

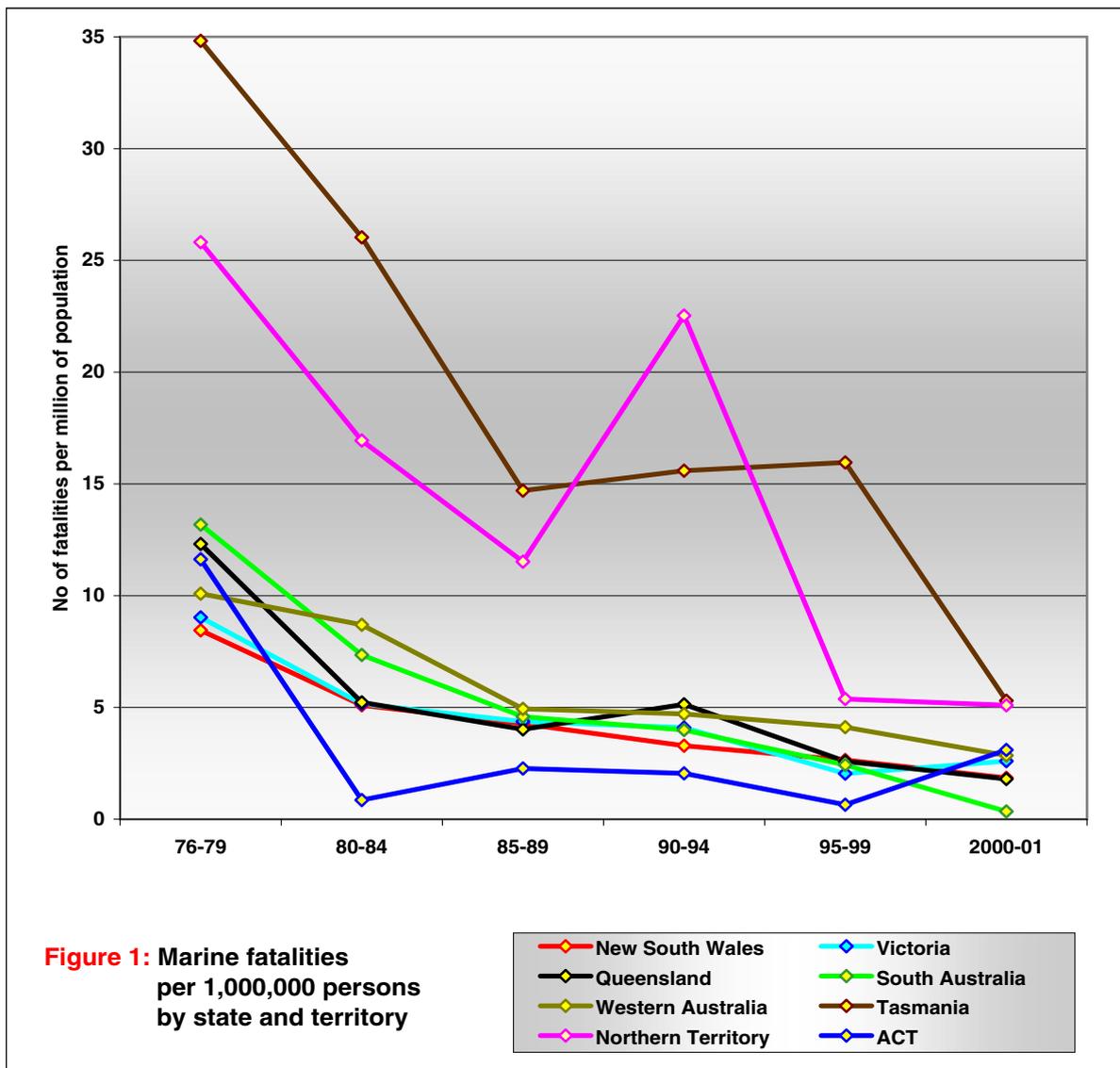
## 2. Marine incident trends and characteristics in Queensland

### 2.1 Introduction

The analyses included in this report draw only on data from ‘reported’ marine incidents as required under section 125 of the Act. While the overall level of reporting of marine incidents is robust, there is an acknowledged indeterminate level of under-reporting of marine incidents in any given year. A comprehensive set of tables showing time-series trends for reported marine incidents from 1997 to 2002 is provided at Appendix 1.

### 2.2 Interstate comparisons

To provide the broadest initial view of Queensland's relative maritime safety performance, the 2002 review commences with a comparison of Queensland's maritime fatality involvement per head of population with that of other Australian states and territories—based on Australian Bureau of Statistics (ABS) coroners' report data. While the ABS scope and definitions of water transport deaths vary slightly from those used by Maritime Safety Queensland for fatal marine



incidents, the ABS data nonetheless allows a nationwide comparison from a common point of reference. This resolves issues of comparability between individual jurisdictions' maritime incident data collections and definitions. Figure 1 shows that over the past 25 years, all states and territories in Australia have shown a steady improvement in maritime fatality rates per head of population. Broadly speaking, a series of eras is visible—that of the seventies, the period from 1980 to 1994, and the remainder of the 1990s to the present, with each era showing lower per capita fatality rates than the previous.

During the period 1994 to 1999, the data shows that the Queensland maritime fatality rate per capita exhibited both an absolute and a relative decrease compared with other jurisdictions. From ranking sixth of the eight jurisdictions in the 1990-94 period, Queensland's ranking improved to third over the period 1995-99. Queensland ranked second in Australia with a maritime fatality rate of 1.8 per one million of population for the period 2000 to 2001. This represents a fall of 30 per cent over the previous five-year average of 2.59 fatalities per million of population. Comparatively, the maritime fatality rate per million of population for all of Australia for 2000 to 2001 was 2.15. Coronial data for the 2002 calendar year was not available from the ABS at the time of printing this report.

## 2.3 Comparisons within Queensland

### 2.3.1 Introduction

This section analyses marine incidents within Queensland. When disaggregated, incidents numbers are often small and random variations can be large. For this reason, Maritime Safety Queensland generally assesses marine incident trends in terms of their rate of occurrence in the year under review compared with the average of the previous four years of data.

In 2002, 629 marine incidents were reported in Queensland. This represents an increase of 25 incidents from 2001. There is evidence that much of the steady increase in the numbers of incidents reported in recent years has been due to better understanding of incident reporting requirements and improved levels of reporting of marine incidents, particularly the more serious incidents.

### 2.3.2 Overview of marine incident investigations

Reported marine incidents are investigated by one of three agencies—Queensland Water Police, Queensland Boating and Fisheries Patrol and Maritime Safety Queensland.

In 2002, the Queensland Water Police investigated 147 of the more serious marine incidents, Queensland Boating and Fisheries Patrol investigated 58 incidents and Maritime Safety Queensland investigated more than 400 incidents.

Some incidents were jointly investigated by more than one agency. There were also three coronial inquiries in 2002 into fatalities resulting from marine incidents. In 2002, the Minister for Transport also convened a Marine Board of Inquiry into the collision in the Whitsundays between two commercial vessels, the *Pride of Airlie* and the *Sun Paradise*. The Board of Inquiry has not yet finalised its report on this incident.

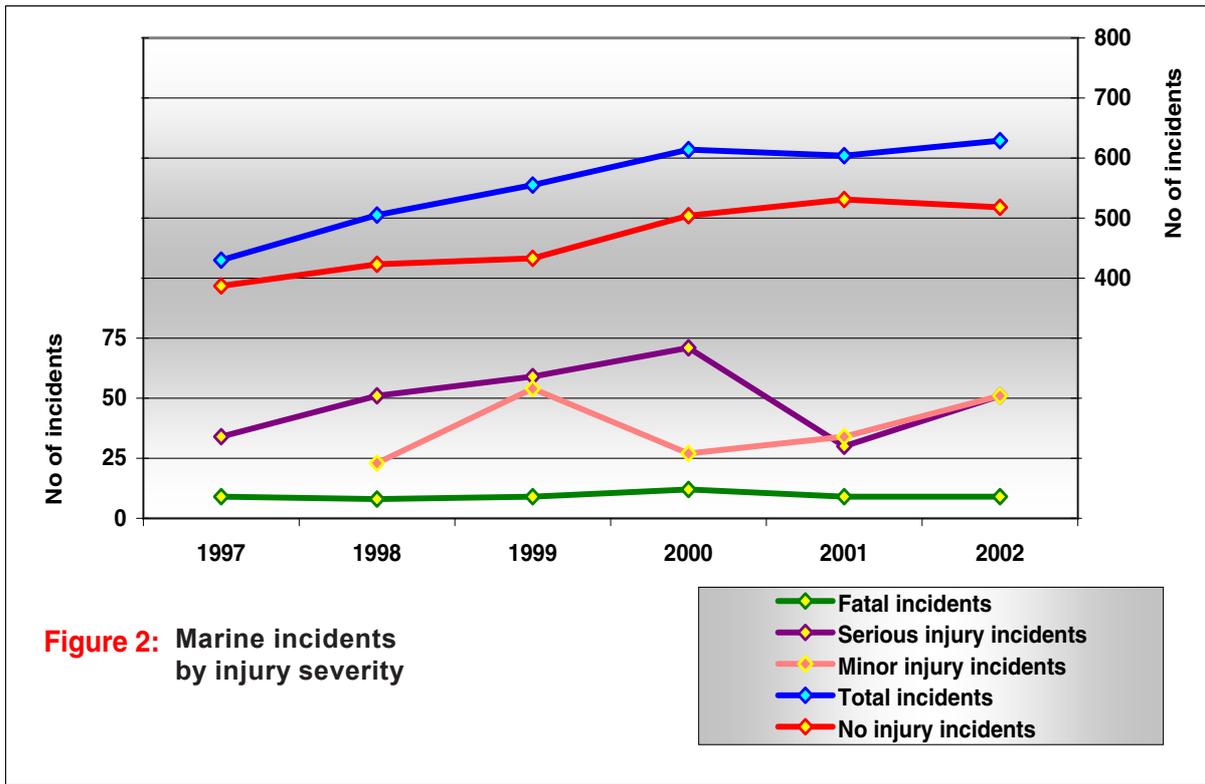
### 2.3.3 Reported marine incidents by severity

This section examines all reported marine incidents in Queensland. Incidents are analysed from two perspectives:

- the severity of resultant personal injury (Figure 2), and
- the severity of resultant property damage (Figure 3)

Figure 2 shows that total reported marine incidents rose slightly in 2002, but at a slower rate than the trend over the previous five years. The aggregate numbers of reported marine incidents in recent years suggest that there may be a plateau occurring in the rate of marine incidents. Analyses in subsequent years will continue to monitor this aspect.





### 2.3.4 Incidents by severity of personal injury

Figure 2 also shows reported marine incident trends according to the severity of the personal injury outcome. Incidents resulting in fatality have fallen from 12 in 2001 to 9 in 2002. This compares favourably with a four-year average of 9.50. While serious injury incidents have risen to 51 in 2002, the number is consistent with the four-year average of 53.75.

Incidents resulting in minor injuries have also been included in Figure 2. Minor injuries resulting from marine incidents appear to be generally consistent after a moderate spike in 1999. Despite an increase in reported marine incidents in 2002, it is encouraging to note the continuing increase in ‘no injury’ incidents—both in absolute and relative terms.

### 2.3.5 Incidents by severity of property damage

The second view of incident severity relates to property damage and loss. The various dimensions of property damage are shown in Figure 3.

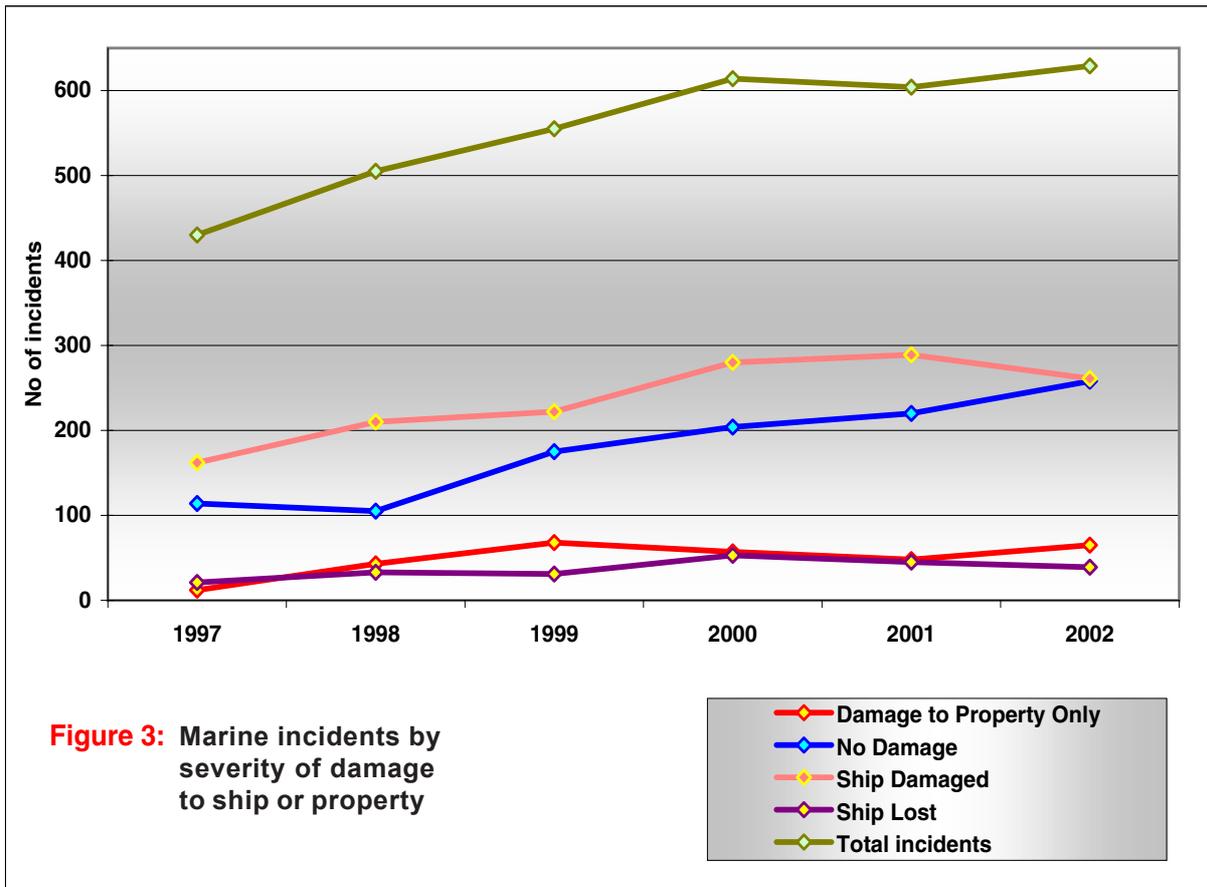


Figure 3 shows increases in 2002 in two damage severity categories ‘damage to property only’ and ‘no damage’. These increases are complemented by decreases in the two categories ‘ships lost’ and ‘ships damaged’. The number of ‘ships lost’ (39) is down 13 per cent on the number lost in 2001 and is now in line with the previous four-year average of 40.50 ships lost. ‘Ships damaged’ fell markedly in 2002—down from 289 in 2001 to 261 in 2002, but still marginally higher than the previous four-year average of 250.25. The trend in recent years showing increasing numbers of incidents where ‘no damage’ was reported also continued in 2002. Maritime Safety Queensland recorded 258 such incidents in 2002 compared with a four-year average of 176.

## 2.4 Fatal incidents in Queensland

Figure 4 shows Queensland's maritime fatalities per million of population and per 100,000 registered vessels. These represent two objective measures of exposure to maritime fatalities. Fatalities relative to both vessels on register and total population have been trending downwards over the past six years.

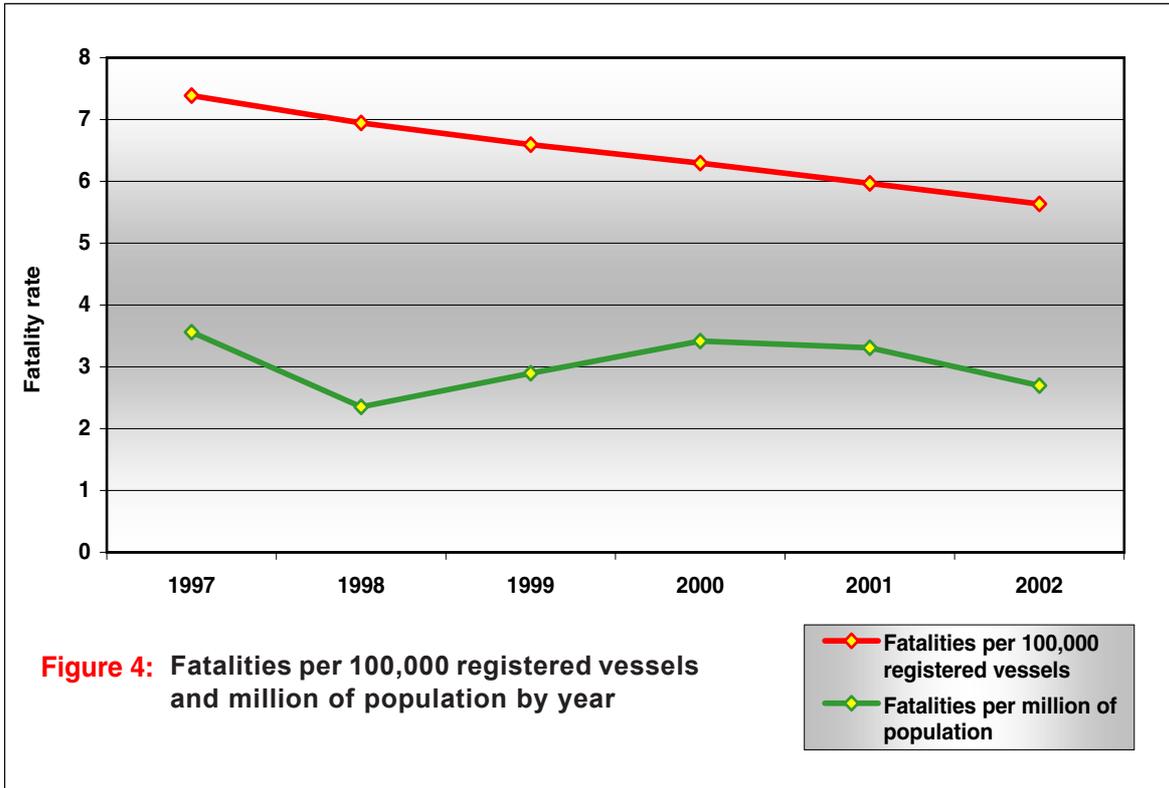
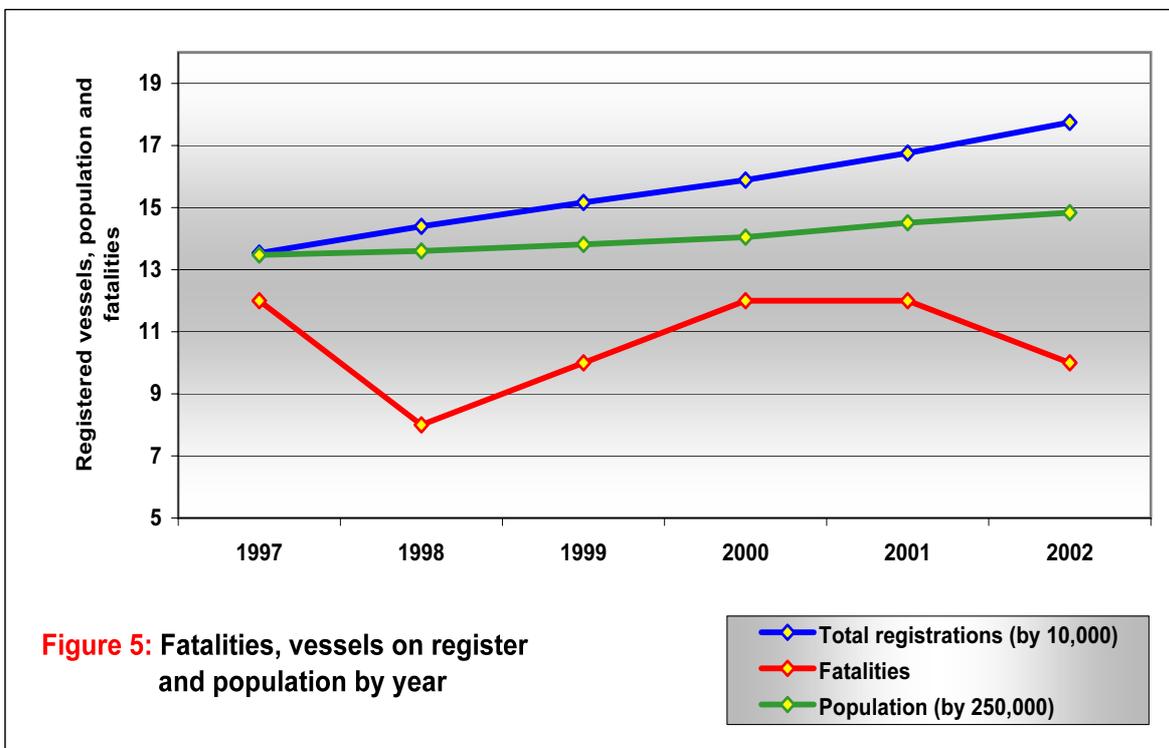


Figure 5 compares Queensland data for marine fatalities, growth in registered vessel numbers and population growth since 1997.



There were 10 fatalities resulting from marine incidents during 2002—two less than in 2001. This represents a 16 per cent fall in the number of fatalities recorded in both 2000 and 2001. Recorded fatalities in 2002 are also marginally below the previous four-year average of 10.50 fatalities. Figure 5 also shows that the combined number of commercially and recreationally registered vessels increased by more than 30 per cent over period 1997 to 2002. Queensland's population has increased by a little over nine per cent in the same period.

In Figures 6 and 7, marine incident fatality figures are broken down into two major vessel registration types—recreational and commercial.

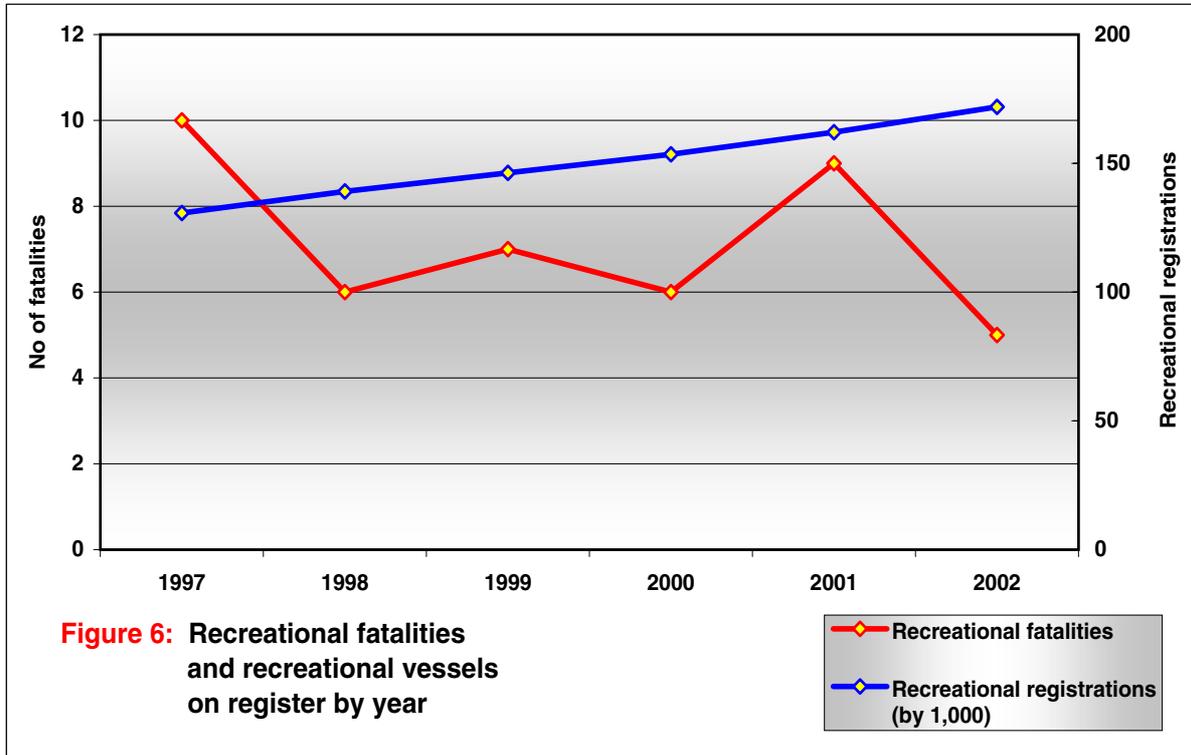
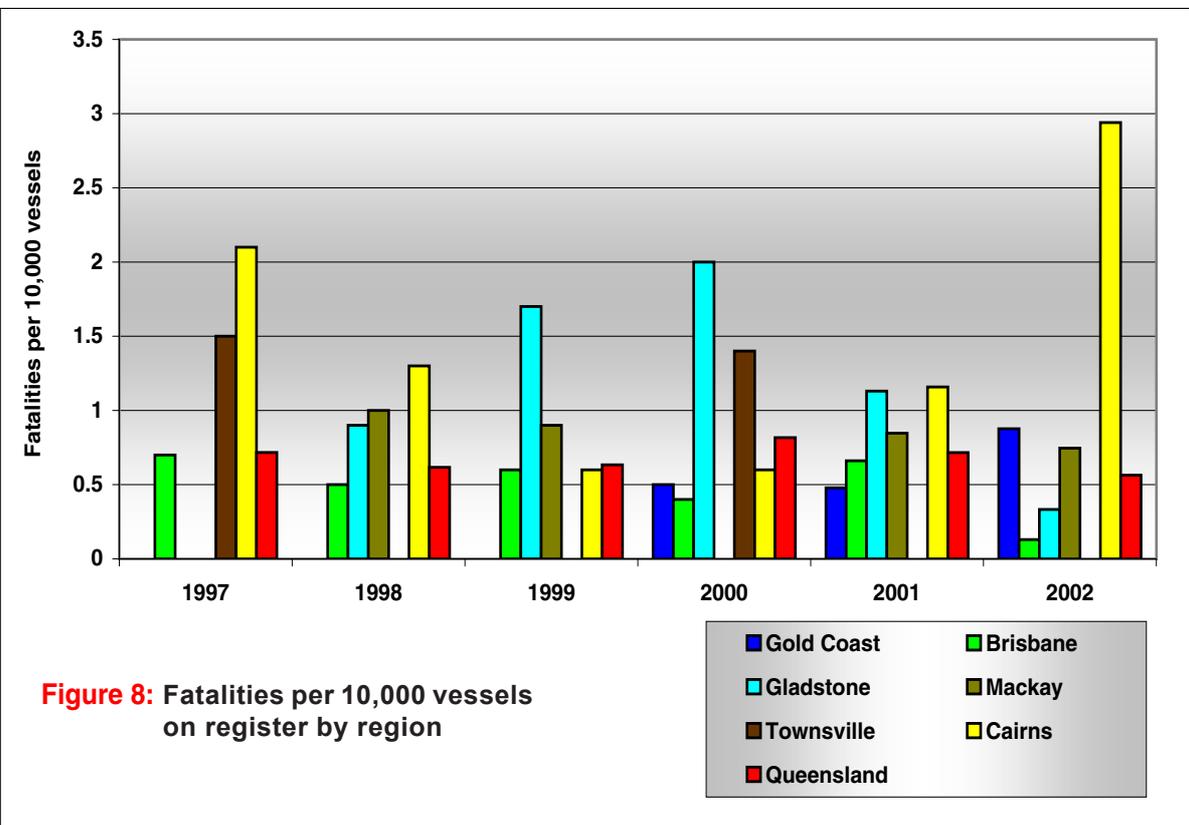
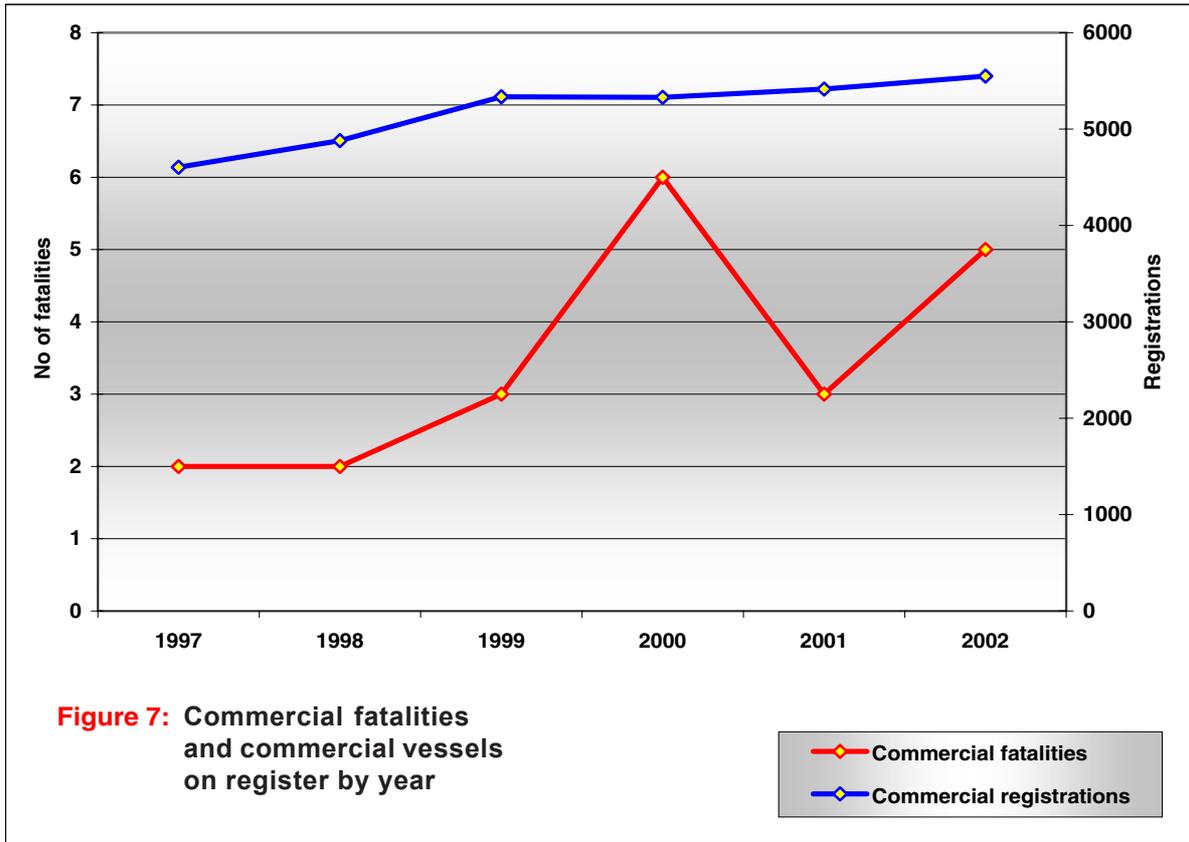


Figure 6 shows that five fatalities resulted from recreational marine safety incidents in 2002. In comparison with the previous four-year average of seven fatalities, recreational fatalities in 2002 fell by more than 27 per cent. This compares with growth in registered recreational vessel numbers in 2002 of more than six per cent and 31 per cent over the period 1997 to 2002. The number of fatalities per registered recreational vessel continues to fall, despite increasing numbers of recreational vessels on the waters.

The growth trend in the number of commercially registered vessels is shown in Figure 7. There has been an increase in the number of commercially registered vessels of some 20 per cent over the period 1997 to 2002. Figure 7 shows there were five fatalities resulting from marine incidents involving commercial vessels in 2002. This represents a 66 per cent increase from 2001 and continues to exceed the average of 3.50 fatalities per year for the previous four-year period.

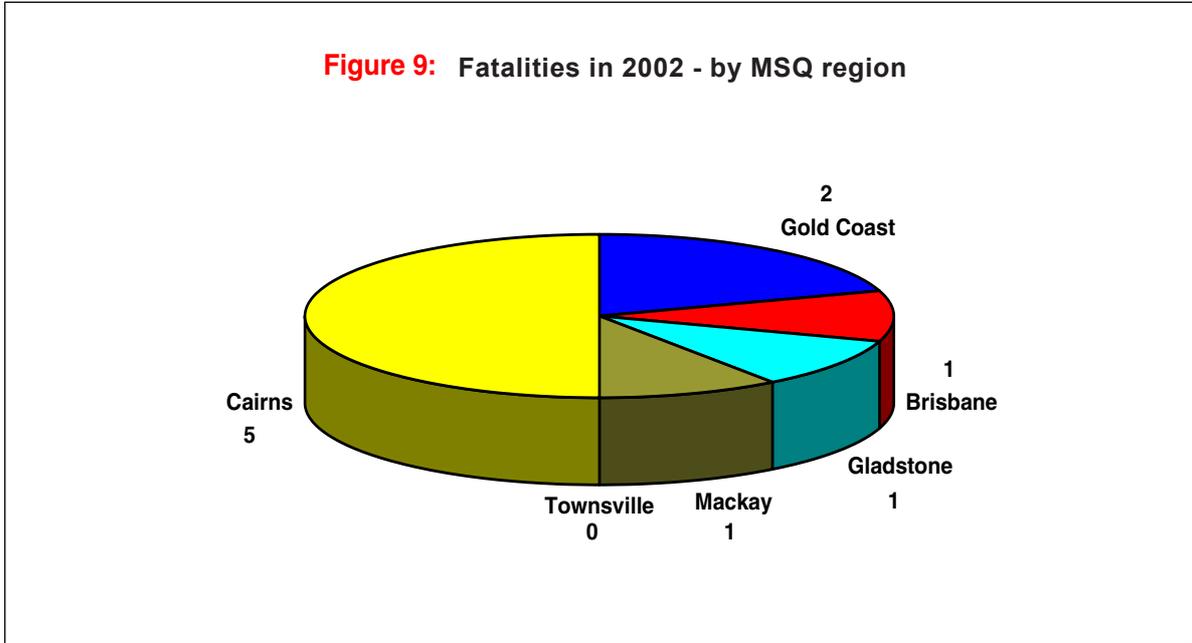
### 2.4.1 Fatal incidents in Queensland—comparisons by region

Figure 8 shows the maritime safety performance of each Maritime Safety Queensland region in terms of fatalities per 10,000 registered vessels over the period 1997 to 2002. In 2002, the state average fatality rate per 10,000 vessels on register was 0.56, compared with a four-year state average of 0.70.



When viewing Figure 8, note that the Gold Coast has only been reported as a separate region since 2000.

Figure 9 shows fatalities according to the region in which they occurred—as a proportion of marine incident fatalities recorded in Queensland in 2002.



While total fatalities are few in number, three regions have shown marked changes in their fatality outcomes in 2002. Cairns region, after under-representation in 1999 and 2000, was over-represented in 2001 and was significantly over-represented in 2002 with five fatalities—some 233 per cent above the Cairns region's previous four-year average of 1.50 fatalities.

Gold Coast region recorded one more fatality in 2002 than in 2001, and was over-represented when compared with its previous two-year average of one fatality per year.

Both Brisbane and Gladstone regions with one fatality in each region, recorded marked falls in fatalities in 2002 compared with 2001. Both regions were well below their four-year fatality averages of 3.75 and 3.50 respectively.

Mackay and Townsville recorded one and zero fatalities respectively in 2002. These are consistent with their respective fatality numbers in 2001 and their four-year regional fatality averages.

### 2.4.2 Out-of-scope marine fatalities

Maritime Safety Queensland now captures data for incidents, which while they may occur in the maritime environment, are outside the scope of marine incidents as defined in the Act. These incidents attract a good deal of media coverage and identify areas where legislative provisions may be inadequate or overlap. They include fatal and serious injury incidents where the death or injury is attributable to natural causes, or where the incidents fall directly within the scope of workplace health and safety or Commonwealth legislation.

As part of its marine incident case management system, Maritime Safety Queensland monitors these incidents to ensure that any necessary remedial action, which may include legislative changes, is taken. The data also enables the presentation of a fuller picture of safety in the maritime environment.

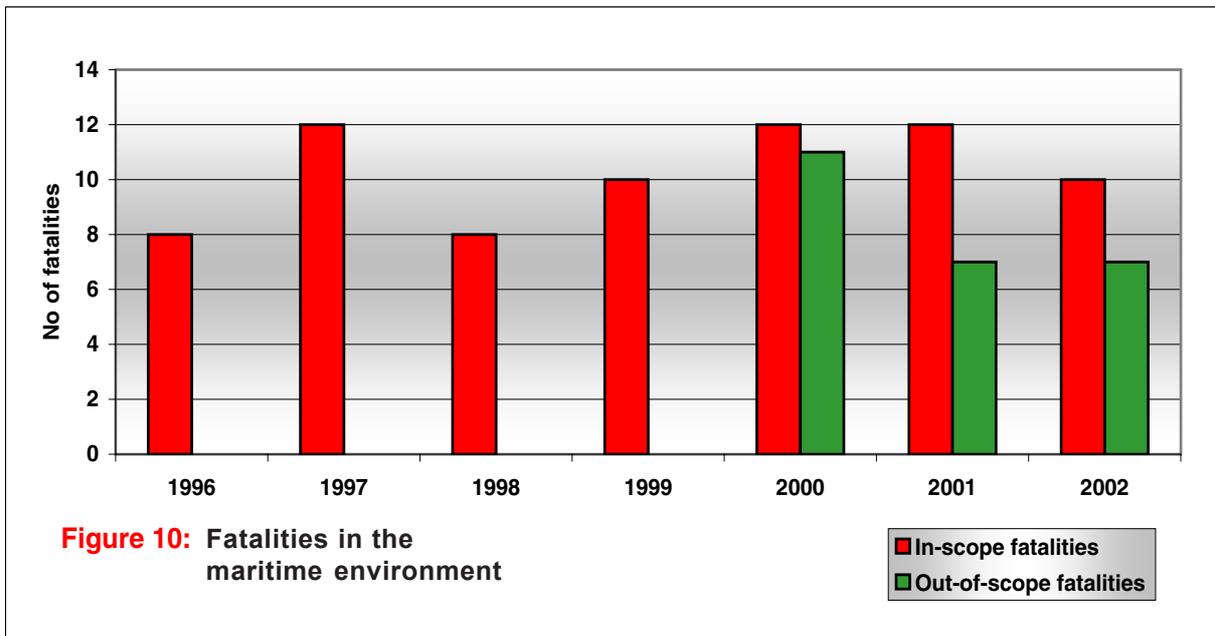


Figure 10 shows the number of fatalities resulting from both in-scope and out-of-scope incidents in the maritime environment for the period 2000 to 2002. During this period, Maritime Safety Queensland recorded details of 96 incidents that were out-of-scope. Twenty-seven of these occurred in 2000, 36 in 2001 and 33 in 2002. Queensland's combined maritime fatalities, including out-of-scope fatalities, were 23 in 2000, 19 in 2001 and 17 in 2002.

The 2002 fatalities classified as out-of-scope included:

- two men who died from heart attacks while scuba diving
- two passengers on reef cruises who died while snorkelling
- a man who died of a heart attack while on a reef cruise
- a passenger on a reef cruise who experienced difficulty while snorkelling, was revived, but subsequently suffered a fatal cardiac arrest

Out-of-scope maritime fatality data was not recorded before 2000.

## 2.5 Fatal and serious injury incidents

The following section examines marine incidents resulting in fatalities and serious injuries (FSI incidents). In 2002, Maritime Safety Queensland received reports of 58 FSI incidents—13 more than in 2001, but marginally under-represented compared with the previous four-year average of 62.75 FSI incidents per year. While the number of FSI incidents has risen, the ratio of fatalities and serious injuries to fatal and serious injury incidents in 2002 (1.18:1) has fallen below the previous four-year average of 1.23:1. As mentioned earlier, Maritime Safety Queensland acknowledges an indeterminate level of under-reporting of marine incidents. Independent reviews of hospital admissions data by Flinders and Monash Universities suggest a higher level of serious injuries from 'water transport' accidents than is reflected in Maritime Safety Queensland's reported marine incident data. Maritime Safety Queensland will continue to monitor hospital admissions data to clarify the extent of serious injuries resulting from marine incidents.

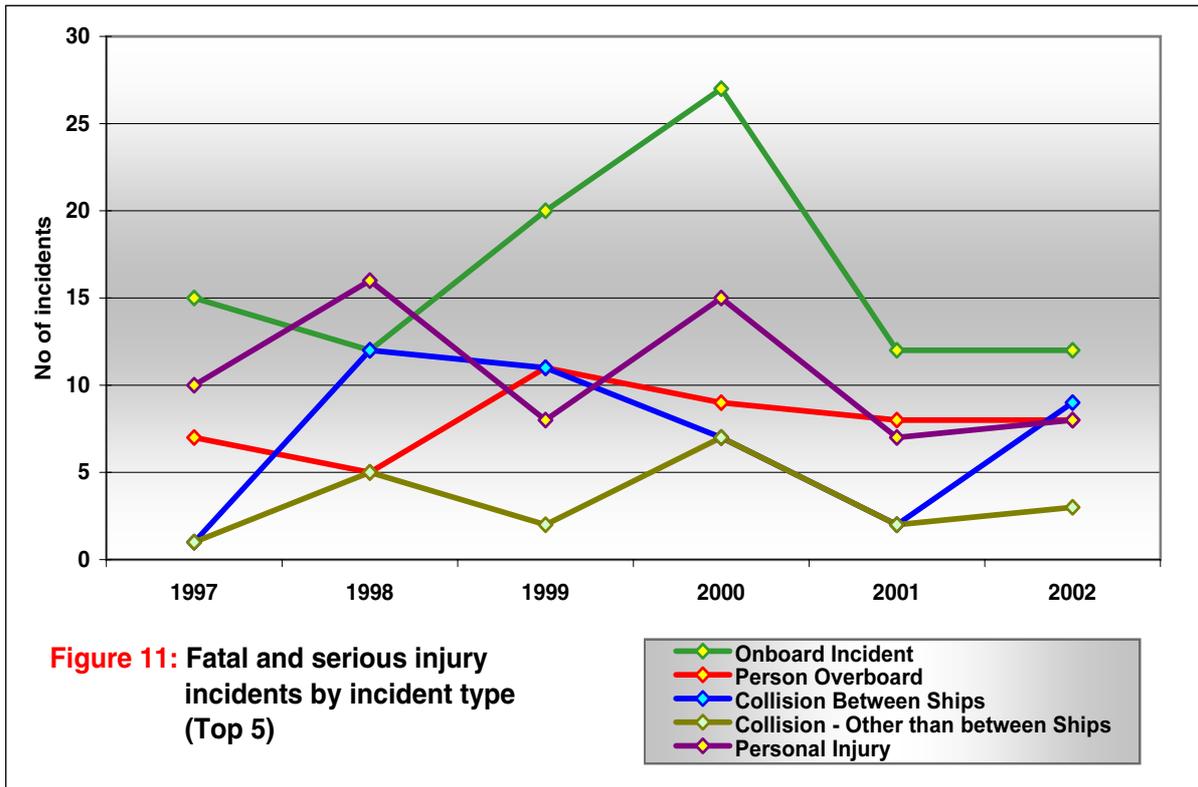
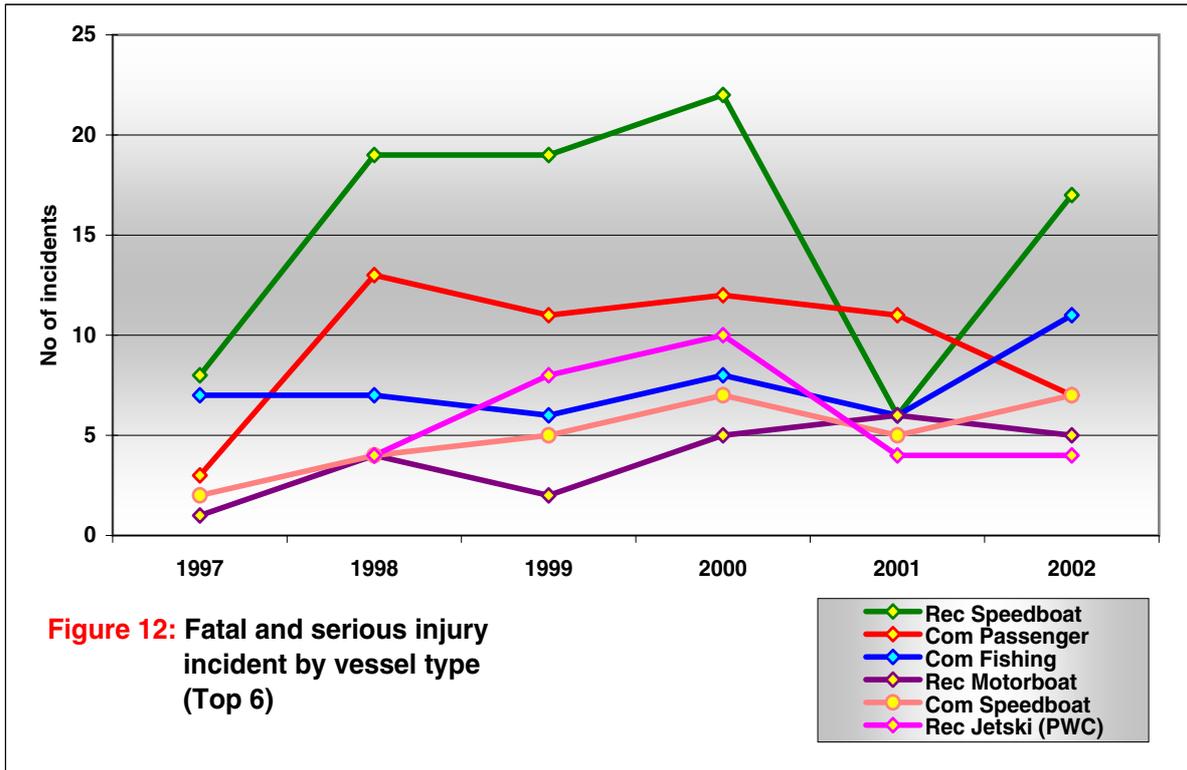


Figure 11 shows the trends for the five most frequently occurring types of marine incident that resulted in either fatalities or serious injuries.

Three incident types have shown increases in 2002 after showing decreases in 2001. With the exception of ‘collisions between ships’, the results for the remaining top four incident types are below or in line with their previous four-year average involvement. The number of FSI incidents involving collisions between ships (9) is up marginally on the previous four-year average involvement of eight.

Figure 12 shows the six vessel types that figured most frequently in FSI incidents in Queensland in 2002 and their comparative representation since 1997. Two of the vessel types have shown a fall in FSI incident involvement in 2002—commercial passenger vessels and recreational motorboats.

Recreational speedboats and commercial fishing vessels showed marked increases in involvement in 2002. Both vessel types were over-represented compared with 2001. While recreational speedboats were significantly over-represented in FSI incidents in 2002, compared with five in 2001, the 2002 results are in line with their previous four-year average involvement (15.25). This elevated level of involvement must also be interpreted in the knowledge that recreational speedboats make up more than 80 per cent of all Queensland registered vessels, with average annual growth in registered numbers of around six per cent.



**Figure 12: Fatal and serious injury incident by vessel type (Top 6)**

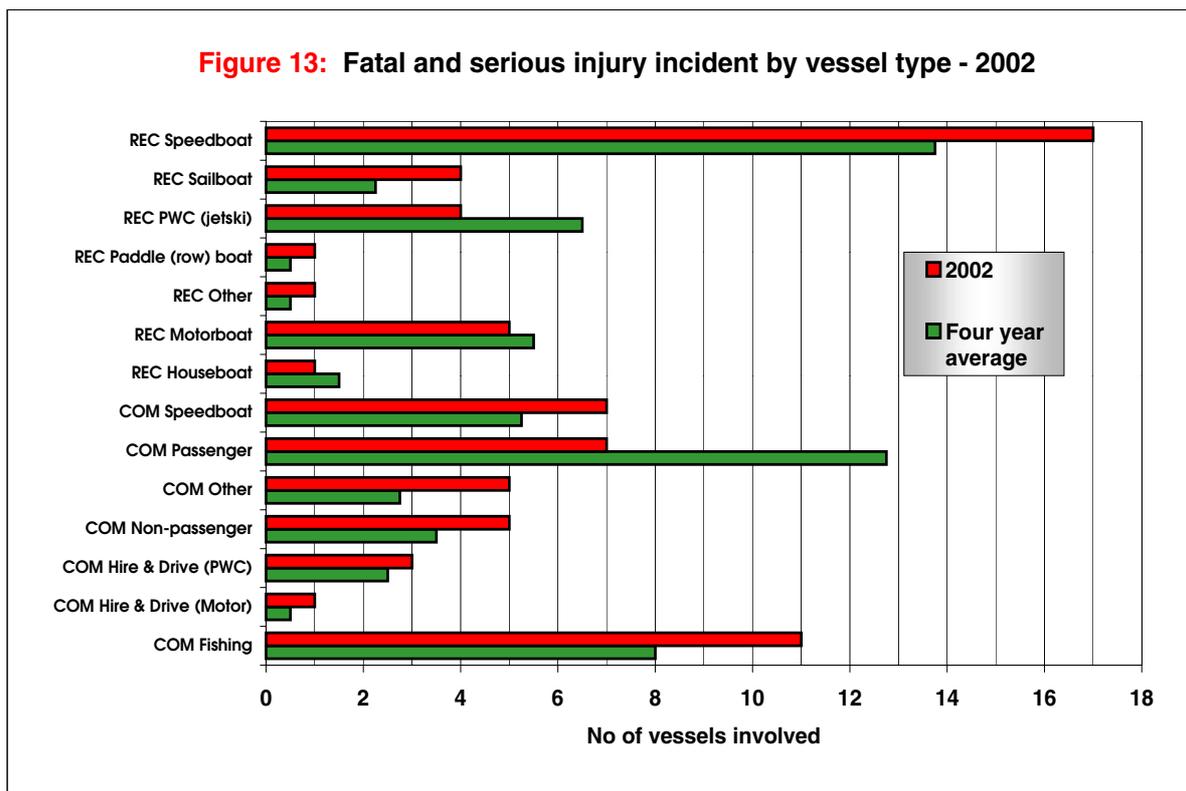
Commercial fishing ships were also over-represented in all FSI incidents in 2002, with 11 commercial fishing ships involved compared with six in 2001 and a previous four-year average involvement of eight ships. A more detailed study of incidents involving commercial fishing ships is included later in this report.

Figure 13 shows the comparative representation of different vessel types in FSI incidents in 2002, together with their average rates of involvement over the previous four-year period.

Both recreational speedboats and commercial fishing vessels show significant over-representation in terms of their involvement in FSI incidents in 2002. Commercial passenger vessels are under-represented when compared with their rate of involvement in prior years.

Recreational personal watercraft, or jet skis as they are better known, continue to trend downwards with their involvement in FSI incidents with four jet skis involved in incidents in 2002, more than 30 per cent below their previous four-year average involvement in FSI incidents. Recreational jet skis make up approximately three per cent of the total Queensland registered recreational vessel fleet.

Based on the number of registered recreational jet skis, they were slightly over-represented in terms of their involvement in FSI incidents in 2002 (5 per cent). Maritime Safety Queensland will continue to closely monitor the involvement of jet skis in 2003, particularly in terms of potential under-reporting of incidents involving jet skis.



### 2.5.1 Fatal and serious injury incidents—incident characteristics by extent of involvement

An analysis was made of FSI incidents to determine the extent to which individual incident characteristics such as human contributing factors, weather conditions and vessel type were involved in these more serious incidents. The analysis focuses on the twenty-five most frequently occurring characteristics in FSI incidents and measures:

- the number of times each characteristic was involved in a FSI incident, and
- changes in the extent of involvement of these characteristics in 2002 compared with their average rate of involvement in FSI incidents in the previous four-year period

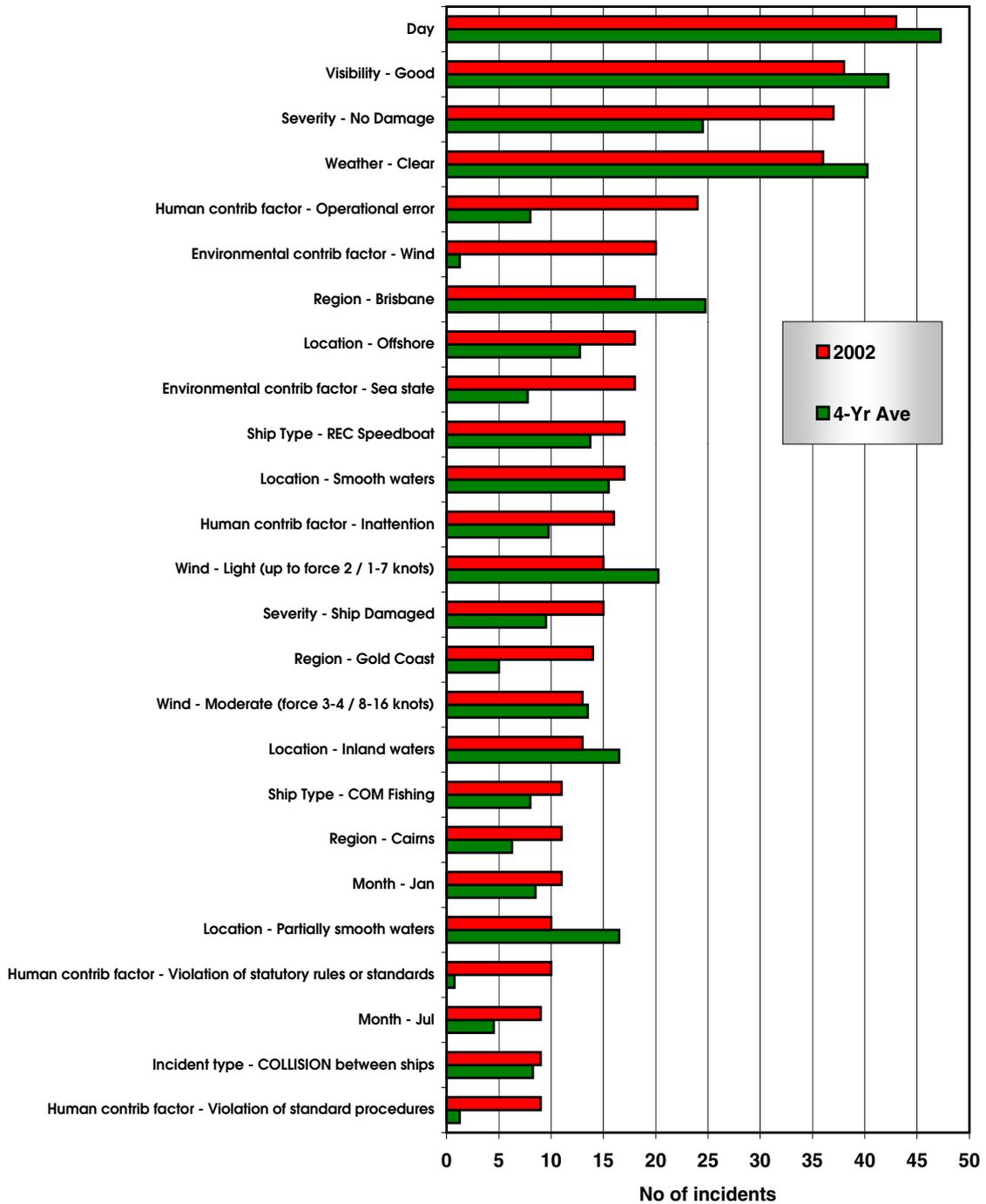
Figure 14 shows the extent of involvement in 2002 for the ‘top twenty-five’ incident characteristics together with their average rate of involvement over the previous four-year period.

As in 2001, three of the most frequently occurring attributes of FSI incidents in 2002 related to ambient conditions including clear weather, good visibility and the daytime period. These factors were each involved in more than 60 per cent of the 58 FSI incidents in 2002.

‘No damage’ incidents again figured significantly in the overall number of FSI incidents in 2002. While the 58 incidents being reviewed involved fatalities and serious injuries, the increase in the proportion of these incidents with no physical damage to the ship is an encouraging outcome.

The next largest attribute was human operational error. Incident investigations identified that human operational error was a contributing factor in 24 (42 per cent) of the 58 FSI incidents in 2002. Some of the 200 per cent increase in this factor over its previous four-year average involvement can be attributed to continuously improving marine incident investigation and reporting procedures.

**Figure 14: Characteristics ranked by size of involvement in marine incidents resulting in fatalities and serious injuries - Queensland**



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Wind conditions also figure significantly with involvement in 35 per cent of FSI incidents in 2002—up 1500 per cent on the previous four-year average involvement for this factor. Improved investigation and reporting procedures are again likely to account for some of this recorded increase in involvement. It is noted that the next two largest FSI incident attributes in 2002 were ‘offshore location’ and ‘sea state’, each involved in more than 30 per cent of the total FSI incidents in 2002. A significant correlation is expected between all three of these factors. The over-representation of all three compared with their previous four-year average involvement may be an indication of changes in vessel usage patterns and user behaviour.

After a 30 per cent fall in involvement in FSI incidents in 2001, recreational speedboats were the most heavily involved vessel type in FSI incidents in 2002. Seventeen recreational speedboats were involved in the 58 FSI incidents reported in 2002—up more than 180 per cent on their 2001 involvement and more than 23 per cent on their previous four-year average involvement. The involvement of recreational vessels in marine incidents is examined in more detail later in this report.

The human contributing factor ‘inattention’ was also up in 2002, being identified as contributing to 16 of the FSI incidents in 2002. This equates to an over-representation in the order of 60 per cent compared with the previous four-year average involvement of inattention in FSI incidents.

Two regions recorded significant variations in the extent of their involvement in FSI incidents in 2002—Brisbane and Gold Coast. Despite an increase in the number of reported FSI incidents in Queensland in 2002, the Brisbane region with 18 reported FSI incidents was under-represented by some 27 per cent in 2002 compared with the region's previous four-year average. Additionally, while the region is responsible for more than 43 per cent of the state's registered vessels, the region accounted for only 31 per cent of the state's reported FSI incidents.

The Gold Coast region, with 14 reported FSI incidents in 2002 representing 24 per cent of the state's FSI incidents, was over-represented by 40 per cent compared with the region's previous two-year average of 10 reported FSI incidents. While approximately 13 per cent of the state's registered vessels fall within the jurisdiction of the Gold Coast region, it also hosts a significant number of visiting vessels from interstate and overseas.

The increases in involvement of individual incident attributes in 2002 must also be considered in the context of an overall increase in 2002 of more than 28 per cent in the number of reported FSI incidents. That is, with increases in the number of reported incidents, there will be a corresponding increase in the number of identifiable incident attributes or characteristics.

A number of incident attributes have shown decreases in their level of involvement in 2002 FSI incidents, most notably incidents occurring in ‘inland waters’ and in ‘partially-smooth waters’. In 2002, inland water incidents represented 22.5 per cent of all reported FSI incidents, a 21 per cent under-representation compared with the previous four-year average.

