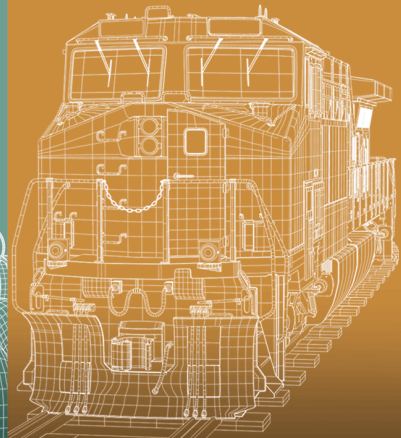
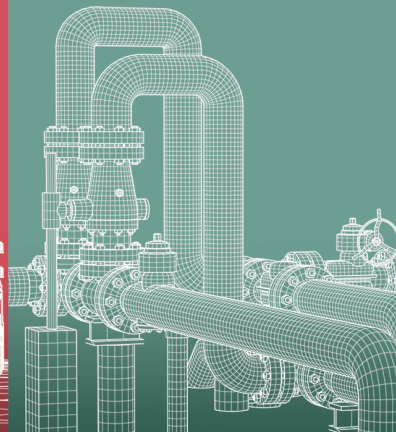
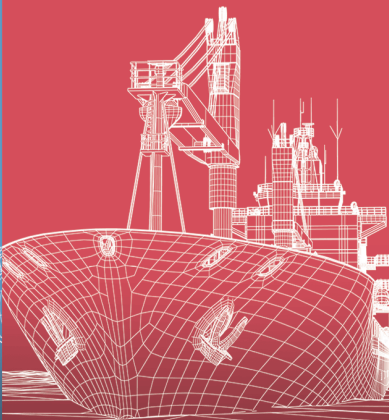




Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



STATISTICAL SUMMARY

Marine transportation occurrences in 2022

Canada

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

© His Majesty the King in Right of Canada, as represented by
the Transportation Safety Board of Canada, 2023

Statistical summary: marine transportation occurrences in 2022

Cat. No. TU1-18E-PDF
ISSN 2562-6671

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

Le présent rapport est également disponible en français.

Table of contents

Accidents.....	2
Overview of accidents and casualties	2
Shipping accidents	3
Accident rates.....	6
Incidents	8
Overview of incidents.....	8
Data tables.....	9
Definitions.....	17
Marine occurrence.....	17
Marine accident	17
Marine incident.....	17
Serious injury	18
Vessels covered.....	18
Miscellaneous	18
TSB regional offices' areas of responsibility	19

Statistical Summary

Marine Transportation Occurrences in 2022

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

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

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

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

The statistics presented here reflect the TSB Marine Safety Information System (MARSIS) database at 27 February 2023. Since the occurrence data are constantly being updated in the live database, the statistics may change slightly over time.

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

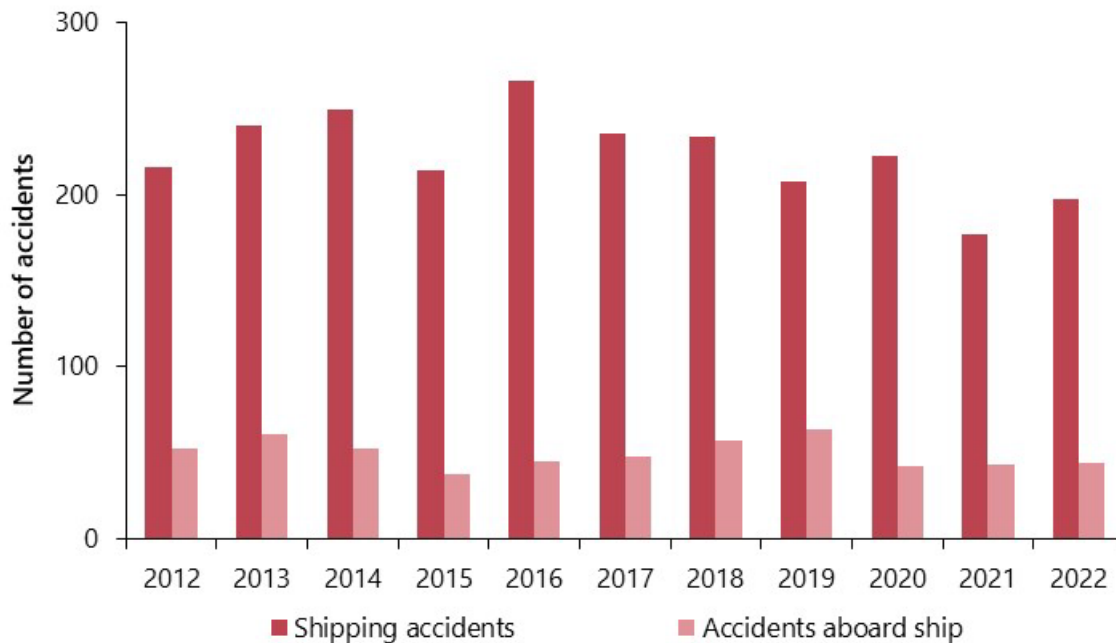
Accidents

Overview of accidents and casualties

In 2022, 241 marine accidents¹ were reported to the TSB, up from the 2021 total of 220 but below the 10-year (2012 to 2021) average of 276 (Figure 1). In 2022 the proportion of shipping accidents (as opposed to accidents aboard ship) was 82% of marine accidents, equal to the previous 10-year average.

There were 197 shipping accidents in 2022, up from the 2021 total of 177 but down 13% from the 2012 to 2021 average of 226. The majority of shipping accidents involved fishing vessels (30%), followed by solid cargo vessels (23%) (data not shown).

Figure 1. Shipping accidents and accidents aboard ship, 2012 to 2022



In 2022, there were 44 accidents aboard ship, compared to 43 in 2021, down from the 2012 to 2021 average of 50. The majority of accidents aboard ship occurred on fishing vessels (36%) and cargo/tanker vessels (26%) (data not shown).

Casualties (tables 1, 6 and 7)

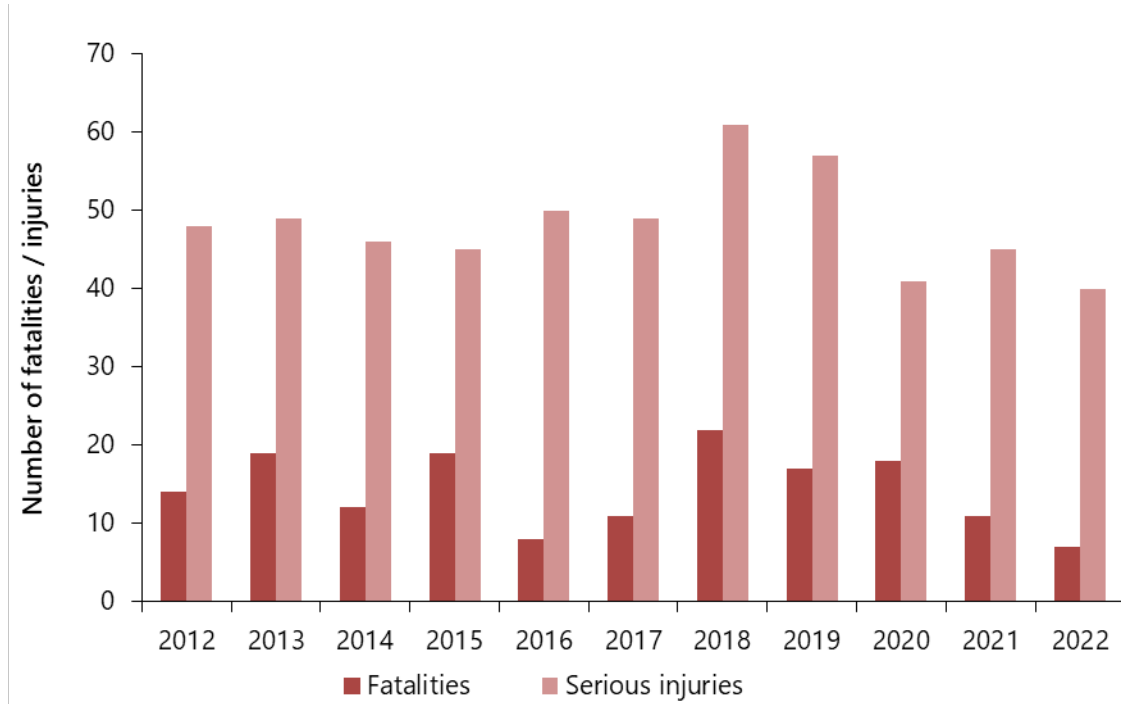
In 2022, 7 marine fatalities were reported, down from the 11 fatalities reported in 2021, and below the annual average of 15 in the 2012 to 2021 time period. Of the 7 fatalities in 2022, 2 were the result of 2 shipping accidents, while the remaining 5 fatalities resulted from 5 accidents aboard ship (Figure 2).

Of note, 1 shipping accident fatality in 2022 involved a commercial fishing vessel, and 2 of the fatalities that ensued from accidents aboard ship occurred aboard commercial fishing vessels. These data indicate that more still needs to be done to improve safety in the commercial fishing industry.

¹ See the Definitions section.

Serious injuries in 2022 totalled 40, down from 45 in 2021 and down from the annual average of 49 from 2012 to 2021. Thirty-three of the 40 serious injuries (83%) resulted from accidents aboard ship, and 7 resulted from shipping accidents.

Figure 2. Marine fatalities and serious injuries, 2012 to 2022

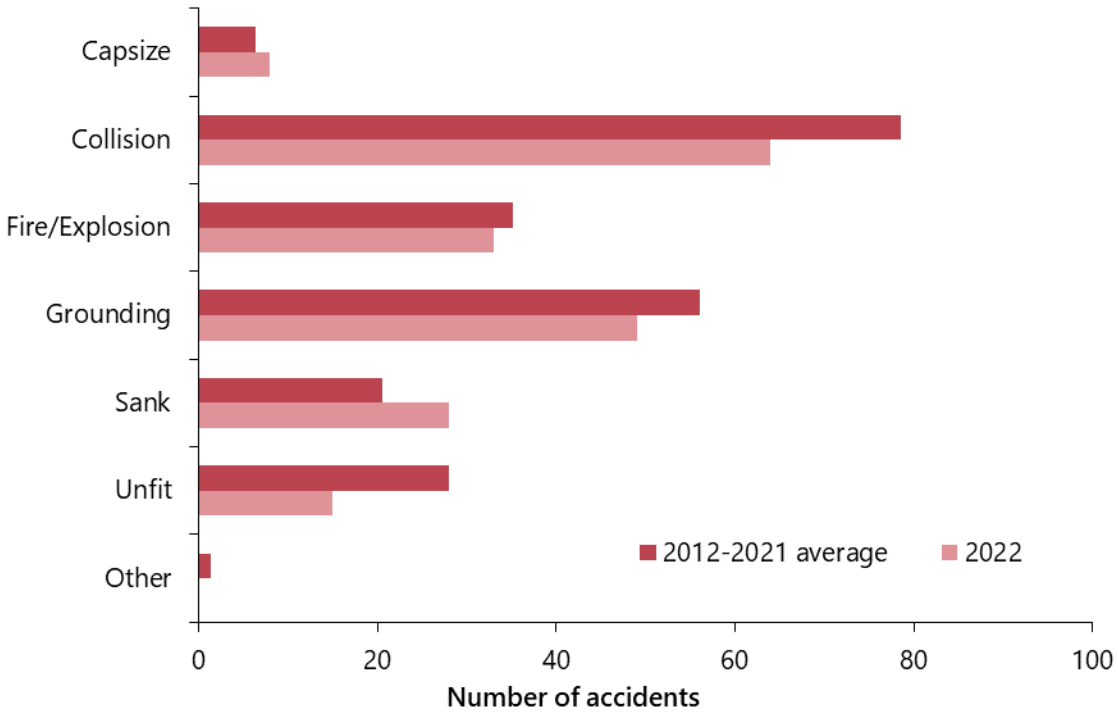


Shipping accidents

Type of accident (Table 1)

As illustrated in Figure 3, the most frequent types of shipping accidents in 2022 were collision (32% of all accident types reported), grounding (25%) and fire/explosion (17%). The total number of collisions (64) was 18% less than the 10-year (2012 to 2021) average of 79, the number of groundings (49) was 13% below the 10-year average of 56 and the number of fire/explosion accidents (33) was 6% below the 10-year average of 35.

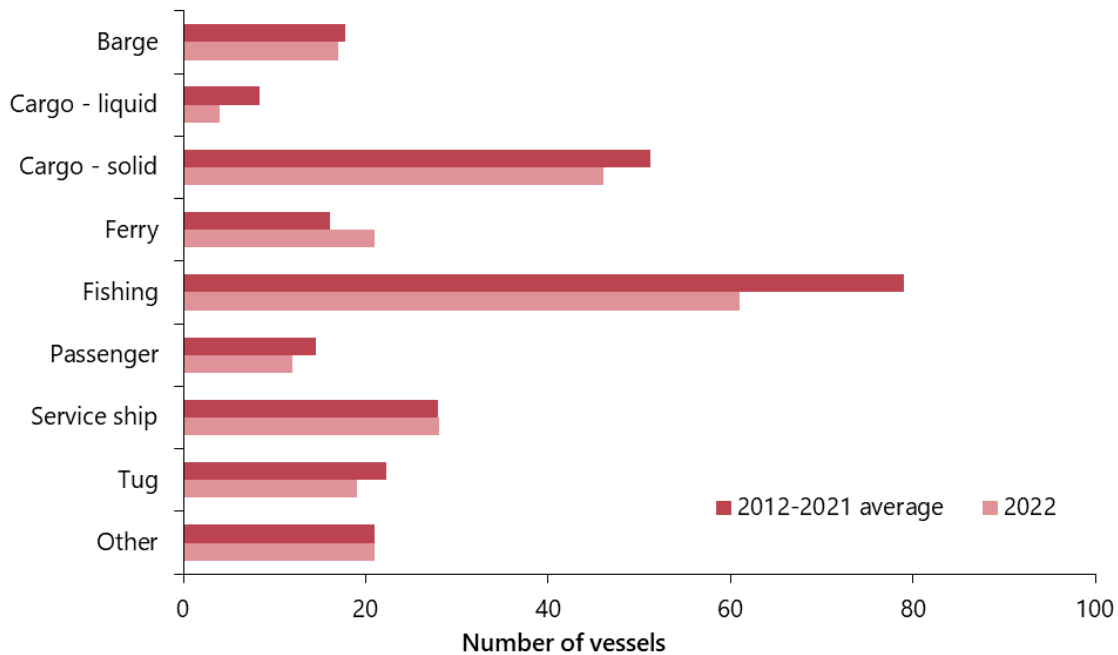
Figure 3. Shipping accidents, by accident type, in 2022 compared with the 2012 to 2021 average



Type of vessel (Table 1)

Sixty-one fishing vessels were involved in shipping accidents in 2022, up from 49 in 2021 but down from the 2012 to 2021 average of 79 (Figure 4). Fishing vessels represented 27% of all vessels involved in shipping accidents.

Figure 4. Shipping accidents, by vessel type, in 2022 compared with the 2012 to 2021 average

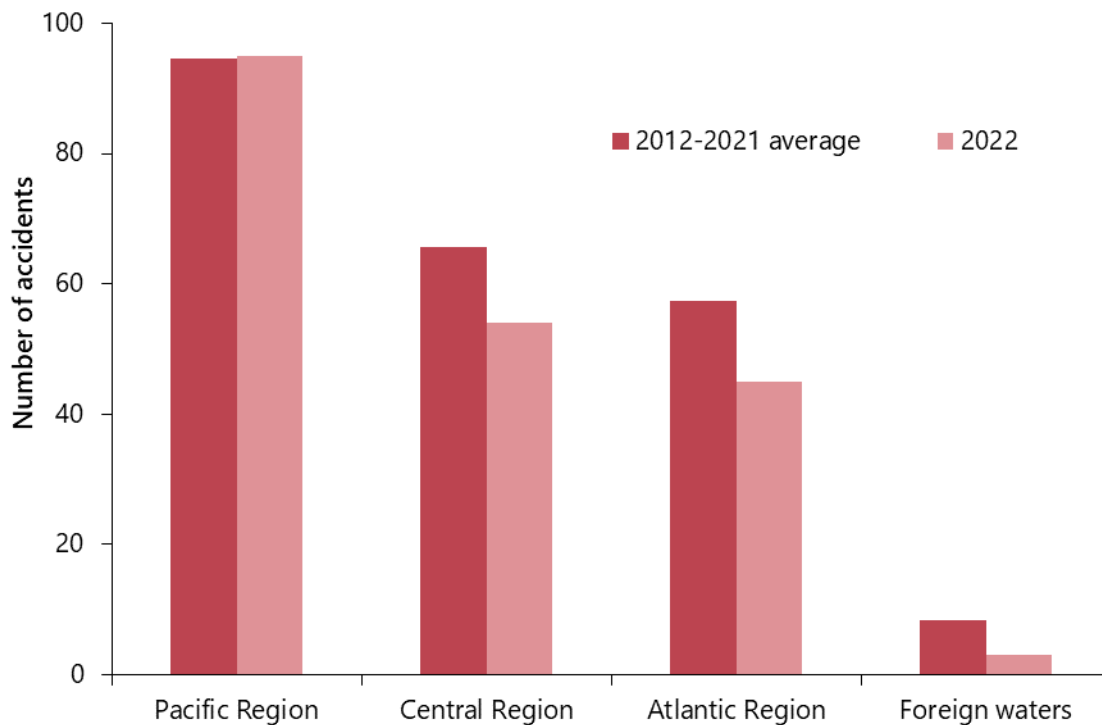


Geographical region (Table 2)

In 2022, 48% of shipping accidents occurred in the Pacific region, 27% in the Central region, and 23% in the Atlantic region. Less than 2% of shipping accidents were in foreign waters.² In the Pacific region in 2022, shipping accidents were unchanged from the 2012 to 2021 average, in the Central region shipping accidents were 18% below the 2012 to 2021 average, and in the Atlantic region shipping accidents were 21% below the 2012 to 2021 average (Figure 5).

Twenty-eight fishing vessels were involved in shipping accidents in the Atlantic region, which is below the 2012 to 2021 average of 41 fishing vessels. Thirty-three cargo/tanker vessels were involved in shipping accidents in the Central region, below the 2012 to 2021 average of 36. Twenty-one barge/tug vessels were involved in shipping accidents in the Pacific region, below the 2012 to 2021 average of 27 (Table 2).

Figure 5. Shipping accidents, by geographical region, in 2022 compared with the 2012 to 2021 average



Vessel flag (tables 1, 3, and 4)

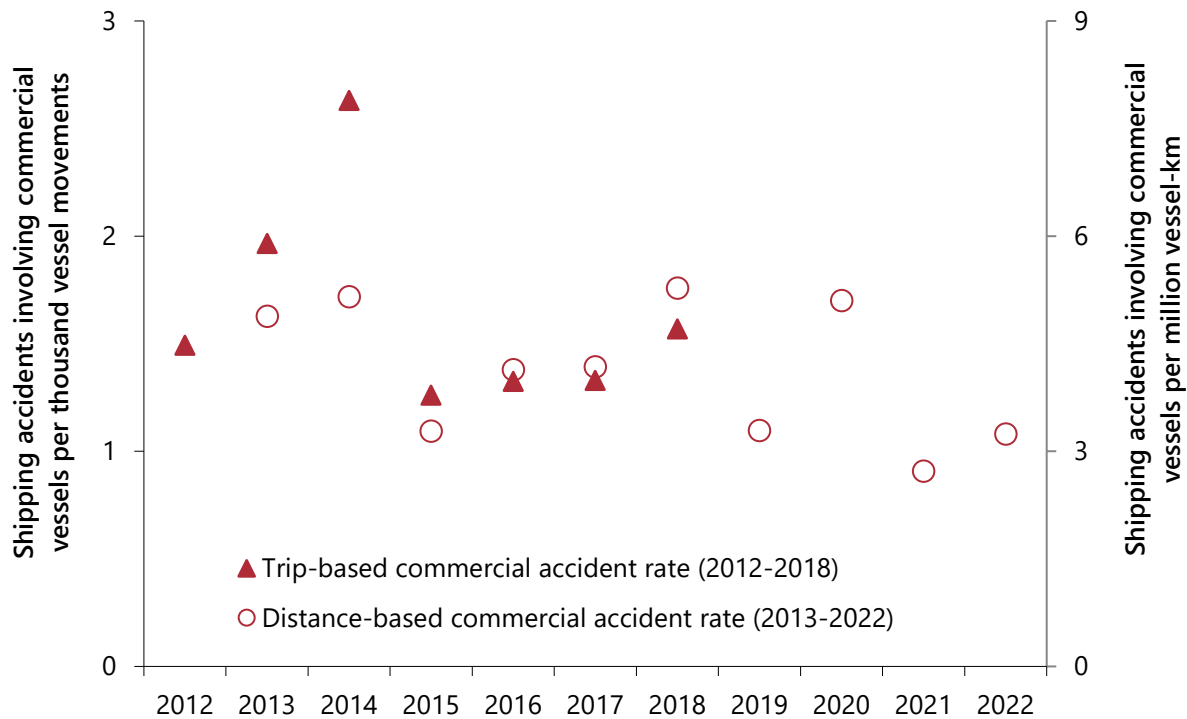
In 2022, 76% of the 229 vessels involved in shipping accidents reported to the TSB were Canadian-flag vessels. Of these Canadian-flag vessels, 49% were commercial non-fishing vessels and 34% were fishing vessels; the remaining 17% were non-commercial vessels, pleasure craft or service vessels.

² See the Definitions section.

Accident rates

According to information provided by Transport Canada³, marine activity for Canadian commercial non-fishing vessels over 15 gross tons (GT) (excluding passenger vessels and cruise ships) was 147.303 million commercial vessel-km in 2022, which is 10% above the 2013 to 2021 average.⁴ This yields a rate of 3.0 shipping accidents per million commercial vessel-km in 2022, lower than the prior 9-year average of 4.0.

Figure 6. Shipping accident rate for Canadian-flag commercial non-fishing vessels, 2012 to 2022



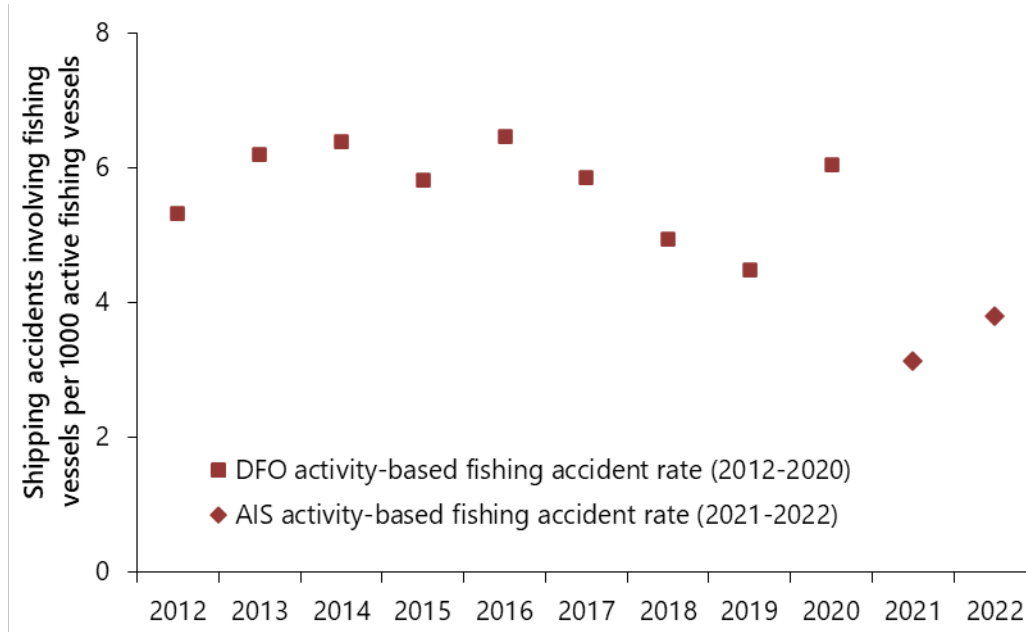
According to information provided by Transport Canada, there were 15 011 active fishing vessels in Canada in 2022⁵. The shipping accident rate for Canadian-flag fishing vessels (Figure 7) was 3.8 shipping accidents per 1000 active fishing vessels in 2022, above the rate of 3.1 in 2021, but below the 2012 to 2021 average of 5.5.

³ Activity data has been updated. Source: Transport Canada, Transportation and Economic Analysis – Policy Group, email communication 24 April 2023.

⁴ Transport Canada (TC) has updated its methodology for measuring commercial activity. Beginning from 2013, TC combines terrestrial automatic identification system (AIS) data from the Canadian Coast Guard and satellite AIS data from the Government of Canada Satellite AIS provider to calculate a distance-based metric of Canadian-flag commercial marine activity in Canadian waters. Vessel movements are no longer captured (Source: An introduction to automatic identification system (AIS) data and how it's used at TC (OPP). Transport Canada. December, 2019).

⁵ Source: Transport Canada, Transportation and Economic Analysis – Policy Group, email communication 24 April 2023.

Figure 7. Shipping accident rate, for Canadian-flag fishing vessels, 2012 to 2022



For Canadian-flag fishing vessels, the most frequently reported shipping accident types in 2022 were grounding (41%), sinking (29%) and fire/explosion (17%). Canadian-flag commercial non-fishing vessels were most often involved in collisions (54%), groundings (17%), or fire/explosions (17%).

In 2022, 36 foreign-flag vessels were involved in shipping accidents in Canadian waters, 35 of which were commercial non-fishing vessels. According to information provided by Transport Canada,⁶ marine activity for foreign commercial non-fishing vessels over 15 GT was 20 022 thousand commercial vessel-km in 2022, above the 2013 to 2021 average of 18 873 thousand commercial vessel-km. This yields an accident rate of 1.6 shipping accidents involving commercial foreign-flag vessels over 15 GT per million commercial vessel-km, unchanged from the 2013 to 2021 average.

Vessels lost (tables 1 and 5)

In 2022, 12 vessels were reported lost, down from 15 in 2021 and down from the 2012 to 2021 average of 17. Eight of the 12 vessels lost in 2022 were fishing vessels. Seven of the 12 vessels lost were less than 15 GT (including 2 with unknown tonnage). In the past 10 years (2013 to 2022), fishing vessels under 60 GT have accounted for 60% of Canadian vessels lost (tables 1 and 5, some data not shown).

⁶ Source: Transport Canada, Transportation and Economic Analysis – Policy Group, email communication 24 April 2023.

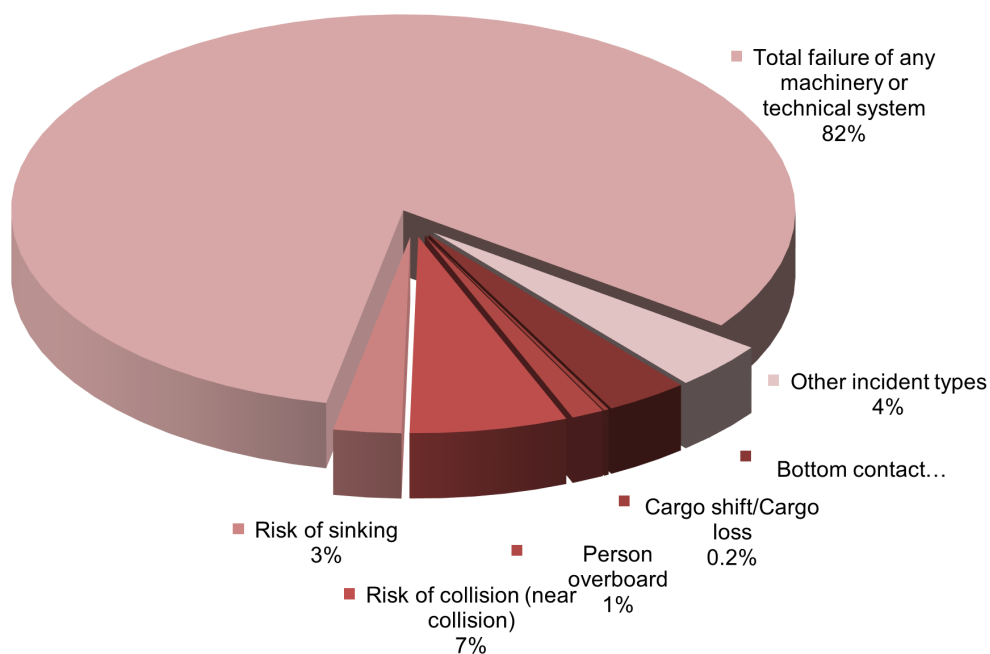
Incidents

Overview of incidents

In 2022, 968 marine incidents were reported to the TSB, up from the total of 856 in 2021 and above the annual 10-year (2012 to 2021) average of 776.⁷ Incidents in the Atlantic region (348) represented 36% of all marine incidents, followed by 35% (339) in the Central region, and 28% (272) in the Pacific region. The remaining 1% (9) of reported incidents occurred in foreign waters (Table 2).

The majority (82%) of reportable incidents involved the total failure of any machinery or technical system (Figure 8).⁸ The largest proportion of these incidents (40%) occurred in the Atlantic region, while the greatest proportion of incidents involving risk of collision (66%) occurred in the Central region (data not shown). The types of vessel most often involved in total failure of any machinery or technical systems incidents in 2022 were fishing vessels (51%) and solid cargo vessels (23%) (data not shown).

Figure 8. Marine incidents, by type, 2022*



* Due to rounding of percentages in category labels, additions across incident types should be calculated from Table 1 data rather than by adding percentages shown in Figure 8.

⁷ 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.

⁸ 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

This page intentionally left blank.

Table 1. Marine transportation occurrences, vessels, losses, and casualties, 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Accidents¹	268	301	301	252	311	283	290	271	264	220	241
Shipping accidents by type	216	240	249	214	266	235	233	207	222	177	197
Capsize	6	8	3	10	7	5	10	8	2	4	8
Collision	78	79	88	57	89	89	82	72	97	54	64
Fire/Explosion	34	32	29	33	44	33	35	32	36	44	33
Grounding	69	62	61	59	65	52	58	51	47	36	49
Sank	10	15	26	17	27	22	27	18	21	23	28
Sustains damage rendering vessel unseaworthy/ unfit for purpose	16	43	41	36	33	33	21	26	18	13	15
Other shipping accident types	3	1	1	2	1	1	0	0	1	3	0
Accidents aboard ship	52	61	52	38	45	48	57	64	42	43	44
Vessels involved in shipping accidents	241	277	281	241	312	270	268	231	258	200	229
Barge	6	19	12	10	24	20	29	18	25	14	17
Cargo - liquid	6	7	14	12	7	10	9	7	6	5	4
Cargo - solid	63	60	68	37	40	39	47	57	62	39	46
Ferry	18	13	20	18	20	12	10	17	15	18	21
Fishing	82	90	92	82	93	90	75	59	78	49	61
Passenger	15	15	13	17	15	15	15	21	12	7	12
Service ship	20	36	21	29	50	38	27	21	20	17	28
Tug	26	25	22	19	26	25	25	8	22	24	19
Other vessel types	5	12	19	17	37	21	31	23	18	27	21
Vessels involved in shipping accidents	241	277	281	241	312	270	268	231	258	200	229
Canadian non-fishing vessels	111	147	144	127	184	148	157	125	141	118	133
Canadian fishing vessels	78	88	92	81	92	86	70	57	75	46	60
Foreign vessels	52	42	45	33	36	36	41	49	42	36	36
Vessels lost	23	21	20	24	19	14	15	8	14	15	12
1600 GT and over	0	0	0	0	0	0	1	0	0	0	1
150 to 1599 GT	1	1	1	2	1	0	0	0	0	2	0
60 to 149 GT	3	4	4	6	5	2	4	1	3	0	1
15 to 59 GT	8	7	4	6	2	4	3	1	3	4	3
Less than 15 GT	9	6	8	9	7	5	6	6	7	5	5
Unknown tonnage	2	3	3	1	4	3	1	0	1	4	2
Persons fatally injured	14	19	12	19	8	11	22	17	18	11	7
Shipping accidents	5	11	4	13	6	4	14	4	14	9	2
Accidents aboard ship	9	8	8	6	2	7	8	13	4	2	5
Persons seriously injured	48	49	46	45	50	49	61	57	41	45	40
Shipping accidents	6	0	1	12	5	7	8	10	2	5	7
Accidents aboard ship	42	49	45	33	45	42	53	47	39	40	33
Occurrences with a dangerous good release¹	0	0	0	5	7	7	8	2	4	1	11
Reportable incidents	270	732	747	705	764	881	931	945	925	856	968
Bottom contact	21	19	24	36	23	42	35	33	15	22	33
Cargo shift/Cargo loss	5	2	1	5	4	6	7	3	3	4	2
Person overboard	5	10	7	10	8	9	11	14	5	5	13
Risk of collision (near collision)	37	63	35	31	45	52	67	54	66	35	63
Risk of sinking	25	24	0	10	20	14	34	14	31	30	27
Total failure of any machinery or technical system ²	156	603	676	590	636	718	732	797	756	730	792
Other incident types	21	11	4	23	28	40	45	30	49	30	38

Data extracted 27 February 2023

¹ The reporting requirement in the 2014 TSB Regulations concerning the release of dangerous goods has been harmonized with Part 8 of the *Transportation of Dangerous Goods Regulations*. The TSB did not collect detailed data on the release of dangerous goods prior to 1 July 2014.

² In 2013, the TSB clarified to industry the reporting requirements for a total failure of any machinery or technical system, which led to an increase in the number of reported incidents of this type. These requirements are documented in the 2014 TSB Regulations.

Table 2. Marine transportation occurrences, vessels, losses and casualties, by region^{1,2}, 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pacific region											
Shipping accidents	76	88	95	90	138	111	101	79	86	81	95
Accidents aboard ship	18	21	23	14	20	9	12	16	15	13	8
Vessels involved in shipping accidents	87	107	108	106	164	130	119	91	102	95	109
Barge/Tug	18	28	23	23	39	34	37	17	30	24	21
Cargo/Tanker	12	8	15	6	14	9	8	13	16	11	12
Ferry/Passenger	10	10	10	15	17	12	13	16	10	17	17
Fishing	29	30	36	33	43	35	30	23	24	18	30
Other vessel types	18	31	24	29	51	40	31	22	22	25	29
Vessels lost	6	3	9	12	9	9	3	2	5	6	5
Fatalities	4	2	5	12	0	6	7	8	4	2	1
Reportable incidents	118	150	149	259	289	282	254	233	257	251	272
Central region											
Shipping accidents	74	74	74	64	57	59	63	68	71	53	54
Accidents aboard ship	19	25	17	10	11	16	21	20	17	15	21
Vessels involved in shipping accidents	79	86	85	71	66	66	71	75	82	59	67
Barge/Tug	9	14	8	6	9	7	8	7	10	12	12
Cargo/Tanker	46	40	55	35	24	26	35	38	40	25	33
Ferry/Passenger	14	13	14	13	9	11	10	17	10	7	10
Fishing	6	8	3	6	6	14	8	1	14	3	3
Other vessel types	4	11	5	11	18	8	10	12	8	12	9
Vessels lost	1	4	2	2	2	0	2	0	1	2	0
Fatalities	3	6	2	2	0	3	1	3	1	2	2
Reportable incidents	107	148	137	116	125	203	274	284	284	244	339
Atlantic region											
Shipping accidents	56	63	72	55	64	59	54	53	55	42	45
Accidents aboard ship	14	12	12	14	14	19	22	24	9	13	14
Vessels involved in shipping accidents	64	68	80	58	73	66	62	58	62	45	50
Barge/Tug	5	2	3	0	1	1	5	2	4	2	3
Cargo/Tanker	3	6	6	2	3	11	4	6	4	7	3
Ferry/Passenger	9	4	9	7	9	4	2	5	7	1	6
Fishing	45	50	52	43	44	40	35	35	40	28	28
Other vessel types	2	6	10	6	16	10	16	10	7	7	10
Vessels lost	15	13	9	10	8	5	10	6	8	7	7
Fatalities	6	11	5	5	8	2	13	6	13	7	4
Reportable incidents	40	428	450	318	336	382	391	410	372	352	348
Foreign waters											
Shipping accidents	10	15	8	5	7	6	15	7	10	1	3
Accidents aboard ship	1	3	0	0	0	4	2	4	1	2	1
Vessels involved in shipping accidents	11	16	8	6	9	8	16	7	12	1	3
Barge/Tug	0	0	0	0	1	3	4	0	3	0	0
Cargo/Tanker	8	13	6	6	6	3	9	7	8	1	2
Ferry/Passenger	0	1	0	0	0	0	0	0	0	0	0
Fishing	2	2	1	0	0	1	2	0	0	0	0
Other vessel types	1	0	1	0	2	1	1	0	1	0	1
Vessels lost	1	1	0	0	0	0	0	0	0	0	0
Fatalities	1	0	0	0	0	0	1	0	0	0	0
Reportable incidents	5	6	11	12	14	14	12	18	12	9	9

Data extracted 27 February 2023

¹ See the map of the regions in the Definitions section of the statistical summary.² In 2013, the TSB clarified to industry the reporting requirements for a total failure of any machinery or technical system, which led to an increase in the number of reported incidents of this type. These requirements are documented in the 2014 TSB Regulations.

Table 3. Canadian-flag vessels involved in shipping accidents, by category of vessel and type of accident, and commercial accident rates, 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Canadian-flag vessels involved	189	232	225	193	244	212	195	164	201	137	173
Commercial vessels	88	101	107	83	100	90	100	81	102	73	84
Capsize	2	0	0	3	2	1	2	1	1	1	1
Collision	45	45	53	34	48	44	49	42	64	34	45
Fire/Explosion	9	12	12	11	14	7	14	13	7	13	14
Grounding	22	28	16	14	21	19	16	13	14	14	14
Sank	1	3	6	10	5	5	5	3	6	7	4
Sustains damage rendering vessel unseaworthy/unfit for purpose	9	13	20	11	10	14	14	9	10	4	6
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0
Commercial movements ¹	28,800	29,000	23,185	30,956	35,478	38,366	43,353	n/a	n/a	n/a	n/a
Commercial accident rate ²	1.5	2.0	2.6	1.3	1.3	1.3	1.6	n/a	n/a	n/a	n/a
Commercial vessel-km (thousands) ³	n/a	11,673	11,829	11,884	11,355	12,200	12,888	13,378	11,952	13,220	13,273
Commercial accidents per million vessel-km ⁴	n/a	4.9	5.2	3.3	4.1	4.2	5.3	3.3	5.1	2.7	3.2
Fishing vessels	78	88	91	79	90	82	68	57	75	43	59
Capsize	3	6	1	5	3	2	4	1	1	2	2
Collision	12	12	15	4	12	19	12	7	17	4	3
Fire/Explosion	19	13	9	14	16	15	6	10	19	15	10
Grounding	33	30	32	33	31	27	33	26	26	13	24
Sank	9	10	19	10	17	8	9	7	10	5	17
Sustains damage rendering vessel unseaworthy/unfit for purpose	0	16	14	11	10	10	4	6	1	2	3
Other shipping accident types	2	1	1	2	1	1	0	0	1	2	0
Active fishing vessels ^{5, 6}	13,871	13,719	13,623	13,242	13,311	13,138	13,124	12,682	11,908	13,392	15,011
Fishing vessel accident rate ⁷	5.3	6.2	6.4	5.8	6.5	5.9	5.0	4.5	6.0	3.1	3.8
Other vessels	23	43	27	31	54	40	27	26	24	21	30
Capsize	1	1	0	1	1	1	1	1	0	1	1
Collision	10	24	14	15	25	24	14	12	8	3	15
Fire/Explosion	4	3	7	3	14	4	10	2	9	9	6
Grounding	5	10	3	8	7	2	1	3	4	2	5
Sank	0	2	1	0	3	6	1	5	2	3	3
Sustains damage rendering vessel unseaworthy/unfit for purpose	3	3	2	4	4	3	0	3	1	3	0
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0

Data extracted 27 February 2023

¹ A movement is a vessel's travel segment between ports with at least one port being a domestic port. (Vessel movement data source: Transport Canada email communication 3 April 2019).

² This 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 1 000 vessel movements (to 2019).

³ Based on data from Transport Canada, which has updated its methodology for measuring commercial activity. Beginning from 2013, TC combines terrestrial automatic identification system (AIS) data from the Canadian Coast Guard and satellite AIS data from the Government of Canada Satellite AIS provider to calculate a distance-based metric of Canadian-flag commercial marine activity in Canadian waters (Source: TC email communication 2 March 2023). Vessel movements are no longer captured.

⁴ This commercial accident rate is the number of shipping accidents involving Canadian-flag commercial vessels of 15 gross tonnage or more (excluding passenger vessels and fishing vessels) per million vessel-km.

⁵ Commercial fishing vessels landing at least one catch in that calendar year (Source: Department of Fisheries and Oceans email communication 6 April 2021).

⁶ The 2021 and 2022 fishing vessel counts are compiled from AIS data (Source: TC email communication 2 March 2023). Note that some included fishing vessels may have engaged only in non-fishing activity, and would not have been counted as active fishing vessels in 2012 to 2020 totals.

⁷ The fishing vessel accident rate is the number of shipping accidents involving Canadian-flag commercial fishing vessels per 1000 active fishing vessels.

Table 4. Foreign-flag vessels involved in shipping accidents, by category of vessel and type of accident, and commercial accident rates, 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Foreign-flag vessels involved	52	42	45	33	36	36	41	49	42	36	36
Commercial vessels	46	38	41	30	32	31	31	45	39	33	35
Capsize	0	0	0	0	0	0	0	0	0	0	0
Collision	28	19	29	11	17	19	23	25	30	20	21
Fire/Explosion	3	5	0	5	0	3	3	6	0	5	2
Grounding	10	2	7	4	8	3	2	6	3	5	5
Sank	0	1	0	0	1	0	0	0	0	0	1
Sustains damage render unseaworthy/ unfit for purpose	5	11	5	10	6	6	3	8	6	3	6
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0
Commercial movements ¹	26,300	26,600	17,635	18,940	21,657	24,728	27,787	n/a	n/a	n/a	n/a
Commercial accident rate ²	1.5	1.3	2.3	1.4	1.3	1.2	1.0	n/a	n/a	n/a	n/a
Commercial vessel-km (thousands) ³	n/a	17,639	18,602	17,865	16,134	19,173	20,487	20,222	19,627	20,107	20,022
Commercial accidents per million vessel-kms ⁴	n/a	1.9	2.2	1.5	1.7	1.5	1.4	1.8	1.8	1.6	1.6
Fishing vessels	4	2	0	1	1	4	5	2	3	3	1
Capsize	0	0	0	0	0	0	0	0	0	0	0
Collision	2	2	0	0	0	2	1	0	2	0	1
Fire/Explosion	0	0	0	0	0	1	1	1	0	1	0
Grounding	1	0	0	1	1	1	2	1	1	0	0
Sank	0	0	0	0	0	0	1	0	0	2	0
Sustains damage render unseaworthy/ unfit for purpose	0	0	0	0	0	0	0	0	0	0	0
Other shipping accident types	1	0	0	0	0	0	0	0	0	0	0
Other vessels	2	2	4	2	3	1	5	2	0	0	0
Capsize	0	0	1	1	0	0	1	0	0	0	0
Collision	1	2	1	1	2	0	2	2	0	0	0
Fire/Explosion	0	0	0	0	0	1	1	0	0	0	0
Grounding	1	0	2	0	1	0	0	0	0	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	1	0	0	0	0
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0

Data extracted 27 February 2023

¹ A movement is a vessel's travel segment between ports with at least one port being a domestic port. (Vessel movement data source: Transport Canada email communication 3 April 2019).

² This commercial 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 1 000 vessel movements (to 2019).

³ Based on data from Transport Canada, which has updated its methodology for measuring commercial activity. Beginning from 2013, TC combines terrestrial automatic identification system (AIS) data from the Canadian Coast Guard and satellite AIS data from the Government of Canada Satellite AIS provider to calculate a distance-based metric of Canadian-flag commercial marine activity in Canadian waters (Source: TC email communication 2 March 2023). Vessel movements are no longer captured.

⁴ This commercial 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 million vessel-km.

Table 5. Vessels lost by category and age of vessel, 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Vessels lost	23	21	20	24	19	14	15	8	14	15	12
0-4 years	1	0	0	1	0	0	0	1	0	1	0
5-9 years	1	1	0	0	0	0	1	0	0	0	0
10-14 years	2	3	0	3	0	0	2	0	0	1	0
15-19 years	5	2	2	1	3	2	2	1	2	1	1
20-24 years	3	3	1	1	0	0	1	1	0	2	0
25-29 years	3	2	5	5	1	0	3	0	0	1	1
30+ years	5	5	4	10	7	7	3	1	6	5	5
Unknown	3	5	8	3	8	5	3	4	6	4	5
Commercial vessels	1	1	2	8	4	2	3	0	1	3	2
0-4 years	0	0	0	0	0	0	0	0	0	1	0
5-9 years	0	0	0	0	0	0	1	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	1	0	0	0	0	0	0
20-24 years	0	0	0	1	0	0	0	0	0	0	0
25-29 years	0	0	1	2	0	0	0	0	0	0	0
30+ years	1	1	1	4	2	1	1	0	0	2	1
Unknown	0	0	0	1	1	1	1	0	1	0	1
Fishing vessels	22	18	17	16	14	9	12	5	12	10	8
0-4 years	1	0	0	1	0	0	0	0	0	0	0
5-9 years	1	1	0	0	0	0	0	0	0	0	0
10-14 years	2	3	0	3	0	0	2	0	0	0	0
15-19 years	5	2	2	1	2	2	2	1	2	1	1
20-24 years	3	3	1	0	0	0	1	1	0	2	0
25-29 years	3	2	4	3	1	0	3	0	0	1	1
30+ years	4	2	3	6	5	6	2	0	6	3	4
Unknown	3	5	7	2	6	1	2	3	4	3	2
Other vessels	0	2	1	0	1	3	0	3	1	2	2
0-4 years	0	0	0	0	0	0	0	1	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	1	0
15-19 years	0	0	0	0	0	0	0	0	0	0	0
20-24 years	0	0	0	0	0	0	0	0	0	0	0
25-29 years	0	0	0	0	0	0	0	0	0	0	0
30+ years	0	2	0	0	0	0	0	1	0	0	0
Unknown	0	0	1	0	1	3	0	1	1	1	2

Data extracted 27 February 2023

Table 6. Accidents and persons fatally¹ or seriously injured, by type of accident, 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Shipping accidents with fatalities¹ or serious injuries	7	5	4	7	5	8	12	7	7	8	6
Capsize	3	2	0	2	1	1	5	2	0	3	0
Collision	1	0	1	2	2	4	1	1	2	1	2
Fire/Explosion	3	2	0	1	1	1	1	1	0	1	0
Grounding	0	1	0	1	0	0	3	1	1	0	2
Sank	0	0	3	1	1	2	2	2	3	2	2
Sustains damage rendering 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	1	1	0
Persons fatally injured in shipping accidents	5	11	4	13	6	4	14	4	14	9	2
Capsize	3	6	0	9	2	1	7	3	0	4	0
Collision	1	0	0	1	0	0	2	0	0	0	0
Fire/Explosion	1	2	0	0	0	0	0	0	0	0	0
Grounding	0	3	0	0	0	0	1	0	1	0	0
Sank	0	0	4	3	4	3	4	1	9	3	2
Sustains damage rendering 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	4	2	0
Persons seriously injured in shipping accidents	6	0	1	12	5	7	8	10	2	5	7
Capsize	3	0	0	0	0	0	1	0	0	2	0
Collision	0	0	1	9	4	6	0	4	2	1	2
Fire/Explosion	3	0	0	1	1	1	5	1	0	1	0
Grounding	0	0	0	2	0	0	2	4	0	0	5
Sank	0	0	0	0	0	0	0	1	0	1	0
Sustains damage rendering 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	52	61	52	38	45	48	57	64	42	43	44
Persons fatally injured in accidents aboard ship	9	8	8	6	2	7	8	13	4	2	5
Boarding, being on board, falling overboard from the ship	3	3	5	6	1	5	7	12	4	2	4
In contact with any part of the ship or its contents	6	5	3	0	1	2	1	1	0	0	1
Persons seriously injured in accidents aboard ship	42	49	45	33	45	42	53	47	39	40	33
Boarding, being on board, falling overboard from the ship	2	6	10	7	6	7	7	2	7	4	5
In contact with any part of the ship or its contents	40	43	35	26	39	35	46	45	32	36	28

Data extracted 27 February 2023

¹ Fatalities include missing persons.

Table 7. Vessels involved in accidents with fatalities or serious injuries and persons fatally¹ or seriously injured, by type of vessel, 2012 to 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Vessels in shipping accidents with fatalities¹ or serious injuries	7	5	4	7	5	8	12	7	7	8	6
Barge/Tug	2	0	0	0	0	0	1	0	0	1	0
Cargo/Tanker	0	0	1	0	0	1	1	0	0	0	0
Ferry/Passenger	0	0	0	2	2	2	1	0	2	0	2
Fishing	4	5	3	3	2	3	8	2	5	5	2
Other	1	0	0	2	1	2	1	5	0	2	2
Persons fatally injured in shipping accidents	5	11	4	13	6	4	14	4	14	9	2
Barge/Tug	1	0	0	0	0	0	0	0	0	2	0
Cargo/Tanker	0	0	2	0	0	0	0	0	0	0	0
Ferry/Passenger	0	0	0	6	0	2	1	0	0	0	0
Fishing	2	11	2	6	6	1	13	0	14	6	1
Other	2	0	0	1	0	1	0	4	0	1	1
Persons seriously injured in shipping accidents	6	0	1	12	5	7	8	10	2	5	7
Barge/Tug	1	0	0	0	0	0	1	0	0	1	0
Cargo/Tanker	0	0	0	0	0	1	5	0	0	0	0
Ferry/Passenger	0	0	0	2	4	2	0	0	2	0	5
Fishing	3	0	1	1	0	3	1	2	0	1	1
Other	2	0	0	9	1	1	1	8	0	3	1
Vessels in accidents aboard ship with fatalities¹ or serious injuries	53	61	52	38	45	48	58	64	42	43	44
Barge/Tug	1	3	4	0	4	2	3	5	3	2	1
Cargo/Tanker	23	17	21	5	12	19	22	24	15	13	14
Ferry/Passenger	3	7	5	9	6	5	8	8	3	4	9
Fishing	21	25	18	23	19	16	21	24	14	23	15
Other	5	9	4	1	4	6	4	3	7	1	5
Persons fatally injured in accidents aboard ship	9	8	8	6	2	7	8	12	4	2	5
Barge/Tug	0	1	0	0	0	0	0	0	0	0	0
Cargo/Tanker	2	2	1	0	0	2	2	2	0	0	0
Ferry/Passenger	1	0	0	1	0	2	0	1	2	0	2
Fishing	6	5	6	5	1	2	4	8	2	2	2
Other	0	0	1	0	1	1	2	1	0	0	1
Persons seriously injured in accidents aboard ship	42	49	42	33	44	42	53	47	39	40	33
Barge/Tug	0	2	4	0	4	3	2	4	2	2	1
Cargo/Tanker	21	12	18	5	12	16	21	16	16	15	12
Ferry/Passenger	2	7	5	8	6	4	10	7	1	4	4
Fishing	15	19	12	19	19	14	17	19	12	19	12
Other	4	9	3	1	3	5	3	1	8	0	4

Data extracted 27 February 2023

¹ Fatalities include 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 *Transportation Safety Board 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 strikings 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

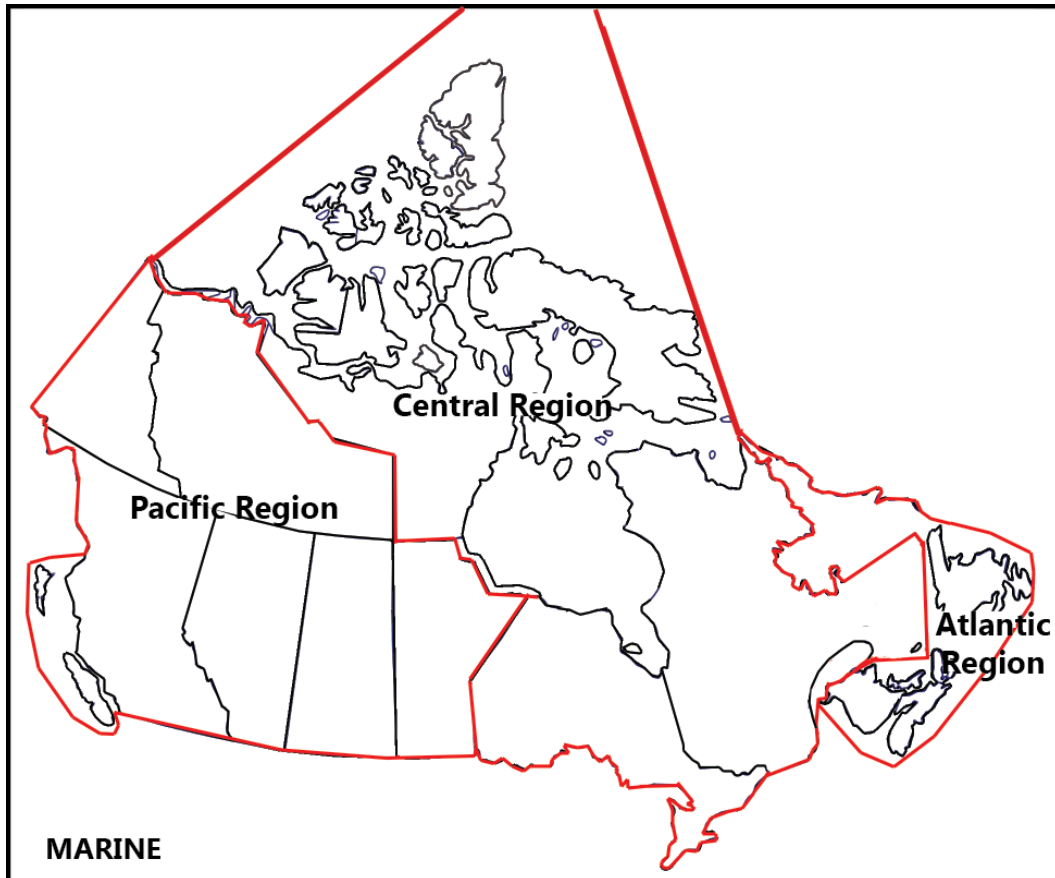
Gross tons (GT)

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 or 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.