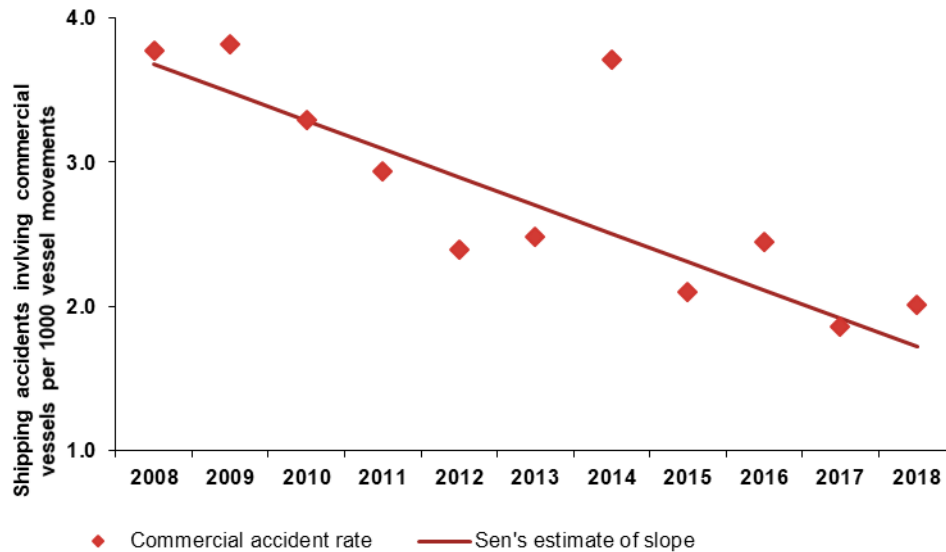
According to information provided by Transport Canada, marine activity for Canadian commercial non-fishing vessels over 15 gross tons (grt) (excluding passenger vessels and cruise ships) was 43 353 commercial movements in 2018, which is 47% above the 2008–2017 average.⁴ This yields a rate of 2.0 shipping accidents per 1,000 commercial movements in 2018, lower than the prior 10-year average of 2.8.

³ See the Definitions section.

⁴ Transport Canada has updated its methodology for counting commercial movements for 2014 to 2018. Movements for 2014 are likely under-reported as a result, inflating the 2014 accident rate. Also, implementation

Kendall's tau-b (τ_b) correlation coefficient is a nonparametric measure of the strength and direction of association that exists between two variables. Kendall's τ_b was calculated on the series of occurrence rate values by year from 2008 to 2018. There was a strong, negative correlation that indicates a downward trend in occurrence rate per 1000 vessel movements over the period ($\tau_b = -0.7091, p = 0.0024$). Sen's estimate of slope, the amount of downward rate change per year, was -0.196 occurrences per 1000 Canadian-flag commercial vessel movements per year (Figure 6).

Figure 6. Shipping accident rates for Canadian-flag commercial non-fishing vessels, 2008 to 2018

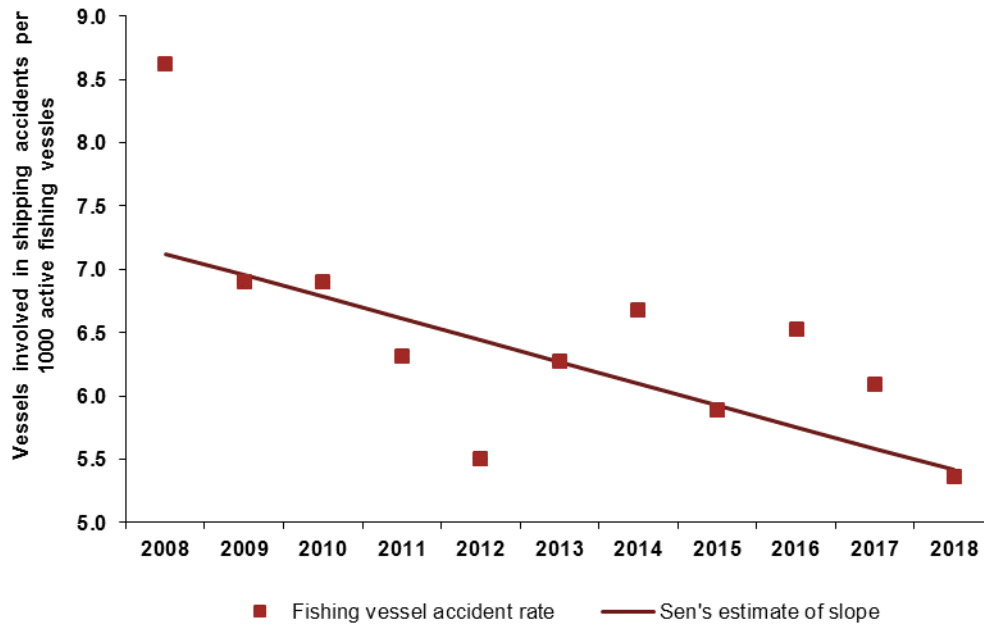


According to the Department of Fisheries and Oceans (DFO), there were an estimated 12 865 active fishing vessels in Canada in 2018. The shipping accident rate for Canadian fishing vessels (Figure 7) decreased from 6.1 shipping accidents per 1000 active fishing vessels in 2017 to 5.4 in 2018, which is 19% below the prior 10-year average. There has been a strong downward trend in the Canadian fishing vessel shipping accident rate over the last 11 years ($\tau_b = -.60, p = .0102$), despite persistently high numbers of fatalities in the fishing industry (18 in 2018 compared to the prior 10-year average of 9.7).⁵

of GPS tracking technology has enabled progressively higher-resolution capture of within-harbour movements, which accounts for most of the activity increase from 2016 through 2018.

⁵ TSB Watchlist 2018, Commercial fishing safety

Figure 7. Shipping accident rates for Canadian-flag fishing vessels, 2008 to 2018



For Canadian-flag fishing vessels, groundings (48%), collisions (17%), and sinkings (13%) were the most frequently reported shipping accident types in 2018. Canadian-flag commercial non-fishing vessels were most often involved in collisions (49%), groundings (16%), or fire/explosion accidents (14%).

In 2018, 41 foreign-flag vessels were involved in shipping accidents in Canadian waters, 31 of which were commercial non-fishing vessels. According to information provided by Transport Canada, marine activity for foreign commercial non-fishing vessels was 27 787 commercial movements in 2018, above the 2008–2017 average of 23 929. This yields an accident rate for commercial foreign-flag vessels involved in shipping accidents of 1.0 per 1000 commercial movements, below the 10-year average of 1.5.

Vessels lost (tables 1 and 5)

In 2018, 15 vessels were reported lost, up from 12 in 2017, but down from the 2008–2017 average of 22. Twelve of the 15 vessels lost in 2018 were fishing vessels. Eight of the 15 vessels lost were less than 15 grt. During the past 10 years, fishing vessels under 60 grt have accounted for more than 60% of Canadian vessels lost (tables 1 and 5).

Incidents

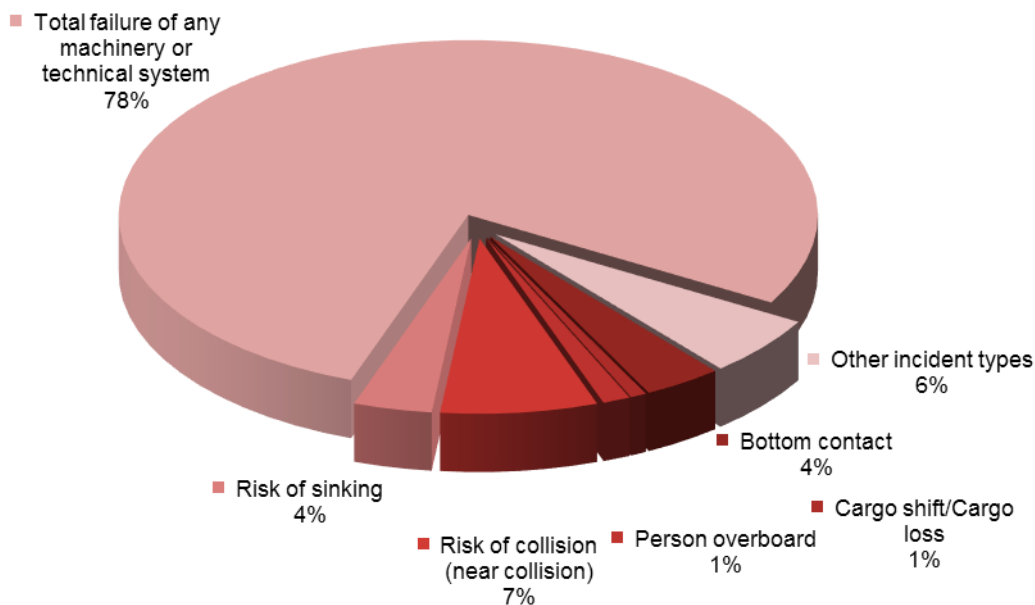
Overview of incidents (tables 1 and 2)

In 2018, 937 marine incidents were reported to the TSB, up from a total of 885 in 2017, and above the annual 10-year (2008–2017) average of 509.⁶

In 2018, incidents in the Atlantic region represented 42% of all marine incidents, followed by 30% in the Central region, and 27% in the Pacific region. The remaining 1% of reported incidents took place in foreign waters.

The majority (78%) of reportable incidents involved the total failure of any machinery or technical system (Figure 8).⁷ The Atlantic region saw the largest proportion of these incidents (45%), while the Pacific region had the greatest proportion of incidents involving risk of collision (45%) (data not shown). The type of vessel most often involved in total failure of any machinery or technical systems incidents in 2018 were fishing vessels (55%) and solid cargo vessels (21%) (data not shown).

Figure 8. Marine incidents by type, 2018



⁶ In 2014, the TSB issued new regulations that changed reporting requirements for some types of incidents, leading to an increase in incidents since that time.

⁷ The 2014 changes in reporting requirements applied to those involving a total failure of any machinery or technical system, leading to an increase in incidents of this category since then.

Data tables

Table 1. Marine occurrences (types, vessels and losses involved), 2008 to 2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Accidents	382	358	336	295	268	299	301	248	307	279	282
Shipping accidents by type	313	301	273	254	216	238	249	213	264	233	233
Capsize	15	9	8	2	6	8	3	10	7	5	10
Collision	95	81	64	87	78	79	88	57	89	89	82
Fire/Explosion	62	50	53	50	34	31	29	33	44	33	35
Grounding	73	110	102	73	69	62	61	59	65	52	58
Sank	31	20	20	10	10	14	26	16	26	22	27
Sustains damage render unseaworthy/ Unfit for purpose	35	29	24	28	16	43	41	36	32	31	21
Other shipping accident types	2	2	2	4	3	1	1	2	1	1	0
Accidents aboard ship	69	57	63	41	52	61	52	35	43	46	49
Vessels involved in shipping accidents by type of vessel	361	337	296	294	241	276	281	240	310	268	268
Barge	22	28	17	20	6	19	12	10	24	20	29
Cargo - liquid	6	11	12	10	6	7	14	12	7	10	9
Cargo - solid	67	63	61	57	63	60	68	37	40	39	47
Ferry	29	26	19	23	18	13	20	18	19	12	10
Fishing	143	117	111	99	82	88	92	81	91	88	76
Passenger	11	17	14	16	15	15	13	17	16	15	14
Service ship	28	38	29	25	20	36	21	29	50	38	27
Tug	34	19	19	24	26	26	22	19	26	25	25
Other vessel types	21	18	14	20	5	12	19	17	37	21	31
Vessels involved in shipping accidents by vessel flag	361	337	296	294	241	276	281	240	310	268	268
Canadian non-fishing vessels	177	166	138	152	111	148	144	127	184	148	156
Canadian fishing vessels	142	114	109	95	78	86	92	80	90	84	71
Foreign vessels	42	57	49	47	52	42	45	33	36	36	41
Vessels lost by gross tonnage	32	26	27	22	23	20	20	23	17	12	15
1600 gross tons and over	0	3	0	0	0	0	0	0	0	0	1
150 to 1599 gross tons	2	0	0	0	1	1	1	2	1	0	0
60 to 149 gross tons	3	4	4	2	3	4	4	6	4	2	4
15 to 59 gross tons	14	6	10	9	8	6	4	6	2	2	2
Less than 15 gross tons	10	7	8	10	9	6	8	8	6	5	6
Unknown tonnage	3	6	5	1	2	3	3	1	4	3	2
Fatalities	30	15	18	16	14	18	12	19	7	11	20
Shipping accidents	21	7	11	3	5	10	4	13	6	4	14
Accidents aboard ship	9	8	7	13	9	8	8	6	1	7	6
Serious injuries	60	54	75	32	48	49	46	42	48	47	50
Shipping accidents	4	5	5	2	6	0	1	12	5	7	5
Accidents aboard ship	56	49	70	30	42	49	45	30	43	40	45
Occurrences with a dangerous good release*	0	0	0	0	0	0	0	5	7	7	8
Reportable incidents by type	285	249	224	216	270	734	747	707	768	885	937
Bottom contact	23	14	13	14	21	19	24	36	24	42	34
Cargo shift/Cargo loss	6	6	3	2	5	2	1	4	4	6	7
Person overboard	9	7	9	4	5	10	7	13	10	10	12
Risk of collision (near collision)	25	28	33	38	37	63	35	31	45	52	68
Risk of sinking	46	33	24	24	25	26	0	10	20	15	34
Total failure of any machinery or technical system**	161	150	135	120	156	603	676	589	637	719	730
Other incident types	15	11	7	14	21	11	4	24	28	41	52

Data extracted 20 March 2019

In November 2013, the Transportation Safety Board developed and deployed a new Marine Database. The new database significantly improves the TSB's ability to collect, categorize and present statistics. In accordance with these changes the 2014 statistical summary onward will be presented in a slightly different format.

New TSB regulations came into effect on 1 July 2014, changing some reporting requirements.

* Under new reporting requirements the release of dangerous goods has been harmonized with Part 8 of the Transportation of Dangerous Goods Regulations. Detailed data was not collected prior to 1 July 2014.

** New regulations clarify the reporting requirements for a total failure of any machinery or technical system.

Table 2. Details of occurrences, losses and vessels involved by region (Pacific, Central, and Atlantic regions), 2008 to 2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Pacific region	285	249	224	216	270	734	747	707	768	885	937
Shipping accidents	103	106	87	88	76	88	95	90	138	111	101
Accidents aboard ship	14	22	15	11	18	21	23	13	19	8	11
Vessels involved in shipping accidents	124	120	95	103	87	108	108	106	164	130	119
Barge/Tug	39	26	20	25	18	29	23	23	39	34	37
Cargo / Tanker	11	13	5	5	12	8	15	6	14	9	8
Ferry/Passenger	16	15	8	13	10	10	10	15	17	12	13
Fishing	48	44	43	38	29	30	36	33	43	35	30
Other vessel types	10	22	19	22	18	31	24	29	51	40	31
Vessels lost	10	8	6	3	6	3	9	12	9	9	3
Fatalities	9	6	6	6	4	2	5	12	0	6	5
Reportable incidents	148	115	113	102	118	150	149	260	290	283	253
Central region											
Shipping accidents	87	105	98	81	74	73	74	64	56	59	63
Accidents aboard ship	34	18	31	16	19	25	17	10	11	16	15
Vessels involved in shipping accidents	97	119	106	95	79	85	85	71	65	66	71
Barge/Tug	12	17	11	12	9	14	8	6	9	7	8
Cargo / Tanker	50	52	55	46	46	40	55	35	24	26	35
Ferry/Passenger	9	11	18	14	14	13	14	13	9	11	10
Fishing	9	17	10	11	6	7	3	6	5	14	8
Other vessel types	17	22	12	12	4	11	5	11	18	8	10
Vessels lost	1	5	2	2	1	4	2	2	1	0	2
Fatalities	4	3	3	1	3	5	2	2	0	3	1
Reportable incidents	85	82	67	74	107	149	137	116	126	203	279
Atlantic region											
Shipping accidents	114	86	79	78	56	62	72	54	63	57	54
Accidents aboard ship	17	16	13	14	14	12	12	12	13	18	21
Vessels involved in shipping accidents	128	94	85	88	64	67	80	57	72	64	62
Barge/Tug	1	4	4	6	5	2	3	0	1	1	5
Cargo / Tanker	5	6	5	11	3	6	6	2	3	11	4
Ferry/Passenger	15	17	7	12	9	4	9	7	9	4	1
Fishing	86	56	58	50	45	49	52	42	43	38	36
Other vessel types	21	11	11	9	2	6	10	6	16	10	16
Vessels lost	21	12	18	17	15	12	9	9	7	3	10
Fatalities	15	6	8	9	6	11	5	5	7	2	13
Reportable incidents	46	44	38	36	40	429	450	319	338	385	393
Foreign waters											
Shipping accidents	9	4	9	7	10	15	8	5	7	6	15
Accidents aboard ship	4	1	4	0	1	3	0	0	0	4	2
Vessels involved in shipping accidents	12	4	10	8	11	16	8	6	9	8	16
Barge/Tug	4	0	1	1	0	0	0	0	1	3	4
Cargo / Tanker	7	3	8	5	8	13	6	6	6	3	9
Ferry/Passenger	0	0	0	0	0	1	0	0	0	0	0
Fishing	0	0	0	0	2	2	1	0	0	1	2
Other vessel types	1	1	1	2	1	0	1	0	2	1	1
Vessels lost	0	1	1	0	1	1	0	0	0	0	0
Fatalities	2	0	1	0	1	0	0	0	0	0	1
Reportable incidents	6	8	6	4	5	6	11	12	14	14	12

Data extracted 20 March 2019

In November 2013, the Transportation Safety Board developed and deployed a new Marine Database. The new database significantly improves the TSB's ability to collect, categorize and present statistics. In accordance with these changes the 2014 statistical summary onward will be presented in a slightly different format.

New TSB regulations came into effect on 1 July 2014, changing some reporting requirements.

Table 3. Canadian-flag vessels involved in shipping accidents by vessel category and type of accident (including commercial accident rates), 2008 to 2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Canadian-flag vessels involved	319	280	247	246	189	231	225	192	242	210	195
Commercial vessels	134	113	99	109	88	102	107	83	100	90	99
Capsize	6	4	5	1	2	0	0	3	2	1	1
Collision	61	41	35	55	45	46	53	34	48	44	49
Fire/Explosion	21	12	13	18	9	12	12	11	14	7	14
Grounding	25	34	31	17	22	28	16	14	21	19	16
Sank	7	12	5	3	1	3	6	10	5	5	5
Sustains damage render unseaworthy/ Unfit for purpose	14	10	10	15	9	13	20	11	10	14	14
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0
Commercial movements (a)	29,717	24,871	25,539	28,269	28,800	29,000	23,185	30,956	35,478	38,366	43,353
Commercial accident rate (b)	3.8	3.8	3.3	2.9	2.4	2.5	3.7	2.1	2.3	1.9	2.0
Fishing vessels	142	114	109	95	78	86	91	78	88	80	69
Capsize	5	3	1	1	3	6	1	5	3	2	5
Collision	29	14	10	16	12	12	15	4	12	19	12
Fire/Explosion	34	27	28	24	19	12	9	14	16	15	6
Grounding	37	56	50	43	33	30	32	33	31	27	33
Sank	18	6	14	6	9	9	19	9	16	8	9
Sustains damage render unseaworthy/ Unfit for purpose	17	7	4	1	0	16	14	11	9	8	4
Other shipping accident types	2	1	2	4	2	1	1	2	1	1	0
(c) Active fishing vessels	16,472	16,514	15,800	15,050	14,167	13,719	13,623	13,242	13,475	13,131	12,865
Fishing vessel accident rate (d)	8.1	6.4	6.7	5.9	5.2	6.1	6.4	5.7	6.2	5.7	5.1
Other vessels	43	53	39	42	23	43	27	31	54	40	27
Capsize	3	2	2	0	1	1	0	1	1	1	1
Collision	20	25	20	24	10	24	14	15	25	24	14
Fire/Explosion	5	7	6	6	4	3	7	3	14	4	10
Grounding	7	15	8	7	5	10	3	8	7	2	1
Sank	6	2	1	1	0	2	1	0	3	6	1
Sustains damage render unseaworthy/ Unfit for purpose	2	1	2	4	3	3	2	4	4	3	0
Other shipping accident types	0	1	0	0	0	0	0	0	0	0	0
fishing vessel fatalities	14	9	11	11	7	15	8	11	8	3	18

Data extracted 20 March 2019

a. Based on data from Transport Canada. 2012 to 2013 data are estimated. Transport Canada has updated their methodology for counting commercial movements for 2014 to 2018. Movements for 2014 are likely under-reported as a result, inflating the 2014 accident rate. Also, implementation of GPS tracking technology has enabled progressively higher-resolution capture of within-harbour movements, which accounts for most of the 2016 through 2018 activity increase.

b. The commercial accident rate is the number of shipping accidents involving Canadian-flag commercial vessels of 15 gross tons or more (excluding passenger vessels and fishing vessels) per 1000 vessel movements.

c. Commercial fishing vessels landing a catch (Source: DFO). 2015 to 2017 data are preliminary and subject to change.

d. The fishing vessel accident rate is the number of shipping accidents involving Canadian-flag commercial fishing vessels of 15 gross tons or more per 1000 active fishing vessels.

Table 4. Foreign-flag vessels involved in shipping accidents by vessel category and type of accident (including commercial accident rates), 2008 to 2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Foreign-flag vessels involved	42	57	49	47	52	42	45	33	36	36	41
Commercial vessels	35	51	43	40	46	38	41	30	32	31	31
Capsize	1	0	0	0	0	0	0	0	0	0	0
Collision	22	26	17	23	28	19	29	11	17	19	23
Fire/Explosion	3	3	5	3	3	5	0	5	0	3	3
Grounding	7	8	13	6	10	2	7	4	8	3	2
Sank	0	0	0	0	0	1	0	0	1	0	0
Sustains damage render unseaworthy/ Unfit for purpose	2	14	8	8	5	11	5	10	6	6	3
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0
Commercial movements (a)	28,015	23,720	26,029	25,669	26,300	26,600	17,635	18,940	21,657	24,728	27,787
Commercial accident rate (b)	1.1	1.9	1.5	1.4	1.6	1.4	2.4	1.4	1.3	1.2	1.0
Fishing vessels	1	3	2	4	4	2	0	1	1	4	5
Capsize	0	0	0	0	0	0	0	0	0	0	0
Collision	0	0	0	1	2	2	0	0	0	2	1
Fire/Explosion	1	0	0	0	0	0	0	0	0	1	1
Grounding	0	3	2	3	1	0	0	1	1	1	2
Sank	0	0	0	0	0	0	0	0	0	0	1
Sustains damage render unseaworthy/ Unfit for purpose	0	0	0	0	0	0	0	0	0	0	0
Other shipping accident types	0	0	0	0	1	0	0	0	0	0	0
Other vessels	6	3	4	3	2	2	4	2	3	1	5
Capsize	0	0	0	0	0	0	1	1	0	0	1
Collision	5	2	3	3	1	2	1	1	2	0	2
Fire/Explosion	0	1	1	0	0	0	0	0	0	1	1
Grounding	1	0	0	0	1	0	2	0	1	0	0
Sank	0	0	0	0	0	0	0	0	0	0	0
Sustains damage render unseaworthy/ Unfit for purpose	0	0	0	0	0	0	0	0	0	0	1
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0

Data extracted 20 March 2019

a. Based on data from Transport Canada. 2012 and 2013 data are estimated. Transport Canada has updated their methodology for counting commercial movements for 2014 to 2018. Movements for 2014 are likely under-reported as a result, inflating the 2014 accident rate. Also, implementation of GPS tracking technology has enabled progressively higher-resolution capture of within-harbour movements, which accounts for most of the 2016 through 2018 activity increase.

b. The accident rate is the number of shipping accidents involving foreign-flag commercial vessels of 15 gross tons or more excluding passenger vessels and fishing vessels) per 1000 foreign vessel movements.

Table 5. Vessels lost by vessel category and age, 2008 to 2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
All vessels	32	26	27	22	23	20	20	23	17	12	15
0-4 years	0	0	1	0	1	0	0	1	0	0	0
5-9 years	5	2	5	1	1	1	0	0	0	0	1
10-14 years	1	4	1	1	2	3	0	2	0	0	2
15-19 years	2	0	2	3	5	2	2	1	3	1	1
20-24 years	6	4	6	4	3	2	1	1	0	0	1
25-29 years	2	2	2	4	3	2	5	5	1	0	3
30+ years	9	7	4	7	5	5	4	10	5	6	3
Unknown	7	7	6	2	3	5	8	3	8	5	4
Commercial vessels	4	9	1	1	1	1	2	8	4	2	3
0-4 years	0	0	0	0	0	0	0	0	0	0	0
5-9 years	0	0	0	0	0	0	0	0	0	0	1
10-14 years	0	1	0	0	0	0	0	0	0	0	0
15-19 years	0	0	0	0	0	0	0	0	1	0	0
20-24 years	0	0	0	0	0	0	0	1	0	0	0
25-29 years	1	0	0	0	0	0	1	2	0	0	0
30+ years	3	4	0	1	1	1	1	4	2	1	1
Unknown	0	4	1	0	0	0	0	1	1	1	1
Fishing vessels	25	14	23	21	22	17	17	15	12	7	12
0-4 years	0	0	1	0	1	0	0	1	0	0	0
5-9 years	5	2	5	1	1	1	0	0	0	0	0
10-14 years	1	3	1	1	2	3	0	2	0	0	2
15-19 years	2	0	2	3	5	2	2	1	2	1	1
20-24 years	4	4	6	4	3	2	1	0	0	0	1
25-29 years	1	2	1	4	3	2	4	3	1	0	3
30+ years	6	3	4	6	4	2	3	6	3	5	2
Unknown	6	0	3	2	3	5	7	2	6	1	3
Other vessels	3	3	3	0	0	2	1	0	1	3	0
0-4 years	0	0	0	0	0	0	0	0	0	0	0
5-9 years	0	0	0	0	0	0	0	0	0	0	0
10-14 years	0	0	0	0	0	0	0	0	0	0	0
15-19 years	0	0	0	0	0	0	0	0	0	0	0
20-24 years	2	0	0	0	0	0	0	0	0	0	0
25-29 years	0	0	1	0	0	0	0	0	0	0	0
30+ years	0	0	0	0	0	2	0	0	0	0	0
Unknown	1	3	2	0	0	0	1	0	1	3	0

Data extracted 20 March 2019

Table 6. Accidents, fatalities and serious injuries by accidents type, 2008 to 2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Shipping accidents with fatalities or serious injuries	14	9	7	4	7	4	4	7	5	8	12
Capsize	8	1	1	0	3	2	0	2	1	1	5
Collision	0	4	3	1	1	0	1	2	2	4	1
Fire/Explosion	1	0	0	2	3	1	0	1	1	1	1
Grounding	1	1	0	1	0	1	0	1	0	0	3
Sank	4	3	1	0	0	0	3	1	1	2	2
Sustains damage render unseaworthy/ Unfit for purpose	0	0	0	0	0	0	0	0	0	0	0
Other shipping accident types	0	0	2	0	0	0	0	0	0	0	0
Shipping accidents fatalities (a)	21	7	11	3	5	10	4	13	6	4	14
Capsize	15	2	4	0	3	6	0	9	2	1	7
Collision	0	0	0	1	1	0	0	1	0	0	2
Fire/Explosion	0	0	0	1	1	1	0	0	0	0	0
Grounding	0	1	0	1	0	3	0	0	0	0	1
Sank	6	4	1	0	0	0	4	3	4	3	4
Sustains damage render unseaworthy/ Unfit for purpose	0	0	0	0	0	0	0	0	0	0	0
Other shipping accident types	0	0	6	0	0	0	0	0	0	0	0
Shipping accidents serious injuries	4	5	5	2	6	0	1	12	5	7	5
Capsize	0	0	0	0	3	0	0	0	0	0	1
Collision	0	5	5	1	0	0	1	9	4	6	0
Fire/Explosion	2	0	0	1	3	0	0	1	1	1	2
Grounding	2	0	0	0	0	0	0	2	0	0	2
Sank	0	0	0	0	0	0	0	0	0	0	0
Sustains damage render unseaworthy/ Unfit for purpose	0	0	0	0	0	0	0	0	0	0	0
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0
Accidents aboard ship	69	57	63	41	52	61	52	35	43	46	49
Accidents aboard ship fatalities (a)	9	8	7	13	9	8	8	6	1	7	6
Boarding, being on board, falling overboard from the ship	3	6	4	13	3	3	5	6	0	5	5
In contact with any part of the ship or its contents	6	2	3	0	6	5	3	0	1	2	1
Accidents aboard ship serious injuries	56	49	70	30	42	49	45	30	43	40	45
Boarding, being on board, falling overboard from the ship	5	4	2	3	2	6	10	5	4	6	6
In contact with any part of the ship or its contents	51	45	68	27	40	43	35	25	39	34	39

Data extracted 20 March 2019

a. Fatalities includes missing persons.

Table 7. Vessels, fatalities and serious injuries by vessel type, 2008 to 2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Vessels involved in shipping accidents with fatalities or serious injuries	14	9	7	4	7	4	4	7	5	8	12
Barge/Tug	1	0	0	0	2	0	0	0	0	0	1
Cargo	3	0	0	0	0	0	1	0	0	1	1
Ferry/Passenger	1	1	1	0	0	0	0	2	2	2	0
Fishing	6	5	4	3	4	4	3	3	2	3	9
Other	3	3	2	1	1	0	0	2	1	2	1
Shipping accident fatalities (a)	21	7	11	3	5	10	4	13	6	4	14
Barge/Tug	0	0	0	0	1	0	0	0	0	0	0
Cargo	7	0	0	0	0	0	2	0	0	0	0
Ferry/Passenger	0	0	4	0	0	0	0	6	0	2	0
Fishing	10	7	7	2	2	10	2	6	6	1	14
Other	4	0	0	1	2	0	0	1	0	1	0
Shipping accident serious injuries	4	5	5	2	6	0	1	12	5	7	5
Barge/Tug	2	0	0	0	1	0	0	0	0	0	1
Cargo	0	0	0	0	0	0	0	0	0	1	2
Ferry/Passenger	2	1	0	0	0	0	0	2	4	2	0
Fishing	0	0	1	1	3	0	1	1	0	3	1
Other	0	4	4	1	2	0	0	9	1	1	1
Vessels involved in accidents aboard ship	71	58	64	41	53	61	52	35	43	46	50
Barge/Tug	9	6	5	4	1	3	4	0	4	2	3
Cargo	22	16	22	13	23	17	21	5	12	18	17
Ferry/Passenger	8	8	8	6	3	7	5	8	5	5	8
Fishing	17	20	17	17	21	25	18	21	18	15	19
Other	15	8	12	1	5	9	4	1	4	6	3
Accident aboard ship fatalities (a)	9	8	7	13	9	8	8	6	1	7	6
Barge/Tug	1	1	0	1	0	1	0	0	0	0	0
Cargo	3	0	1	1	2	2	1	0	0	2	2
Ferry/Passenger	0	1	2	1	1	0	0	1	0	2	0
Fishing	4	4	4	10	6	5	6	5	0	2	4
Other	1	2	0	0	0	0	1	0	1	1	0
Accident aboard ship serious injuries	56	49	70	30	42	49	42	30	42	40	45
Barge/Tug	6	4	5	3	0	2	4	0	4	3	2
Cargo	18	16	36	12	21	12	18	5	12	15	15
Ferry/Passenger	8	6	5	6	2	7	5	7	5	4	10
Fishing	12	16	13	8	15	19	12	17	18	13	15
Other	12	7	11	1	4	9	3	1	3	5	3

Data extracted 20 March 2019

a. Fatalities includes missing persons.

Definitions

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

Marine occurrence

- any accident or incident associated with the operation of a ship
- any situation or condition that the Board has reasonable grounds to believe could, if left unattended, induce an accident or incident described above.

Marine accident

An accident resulting directly from the operation of a ship other than a pleasure craft, where

Accident aboard ship

- a person is killed or sustains a serious injury as a result of
 - boarding, being on board or falling overboard from the ship, or
 - coming into direct contact with any part of the ship or its contents;

Shipping accident

- the ship
 - sinks, founders or capsizes,
 - is involved in a collision (includes striking and contacts),
 - sustains a fire or an explosion,
 - goes aground, or
 - sustains damage that affects its seaworthiness or renders it unfit for its purpose, is missing or abandoned;

Marine incident

- a person falls overboard from the ship, or
- the ship
 - makes unforeseen contact with the bottom without going aground,
 - fouls a utility cable or pipe, or an underwater pipeline,
 - is involved in a risk of a collision,
 - sustains a total failure of
 - the navigation equipment if the failure poses a threat to the safety of any person, property or the environment,
 - the main or auxiliary machinery, or
 - the propulsion, steering, or deck machinery if the failure poses a threat to the safety of any person, property or the environment;
- all or part of the ship's cargo shifts or falls overboard, or
- is anchored, grounded or beached to avoid an occurrence,

- a crew member whose duties are directly related to the safe operation of the ship 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;
- there is an accidental release on board or from the ship consisting of a quantity of dangerous goods or an emission of radiation that is greater than the quantity or emission levels specified in Part 8 of the Transportation of Dangerous Goods Regulations.

Serious injury

- (a) a fracture of any bone, except simple fractures of fingers, toes or the nose;
- (b) lacerations that cause severe hemorrhage or nerve, muscle or tendon damage;
- (c) an injury to an internal organ;
- (d) second or third degree burns, or any burns affecting more than 5% of the body surface;
- (e) a verified exposure to infectious substances or injurious radiation; or
- (f) an injury that is likely to require hospitalization.

Vessels covered

This report covers commercial vessels that include all vessels either registered or licensed to operate commercially. Pleasure craft occurrences are not normally included unless they also involved a commercial vessel.

Vessel categories

Commercial Vessels: include cargo vessels, ferries, passenger vessels, tugs and barges

Fishing Vessels: include vessels involved in commercial fishing

Other Vessels: include research vessels, oil exploration, exploitation and support vessels, government vessels and pleasure craft

Miscellaneous

Gross tons (grt)

A measure of vessel capacity in cubic feet of the spaces within the hull, and of enclosed spaces above deck available for cargo, stores, fuel, passengers and crew, with certain exclusions. One hundred cubic feet is equivalent to one gross ton.

Movement

A vessel's travel segment between ports or a length of 1 km or more within a port harbor, with at least one port being a domestic port.

TSB regional offices' areas of responsibility



Pacific Region's area of responsibility consists of the provinces of British Columbia, Alberta, Saskatchewan, and Manitoba, the Yukon and the Northwest Territories south of the 70th parallel, as well as the waters adjacent to these provinces and territories.

Central Region's area of responsibility consists of the provinces of Ontario and Quebec (including the Magdalen Islands), the territory of Nunavut, and the Northwest Territories north of the 70th parallel, as well as James Bay, Hudson Bay, the St. Lawrence Seaway, and the Great Lakes waterways up to the Canada–U.S. border.

Atlantic Region's area of responsibility consists of the provinces of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador, as well as the waters adjacent to these provinces.