

# Marine incidents in Queensland

2011

# Foreword

The report, *Marine incidents in Queensland 2011*, is an important tool for furthering our understanding of the factors that contribute to marine incidents and of emerging marine safety challenges and trends.

Two features dominated Queensland's marine incident statistics in 2011. The impact of Tropical Cyclones Yasi and Anthony, particularly on boat owners and operators in north Queensland, was substantial. Boating safety performance was also characterised by too many needless and costly marine incidents.

In 2011, 193 people were injured in reported marine incidents. Fourteen of these people died, 41 were hospitalised while another 138 suffered injuries requiring attention ranging from simple first aid to extensive outpatient surgery and rehabilitation.

Alcohol use and the failure to wear a life jacket once again contributed to the toll of fatalities in 2011. After excluding cyclone-related incidents, the number of reported marine incidents was generally in line with previous years while the average number of marine incidents and fatal marine incidents per 100 000 registered vessels continued to decline.

The 2011 report features an analysis of the year's fatalities designed to identify safety challenges that could be further examined to reduce the toll in the future.

The fatality analysis importantly concludes that only 2 of the 12 fatal incidents in 2011 could reasonably be considered as mishaps. The remainder involved circumstances that were foreseeable and ended in tragedy.

Maritime Safety Queensland's focus continues to be on the future and the challenges it brings. As Queensland's maritime safety agency, we will work collaboratively with the boating industry and our compliance partners to encourage boat operators to foster safety as a core boating value and culture.

The message from the 2011 report is clear—neither experience nor the nature of the boating activity diminishes the need for proper safety planning and preparation or the master's responsibility for the safety of those who travel in their boat.

Michael Caltabiano

Director-General

Department of Transport and Main Roads

## Key points

- In 2011, 819 marine incidents were reported in Queensland—117 of these incidents reported damage to vessels occasioned by Tropical Cyclones Anthony and Yasi.
- The remaining 702 reported incidents amounted to 285 marine incidents per 100 000 registered vessels.
- Forty-eight per cent of the vessels involved in these 702 marine incidents were being used commercially, 47 per cent recreationally and 5 per cent were used in a hire and drive setting.
- The most common incidents were collisions (37%), capsizing, flooding and swamping incidents (18%) and groundings (15%).
- About 1 in 13 of the 702 incidents resulted in a fatality or serious injury.
- Twelve fatal marine incidents occurred in 2011 resulting in 14 deaths—5.7 fatal incidents for every 100 000 registered vessels.
- Capsizing, flooding and swamping incidents represented only 18 per cent of all the incidents reported in 2011 but 36 per cent of the recorded fatal incidents.
- Alcohol was known to be involved in at least two separate fatal marine incidents.
- In 9 fatal incidents 26 people ended up in the water—8 of them drowned.
- None of the 8 people who drowned were known to have been wearing a PFD (life jacket).

# Marine incidents in Queensland

## Purpose

This report was prepared by Maritime Safety Queensland in accordance with Section 127 of the *Transport Operations (Marine Safety) Act 1994*. It provides an overview of reported marine incidents that occurred in Queensland waters during 2011.

While the reporting of marine incidents is mandatory, anecdotal evidence suggests a substantial number of incidents continue to go unreported, particularly those which result in neither material damage nor personal injury and those that occur in more remote locations.

Nevertheless this report provides a valuable summary of the more serious marine incidents that occurred and a factual basis for informed consideration of how the safety risks associated with boating activities might be better managed in the future.

## Incident overview

In 2011 a record 819 marine incidents involving 1009 vessels were reported. This increase in reported incidents was a direct consequence of vessels damaged in the wake of Tropical Cyclones (TC) Anthony and Yasi.

There were 117 marine incident reports lodged in relation to vessel and associated property damage sustained as a consequence of these tropical cyclones in 2011. The overwhelming majority of the vessels involved in these incidents were moored and unmanned at the time the cyclones struck.

Most of the 117 vessels involved in these incidents were recreational and included 57 motorboats, 39 sailing boats and 1 house boat. There were only 20 commercial vessels involved in the cyclone-related incidents. While none of the incidents resulted in death or personal injury, 11 vessels were completely lost or destroyed and a further 36 sustained major damage.

The remaining 702 reported incidents involved 892 vessels. Forty-seven per cent of vessels involved in these incidents were recreational vessels, 22 per cent were commercial non-passenger vessels, 17 per cent were commercial passenger vessels, 7 per cent were commercial fishing vessels, and 5 per cent were hire and drive vessels.

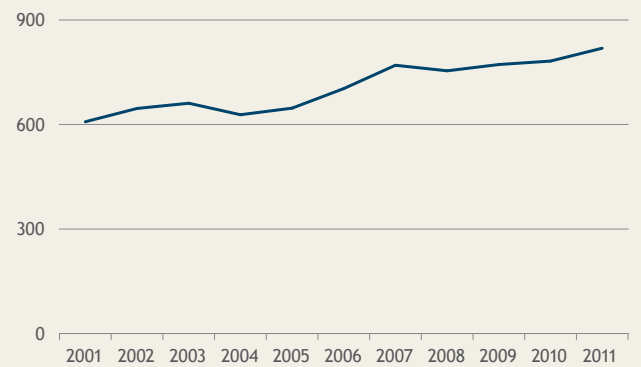
There were 42 serious marine incidents that resulted in 14 deaths and 41 people being hospitalised with serious injuries. Twelve of the incidents were fatal—two resulting in multiple deaths. Three people were also seriously injured in two of the fatal incidents. Thirty-eight people were seriously injured in the remaining 30 incidents. Eight of the fatal incidents involved recreational motorboats, while the other four involved commercial vessels—two fishing vessels, a passenger vessel and a tug.

In terms of material damage to vessels other than as a consequence of TC Anthony and Yasi, a further 46 vessels were lost, 69 sustained major damage, 238 sustained moderate damage and 101 sustained minor damage.

## Trends

The number of reported marine incidents rose from 772 in 2009, to 782 in 2010, to 819 in 2011 (see [Figure 1](#)). Between 2001 and 2009 an average of four reports were received each year concerning damage to vessels resulting from cyclonic weather conditions. In 2010, 49 cyclone-

Figure 1 Marine incidents, 2001 to 2011



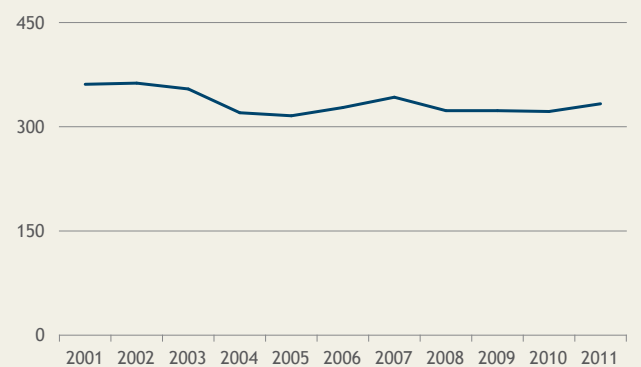
Source: Caseman, marine incident case management database

related incidents were reported while in 2011, 117 such incidents were reported. If cyclone-related reports of vessel damage are excluded, the number of marine incidents reported annually has been falling by about 2.22 per cent per year since 2007.

## Rate of marine incidents

The marine incident rate per 100 000 registered vessels increased from 322 in 2010 to 333 in 2011 which represents an annual increase of 3.4 per cent (see [Figure 2](#)). This rise is the result of an increase of 4.7 per cent in the number of reported incidents in contrast to a 1.28 per cent increase in the number of registered vessels. If the cyclone-related incidents of the last two years are excluded, the rate of reported incidents has fallen from 302 in 2010 to 285 in 2011—a fall of 5.4 per cent. If these cyclone-related incidents are excluded for the past five years, the marine incident rate has fallen from 342 per 100 000 registered vessels in 2007 to a present level of 285—an average decrease in the rate of reported marine incidents of 4.4 per cent per year.

Figure 2 Marine incidents per 100 000 registered vessels



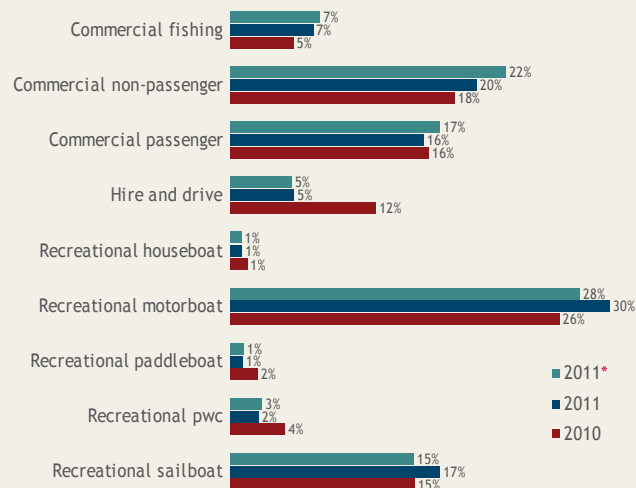
Sources: Caseman, marine incident case management database; TRAILS, recreational registration and licensing database; CIRMS, commercial vessel registration database.

## Vessels involved

In 2011, 1009 vessels were involved in reported marine incidents. Forty-seven per cent were recreational vessels, 48 per cent were commercial vessels and 5 per cent were hire and drive vessels.

In line with previous years recreational motorboats had the highest level of involvement in reported incidents (30%) followed by commercial non-passenger vessels (20%) and recreational sailing vessels (17%) (see Figure 3).

Figure 3 Vessels involved in incidents, 2011 v. 2010



Source: Caseman, marine incident case management database  
\* Excludes vessels involved in cyclone-related incidents

The increase in the proportion of recreational sailing vessels involved in incidents in 2011 can be entirely attributed to TC Yasi. The decrease in the proportion of hire and drive vessels involved in incidents in 2011 is a response to the fact that they were over-represented in 2010 as a consequence of TC Ului that year.

Larger recreational vessels were also disproportionately involved in marine incidents in 2011. Recreational vessels greater than 12 metres in length account for 2 per cent of all registered recreational vessels but accounted for 26 per cent of all the registered recreational vessels involved in reported incidents. Recreational vessels between 6 and 12 metres in length account for 12 per cent of all registered recreational vessels but accounted for 33 per cent of all the recreational vessels involved in reported incidents. Recreational vessels less than 6 metres in length account for 86 per cent of registered recreational vessels but only 34 per cent of all the recreational vessels involved in reported incidents.

## Fatal marine incidents

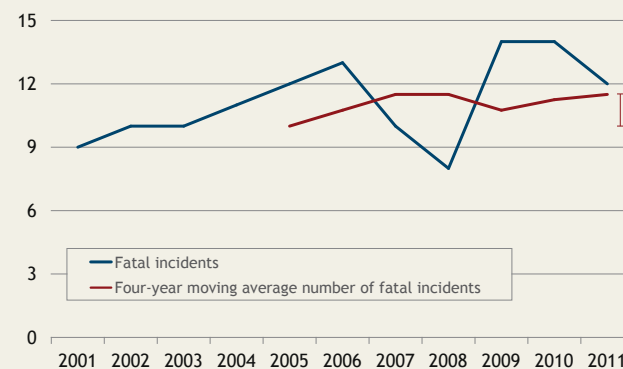
In 2011, 14 people died in 12 separate marine incidents. Five people died in four capsizing incidents, two people died in person overboard incidents, two people were presumed dead (their vessels having been lost at sea), two people died in a water skiing incident, and two people died in collision incidents—one where the boat collided with a bridge pylon, the other where a boat struck a surfboard rider. The remaining fatality resulted from a fall onboard a vessel.

Four of the 12 fatal incidents involved commercial vessels including two fishing vessels, one passenger and one non-passenger vessel. The remaining eight fatal incidents involved only recreational motorboats.

## Fatal incident trends

Over the last decade the number of reported fatal marine incidents has varied considerably from year-to-year; from a low of 8 in 2008 to a high of 14 fatal incidents in both 2009 and 2010. While these year-to-year variations do not show an underlying upward trend in the number of fatal incidents, the four-year moving average suggests that over the past decade the average number of fatal marine incidents has been increasing by about one sixth of one incident per year (see Figure 4).

Figure 4 Fatal marine incidents—annual toll v. FYA\*



Source: Caseman, marine incident case management database  
\* FYA represents the four-year moving average

## Fatality rate

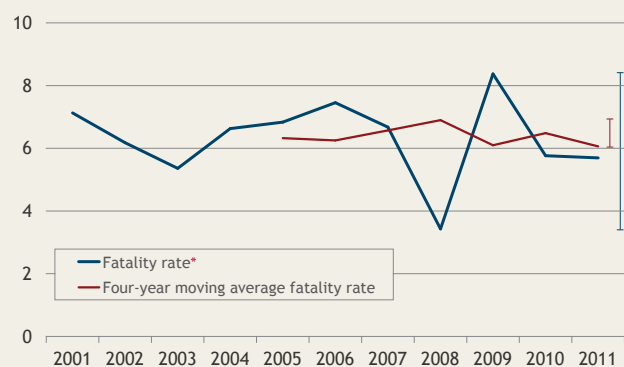
Given the number of fatalities remained unchanged from the previous year the annual marine incident fatality rate (fatal incidents per 100 000 registered vessels) fell from 5.77 to 5.69 entirely as a consequence of an increase in the number of registered vessels in Queensland (see Figure 5). The 2011 rate is well below the four-year moving average fatal incident rate and is indicative of a continuing downward trend. Since 2007 the four-year moving average fatal incident rate has been trending downward by about 3.9 per cent per year.

## Serious injuries

Serious injuries are defined as those resulting in admission to a hospital. Analysis of Queensland Health hospital admissions data indicates about 30 per cent of marine incident-related serious injury cases represent a “high threat to life”—entirely consistent with the proportion for road traffic crashes.

In 2011, 41 people were reported seriously injured in 32 marine incidents. Three of these people were injured in two incidents which also resulted in fatalities. Twelve of the 32 incidents involved only commercial vessels, 19 involved only recreational vessels and a single incident involved a recreational sailing boat and a hire and drive personal watercraft.

Figure 5 Fatalities per 100 000 registered vessels



Sources: Caseman, marine incident case management database; TRAILS, recreational registration and licensing database; CIRMS, commercial vessel registration database.

\* Fatalities per 100 000 registered vessels

Seven of the serious injury incidents involved onboard incidents, seven involved collisions, six were person overboard incidents, four were water skiing incidents, three involved fire or explosion, three involved unintentional groundings and capsizing and flooding each accounted for one serious injury incident.

In addition to the 41 serious injuries, a further 139 people were reported to have suffered injuries which did not require hospitalisation. The treatment of these injuries ranged from simple first aid to extensive outpatient surgery and rehabilitation.

### Incident characteristics

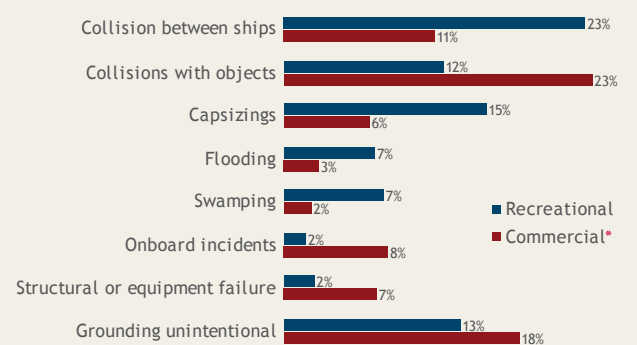
In line with previous years almost a third of reported marine incidents took place in ideal boating conditions—good visibility, clear weather, and within designated smooth waters. Fifty-three per cent took place within designated smooth waters, 64.5 per cent in clear weather while 70.3 per cent reported that visibility was good at the time of the incident.

Forty-three per cent of incidents happened between 9am and 3pm, 11 per cent occurred before 6am while 12 per cent occurred after 6pm. Thirty-six per cent of incidents occurred on weekends while 53 per cent occurred during the warmer months of January to March and October to December.

There were 126 in-water incidents reported in 2011. While these represent only 18 per cent of all reported incidents, 83 per cent of the fatal incidents in 2011 were in-water incidents. Eighty-six per cent (12) of the 14 people who perished in marine incidents in 2011 died in the water. Put simply, one in every 13 in-water incidents resulted in a fatality in 2011.

The breakdown of incidents in 2011 by incident type was generally comparable to previous years. Collisions between ships accounted for 20 per cent of all reported marine incidents. Capsizing, flooding or swamping incidents together accounted for 18 per cent of incidents. Incidents involving collisions with fixed, floating, or submerged objects accounted for 17 per cent of incidents and 15 per cent were reported as unintended groundings.

Figure 6 Marine incidents by type



Source: Caseman, marine incident case management database

\* Commercial incidents include commercial hire and drive incidents

As in previous years, there were significant differences in the incident profiles of recreational and commercial vessels (see Figure 6). While marine incidents involving recreational vessels are more likely to be collisions between ships, capsizing, flooding or swamping incidents, those involving commercial vessels are more likely to be collisions with objects, onboard incidents or to be the result of structural or equipment failures.

## Fatalities analysis

The analysis of fatal marine incidents that occurred during 2011 is intended to bring into focus those factors which contributed to their occurrence and to emphasize what can be done to prevent similar incidents from occurring in the future.

A variety of sources of information were examined. The Queensland Police Service and Maritime Safety Queensland both investigate fatal marine incidents that occur in Queensland waters. The final reports from those investigations, along with original marine incident reports, Coronial reports, incident scene and vessel inspection reports, autopsy, toxicology and forensic reports, and witness statements, where available, were utilised.

### Overview

In 2011, 14 people died in 12 separate marine incidents—two fewer fatal incidents than the previous year but the same number of deaths. There were two double-fatality incidents in 2011.

The vessels involved in the 12 fatal incidents included a commercial tug, two commercial fishing vessels, a commercial charter vessel and eight recreational runabouts. The activities in which those involved in a fatal incident were engaged at the time were unexceptional. They included fishing, personal transportation, normal commercial maritime activities and everyday recreational boating activities.

### Operator qualifications and experience

Neither operator licence status nor the length of time a licence has been held appears to have had any direct

bearing on the occurrence of the 12 fatal marine incidents. The masters of the vessels involved were aged from 18 to 80 years and had held a marine licence for an average of 12 years. At the time of the incidents the least experienced master had held a licence for two years while the most experienced master had held a licence for 42 years.

Six of the fourteen people who perished were vessel masters, four were passengers, two were being towed on a water ski tube and one was a check pilot on a tug. The remaining person who perished was a surfboard rider struck by a recreational motorboat crossing an estuarine entrance congested with swimmers and surfers.

Fishing was again in 2011 the most common boating activity to end in tragedy, accounting for the loss of eight lives in seven incidents. In all but one case the vessels were travelling to or from their fishing destination rather than actually fishing at the time of the incident.

### **Contributing Factors**

There were 34 people involved in the 12 marine incidents in which 14 people lost their lives.

While the precise causes of death are still to be officially established, the apparent principal cause of death was drowning in eight cases and traumatic injury in another five. In the remaining case, while the master of the vessel died of cardiac arrest, it could not be determined if this episode precipitated the incident or was a consequence of having fallen overboard.

#### **Personal flotation devices**

Leaving aside the incidents involving the surfboard rider and the water ski tube riders who were already in the water as part of their respective watersport activities, 26 of the 34 people involved in fatal incidents found themselves inadvertently in the water. None of these 26 individuals is known with certainty to have been wearing a lifejacket or personal flotation device (PFD).

Of these 26 individuals, eight are known or presumed to have drowned, six in conditions where a PFD would have been of assistance. Three of the eight individuals were boating alone, once again in circumstances where prudence would suggest wearing a PFD.

Two more individuals, the master and the passenger on a recreational runabout, both drowned after their vessel capsized in a bar crossing incident. Another person, the sole passenger on a recreational runabout, drowned after taking refuge on a sandbar after a swamping incident. Again in both these incidents wearing a PFD may have resulted in a better outcome.

The remaining two drowning incidents involved two commercial vessels. In both cases the incidents occurred in circumstances in which the wearing of a PFD would have been uncommon and unlikely to have changed the tragic outcome—the deceased in both incidents having been trapped inside the vessels when they capsized.

Recent research demonstrates that at admission to hospital a person's chance of surviving any traumatic injuries they have sustained is reduced by a further 10 per cent if they are also suffering the effects of near drowning.

#### **Alcohol consumption**

Alcohol consumption was again in 2011 noted by investigators as a factor which contributed to the occurrence of some fatal marine incidents. That there is a well established connection between alcohol consumption and the probability of a vessel being

involved in a fatal marine incident is neither surprising nor controversial. What may not be so well known is that alcohol consumption by the passengers or the master of a recreational vessel has been shown to increase the probability of that vessel being involved in a fatal incident, even before the master or passenger reaches any statutory blood alcohol concentration limit.

At the time of printing, the majority of the fatal incidents that occurred during 2011 were still under investigation. Consequently, some details are yet to be established with certainty. In particular the absence of finalised toxicology reports leaves unanswered the question of just how many of those who perished may or may not have been either intoxicated (according to the legal definition), or affected by alcohol at the time of their deaths.

Of the investigations that have been completed, it is now known with certainty that the master of one vessel and a passenger on another were drinking heavily immediately prior to the incidents which resulted in their deaths.

In addition, the surviving master of a vessel involved in a fatal incident was found to have a blood alcohol concentration more than twice the statutory limit.

#### **Environmental factors**

Environmental factors were identified as contributing to only three of the 12 fatal incidents. In two incidents the investigator noted bar conditions as a contributing factor, while in the third incident it was noted that the vessel was being operated in conditions of poor visibility and gale force winds in excess of 60 kilometres per hour.

#### **Material, mechanical or structural factors**

Material, mechanical or structural factors were infrequent contributors to the fatal incidents in 2011. Instability was noted in respect of a capsizing incident and the carriage of insufficient safety equipment in another.

#### **Human factors**

Human factors could be summarised as risk management-related and fall into three distinct groups—trip planning, situational awareness and risk responsiveness. Some of the more significant human contributing factors identified included inattention in the form of not keeping a proper lookout (particularly when operating a vessel in darkness), excessive speed for the prevailing conditions, and failure to appreciate and respond to changing weather and boating conditions.

#### **Lessons to be learned**

Only 2 of the 12 fatal marine incidents that occurred in 2011 might reasonably be attributed to misfortune rather than to at least some measure of misjudgement. Of the remaining 10 incidents, better trip planning, situational awareness and more appropriate responses to emerging circumstances would almost certainly have reduced the likelihood of the incident occurring or lessened the likelihood of a fatal outcome. In summary, short comings in safety management by masters in relation to onboard operations rather than simple misfortune or unforeseen or unavoidable accidents, are more likely to result in the occurrence of a fatal incident.

The lessons are obvious and apply to recreational and professional mariners alike. Neither boating experience nor the nature of the activity in which boaters are engaged in any way diminishes the need for proper planning, preparation or the master's responsibility for the safety of those who travel in their vessel.

# Maritime region profile

## Regional summary

To enable meaningful regional comparisons marine incidents that occurred as a direct consequence of Tropical Cyclones Anthony and Yasi have been excluded from the regional analysis.

Across the state there were 29 marine incidents reported for every 10 000 vessels registered in Queensland. Brisbane, Gold Coast and Townsville maritime regions recorded incident rates below the state average while Cairns, Mackay and Gladstone regions recorded incident rates above the state average (see Table 1).

Table 1 Marine incidents by region

	Marine incidents	Incident rate *	Serious injury incidents	Fatal incidents	Fatalities
Brisbane	211	23	14	3	5
Cairns	97	45	3	1	1
Gladstone	153	34	6	3	3
Gold Coast	95	23	5	1	1
Mackay	92	48	3	2	2
Townsville	54	23	1	2	2
QLD	702	29	32	12	14

Sources: Caseman, marine incident case management database; TRAILS, recreational registration and licensing database; CIRMS, commercial vessel registration database  
 \* Reported marine incidents per 10 000 registered vessels in the region/state

Based on the number of commercial vessels registered in each region, incidents involving commercial vessels occurred more often than would be expected in both the Gladstone and Mackay regions. In the Gladstone region the commercial vessels involved, with rare exception, were operated by professional mariners. In contrast, in the Mackay region 38 per cent of the commercial vessels involved in incidents were hire and drive sailing vessels.

## Regional incidents in focus

The **Brisbane** region reported 211 marine incidents involving 144 recreational vessels, 48 commercial non-passenger vessels, 37 commercial passenger vessels, 19 commercial fishing vessels and 4 commercial hire and drive vessels. Collision and grounding incidents made up 46 per cent of the region's reported incidents, all involving some degree of human error.

The region reported three fatal marine incidents in which five lives were lost. Two people died when their recreational runabout capsized on a coastal bar. Another two young people died and a third was seriously injured in a water skiing/tubing incident. In the third fatal incident one passenger died and the master and a second passenger were seriously injured when their runabout ran into a bridge pylon.

A further 19 people were seriously injured—5 from a recreational vessel fire, 3 from an explosion on a commercial vessel, 3 in onboard incidents, 1 in a capsizing and 2 in swamping incidents, 2 in collisions, 2 in person overboard incidents and 1 in a grounding incident.

The **Cairns** region reported 97 marine incidents involving 58 recreational vessels, 24 commercial fishing vessels,

22 commercial passenger vessels, 19 commercial non-passenger vessels and 2 hire and drive vessels.

Twenty-six per cent of the region's reported marine incidents involved collisions between ships—compared with 20 per cent state wide. A further 16 per cent of incidents were unintentional groundings.

The region reported one fatal incident involving the loss of a crew member from a tender to a fishing trawler. Three people were seriously injured in incidents involving recreational vessels.

The **Gladstone** region reported 153 marine incidents involving 71 recreational vessels, 68 commercial non-passenger vessels, 42 commercial passenger vessels and 14 commercial fishing vessels.

Almost 36 per cent of the region's reported incidents involved collisions, including 26 collisions between ships, 16 collisions with fixed objects, 10 collisions with submerged objects and 3 other types of collisions. There were 27 unintentional grounding incidents which, when combined with collision incidents, suggests more than 53 per cent of regional incidents involved some measure of human, operational or navigational error.

Three people died as a result of marine incidents in the region—a mariner died when a commercial tug capsized and sank; a passenger was lost when a recreational runabout capsized and a commercial fisherman fell overboard. A further seven people were seriously injured—six in incidents involving commercial vessels.

The **Gold Coast** region reported 95 marine incidents involving 68 recreational vessels, 30 commercial non-passenger vessels, 21 commercial passenger vessels, and 10 hire and drive vessels. More than 41 per cent of the region's reported incidents involved collisions including 23 collisions between vessels, 14 collisions with other objects and 3 collisions with people.

The region recorded one marine incident death—a surfboard rider struck by a recreational motorboat entering a coastal bar. A further five people were seriously injured in recreational boating incidents.

The **Mackay** region reported 92 marine incidents involving 38 recreational vessels, 28 commercial hire and drive vessels, 22 commercial passenger vessels, 19 commercial non-passenger vessels, and 3 commercial fishing vessels. Collision and grounding incidents made up 61 per cent of the region's reported incidents.

The region recorded two fatal marine incidents in 2011—a passenger perished when a commercial charter vessel capsized in a storm, and the master of a recreational runabout was lost at sea. Three other people were seriously injured, two in separate person overboard incidents, the other in a grounding incident.

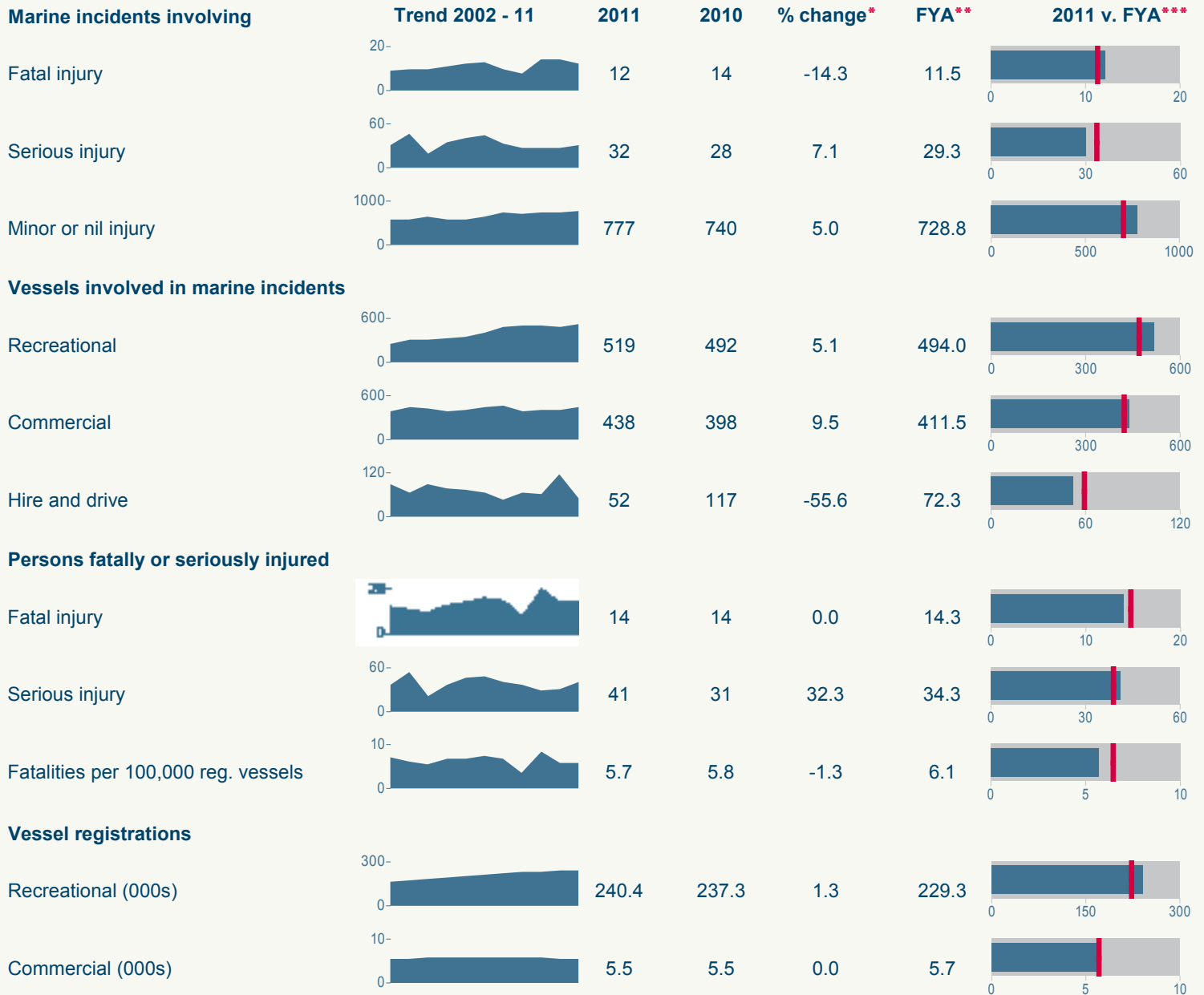
The **Townsville** region reported 54 marine incidents involving 43 recreational vessels, 12 commercial non-passenger vessels, 7 commercial passenger vessels and 4 commercial fishing vessels.

Notably 11 incidents involved collisions between vessels, 10 were capsizing incidents and 5 were unintentional groundings. There were also two person overboard incidents, one resulting in a fatality and the other in a serious injury. A second fatality occurred when the master of a recreational vessel fell from the vessel's fly-bridge.



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# Marine incident barometer—2011

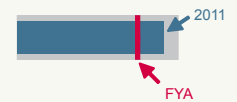


## Notes

\* % change represents the percentage difference between 2010 and 2011

\*\* FYA represents the prior four-year moving average

\*\*\* 2011 data versus the prior four-year average, 2007 to 2010. For example, there were 517 recreational vessels involved in marine incidents in 2011 compared to the prior FYA of 494.



Disclaimer: The data sources used in the compilation of this report are subject to an ongoing process of data validation and consequently the numbers and calculations presented are subject to revision.

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