

May 2003

2002 California Boating Safety Report

**State of California
The Resources Agency**

Department of Boating and Waterways

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State of California**

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May 2003

Dear Boating Enthusiast:

California ranks second nationally in the number of registered vessels. As crowded waterways lead to an increased chance of accidents, it is not surprising that California also ranks second in the number of boating accidents. Because of this, it is important to supply the boating public with the best information possible to enhance safety on the water.

A primary focus of this publication is the analysis of boating accidents that occurred in 2002. This information is compiled to help us direct our efforts to reduce the number of boating accidents, injuries, and fatalities on California's waterways.

In 2002, 50% of boating fatalities were found to be alcohol-related where testing could be conducted. Of those killed in alcohol-related accidents, 60% were intoxicated passengers. The vast majority (75%) of those passengers were either responsible for or contributed to their own deaths. This finding remains consistent with previous years. The Department continues to stress that the "designated driver" concept does not go far enough and recommends that no one aboard a vessel consume alcoholic beverages.

The report also includes information about the Department's efforts to promote boating safety through law enforcement and safety education programs which involve essential, direct interaction with the boating community.

This report is also available on the Department's website, www.dbw.ca.gov. For more information about this or other accident statistics, please contact Amy Rigby by telephone at (916) 263-8190 or by email at arigby@dbw.ca.gov.

Sincerely,

A handwritten signature in black ink that reads "Raynor Tsuneyoshi". The signature is fluid and cursive, with a long horizontal stroke at the end.

Raynor Tsuneyoshi
Director

Glossary of Terms

At Anchor

Held in place in the water by an anchor; includes “moored” to a buoy or anchored vessel, and “dragging anchor.”

Cabin Motorboat

Motorboat with a cabin that can be completely closed by means of doors or hatches.

Capsizing

Overturning of a vessel. The bottom must become uppermost, except in the case of a sailboat, which may lie.

Collision with Fixed Object

The striking by a vessel of any stationary object, above or below the surface of the water.

Collision with Floating Object

Collision with any waterborne object above or below the surface of the water.

Cruising

Proceeding normally, unrestricted, with an absence of drastic rudder or engine changes.

Drifting

Under way, but proceeding without use of engines, oars, or sails; carried along only by current, or wind.

Excessive Speed

Operating at a speed that is not reasonable, prudent, or legal considering the circumstances.

Fire/Explosion (Fuel)

Accidental combustion of vessel fuel or liquids, including their vapors.

Flooding/Swamping

Filling with water, but retaining sufficient buoyancy to remain on the surface.

Grounding

The running aground of a vessel; striking or pounding on the rocks, reefs, or shoals.

Improper Lookout

No proper watch; the failure of an operator to perceive danger because no one was serving as a lookout, or the person so serving failed to do so. (For purposes of this report, this term refers only to accidents where the ski observers were not present or failed to do their job, or sailboat accidents where a lookout was not posted or failed to perceive danger. All other accidents involving inattentive operators fall under “Operator Inattention.”)

Maneuvering

Changing course, speed, or both during which a high degree of alertness is required.

Open Motorboat

Craft of open construction specifically built for operating with a motor, including boats canopied or fitted with temporary partial shelters.

Personal Flotation Device (PFD)

Commonly known as a life jacket or life saving device, a PFD can be a jacket, vest, cushion, or ring buoy designed to serve as a lifesaving aid.

Personal Watercraft (PWC)

A small vessel that uses an internal combustion engine powering a jet pump or propeller. It is designed to carry from one to four persons, and to be operated by a person sitting, standing, or kneeling on the vessel rather than in the conventional manner of sitting or standing inside the vessel.

Rules of the Road

Statutory and regulatory rules governing the navigation of vessels.

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Executive Summary

The California Department of Boating and Waterways administers many programs to provide for boating safety on the State's waterways. The *2002 California Boating Safety Report* summarizes activities performed in three key safety program areas:

- Boating accident analysis
- Law enforcement
- Safety education.

This report also highlights the Department's current program enhancements and future safety initiatives designed to reduce accidents and make California's waterways safer.

Through the boating accident program, the Department provides useful accident information to boaters, law enforcement agencies, and educators. This information is communicated to the general public through the incorporation of relevant safety measures based on accident analysis into the Department's safety education programs and law enforcement training programs.

Exhibit E-1 (starting on page 2) provides a summary of key boating accident statistics for 2002.

The Department provides supplemental funding to counties for law enforcement activities and promotes uniform enforcement of boating laws through its law enforcement training program. In 2002, the financial aid program allocated \$8.1 million to 36 counties and 2 cities for enforcement personnel and operating costs. In turn, the counties provided crucial boating law enforcement, as well as safety training for law enforcement officers and the public. **Exhibit E-2** (on page 5) provides a summary of law enforcement activities supported by the Department's financial aid program.

In 2002, the law enforcement-training program included seven courses on various boating safety topics, in which Department staff trained approximately 550 marine enforcement officers.

The Department's safety education programs provided nearly 2 million individuals with boating safety training and materials.

On-going partnerships with educational institutions, aquatic centers, and non-profit organizations provided crucial safety information to students and the general public.

Additionally, the Department sponsored a statewide radio and outdoor media campaign to promote life jacket use, environmental stewardship, and boating safety course participation. **Exhibit E-3** (starting on page 5) provides a summary of the Department's safety education outreach programs.

New programs developed in 2002 focus on improving public outreach and expanding law enforcement training. Enhancements to existing programs reflect changing accident statistics and key safety concerns. **Exhibit E-4** (starting on page 6) presents a summary of 2002 program enhancements and initiatives.



Exhibit E-1 2002 Boating Accident Summary Statistics

Overall Boating Accident Highlights

- In 2002, a total of 911 boating accidents were reported to the Department, involving 468 injuries, 53 fatalities, and \$3,732,850 in property damage.
- Operator inattention (38%) was the most common cause of boating accidents, followed by operator inexperience (36%), and excessive speed (27%). *(Many accidents had more than one cause.)*
- Accidents involving personal watercraft (PWC) decreased from 273 in 2001 to 253 in 2002. The total number of PWC-related accidents remains well below the 391 which occurred in 1997, prior to two new laws that took effect in January 1998. The continued reduction in the number of PWC-related accidents appears to be attributable primarily to these laws.
- Open motorboats were involved in 51% of all accidents. PWC were involved in 28%.
- About 35% of all vessels and 70% of PWC involved in accidents were operated by someone other than the registered owner. These findings demonstrate the need to emphasize boating education for all vessel operators, as well as vessel owners.
- 71% of vessels involved in all accidents were less than 26 feet in length. 88% of vessels involved in fatal boating accidents were also less than 26 feet in length.
- 36% of reported accidents resulted from collisions with other vessels.
- Accidents occurred mostly during the summer months (May through September), on weekends, and during the hours between 2:00 p.m. - 4:00 p.m. The largest number of accidents (44%) occurred on lakes, followed by ocean/bay waters (27%).
- Of operators whose ages were known, those in the 31-40 age group were involved in more accidents than any other age group, followed by the 41-50 age group.
- 23% of boating accidents and nearly one quarter of all injuries occurred during the summer holiday periods of Memorial Day, Independence Day, and Labor Day.
- 13% of boating accidents occurred during water skiing activities. In this report, the term “water skiing” refers to all activities involving a vessel towing a person on a towline.



An Open Motorboat



A Personal Watercraft (PWC)

Exhibit E-1 (continued)

PWC Accident Statistics

- Accounting for 18% of registered vessels, PWC were involved in 28% of all accidents, 40% of all injuries, 13% of all fatalities, and 14% of all property damage.
- In January 1998, two laws impacting PWC operators took effect. The first law raised the minimum age to operate a vessel over 15 horsepower from 12 to 16 years of age. Since the PWC is the vessel of choice for the vast majority of youth operators, we believe that this law has decreased the number of PWC-related accidents. A second law, prohibiting activities such as wake jumping within 100 feet of another vessel, spraying down other vessels, and playing “chicken” with another vessel, has also had a positive impact on PWC-related accidents.
- Accidents involving PWC have decreased 35% since January 1998. Trends contributing to this result:
 - Accidents involving youths operating all types of vessels have decreased 34%.
 - PWC accidents involving radical maneuvers (such as wake jumping, donuts, and spraying other vessels) have decreased 38%.
- 66% of PWC accidents resulted from collisions with other vessels.
- In PWC collisions with another vessel, the other vessel was most often another PWC (60%).
- 31% of all PWC-related collisions involved operators who knew each other and were boating together.
- The most common cause of PWC-related accidents involved operator inexperience (66%), operator inattention (61%), and excessive speed (57%). (*Many accidents had more than one cause.*)
- 36% of PWC operators were age 11-20 and were involved in more accidents than any other age group, followed by the 21-30 age group.
- 70% of PWC involved in accidents were operated by someone other than the registered owner (50% were borrowed and 20% were rented).

Youth Accident Statistics (Youth is under 18 years of age)

- Since January 1998, when the minimum age to operate a vessel over 15 HP alone was raised from 12 to 16 years of age, the number of accidents involving youth operators has decreased 34%, from 120 in 1997 to 79 in 2002.
- During the 2002 boating season, a total of 90 youth operators were involved in 9% of all accidents, 15% of all injuries, and 4% of fatalities.
- 31 operators involved in accidents (34%) were under the age of 16. Three of those operators were under the age of 12.
- Of the 31 operators under 16 years of age, 84% did not have an adult on board.
- Collisions with other vessels accounted for 68% of accidents involving youth operators.



Exhibit E-1 (continued)

- Most of the collisions involved youth operators colliding with adult operators.
- In collisions between youth and adult operators, youth operators were more likely to be exclusively at fault.
- Operator inexperience was a factor in 75% of accidents involving youth operators and was the most common cause of accidents involving them. Operator inexperience was a factor in only 36% of accidents involving operators of all ages.
- 88% of youth operators involved in accidents were operating a PWC.

Fatal Accident Statistics

- Of the 53 fatalities in 2002, 57% occurred between May and September. 49% of all fatalities occurred on weekends.
- 62% of all fatalities drowned. Of that group, 88% were not wearing a life jacket.
- Fishing-related fatalities accounted for 34% of fatalities in 2002. 2/3 of those victims were boating in the off-season of October through April.
- Of all fishing-related fatalities, 78% were the result of vessels capsizing or falls overboard. 83% drowned and none were wearing life jackets.
- Over half (59%) of the vessels involved in fatal accidents were open motorboats, 18% were PWC, and 9% were cabin motorboats.
- The majority (88%) of vessels involved in fatal accidents were less than 26 feet in length.
- Vessels capsizing (30%) and falls overboard (25%) were the most common types of fatal accidents.
- The most common causes of fatalities were operator inattention (34%), excessive speed (30%), and operator inexperience (23%). (*Many accidents had more than one cause.*)
- Operators in the 41-50 age group were involved in more fatal boating accidents than any other age group.
- 34% of fatalities occurred on lakes, 17% occurred on oceans/bays, and 15% occurred on the Sacramento-San Joaquin Delta region.
- 50% of boating fatalities were found to be alcohol-related, where testing could be conducted.



Angler Safety Message

**Exhibit E-2
Services Supported by the 2002 Financial Aid Program**

Regulation Enforcement	
Verbal Warnings	77,562
Citations	6,260
Physical Arrests	1,053
Boater Assistance	
Persons Assisted	25,996
Vessels Assisted	7,199
Accident Investigations	557
Search and Rescue Operations	
Searches	886
Body Recovery Attempts	101
Boating Safety Presentations	7,577
Vessel Inspections	50,712
Organized Boating Event Supervision	145

**Exhibit E-3
2002 Boating Safety Education Programs**

Education Programs

<i>AquaSMART</i> Elementary Education Program	500,000	participating students
<i>AquaSMART Boating</i> High School Education Program	35,000	participating students
Home Study Course (General Public)	47,000	courses mailed
Poster Contest (Sixth Annual)	3,000	entries

Aquatic Center Grant Program

Grants to universities and non-profit organizations for scholarships for the purchase of boats, equipment, and related safety supplies	120,000	individuals trained organizations
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Public Outreach Programs

In 2002, Department representatives:

- Attended numerous events to distribute boating safety literature and answer questions for the public.
- Continued the *Boating Safety Awareness* outdoor media campaign, focusing on areas with the greatest number of accidents. This campaign consisted of 50 stationary billboards and 10 mobile billboards. The billboards were designed to resemble “road signs” for the waterways. The mobile billboards traveled to waterways throughout the summer, particularly on major holiday weekends.



Exhibit E-3 (continued)

- Continued to place special emphasis on educating anglers by placing articles and messages in fishing publications throughout the state.
- Expanded the *Boating Safety Awareness* radio campaign, targeting areas of California with the highest accident rates. Safety messages regarding environmental stewardship and taking a boating safety course were added to the messages already being aired that promotes life jacket use and overall boating safety. These messages were aired by more than 35 stations throughout the state.
- Continued outreach efforts to boaters at the water by:
 - Partnering with the California Coastal Commission's *Adopt-a-Beach* program to put safety posters on refuse barrels on the docks and in picnic areas.
 - Placing all-weather safety posters at launching ramps, fuel docks, park entrances, and on trash receptacles.
- Distributed 1.2 million copies of boating safety literature.

Abandoned Watercraft Removal Program

- In 2002, a total of \$535,000 was allocated to 11 public agencies for the removal and disposal of abandoned vessels and other substantial hazards to navigation.



Removal of an Open Motorboat

Exhibit E-4 2002 Boating Safety Program Enhancements

Life Jacket Use

- The Department continues the *Life Jacket Loan Program* and the *T-Shirt Program* aimed at increasing the use of life jackets by children.
- The Department continues a radio ad campaign promoting the new laws requiring that persons aboard PWC, persons towed behind boats, and children under 12 on vessels 26 feet or less to wear life jackets. This safety message is being aired on radio stations throughout California and targets boaters in high accident areas.
- The Department continues placing billboards reminding boaters to wear their life jackets in areas where accidents are most prevalent, along with placing safety messages on posters and refuse barrels at marinas. The billboards and posters look like waterway “road signs” with messages of overall boating safety. The Department continues promoting the use of life jackets at safety fairs and boat shows throughout the state, through the annual *Safe and Wise Water Ways* poster contest for children, and at *National Safe Boating Week* events.
- In 2002, the Department partnered with Infinity Broadcasting, Nor Cal Water, and AM PM Mini Marts to remind their collective clients in Northern California to “Get Hooked on H₂O” and “Boat Smart from the Start...Wear Your Life Jacket.” An estimated 12 million impressions were made on clients as the messages traveled the airwaves and were viewed at purchase points.

Exhibit E-4 (continued)

Personal Watercraft

- The Department continues distribution of a short course on PWC operation and safe boat handling. The course is intended for PWC operators of all ages and is available to the general public. It is designed so that it can easily be incorporated into existing safety programs offered by organizations such as the U.S. Coast Guard Auxiliary, the U.S. Power Squadrons, marine law enforcement agencies, and aquatic centers. There is a 20-question exam at the end of the booklet to self-test on the material covered. This basic course does not earn a certificate, but is simply a tool to introduce new PWC operators to laws, requirements, and important safety issues associated with their vessels. This short course is now available online and those who complete the quiz online are rewarded with access to some boating-themed screensavers.
- The promotion of safe operation of PWC is a component of the Department’s outdoor media campaign.
- The Department continues piloting a PWC-handling course specifically for law enforcement. This course has been P.O.S.T. certified.



PWC Safety Online Course

Youth Operator Safety

- The Department continues distribution of the *AquaSMART Boating* program for high school students throughout California. This course incorporates lessons on key safety concerns identified by accident statistics. Four types of boating are addressed: personal watercraft, powerboating, sailing, and paddling. The course is available to schools, aquatic centers, and youth organizations.

Alcohol

- The Department continues a radio ad campaign warning boaters of the dangers of drinking alcohol while boating. This safety message is airing on radio stations throughout California and targets boaters in areas with the highest accident rates.
- The Department continues to notify law enforcement agencies statewide about alcohol-related fatalities and encourages them to strengthen their educational and enforcement efforts in this area. The Department reinforces this message at all of its law enforcement training classes.
- The curriculum for all *AquaSMART* youth programs includes information on the dangers of alcohol and drug use, especially when boating. Zero tolerance is emphasized for all persons engaged in aquatic recreation.
- The Department’s “Get H2OOked on Sober Boating” T-Shirt promotion continued at boat shows and other outreach venues throughout the state.



Facts About Boating and Alcohol Publication



Exhibit E-4 (continued)

Other Safety Enhancements

- The Department continues working to increase awareness of carbon monoxide poisoning by providing safety information to boaters and by providing information and training to law enforcement officers who investigate accidents.
- In 2002, the Department sponsored 40 *AquaSMART Live* performances. Regaled by educators, the traveling puppet show is hosted by Splasher the Frog, mascot of the *AquaSMART* program. *AquaSMART Live* has two programs for grades K-3 and 4-6. The K-3 program uses stunt dummies to demonstrate to children what can happen when you do not play safe in and around the water. The 4-6 program is a game show format where two teams compete for prizes while learning how to stay safe in and around the water.
- The Department will continue to warn boaters about hazardous water conditions on California's rivers, especially during spring and early summer, when water levels are high from snow pack run-off.
- The Department is in the final stages of updating its water skiing safety video to cover not only traditional water skiing activities, but also to include wakeboarding, kneeboarding, inner tubing, and other related activities. This video will be released in Summer 2003.
- The Law Enforcement Unit continues to conduct the *Accident Reconstruction Course* on the water, providing staged accidents for reconstruction by students. The course helps law enforcement officers reconstruct accidents more accurately.
- The Department produced a boating safety radio PSA, entitled "The Safety Pirate" for distribution through the National Safe Boating Council. This award-winning radio message was aired throughout the nation in 2002 and was also used in England and Australia.
- In 2002, KCRA/KQCA, the NBC affiliate in Sacramento, partnered with the Department to produce a 30-second PSA for television promoting safe boating and taking a boating safety course in its viewing area in Northern California.



Boating Course
Publications



Accident Reconstruction Course Lecture
at Lake Tulloch

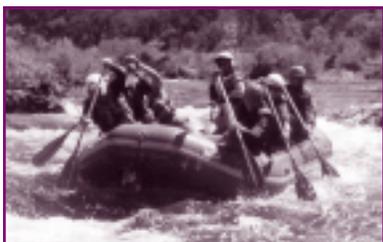
Section I

Introduction

California's rivers, lakes, and coastal areas offer boating enthusiasts a wide variety of recreational opportunities, including:

- 1,356,780 surface acres of water
- 30 popular whitewater rivers with approximately 2,600 miles of waterways
- 3,427 miles of coastline and tidal shoreline.

Boating popularity grew steadily over the last decade, as reflected by the increase in the number of registered vessels. As of December 31, 2002, California had 896,090 registered vessels, the second highest in the nation.



Rafting on One of California's Rivers



Boating on One of California's Lakes

The California Department of Boating and Waterways' mission is to provide safe and convenient public access to California waterways and to provide leadership in promoting the public's right to safe and enjoyable boating. To accomplish this, the Department administers statewide boating accident, law enforcement, and safety education programs. The *California Boating Safety Report* highlights important statistics and describes current and future program activities to enhance boating safety.

A. Boating Accident Program

The Department's boating accident program disseminates accident information to boaters, law enforcement agencies, educational organizations, and the media. The program is mandated by Part 173 of Title 33 of the U.S. Code of Federal Regulations. Annual accident information collected by the Department is forwarded to the U.S. Coast Guard in Washington D.C., and is made a part of the Coast Guard's annual publication, *Boating Statistics*.

California accident statistics are compiled under state law, Section 656 of the *Harbors and Navigation Code*, which requires a boater, who is involved in an accident, to file a written report with the Department when:

- A person dies, disappears, or is injured requiring medical attention beyond first aid; or
- Damage to a vessel or other property exceeds \$500, or there is complete loss of a vessel.



Department staff review reported accidents, determine the cause(s), and identify preventative measures and specific safety-related problems. Safety education and public information program staff incorporate these safety problems and related solutions into updated course materials, promotional activities, and brochures. Law enforcement staff also communicate these safety problems during Department-sponsored training sessions for law enforcement officers.

B. Boating Law Enforcement Programs

The primary objective of the Department's law enforcement program is to assist law enforcement agencies that provide waterborne law enforcement services. These local agencies enhance boating safety through the enforcement of safety laws and regulations. To this end, the unit offers training to law enforcement officers to ensure uniform enforcement of boating laws, and provides financial support to counties for law enforcement programs and activities.

During FY 2001/02, law enforcement officers from agencies participating in the financial aid program provided more than 77,000 operators with boating safety education through enforcement activities. Their verbal warnings and written citations were instrumental in helping to prevent accidents and improve boating safety.



Vessel Safety Check Performed by the USCG Auxiliary during Media Day at Folsom Lake

C. Boating Safety Education Programs

The Department provides accessible boating safety education through partnerships with educational institutions and non-profit organizations. These entities, in turn, provide crucial aquatic and boating safety education to students and the general public. Both teachers and students praise the boating safety course materials developed by the Department for their exceptional content and ease of use.



ABC's of the California Boating Law Publication

Additionally, the Department's Public Information Unit provides safety information to millions of boaters through publication distribution, public service announcements (PSAs), and press releases. The Department has more than 50 different boating safety publications covering many topics, such as boating and alcohol use and proper PWC handling. Basic boating information, including laws and regulations, rules of the road, and safe operation practices, is provided to each person registering a vessel through the Department of Motor Vehicles.

Other safety messages are disseminated through the Department's *Boating Safety Awareness* multimedia campaign. These methods allow the Department to reach boaters who may not otherwise come into contact with other forms of boating safety information the Department provides at safety fairs, boat shows, or in pamphlets.

In 2002, the Department received two national awards for the "Safety Pirate" Public Service Announcement and a national award for the "Get H₂OOked on Sober Boating" T-Shirt used in the sober boating educational outreach campaign.

Section II

Boating Accident Program

This section summarizes 2002 boating accident statistics. The Department, law enforcement agencies, the United States Coast Guard, educational institutions, and California boaters use these statistics to help improve boating safety.

A. Limitations of the Analysis

Reportable Accidents

The statistics in this report reflect every reported boating accident in California in 2002. Although the Department believes that all accidents involving fatalities were reported, many non-fatal accidents are never reported to the Department or law enforcement agencies due to noncompliance with, or ignorance of, the reporting law. The U.S. Coast Guard estimates that only about 10% of accidents are actually reported to state programs nationwide.

An increase in the number of reported accidents from year to year might not necessarily reflect an increase in the actual number of accidents, but rather might result from improved reporting efforts or follow-up research from other sources (e.g., newsclippings). To improve the accuracy of accident statistics, the Department has increased its efforts to obtain all accident reports by working closely with law enforcement agencies.



Open Motorboat after a Collision



Open Motorboat Grounding on the Shoreline

Accident Statistics

A total of 911 accidents were reported to the Department in 2002. Some statistics in this report are measured as a percentage of these total accidents. Often, there is more than one cause of an accident, more than one operator involved in an accident, or more than one vessel involved. Therefore, the number of vessels, like the number of operators involved in accidents, usually exceeds the number of accidents. A total of 1,135 operators were involved in boating accidents in 2002. Many statistics presented in this report are measured as a percentage of the number of operators involved or the number of causes-rather than the 911 accidents-in order to provide more accurate comparisons.



Alcohol Use

Analysis of alcohol-related accidents can be difficult for the following reasons:

- **Delayed Accident Reporting** – Often there is significant delay between the time of the accident and the reporting of the accident to law enforcement agencies. Delays can happen for a variety of reasons, including emergency care needs and the desire to avoid legal consequences. (Operators/passengers are reluctant to report themselves as being under the influence of alcohol or drugs.) Unfortunately, these delays can result in the loss of accurate data due to alcohol burn-off.
- **Delayed Body Recovery** – Sometimes, the bodies of boating accident victims are not recovered immediately. A delay of more than two days in recovering a body can result in significantly altered blood alcohol levels due to the process of decomposition, a by-product of which is blood alcohol. 25% of boating fatalities in 2002 could not be tested for alcohol for the above reasons.

B. 2002 Accident Summary

Findings

The 911 accidents reported to the Department during 2002 involved 468 injuries, 53 fatalities, and \$3.7 million in property damage. The total number of reported accidents, fatalities, and the total property damage were higher (907, 48, \$2.8 million) while the number of injuries was lower than 2001 total of 502.

Exhibit II-1 (on page 13) presents boating accident statistics in California from 1980 through 2002.

Exhibit II-2 (starting on page 14) presents 2002 boating accident statistics by county.



An Open Motorboat

Type and Cause of Accidents

Exhibit II-3 (on page 15) presents types and causes of accidents by vessel type. Overall, the most common type of accident involved collision with another vessel (36%). Open motorboats and personal watercraft were the most common types of vessels involved in accidents and were involved in 51% and 28% of accidents respectively. The most common type of accident involving open motorboats was collision with another vessel (32%), followed by accidents involving skier mishaps (15%). Most accidents involving PWC were collisions with other vessels (66%), followed by falls overboard (13%).

The most frequently stated causes of accidents overall were operator inattention (38%) operator inexperience (36%), and excessive speed (27%). (*A boating accident can have more than one attributable cause.*)

The leading causes of accidents involving open motorboats were operator inattention and operator inexperience. The leading causes of accidents involving PWC were operator inexperience and operator inattention. Overall, these causes were consistent with previous years.

Time and Location

Accidents occurred mostly during the summer months (May through September), on weekends, and between 2:00 p.m. and 4:00 p.m.

Of the 911 boating accidents, 212 (23%) occurred during the three holiday periods of Memorial Day, Independence Day, and Labor Day. Over one-quarter (26%) of all injuries and 9% of fatalities also occurred during these periods.

Of the 243 accidents occurring on northern lakes in 2002, 25% occurred during these holiday periods. Of the 58 accidents occurring on the Colorado River, 38% occurred during these periods.

**Exhibit II-1
1980-2002 Boating Accidents in California***

Year	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
1980	657	270	112	\$2,039,800
1981	728	319	87	\$3,655,630
1982	696	323	103	\$2,497,000
1983	648	333	95	\$3,713,100
1984	791	341	93	\$2,491,700
1985	869	403	76	\$4,246,400
1986	741	319	68	\$2,645,500
1987	905	325	54	\$3,381,600
1988	745	333	51	\$2,396,100
1989	632	371	43	\$3,669,800
1990	761	416	50	\$3,131,200
1991	750	421	58	\$2,653,800
1992	689	447	59	\$4,360,100
1993	743	434	67	\$2,052,800
1994	709	386	40	\$1,740,300
1995	833	490	52	\$2,536,500
1996	850	537	56	\$2,241,700
1997	925	526	43	\$3,266,800
1998	772	413	58	\$2,299,600
1999	907	491	42	\$2,864,000
2000	906	524	51	\$3,038,400
2001	907	502	48	\$2,841,900
2002	911	468	53	\$3,732,850

* An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; vessel or other property damage exceeds \$500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.

Exhibit II-4 (on page 15) presents the accidents, injuries, and fatalities by location. Overall, most accidents and injuries occurred on lakes, 44% and 51% respectively, and more occurred on northern lakes.

Vessel Type and Length

In 2002, open motorboats accounted for approximately 50% of all vessels registered in California, and PWC accounted for 18%. Open motorboats were involved in 51% of all accidents and PWC were involved in 28% of all accidents. This indicates that PWC were involved in a disproportionately high number of accidents. However, the number of PWC involved in accidents has decreased substantially in the last five years and has decreased 35% since 1997, when accidents involving these vessels were at an all-time high of 391. Most vessels (71%) involved in accidents were less than 26 feet long.

Exhibit II-5 (on page 17) presents registration and accident statistics for open motorboats, PWC, and other vessels during 2002.

Operator Age

Overall, operators in the 31-40 age group were involved in accidents more often than those in any other age group. The 31-40 age group was involved most often in open motorboat accidents, followed by the 41-50 age group. Most PWC accidents involved operators in the 11-20 age group, followed by the 21-30 age group.

Operator Owner Status

51% of all vessels involved in accidents were operated by the registered owner. About 35% of vessels were operated by someone other than the registered owner (25% were borrowed and 10% were rented).



Exhibit II-2 2002 Boating Accidents by County*

County	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
Alameda	8	1	0	\$37,300
Amador	1	1	0	\$1,250
Butte	6	2	1	\$8,200
Calaveras	8	4	0	\$14,500
Colusa	2	2	0	\$700
Contra Costa	32	20	3	\$452,800
Del Norte	3	2	2	\$2,700
El Dorado	19	12	0	\$75,000
Fresno	10	10	3	\$45,850
Glenn	3	1	0	\$5,550
Humboldt	9	10	2	\$51,000
Imperial	8	6	1	\$17,200
Kern	6	1	0	\$18,300
Kings	1	1	0	\$3,000
Lake	10	9	3	\$24,000
Lassen	4	1	0	\$9,600
Los Angeles	67	31	2	\$216,000
Madera	18	10	2	\$166,000
Marin	18	4	1	\$73,600
Mariposa	3	1	0	\$16,000
Mendocino	4	2	0	\$52,100
Merced	3	0	0	\$5,250
Monterey	17	6	0	\$39,550
Napa	34	20	1	\$70,150
Nevada	3	3	0	\$3,000
Orange**	82	13	3	\$453,000
Placer	27	15	0	\$347,050
Plumas	5	6	0	\$10,000
Riverside	67	50	1	\$126,750
Sacramento	24	14	2	\$50,250
San Bernardino	44	34	8	\$154,400
San Diego	79	43	3	\$205,950
San Francisco	16	3	2	\$109,150
San Joaquin	68	32	2	\$303,250
San Luis Obispo	20	7	1	\$72,250
San Mateo	10	4	0	\$24,000
Santa Barbara	8	3	0	\$50,400
Santa Clara	5	4	0	\$5,000
Santa Cruz	3	0	0	\$14,500
Shasta	61	35	1	\$85,050
Solano	14	3	1	\$59,850
Sonoma	4	4	0	\$26,000
Stanislaus	11	3	0	\$44,400
Sutter	2	0	0	\$6,000
Tehama	3	1	0	\$22,000
Trinity	15	11	0	\$19,600
Tulare	6	4	1	\$7,500
Tuolumne	19	12	4	\$23,600
Ventura	10	5	0	\$39,050
Yolo	5	0	2	\$28,050
Yuba	6	2	1	\$37,200
Totals	911	468	53	\$3,732,850

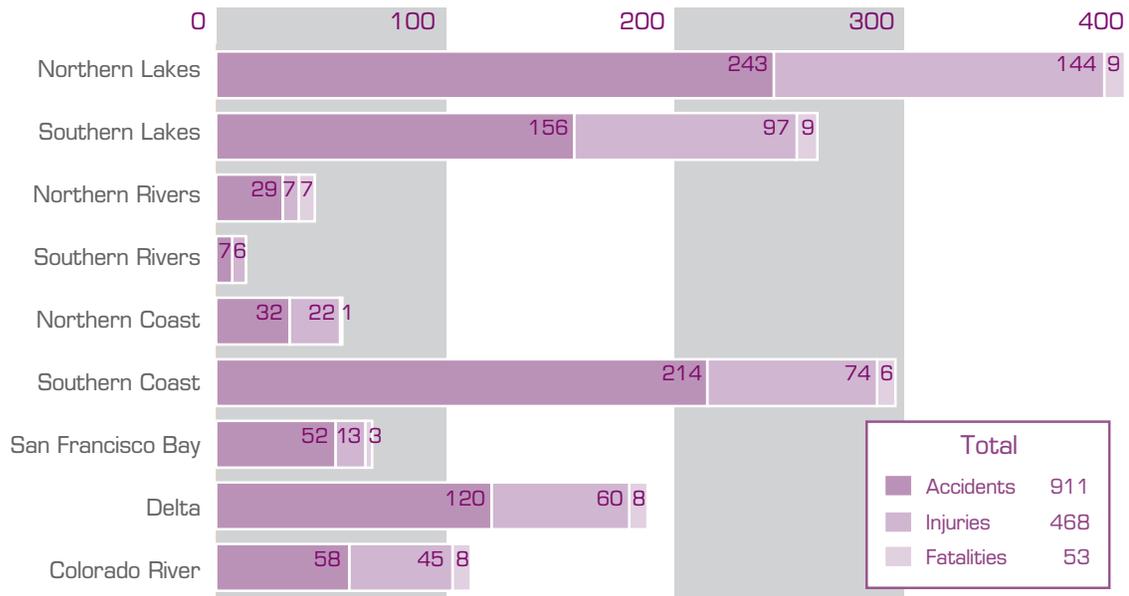
* An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; vessel or other property damage exceeds \$500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.

** The increase in boating accidents in Orange County when compared with accident totals appearing in reports prior to 1999 is not due to an increase in accidents, but rather an increase in the reporting of accidents to the Department.

Exhibit II-3 Types and Causes of Accidents by Vessel Type

	Open Motorboats	Personal Watercraft	Other Vessels	All Vessels
Types of Accidents	Collision with Vessel 32%	Collision with Vessel 66%	Collision with Vessel 39%	Collision with Vessel 36%
	Skier Mishap 15%	Falls Overboard 33%	Grounding 14%	Flooding/Swamping 12%
	Flooding/Swamping 14%	Struck by Boat 4%	Flooding/Swamping 10%	Grounding 11%
Causes of Accidents	Operator Inattention 39%	Operator Inexperience 66%	Operator Inexperience 31%	Operator Inexperience 36%
	Operator Inexperience 28%	Operator Inattention 61%	Operator Inattention 29%	Operator Inattention 38%
	Excessive Speed 24%	Excessive Speed 57%	Machinery Failure 12%	Excessive Speed 27%

Exhibit II-4 2002 Boating Safety Accidents by Location*



* An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; vessel or other property damage exceeds \$500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.





Fire Onboard an Open Motorboat

C. Accidents Involving Personal Watercraft

Background

A personal watercraft is a small vessel that uses an internal combustion engine powering a jet pump or propeller. It is designed to carry from one to four persons, and to be operated by a person sitting, standing, or kneeling on the vessel rather than in the conventional manner of sitting or standing inside the vessel.

The use of a PWC is subject to all state, local, and federal regulations governing the operation of all powerboats of similar size.

As of December 31, 2002, there were 157,687 PWC registered in California, comprising 18% of registered vessels. **Exhibit II-6** (on page 18) shows the total number of PWC registered in California from 1993 through 2002.

Findings

A total of 253 PWC-related accidents were reported in 2002, resulting in 188 injuries, 7 fatalities, and \$524,250 in property damage. The total number of reported accidents and injuries were lower than 2001 levels (273 and 216 respectively), while the number of reported fatalities and property damage increased from 5 and \$465,200.

Exhibit II-7 (on page 18) presents a ten-year summary for PWC accidents, injuries, fatalities, and property damage.

Exhibit II-8 (on page 20) presents 2002 reported PWC-related accidents by county.

Accounting for 18% of registered vessels, PWC were involved in 13% of all fatalities and were responsible for 14% of all property damage, but were involved in 28% of all accidents and 40% of all injuries.

Accidents involving personal watercraft decreased from 273 in 2001 to 253 in 2002. Accidents involving them have decreased significantly (35%) since the 1997 boating season, during which there were 391 PWC-related accidents.

This decrease appears to be attributable mainly to two laws affecting PWC that took effect in January 1998. The first law prohibited activities such as wake jumping within 100 feet of another vessel, spraying down other vessels, and playing “chicken.” These activities now constitute endangerment of life, limb, and property. The second law raised the minimum age to operate a vessel of over 15 HP alone from 12 to 16 years of age. Since the vessel of choice of operators between 12 and 16 is the PWC, restricting this group’s ability to operate vessels has resulted in a decrease in PWC-related accidents. This reduction in accidents is also discussed in *Accidents Involving Youths*, on page 23.

PWC accidents involving radical maneuvers such as wake jumping, donuts, and spraying other vessels fell from 88 in 1997 to 55 in 2002, a decrease of 38%.

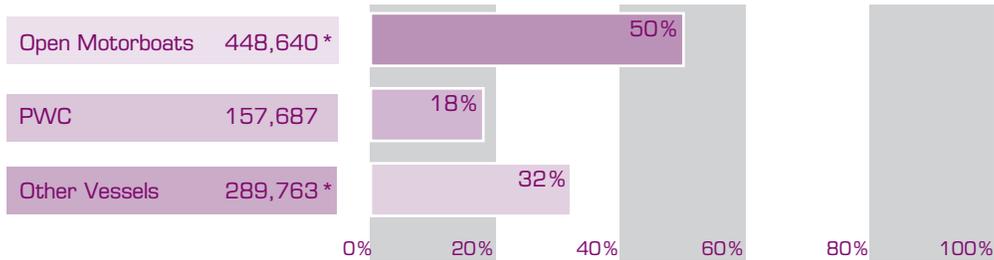
Accidents involving youth operators fell from 120 in 1997 to 79 in 2001, a decrease of 34%.



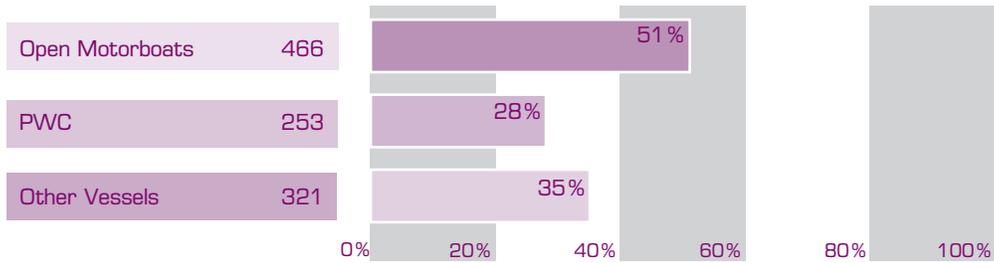
A Personal Watercraft (PWC)

Exhibit II-5
 2002 Registration and Accident Statistics for
 Open Motorboats, PWC, and Other Vessels

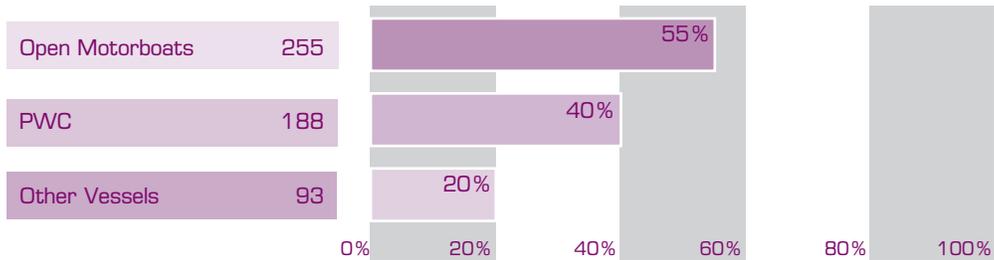
California Registered Vessels**



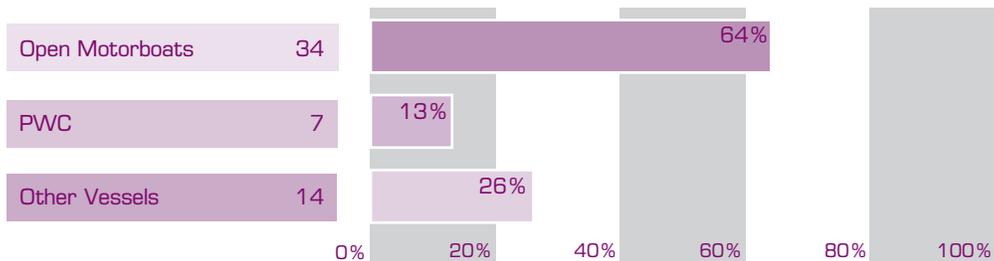
Accidents**



Injuries**



Fatalities**

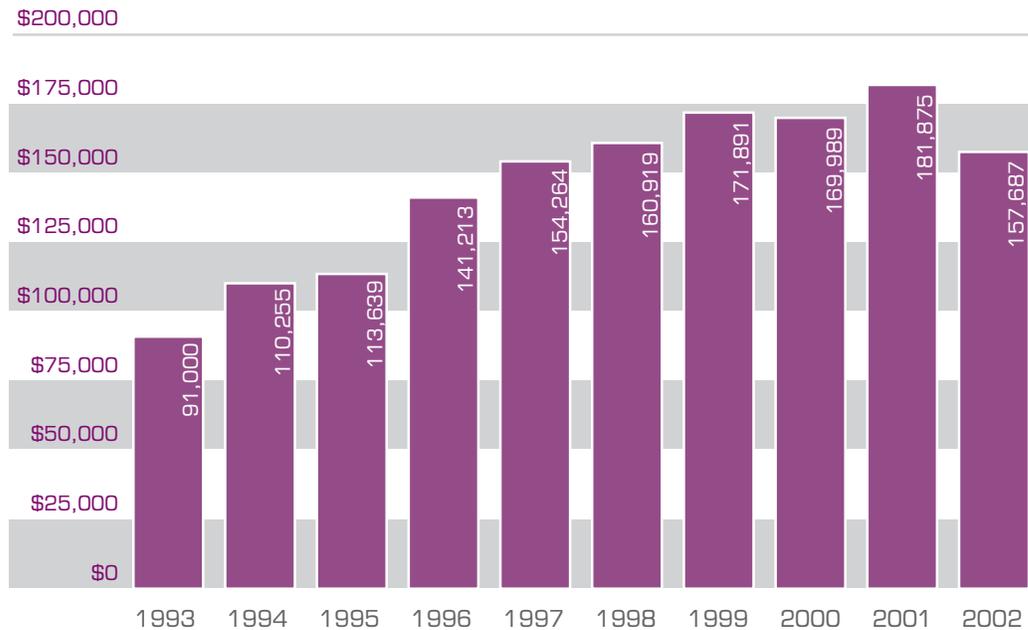


* These figures are estimates, based on the Department of Motor Vehicles registration categories.

** The sum of the percentages does not equal 100 percent because some accidents, injuries, and fatalities involve multiple types of vessels.



Exhibit II-6
1993-2002 PWC Registration



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Exhibit II-7
1993-2002 PWC Accidents, Injuries, Fatalities, and Property Damage*

Year	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
1993	248	178	5	\$306,900
1994	257	178	7	\$294,800
1995	353	226	6	\$579,550
1996	385	298	8	\$508,300
1997	391	276	8	\$709,450
1998	229	161	9	\$384,050
1999	264	215	6	\$447,550
2000	293	238	6	\$436,650
2001	273	216	5	\$465,200
2002	253	188	7	\$524,250

* An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; vessel or other property damage exceeds \$500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.

Type and Cause of Accidents

Most reported PWC accidents involved collisions with other vessels (66%). 13% of accidents involved falls overboard and 4% involved persons being struck by boats.

An examination of the 166 collisions involving PWC reveals that 100 (60%) involved a PWC colliding with a second PWC. Of the collisions involving two PWC, 31 (31%) involved two operators who knew each other and were riding together. Behaviors more likely to occur between operators who were riding together, were unsafe following distances and radical maneuvers.

The most common causes of all PWC accidents were operator inexperience (66%), operator inattention (60%), and excessive speed (57%). *(Some accidents have more than one attributable cause.)* All of these causes are operator-controllable factors.

Operator Age

PWC operators in the 11-20 age group were involved in more accidents than any other age group followed by the 21-30 age group.

Operator Owner Status

70% of PWC involved in accidents were operated by someone other than the registered owner (50% were borrowed and 20% were rented).

Boater Use Study

Several years ago, the Department noted the disproportionately high number of PWC-related accidents when compared to their registered numbers. For example, in 1994, PWC constituted 13% of the vessel population, but were involved in 36% of the accidents. However, if PWC spent more time underway than conventional boats, would the accident rate still be



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disproportionate? To answer this concern, the Department funded a study that was conducted by California State University Sacramento to survey boat owners to determine the amount of time boats were under way.

The study, conducted in 1995 and 1996, found that, for every day on the water, PWC spent 5.2 hours underway, while conventional vessels only spent 3.6 hours underway. However, when controlled for hours under way (that is, if conventional boats spent the same amount of time on the water as PWC), the study found that the number of accidents and injury-related accidents involving PWC still exceeded those involving conventional boats.

The number of PWC-related accidents has decreased substantially in the last four years. Therefore, to see if the above finding was still true, the 2002 accident data was used in combination with the use data from the study to generate the following statistics:

- Despite the decrease in PWC-related accidents, the number of accidents and injury accidents involving PWC continues to exceed those involving conventional vessels when controlled for hours under way, however, the gap has narrowed substantially.
- When controlled for hours under way, there would have been 1 accident for every 623 PWC operating on California waterways, compared to 1 accident for every 693 conventional vessels.



Exhibit II-8 2002 PWC-Related Accidents by County*

County	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
Alameda	1	1	0	\$0
Amador	1	1	0	\$1,250
Butte	3	2	0	\$6,800
Calaveras	3	2	0	\$1,500
Colusa	1	1	0	\$700
Contra Costa	2	2	0	\$3,000
El Dorado	10	7	0	\$21,100
Fresno	3	1	0	\$11,000
Imperial	6	4	1	\$15,700
Kern	3	1	0	\$5,100
Kings	1	1	0	\$3,000
Lake	2	3	0	\$5,200
Los Angeles	19	15	1	\$46,900
Madera	6	5	0	\$8,200
Mendocino	1	0	0	\$2,100
Merced	1	0	0	\$2,050
Monterey	7	4	0	\$10,150
Napa	13	11	0	\$27,100
Nevada	1	1	0	\$0
Orange**	2	1	0	\$2,100
Placer	14	8	0	\$28,150
Plumas	1	1	0	\$0
Riverside	42	33	1	\$92,500
Sacramento	6	6	0	\$12,200
San Bernardino	20	21	3	\$34,500
San Diego	24	22	0	\$35,900
San Joaquin	11	8	0	\$28,250
San Luis Obispo	6	3	0	\$7,200
Santa Barbara	1	2	0	\$7,500
Shasta	15	10	0	\$23,100
Sonoma	1	1	0	\$0
Stanislaus	7	1	0	\$14,900
Sutter	1	0	0	\$5,000
Tehama	1	1	0	\$7,000
Trinity	5	3	0	\$15,500
Tulare	4	3	0	\$7,500
Tuolumne	5	0	1	\$7,500
Yuba	3	2	0	\$24,600
Totals	253	188	7	\$524,250

* An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; vessel or other property damage exceeds \$500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.

** The increase in boating accidents in Orange County when compared with accident totals appearing in reports prior to 1999 is not due to an increase in accidents, but rather an increase in the reporting of accidents to the Department.

Representative Accidents

- A PWC operator was coasting into shore with the engine off. He was in close proximity to a person floating on a tube. A sudden gust of wind blew the tube into his path, and since the operator had no steering capability, he was unable to avoid striking the tuber. The victim was hospitalized with a head injury.
- A PWC operator made a sharp turn at a high rate of speed. The passenger was unprepared and was not holding on well and fell overboard. As he fell, his foot became tangled in a rope coiled in the foot well. The rope tightened around his foot, causing the amputation of two toes.
- A PWC operator decided to cut behind another vessel and failed to see people being towed on a ski banana style tube. As he attempted to avoid a collision, one of the occupants of the banana fell overboard and was struck by the PWC. She sustained a severe head injury.
- Two friends, each operating a PWC, were involved in horseplay. One operator sped past and cut in front of the second operator and then came to a stop. The second operator had no time to maneuver and collided with him, knocking him unconscious.
- The operator of a PWC decided to spray a second PWC operator but misjudged his speed and distance and collided with that vessel instead, injuring the operator. The victims sustained a loss of teeth, a broken nose, and bit through his lip severely.

Additional Safety Concerns

- Many PWC operators do not realize that when they let off the throttle, they lose steering capability. Numerous accidents have resulted from this lack of knowledge.

- PWC sometimes present a danger to their riders because of the craft’s lack of visibility when it capsizes. Riders who are attempting to remount their PWC are often not visible to other watercraft, and are liable to be struck by other vessels.
- Although rare, lanyards sometimes present difficulties for operators. In one case, the operator fell overboard and was injured, rendering him unable to swim back to the craft. Since the lanyard was on his wrist, the passenger was unable to maneuver the craft to retrieve him. In other cases, lanyards became detached and could not be reattached quickly enough to avoid grounding or colliding with another vessel. These situations are rare, but noteworthy.



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D. Accidents Involving Water Skiing

In this report, the term “water skiing” refers to all activities involving a vessel towing a person on a towline.

Findings

In 2002, a total of 117 accidents involving water skiing activities were reported to the Department, resulting in 104 injuries and 2 fatalities. The accidents accounted for 13% of all accidents, 22% of injuries, and 4% of fatalities. Water skiing accidents decreased 9% compared with 2001 totals.



In recent years, the sport of water skiing has evolved beyond traditional water skiing and now encompasses the towing of inner tubes, wakeboards, kneeboards, and air chairs. This year marked the third year that accidents involving wakeboards exceeded accidents involving traditional water skiing. In 2002, accidents involving vessels towing inner tubes also exceeded traditional water skiing accidents. Wakeboarding activities were involved in 44% of water skiing accidents, followed by inner tubing (31%) and traditional water skiing (26%).

Time and Location

97% of water skiing accidents occurred between May and September, with nearly one quarter (24%) occurring during the holiday weekend periods of Memorial Day, Independence Day, and Labor Day. 64% of water skiing-related accidents occurred in Northern California and 36% in Southern California. The most popular bodies of water were lakes (77%), followed by the Sacramento-San Joaquin Delta (12%) and the Colorado River (6%).

Vessel Type and Length

Most water skiing accidents (90%) involved open motorboats between 16 and 25 feet in length, followed by PWC (7%).



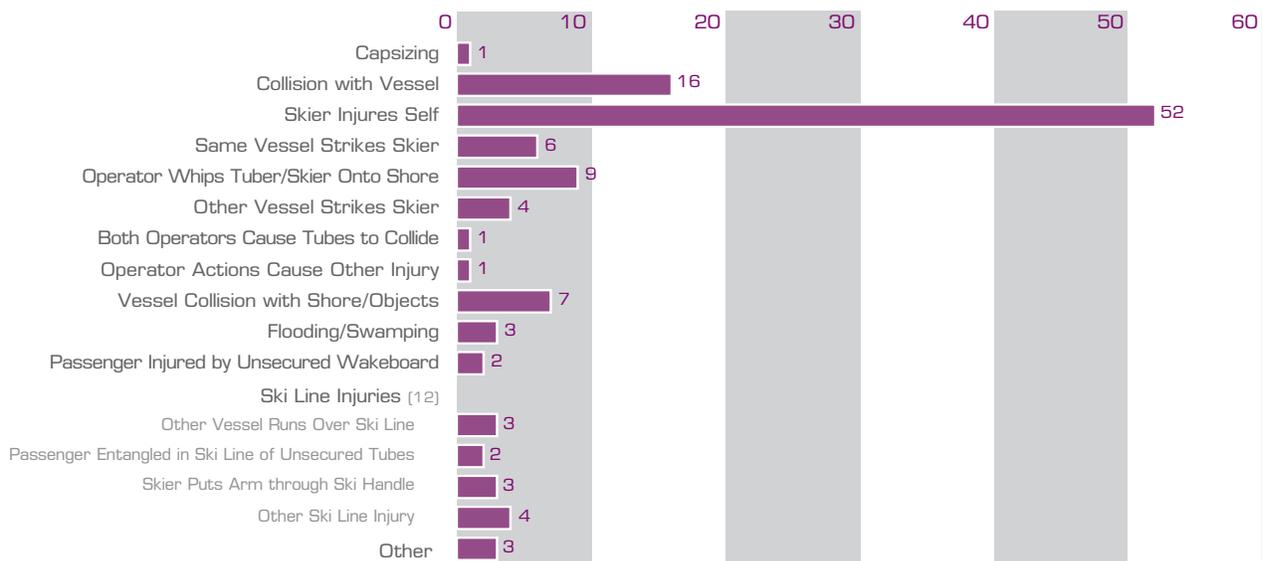
Water Skier on One of California's Lakes

Type and Cause of Accidents

Exhibit II-9 (on page 22) provides a breakdown of the 2002 reported water skiing activities by situation.

Water skiing accidents, in which the skier was responsible for the accident, accounted for 47% of the accidents. These accidents most often involved inexperienced skiers, who were injured while attempting to stand up or who attempted maneuvers beyond their experience level. Some injuries were caused by skiers placing an arm through the ski handle.

**Exhibit II-9
2002 Water Skiing Accidents by Situation**



53% of accidents involved a variety of unsafe behaviors, both by operators towing skiers and also by other vessels operating in the vicinity of vessels towing skiers. A number of accidents involved inappropriate handling of ski lines by operators and skiers. Consistent with other years, the most common situations involved:

- Vessels not keeping appropriate distances from drifting vessels involved in assisting fallen skiers, thereby running over ski lines.
- Operators commencing operation of vessels while ski lines are still in the water, causing the lines to be entangled in the propellers.
- Operators coming too close to the shoreline while towing tubes, not realizing that the tubers cannot maneuver the tubes and causing them to strike the shoreline.
- Operators towing tubes in donuts to provide the tubers with more exciting rides, but instead, running over the ski lines and pulling the tubes into the propellers.
- Operators failing to notice that other vessels are towing skiers, causing collisions with skiers.
- Operators looking over their shoulders, watching skiers instead of relying on the observers, resulting in collisions with other vessels or the shoreline.
- Operators not securing tubes, resulting in their blowing overboard, tangling people in lines or unsecured wakeboards falling off racks and injuring people.

Representative Accidents

- The operator was towing people on a tube and stopped in shallow water. As he reaccelerated, dirt and rocks were sucked into the jet pump and expelled striking one of the tubers in the head, injuring him.



Water Skier on One of California's Lakes

- The operator was maneuvering to retrieve a fallen skier. His attention was focused on the skier, and he did not check for vessel traffic before making a turn. He entered a crossing situation with another vessel, causing a collision.
- The operator of a PWC was towing a tuber. Unnoticed by the operator during a turn, the observer fell overboard and became tangled in the ski line. The tuber finally got the operator's attention to stop, but not before the observer sustained severe lacerations to his arm.
- A wake boarder was holding the ski line improperly by putting her arm through the ski handle. She fell and was unable to free her arm, causing her to be dragged behind the vessel, severely tearing her arm muscles.
- The operator was towing a skier too close to the shoreline. The skier, skiing aggressively, did a flip, caught too much air, and landed on the rip rap, sustaining multiple lacerations and contusions.

E. Accidents Involving Youths

Background

Throughout this report, "youths" refers to persons under 18 years of age.

From 1987 through 1997, California law required a person to be at least 12 years of age to operate a craft of more than 10 HP. If an operator was under 12, a person 18 years of age or older had to be on board the vessel.

In 1998, the law changed; it now requires the operator of a craft of more than 15 HP to be at least 16 years of age. Persons 12-15 may operate if a person of at least 18 years of age is attentively supervising aboard the vessel.

Note: Exceptions to this law include the operation of a sailboat that does not exceed 30 feet in length or a dinghy used directly between a moored boat and the shore, or between two moored boats.



Findings

During the 2002 boating season, youth operators were involved in 9% of all accidents, 15% of injuries, and 4% of fatalities.

Exhibit II-10 (on page 25) presents a ten-year summary for youth operator accident statistics.

The number of accidents involving youths had remained consistent for three years prior to the 1998 boating season. However, since the previously mentioned operator age limit increase took effect in January 1998, there has been a substantial decrease in the number of accidents involving operators under 16 years of age. The total number is 34% lower than the number reported in 1997.

Of the 90 youth operators involved in accidents, 31 (34%) were under the age of 16, and 3 were under the age of 12. Of the operators younger than 16 years of age, 84% were operating illegally by either not having an adult on board, or, when the operator was younger than 12, operating the vessel under any circumstance. The percentage of underage operators operating illegally has decreased from 92% in 2001.

Type and Cause of Accidents

Collisions (68%) were the primary type of accident involving youth operators, followed by falls overboard (9%) and vessels grounding (4%).

The most common cause of accidents involving youth operators was operator inexperience (75%). Operator inexperience was a factor in only 36% of accidents involving operators of all ages. Operator inattention was the second most common cause, followed by excessive speed.

Vessel Type

The vast majority (88%) of youth operators involved in accidents were operating PWC. An additional 8% were operating open motorboats.

Fault Assessment

Youth operators were involved in 54 collisions with other vessels. Most of these collisions (78%) involved youth operators colliding with adult operators. Youth operators were exclusively at fault in 41% of these collisions, compared to 21% for adult operators. An additional 38% of accidents between youth and adult operators involved shared fault.



*Stay With Your Boat,
Aquatic Center Camp Skit*

Representative Accidents

- A 17-year-old PWC operator was following behind a friend on a neighboring PWC and decided to jump his wake. He failed to notice that the friend had come to a stop and rear-ended him. The victim sustained a laceration to the back of his head.
- A 15-year-old PWC operator was towing a person on a tube without an adult on board the PWC. He was looking back at the tuber and traveling too fast considering his proximity to the shoreline. He struck a canoe drifting near the shoreline, destroying it. Luckily, no one was injured.
- A 15-year-old PWC operator was attempting to approach a houseboat at too great a speed. He let off the throttle thereby losing steering capability and could not avoid striking the transom, sheering off the swim ladder, and causing additional damage to both vessels.
- The owner of a PWC let his 9-year-old daughter sit unsupervised on his drifting PWC with the engine running. The child gripped the throttle and shot across the water at a high rate of speed, eventually grounding the vessel and sustaining injuries.
- A 16-year-old operator was attempting to jump a wake and fell forward, smashing his face on the steering column and splitting his lip, requiring stitches.

Additional Safety Concern

Very young children riding on PWC can present serious safety problems. While riding in front of an operator, a child has easy access to the vessel controls and can easily manipulate them. Such situations have resulted in accidents. Seating a young child behind a PWC operator is unsafe as well, because he or she can easily fall overboard.

F. Fatal Boating Accidents

Findings

In 2002, 53 fatalities occurred on California waterways. This represents 5.9 fatalities per 100,000 registered vessels. The number of fatalities increased from 48 in 2001 (5.0 per 100,000 registered vessels).

Type and Cause of Accidents

The most common type of fatal accident involved vessels capsizing (30%) and falls overboard (25%). Operator inattention (34%), excessive speed (30%), operator inexperience (23%), and hazardous weather/water conditions (19%) were the primary causes of fatalities. 62% of the victims drowned. Of that group, 88% were not wearing a life jacket.

Time and Location

The largest number of fatalities occurred in May. 43% of fatalities occurred during the off-season of October through April. 49% of fatalities occurred during weekends. 34% of fatalities occurred on lakes, 17% occurred on oceans/bays, 15% on the Colorado River, 15% occurred in the Sacramento-San Joaquin Delta region, and 13% on other rivers throughout the State. Fatalities were nearly evenly split between Northern (53%) and Southern California (47%), unlike the 2001 boating season, in which 77% of fatalities occurred in Northern California.

Vessel Type and Length

The majority (59%) of vessels involved in fatal accidents were open motorboats, followed by PWC (18%), paddle craft (9%), and cabin motorboats (9%). Even though PWC were involved in 28% of all accidents, they were not involved in nearly as many fatalities. PWC operators are more likely to wear life jackets, which may explain the lower fatality rate. Nearly all vessels involved in fatal accidents were less than 26 feet in length (88%).

Victim Activity

Exhibit II-11 (on page 26) presents boating fatalities by type of activity and life jacket usage.

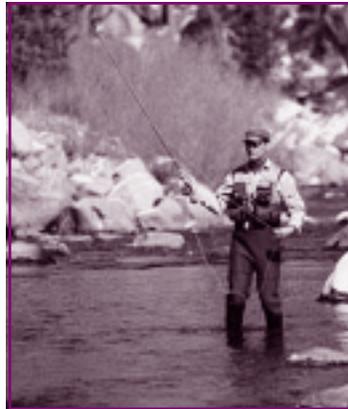
**Exhibit II-10
1993-2002 Youth Operator Accidents**

Year	Number of Operators	Number of Accidents	Number of Injuries	Number of Fatalities
1993	77	67	51	7
1994	99	86	63	3
1995	135	110	80	1
1996	136	117	95	3
1997	140	120	87	2
1998	81	70	51	6
1999	73	63	56	2
2000	94	80	72	2
2001	107	88	92	0
2002	90	79	68	2



Fishing-Related Fatalities

Fishing-related fatalities accounted for 34% of boating fatalities in 2002. Of these victims, 83% drowned and none were wearing a life jacket.



Angler on One of California's Rivers

The majority (67%) of victims of fishing-related accidents were boating in Northern California. The most common location of these accidents were northern lakes, followed by the Sacramento-San Joaquin Delta and northern rivers.

All of the fishing-related fatalities occurred as a result of vessels capsizing or victims falling overboard.

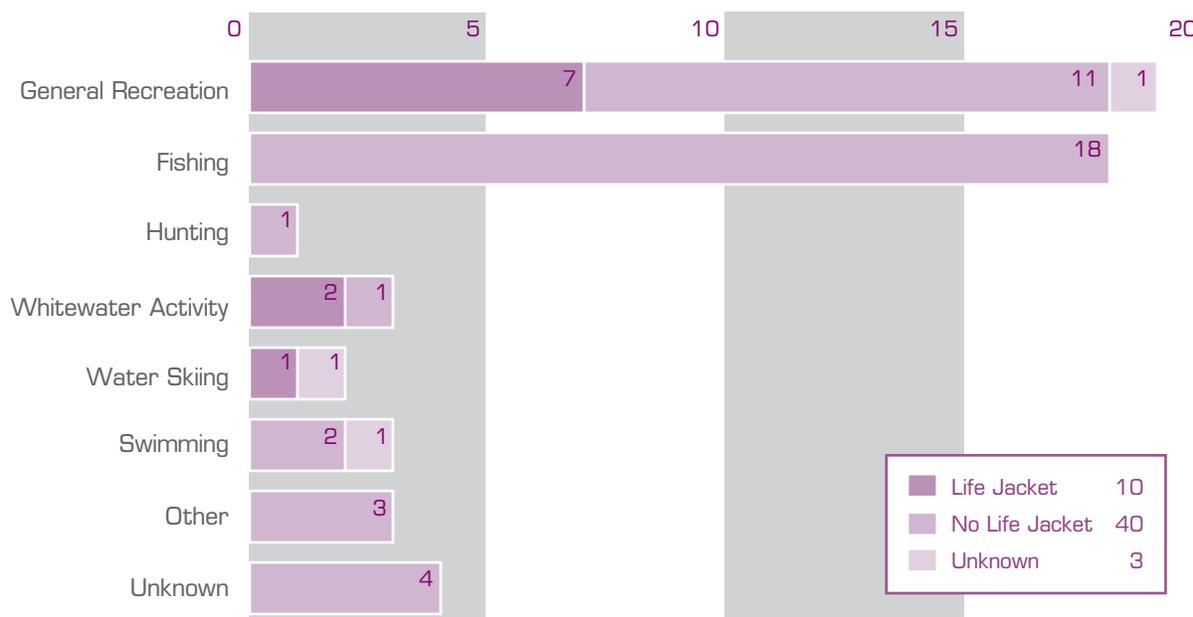
Carbon Monoxide-Related Fatalities

The inhalation of carbon monoxide fumes was a factor in 2 fatalities in 2002. During the last several years, victims have died as a result of carbon monoxide poisoning. Dangerous behaviors include:

- Leaning over the stern of the vessel while the engine is engaged
- Teak surfing (body surfing by holding onto the swim step of a vessel that is under way and then letting go and surfing the vessel's wake.)
- Improper ventilation in an enclosed cabin
- Swimming near the stern of a vessel whose engine is engaged.

Boating fatalities involving carbon monoxide may be much higher than reported. In the past, some drowning accidents thought to be swimming-related may have involved carbon monoxide. The Department is increasing educational efforts to educate boaters and accident investigators about carbon monoxide in the boating environment.

Exhibit II-11
2002 Boating Fatalities by Type of Accident and Life Jacket Usage



Representative Accidents

- An intoxicated passenger fell overboard from an anchored vessel while on a fishing trip. He was unable to grasp the life ring tossed to him. Additionally, the occupants were unable to locate the keys in order to maneuver to his location and assist him. He subsequently drowned.
- While trolling, the passenger leaned over the transom to adjust the lines and was overcome by carbon monoxide fumes and died. Neither the operator nor the passenger were aware of the dangers of carbon monoxide.
- A PWC operator was speeding in the 5 MPH zone and collided with another PWC traveling at idle speed. The force of the collision caused the operator and passenger aboard the first vessel to knock heads so hard that the passenger died from brain injuries. The operator also sustained severe head injuries but survived.
- The operator of an open motorboat was traveling very fast at night. His speed, the lack of visibility, and the fact that he was intoxicated caused him to misjudge his distance from shore and he grounded the vessel, killing everyone on board.
- The operator was fishing too close to shore when his propeller became fouled, stalling the engine. The operator did not have time to deploy the anchor and the vessel was swept to the breakwater where it capsized. Two people made it to shore, but the third person drowned. Had he been wearing a life jacket, he might have lived.

G. Alcohol Use and Fatal Boating Accidents

Background

In 1987, state law made it illegal to operate a recreational vessel with a blood alcohol level of 0.10% or more. In 1991, the legal limit was decreased to 0.08%. Furthermore, a “boating under the influence” conviction now appears on Department of Motor Vehicles records and can be used to suspend or revoke a vehicle driver’s license.

For the purpose of this analysis, only fatal boating accidents were analyzed for alcohol relatedness. A person with a blood alcohol level of 0.035% or higher is assumed to be “under the influence.” The National Transportation Safety Board has determined that when the concentration of alcohol in a person’s bloodstream reaches this level, noticeable changes in judgment and operational competency occur.

As was discussed earlier (on page 12), testing was not conducted on all victims due to delayed accident reporting or delayed body recovery, which can alter blood alcohol levels.

Findings

Of the 53 fatalities, blood alcohol information was available in 40 of the cases. Of these 40 victims, 20 (50%) had blood alcohol levels equal to or greater than 0.035%.

Type and Cause of Accidents

The majority of alcohol-related boating fatalities were the result of falls overboard (35%), vessels capsizing (20%), collisions with other vessels (15%), and vessels grounding (15%). Excessive speed (35%), restricted vision (30%) and operator inattention (25%) were the leading causes of accidents. *(Some accidents had more than one cause.)*

The majority (70%) of the victims drowned. Of this group, none were wearing life jackets.

Type of Vessel

A total of 24 vessels were involved in these accidents, all of which were motorized. Of these vessels, the majority (71%) were open motorboats. 83% of all vessels involved were less than 26 feet in length.



Time and Location

Of the 20 alcohol-related fatalities, 90% occurred on weekends throughout the year. 9 occurred in Northern California and 11 in Southern California.

Activity

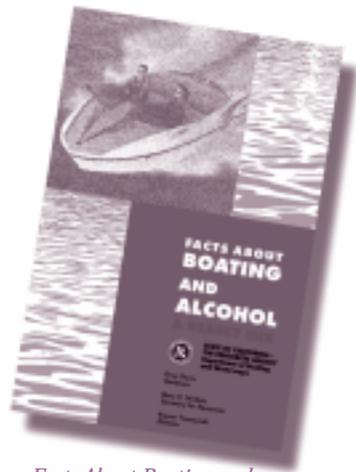
Unlike the 2001 boating season, in which only 1 alcohol-related fatality took place during fishing-related activities, 35% of alcohol-related fatalities took place during fishing trips.

Profile of Intoxicated Boaters

An examination of the 20 fatalities reveals that 12 were passengers. Of these 12 passengers, 9 contributed to their deaths due to poor judgment related to alcohol consumption.

These findings relating to intoxicated passengers were consistent with findings from other years. Passengers who are under the influence often put themselves in dangerous positions in the boating environment. Passengers engage in activities such as leaning over or sitting on gunwales or jumping from one vessel to another. Additionally, passengers standing in or moving about in vessels has caused them to fall overboard, or vessels to capsize, placing all aboard in danger. Persons also swim too close to propellers, causing danger to themselves.

These situations underscore the Department's long-held view that a sober operator does not ensure passenger safety. Intoxicated persons in or around vessels are exposed to dangers that would not affect the safety of intoxicated passengers in a vehicle. The "designated driver" concept, which is popular in some boating safety literature, has its roots in automobile safety where the possibility of falling overboard and drowning (or in some



Facts About Boating and Alcohol Publication

years, swimming too close to the propeller) is not a factor. Therefore, based upon the findings of these fatalities and others from other years, the Department recommends that neither operators nor passengers drink alcoholic beverages while boating.

Alcohol-Related Fatalities Involving Motorized Vessels

In January 1986, the Department submitted the Boating Safety Report to the California Legislature. This report analyzed alcohol-related boating accidents between November 1, 1983 and October 31, 1985, and concluded that 59% of all fatalities involving motorized vessels were alcohol-related (where testing could be conducted).

The Department conducted a second alcohol-related boating accident study between January 1, 1993, and December 31, 1994. This study concluded that 23% of all fatalities involving motorized vessels were alcohol-related, a significant reduction from the 1986 study.

Table II-1 (below) shows the percentage of alcohol-related fatalities involving motorized vessels (where alcohol-related testing could be conducted) from 1993 to 2002. In 2002, 38 of the 40 victims tested for alcohol-relatedness were killed in accidents involving motorized vessels. Of that group, 20 (51%) were alcohol-related.

Table II-1

Percentages of Alcohol-Related Fatalities Involving Motorized Vessels	
1993	33%
1994	11%
1995	34%
1996	39%
1997	48%
1998	14%
1999	25%
2000	39%
2001	28%
2002	53%

Section III

Boating Law Enforcement Programs

In support of the Department's mission to provide leadership in promoting the public's right to safe and enjoyable boating on California waterways, the Enforcement Unit's primary objectives are:

- To provide for adequate boating law enforcement through local agencies
- To ensure that the enforcement of California boating laws is uniform throughout the State.

The Enforcement Unit meets these objectives through programs that provide officer training and financial aid to local boating law enforcement agencies.

A. Financial Aid Program

The Department's financial aid program provides supplemental funding to local Governments, usually for county sheriff boating patrol units. The funding supports enforcement of State laws and regulations and local ordinances affecting boating activities, inspection of vessels, supervision of water events, search and rescue operations, and recovery of drowned bodies.



Open Motorboat Fire Inspection



Removal of Open Motorboat

During FY 2001/02, the Department allocated \$8.1 million in funding to 36 counties and 2 cities for boating law enforcement operations including maintenance, equipment, and personnel costs. **Exhibit III-1** (on page 34) presents a summary of services supported during this period by the financial aid program.

Boating law enforcement officers provide important safety education to the boating public. The Department's partnerships with the law enforcement community provide the Department with an excellent resource to help educate and communicate with the recreational boater.

In FY 2001/02, law enforcement officers provided boating safety education to nearly 75,000 vessel operators, primarily by means of public contact and verbal warnings, which act as teaching tools to give the boater more knowledge and help prevent accidents.



Exhibit III-3 Services Supported by the 2001 Financial Aid Program

Regulation Enforcement	
Verbal Warnings	77,562
Citations	6,260
Physical Arrests	1,053
Boater Assistance	
Persons Assisted	25,996
Vessels Assisted	7,199
Accident Investigations	557
Search and Rescue Operations	
Searches	886
Body Recovery Attempts	101
Boating Safety Presentations	7,577
Vessel Inspections	50,712
Organized Boating Event Supervision	145

B. Law Enforcement Training Program

In California, boating law enforcement is decentralized. There are more than 100 public agencies throughout the State that enforce California's boating laws. Consequently, the interpretation of boating laws could vary from agency to agency, making it confusing for the State's boaters. However, the Department provides an extensive marine law enforcement training program to ensure that boaters can expect uniform law enforcement on waterways throughout the State.

During 2002 the Department conducted 20 one-week classes (800 hours) throughout the State and trained approximately 550 marine patrol officers. These courses are designed for law enforcement personnel and are taught by law enforcement specialists who bring great expertise and credibility to the training program.

The Department offers training classes in the following areas:

- Seamanship-Rescue Boat Operations
- Boating-Basic Skills Training
- Coastal Piloting and Navigation
- Marine Firefighting
- Basic Boating Safety and Enforcement
- Boating Accident Investigation/Reconstruction
- Boating Intoxication Enforcement.



Calaveras County Sheriff Lake Patrol

Section IV

Boating Safety Education Programs

The Safety Education Unit has two primary objectives to support the Department's mission:

- To provide accessible boating safety education for youths and adults
- To educate and protect youth operators by developing and distributing boating and aquatic safety material to California schools.



Alcohol Rescue, Aquatic Center Camp Skit

The Department relies on partnerships with several organizations (educational institutions, aquatic centers, the U.S. Coast Guard Auxiliary and the U.S. Power Squadrons) to provide boating safety education. The Department provides educational institutions with free course materials on boating and aquatic safety information. Aquatic centers that offer on-the-water safety education are eligible for Department grants and scholarships. Last year, these partnerships provided 693,000 individuals with boating safety education.

A. Educational Outreach to School-Age Children

AquaSMART

The Department developed the *AquaSMART* curriculum to educate school-age children about water safety. The course is a three-part series for K-2, 3-5, and 6-8 grades. Course materials cover a variety of topics involving boating and aquatic safety. Nearly 500,000 elementary school students benefited from the *AquaSMART* education programs in 2002.



AquaSMART Coloring Book

The Department also disseminates the *AquaSMART Boating* program for high school students that incorporates key safety concerns identified by accident statistics. Four types of boating are addressed: personal watercraft, powerboating, sailing, and paddling. The course is available to schools, aquatic centers, and youth organizations. In 2002, a total of 35,000 high school students were educated using the *AquaSMART Boating* program.



- Overall “common sense” boating message that combines general boating safety preparedness.
- Responsible operation with an emphasis on defensive driving.
- Taking a boating safety course.

The campaign runs year round in Southern California and from May-October statewide, targeting California’s top ten boating accident areas. Over 35 radio stations across the State air safety messages reminding boaters to “Boat Smart from the Start.”

Televised Message Campaign

The Department continues promoting the use of life jackets at safety fairs and boat shows throughout the state, through the annual *Safe and Wise Water Ways* poster contest for children, and at *National Safe Boating Week* events. In 2002, KCRA/KQCA, the NBC affiliate in Sacramento, partnered with the Department to produce a 30-second public service announcement for television promoting safe boating and taking a boating safety course in its viewing area in Northern California.



AWAF, An Abandoned Vessel

C. Public Information Education through Pamphlets

In 2002, the Department distributed 1.2 million copies of boating safety literature to the public. The Department’s Public Information Unit publishes and distributes more than 50 different boating safety publications. The publications cover a variety of topics emphasizing boating safety on California waterways.

Materials focus on subjects such as key safety issues for individual waterways, required equipment, and operational laws. The unit mails these publications directly to individuals and provides various organizations with materials for distribution. Department representatives also attend numerous safety fairs and boat shows, distributing literature and answering questions. Currently, the Department of Motor Vehicles mails safety brochures with each new vessel registration and each renewal.



Department Boating Safety Publications

D. Abandoned Watercraft Removal Program

As part of its commitment to provide clean, safe, and enjoyable recreational boating in California, the Department administers a program for removal of abandoned watercraft and substantial navigational hazards from California navigable waterways. Specifically, grant funds can be used by public agencies for the removal, storage, and/or disposal of these navigational hazards. In 2002, the Department granted 11 public agencies a total of \$535,000 to remove abandoned vessels and other substantial hazards to navigation.

Poster Contest

Nearly 3,000 students participated in the Department's 10th annual poster contest, *Safe and Wise Water Ways*, in 2002. Students in the K-8 grade levels are invited to submit original artwork depicting aquatic and boating safety themes. One winning entry from each grade level is selected and featured on the Department's annual calendar poster. Corporate sponsors contribute to the success of this program by providing awards for the winners. A Department representative visits each winning school to present the sponsors' awards and give a presentation on aquatic safety with an emphasis on life jackets. Participating students become water wise and help others stay safe by sharing their safety lessons through the medium of art. Their artwork is also used in displays and in other programs in the Education Unit. The success of this program is evidenced by the fact that this is the 10th anniversary of the poster calendar contest.

We have had a number of consistent teachers; one even received a national award from the National Water Safety Congress. When it was inaugurated in 1993 approximately 500 students participated. Since then, there has been a tenfold increase in participation.



2002 Safe and Wise Waterways Poster Contest Winners

Interactive Tools

The Department lends two interactive robotic boats, SeaMore and Sea Lily, to boating safety organizations and marine law enforcement agencies. The remote-controlled robots communicate boating safety information to children at safety fairs and boating events.



SeaMore and a Friend

B. Educational Outreach to the General Public

Aquatic Center Grant Program

The Department provides grant monies to aquatic centers throughout the state to enhance their programs. Grants can be used either for scholarships or for the purchase of equipment to be used in boating and education classes. This grant program allows the Department to increase the number of boaters who receive hands-on boating safety training.

Aquatic centers, operated by universities, cities, counties, and nonprofit organizations, provide on-the-water boating safety education in kayaking, canoeing, water skiing, power boating, sailing, windsurfing, and personal watercraft operation. These programs target university students, the general public, persons with disabilities, and disadvantaged youths.

During the 2001/02 fiscal year, the Department allocated \$620,000 in grants to 28 aquatic centers, which then provided nearly 120,000 individuals with hands-on aquatic and boating education.

Home Study Course

The Department provides a 94-page booklet to the public called *California Boating: A Course for Safe Boating*. This course is designed for home study, allowing readers to progress at their own pace. This comprehensive course covers State and federal boating law, rules of the road, boat handling, required and recommended equipment, navigational aids, and other topics. The course contains an optional exam to be completed and forwarded to the Department for grading. Those who pass the course are awarded with certificates that are recognized by many insurance companies for boat insurance discounts. In 2002, a total of 47,000 home study education course materials were distributed to the general public.

National Safe Boating Week

Each year, the President and the Governor proclaim the week before Memorial Day as *National Safe Boating Week*. The Department organizes a number of boating safety events during this week designed not only to promote safe boating, but also to promote the sport of boating. Activities featured during this week include:

- Boating fairs featuring contests to win life jackets
- Promotional safety product giveaways
- Boating demonstrations
- Highlights of annual boating accident statistics
- News releases featuring boating safety tips
- Interviews with the media
- Life jacket trade-ins



USCG's PFD Panda



Outdoor Media Campaign Mobile Billboard

Media Outreach to Boaters

Boating Safety Awareness Outdoor Media Campaign

In 2002, the Department's outdoor media campaign of billboards and posters were designed as "road signs for the waterways." Permanent and mobile billboards were placed on key waterways to promote boating safety throughout the boating season and during holiday weekends. Taking the message directly to boaters, colorful oversized all-weather posters adorn launch ramps, fuel docks, and marina and park entrances, reminding boaters to wear a life jacket and take a boating safety course. In conjunction with the California Coastal Commission's *Adopt-a-Beach* program, the Department also placed safety messages on refuse barrels located on docks and in picnic areas.

Boating Safety Awareness Radio Campaign

In conjunction with the Department's outdoor media campaign, the Department continues a statewide radio campaign, which highlight the following safety tips:

- The importance of wearing life jackets
- The dangers of mixing alcohol and boating
- River safety
- Environmental Stewardship—
Keep it Clean When You Boat.



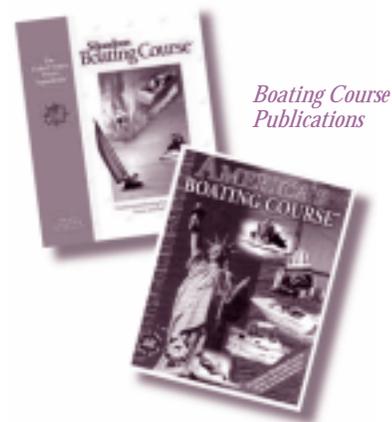
Section V

2002 Program Enhancements, Initiatives, and New Laws

New Laws

Boating Safety Course

Any person convicted of any moving violation in the *Harbors and Navigation Code*, the Federal Rules of the Road and regulations adopted by DBW, while operating a vessel, shall be ordered by the court to complete and pass a boating safety course approved by the Department of Boating and Waterways. *Proof of completion and passage of the course must be submitted to the court within seven months of the time of conviction.*



PWC Operation

As of January 1, 2003, the prohibition hours for personal watercraft operation have been adjusted to mirror the hours of prohibited water skiing. Personal watercraft and water skiing are from sunset to sunrise.

Life Jacket Use

Persons using any underwater maneuvering device are exempt from wearing a personal flotation device. An underwater maneuvering device is any towed or self-powered apparatus designed for underwater use that a person can pilot through diving, turning and surfacing maneuvers.

False Search and Rescue Calls

Under existing law, it is a misdemeanor for a person to knowingly make a false report concerning an emergency to a governmental agency where the emergency results in, or could result in, the response of a public official in an emergency aircraft or vessel. The law now further provides that it is a felony for any individual to report, or cause any report to be made, to any state or local government agency that an emergency exists, and who knows or should know that the response to the report is likely to cause death or great bodily injury and such injury or death is sustained by any person as a result of the false report.

Vessel Sewage

A state or local peace officer who reasonably suspects that a vessel is discharging sewage in an area where the discharge is prohibited may board that vessel of the owner or operator is aboard, for the purpose of inspecting the marine sanitation device for proper operation and placing a dye tablet in the holding tank.



Life Jacket Use

- The Department continues the *Life Jacket Partner Program* and the *T-Shirt Program*, aimed at increasing the use of life jackets by children.



Recipients of DBW's T-Shirt Program

- The Department continues a radio ad campaign informing boaters of new laws requiring that persons aboard PWC, persons towed behind boats, and children under 12 on vessels 26 feet or less to wear life jackets. This safety message is being aired on radio stations throughout California and targets boaters in areas where high numbers of accidents occur.
- The Department continues placing billboards in areas where accidents are most prevalent and has added to this outreach effort by placing safety messages on posters and refuse barrels at marinas. These “road signs for the waterways,” increase boating safety awareness throughout the State.
- The Department continues promoting the use of life jackets at safety fairs and boat shows throughout the state, through the annual *Safe and Wise Water Ways* poster contest for children, and at *National Safe Boating Week* events. In 2002, KCRA/KQCA, the NBC affiliate in Sacramento, partnered with the Department to produce a 30-second public service announcement for television promoting safe boating and taking a boating safety course in its viewing area in Northern California.



North American Safe Boating Campaign

- In 2002, the Department partnered with Infinity Broadcasting, Nor Cal Water, and AM PM Mini Marts to remind their collective clients in Northern California to “Get Hooked on H₂O” and “Boat Smart from the Start...Wear Your Life Jacket.” An estimated 12 million impressions were made on clients as the messages traveled the airwaves and were viewed at purchase points.

Personal Watercraft

- The Department distributes a short course on PWC operation and safe boat handling, and last year, made it available online. The course is intended for PWC operators of all ages and is available to the general public. It is designed so that it can easily be incorporated into existing safety programs offered by organizations such as the U.S. Coast Guard Auxiliary, the U.S. Power Squadrons, marine law enforcement agencies, and aquatic centers. There is a 20-question exam at the end of the booklet to self-test on the material covered. The promotion of safe operation of PWC is a component of the Department’s outdoor media campaign. This basic course does not earn a certificate, but is simply a tool to introduce new PWC operators to laws, requirements, and important safety issues associated with their vessels. Those who complete the quiz online are rewarded with access to some boating-themed screensavers.
- The Department continues piloting a PWC-handling course specifically for law enforcement. This course has been P.O.S.T. certified.
- The Department continues a radio ad campaign informing boaters of the new laws requiring that persons aboard PWC wear life jackets. This safety message is being aired on radio stations throughout California and targets boaters in high accident areas.

Youth Operator Safety

- The *AquaSMART Boating* program for high school students continues to be distributed to schools throughout California. This course incorporates key safety concerns identified by accident statistics. Four types of boating are addressed: personal watercraft, power boating, sailing, and paddling. The course is available to schools, aquatic centers, and youth organizations.
- The curriculum for youth programs includes information on the dangers of alcohol and drug use, especially when boating. Zero tolerance is emphasized for all persons engaged in aquatic recreation.

Alcohol

- The Department’s radio campaign continues to promote the dangers of drinking alcohol while boating. This safety message is airing on radio stations throughout California and targets boaters in areas with the highest accident rates.
- The Department continues to notify law enforcement agencies statewide about alcohol-related fatalities and encourage them to strengthen their educational and enforcement efforts in this area. The Department reinforces this message at all of its law enforcement training classes.
- The Department’s “Get H₂Ooked on Sober Boating” T-Shirt promotion continued at boat shows and other outreach venues throughout the state.



AquaSMART PFD Certificate

Improved Internet Access

- The *AquaSMART* Internet education pages (dbw.ca.gov/aquasmart) supplement the Department’s *AquaSMART* curriculum series. The design is bright and content addresses boating safety in a fun manner, as the Webpage is targeted primarily at children exposed to the *AquaSMART* curriculum series. The secondary audience includes teachers, parents, and other boaters. A link to the Department’s homepage is provided for persons seeking more detailed boating safety information.
- The Department experiences continued success with its Webpage, www.boatsmarter.com. This Webpage is publicized through the Department’s radio and outdoor media campaign and is easy to remember. Visitors to the site can click on “road sign” billboards for more information on boating safety.



My California Department of Boating and Waterways Website



AquaSMART Website



Boatsmarter.com Website



Other Safety Enhancements

- The Department is working to increase awareness of carbon monoxide poisoning by providing safety information to boaters and by providing information and training to law enforcement officers who investigate accidents.

- In 2002, the Department sponsored 40 *AquaSMART Live* performances. The traveling puppet show is hosted by Splasher the Frog, mascot of the *AquaSMART* program. *AquaSMART Live* has two programs for grades K-3 and 4-6. The K-3



Splasher the Frog

program uses stunt dummies to demonstrate to the children what can happen when you do not play safe in and around the water. The 4-6 program is a game show format where two teams compete for prizes while learning how to stay safe in and around the water.

- To further enhance river safety, the Department offers an assortment of river guides. The Department continues to warn boaters about hazardous water conditions on California's rivers, especially during spring and early summer when water levels are high from snow pack run-off.

- The Department is in the final stages of completing a new water skiing safety video. The updated version will include not only traditional water skiing activities, but also wake boarding, knee boarding, inner tubing, and air chair activities. This video will be in distribution in Summer 2003.



Water skiing on One of California's Lakes

- The Department continues outreach efforts to anglers by placing safety articles and messages in fishing publications throughout the state.
- The Law Enforcement Unit continues to conduct the *Accident Reconstruction Course* on the water, providing staged accidents for reconstruction by students. Many law enforcement officers believe this course helps them reconstruct accidents more accurately.



Accident Reconstruction Course Simulation at Lake Tilloch

- The Department produced a boating safety radio PSA, entitled "The Safety Pirate" for distribution through the National Safe Boating Council. This award-winning radio message was aired throughout the nation in 2002 and was also used in England and Australia.

Section VI

Accident Data Charts

The charts in this section are designed to provide general statewide information on boating accidents. Three groups of charts give information on:

- All Accidents
- PWC Accidents
- Fatal Accidents.

Charts for All Accidents

Some charts are organized by the number of accidents, which totaled 911. Other charts are organized by the number of vessels involved in accidents, which totaled 1,290. The totals listed on the charts **Type of Accident** and **Cause of Accident** exceed the total number of accidents because many accidents fell into more than one category. The chart **Operators Involved in All Accidents by Age** shows a total of 1,290 vessels. The chart also shows a total of 1,135, which indicates the total number of operators, as 155 vessels involved in accidents did not have operators.

Charts for PWC Accidents

The totals listed on the charts **Type of Accident** and **Cause of Accident** exceed the total number of PWC accidents, which was 253, because many accidents fell into more than one category.

Charts for Fatal Accidents

Totals on most of the charts containing information for fatal accidents add up to the total number of fatalities, which was 53. Other charts are organized by the total number of vessels involved in fatal accidents, which was 56. The total listed on the chart **Cause of Accident** exceeds the total number of fatalities because many accidents involving fatalities fell into more than one category.



Chart 1 Accidents by Month

Total Accidents = 911

Most boating accidents occurred from May through September with the greatest number occurring in July.

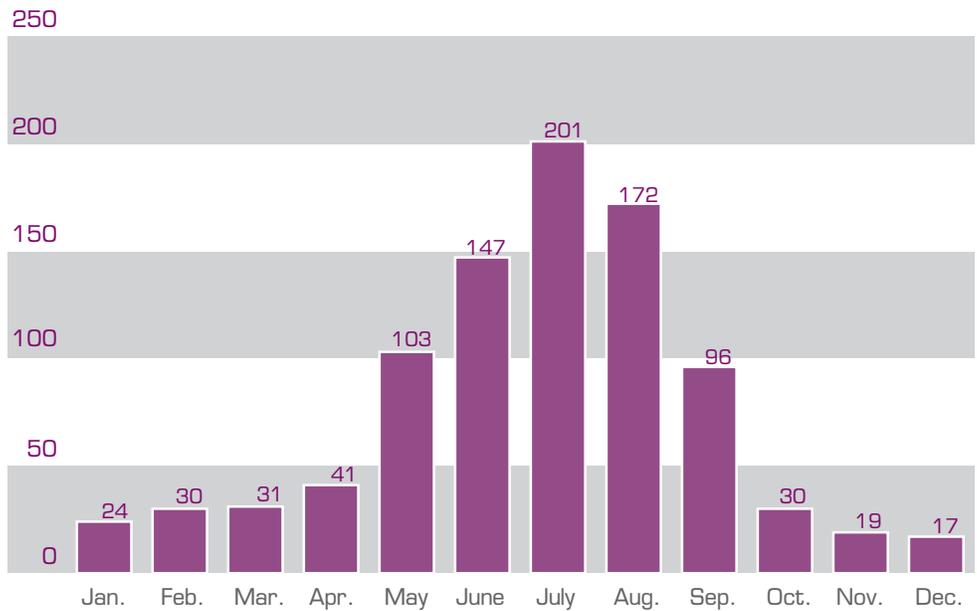
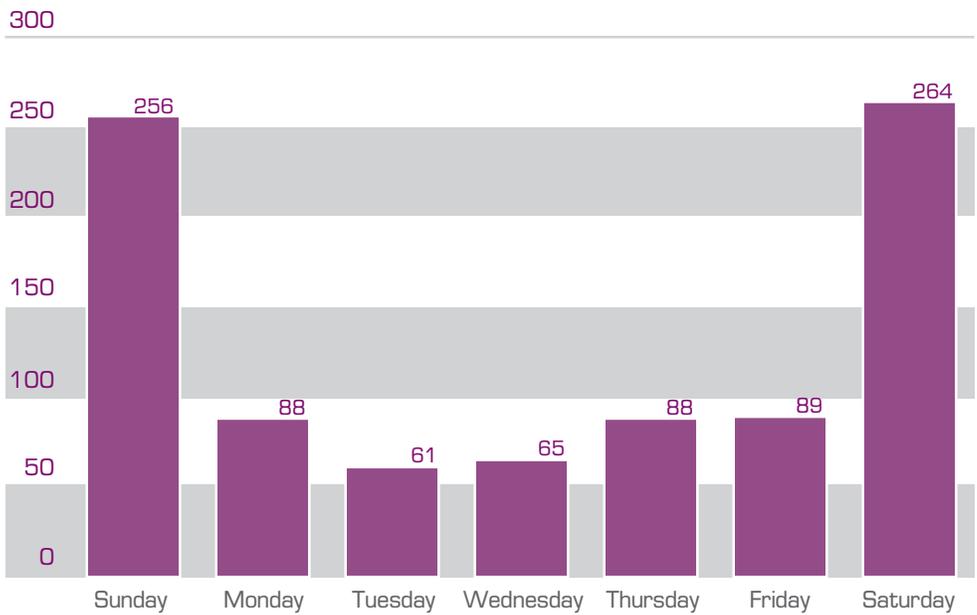


Chart 2 Accidents by Day of the Week

Total Accidents = 911



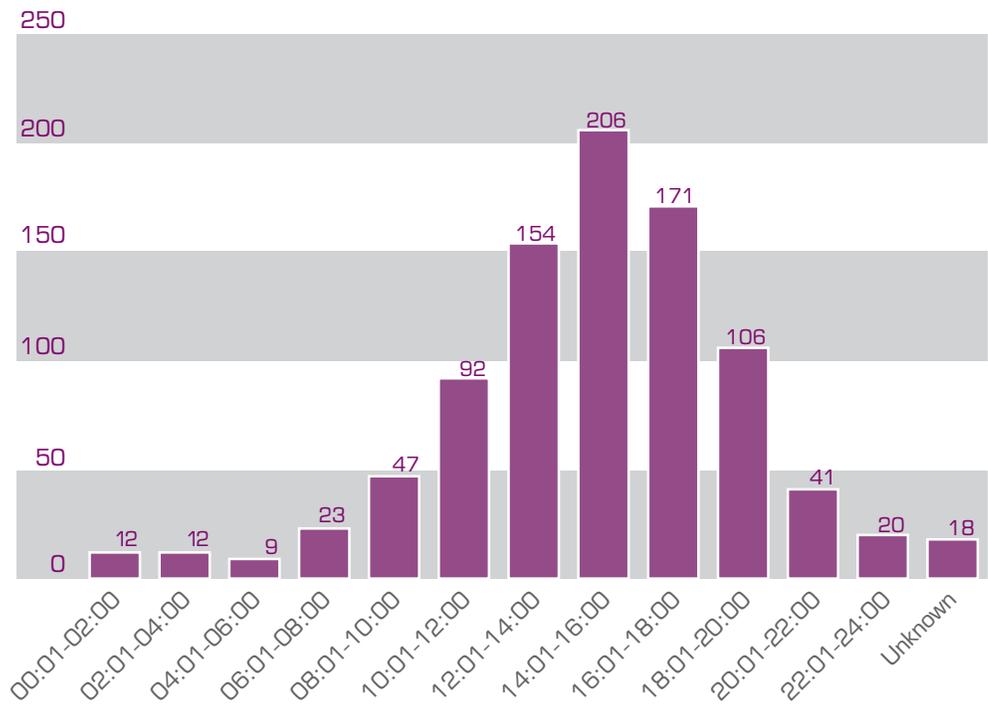
57% of boating accident occurred on weekends (Saturday and Sunday).

Chart 3 Accidents by Time of Day

Total Accidents = 911

Chart time periods are shown using military time.

The majority of boating accidents occurred between 12:00 p.m. and 6 p.m. with the largest percentage occurring between 2:00 p.m. and 4:00 p.m.



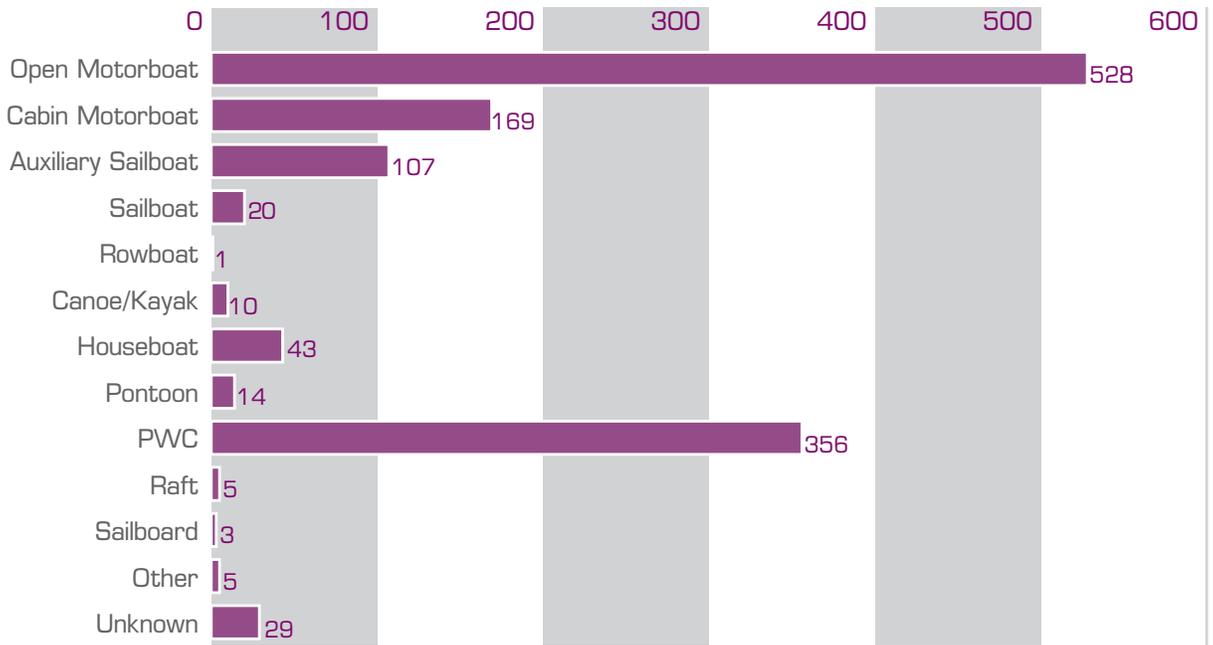
Outdoor Media Campaign



**Chart 4
Vessels Involved in All Accidents by Type**

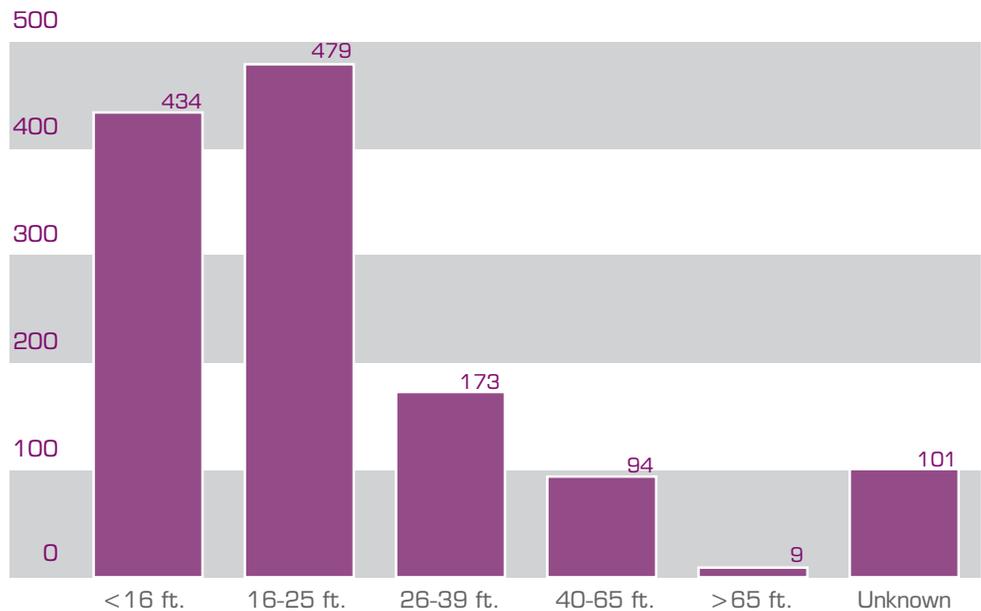
Total Vessels = 1,290

Open motorboats and personal watercraft (PWC) comprised 69% of all vessels involved in accidents.



**Chart 5
Vessels Involved in All Accidents by Length**

Total Vessels = 1,290



Vessels 16-25 feet in length were involved in more accidents than any other category, followed closely by vessels less than 16 feet in length. These two categories accounted for 71% of all vessels involved in accidents.

Chart 6 Operators Involved in All Accidents by Age

Total Operators = 1,135
Total Vessels = 1,290

“No Operator” refers to accidents involving vessels where there was no operator present at the time of the accident. Most of these vessels were in vessel slips, tied to docks, or moored, and were struck by other vessels. Some accident reports submitted to the Department do not include operator age information, as indicated by the “Age Unknown” category.

Operators in the 31-40 age group were involved in more accidents than any other age group, followed by the 41-50 age group.

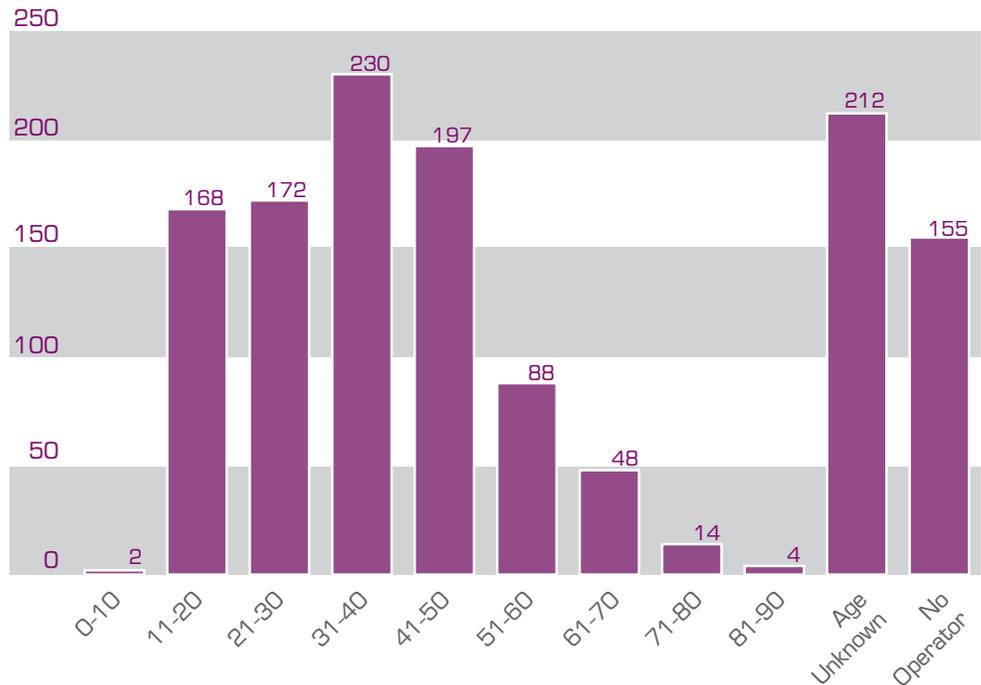
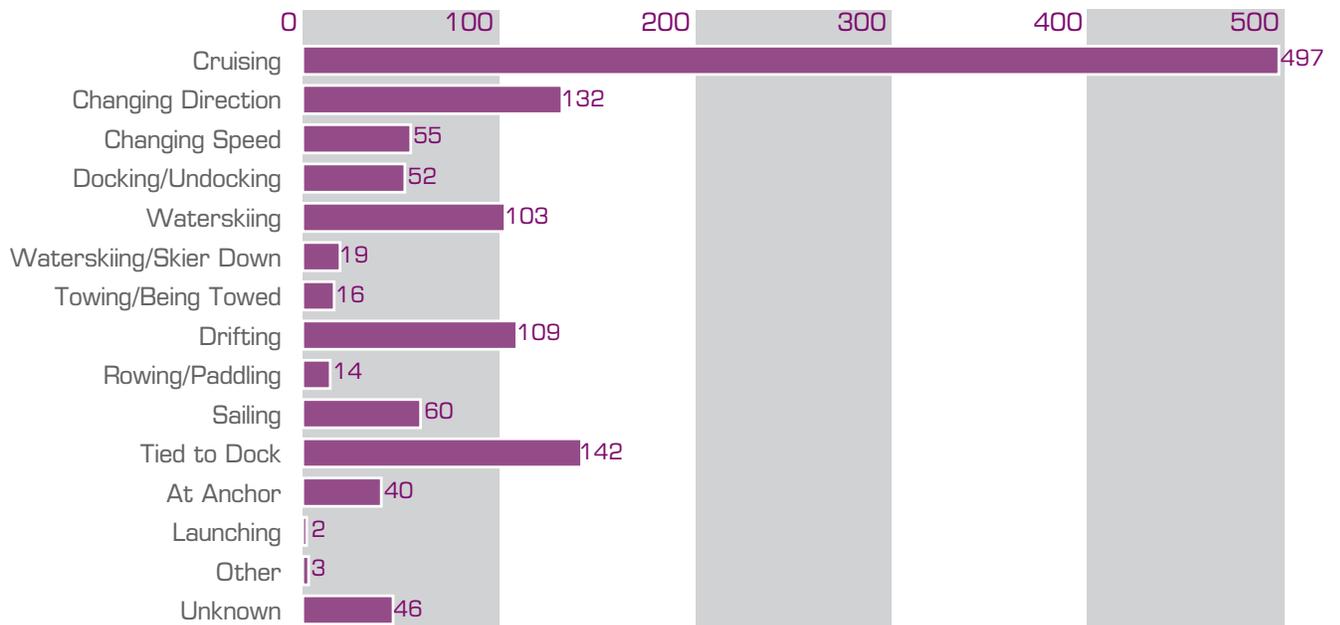


Chart 7 Operation at Time of Accident

Total Vessels = 1,290



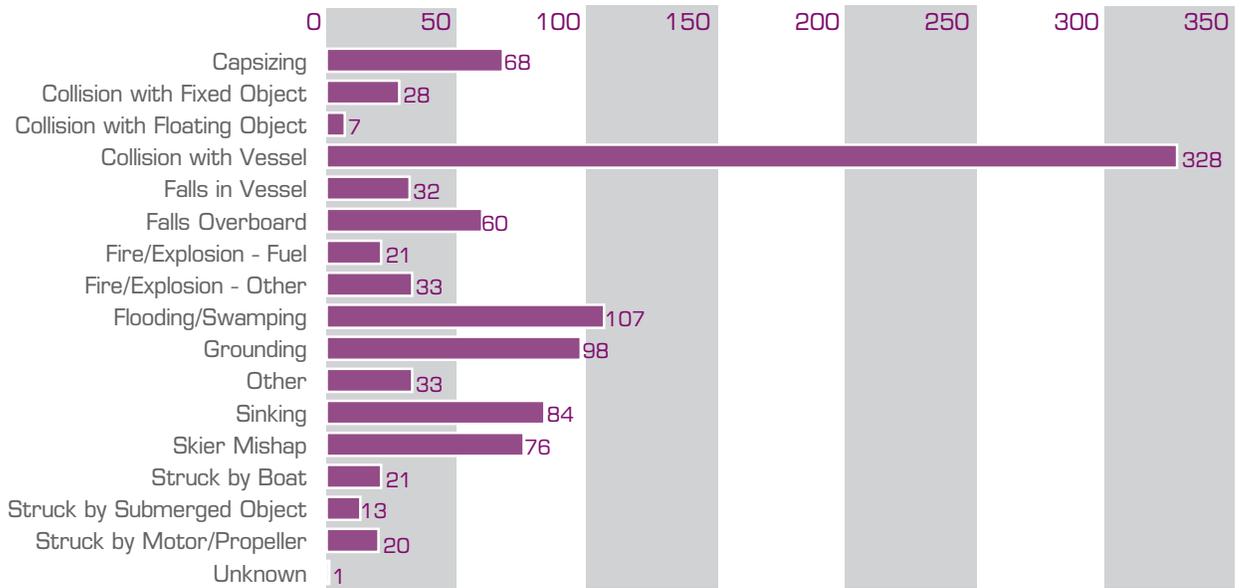
The most common type of vessel operation preceding an accident was cruising.



Chart 8 Type of Accident

Total Types = 1,030
Total Accidents = 911

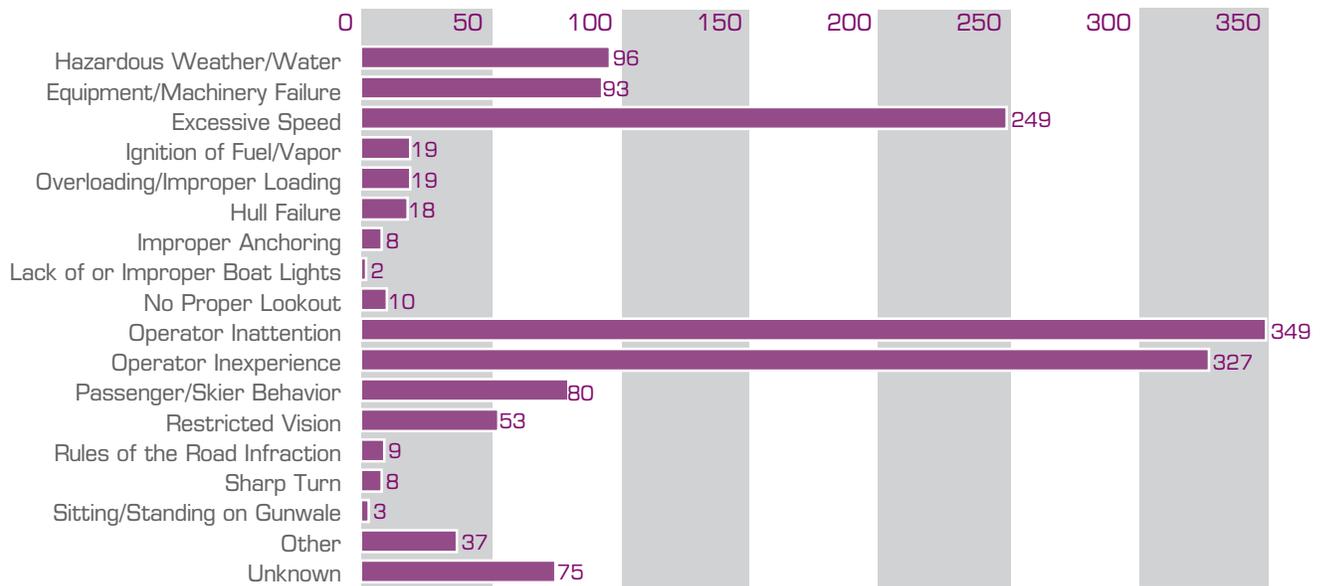
By far, collisions with another vessel was the most common type of accident, accounting for 36% of all accidents.



Some accidents are represented by more than one accident type, which accounts for the accident types exceeding the number of accidents.

Chart 9 Cause of Accident

Total Causes = 1,359
Total Accidents = 911



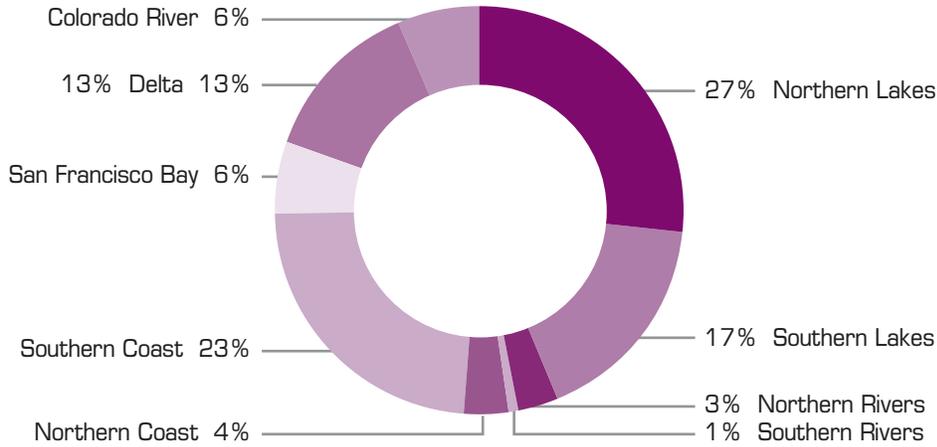
Operator inattention was the most common cause of all accidents (38%), followed by operator inexperience (36%) and excessive speed (27%).

Many accidents had more than one cause, which is reflected in this chart. The "Other" category includes causes that do not fit into any of the categories listed above.

Chart 10 Accident Locations

Total Accidents = 911

Most accidents occurred on lakes (44%), followed by oceans/bays (27%).



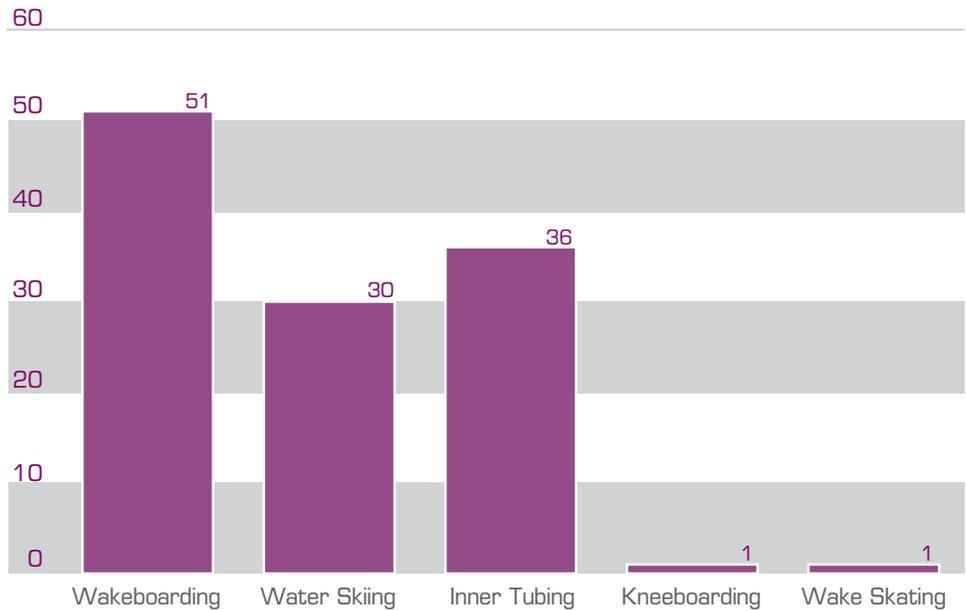
Number of Accidents	
Northern Lakes	243
Southern Lakes	156
Northern Rivers	29
Southern Rivers	7
Northern Coast	32
Southern Coast	214
San Francisco Bay	52
Delta	120
Colorado River	58
Total	911

Chart 11 Water Skiing Accidents

Total Activities = 119

Total Accidents = 117

2 accidents each involved 2 vessels, both involved in different types of water skiing. For example, a vessel towing a tube was involved in an accident with a vessel towing a wakeboard. This accident is represented in both the inner tubing and the wake boarding categories. This accounts for the total number of activities totaling 119, while the total number of accidents totals 117.

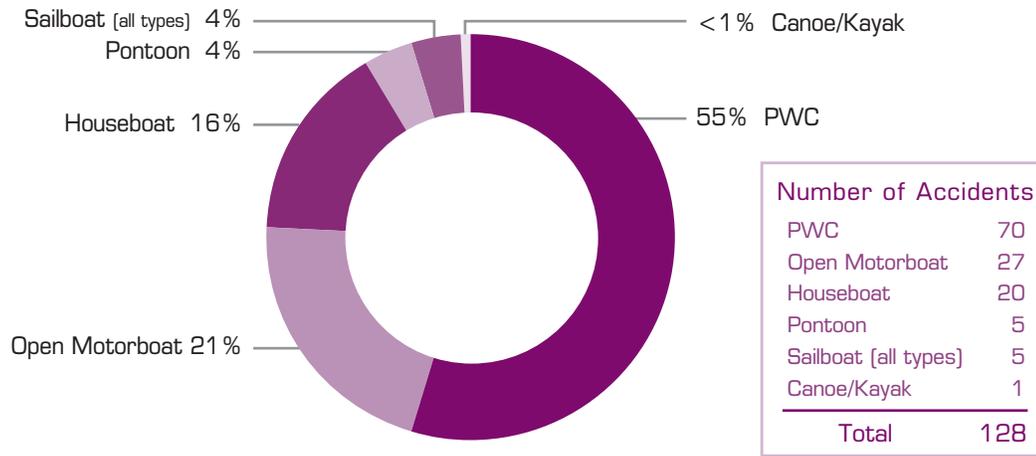


Wakeboarding accidents accounted for 44% of all water skiing accidents, followed by inner tubing (31%) and traditional water skiing (26%).



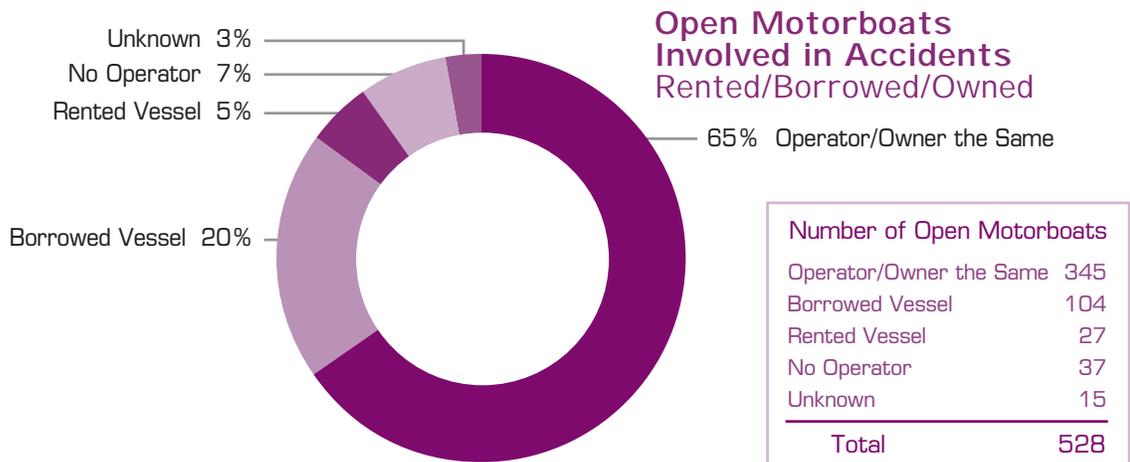
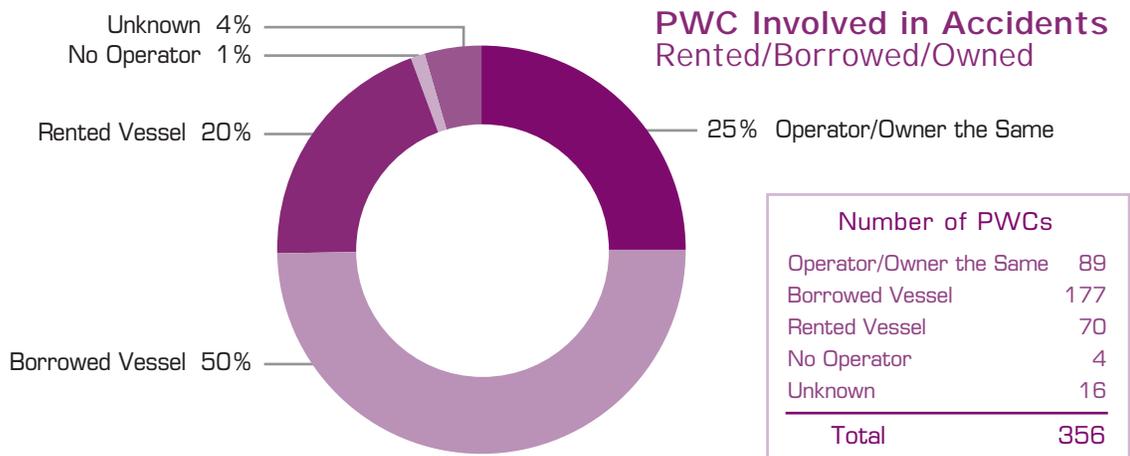
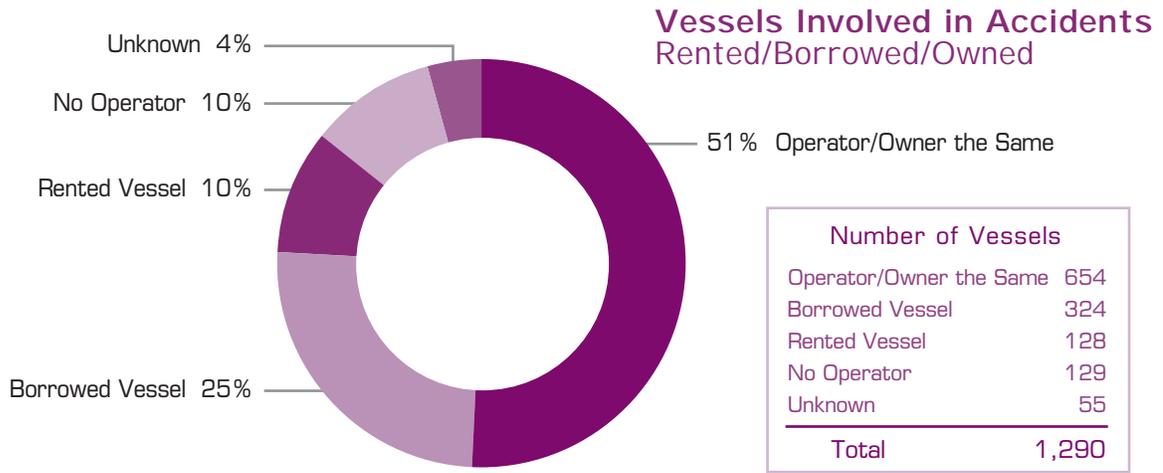
Chart 12
Rented Vessels Involved in All Accidents by Vessel Type

The majority of rented vessels involved in accidents were PWC.



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Chart 13
Vessels, PWC, and Open Motorboats Involved in Accidents



Operators in the 11-20 age group accounted for 36% of PWC operators involved in accidents. Operators in the 31-40 age group accounted for 25% of open motorboat operators involved in accidents.

Chart 14 Open Motorboats/PWC - Operators Involved in Accidents by Age

Total Open Motorboat Operators = 528

Total PWC Operators = 356

“No Operator” refers to accidents involving vessels where there was no operator present at the time of the accident. Most of these vessels were in vessel slips, tied to docks, or moored, and were struck by other vessels. Because PWC do not tend to be housed in slips, due to their small size, the number of vessels in this category is much smaller than the “No Operator” category for overall boating accidents. Some reports submitted to the Department do not include operator age information, as indicated by the “Age Unknown” category.

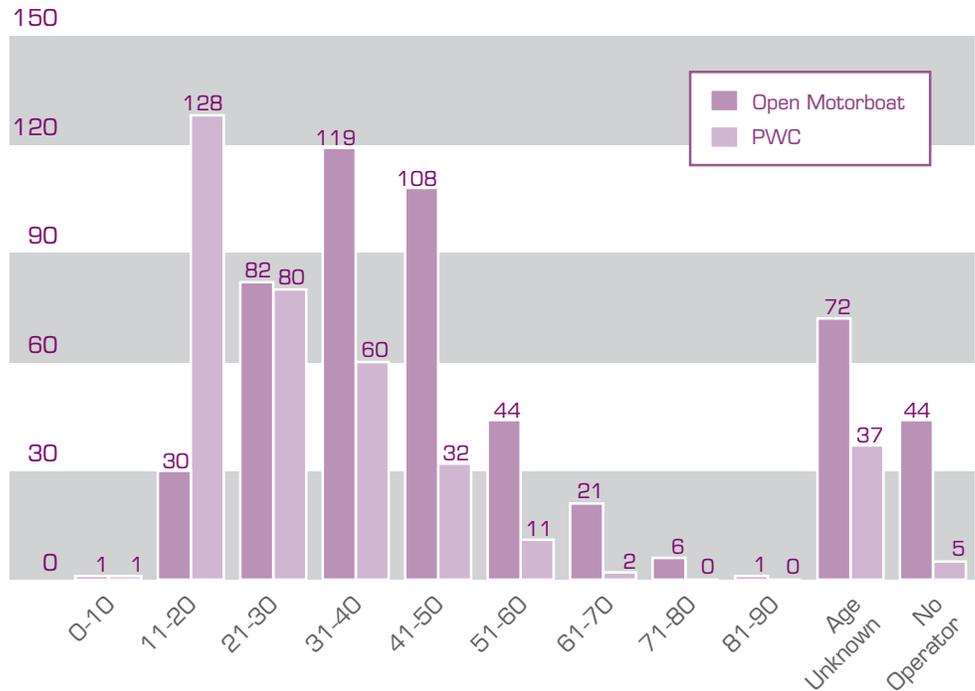


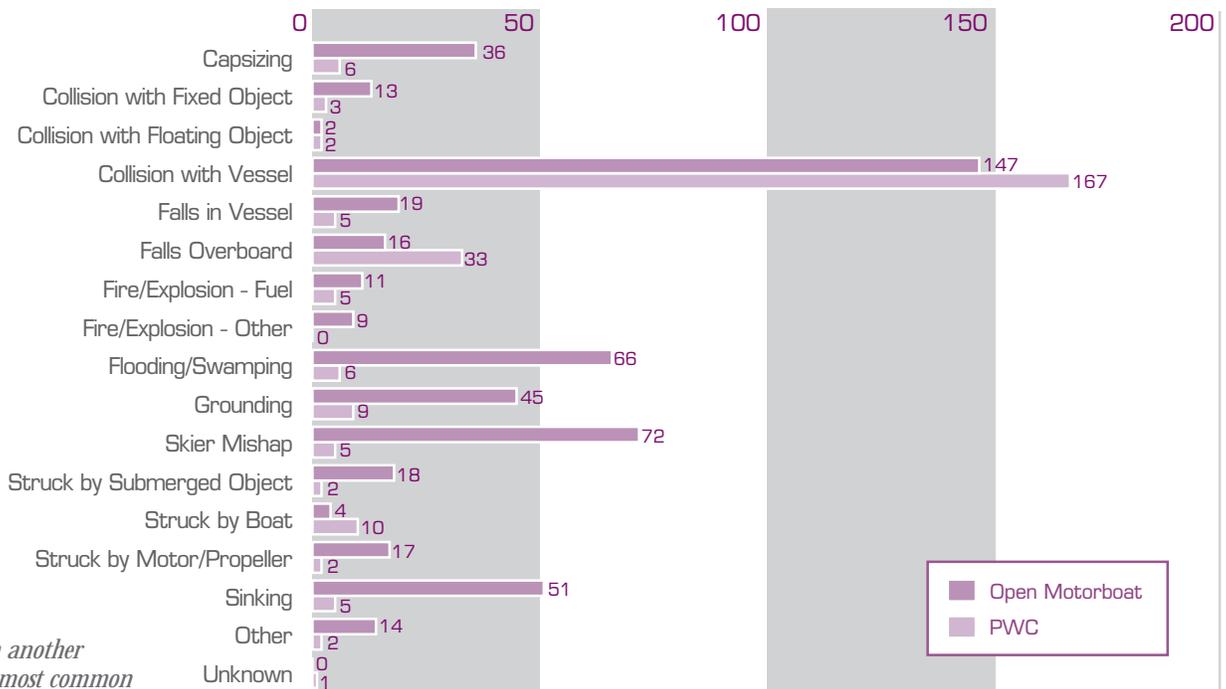
Chart 15 Open Motorboats/PWC - Type of Accident

Total Open Motorboat Types = 540

Total PWC Types = 516

Total Open Motorboat Accidents = 466

Total PWC Accidents = 253



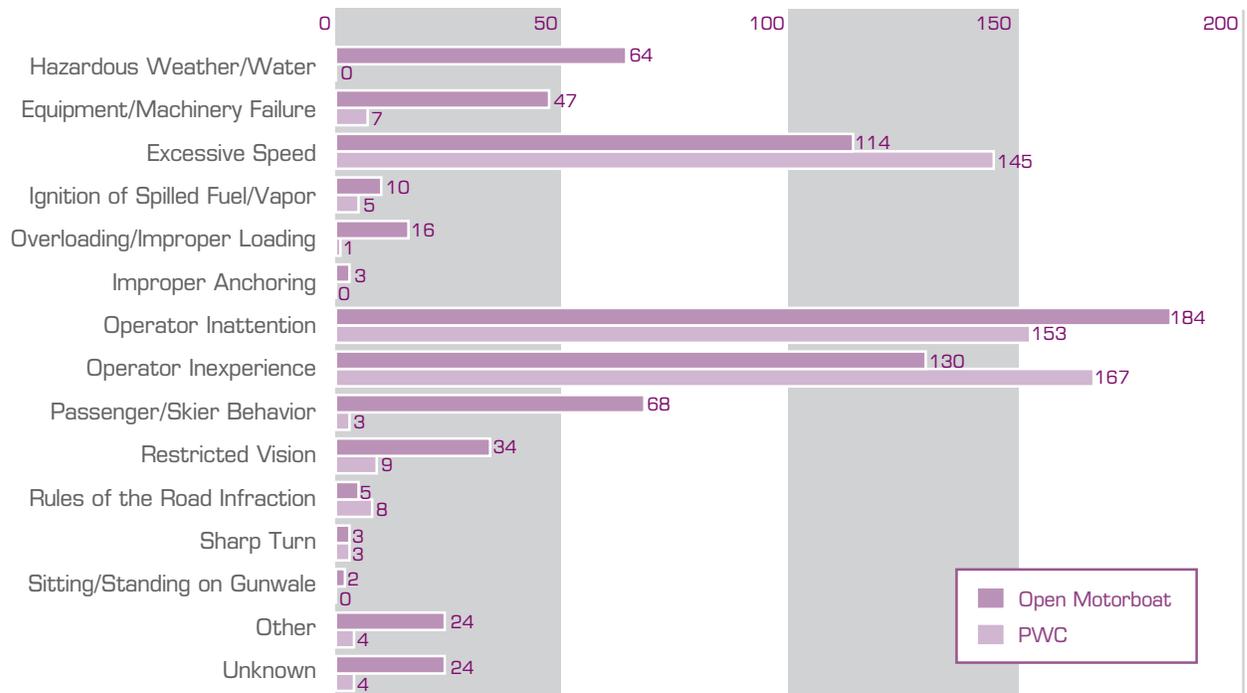
Collision with another vessel was the most common type of accident involving both types of vessels.

Some accidents are represented by more than one accident type, which accounts for the accident types exceeding the number of accidents. An example of such an accident is when an operator falls overboard and is then struck by another vessel. Such an accident would be represented in both the “Falls Overboard” category and the “Struck by Boat/Propeller” category, since both of these occurrences were significant components of the accident.

Chart 16 Open Motorboats/PWC - Cause of Accident

Total Open Motorboat Causes = 728 Total PWC Causes = 509
 Total Open Motorboat Accidents = 466 Total PWC Accidents = 253

Operator inexperience was the most common cause of accidents involving PWC, occurring in 66% of those accidents. Operator inattention was the most common cause of accidents involving open motorboats, occurring in 39% of accidents involving them.



Many PWC-related accidents had more than one cause, which is reflected in this chart. The "Other" category includes causes that do not fit into any of the categories listed above.



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Chart 17 Fatalities by Month

Total Fatalities= 53

The largest number of fatalities occurred in May.

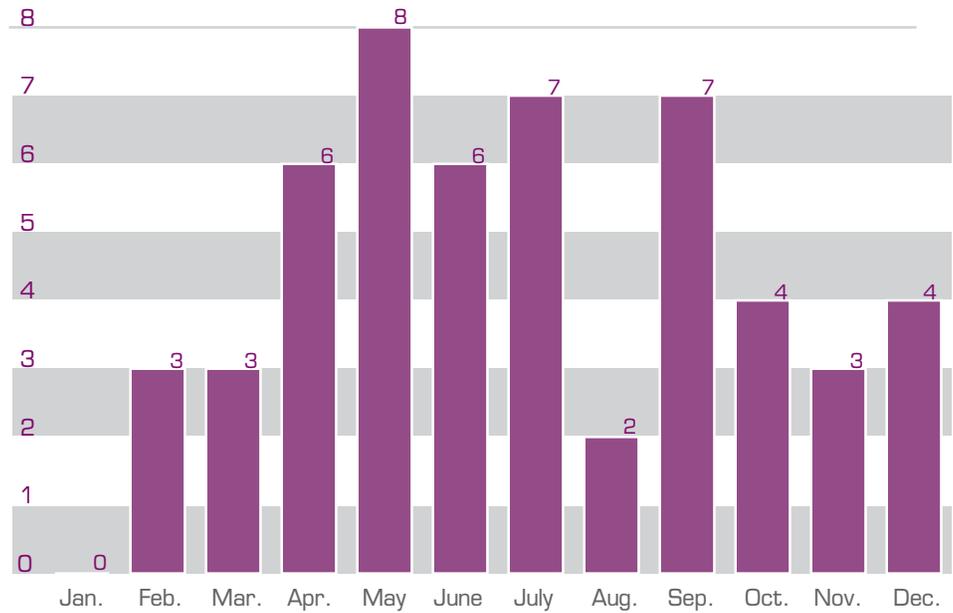
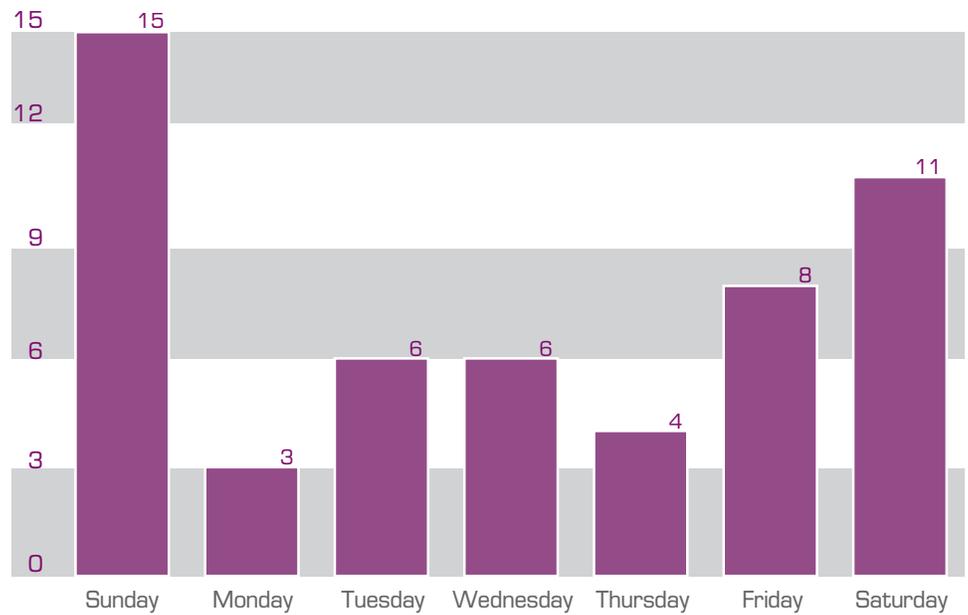


Chart 18 Fatalities by Day of the Week

Total Fatalities= 53



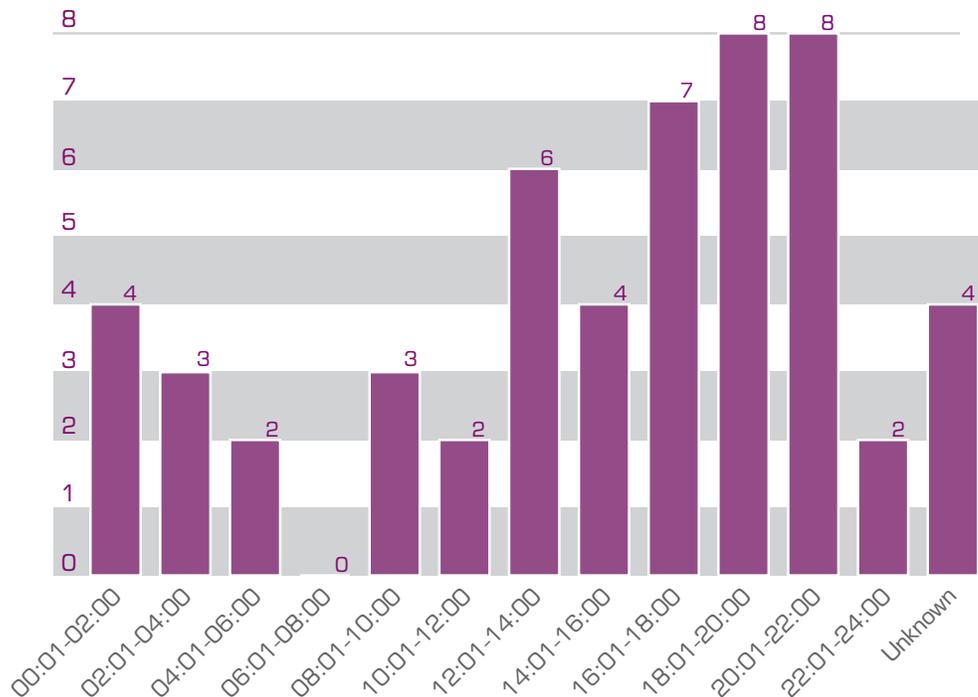
49% of fatal boating accidents occurred on the weekends.

Chart 19 Fatalities by Time of Day

Total Fatalities = 53

The largest number of fatalities occurred between 6 and 10 p.m.

Chart time periods are shown using military time.



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Chart 20
Fatalities by Type of Vessel

Total Vessels = 56
Total Fatalities = 53

The majority of vessels involved in fatal boating accidents were open motorboats.

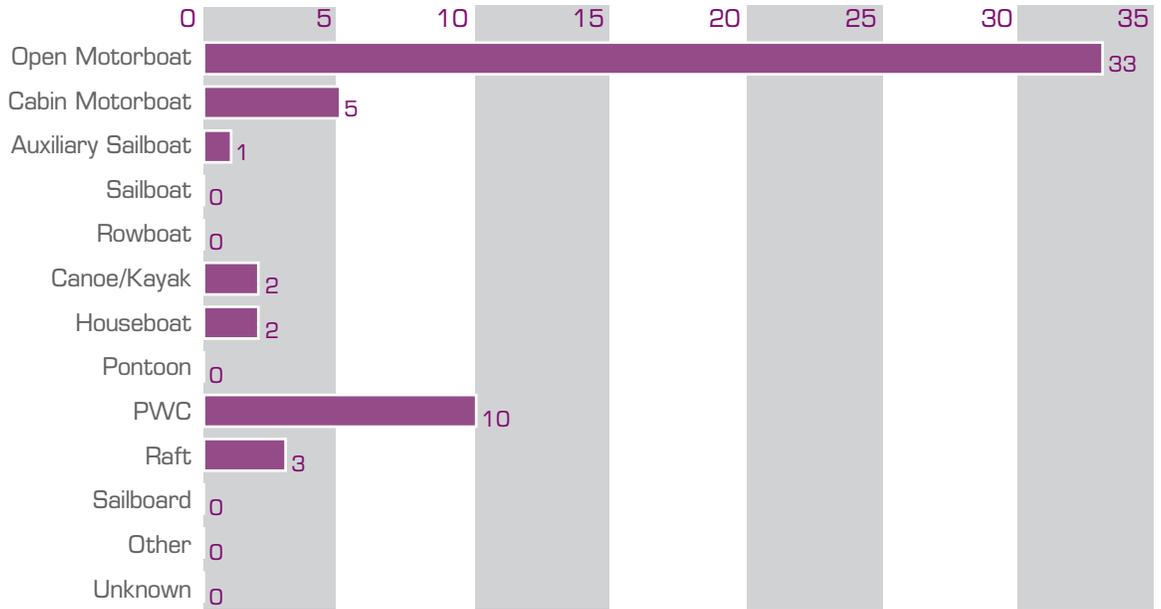
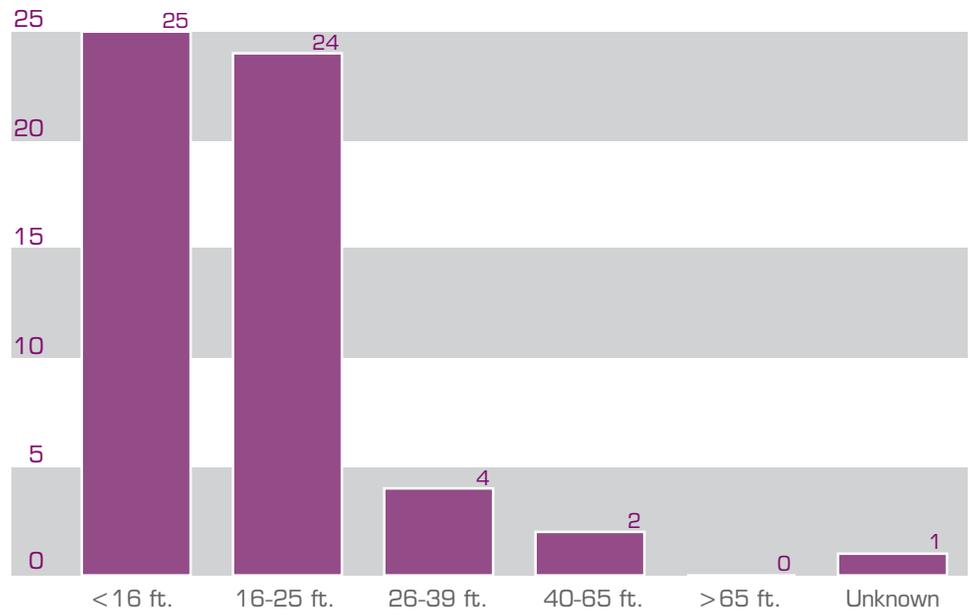


Chart 21
Fatalities by Length of Vessel

Total Vessels = 56
Total Fatalities = 53

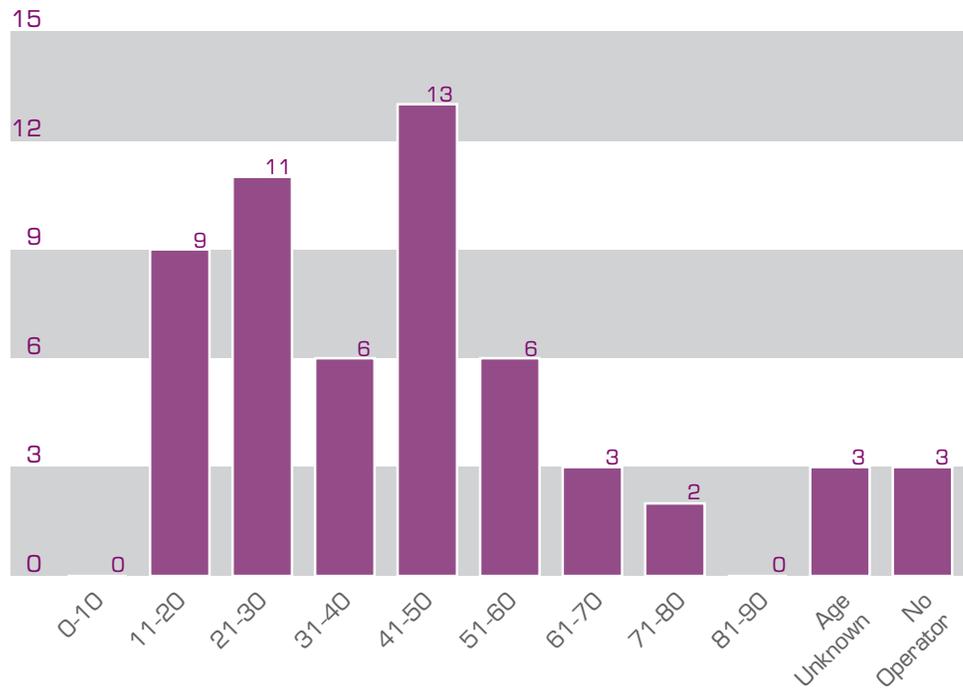


The majority of vessels (88%) involved in fatal boating accidents were less than 26 feet in length.

Chart 22 Operators Involved in Fatal Accidents by Age

Total Vessels = 56
Total Operators = 53
Total Fatalities = 53

Operators from the 41-50 age group were involved in more fatal boating accidents than any other age group, closely followed by the 21-30 age group.



53

Chart 23 Fatalities by Operation at Time of Accident

Total Vessels = 56
Total Fatalities = 53



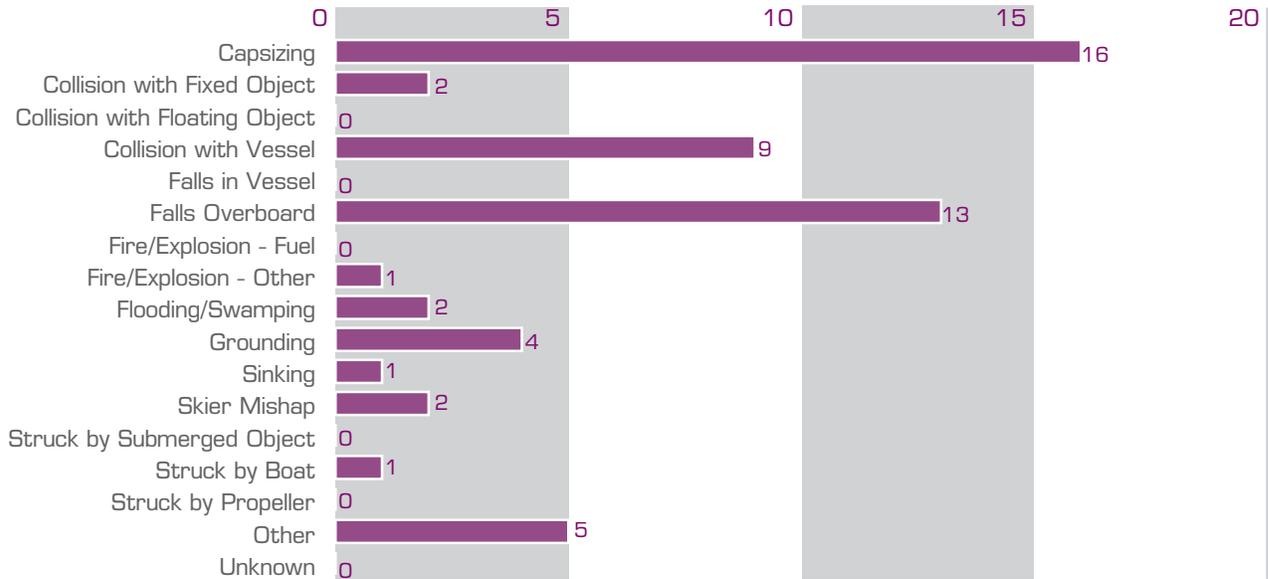
45% of the vessels involved in fatal boating accidents were cruising at the time of the accident.



Chart 24 Fatalities by Type of Accident

Total Types = 56
Total Fatalities = 53

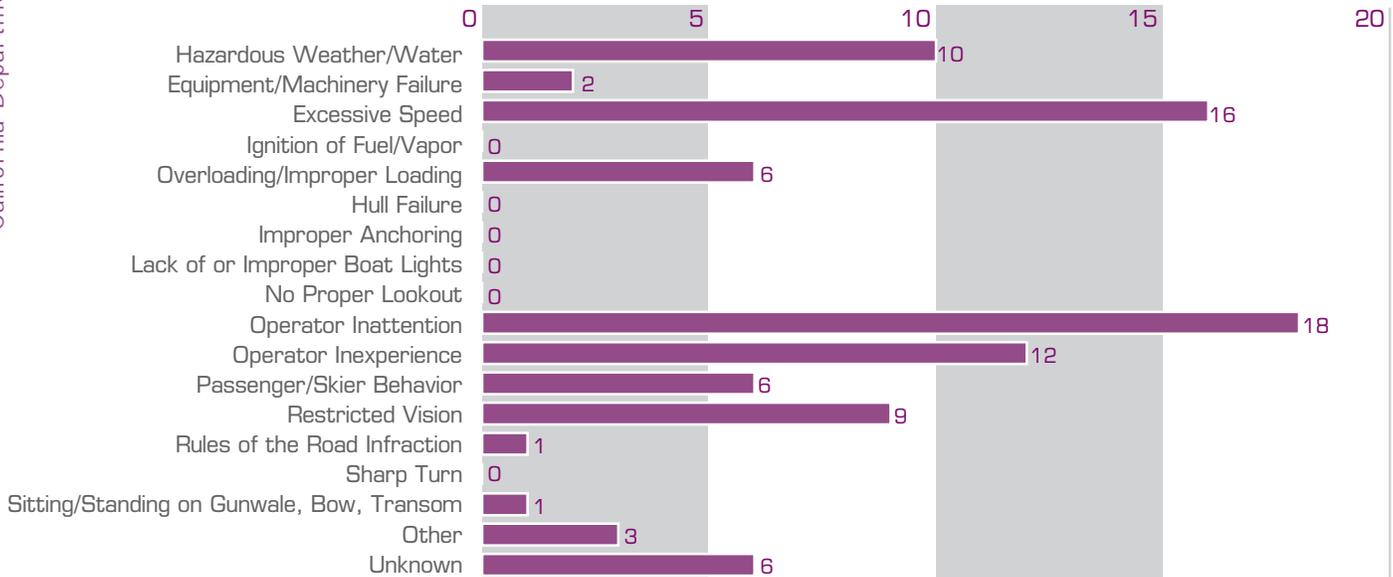
Capsizing and falls overboard were the most common types of fatal boating accidents.



Some accidents are represented by more than one accident type, which accounts for the accident types exceeding the number of fatalities.

Chart 25 Fatalities by Cause of Accident

Total Causes = 80
Total Fatalities = 53



Operator inattention played a role in 34% of all fatalities, followed by excessive speed (30%).

Many PWC-related accidents had more than one cause, which is reflected in this chart. The "Other" category includes causes that do not fit into any of the categories listed above.

Chart 26 Fatalities by Accident Location

Total Fatalities = 53

The largest number of fatalities occurred on lakes throughout the State, followed by coastal waters.

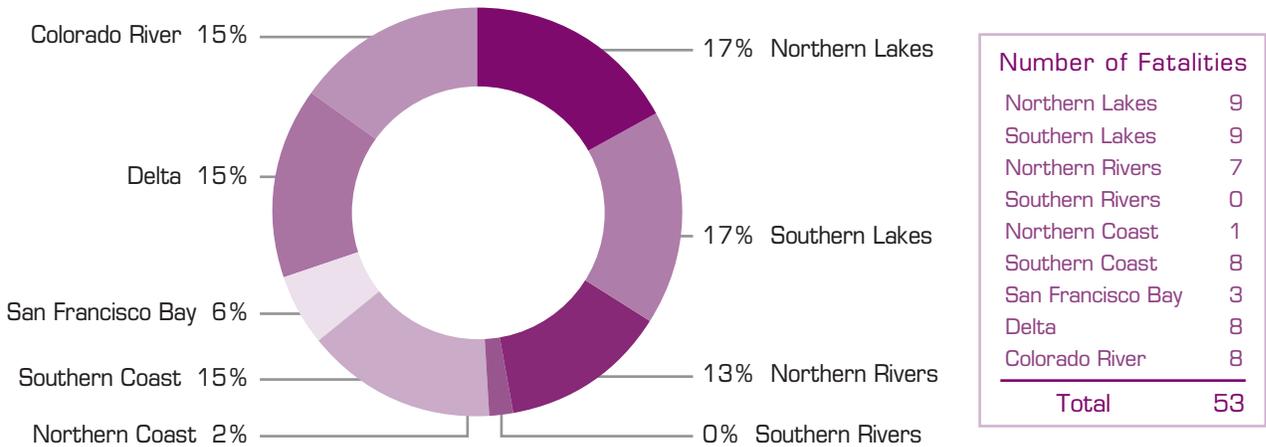
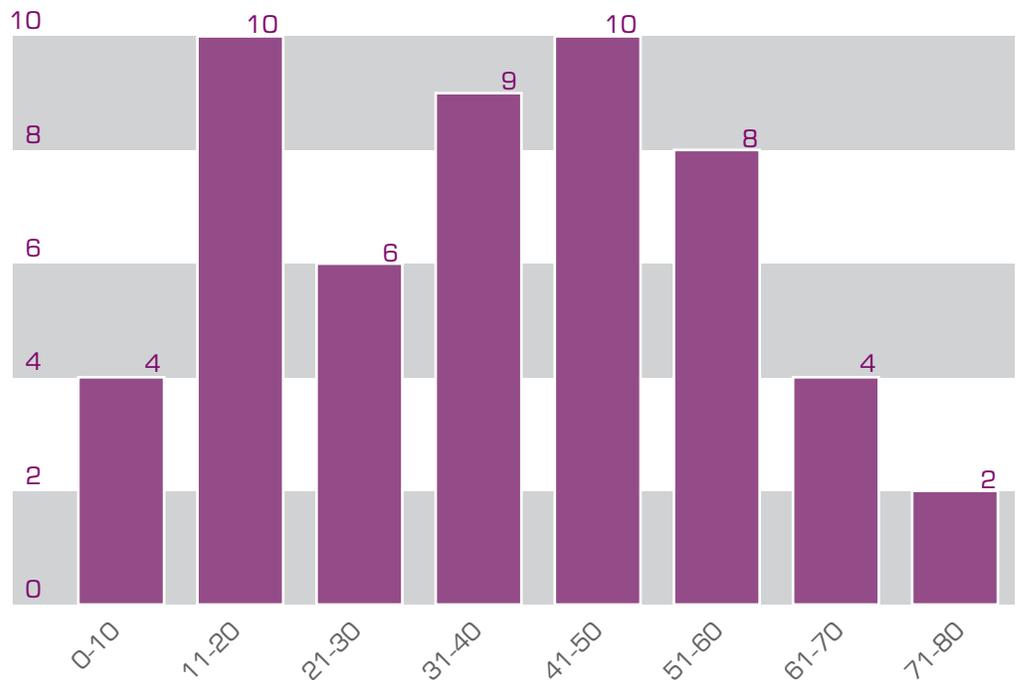


Chart 27 Fatalities by Age of Victim

Total Fatalities = 53



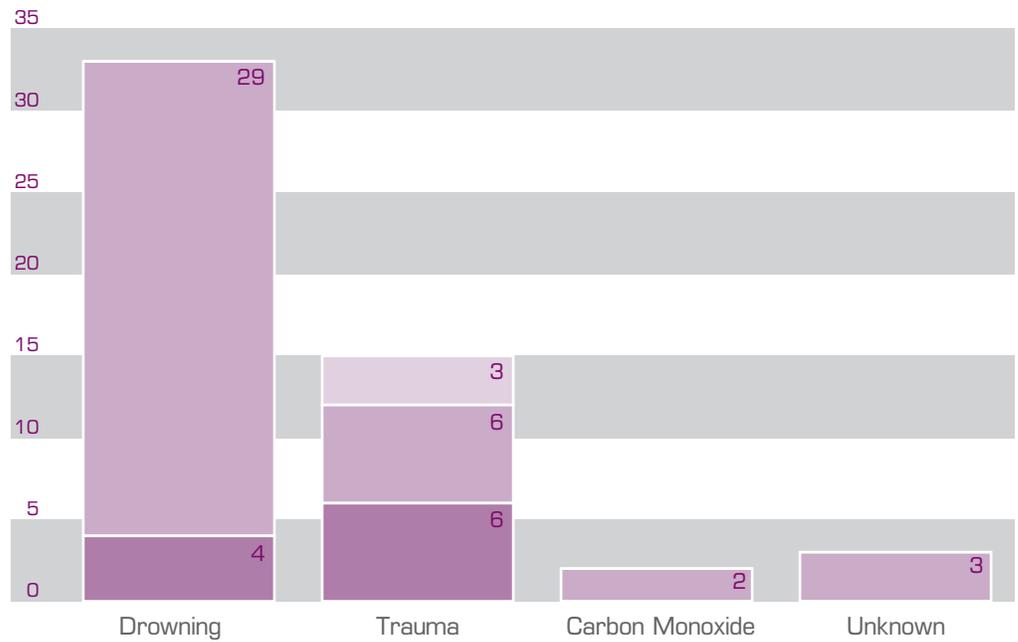
The 11-20 and 41-50 age groups registered the largest number of boating fatalities.



Chart 28 Fatalities by Cause of Death

Total Causes = 53
Total Fatalities = 53

Drowning was the leading cause of death in fatal accidents. The chart shows the effectiveness of life jacket usage. Of the victims who drowned, 88% were not wearing a life jacket.



Unknown ■
Victim Not Wearing Life Jacket ■
Victim Wearing Life Jacket ■

Number of Fatalities	
Drowning	33
Trauma	15
Carbon Monoxide	2
Unknown	3
Total	53



Angler Safety Message

CALIFORNIA BOATING ACCIDENT REPORT

CALIFORNIA DEPARTMENT OF BOATING AND WATERWAYS

The operator of every recreational vessel is required by Section 656 of the Harbors and Navigation Code to file a written report whenever a boating accident occurs which results in death, disappearance, injury that requires medical attention beyond first aid, total property damage in excess of \$500, or complete loss of a vessel. Reports must be submitted within 48 hours in case of death occurring within 24 hours of an accident, disappearance, or injury beyond first aid. All other reports must be submitted within 10 days of the accident. Reports are to be submitted to the California Department of Boating and Waterways at 2000 Evergreen Street, Suite 100, Sacramento, California 95815-3888, (916) 263-8189. Failure to submit this report as required is a misdemeanor and is punishable by a fine not to exceed \$1000 or imprisonment not to exceed 6 months or

DATE OF ACCIDENT (M/D/Y)		TIME OF ACCIDENT <input type="checkbox"/> AM <input type="checkbox"/> PM		COUNTY	BODY OF WATER	LOCATION ON WATER	
# INJURED	# DEAD	TOTAL \$\$	LAW ENFORCEMENT ON ACCIDENT SCENE? <input type="checkbox"/> YES <input type="checkbox"/> NO		AGENCY NAME		
WEATHER (CHECK ALL THAT APPLY): <input type="checkbox"/> CLEAR <input type="checkbox"/> RAIN <input type="checkbox"/> CLOUDY <input type="checkbox"/> SNOW <input type="checkbox"/> FOG <input type="checkbox"/> HAZY		WATER CONDITIONS <input type="checkbox"/> CALM (waves less than 6") <input type="checkbox"/> CHOPPY (waves 6"-2') <input type="checkbox"/> ROUGH (waves 2'-6') <input type="checkbox"/> VERY ROUGH (waves >6')		WIND CONDITIONS <input type="checkbox"/> NONE <input type="checkbox"/> LIGHT (0-6 mph) <input type="checkbox"/> MODERATE (7-14 mph) <input type="checkbox"/> STRONG (15-25 mph) <input type="checkbox"/> STORM (over 25 mph)		TEMPERATURE WATER AIR VISIBILITY <input type="checkbox"/> GOOD <input type="checkbox"/> FAIR <input type="checkbox"/> POOR STRONG CURRENT <input type="checkbox"/> YES <input type="checkbox"/> NO	

TYPE OF ACCIDENT (CHECK ALL THAT APPLY):				CAUSE OF ACCIDENT (CHECK ALL THAT APPLY):			
<input type="checkbox"/> CAPSIZING	<input type="checkbox"/> FIRE / EXPLOSION (fuel)	<input type="checkbox"/> IMPROPER LOOKOUT / INATTENTION	<input type="checkbox"/> HAZARDOUS WEATHER / WATER	<input type="checkbox"/> COLLISION WITH VESSEL	<input type="checkbox"/> FIRE / EXPLOSION (other than fuel)	<input type="checkbox"/> OPERATOR INEXPERIENCE	<input type="checkbox"/> RESTRICTED VISION
<input type="checkbox"/> COLLISION WITH FIXED OBJECT	<input type="checkbox"/> FLOODING / SWAMPING	<input type="checkbox"/> EXCESSIVE SPEED	<input type="checkbox"/> IGNITION OF SPILLED FUEL / VAPOR	<input type="checkbox"/> COLLISION WITH FLOATING OBJECT	<input type="checkbox"/> SINKING	<input type="checkbox"/> MACHINERY FAILURE	<input type="checkbox"/> IMPROPER ANCHORING
<input type="checkbox"/> FALL OVERBOARD	<input type="checkbox"/> STRUCK BY BOAT / PROPELLER	<input type="checkbox"/> EQUIPMENT FAILURE	<input type="checkbox"/> OFF-THROTTLE STEERING INABILITY	<input type="checkbox"/> FALL IN BOAT	<input type="checkbox"/> SKIER MISHAP	<input type="checkbox"/> IMPROPER LOADING	<input type="checkbox"/> FAILURE TO VENT
<input type="checkbox"/> OTHER _____		<input type="checkbox"/> OVERLOADING	<input type="checkbox"/> OTHER _____				

DESCRIBE WHAT HAPPENED AND WHAT YOU COULD HAVE DONE TO PREVENT THIS ACCIDENT
(Explain the cause of death or injury, medical treatment, etc. Use sketch if helpful. If needed, continue description on additional paper.)

VICTIM OR WITNESS INFORMATION

VICTIM / WITNESS NAME & ADDRESS	VICTIM / WITNESS STATUS	RIDING IN VESSEL #	AGE	INJURY DESCRIPTION	CAUSE OF DEATH	COULD VICTIM SWIM?	LIFE JACKET WORN?
	<input type="checkbox"/> INJURED <input type="checkbox"/> DEAD <input type="checkbox"/> WITNESS ONLY				<input type="checkbox"/> DROWNING <input type="checkbox"/> TRAUMA <input type="checkbox"/> OTHER	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
	<input type="checkbox"/> INJURED <input type="checkbox"/> DEAD <input type="checkbox"/> WITNESS ONLY				<input type="checkbox"/> DROWNING <input type="checkbox"/> TRAUMA <input type="checkbox"/> OTHER	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
	<input type="checkbox"/> INJURED <input type="checkbox"/> DEAD <input type="checkbox"/> WITNESS ONLY				<input type="checkbox"/> DROWNING <input type="checkbox"/> TRAUMA <input type="checkbox"/> OTHER	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
	<input type="checkbox"/> INJURED <input type="checkbox"/> DEAD <input type="checkbox"/> WITNESS ONLY				<input type="checkbox"/> DROWNING <input type="checkbox"/> TRAUMA <input type="checkbox"/> OTHER	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO

CALIFORNIA BOATING ACCIDENT REPORT

CALIFORNIA DEPARTMENT OF BOATING AND WATERWAYS

INFORMATION: OPERATOR #1

OPERATOR NAME AND ADDRESS AGE	IS OWNER DIFFERENT THAN OPERATOR? <input type="checkbox"/> YES <input type="checkbox"/> NO OWNER NAME AND ADDRESS	OPERATOR EXPERIENCE <input type="checkbox"/> UNDER 10 HOURS <input type="checkbox"/> 10 TO 100 HOURS <input type="checkbox"/> OVER 100 HOURS	OPERATOR EDUCATION <input type="checkbox"/> AMERICAN RED CROSS <input type="checkbox"/> USCG AUXILIARY <input type="checkbox"/> US POWER SQUADRON <input type="checkbox"/> STATE COURSE <input type="checkbox"/> INFORMAL <input type="checkbox"/> NONE
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INFORMATION: VESSEL #1

(YOUR VESSEL)

<input type="checkbox"/> THIS VESSEL ONLY	# INJURED	# DEAD	ESTIMATED DAMAGE	RENTED BOAT <input type="checkbox"/> YES <input type="checkbox"/> NO	# OF PERSONS ON BOARD	# OF PERSONS TOWED
BOAT NUMBER (CF OR DOC #)		MFR. HULL ID #		BOAT NAME		LENGTH
BOAT MANUFACTURER		BOAT MODEL		YEAR BUILT	TYPE OF FUEL	# OF ENGINES HORSEPOWER
ACTIVITY <input type="checkbox"/> RECREATIONAL <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> OTHER _____			FIRE EXTINGUISHER ON BOARD <input type="checkbox"/> YES <input type="checkbox"/> NO	FIRE EXTINGUISHER USED <input type="checkbox"/> YES <input type="checkbox"/> NO	LIFE JACKETS ON BOARD <input type="checkbox"/> YES <input type="checkbox"/> NO	LIFE JACKETS ACCESSIBLE <input type="checkbox"/> YES <input type="checkbox"/> NO
LIFE JACKETS WORN <input type="checkbox"/> YES <input type="checkbox"/> NO		TYPE OF BOAT		HULL MATERIAL		PROPULSION
<input type="checkbox"/> OPEN MOTORBOAT <input type="checkbox"/> CABIN MOTORBOAT <input type="checkbox"/> PERSONAL WATERCRAFT <input type="checkbox"/> HOUSEBOAT <input type="checkbox"/> SAILBOAT (aux. engine) <input type="checkbox"/> SAILBOAT (sail only) <input type="checkbox"/> CANOE / KAYAK <input type="checkbox"/> RAFT <input type="checkbox"/> ROWBOAT <input type="checkbox"/> OTHER (specify) _____		<input type="checkbox"/> WOOD <input type="checkbox"/> ALUMINUM <input type="checkbox"/> FIBERGLASS <input type="checkbox"/> PLASTIC <input type="checkbox"/> RUBBER / VINYL <input type="checkbox"/> OTHER (specify) _____		<input type="checkbox"/> OUTBOARD <input type="checkbox"/> INBOARD <input type="checkbox"/> INBOARD / OUTBOARD <input type="checkbox"/> JET <input type="checkbox"/> SAIL ONLY <input type="checkbox"/> PADDLE / OARS <input type="checkbox"/> OTHER (specify) _____		OPERATION AT TIME OF ACCIDENT
				<input type="checkbox"/> CRUISING <input type="checkbox"/> CHANGING DIRECTION <input type="checkbox"/> CHANGING SPEED <input type="checkbox"/> TOWING SKIER / TUBER <input type="checkbox"/> TOWING SKIER- SKIER DOWN <input type="checkbox"/> TOWING ANOTHER VESSEL <input type="checkbox"/> BEING TOWED BY ANOTHER VESSEL		<input type="checkbox"/> DRIFTING <input type="checkbox"/> AT ANCHOR <input type="checkbox"/> TIED TO DOCK <input type="checkbox"/> LAUNCHING <input type="checkbox"/> DOCKING / LEAVING DOCK <input type="checkbox"/> SAILING <input type="checkbox"/> OTHER (specify) _____
				SPEED _____ MPH		

INFORMATION: OPERATOR #2

OPERATOR NAME AND ADDRESS AGE	IS OWNER DIFFERENT THAN OPERATOR? <input type="checkbox"/> YES <input type="checkbox"/> NO OWNER NAME AND ADDRESS	OPERATOR EXPERIENCE <input type="checkbox"/> UNDER 10 HOURS <input type="checkbox"/> 10 TO 100 HOURS <input type="checkbox"/> OVER 100 HOURS	OPERATOR EDUCATION <input type="checkbox"/> AMERICAN RED CROSS <input type="checkbox"/> USCG AUXILIARY <input type="checkbox"/> US POWER SQUADRON <input type="checkbox"/> STATE COURSE <input type="checkbox"/> INFORMAL <input type="checkbox"/> NONE
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INFORMATION: VESSEL #2

(OTHER VESSEL INVOLVED)

<input type="checkbox"/> THIS VESSEL ONLY	# INJURED	# DEAD	ESTIMATED DAMAGE \$\$	RENTED BOAT <input type="checkbox"/> YES <input type="checkbox"/> NO	# OF PERSONS ON BOARD	# OF PERSONS TOWED
BOAT NUMBER (CF OR DOC #)		MFR. HULL ID#		BOAT NAME		LENGTH
BOAT MANUFACTURER		BOAT MODEL		YEAR BUILT	TYPE OF FUEL	# OF ENGINES HORSEPOWER
ACTIVITY <input type="checkbox"/> RECREATIONAL <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> OTHER _____			FIRE EXTINGUISHER ON BOARD <input type="checkbox"/> YES <input type="checkbox"/> NO	FIRE EXTINGUISHER USED <input type="checkbox"/> YES <input type="checkbox"/> NO	LIFE JACKETS ON BOARD <input type="checkbox"/> YES <input type="checkbox"/> NO	LIFE JACKETS ACCESSIBLE <input type="checkbox"/> YES <input type="checkbox"/> NO
LIFE JACKETS WORN <input type="checkbox"/> YES <input type="checkbox"/> NO		TYPE OF BOAT		HULL MATERIAL		PROPULSION
<input type="checkbox"/> OPEN MOTORBOAT <input type="checkbox"/> CABIN MOTORBOAT <input type="checkbox"/> PERSONAL WATERCRAFT <input type="checkbox"/> HOUSEBOAT <input type="checkbox"/> SAILBOAT (aux. engine) <input type="checkbox"/> SAILBOAT (sail only) <input type="checkbox"/> CANOE / KAYAK <input type="checkbox"/> RAFT <input type="checkbox"/> ROWBOAT <input type="checkbox"/> OTHER (specify) _____		<input type="checkbox"/> WOOD <input type="checkbox"/> ALUMINUM <input type="checkbox"/> FIBERGLASS <input type="checkbox"/> PLASTIC <input type="checkbox"/> RUBBER / VINYL <input type="checkbox"/> OTHER (specify) _____		<input type="checkbox"/> OUTBOARD <input type="checkbox"/> INBOARD <input type="checkbox"/> INBOARD / OUTBOARD <input type="checkbox"/> JET <input type="checkbox"/> SAIL ONLY <input type="checkbox"/> PADDLE / OARS <input type="checkbox"/> OTHER (specify) _____		OPERATION AT TIME OF ACCIDENT
				<input type="checkbox"/> CRUISING <input type="checkbox"/> CHANGING DIRECTION <input type="checkbox"/> CHANGING SPEED <input type="checkbox"/> TOWING SKIER / TUBER <input type="checkbox"/> TOWING SKIER- SKIER DOWN <input type="checkbox"/> TOWING ANOTHER VESSEL <input type="checkbox"/> BEING TOWED BY ANOTHER VESSEL		<input type="checkbox"/> DRIFTING <input type="checkbox"/> AT ANCHOR <input type="checkbox"/> TIED TO DOCK <input type="checkbox"/> LAUNCHING <input type="checkbox"/> DOCKING / LEAVING DOCK <input type="checkbox"/> SAILING <input type="checkbox"/> OTHER (specify) _____
				SPEED _____ MPH		

NAME OF PERSON COMPLETING THE REPORT _____

SIGNATURE OF PERSON COMPLETING THE REPORT _____

QUALIFICATION OF PERSON COMPLETING REPORT

OPERATOR OWNER OTHER (specify) _____