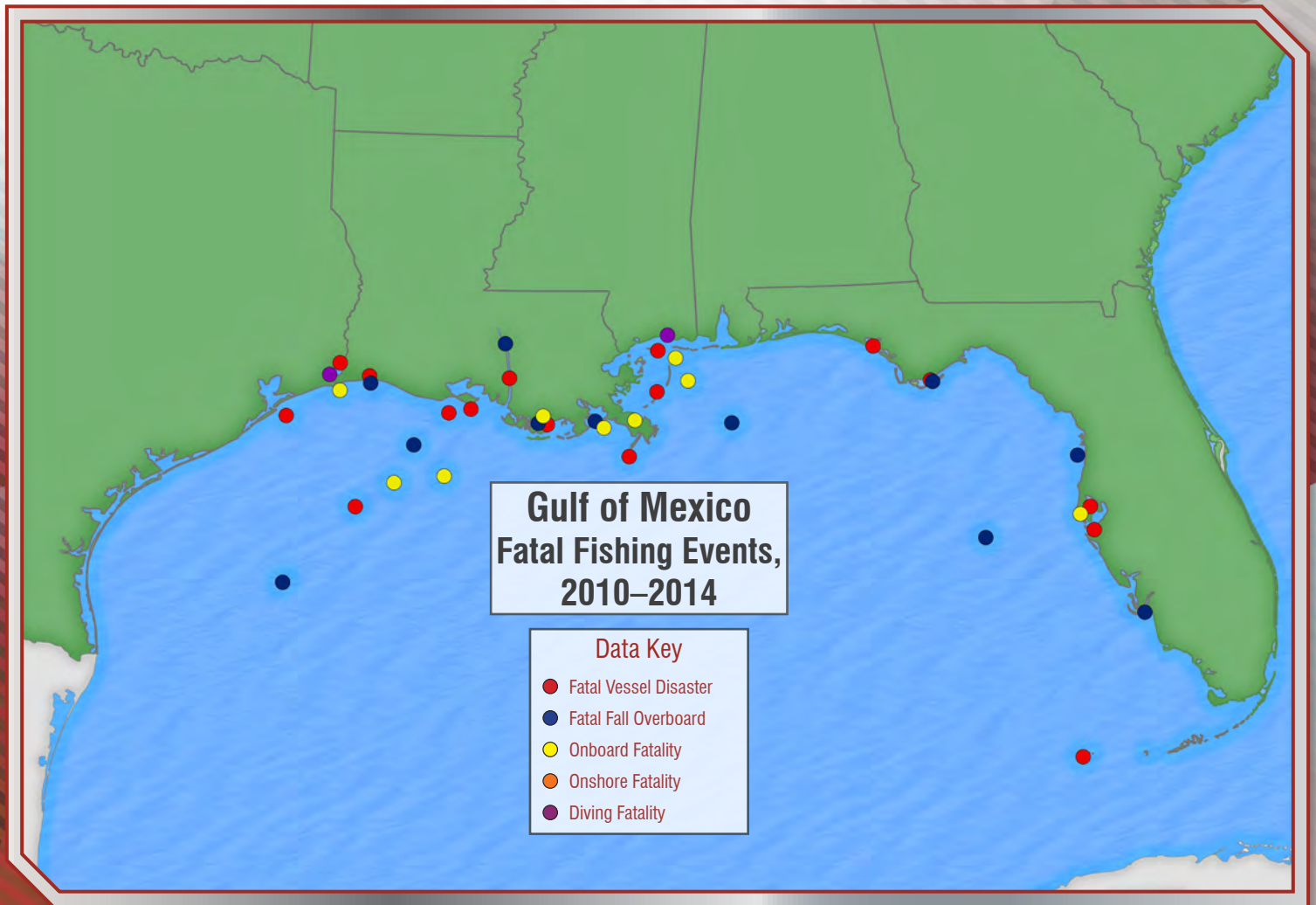


Commercial Fishing Fatality Summary

■ Gulf of Mexico Region ■

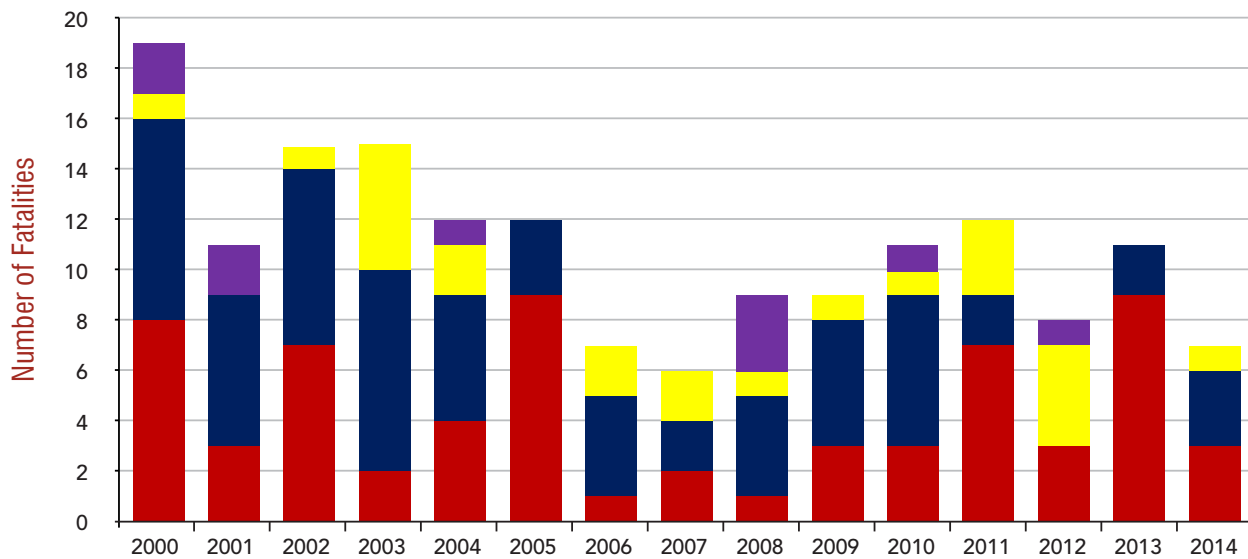


About this Report

The National Institute for Occupational Safety and Health (NIOSH) is the federal government agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. In 2010, NIOSH published an in-depth study of commercial fishing fatalities due to traumatic injury that occurred in the United States during 2000–2009. NIOSH recently completed a five-year update (2010–2014) to the previous study in order to identify current hazards among fisheries in different regions of the country: Alaska, West Coast, East Coast, and the Gulf of Mexico. This document is one in a set of four reports summarizing the most recent fatality and vessel disaster data for US fishing regions.

Data Key	
■	Fatal Vessel Disaster
■	Fatal Fall Overboard
■	Onboard Fatality
■	Onshore Fatality
■	Diving Fatality

Figure 1 Commercial Fishing Fatalities by Year and Incident Type, Gulf of Mexico, 2000–2014 (164 Total)



During the 15-year period 2000–2014, 164 commercial fishing deaths occurred in Gulf of Mexico fisheries, averaging almost 11 fatalities annually (Figure 1). During the first decade (2000–2009), 115 fatalities occurred, for an average of nearly 12 deaths per year. For the most recent five-year period (2010–2014), 49 fatalities were recorded, averaging 10 fatalities annually. During 2000–2009, the leading cause of fatalities in the region was falling overboard; however, during 2010–2014, the leading cause of fatalities was vessel disasters.

Vessel disasters accounted for half of all fatalities (25, 51%) in the Gulf of Mexico during 2010–2014 (Figure 2). Vessel disasters include sinkings, capsizings, fires, groundings, or other events that force crews to abandon ship. Drownings following falls overboard were the second leading cause of fatalities during this time period (13, 27%). Of the fatal onboard injuries (9, 18%), the majority involved contact with equipment: four deaths from being caught in winches, and two deaths from being struck by a hook and by a pulley. The remaining three onboard fatalities were due to a drug overdose and two instances of assault. Drownings during diving activities to clear gear and a propeller accounted for two deaths (4%).

Figure 2 Commercial Fishing Fatalities by Incident Type, Gulf of Mexico, 2010–2014 (49 Total)

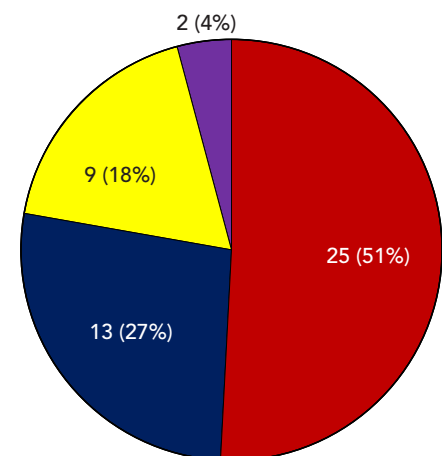
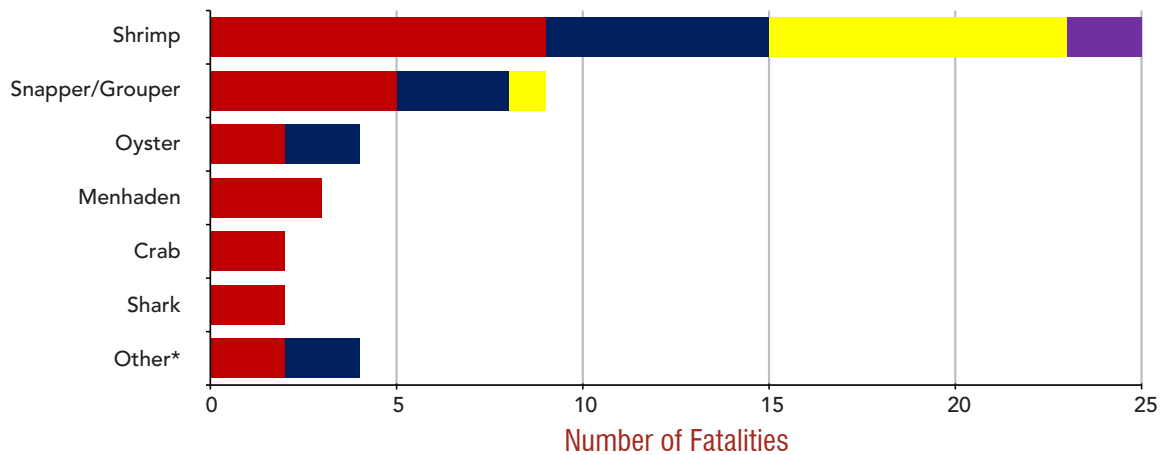


Figure 3

Commercial Fishing Fatalities by Fleet, Gulf of Mexico, 2010–2014 (49 Total)

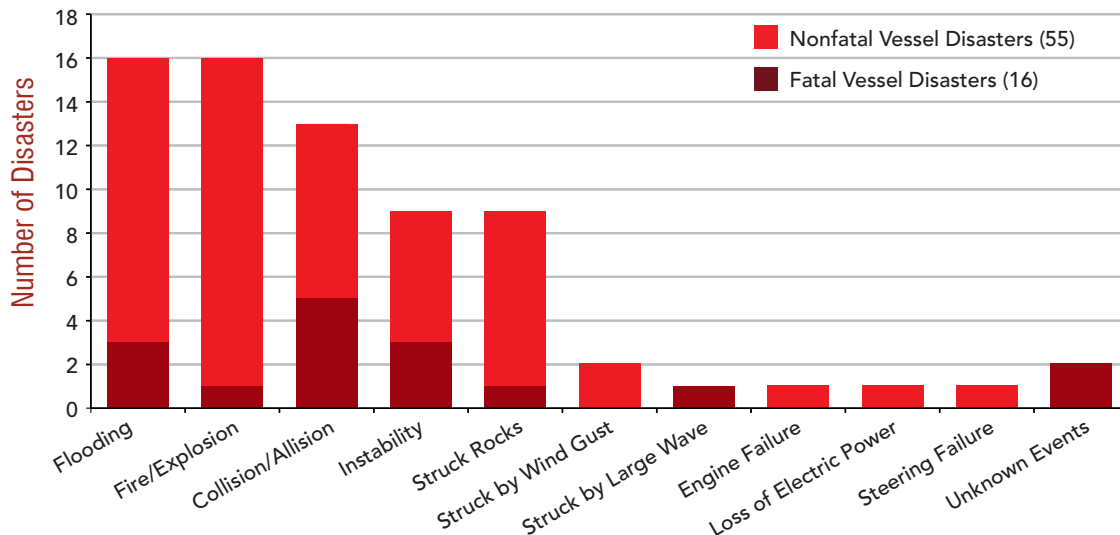


*Other fleets are those that experienced a single fatality during 2010–2014: crawfish, other shellfish, mullet, and other pelagic.

Fatalities occurred in 10 fleets in the Gulf of Mexico, with six fleets experiencing two or more fatalities (Figure 3). The shrimp fleet had the highest number of fatalities in the Gulf of Mexico, with 25 deaths. These 25 deaths constituted half of all deaths in the region during 2010–2014. Among shrimp fishermen, the leading causes of death were vessel disasters, onboard injuries, and falls overboard. The snapper/grouper fishery experienced nine fatalities, resulting from two vessel disasters, three falls overboard, and an onboard injury. The oyster fishery experienced four fatalities, with two resulting from vessel disasters and two from falls overboard. In the menhaden fishery, a single vessel disaster resulted in three crewmember deaths.

Figure 4

Causes of Vessel Disasters, Gulf of Mexico, 2010–2014 (71 Total)



Vessel disasters resulted in the most fatalities during 2010–2014. A total of 71 vessel disasters occurred in Gulf of Mexico waters during this time period (Figure 4), placing 189 crewmembers at risk of immersion and death. While 87% of crewmembers involved in vessel disasters survived, 16 disasters resulted in 25 fatalities. The leading causes of fatal vessel disasters were collisions and allisions, flooding, and instability. In comparison, the leading causes of nonfatal vessel disasters were fires and explosions, flooding, and collisions and allisions. Of the 16 vessel disasters initiated by flooding, the majority were caused by a breached hull.

To help prevent vessel disasters, ensure watertight integrity of the vessel and perform maintenance to prevent fires and explosions

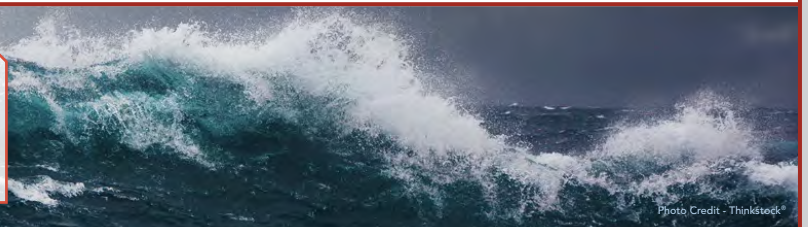
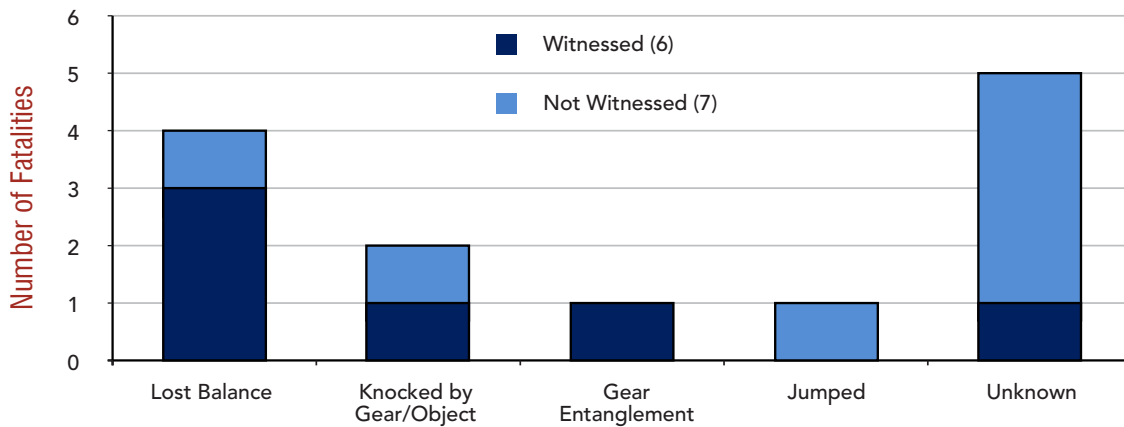


Figure 5

Causes of Fatal Falls Overboard, Gulf of Mexico, 2010–2014 (13 Total)



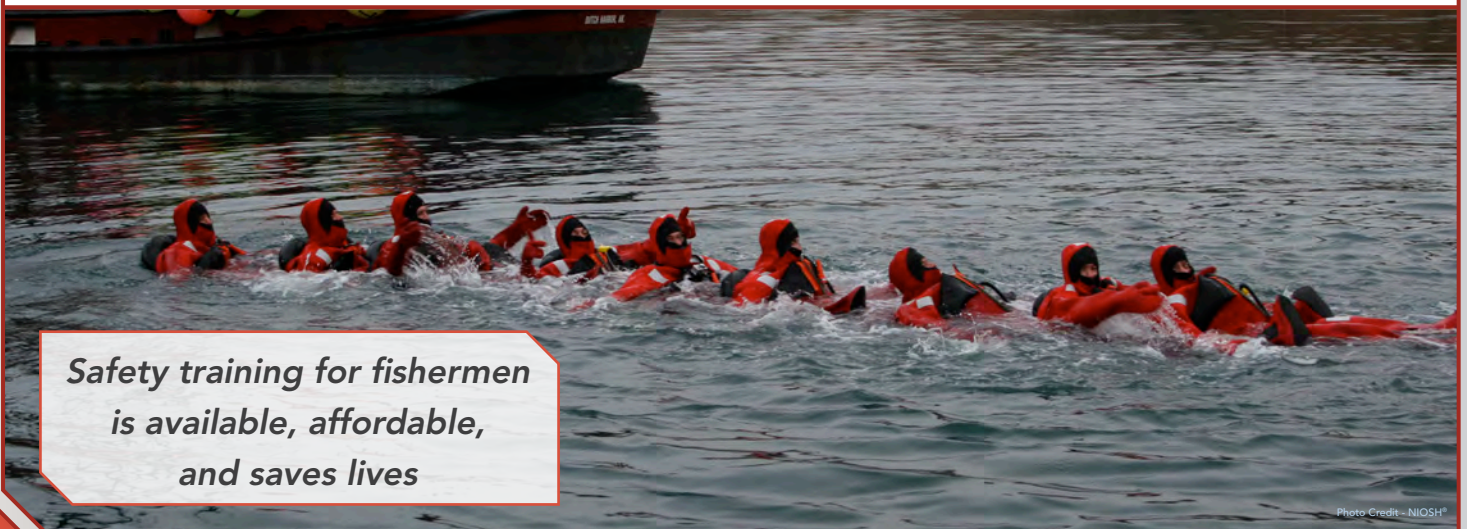
During 2010–2014, 13 crewmembers died from drowning after falling overboard, contributing to 27% of fatalities in the region (Figure 5). None of the crewmembers were wearing a personal flotation device (PFD) when they drowned. Over half (54%) of the falls were not witnessed by other crewmembers, either because the fishermen were alone on the vessel (1) or alone on deck (6). Fatal falls overboard were most frequently caused by losing balance or by contact with gear, including being knocked over by or becoming entangled in gear.

Conclusions

In this region, preventing vessel disasters, falls overboard, and onboard injuries should be priorities. Vessel disasters contributed to half of all fatalities, with the most frequent causes including flooding, fires and explosions, and collisions/allisions. Performing preventive maintenance, attending safety training, and conducting monthly drills are recommended to prevent vessel disasters and to improve chances of survival if a disaster occurs.

To prevent drownings due to falls overboard, fishermen should wear PFDs while working on deck to stay afloat if a fall overboard occurs. Crewmembers should be trained in proper man-overboard recovery procedures. When fishermen choose to fish alone, they should ensure ways to re-board their vessels without assistance from other crewmembers, in case they fall in the water while working alone.

Onboard injury prevention should target winch entanglements, which contributed to nearly half of the onboard fatalities in the region. NIOSH is working on engineering solutions to address this issue by developing and testing winch guards and auxiliary-stop devices in the Gulf of Mexico shrimp fleet. More information about engineering solutions for fishing vessels can be found at: www.cdc.gov/niosh/topics/fishing/engineering.html.

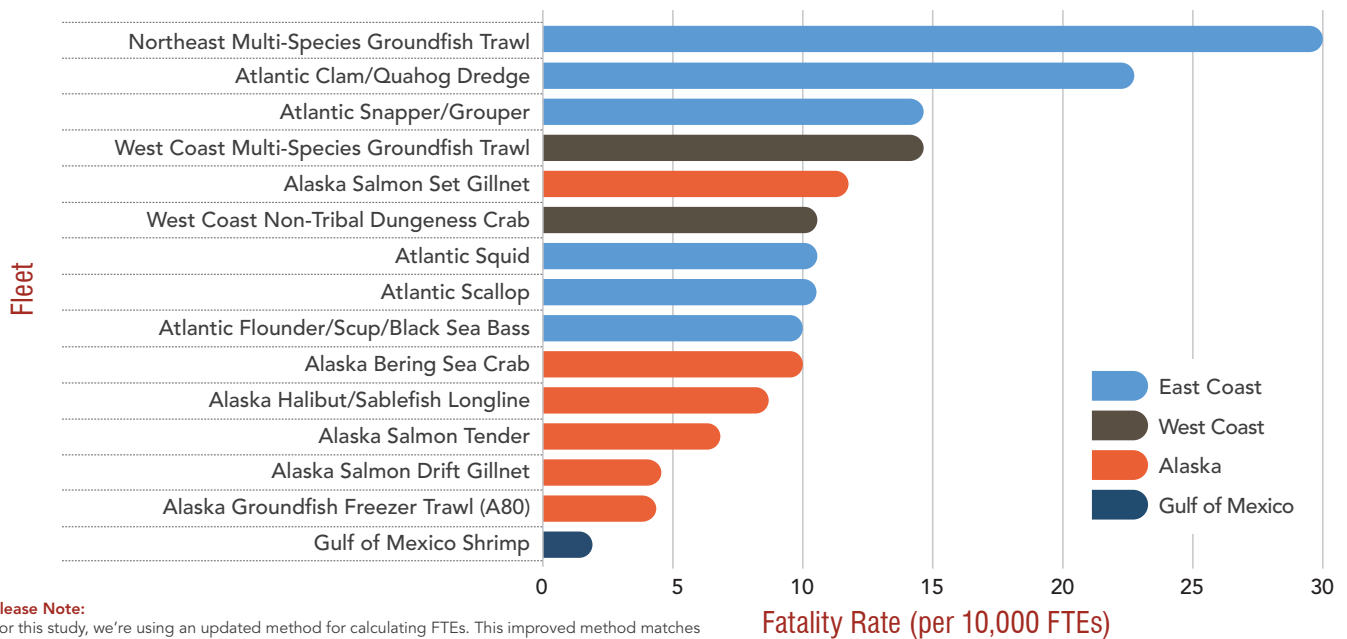


Comparing risk between fleets

Commercial fishing fleets have different numbers of vessels, fishermen, and season lengths. Because of these operating differences, we cannot simply use the number of fatalities in each fleet to compare their risk for fatalities. Instead, we calculate fatality rates to measure risk. Risk is the probability of a fatality occurring.

Figure 6

US Fatality Rates by Fleet, 2005–2014



Please Note:

For this study, we're using an updated method for calculating FTEs. This improved method matches what is used by other agencies and academic institutions, and allows the fatality rates to be compared to other occupations. As a result of the change in our calculation methods, the fishing fatality rates published in this report cannot be compared to rates published in previous NIOSH studies.

Fatality rates were calculated for fleets that experienced five or more fatalities during a 10-year period (2005–2014) and where workforce estimates were available (Figure 6). For the Gulf of Mexico, workforce estimates were only available to calculate a fatality rate for the shrimp fleet. During 2005–2014, the Gulf of Mexico shrimp fleet experienced the highest number of fatalities in the nation, with 48 crewmember deaths. However, due to the large size of the workforce, during this period the Gulf of Mexico shrimp fleet had the nation's lowest fatality rate among fleets where fatality rates were calculated.

Why use a fatality rate?

To determine the risk of fatalities in different fleets, we need to consider the number of vessels in the fleet, number of fishermen, and the length of time that they spend working and exposed to potential hazards. By calculating rates, we can take into account the total number of hours worked in each fleet. The results of these rate calculations answer the question: *"How many fatalities would have occurred in these fleets if they all had 10,000 fishermen working regular 40-hour weeks throughout the year?"* Fleets with higher fatality rates are more dangerous than fleets with lower fatality rates.

How do we calculate a fatality rate?

We know how many fatalities occurred in each fleet, based on our data collection from US Coast Guard investigation reports and documents from various agencies. For many of the fleets around the US, we also know how many vessels, crewmembers, and operating days are in the fleet each year. This information is used to estimate "full-time equivalent" fishermen (FTEs).

Here's how we calculate FTEs:

$$\frac{\# \text{ Vessels} \times \# \text{ Crew per Vessel} \times \# \text{ Operating Days} \times 24 \text{ Hours}}{2,000 \text{ Hours (standard 40-hour work week for the year)}} = \# \text{ of FTEs}$$

Here's how we use FTEs to calculate a fatality rate:

$$\frac{\# \text{ Fatalities}}{\# \text{ of FTEs}} \times 10,000 = \# \text{ of Fatalities per 10,000 FTEs}$$

Recommendations

Vessel Disasters

- **Take a marine safety class at least every five years.** Safety training for fishermen is available, affordable, and saves lives. All fishermen should learn and know how to use basic lifesaving equipment like immersion suits, life rafts, EPIRBs, and fire extinguishers to improve their chances of survival in an emergency.
- **Conduct monthly drills for abandon ship, fire, and flooding.** The practical knowledge learned in safety training should be applied each month during drills, allowing fishermen to reinforce the skills needed in an emergency.
- **Ensure watertight integrity of the vessel.** The hull and through-hull penetrations should be regularly inspected and maintained. Doors and hatches should remain closed while underway, especially in rough seas. Maintain and test high water alarms before each trip.
- **Perform maintenance activities to prevent fires and explosions.** Regularly inspect electrical wiring, hoses, and fuel and oil lines for cracking and damage. Store combustible materials, such as thinners, solvents, and flammable liquids, in designated lockers or storerooms away from heat sources. Securely stow gas or hazardous materials cylinders on deck in an upright position. Fire extinguishers and fixed extinguishing systems should be checked monthly by an authorized person and replaced when needed.

Falls Overboard

- **Wear a PFD on deck.** Nationwide, none of the fishermen who died from falling overboard were wearing a PFD when they drowned. PFDs can keep fishermen afloat, giving the crew time for rescue.
- **Use a man-overboard alarm system.** Many falls overboard are not witnessed, delaying recovery time and reducing chances of survival. A man-overboard system will alert the crew that a fall overboard occurred, and a device with GPS capabilities can signal the fisherman's location to assist in search and recovery efforts.

- **Add effective recovery devices and re-boarding ladders.** A rescue sling or similar device is more effective than a life ring for bringing a crewmember back on the vessel. If someone fishes alone, a plan should be in place for them to re-board their vessel unassisted after a fall.
- **Conduct man-overboard drills monthly.** Recovery procedures should be practiced regularly to ensure all crewmembers are prepared to respond to a fall overboard.

Onboard Fatalities

- **Install safety devices on deck machinery.** Emergency-stop buttons have been developed specifically for deck machinery on fishing vessels and can be adapted and retrofitted onto winches or other machinery. Stationary guarding and auxiliary-stops are also being tested. More information about engineering solutions for fishing vessels can be found at: cdc.gov/niosh/topics/fishing/engineering/

Diving Fatalities

- **Dive with an experienced, alert tender.** Be familiar with vessel operations, safety equipment, and procedures for both vessel and dive emergencies. Be alert and focused while the diver is in the water.
- **Be prepared for a dive emergency.** Be prepared to administer first aid, including the use of an oxygen delivery system.
- **Maintain diving equipment.** Ensure that compressors and other equipment used in diving operations are in good working condition.

National Institute for Occupational Safety and Health Commercial Fishing Safety Research and Design Program

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