



National Association of State Boating Law Administrators
Engineering, Reporting & Analysis Committee

Template for In-Depth Analysis of Fatality Trends by Body of Water

OPERATOR'S MANUAL

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Introduction

The purpose of the template described in this manual is to aid state boating authorities in analyzing boat accident information (data). It is primarily geared toward two categories of accident data: contributing factors/causes and accident types. The overall goal in undertaking this sort of analysis is to recognize trends in data categories and tailor education campaigns and/or direct law enforcement activities to help prevent future accidents.

While this may seem simple at first, after reviewing accident information (data) with this goal in mind, it becomes apparent that it is a complex endeavor, especially over a large geographic area or span of time.

In 2008, the National Association of State Boating Law Administrators (NASBLA) Engineering, Reporting & Analysis Committee (ERAC) began exploring ways to analyze large amounts of boat accident data to answer questions about causes and prevention. The ERAC charge team first assigned to this project decided to focus on recreational boating fatalities since the reports on these incidents typically have the most detail and accuracy. The result was an Excel spreadsheet template that could be used to compile a state's accident data by body of water across a 10-year timeframe. The tool has since been tested and refined; it is described in this manual and is presented in two separate Excel files.

The two worksheet templates utilizing color-coded fields capture 10 years of fatality data by body of water. One worksheet covers the primary types of accidents and the other, the primary contributing factors/causes of the accidents.

Among the template's features:

- The primary types and contributing factors/causes of fatal accidents are presented both across a 10-year timeframe and by individual calendar year to facilitate comparison.
- Data including surface acres of water and characteristics unique to each body of water are displayed to give additional perspectives between bodies of water.
- The percentages of fatalities by body of water for the last 10 years and the last five (5) years are displayed to help identify trends over those periods of time and give direction for further study.

What you can learn from using the template:

- Insight into fatal accident patterns or trends: short term vs. long term
- Evaluation of program implementation: e.g., mandatory education or media campaigns
- Evaluation of laws and regulations: e.g., BUI law changes, operator age requirements, speed limits, mandatory PFD wear
- Assistance with goal planning: directed law enforcement patrol or targeted education

Preparing to use the Template

You will be retrieving data for fatal boat accidents over a 10-year time period. The data need to be numbers of accidents broken down by **Accident Type** and **Contributing Factor/Cause** and you should have these numbers for each body of water. Instructions for entering data into the cells of the Microsoft Excel worksheet templates are presented in the **Using the Template** section of this manual (p. 6). However, the results you receive from using the template will be affected by the quality of data that you enter.

Use the following instructions to prepare for entering your data:

1) Identify the accident report database that will be used, and assess its characteristics:

- a. *How many years of fatality data are available?*
- b. *In what format are the data stored—paper, electronic, both?*

Consider these checklist items together. The format in which the data are stored can facilitate—or slow down—your preparation time and affect the time frame you cover in your spreadsheet. A five (5)- or 10-year range of data is necessary for identifying meaningful patterns and trends, but the farther back in time you go, the more likely you will find some incomplete records; do not let that discourage you from this important process. If the fatality data are stored in an electronic database, determine whether it has query/report capability.

2) Review the integrity of the fatality accident reports

- a. *Were the reports prepared, reviewed and approved by trained personnel?*

Consider the source of the reports—owner/operator or officer/investigator—and whether the person reviewing and approving the reports attended accident investigation training or BARD-Web (Boating Accident Report Database) training. Keep in mind that reports prepared, reviewed and approved by officers/investigators are generally more accurate than those generated solely by those parties actually involved in the accident.

- b. *Has a primary accident type and contributing factor/cause been established for each report?*

If trained, experienced personnel did not make the final determinations for type and contributing factor/cause, then it may be necessary to delve deeper into the accident report(s) to see if any underlying factors or other important details have been overlooked.

c. Are most of the accident types and contributing factors/causes consistent with national standards?

Consider whether the accident types and contributing factors/causes have been determined based on nationally-established terms and definitions (as presented in the template), if there are any significant differences, and if, as a result, you will need to add to the types and contributing factors/causes already presented in the template.

3) Establish the parameters for the “Bodies of Water” that will be included and examined using the template:

It might not be desirable to compile information on all of the bodies of water in your state. If you wish to narrow your list, set parameters for those bodies of water on which you *will* examine data. Recognize that the parameters will affect the scope and applicability of your results and, ultimately, your interventions.

For example:

- a. **LE patrolled vs. non-patrolled waters**—Are the bodies of water that will be analyzed patrolled by boating law enforcement officers?*
- b. **Public vs. private waters**—Do your state’s boating enforcement statutes cover public and private bodies of water? Will only the bodies of water covered by state boating statutes be included in the template?*
- c. **Man-made vs. natural waters**—Is there a need or reason to differentiate between man-made vs natural bodies of water?*
- d. **Total body of water vs. defined areas**—Are some of the bodies of water so large that there would be benefit (or a need) to defining areas within the body of water?*

4) Determine a source or sources for information on the characteristics of the bodies of water covered in the template:

It may be helpful to characterize certain bodies of water to evaluate accident trends or contributing factors/causes. A body of water may show more of a certain accident type or contributing factor/cause depending on external factors.

For example:

- a. **Size:** Characterize each body of water by size using surface acres, shoreline miles, or other available measurement*

- b. **Type:** *River or Impoundment, or other type*
- c. **Establish other body of water characteristics to be used including, but not limited to:**

Shoreline development (type and timeline)

Presence and prevalence of non-resident boaters

Primary residence vs. secondary residence development

Primary user groups

Using the Template

General Notes

The cell areas throughout the spreadsheet workbook where you will be adding information will be noted in red or will be blank; only those areas where information is required are available to you, all other fields are locked and you will not be able to click into or change information in these cells.

If you are experienced in Excel, you can unlock the cells to allow additional manipulation by navigating to Tools>Protection and clicking "Unprotect Sheet." There are no passwords set on the workbook sheets.

Step 1

On the first tab titled "1-Bodies of Water" type in the names of up to 200 bodies of water that you want to enter in your analysis in the first column **(1)**; you will only have to input this information once and it will carry through to the other tabs for each years' data.

In the second and third columns, enter the surface acres **(2)** of the bodies of water that you have chosen as well as the unique characteristics **(3)** of those bodies of water.

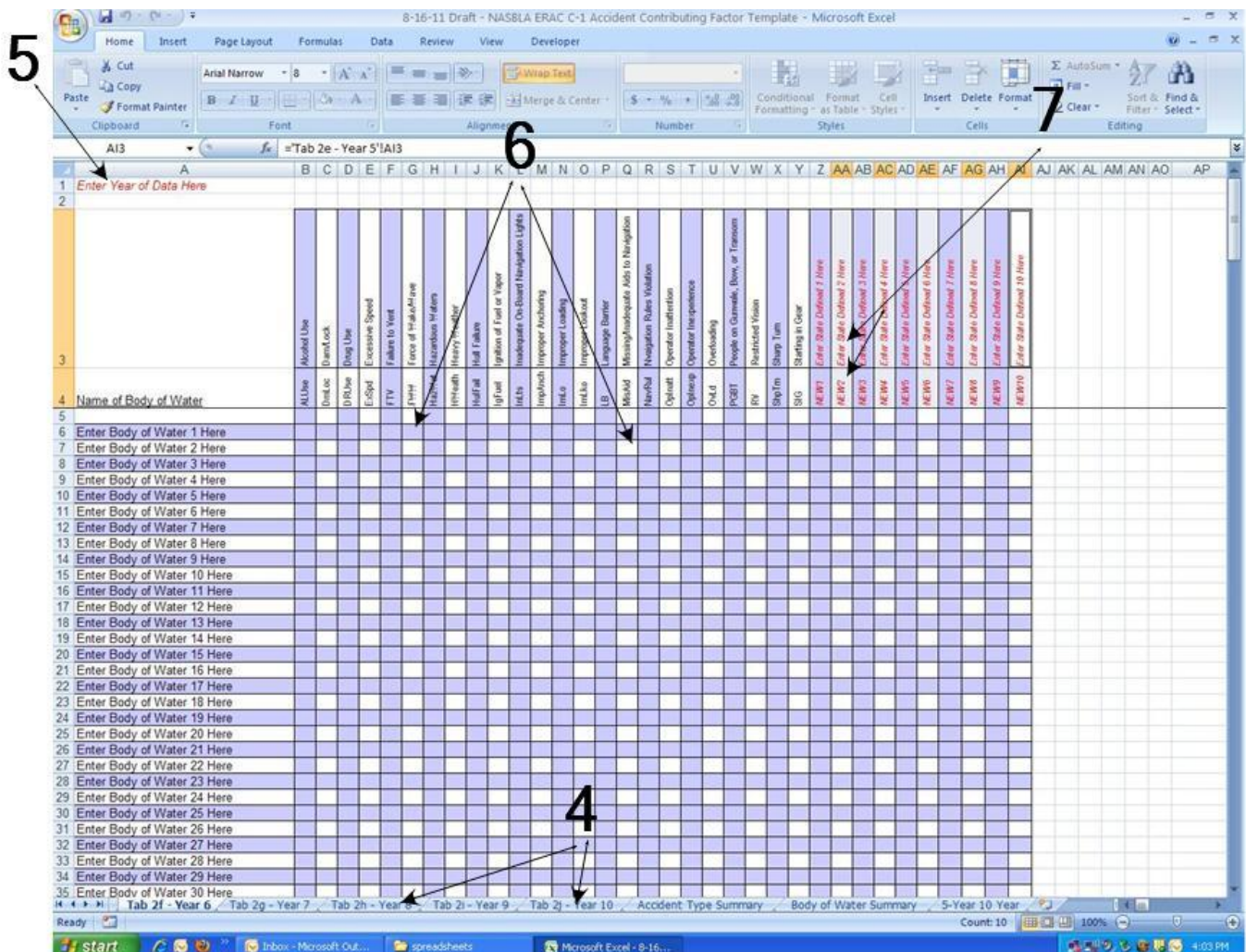
The screenshot shows a Microsoft Excel spreadsheet with the following structure:

1	2	3					
Name of Body of Water	Surface Acres	Unique Characteristics					
Enter Body of Water 1 Here	Enter Surface Acres for Body of Water 1 Here	Enter Unique Characteristics for Body of Water 1 Here					
Enter Body of Water 2 Here	Enter Surface Acres for Body of Water 2 Here	Enter Unique Characteristics for Body of Water 2 Here					
Enter Body of Water 3 Here	Enter Surface Acres for Body of Water 3 Here	Enter Unique Characteristics for Body of Water 3 Here					
Enter Body of Water 4 Here	Enter Surface Acres for Body of Water 4 Here	Enter Unique Characteristics for Body of Water 4 Here					
Enter Body of Water 5 Here	Enter Surface Acres for Body of Water 5 Here	Enter Unique Characteristics for Body of Water 5 Here					
Enter Body of Water 6 Here	Enter Surface Acres for Body of Water 6 Here	Enter Unique Characteristics for Body of Water 6 Here					
Enter Body of Water 7 Here	Enter Surface Acres for Body of Water 7 Here	Enter Unique Characteristics for Body of Water 7 Here					
Enter Body of Water 8 Here	Enter Surface Acres for Body of Water 8 Here	Enter Unique Characteristics for Body of Water 8 Here					
Enter Body of Water 9 Here	Enter Surface Acres for Body of Water 9 Here	Enter Unique Characteristics for Body of Water 9 Here					
Enter Body of Water 10 Here	Enter Surface Acres for Body of Water 10 Here	Enter Unique Characteristics for Body of Water 10 Here					
Enter Body of Water 11 Here	Enter Surface Acres for Body of Water 11 Here	Enter Unique Characteristics for Body of Water 11 Here					
Enter Body of Water 12 Here	Enter Surface Acres for Body of Water 12 Here	Enter Unique Characteristics for Body of Water 12 Here					
Enter Body of Water 13 Here	Enter Surface Acres for Body of Water 13 Here	Enter Unique Characteristics for Body of Water 13 Here					
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Enter Body of Water 41 Here	Enter Surface Acres for Body of Water 41 Here	Enter Unique Characteristics for Body of Water 41 Here					
Enter Body of Water 42 Here	Enter Surface Acres for Body of Water 42 Here	Enter Unique Characteristics for Body of Water 42 Here					
Enter Body of Water 43 Here	Enter Surface Acres for Body of Water 43 Here	Enter Unique Characteristics for Body of Water 43 Here					

Step 2

On the next ten tabs (2a-2j) (4), enter the year of the data (5) being compiled in the upper left-hand corner of each spreadsheet. Then, using the data you have collected, type in the number of accidents (6) in each category for each body of water in the proper year's tab/spreadsheet.

Note that you can insert additional category options (7) (description and code) in the red category boxes at the upper right side of each table as well. You can just type over the existing options with your new categories. As with the "1-Bodies of Water" tab, what you type in 2a will roll through to 2b, what you type in 2b will roll through to 2c, and so on.



Step 3

Once Steps 1 and 2 are completed, you are ready to begin analyzing your results, which are found under two "Summary Tabs" (8) and a "5 Year 10 Year" tab (9). The summary tables will give you totals by: Year (10), Accident Type or Contributing Factor/Cause over a span of years (11), and Body of Water (12 – see next page). See examples below.

You can print out the results and make notes/highlights on paper, or, as indicated earlier, if you are familiar with Excel you can turn off the protection on these sheets to allow you to highlight or insert comments directly into the spreadsheet.

		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTALS
1												
2	Accident Type											
3	ALUse Alcohol Use	0	2	0	1	0	0	0	1	0	2	6
4	DmLoc Dam/Lock	0	0	0	0	0	1	0	0	0	0	1
5	DRUse Drug Use	0	0	0	0	0	0	0	0	0	0	0
6	ExSpd Excessive Speed	0	0	0	0	1	0	0	0	0	2	3
7	FTV Failure to Veat	0	0	0	0	0	0	0	0	0	0	0
8	FWW Force of Wake/Wave	0	0	0	0	0	0	0	0	0	0	0
9	HazWat Hazardous Waters	0	0	0	0	0	0	0	0	0	0	0
10	HWeath Heavy Weather	0	1	0	0	0	0	0	0	1	0	2
11	HuFall Hull Failure	1	0	0	0	0	0	0	0	0	0	1
12	IgFuel Ignition of Fuel or Vapor	0	0	0	0	0	0	0	0	0	0	0
13	IMLs Inadequate On-Board Navigation Lights	0	0	0	0	0	0	0	0	0	0	0
14	ImpAnch Improper Anchoring	0	0	0	0	0	0	0	0	0	0	0
15	IMLo Improper Loading	0	0	0	0	0	0	0	0	0	0	0
16	IMLo Improper Lookout	0	1	0	0	1	0	0	0	0	0	2
17	LB Language Barrier	0	0	0	0	0	0	0	0	0	0	0
18	MisAid Missing/Inadequate Aids to Navigation	0	0	0	0	0	0	0	0	0	0	0
19	NavRuL Navigation Rules Violation	0	0	0	0	0	0	0	0	0	0	0
20	OpInat Operator Inattention	1	0	0	0	0	1	0	1	0	0	3
21	OpInexp Operator Inexperience	0	0	1	0	0	0	0	0	0	0	1
22	OvLd Overloading	0	0	0	0	0	0	0	0	0	1	1
23	POBT People on Gunwale, Bow, or Transom	1	0	0	0	0	1	1	0	0	0	3
24	RV Restricted Vision	0	0	1	0	1	0	0	0	0	0	2
25	ShpTrn Sharp Turn	0	0	0	0	0	0	0	0	1	0	1
26	SlG Starting in Gear	0	0	0	0	0	0	0	0	0	0	0
27	NEW1 Equipment failure	1	0	0	1	0	0	0	0	0	0	2
28	NEW2 Weather	0	0	0	0	0	0	0	0	0	0	0
29	NEW3 unknown	0	0	0	0	0	1	0	1	1	0	3
30	NEW4 Medical	0	0	0	0	0	0	0	0	0	1	1
31	NEW5 Enter State Defined 5 Here	0	0	0	0	0	0	0	0	0	0	0
32	NEW6 Enter State Defined 6 Here	0	0	0	0	0	0	0	0	0	0	0
33	NEW7 Enter State Defined 7 Here	0	0	0	0	0	0	0	0	0	0	0
34	NEW8 Enter State Defined 8 Here	0	0	0	0	0	0	0	0	0	0	0
35	NEW9 Enter State Defined 9 Here	0	0	0	0	0	0	0	0	0	0	0
36	NEW10 Enter State Defined 10 Here	0	0	0	0	0	0	0	0	0	0	0
37												
38	TOTALS	4	4	2	2	3	4	1	3	5	4	32
39												
40												
41												
42												
43												
44												
45												

10

11

8

9

Step 3 (continued)

Totals by Body of Water (summary table)

1	Name of Body of Water	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTALS
2	Chickamauga	1 HuFat; 1 PGBT;	1 ALUse; 1 RV;	1 NEW1;			1 DmLoc; 1 PGBT;			1 ExSpd; 1 NEW3;	1 ALUse; 1 NEW4;	1 HuFat; 1 PGBT; 1 ALUse; 1 RV; 1 NEW1; 1 DmLoc; 1 PGBT; 1 ExSpd; 1 NEW3; 1 ALUse; 1 NEW4;
3	KY Lake	1 NEW1;	1 ALUse; 1 HWeath; 1 ImLko;	1 Ophexp;	1 ALUse;	1 ExSpd; 1 ImLko; 1 RV;	1 Ophatt; 1 PGBT;			1 ALUse; 1 Ophatt;	1 HWeath; 1 SnpTrn;	1 ALUse; 1 OvLd; 1 NEW1; 1 ALUse; 1 HWeath; 1 ImLko; 1 Ophexp; 1 ALUse; 1 ExSpd; 1 ImLko; 1 RV; 1 Ophatt; 1 PGBT; 1
4	Ft Loudon						1 NEW3;		1 NEW3;	1 ExSpd;		1 Ophatt; 1 NEW3; 1 NEW3; 1 ExSpd;
5	Enter Body of Water 4 Here											
6	Enter Body of Water 5 Here											
7	Enter Body of Water 6 Here											
8	Enter Body of Water 7 Here											
9	Enter Body of Water 8 Here											
10	Enter Body of Water 9 Here											
11	Enter Body of Water 10 Here											

Utilizing Template Results

Below are findings and comments from four states that have already used the template and its applicable results:

The template and associated accident data were used to select Norris Lake as the 2010 site for the "Wear It Tennessee" program. Template findings were used to secure sponsorship for the program and donation of a bass boat to facilitate the "Wear It Tennessee" campaign. The accident data was also used to create educational presentations to target specific groups. ~ *Tennessee*

Based on template findings, the Inland Freshwater Lake Awareness Program was expanded to a larger audience that included saltwater fisherman and others. The agency also increased participation in awareness programs such as "Nobody's Waterproof" and greater emphasis was placed on alcohol and life jacket laws on specific water bodies in the state. ~ *Texas*

Alcohol-involved accidents were found to be the most prevalent in the lower Connecticut River and Candlewood Lake areas of the state – leading to targeted enforcement in these areas including BUI initiatives and "Operation Drywater."
~ *Connecticut*

Template results indicated that capsizings, falls overboard, floodings, and swampings continue to account for a significant number of accidents – potentially warranting a re-emphasis on "Operation Overboard"-style messaging. A large percentage of accidents were also noted in non-public access boating areas in the state indicating a potential need to re-tailor education and enforcement efforts to reach this audience. ~ *Ohio*

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