Mariners who wish to live long, healthy lives might want to reconsider a berth aboard oil tankers. When compared to container vessels and those carrying bulk cargo, such as coal and iron ore, tankers account for proportionately more fatalities and nonfatal accidents. Given ship size and potential petrochemical combustibility, such a conclusion may seem obvious. Intuition, however, does not always equate to fact. For Wayne Talley, a specialist in transportation economics, the facts present themselves within the numbers: the minutiae of incident accounts, accident reports and statistical patterns speak unequivocally to those who listen closely.
“Human factors play a considerable role in all of these accidents, fatal and nonfatal.”
Talley, interim executive director of Old Dominion's International Maritime Ports and Logistics Management Institute and a University economics professor who holds an endowed chair, has spent nearly three decades coaxing hard-hitting conclusions from reams of raw data. His study of 2,500 maritime mishaps involving U.S.-flag vessels revealed the disturbing tanker-mortality trend. Another, related study involved 1,600 incidents over ten years and gauged the extent of oil spillage from tankers and tanker barges. In both, Talley concluded that human miscalculation or error played a prominent role in accident occurrence and severity.

“What I’m doing is looking at what’s happened in the past, filtering out the most important contributing factors,” he says. “You can learn from what is statistically significant. What I’ve found is that human factors play a considerable role in all of these accidents, fatal and non-fatal.”

In addition to accidents research, Talley has examined shipping’s impact on marine environments, conducted studies to determine the most cost-effective means of moving people and cargo, evaluated the economic performance of public seaports and, most recently, investigated the impact of federal land-transport deregulation on wages and salaries in the public and private sectors. Along the way, he has won international accolades, received a series of research awards and has been widely praised by colleagues for the incisiveness and thoroughness of his work.

“Wayne’s quantitative analyses are of interest for us Europeans because he manages to get access to extensive American databases that contain data that is hardly gathered in Europe at all,” says Albert Veenstra of Erasmus University in Rotterdam, Holland. “He just presents his work, which is of very high standard and of great practical relevance as well.”

Not The Simple Answer

Teasing trends from collected information may satisfy the intellectual curiosity of individual researchers, but conveying that information to decision makers and then persuading them to act upon it is another matter. Talley says he has no influence on how or whether his research findings are ever practically applied. What he does know is that more effective operator training could likely reduce the number of maritime accidents or, at the very least, lessen their severity.

Take ship groundings. Although groundings account for just 25 percent of all accidents involving
oil-carrying vessels, they result in the greatest spillage per an individual ship’s gross tonnage — even more than materials and equipment failure, which account for roughly 48 percent of all mishaps (at 22 percent, collisions are third and fires and explosions a distant fourth at five percent). Ships run aground, not on account of equipment failure, but because of human blunders. And humans can learn to correct their mistakes.

“This is the kind of information people can use to affect their lives professionally and personally,” Talley points out. “But it’s up to the owners and the project engineers to figure out when and how.”

Unlike fairly straightforward economic interactions — a sales tax increase on goods and services can directly affect sales volumes, for instance — transportation economics is more complex. Talley points out that determining the costs associated with transport and travel is not an easy matter of dividing costs among travelers or calculating manufacturers’ original outlays. The best answer is not always the simplest, or even the most accurate.

To pinpoint the actual per-passenger cost incurred by an airline in a flight from, for example, Norfolk to Chicago, such factors as airline fuel costs and pilot salaries must be included. In a recent project, Talley used sophisticated software to develop a methodology to allocate a flight’s shared costs among passengers, which had the practical effect of determining the most economical airplane type and crew complement to fly a given route. If properly applied, such an approach could eventually result in substantial ticket-price savings to consumers.

“When you add to a body of knowledge, that’s a satisfying feeling,” Talley says. “If in the long run you have a positive effect on peoples’ lives it’s even more gratifying.”

Research and additional material provided by writer Elizabeth Harders