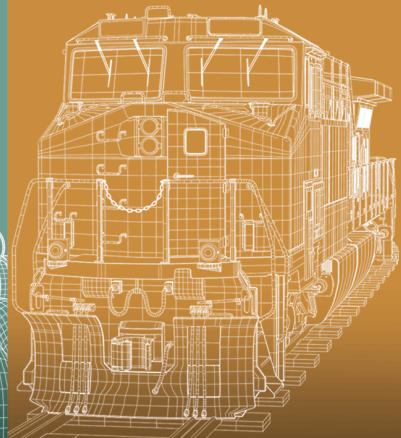
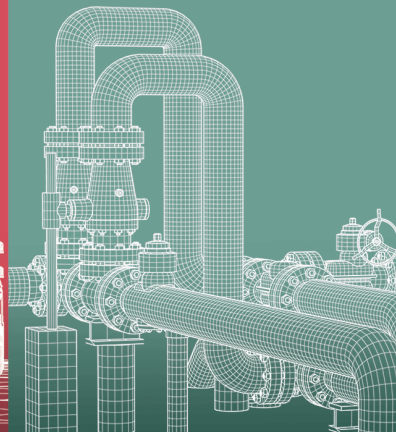




Transportation  
Safety Board  
of Canada

Bureau de la sécurité  
des transports  
du Canada



## STATISTICAL SUMMARY

# Marine Transportation Occurrences in 2021

Canada

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

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*Le présent rapport est également disponible en français.*

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# Statistical Summary

## Marine Transportation Occurrences in 2021

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.

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 2021 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 18 March 2022. 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.

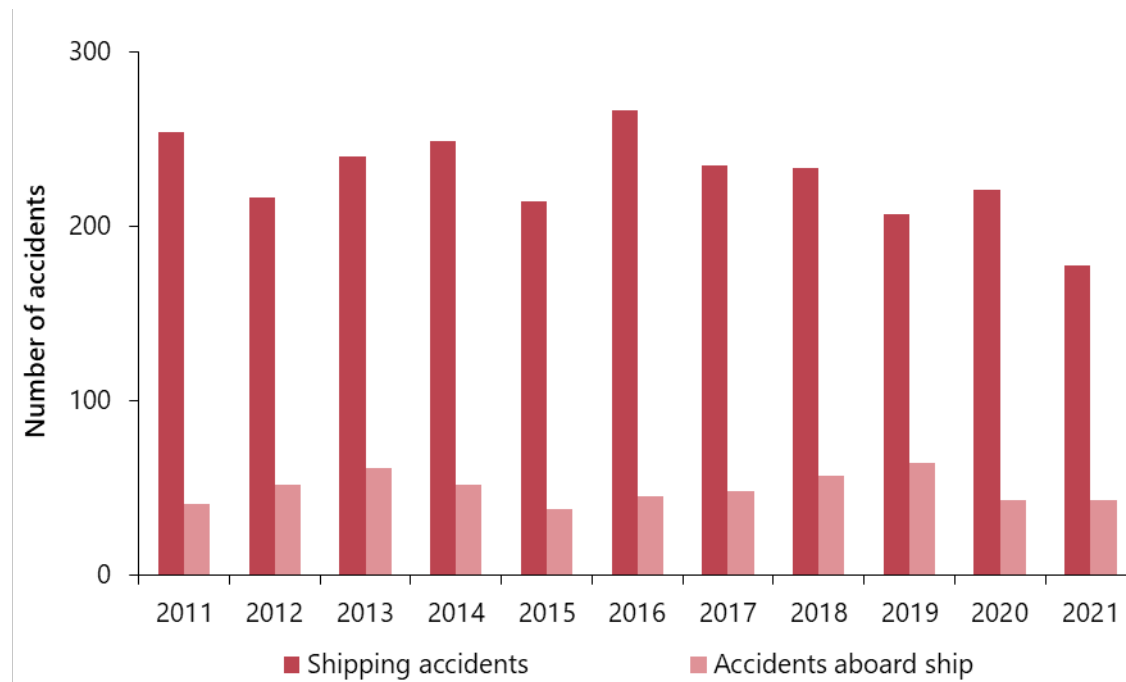
# Accidents

## Overview of accidents and casualties

In 2021, 220 marine accidents<sup>1</sup> were reported to the TSB, down from the 2020 total of 264 and below the 10-year (2011–2020) average of 284 (Figure 1). In 2021 the proportion of shipping accidents (as opposed to accidents aboard ship) was 80% of marine accidents, comparable to the previous 10-year average of 82%.

There were 177 shipping accidents in 2021, down from the 2020 total of 221 and down 24% from the 2011–2020 average of 234. The majority of shipping accidents involved fishing vessels (25%), followed by solid cargo vessels (21%) (data not shown).

Figure 1. Shipping accidents and accidents aboard ship, 2011 to 2021



In 2021, there were 43 accidents aboard ship, unchanged from 43 in 2020 and down from the 2011–2020 average of 50. The majority of accidents aboard ship occurred on fishing vessels (53%) and cargo/tanker vessels (30%) (data not shown).

## Casualties (tables 1, 6 and 7)

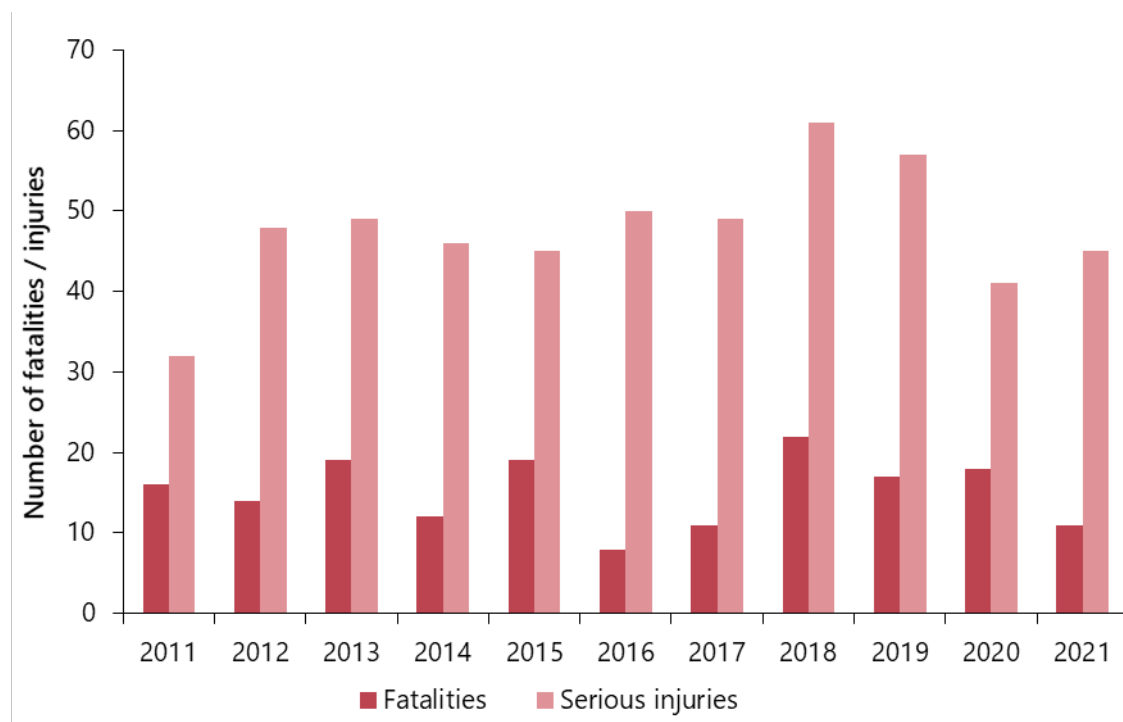
In 2021, 11 marine fatalities were reported, down from the 18 fatalities reported in 2020, and below the annual average of 15.6 in the 2011–2020 time period. Of the 11 fatalities in 2021, 9 were the result of 4 shipping accidents, while the remaining 2 fatalities resulted from accidents aboard ship (Figure 2).

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

Of note, 6 of the 9 shipping accident fatalities in 2021 involved commercial fishing vessels, and both 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.

Serious injuries in 2021 totalled 45, up from 41 in 2020 but down from the annual average of 47 from 2011 to 2020. Forty of the 45 serious injuries (89%) resulted from accidents aboard ship, and 5 resulted from shipping accidents.

Figure 2. Marine fatalities and serious injuries, 2011 to 2021

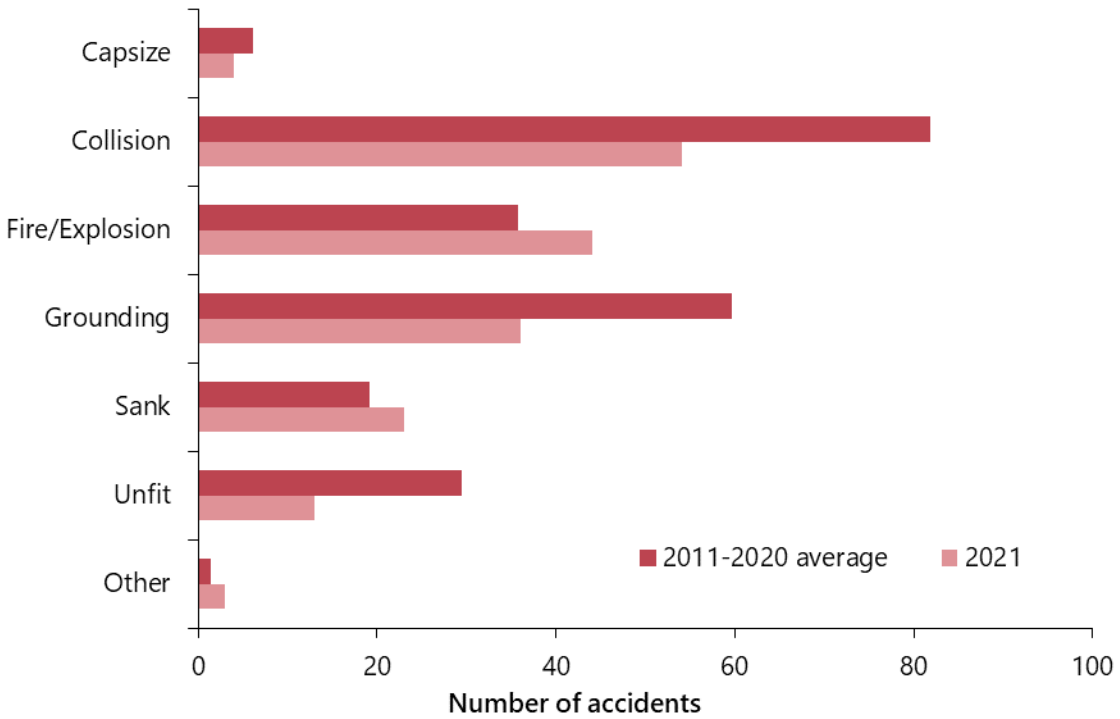


## Shipping accidents

### Type of accident (Table 1)

As illustrated in Figure 3, the most frequent types of shipping accidents in 2021 were collision (31% of all accident types reported), fire/explosion (25%), and grounding (20%). The total number of collisions (54) was 34% less than the 10-year (2011–2020) average of 82, the number of fire/explosion accidents (44) was 23% above the 10-year average of 36, and the number of groundings (36) was 40% below the 10-year average of 60.

Figure 3. Shipping accidents, by accident type, in 2021 compared with the 2011–2020 average

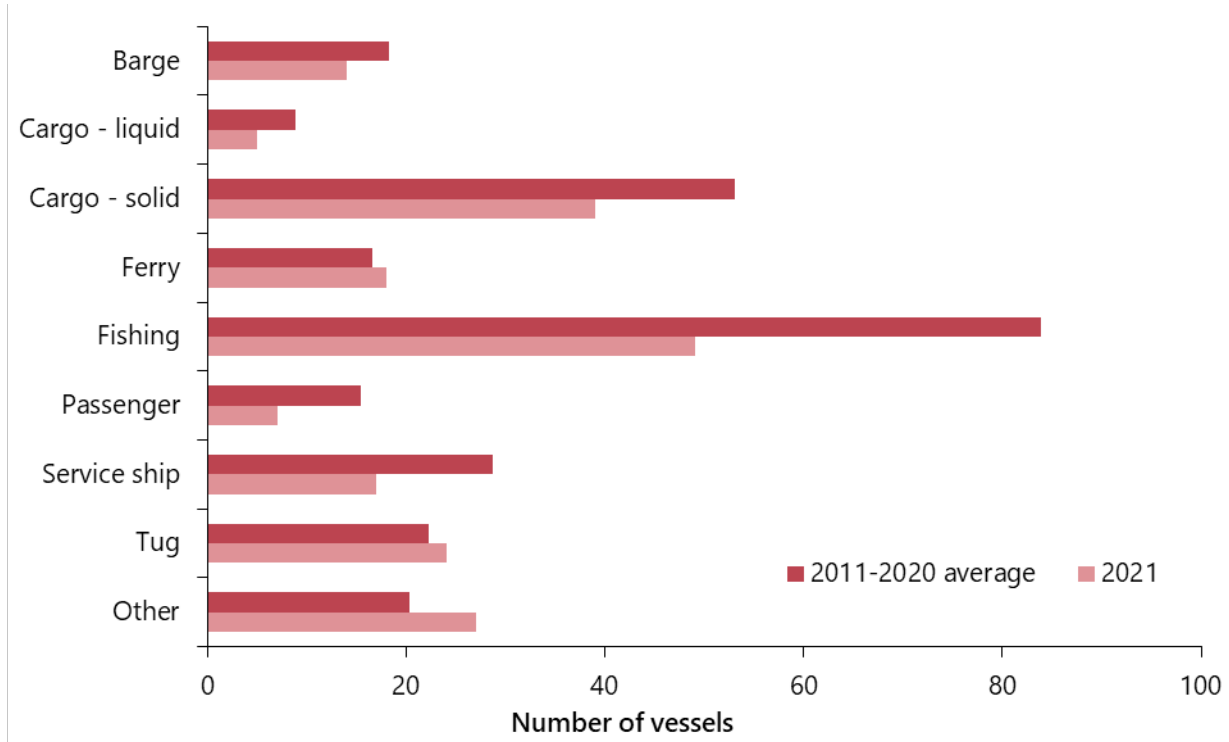


**Type of vessel (Table 1)**

Forty-nine fishing vessels were involved in shipping accidents in 2021, down from 77 in 2020 and down from the 2011–2020 average of 84 (Figure 4). Fishing vessels represented one-quarter of all vessels involved in shipping accidents.



Figure 4. Shipping accidents, by vessel type, in 2021 compared with the 2011–2020 average



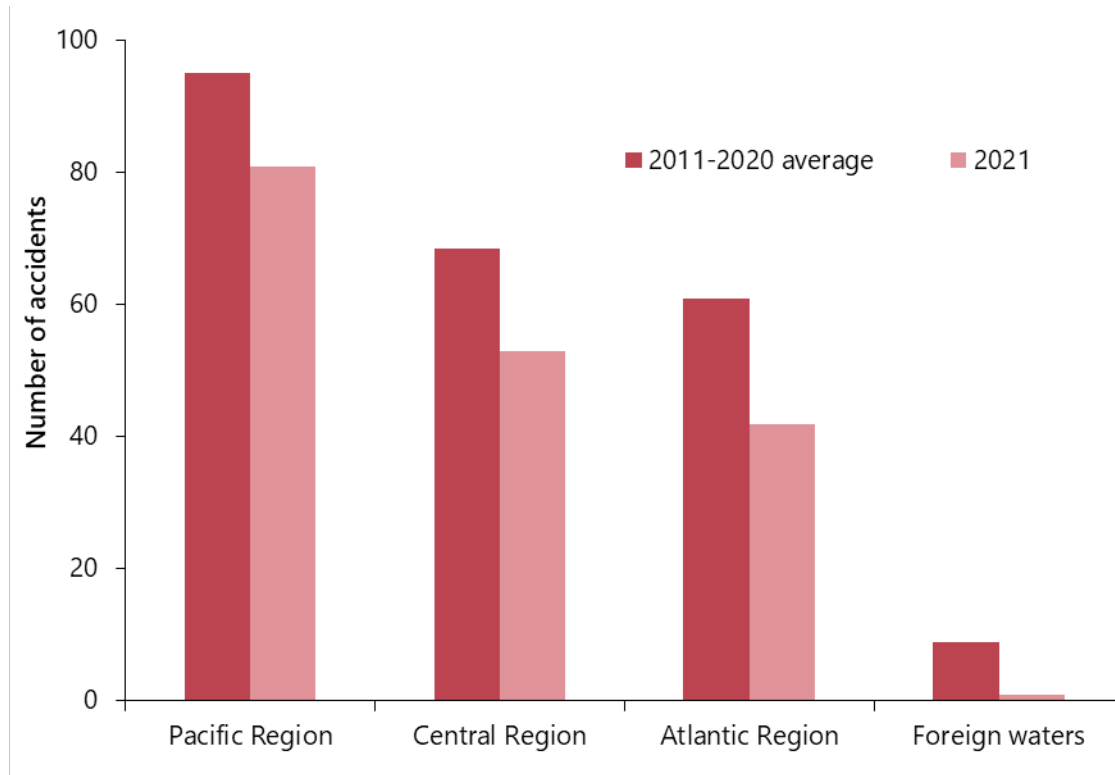
**Geographical region (Table 2)**

In 2021, 46% of shipping accidents occurred in the Pacific region, 30% in the Central region, and 24% in the Atlantic region. Less than 1% of shipping accidents were in foreign waters.<sup>2</sup> In the Pacific region in 2021, shipping accidents were 15% below the 2011–2020 average, in the Central region shipping accidents were 23% below the 2011–2020 average, and in the Atlantic region shipping accidents were 31% below the 2011–2020 average (Figure 5).

Twenty-eight fishing vessels were involved in shipping accidents in the Atlantic region, which is below the 2011–2020 average of 43 fishing vessels. Twenty-five cargo/tanker vessels were involved in shipping accidents in the Central region, below the 2011–2020 average of 39. Twenty-four barge/tug vessels were involved in shipping accidents in the Pacific region, below the 2011–2020 average of 27 (Table 2).

<sup>2</sup> See the Definitions section.

Figure 5. Shipping accidents, by geographical region, in 2021 compared with the 2011–2020 average



**Vessel flag (tables 1, 3, and 4)**

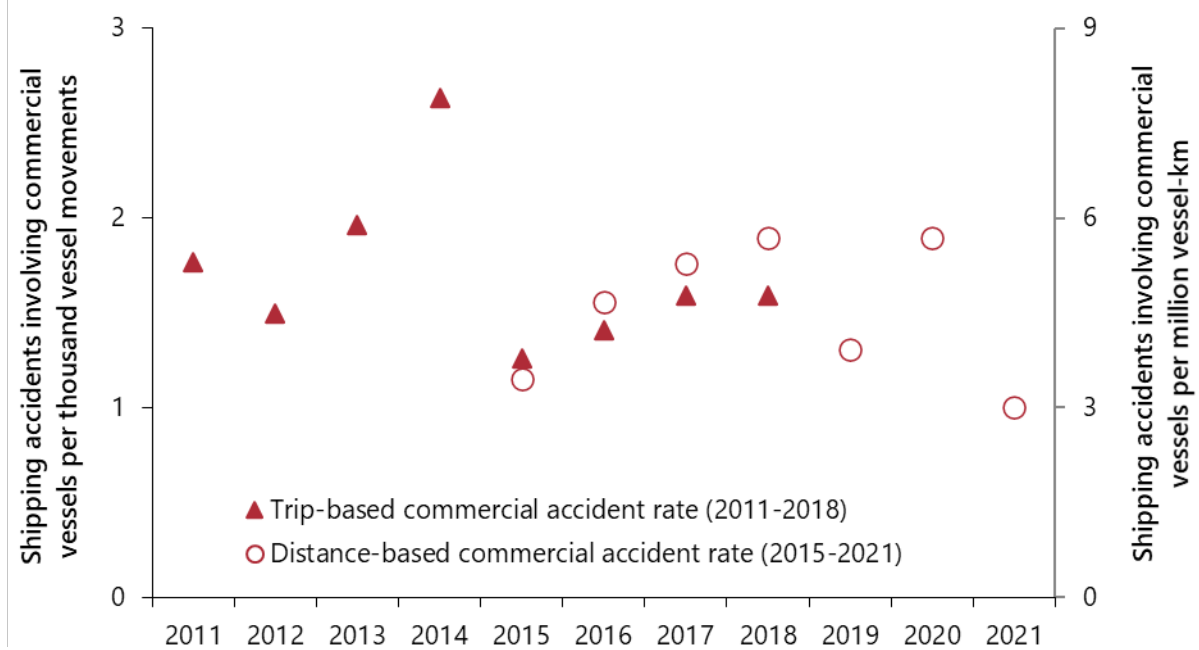
In 2021, 82% of the 200 vessels involved in shipping accidents reported to the TSB were Canadian-flag vessels. Of these Canadian-flag vessels, 53% were commercial non-fishing vessels and 32% were fishing vessels; the remaining 15% were non-commercial vessels, pleasure craft or service vessels.

According to information provided by Transport Canada<sup>3</sup>, marine activity for Canadian commercial non-fishing vessels over 15 gross tons (GT) (excluding passenger vessels and cruise ships) was 12 309 thousand commercial vessel-km in 2021, which is 7% above the 2015–2020 average.<sup>4</sup> This yields a rate of 3.0 shipping accidents per million commercial vessel-km in 2021, lower than the prior 6-year average of 4.8. (Note that a 7-year series is too short to test for trends.)

<sup>3</sup> Source: Transport Canada, Transportation and Economic Analysis – Policy Group, email communication 22 April 2022.

<sup>4</sup> Transport Canada (TC) has updated its methodology for measuring commercial activity. Beginning from 2015, 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 & how it’s used at TC (OPP). Transport Canada. December, 2019).

Figure 6. Shipping accident rate for Canadian-flag commercial non-fishing vessels, 2011 to 2021

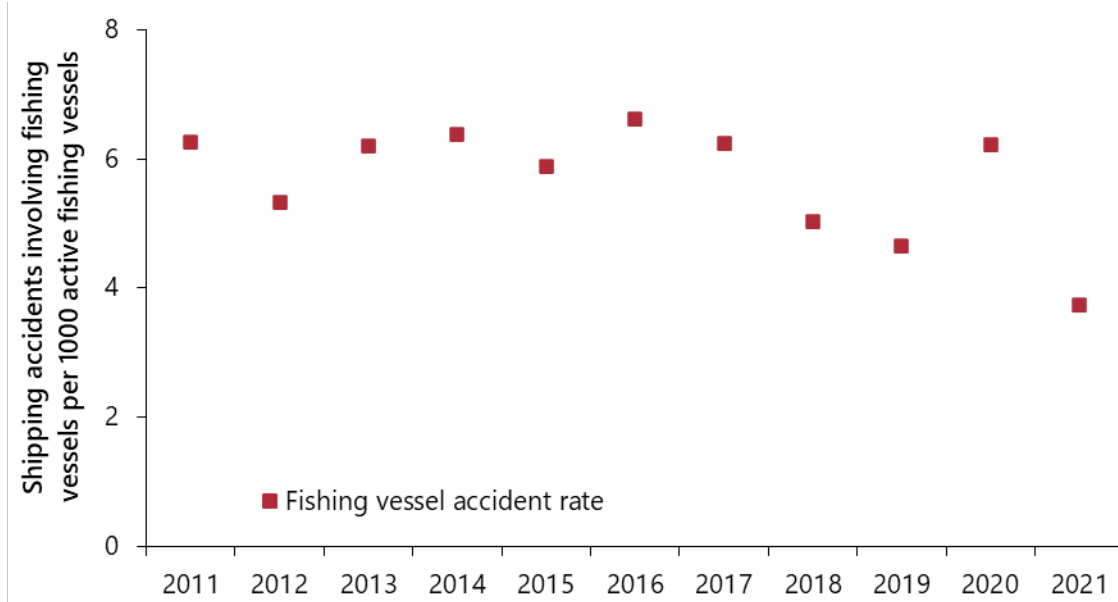


Using historical data (2011 – 2020) from the Department of Fisheries and Oceans (DFO) <sup>5</sup>, the TSB estimated there were 11 744 active fishing vessels in Canada in 2021 <sup>6</sup>. The shipping accident rate for Canadian-flag fishing vessels (Figure 7) was 3.7 shipping accidents per 1000 active fishing vessels in 2021, below the rate of 6.2 in 2020, and below the 2011–2020 average of 5.9.

<sup>5</sup> Source: DFO email communication 6 April 2021.

<sup>6</sup> The 2011-2019 active fishing vessel regression line was extrapolated to 2021 to capture the historical decreasing trend, the difference between the estimated and actual 2020 values captured the pandemic impact, and assuming a constant pandemic impact from 2020 to 2021, the difference was applied to the 2021 regression value to yield the 2021 estimate of 20 744 active commercial fishing vessels.

Figure 7. Shipping accident rate, for Canadian-flag fishing vessels, 2011 to 2021



For Canadian-flag fishing vessels, the most frequently reported shipping accident types in 2021 were fire/explosions (35%), groundings (30%), sinkings (12%), and collisions (9%). Canadian-flag commercial non-fishing vessels were most often involved in collisions (47%), groundings (19%), or fire/explosions (18%).

In 2021, 36 foreign-flag vessels were involved in shipping accidents in Canadian waters, 33 of which were commercial non-fishing vessels. According to information provided by Transport Canada,<sup>7</sup> marine activity for foreign commercial non-fishing vessels over 15 GT was 15 597 thousand commercial vessel-km in 2021, above the 2015–2020 average of 15 328 thousand commercial vessel-km. This yields an accident rate of 2.3 shipping accidents involving commercial foreign-flag vessels over 15 GT per million commercial vessel-km, above the 2015–2020 average.

### Vessels lost (tables 1 and 5)

In 2021, 15 vessels were reported lost, up from 13 in 2020 but down from the 2011–2020 average of 18. Ten of the 15 vessels lost in 2021 were fishing vessels. Nine of the 15 vessels lost were less than 15 GT (including 4 with unknown tonnage). In the past 10 years (2012 to 2021), fishing vessels under 60 GT have accounted for 62% of Canadian vessels lost (tables 1 and 5, some data not shown).

<sup>7</sup> Source: Transport Canada, Transportation and Economic Analysis – Policy Group, email communication 22 April 2022.

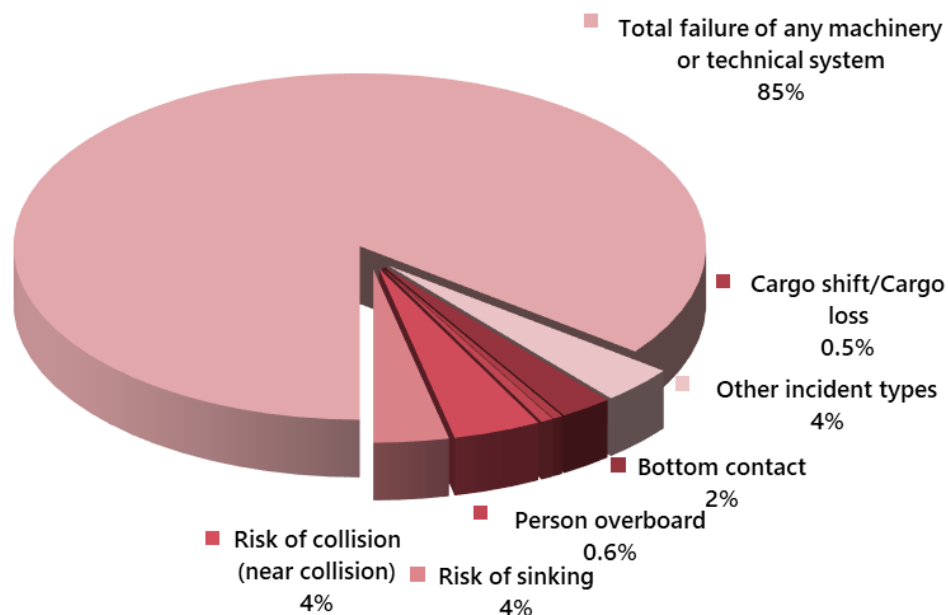
# Incidents

## Overview of incidents

In 2021, 855 marine incidents were reported to the TSB, down from the total of 925 in 2020, but above the annual 10-year (2011–2020) average of 712.<sup>8</sup> Incidents in the Atlantic region (352) represented 41% of all marine incidents, followed by 29% (251) in the Pacific region, and 28% (243) in the Central region. The remaining 1% (9) of reported incidents occurred in foreign waters (Table 2).

The majority (85%) of reportable incidents involved the total failure of any machinery or technical system (Figure 8).<sup>9</sup> The largest proportion of these incidents (44%) occurred in the Atlantic region, while the greatest proportion of incidents involving risk of collision (51%) 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 2021 were fishing vessels (55%) and solid cargo vessels (23%) (data not shown).

Figure 8. Marine incidents, by type, 2021\*



\* 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.

<sup>8</sup> 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.

<sup>9</sup> 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 transportation occurrences, vessels, losses, and casualties, 2011 to 2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Accidents<sup>1</sup></b>	<b>295</b>	<b>268</b>	<b>301</b>	<b>301</b>	<b>252</b>	<b>311</b>	<b>283</b>	<b>290</b>	<b>271</b>	<b>264</b>	<b>220</b>
Shipping accidents by type	254	216	240	249	214	266	235	233	207	221	177
Capsize	2	6	8	3	10	7	5	10	8	2	4
Collision	87	78	79	88	57	89	89	82	72	97	54
Fire/Explosion	50	34	32	29	33	44	33	35	32	36	44
Grounding	73	69	62	61	59	65	52	58	51	47	36
Sank	10	10	15	26	17	27	22	27	18	20	23
Sustains damage rendering vessel unseaworthy/ unfit for purpose	28	16	43	41	36	33	33	21	26	18	13
Other shipping accident types	4	3	1	1	2	1	1	0	0	1	3
Accidents aboard ship	41	52	61	52	38	45	48	57	64	43	43
<b>Vessels involved in shipping accidents</b>	<b>294</b>	<b>241</b>	<b>277</b>	<b>281</b>	<b>241</b>	<b>312</b>	<b>270</b>	<b>268</b>	<b>231</b>	<b>257</b>	<b>200</b>
Barge	20	6	19	12	10	24	20	29	18	25	14
Cargo - liquid	10	6	7	14	12	7	10	9	7	6	5
Cargo - solid	57	63	60	68	37	40	39	47	57	62	39
Ferry	23	18	13	20	18	20	12	10	17	15	18
Fishing	99	82	90	92	82	93	90	75	59	77	49
Passenger	16	15	15	13	17	15	15	15	21	12	7
Service ship	25	20	36	21	29	50	38	27	21	20	17
Tug	24	26	25	22	19	26	25	25	8	22	24
Other vessel types	20	5	12	19	17	37	21	31	23	18	27
<b>Vessels involved in shipping accidents</b>	<b>294</b>	<b>241</b>	<b>277</b>	<b>281</b>	<b>241</b>	<b>312</b>	<b>270</b>	<b>268</b>	<b>231</b>	<b>257</b>	<b>200</b>
Canadian non-fishing vessels	152	111	147	144	127	184	148	157	125	141	118
Canadian fishing vessels	95	78	88	92	81	92	86	70	57	74	46
Foreign vessels	47	52	42	45	33	36	36	41	49	42	36
<b>Vessels lost</b>	<b>22</b>	<b>23</b>	<b>21</b>	<b>20</b>	<b>24</b>	<b>19</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>13</b>	<b>15</b>
1600 GT and over	0	0	0	0	0	0	0	1	0	0	0
150 to 1599 GT	0	1	1	1	2	1	0	0	0	0	2
60 to 149 GT	2	3	4	4	6	5	2	4	1	2	0
15 to 59 GT	9	8	7	4	6	2	4	3	1	3	4
Less than 15 GT	10	9	6	8	9	7	5	6	6	7	5
Unknown tonnage	1	2	3	3	1	4	3	1	0	1	4
<b>Persons fatally injured</b>	<b>16</b>	<b>14</b>	<b>19</b>	<b>12</b>	<b>19</b>	<b>8</b>	<b>11</b>	<b>22</b>	<b>17</b>	<b>18</b>	<b>11</b>
Shipping accidents	3	5	11	4	13	6	4	14	4	12	9
Accidents aboard ship	13	9	8	8	6	2	7	8	13	6	2
<b>Persons seriously injured</b>	<b>32</b>	<b>48</b>	<b>49</b>	<b>46</b>	<b>45</b>	<b>50</b>	<b>49</b>	<b>61</b>	<b>57</b>	<b>41</b>	<b>45</b>
Shipping accidents	2	6	0	1	12	5	7	8	10	2	5
Accidents aboard ship	30	42	49	45	33	45	42	53	47	39	40
<b>Occurrences with a dangerous good release<sup>1</sup></b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>2</b>	<b>4</b>	<b>1</b>
<b>Reportable incidents</b>	<b>216</b>	<b>270</b>	<b>732</b>	<b>747</b>	<b>705</b>	<b>764</b>	<b>881</b>	<b>931</b>	<b>945</b>	<b>925</b>	<b>855</b>
Bottom contact	14	21	19	24	36	23	42	35	33	15	21
Cargo shift/Cargo loss	2	5	2	1	5	4	6	7	3	3	4
Person overboard	4	5	10	7	10	8	9	11	14	5	5
Risk of collision (near collision)	38	37	63	35	31	45	52	67	54	66	35
Risk of sinking	24	25	24	0	10	20	14	34	14	31	30
Total failure of any machinery or technical system <sup>2</sup>	120	156	603	676	590	636	718	732	797	756	730
Other incident types	14	21	11	4	23	28	40	45	30	49	30

Data extracted 18 March 2022

<sup>1</sup> 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.

<sup>2</sup> 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,<sup>1,2</sup> 2011 to 2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Pacific region</b>											
Shipping accidents	88	76	88	95	90	138	111	101	79	85	81
Accidents aboard ship	11	18	21	23	14	20	9	12	16	16	13
Vessels involved in shipping accidents	103	87	107	108	106	164	130	119	91	101	95
Barge/Tug	25	18	28	23	23	39	34	37	17	30	24
Cargo/Tanker	5	12	8	15	6	14	9	8	13	16	11
Ferry/Passenger	13	10	10	10	15	17	12	13	16	10	17
Fishing	38	29	30	36	33	43	35	30	23	23	18
Other vessel types	22	18	31	24	29	51	40	31	22	22	25
Vessels lost	3	6	3	9	12	9	9	3	2	4	6
Fatalities	6	4	2	5	12	0	6	7	8	4	2
Reportable incidents	102	118	150	149	259	289	282	254	233	257	251
<b>Central region</b>											
Shipping accidents	81	74	74	74	64	57	59	63	68	71	53
Accidents aboard ship	16	19	25	17	10	11	16	21	20	17	15
Vessels involved in shipping accidents	95	79	86	85	71	66	66	71	75	82	59
Barge/Tug	12	9	14	8	6	9	7	8	7	10	12
Cargo/Tanker	46	46	40	55	35	24	26	35	38	40	25
Ferry/Passenger	14	14	13	14	13	9	11	10	17	10	7
Fishing	11	6	8	3	6	6	14	8	1	14	3
Other vessel types	12	4	11	5	11	18	8	10	12	8	12
Vessels lost	2	1	4	2	2	2	0	2	0	1	2
Fatalities	1	3	6	2	2	0	3	1	3	1	2
Reportable incidents	74	107	148	137	116	125	203	274	284	284	243
<b>Atlantic region</b>											
Shipping accidents	78	56	63	72	55	64	59	54	53	55	42
Accidents aboard ship	14	14	12	12	14	14	19	22	24	9	13
Vessels involved in shipping accidents	88	64	68	80	58	73	66	62	58	62	45
Barge/Tug	6	5	2	3	0	1	1	5	2	4	2
Cargo/Tanker	11	3	6	6	2	3	11	4	6	4	7
Ferry/Passenger	12	9	4	9	7	9	4	2	5	7	1
Fishing	50	45	50	52	43	44	40	35	35	40	28
Other vessel types	9	2	6	10	6	16	10	16	10	7	7
Vessels lost	17	15	13	9	10	8	5	10	6	8	7
Fatalities	9	6	11	5	5	8	2	13	6	13	7
Reportable incidents	36	40	428	450	318	336	382	391	410	372	352
<b>Foreign waters</b>											
Shipping accidents	7	10	15	8	5	7	6	15	7	10	1
Accidents aboard ship	0	1	3	0	0	0	4	2	4	1	2
Vessels involved in shipping accidents	8	11	16	8	6	9	8	16	7	12	1
Barge/Tug	1	0	0	0	0	1	3	4	0	3	0
Cargo/Tanker	5	8	13	6	6	6	3	9	7	8	1
Ferry/Passenger	0	0	1	0	0	0	0	0	0	0	0
Fishing	0	2	2	1	0	0	1	2	0	0	0
Other vessel types	2	1	0	1	0	2	1	1	0	1	0
Vessels lost	0	1	1	0	0	0	0	0	0	0	0
Fatalities	0	1	0	0	0	0	0	1	0	0	0
Reportable incidents	4	5	6	11	12	14	14	12	18	12	9

Data extracted 18 March 2022

<sup>1</sup> See the map of the regions in the Definitions section of the statistical summary.<sup>2</sup> 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, 2011 to 2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Canadian-flag vessels involved</b>	<b>246</b>	<b>189</b>	<b>232</b>	<b>225</b>	<b>193</b>	<b>244</b>	<b>212</b>	<b>195</b>	<b>164</b>	<b>200</b>	<b>137</b>
Commercial vessels	109	88	101	107	83	100	90	100	81	102	73
Capsize	1	2	0	0	3	2	1	2	1	1	1
Collision	55	45	45	53	34	48	44	49	42	64	34
Fire/Explosion	18	9	12	12	11	14	7	14	13	7	13
Grounding	17	22	28	16	14	21	19	16	13	14	14
Sank	3	1	3	6	10	5	5	5	3	6	7
Sustains damage rendering vessel unseaworthy/unfit for purpose	15	9	13	20	11	10	14	14	9	10	4
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0
Commercial movements <sup>1</sup>	28 269	28 800	29 000	23 185	30 956	35 478	38 366	43 353	n/a	n/a	n/a
Commercial accident rate <sup>2</sup>	1.8	1.5	2.0	2.6	1.3	1.4	1.6	1.6	n/a	n/a	n/a
Commercial vessel-km (thousands) <sup>3</sup>	n/a	n/a	n/a	n/a	11 262	10 689	11 541	12 115	12 502	11 059	12 309
Commercial accidents per million vessel-km <sup>4</sup>	n/a	n/a	n/a	n/a	3.5	4.7	5.3	5.7	3.9	5.7	3.0
Fishing vessels	95	78	88	91	79	90	82	68	57	74	43
Capsize	1	3	6	1	5	3	2	4	1	1	2
Collision	16	12	12	15	4	12	19	12	7	17	4
Fire/Explosion	24	19	13	9	14	16	15	6	10	19	15
Grounding	43	33	30	32	33	31	27	33	26	26	13
Sank	6	9	10	19	10	17	8	9	7	9	5
Sustains damage rendering vessel unseaworthy/unfit for purpose	1	0	16	14	11	10	10	4	6	1	2
Other shipping accident types	4	2	1	1	2	1	1	0	0	1	2
Active fishing vessels <sup>5, 6</sup>	14 217	13 871	13 719	13 623	13 242	13 311	13 138	13 124	12 682	11 908	11 744
Fishing vessel accident rate <sup>7</sup>	6.3	5.3	6.2	6.4	5.9	6.6	6.2	5.0	4.7	6.2	3.7
Other vessels	42	23	43	27	31	54	40	27	26	24	21
Capsize	0	1	1	0	1	1	1	1	1	0	1
Collision	24	10	24	14	15	25	24	14	12	8	3
Fire/Explosion	6	4	3	7	3	14	4	10	2	9	9
Grounding	7	5	10	3	8	7	2	1	3	4	2
Sank	1	0	2	1	0	3	6	1	5	2	3
Sustains damage rendering vessel unseaworthy/unfit for purpose	4	3	3	2	4	4	3	0	3	1	3
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0

Data extracted 18 March 2022

<sup>1</sup> 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).

<sup>2</sup> 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).

<sup>3</sup> Based on data from Transport Canada, which has updated its methodology for measuring commercial activity. Beginning from 2015, 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 15 April 2021). Vessel movements are no longer captured.

<sup>4</sup> 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.

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

<sup>6</sup> The 2011-2019 active fishing vessel regression line was extrapolated to 2021 to capture the historical decreasing trend, the difference between the estimated and actual 2020 values captured the pandemic impact, and assuming a constant pandemic impact from 2020 to 2021, the difference was applied to the 2021 regression value to yield the 2021 estimate of 20 744 active commercial fishing vessels.

<sup>7</sup> 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, 2011 to 2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Foreign-flag vessels involved</b>	<b>47</b>	<b>52</b>	<b>42</b>	<b>45</b>	<b>33</b>	<b>36</b>	<b>36</b>	<b>41</b>	<b>49</b>	<b>42</b>	<b>36</b>
Commercial vessels	40	46	38	41	30	32	31	31	45	39	33
Capsize	0	0	0	0	0	0	0	0	0	0	0
Collision	23	28	19	29	11	17	19	23	25	30	20
Fire/Explosion	3	3	5	0	5	0	3	3	6	0	5
Grounding	6	10	2	7	4	8	3	2	6	3	5
Sank	0	0	1	0	0	1	0	0	0	0	0
Sustains damage render unseaworthy/unfit for purpose	8	5	11	5	10	6	6	3	8	6	3
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0
Commercial movements <sup>1</sup>	25 669	26 300	26 600	17 635	18 940	21 657	24 728	27 787	n/a	n/a	n/a
Commercial accident rate <sup>2</sup>	1.3	1.5	1.3	2.4	1.4	1.3	1.4	1.1	n/a	n/a	n/a
Commercial vessel-km (thousands) <sup>3</sup>	n/a	n/a	n/a	n/a	14 329	13 517	15 635	16 788	16 543	15 157	15 597
Commercial accidents per million vessel-kms <sup>4</sup>	n/a	n/a	n/a	n/a	1.8	2.1	2.2	1.8	2.5	2.6	2.3
Fishing vessels	4	4	2	0	1	1	4	5	2	3	3
Capsize	0	0	0	0	0	0	0	0	0	0	0
Collision	1	2	2	0	0	0	2	1	0	2	0
Fire/Explosion	0	0	0	0	0	0	1	1	1	0	1
Grounding	3	1	0	0	1	1	1	2	1	1	0
Sank	0	0	0	0	0	0	0	1	0	0	2
Sustains damage render unseaworthy/unfit for purpose	0	0	0	0	0	0	0	0	0	0	0
Other shipping accident types	0	1	0	0	0	0	0	0	0	0	0
Other vessels	3	2	2	4	2	3	1	5	2	0	0
Capsize	0	0	0	1	1	0	0	1	0	0	0
Collision	3	1	2	1	1	2	0	2	2	0	0
Fire/Explosion	0	0	0	0	0	0	1	1	0	0	0
Grounding	0	1	0	2	0	1	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	0	1	0	0	0
Other shipping accident types	0	0	0	0	0	0	0	0	0	0	0

Data extracted 18 March 2022

<sup>1</sup> 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).

<sup>2</sup> 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).

<sup>3</sup> Based on data from Transport Canada, which has updated its methodology for measuring commercial activity. Beginning from 2015, 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 foreign-flag commercial marine activity in Canadian waters (Source: TC email communication 15 April 2021). Vessel movements are no longer captured.

<sup>4</sup> 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, 2011 to 2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Vessels lost</b>	<b>22</b>	<b>23</b>	<b>21</b>	<b>20</b>	<b>24</b>	<b>19</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>13</b>	<b>15</b>
0-4 years	0	1	0	0	1	0	0	0	1	0	1
5-9 years	1	1	1	0	0	0	0	1	0	0	0
10-14 years	1	2	3	0	3	0	0	2	0	0	1
15-19 years	3	5	2	2	1	3	2	2	1	2	1
20-24 years	4	3	3	1	1	0	0	1	1	0	2
25-29 years	4	3	2	5	5	1	0	3	0	0	1
30+ years	7	5	5	4	10	7	7	3	1	5	5
Unknown	2	3	5	8	3	8	5	3	4	6	4
<b>Commercial vessels</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>8</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>3</b>
0-4 years	0	0	0	0	0	0	0	0	0	0	1
5-9 years	0	0	0	0	0	0	0	1	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	1	0	0	0	0	0
20-24 years	0	0	0	0	1	0	0	0	0	0	0
25-29 years	0	0	0	1	2	0	0	0	0	0	0
30+ years	1	1	1	1	4	2	1	1	0	0	2
Unknown	0	0	0	0	1	1	1	1	0	1	0
<b>Fishing vessels</b>	<b>21</b>	<b>22</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>14</b>	<b>9</b>	<b>12</b>	<b>5</b>	<b>11</b>	<b>10</b>
0-4 years	0	1	0	0	1	0	0	0	0	0	0
5-9 years	1	1	1	0	0	0	0	0	0	0	0
10-14 years	1	2	3	0	3	0	0	2	0	0	0
15-19 years	3	5	2	2	1	2	2	2	1	2	1
20-24 years	4	3	3	1	0	0	0	1	1	0	2
25-29 years	4	3	2	4	3	1	0	3	0	0	1
30+ years	6	4	2	3	6	5	6	2	0	5	3
Unknown	2	3	5	7	2	6	1	2	3	4	3
<b>Other vessels</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>2</b>
0-4 years	0	0	0	0	0	0	0	0	1	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	1
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	0	2	0	0	0	0	0	1	0	0
Unknown	0	0	0	1	0	1	3	0	1	1	1

Data extracted 18 March 2022

**Table 6. Accidents and persons fatally<sup>1</sup> or seriously injured, by type of accident, 2011 to 2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Shipping accidents with fatalities<sup>1</sup> or serious injuries</b>	<b>4</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>5</b>	<b>8</b>	<b>12</b>	<b>7</b>	<b>6</b>	<b>8</b>
Capsize	0	3	2	0	2	1	1	5	2	0	3
Collision	1	1	0	1	2	2	4	1	1	2	1
Fire/Explosion	2	3	2	0	1	1	1	1	1	0	1
Grounding	1	0	1	0	1	0	0	3	1	1	0
Sank	0	0	0	3	1	1	2	2	2	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	0	1	1
<b>Persons fatally injured in shipping accidents</b>	<b>3</b>	<b>5</b>	<b>11</b>	<b>4</b>	<b>13</b>	<b>6</b>	<b>4</b>	<b>14</b>	<b>4</b>	<b>12</b>	<b>9</b>
Capsize	0	3	6	0	9	2	1	7	3	0	4
Collision	1	1	0	0	1	0	0	2	0	0	0
Fire/Explosion	1	1	2	0	0	0	0	0	0	0	0
Grounding	1	0	3	0	0	0	0	1	0	1	0
Sank	0	0	0	4	3	4	3	4	1	7	3
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	4	2
<b>Persons seriously injured in shipping accidents</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>12</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>2</b>	<b>5</b>
Capsize	0	3	0	0	0	0	0	1	0	0	2
Collision	1	0	0	1	9	4	6	0	4	2	1
Fire/Explosion	1	3	0	0	1	1	1	5	1	0	1
Grounding	0	0	0	0	2	0	0	2	4	0	0
Sank	0	0	0	0	0	0	0	0	1	0	1
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
<b>Accidents aboard ship</b>	<b>41</b>	<b>52</b>	<b>61</b>	<b>52</b>	<b>38</b>	<b>45</b>	<b>48</b>	<b>57</b>	<b>64</b>	<b>43</b>	<b>43</b>
<b>Persons fatally injured in accidents aboard ship</b>	<b>13</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>6</b>	<b>2</b>	<b>7</b>	<b>8</b>	<b>13</b>	<b>6</b>	<b>2</b>
Boarding, being on board, falling overboard from the ship	13	3	3	5	6	1	5	5	12	6	2
In contact with any part of the ship or its contents	0	6	5	3	0	1	2	3	1	0	0
<b>Persons seriously injured in accidents aboard ship</b>	<b>30</b>	<b>42</b>	<b>49</b>	<b>45</b>	<b>33</b>	<b>45</b>	<b>42</b>	<b>53</b>	<b>47</b>	<b>39</b>	<b>40</b>
Boarding, being on board, falling overboard from the ship	3	2	6	10	7	6	7	7	2	7	4
In contact with any part of the ship or its contents	27	40	43	35	26	39	35	46	45	32	36

Data extracted 18 March 2022

<sup>1</sup> Fatalities include missing persons.

**Table 7. Vessels involved in accidents with fatalities or serious injuries and persons fatally<sup>1</sup> or seriously injured, by type of vessel, 2011 to 2021**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Vessels in shipping accidents with fatalities<sup>1</sup> or serious injuries</b>	<b>4</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>5</b>	<b>8</b>	<b>12</b>	<b>7</b>	<b>6</b>	<b>8</b>
Barge/Tug	0	2	0	0	0	0	0	1	0	0	1
Cargo/Tanker	0	0	0	1	0	0	1	1	0	0	0
Ferry/Passenger	0	0	0	0	2	2	2	1	0	2	0
Fishing	3	4	5	3	3	2	3	8	2	4	5
Other	1	1	0	0	2	1	2	1	5	0	2
<b>Persons fatally injured in shipping accidents</b>	<b>3</b>	<b>5</b>	<b>11</b>	<b>4</b>	<b>13</b>	<b>6</b>	<b>4</b>	<b>14</b>	<b>4</b>	<b>12</b>	<b>9</b>
Barge/Tug	0	1	0	0	0	0	0	0	0	0	2
Cargo/Tanker	0	0	0	2	0	0	0	0	0	0	0
Ferry/Passenger	0	0	0	0	6	0	2	1	0	0	0
Fishing	2	2	11	2	6	6	1	13	0	12	6
Other	1	2	0	0	1	0	1	0	4	0	1
<b>Persons seriously injured in shipping accidents</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>12</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>2</b>	<b>5</b>
Barge/Tug	0	1	0	0	0	0	0	1	0	0	1
Cargo/Tanker	0	0	0	0	0	0	1	5	0	0	0
Ferry/Passenger	0	0	0	0	2	4	2	0	0	2	0
Fishing	1	3	0	1	1	0	3	1	2	0	1
Other	1	2	0	0	9	1	1	1	8	0	3
<b>Vessels in accidents aboard ship with fatalities<sup>1</sup> or serious injuries</b>	<b>41</b>	<b>53</b>	<b>61</b>	<b>52</b>	<b>38</b>	<b>45</b>	<b>48</b>	<b>58</b>	<b>64</b>	<b>43</b>	<b>43</b>
Barge/Tug	4	1	3	4	0	4	2	3	5	3	2
Cargo/Tanker	13	23	17	21	5	12	19	22	24	15	13
Ferry/Passenger	6	3	7	5	9	6	5	8	8	3	4
Fishing	17	21	25	18	23	19	16	21	24	15	23
Other	1	5	9	4	1	4	6	4	3	7	1
<b>Persons fatally injured in accidents aboard ship</b>	<b>13</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>6</b>	<b>2</b>	<b>7</b>	<b>8</b>	<b>12</b>	<b>6</b>	<b>2</b>
Barge/Tug	1	0	1	0	0	0	0	0	0	0	0
Cargo/Tanker	1	2	2	1	0	0	2	2	2	0	0
Ferry/Passenger	1	1	0	0	1	0	2	0	1	2	0
Fishing	10	6	5	6	5	1	2	4	8	4	2
Other	0	0	0	1	0	1	1	2	1	0	0
<b>Persons seriously injured in accidents aboard ship</b>	<b>30</b>	<b>42</b>	<b>49</b>	<b>42</b>	<b>33</b>	<b>44</b>	<b>42</b>	<b>53</b>	<b>47</b>	<b>39</b>	<b>40</b>
Barge/Tug	3	0	2	4	0	4	3	2	4	2	2
Cargo/Tanker	12	21	12	18	5	12	16	21	16	16	15
Ferry/Passenger	6	2	7	5	8	6	4	10	7	1	4
Fishing	8	15	19	12	19	19	14	17	19	12	19
Other	1	4	9	3	1	3	5	3	1	8	0

Data extracted 18 March 2022

<sup>1</sup> 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**

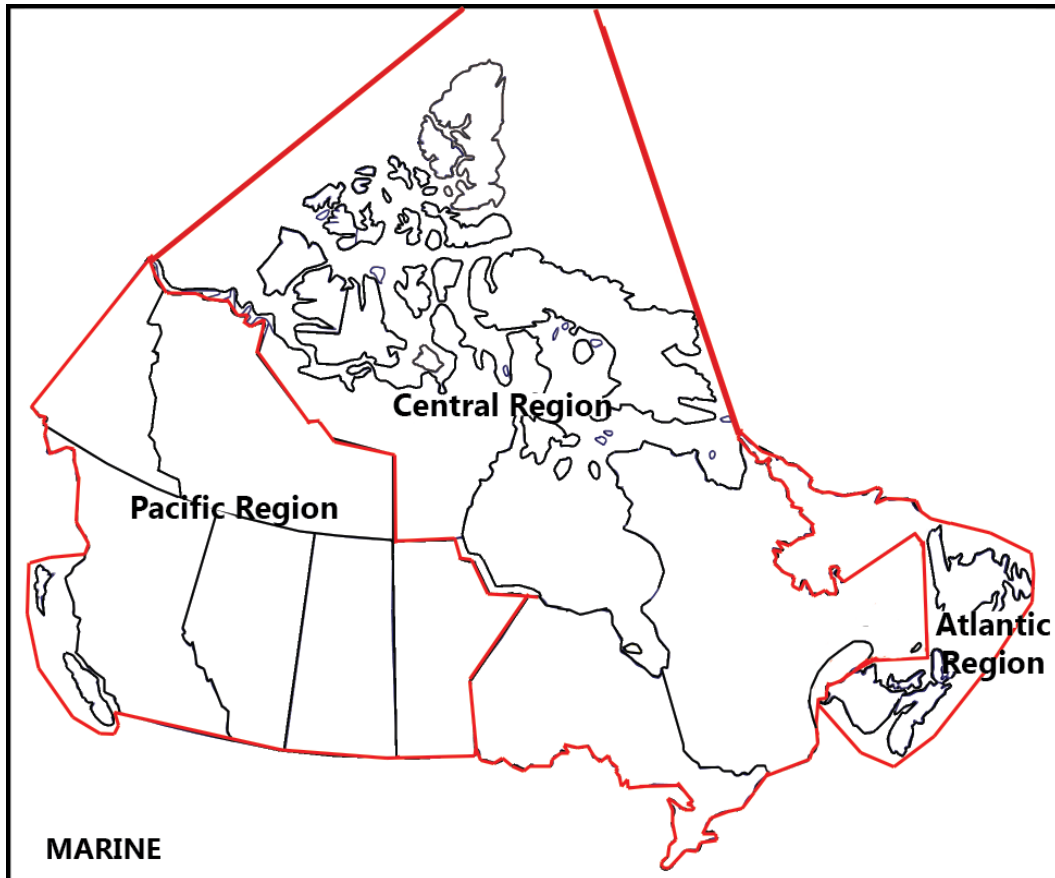
#### **Gross tons (GT)**

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 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.