**User Name:** donyAYCEProd antony
**Date and Time:** Oct 18, 2014 4:02 p.m. EDT
**Job Number:** 13841867

## Document(1)

1. Human error in recreational boating

**Client/Matter:** Dony1

**Narrowed by:**

| Content Type | Narrowed by |
|---|---|
| Scientific | -None- |

*Human error in recreational boating*; (2006) 39 ESACAP 2 398-405

March 2007

**Section:** Pgs. 398-405 Vol. 39 No. 2 ISSN: 0001-4575

**Length:** 6296 words

**History:** Received: June 6, 2006; Revised: September 2, 2006; Accepted: September 10, 2006

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# Body

## ABSTRACT

Each year over 600 people die and more than 4000 are reported injured in recreational ***boating*** ***accidents***. As with most other ***accidents***, human error is the major contributor. U.S. Coast Guard reports of 3358 ***accidents*** were analyzed to identify errors in each of the ***boat*** types by which statistics are compiled: auxiliary (motor) sailboats, cabin motorboats, canoes and kayaks, house ***boats***, personal watercraft, open motorboats, pontoon ***boats***, row ***boats***, sail-only ***boats***. The individual errors were grouped into categories on the basis of similarities in the behavior involved. Those presented here are the categories accounting for at least 5% of all errors when summed across ***boat*** types. The most revealing and significant finding is the extent to which the errors vary across types. Since ***boating*** is carried out with one or two types of ***boats*** for long periods of time, effective ***accident*** prevention measures, including safety instruction, need to be geared to individual ***boat*** types.

## FULL TEXT

### 1 Introduction

In a typical year, over 600 recreational boaters die, and more than 4000 are reported injured, in U.S. waters. The U.S. Coast Guard (USCG) collects reports of ***boating*** ***accidents*** and reports them annually in ″***boating*** statistics″. The various ***accidents*** are categorized by type, such as ″capsizing″ or ″collision with vessel″, and contributors such as ″weather″ or ″drug use″. Information as to the conditions and events contributing to ***boating*** ***accidents*** can be very useful in guiding preventive efforts. Most ***accidents*** on the water involve multiple causes. Probably one of the better-known examples is the sinking of Titanic. While the direct cause was collision with an iceberg, other contributing causes include a northerly route, limited visibility, and failure to limit speed accordingly. Insight into the causes of ***boating*** ***accidents*** can help in reducing the incidence of death and injury by allowing educational, enforcement, and other preventive efforts to focus upon those factors that play the largest role in bringing them about.

### 1.1 Identification of ***accident*** causes

Some analyses of ***accidents*** reserve the term ″cause″ to that which directly results in unintentional damage or injury, treating those events which lead up to the cause as ″contributors″. However, more common usage in ***accident*** analysis accepts as a cause any factor without which the ***accident***, or its consequences, would not have occurred, often referred to as the ″but for″ criterion. Although it was collision with an iceberg that caused the Titanic to sink, a more southerly route, better visibility *or* slower speed would have prevented the collision and the sinking. The series of events leading