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Safety on board: Monitoring safety behaviours among recreational boaters in WA

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Western Australia's 12,500 kilometre coastline is extensive and isolated. There are more than 73,000 recreational vessels registered with the Western Australian Department for Planning and Infrastructure (DPI) and an estimated quarter of a million people use our waterways. A review of boating-related deaths, injuries and incidents in Western Australia (WA) reported rates of 0.96 deaths per 10,000 registered vessels, 1.74 hospital admissions per 1,000 vessels, and 18.55 rescues per 1,000 vessels (Pikora & Cercarelli, 2004).

The Recreational Boating Branch at the Marine Safety Directorate at DPI is responsible for recreational boating safety through educational and promotional programs. In November 2003 a survey was conducted to assess attitudes towards safety and safe boater behaviour among recreational boat owners (Department for Planning and Infrastructure, 2003).

The aims of the current study were:

- To measure and monitor changes in recreational boaters' beliefs, attitudes and knowledge regarding boating safety issues and standards and
- To explore the number, type and reporting of incidents and injuries among recreational boaters in the previous 12 months.

METHODS

The Marine Safety Directorate at DPI maintains a database of all recreational vessels that are registered in WA. The survey participants were boaters who reside in WA and had a current registered recreational vessel. Using this database, 1500 registered recreational vessel owners were randomly selected. The sampling frame was divided into segments based on vessel type (ie, open boat, runabout, cabin cruiser, yacht, half cabin, PWC, centre console, and other) and location (ie, metropolitan and regional) so that more owners with common vessel types were included in larger numbers to reflect boat owners across the State. Adult boaters were recruited to participate in a telephone survey conducted by an independent market research company in March 2006.

A quota of 500 adult boaters was required for the study. Boaters were invited to participate in the survey and if they declined, their telephone number was withdrawn and another chosen until the quota was achieved. Ethics approval was provided by the UWA Human Ethics Committee. A response rate of 47% was achieved (ie, 500 surveys /1071 calls (including 380 refused, 20 language barriers, 113 screening, 58 not available)). SPSS Version 14 was used to analyse the data and comparisons with the 2003 survey results are made where appropriate.

RESULTS

Demographic characteristics

As shown in Table 1, the majority of recreational boaters sampled were male (79%; compared with 91% in the 2003 survey), were aged 45 years or older (72%; 62% in 2003) and described themselves as families with older children or as older couples with no children at home (68%).

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Table 1. Demographic characteristics

Characteristics	%	
	2006 ¹	2003 ²
Gender		
Male	79.4	91
Age*		
18-24 years	1.9	3
25-34 years	5.6	7
35-44 years	20.9	27
45-54 years	25.1	25
55-64 years	23.5	22
65+ years	23.0	15
Household structure		
Single/young couple no children	13.6	-
Family with children aged 12 or under	18.2	-
Family with older children	25.2	-
Older couple with no children at home	43.0	-

¹n=500; ²n=405; *missing n=70 (2006 only)

Recreational boating characteristics

The majority had been boating in the previous 12 months (88%) and were not a member of any boating association (74%; 74% in 2003) (Table 2). Less than one-half of the boaters (40%) carried children aged less than 12 years on board on their most recent trip. The majority of the boaters went boating most often on weekends (46%; 64% in 2003) or both during the week and on weekends (38%; 3% in 2003). Approximately one-third (32%; 36% in 2003) went boating once a week or more frequently, while the most common activity was fishing and almost one-half (43%) went boating in protected waters. Very few respondents reported that they went boating alone (3%).

Table 2. Boating characteristics

Characteristics	%	
	2006 ¹	2003 ²
Boating previous 12 months	88.4	-
Member boating association	25.8	26
Carry children under 12 years on board	40.4	-
Days go boating		
Weekend	46.4	64
Weekdays	15.6	33
Both	38.0	3
Boating frequency		
Once a week or more	32.2	36
Every couple of weeks	29.6	34
Once a month or less	38.2	30
Activities*		
Fishing	79.0	85
Cruising/motoring	33.0	33
Water sports (eg, skiing, wakeboarding)	10.4	11
Diving/racing/other	13.8	21
Number people usually go boating with		
Alone	2.8	-
1 – 2	58.0	-
3 +	39.2	-
Location go boating most often		
Protected waters	42.6	35
Within 2nM from mainland	14.6	21
Between 2 & 5nM from mainland	16.2	17
More than 5nM from mainland	26.6	26

¹n=500; ²n=405; *multiple responses allowed

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Almost one-half of the boaters went boating all year (44%) and the most common months for boating were between November and April (Figure 1). These results are similar with those in the 2003 boater survey.

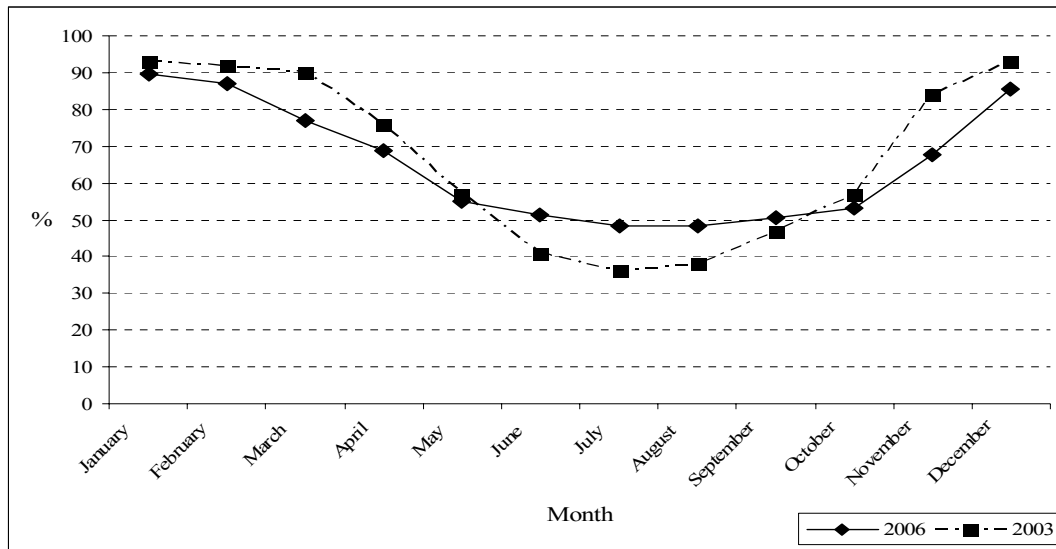


Figure 1. Months when respondents go boating: comparison between 2006 and 2003 survey

The majority of the boaters had more than ten years overall boating experience (73%; 74% in 2003), two-thirds had more than ten years experience driving a boat (65%; 59% in 2003), while one-half had owned a boat for more than ten years (53%; 46% in 2003) (Table 3). These results may reflect that there was an older group of respondents in the survey.

Table 3. Boating experience

Years	Overall Boating Experience		Driving Boat		Ownership of Boat	
	2006 ¹	2003 ²	2006 ¹	2003 ²	2006 ¹	2003 ²
≤2 years	7.2	5	11.2	7	14.5	16
3 – 5 years	7.0	9	9.2	18	15.9	19
6 – 10 years	12.9	13	14.3	16	16.1	21
11 – 20 years	25.3	26	26.1	27	23.1	22
21+ years	47.6	48	39.2	32	30.1	23

¹n=500; ²n=405

Recreational boating safety

When asked “When thinking about boating, which issues do you feel are important?” safety was the first mentioned response for the majority of respondents (66%) followed by weather (7%), knowledge about boating/education/training (6%), safety equipment (4%), safe launching areas/more ramps/lack of ramps (4%), and condition/maintenance of boat and equipment (3%). In the 2003 survey, 73% of respondents spontaneously raised issues related to safety.

When asked “When thinking about recreational boating safety, which issues are most important to you?” safety was again the first mentioned response (18%) followed by life jackets/flares (17%), weather (9%), safety equipment (9%), knowledge about boating/education/training (8%), and condition/maintenance of boat and equipment (5%). The most common responses from the respondents to both overall issues and safety issues are provided in Figure 2.

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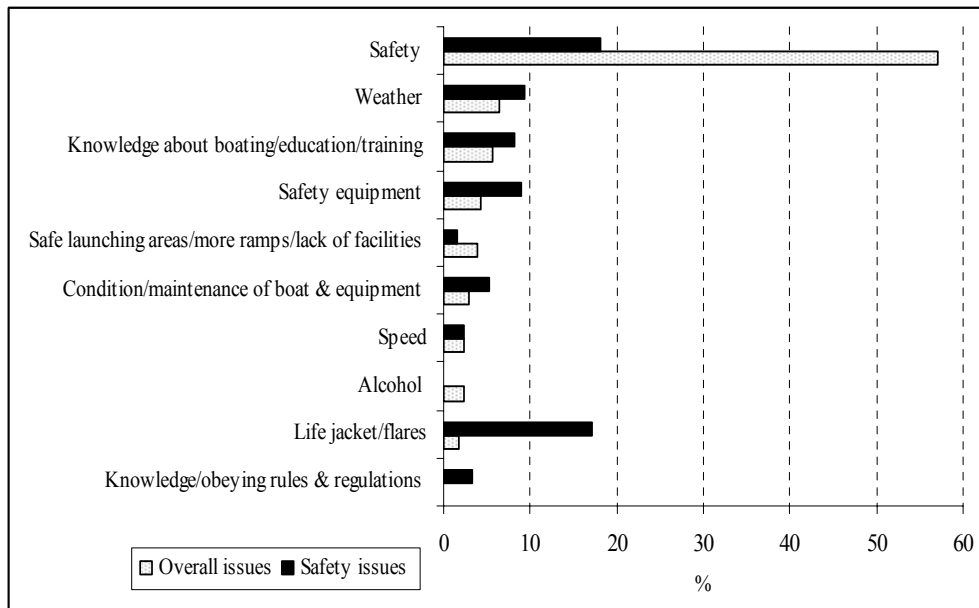


Figure 2. Recreational boating issues and boating safety issues - unprompted responses

The boaters were asked about which marine safety issues require more effort or focus. Boating safety education was selected by more than one third (39%) of the boaters as requiring more focus or effort, while fewer suggested that the control of boaters under the influence of alcohol or drugs (32%) and the control of reckless operation (30%). Interestingly, very few respondents (2%) thought that there were no issues that required more effort or focus (Table 4).

Table 4. Marine safety issues that require more effort/focus

Issues*	(n=500)	%
Boating safety education		39.0
Control of boaters under influence of alcohol or drugs		31.6
Control of reckless operation		30.2
Speeding/other		4.2
Nothing		2.2

*Multiple responses allowed

The boaters were asked who they believed to have the authority and are responsible for ensuring that boaters behave safely on the water. Almost one third suggested that the skipper or the boater themselves had the authority and were responsible for boater behaviour (31%; 0% in 2003 survey). Other authorities mentioned frequently included the Water Police (29%; 35% in 2003), Marine Safety (16%; 2% in 2003) and the Department for Planning and Infrastructure (9%; 22% in 2003). As shown in Table 5, a range of organisations were mentioned as having authority which is similar to those reported in the 2003 survey.

Table 5. Those with authority and responsibility for ensuring safe boater behaviour

Who has authority & responsibility	%	
	2006 ¹	2003 ²
Skipper/boaters	31.0	0
Water Police	29.0	35
Marine Safety/DPI	24.6	24
Fisheries	7.6	8
Other	5.2	12
Department of Transport	-	13
Harbour and Lights	-	17
Marine and Harbour	-	30
Don't know/unsure	2.6	-

¹n=500; ²n=405

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When asked where they had obtained information about boating safety, one third had not sourced any safety information (34%; 37% in 2003) while 20% had obtained information from the Department for Planning and Infrastructure and 11% from media advertising.

Recreational boating safety behaviours

Among those who had children aged less than 12 years on board in the previous 12 months (47%), the majority (73%) ensured that these children always wore a life jacket. Less than one fifth (19%) reported that they had an alcoholic drink while on their most recent trip.

Logistic regression analysis was conducted to compare those who reported that they had an alcoholic drink while on their most recent trip with those who had not. While the number of boaters who reported having a drink on their last trip was not high (n=93), the findings are consistent with those reported in other studies. After adjusting for age, the odds of not consuming alcohol was associated with having completed a boating education course and carrying children aged less than 12 years on board (Table 6). Compared with those who had completed a boating education course, those with no education were 45% more likely to report consuming alcohol on their most recent trip (OR 0.55, 95% CI 0.32-0.95). Similarly, compared with those who carry children, those who did not were 63% more likely to report consuming alcohol (OR 0.37, 95% CI 0.22-0.63).

Table 6. Multivariate analysis comparing those who reported not having had a drink of alcohol on their most recent trip with those who did

Factors	n	Single factor	Final Model ¹	
		OR	OR	95% CI
Completed a boating education course				
Yes	137	1.00	1.00	
No	363	0.52	0.55*	0.32-0.95
Carry children <12 years on board				
Yes	202	1.00	1.00	
No	298	0.37	0.37**	0.22-0.63

¹ adjusted for age; * p-value <0.05; ** p-value<0.005

The respondents were asked to list the top of mind (unprompted) things they did when preparing to go boating (see Table 7). Many of the boaters reported that they checked their fuel supply (61%; 64% in 2003 survey) and attended to a general boat and equipment check (52%; 68% in 2003). Fewer boaters reported checking life jackets/PFD's (45%; 53% in 2003), batteries on board (35%; 21% in 2003) and flares (27%; 41% in 2003). Of concern is that only approximately one quarter reported that they checked the weather conditions before going boating (22%; 16% in 2003). Few respondents reported that they logged on (4%) and, while the vast majority of the boaters went boating with other people, only 12% reported that they told someone where they were going and 7% reported showing their passengers safety equipment.

Table 7. Preparing to go boating - unprompted

Preparation	%	
	2006 ¹	2003 ²
Check fuel supply	60.8	64
General boat & equipment check	52.4	68
Check life jackets/PFD's	45.4	53
Check batteries	34.8	21
Check flares	27.2	41
Check weather conditions	22.2	16
Regularly service engine	18.4	-
Check anchor and line	16.6	23
Check radio	15.8	27
Check EPIRB	15.0	23
Check boat stability	13.0	7
Inform someone of trip details	12.2	13
Check bucket or bailer	10.6	6
Show passengers safety equipment	6.6	-
Log on	4.4	-

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Check or run motor

-

59

¹n=500; ²n=405

Boaters were asked where they sourced weather information (Table 8). Among those who reported checking the weather conditions before going boating (n=111), almost one half (47%) sourced the weather information on the internet (compared with 25% in 2003). Other common sources mentioned included television weather reports (40%; 47% in 2003), AM/FM radio reports (28%; 23% in 2003) and newspapers (16%; 20% in 2003).

Table 8. Sources of weather information

Sources*	%	
	2006 ¹	2003 ²
Internet	46.8	25
Television weather reports	40.5	47
AM/FM radio reports	27.9	23
Newspaper	16.2	20
Marine radio reports	10.0	23
Phone	7.2	8
Visual	3.6	11
Other	1.8	6
Bureau of Metrology	-	24
None	0.9	4

¹n=111; ²n=65; *multiple responses allowed

Recreational boating safety equipment

The boaters were asked which types of safety equipment that they carry on board. Figure 3 summarises both the top of mind (unprompted) responses and prompted responses. The majority reported carrying PFD's or life jackets (80%) regardless of where they go boating most often. Other safety equipment carried frequently included an anchor and line (39%); a marine radio (35%),; and a bilge pump or bail bucket (25%). When prompted with a list of safety equipment the responses altered. Many of the boaters reported carrying a tool kit (65%). Other safety equipment reported to be carried frequently included an anchor and line (57%); a bilge pump or bail bucket (58%); and a cellular phone (54%). In contrast to the unprompted responses, few boaters reported carrying PFD's or life jackets (16%).

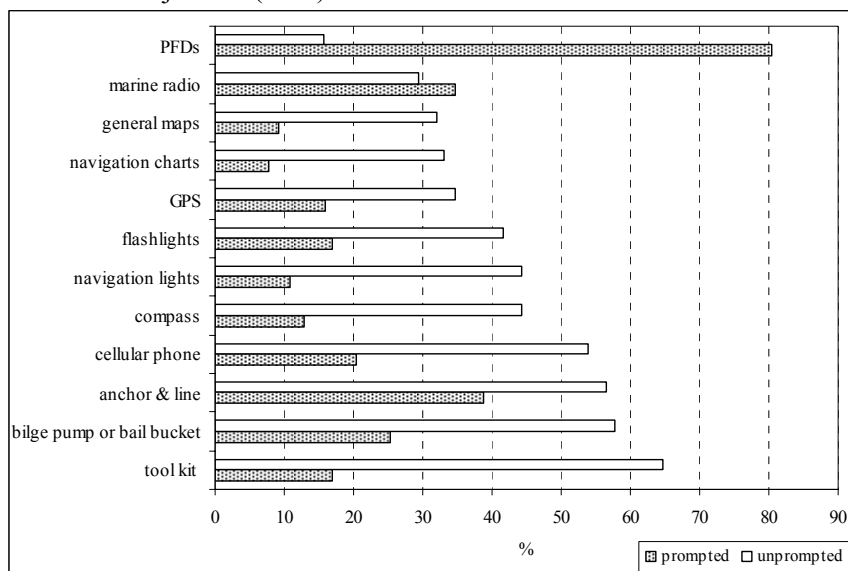


Figure 3. Boating safety equipment carried on board – unprompted and prompted responses

Recreational boating emergency equipment

The boaters were asked which types of boating emergency equipment that they carry on board. Figure 4 summarises both the top of mind (unprompted) and prompted responses. As shown, the majority of boaters reported carrying visual distress signals (eg, flares, flags) (70%). Other emergency equipment carried frequently included an EPIRB (42%); a fire extinguisher (30%); and a first aid kit (21%). When provided with a suggested

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list of emergency equipment these responses altered. Many of the boaters reported carrying a safety rope (59%); equipment for reaching someone in the water (49%); a first aid kit (46%); and a fire extinguisher (41%). In contrast to the unprompted responses, few boaters reported carrying visual distress signals (15%) or EPIRB's (12%). These results might reflect how the boaters in the sample interpreted the terms of "safety equipment" and "emergency equipment" when asked for their response without having an example as a prompt.

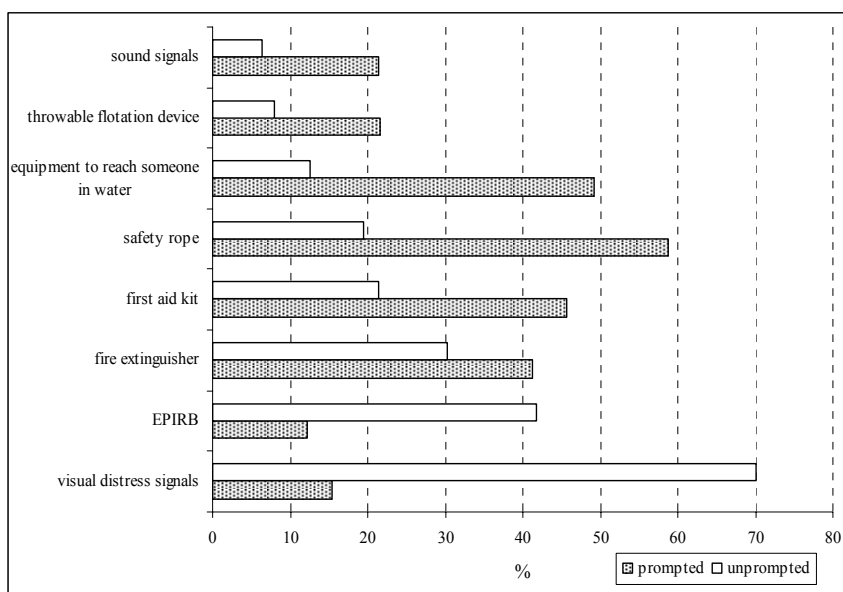


Figure 4. Boating emergency equipment carried – unprompted and prompted responses

Recreational boating education

The majority of respondents had not completed any boating education course (73%) compared with 64% in the 2003 survey. Those who reported attending some boater education course had more experience (48% with 21 or more years experience compared with only 5% with < 2 years), were not members of a boating association (61%), were 35 years or older (96%), were older couples with no children at home (39%), and male (86%).

Recreational Skippers Ticket

Information about the introduction of the Recreational Skippers Ticket (RST) was not formally released until after this survey was conducted, although there had been discussion about this within the recreational boating community and this may have influenced the results for the questions related to RST. When asked about the RST 73% had heard of it compared with 86% having heard of the BoatSmart course in the 2003 survey. While two thirds (66%) of the respondents supported or strongly supported the introduction of the RST, this was lower than those who supported the introduction of a required minimum competency for all recreational boaters in the 2003 survey (84% supported or strongly supported). More than one half of the respondents planned to complete the RST within the next 12 months (56%), while 10% suggested that they already had a qualification and/or were exempt from the RST and another 8% reported that they were not going to do the RST (Table 9).

Table 9. Recreational Skippers Ticket

Issues	(n=500)	%
Support for RST		
Strongly support/support		66.0
Neither support nor oppose		13.8
Strongly oppose/oppose		15.8
Don't know enough about it		4.4
When plan to complete		
Within next 6 months		43.2
Within next 12 months		12.8
Did not know about it until now so don't know		14.6
Have qualification/exempt		10.0
Not going to		8.0

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As late a possible	3.2
Unsure	3.2
Within next 2 years	2.4
Other	1.8
As soon as possible	0.8

Recreational boating injuries, incidents and near misses in the previous 12 months

Almost 9% (n=46) of the respondents described having suffered an injury in the previous 12 months while on board a boat (compared with 6% in 2003) and 5% (n=27) experienced an incident or near miss in the previous 12 months. While the current survey asked about specific injuries, incidents and near misses that occurred in the previous 12 months, the 2003 survey asked respondents about experiencing a scenario that raised safety concerns. In the 2003 survey, 26% reported experiencing such a scenario. The vast majority of the boating injuries described were cuts and lacerations (85%) and only required minor first aid or no treatment (93%) (Table 10). This was similar with the boating related incidents and near misses described. The majority of respondents who described incidents and near misses classed these as minor (74%) and few reported these to authorities (15%) (Table 10).

Table 10. Recreational boating injuries, incidents and near misses in the previous 12 months

Boating injury	n
<i>Any injury</i>	46
<i>Type of injury:</i>	
Cuts & lacerations	39
Fractures/broken bones	3
Burns	2
Hypothermia	2
<i>Level of seriousness:</i>	
Serious with hospital stay	1
Moderate with General Practitioner or Emergency Department visit	2
Minor with first aid	14
No treatment required	29
Boating incident or near miss	
<i>Experienced incident or near miss</i>	27
<i>Type of incident:</i>	
High risk	6
Urgent situation	1
Minor incident	20
<i>Reported incident</i>	4
<i>Factors leading to the incident:</i>	
Reckless or careless operation	9
Operator error	7
Weather or sea conditions	3
Operator inexperience	3
Lack of boating skills	3
Speed	3
Inadequate lookout	2
Alcohol use	0
Mechanical or structural failure	0

Logistic regression analysis was conducted to compare those who have had an injury or incident in the previous 12 months with those who had not. While the number of boaters who have had an injury or incident in the previous 12 months were not high (n=65), the associations found are consistent with those reported in other studies.

After adjusting for age, the odds of having an injury or incident was associated with the boater having had consumed alcohol on their most recent trip, having completed a boating education course, being more experienced and going boating more often (Table 11). Compared with those who did not consume alcohol on

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their last trip, those who did were twice as likely to have had an injury or incident (OR 2.02, 95% CI 1.10-3.73). Similarly, compared with those who had not completed a boating education course, those who had completed a course were twice as likely to have had an injury or incident (OR 2.10, 95% CI 1.19-3.69). In addition, compared with those who went boating once a month or less, those who went boating more frequently were more likely to have had an injury or incident, and, compared with those boaters with less boating experience, those with more experience were more likely to have had an injury or incident.

Table 11. Multivariate analysis comparing those who did not report an injury or incident with those who did

Factors	n	Single factor	Final Model ¹	
		OR	OR	95% CI
Had an alcoholic drink last trip				
No	405	1.00	1.00	
Yes	93	2.41**	2.02*	1.10-3.73
Completed a boating education course				
No	362	1.00	1.00	
Yes	136	2.26**	2.10*	1.19-3.69
Frequency of boating				
Once a month or less	190	1.00	1.00	
Once a week or more	160	3.44**	2.89**	1.36-6.14
Every couple of weeks	148	3.49**	2.86**	1.33-6.16
Overall boating experience				
10 years or less	135	1.00	1.00	
Between 11 and 20 years	126	2.64*	2.67*	1.13-6.31
21 years or more	237	2.51*	2.98*	1.27-6.99

¹ adjusted for age; * p-value <0.05; ** p-value<0.005

DISCUSSION

Findings

Both the demographic and boating characteristics were similar with those in the 2003 survey. The main differences in the demographics from the previous survey were more females were included and that more boaters reported using their vessels on both week days and on weekends. These changes in patterns of usage may reflect changes in work styles and it is suggested that this be investigated in future surveys. Safety was an important issue among the majority of the recreational boaters in the survey, both when asked about boating and safety issues. Key marine safety issues that the respondents considered as requiring more focus or effort involved boating safety education, the control of boaters under the influence of alcohol or drugs and the control of reckless operation. In contrast to the 2003 survey, the respondents suggested that boaters or skippers themselves were responsible for ensuring safe boater behaviour. This may be in response to discussions within the boating community related to the possibility of introducing a Skippers Ticket. Other authorities mentioned were the Water Police, Marine Safety and DPI. This suggests that there has been little progress made in promoting a single authority to be responsible for safety on the water as was recommended in the 2003 report (Department for Planning and Infrastructure, 2003). Such a promotion would assist boaters to identify where boating safety information can be assessed and where to report boating incidents and injuries.

The boating safety behaviours were similar with those in the 2003 survey (Department for Planning and Infrastructure, 2003) and there is the need to reinforce and remind boaters of these safety issues. While the respondents suggested that boaters under the influence of alcohol or drugs were a concern, few of those surveyed reported that they had had an alcoholic drink on their most recent trip. Therefore, the true measure of drinking behaviour among recreational boaters may not be reflected in this survey as many may have felt uncomfortable in reporting any drinking. The results from the regression analysis suggested that those who did not drink alcohol were less likely to have undertaken any boating education and were more likely to have children on board. These results are similar to those found in a US study where boaters with formal training were equally or more likely to use alcohol while boating (Bell, et al. 2000). The authors suggested that this association may be due to a lower perception of risk as a result of training programs rarely highlighting the risks of alcohol use while boating. This study concluded that boater training should address the risks of alcohol use

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and that any training needs to be renewed frequently enough to compensate for declines in perceptions of risk (Bell, et al. 2000). No other published studies have assessed the consumption of alcohol and whether children were on board. However, the finding that boaters with children on board were less likely to consume alcohol is reasonable as these boaters may be more safety conscious. The use of alcohol among boaters is an issue that warrants further research. It is recommended that efforts to reduce the consumption of alcohol while boating, such as through legislation and education, be monitored over time to determine the effect of these upon safety behaviours.

Of concern is that the majority of respondents reported not logging on or advising someone where they were going remains a concern and it is suggested that this issue continue to be a target for education campaigns. This finding is consistent with that found among Tasmanian recreational boaters where 15% of those surveyed did not tell someone where they were going or their expected time of return (Marine and Safety Tasmania, 2000).

Less than one-quarter of the recreational boaters reported checking the weather prior to going out boating and among those that did, almost one-half accessed the internet for this information. Of concern is that many boaters do not access any weather information, or that they do so from television and newspaper reports rather than from regularly up-dated sources such as the internet or the radio. The reliance on television weather reports is similar with that found in the 2003 survey (Department for Planning and Infrastructure, 2003). It is recommended that boaters are reminded and encouraged to check the most accurate weather information prior to going boating. In addition, boaters should be directed to sources that provide up-to-date information. It is concerning that few boaters reported checking fuel supplies or conducting a general boat and equipment check as more than one half of marine search and rescue incidents were related to breakdowns, fuel blockages, electrical failure and being out of fuel (Pikora & Cercarelli, 2004).

There was support for the introduction of the RST, although this was lower than the support reported in the 2003 survey for the introduction of a required minimum competency for all recreational boaters (Department for Planning and Infrastructure, 2003). The uptake of the RST requires monitoring to determine the effects of boater education upon the number and severity of boating related injuries and incidents, including marine search and rescue incidents.

While the number of injuries described by the respondents was low and the majority were considered as minor (ie, requiring first aid or no treatment) the hospitalisation rate of 2 per 1,000 vessels is comparable with that of 1.75 hospitalisations per 1,000 vessels reported in a previous study (Pikora & Cercarelli, 2004). Due to the lack of data related to minor boating-related injuries in WA, it is not possible to compare the number of injuries reported here with those in the recreational boating community. Perhaps reflecting the low number of boaters who described an injury or involvement in an incident or near miss in the previous 12 months, few significant results were found in the logistic regression analysis. Not unexpectedly, boaters who consumed alcohol were more likely to sustain an injury or be involved in an incident. This finding is consistent with those from a previous US study (Bell, et al. 2000). Consistent with the association between alcohol use and boating education, boaters who had completed a boating education course were more likely to be injured or be involved in an incident. This may reflect that boaters who undergo education training may be more likely to take risks or to perceive that they are more capable and competent in handling their vessel. Not surprisingly, those with more experience and those who go boating more frequently were more likely to sustain an injury or be involved in an incident which is consistent with previous findings (Bell, et al. 2000). These associations are possibly due to the increased exposure among these groups. It is recommended that items measuring injuries and incidents are included in future surveys among boaters to further explore the associations found in this study.

Limitations

There are several limitations with the study. The first was that only recreational boaters with registered vessels were included in the sampling frame and the results may have been different with the inclusion of those with unregistered vessels. Secondly, the data sent by the market research company did not include any information on the location (ie, metropolitan or regional) of the respondents. It is suggested that this item be included in subsequent surveys to determine where there are differences between these locations. In addition, due to the small number of boaters included in the sample to have had an injury or incident, it is suggested that a larger sample of boaters be recruited in future surveys to allow factors that may influence these to be explored in more detail. Fourth, the data were self-reported and this may have resulted in boaters underreporting their drinking

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while boating due to social desirability factors, although the vast majority of previous studies assessing alcohol consumption have used self-reported data. Another limitation was that the sample included older, more experienced boaters with a high proportion being male. These factors may reflect the demographic characteristics of recreational boaters in WA, although it is not clear whether this is the case as no demographic factors are recorded in the vessel registration database. In addition, as no information was collected from those who did not complete the survey, it is not possible to determine differences any between those who did and did not complete the survey.

Recommendations

- It is important to continue to measure and monitor changes in recreational boaters' attitude and knowledge toward boating safety issues and standards.
- It is recommended that one authority be promoted as responsible for boating and marine safety. This would assist boaters in knowing where to access boating safety information.
- It is important to further investigate the number of injuries and incidents, and alcohol consumption among recreational boaters. It is suggested that personal and behavioural factors associated with these are explored further.
- It is recommended that the focus of recreational boaters education be on three main areas:
 - Raise awareness of the importance of accessing regularly updated weather forecasts (such as using the telephone, radio, or internet) and increase the number of recreational boaters who do so.
 - Remind boaters of the importance of checking the fuel supply as well as conducting a general boat and equipment check.
 - Reinforce the importance of logging on or telling someone where they are going.

Conclusion

Safety behaviours among recreational boaters in WA remain a concern and further investigation into factors related to injuries and incidents is warranted. While these safety behaviours may change with through completion of the RST and with the introduction of additional education campaigns, it is recommended that both boater behaviour and the number and severity of injuries and incidents be monitored to determine how these influence boater behaviour.

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