Behind the counts

The vital role that accident report data play in answering boating safety research questions and what can improve them for the future

By Dr. Deborah Gona, NASBLA Research Director

In his article, "In the blink of an eye" (pp. 14-15), Capt. Gary Haupt of the Missouri State Water Patrol recounts many of the harsh details of a recreational boating accident scene still fresh in his mind, though the event happened nearly 30 years ago. The eye-opening experience, along with numerous others over the years, surely has formed a cache of haunting memories.

Just as surely, his on-the-job experiences, and those of fellow marine law enforcement officers and accident investigators across the nation, have accumulated into a rich reserve of skills, gritty awareness of behaviors and activities on the waterways, insights into problem areas, and recommendations for resolutions.

For those of us not patrolling the waters—instead navigating databases to analyze patterns and trends in the collection of individual incidents reported over time—their hands-on, from-the-field perspectives can help to corroborate, test, and even add depth to our findings.

But it is their front-end contribution in the chain of personnel and processes comprising an accident reporting system that can have the most profound impact on the quality and relevance of what we know—*or what we think we know*—about the factors behind the accident totals.

Looking behind the counts

Each year, the U.S. Coast Guard compiles national statistics on boating accidents meeting federal reporting requirements and drawn primarily from boating accident report data forwarded by the states and territories.

With dozens of tables presenting counts of accident

New Jersey State Police photo

types, causes and contributing factors, vessel types, and operator and passenger information, these national annual reports—along with state-generated statistical counterparts—are valuable for answering the "*how many*" and "*what*" questions, identifying and tracking potential trends, and making comparisons.

They are every bit as important for highlighting factors that warrant a closer look, and raising the "*why*" and "*how*" questions about boating accidents. Answering those questions, though, usually takes more "drilling" into the data that form the basis for those annual compilations.

As the Engineering, Reporting and Analysis Committee (ERAC) of the National Association of State Boating Law Administrators (NASBLA) has learned in its work over the past few years, these data explorations sometimes lead to only preliminary or partial results. Other times, they end with the realization that the data were never intended to answer the research question at all.

Most times, they expose data flaws—some fatal, some quirky, most that are "masked" in the aggregate view—that need "work-arounds," improvement or outright fixing.

Accident report data are *fundamental* not only for meeting federal mandates but also for use in analyses – analyses that affect our understanding of boating safety issues, inform allocations of enforcement and safety education resources, lead to consideration of equipment modifications, shape state and national programs and policies and strategies, and help determine whether they are even effective. The analyses are only as solid as the data.

So, there are good reasons to illuminate their limitations,

and then identify some practical ways to address them. The good news is that over time, with deliberate and coordinated efforts at the state and national levels, there can be improvements to the overall quality and reliability of accident report data for addressing critical safety issues.

When missing data and fuzzy definitions obscure the view

In 2009, ERAC ventured into projects ranging from attempts to separate out human- and boat-related factors from other influences on boating accidents to analyses of factors associated with children and youth boaters and of patterns associated with certain vessel types.

The focus was on fatalities—in part because the volume of data for the five- and 10-year periods under study would be more manageable than that for other accidents; and, in part, because committee members expected a higher degree of data detail and accuracy resulting from fatality investigations than other incident reports, especially those submitted by boat operators or owners. They analyzed data extracted from the Coast Guard's Boating Accident Report Database (BARD), and as needed, data compiled by members from their individual states' accident reports.

Almost as unsettling as the topics they explored was the members' discovery of inconsistencies in the level of detail and completeness of accident reporting and other critical boating program data—enough so that they left the door open for questions as to just how accurate the data were.

While this "discovery" might not have come as surprising news to Coast Guard statisticians who review, reconcile and try to standardize data across the states and territories for inclusion in BARD, it was eye-opening and, in some ways, suspicion-confirming for ERAC members.

There were irregularities in report data fields and fields left unfilled—in some instances, in significant proportion, leading to caution in framing the findings.

In one example, observations about the activities in which victims were involved at the time of their accidents had to be tempered after detection of a too-large number of incomplete responses to the data field intended to capture that "Activity." A whopping 64 percent in that analysis were "Unknown," marked as "Other," or left blank.

In another, members hesitated to draw conclusions about the impact of operator education across different age groups when they realized there was a significant amount of missing report data in the "Operator Education" data field. In that analysis, nearly 54 percent of the fatalities across all of the age groups under study were missing this piece of information.

There were variations in how accident report categories and definitions were applied—from inadequate or inaccurate captures of accident scenarios using the available lists of category options on the report forms to varying interpretations, recording and data entry of those categories.

One charge team discovered the variations in reporting categories and definitions when members were tasked with reviewing their own states' fatality data, using only officer/investigator reports and only reports that a trained, experienced accident investigator would have reviewed for the primary accident cause and accident type.

In the process, they found ambiguities among terms and definitions; outdated categories; a tendency for critical factors identified in accident investigations to be dropped into a catch-all "Other," because viable category choices were not available; and indications that personnel were not always catching inconsistencies.

Advancing the quality—and usefulness— of the accident report data

So what can be done to improve the data and the processes that generate them? Some basic recommendations from the committee charge teams include:

- Developing and providing additional training and guidance at **all** levels of report data collection and data entry—from investigating officers in the field, so they can more accurately and completely capture and detail the accident scenarios onto the report form, all the way to the data entry personnel, so they can more consistently interpret and input that report data at the state level; and,

- As part of that guidance, emphasizing the importance of obtaining complete information for **all** data fields and of not leaving some items consistently blank.

But perhaps the one area that could have the most fundamental, cross-cutting effect on the quality of accident report data for years to come—and ultimately, the quality and depth of future analyses—is the creation and application of standardized terms and definitions and accompanying guidance for completing data fields on an accident report form.

Related efforts have been under way on this front, both at the committee level and nationally, at the Coast Guard.

As one example, the same ERAC charge team that found variations in how accident report categories and definitions were being applied, took the next logical step and developed draft guidance intended primarily for investigators.

Working from a foundation of Coast Guard draft lists and BARD-Web data dictionary entries, and a recently updated state-issued reporting manual, the team proposed modifications and additions to categories and definitions for accident types and contributing factors/causes. The objective?—to improve incident reporting and data entry

by helping investigators better capture accident scenarios that cannot be accurately or adequately defined using current options and further guiding data entry personnel in their interpretation and entry of accident report data. The guidance also encourages officers to delve into incidents to identify and list secondary and tertiary factors that can add depth to analyses, and discourages overuse of catch-all categories.

On the heels of those efforts, the committee has been working through some additional updates to the guidelines, and developing a similar set of guidance for categories and definitions associated with vessel types, activity and operations.

In a stroke of good timing, that project work coincides with and will feed into the response to a related and significant effort at the national level to improve the efficiency and effectiveness of data systems. On May 7, the Coast Guard took a long-awaited step and issued a notice of proposed rulemaking to align, update and clarify terms and definitions common across BARD, the Standard Numbering System, and the Vessel Identification System [Docket No. USCG-2003-14963]. Among other purposes, the proposed changes are intended to help leverage the ability to coordinate data from all three databases to facilitate and enhance boating safety, law enforcement, and maritime security.

It isn't just "us"

Data issues and challenges *are not unique* to boating accident reporting systems and processes.

In a recent report the U.S. Government Accountability Office, assessed the quality and performance of the states' traffic safety data systems (GAO-10-454, April 2010). It found variations in timeliness, consistency, completeness, and accuracy, among other performance measures, and described the significant resource and coordination challenges within states as they tried to make progress.

Depending on your perspective, it might be either comforting—or discomforting—to read some familiarity into the themes of the GAO findings. What might be more encouraging to know is that GAO *still* found improvements as states developed strategies to overcome those challenges.

And *that* does not have to be unique to traffic safety data systems.

> **For copies of all of the research products compiled by ERAC in 2009, and for more information on 2010 products as they become available, visit the committee's page at http://www.nasbla.org.**

new BLAs cont.

Scott Brewen
Oregon

Scott Brewen, from Dallas, Ore., became the boating law administrator for Oregon on May 17, 2010, when he was selected to take the helm of the Oregon State Marine Board.

Brewen has worked in public safety training and human resources for the state of Oregon for past 10 years. Prior to working for the state, he served nine years as an officer in the U.S. Coast Guard, serving on three ships and one training command. While with the Coast Guard, he served as a boarding officer and maritime law enforcement instructor as well as the Commanding Officer of a coastal patrol boat in Oregon, with primary responsibilities for federal fisheries and boating safety enforcement.

Brewen has extensive boating knowledge and enthusiasm for boating and enjoys taking to the water on his 22-foot Catalina sailboat. In addition to his participation in NASBLA and the Western States Boating Administrators Association,

Brewen's other maritime obligation is with the Merchant Marine Reserve program with the U.S. Navy. This requires him to maintain his unlimited tonnage Chief Mate's license and fulfill a two-week annual training obligation.

When asked his views on the biggest pressing need in boating safety today, Brewen said, "As areas around various waterways become more congested, waterway conflict seems to have become a bigger issue. This can potentially create a more dangerous environment and increases the need for law enforcement presence."

He added that this issue is particularly visible between non-motorized boaters and skiers/wakeboarders – two groups that have very different views of the boating experience.

Brewen said this issue increases the pressure to pass rules to limit access or operations in areas where these conflicts exist. "On the one hand we have a responsibility/duty to try to keep the waterways safe, while on the other hand we have to be very cautious of legislating social conflict," he added.

He said he would like to spend time addressing the issue of waterway conflict through mediation first, rather than going directly to legislative remedies. ✪