Using Casualty Data to Assess Risk in the Commercial Fishing Industry

Presented to

U.S. COAST GUARD

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March 2012

Overview

- **NIOSH Background**
  - **Fishing Vessel Safety Research**
- Regional Summaries
  - Alaska and West Coast
- Casualty Analysis
  - Vsls >50ft

The Mission of NIOSH

“To provide leadership in research to prevent work-related illness, injury, disability and death”

Commercial Fishing Safety Research since mid-1990’s

Occupational Safety and Health

Department of Labor

Occupational Safety and Health Administration

OSHA

Regulation/Enforcement

Department of Health and Human Services

Centers for Disease Control and Prevention (CDC)

National Institute for Occupational Safety and Health

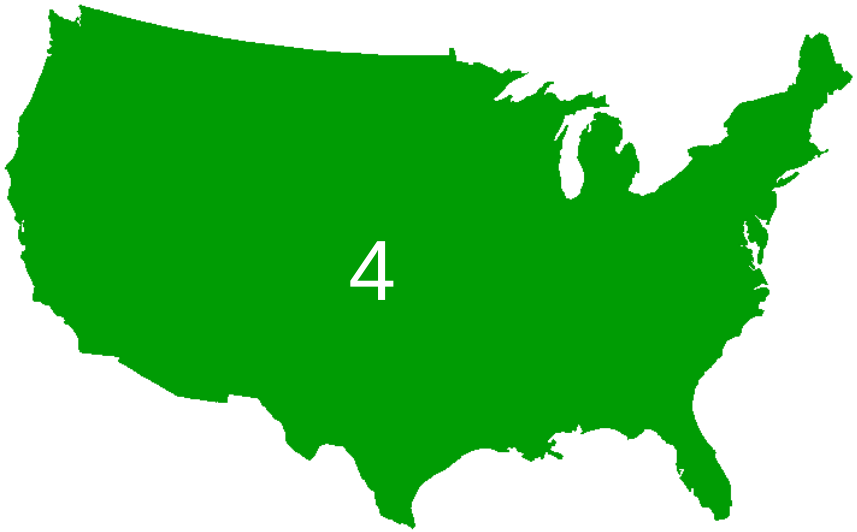
NIOSH

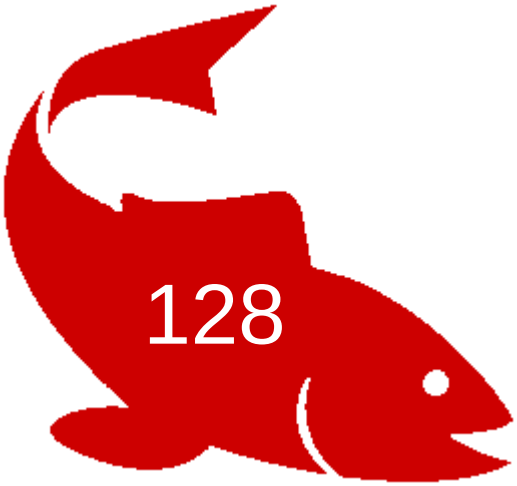
Research, Training, and Prevention Recommendations

Injury Epidemiologist

- Injury pattern recognition
- Incident investigations
- Network with stakeholders: fishermen, USCG, marine safety advocates
- Support safety interventions
- Evaluate success of interventions

US Occupational Fatality Rates per 100,000 Workers, 1992-2008





Top 3 since 1992
#1 since 2005

Range of Commercial Fishing Operations

Differ by:

- Fish Species
- Gear Type
- Vessel Type
- Geographic Location

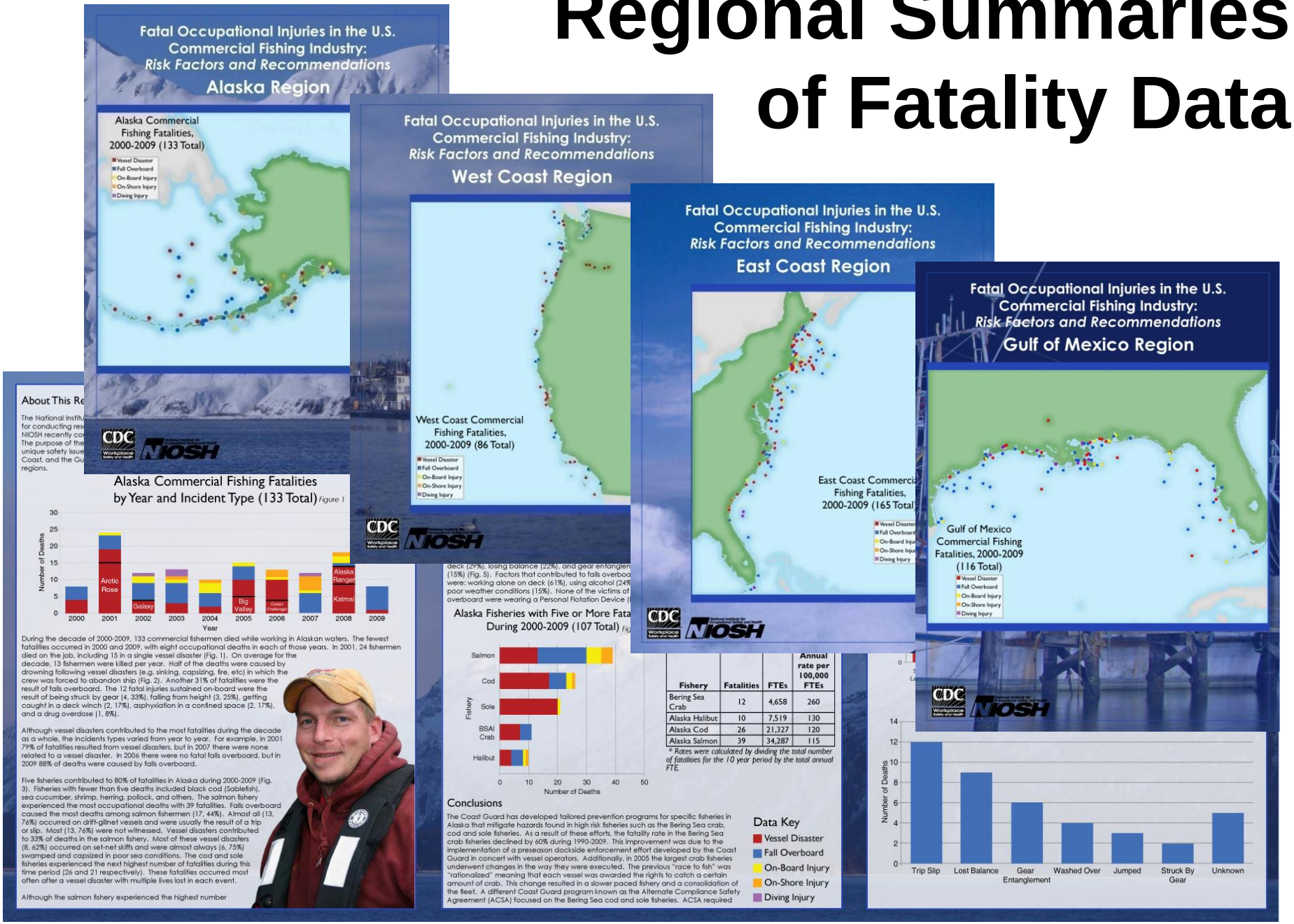
Fatality Surveillance

- What is the problem?
  - Who, how many, in what ways
- What is the cause?
  - Risks, contributing factors
- Identifies areas for targeted interventions
- Monitors progress
  - Reduction in deaths

Commercial Fishing Incident Database (CFID)

- Relational database
  - Tables: Incident , Victim/Survivor, Vessel
- ~100 variables
- Ability to query data in many different ways
- Data sources
  - US Coast Guard
  - state health departments; local law enforcement; media; death certificates

Regional Summaries of Fatality Data



Types of Events

- Vessel Disasters
- Falls Overboard
- On-board Injuries
- On-shore Injuries
- Diving Injuries

U.S. Commercial Fishing Fatalities by Year and Region, 2000-2010 (545* total)

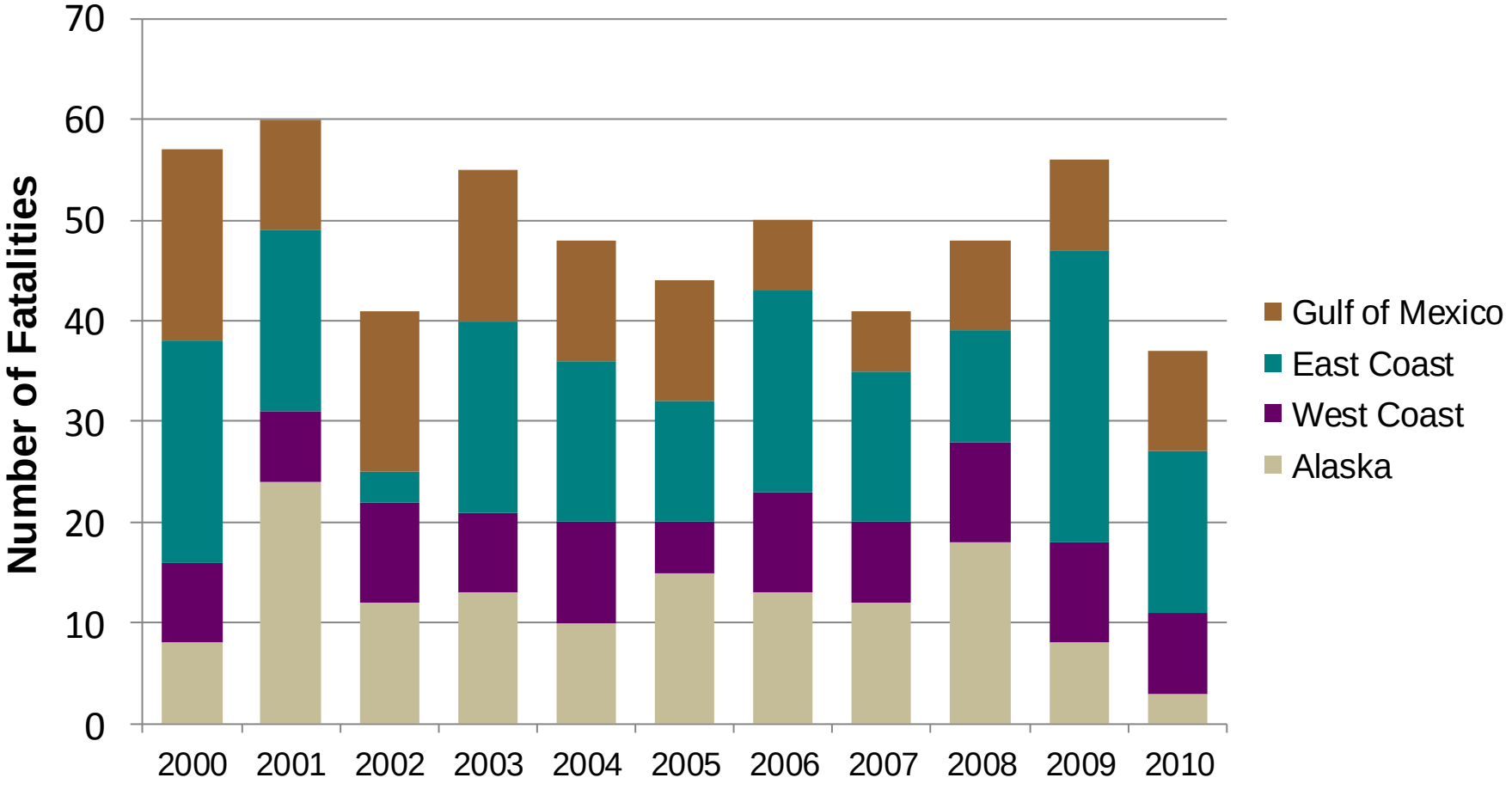
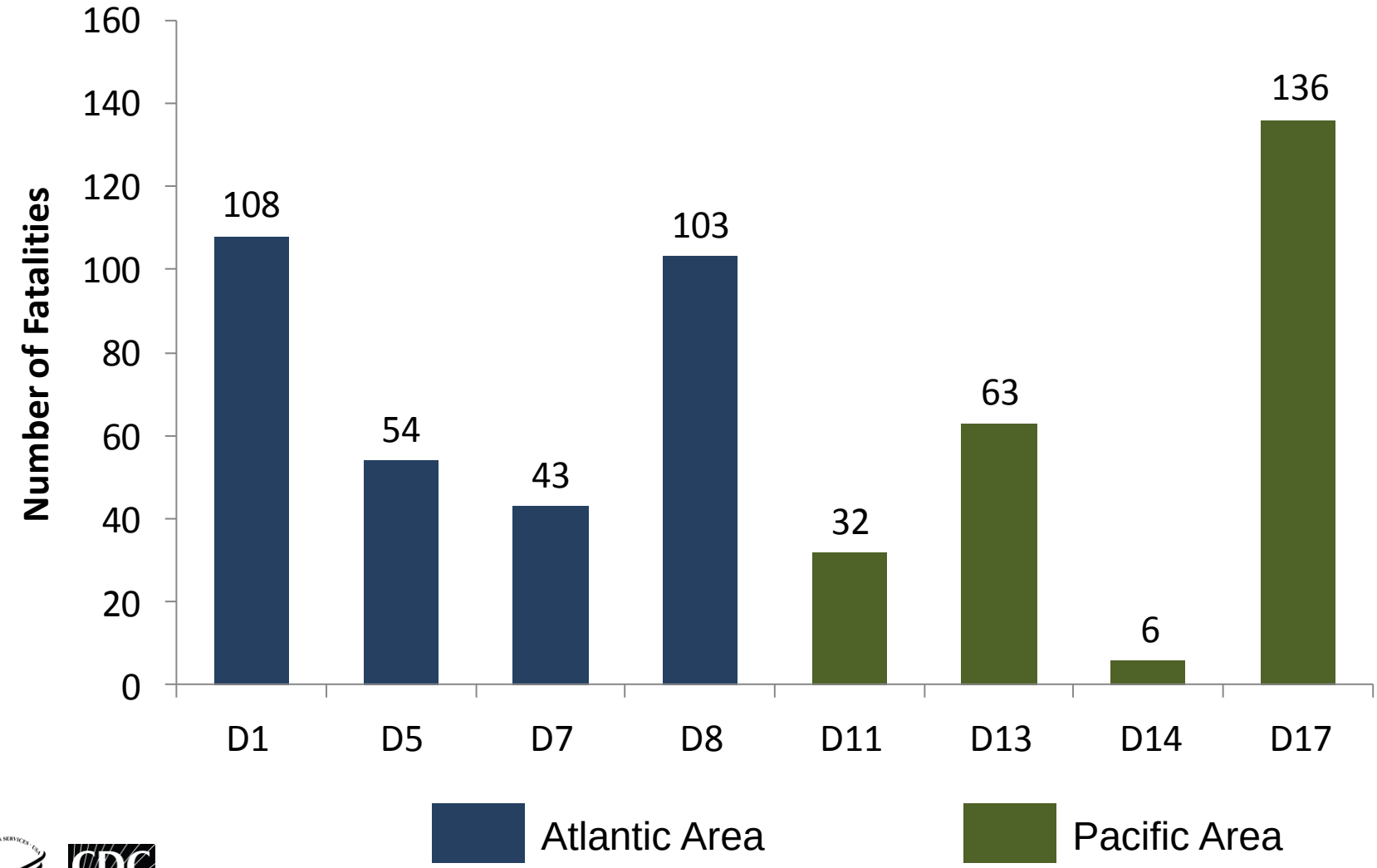
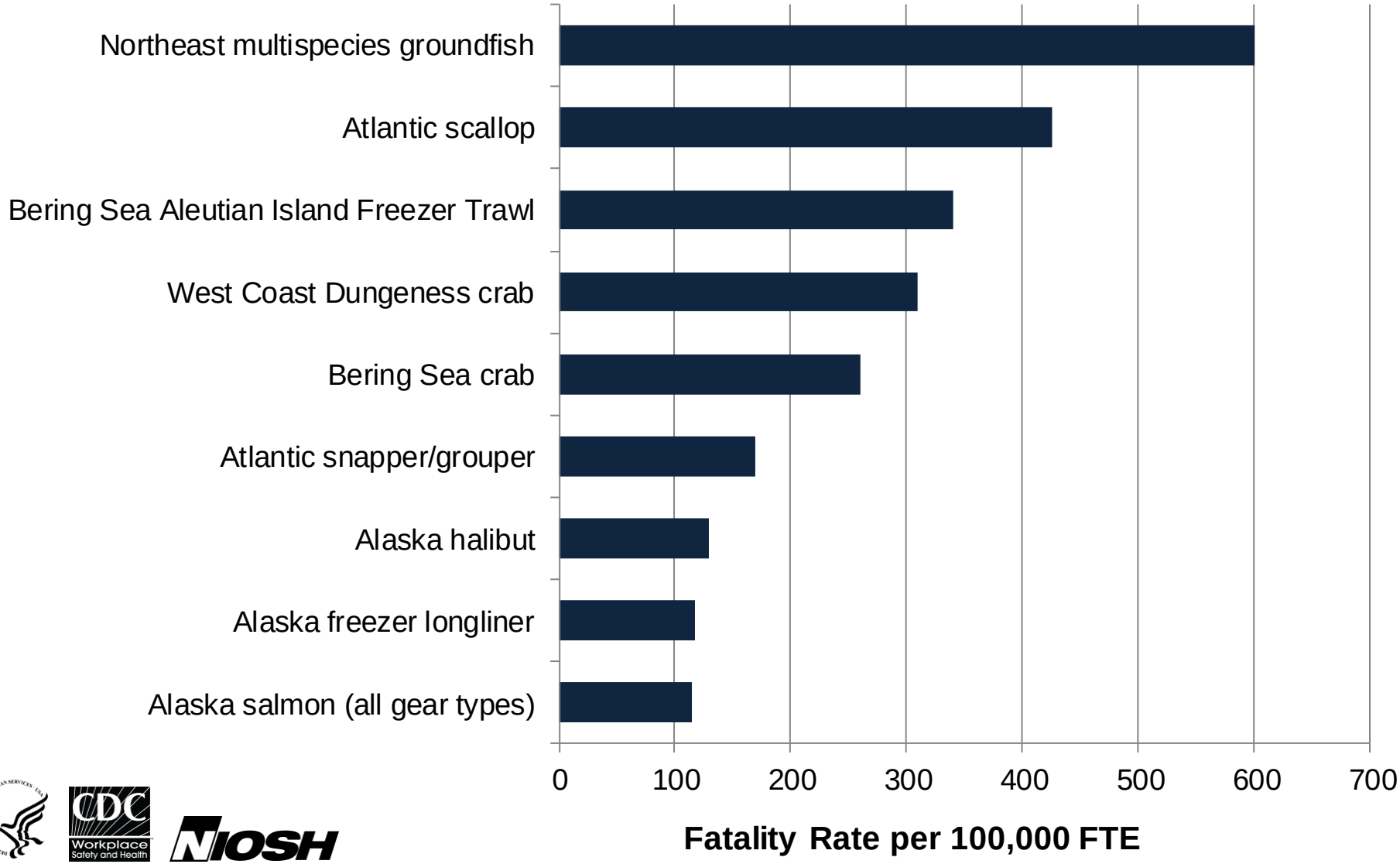


*Chart excludes 6 deaths in Hawaii and 1 in Canadian waters during transit to AK

Commercial Fishing Fatalities by District, 2000-2010 (545 Total)



Fatality Rates for Full-time Equivalent (FTE) Workers



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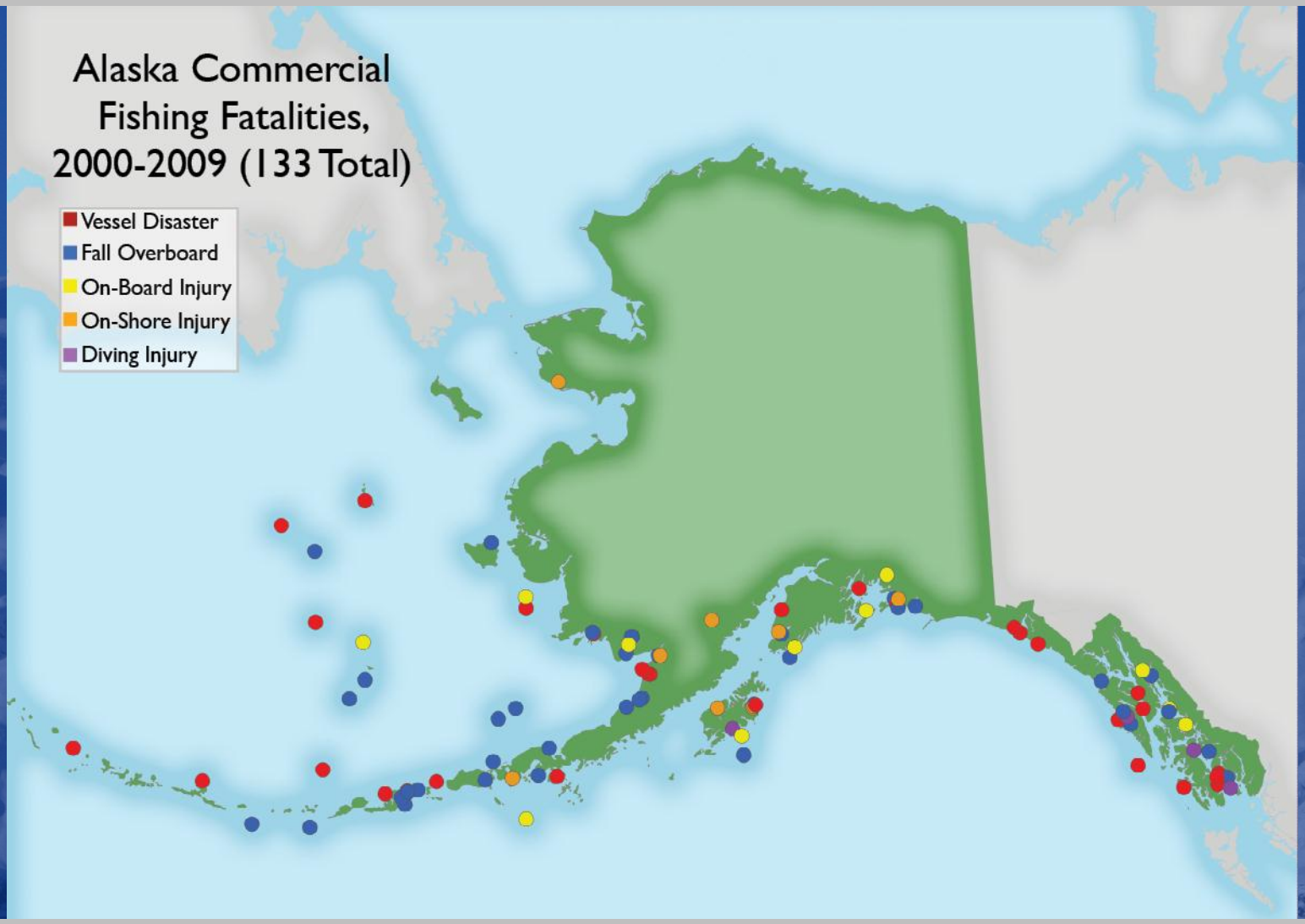
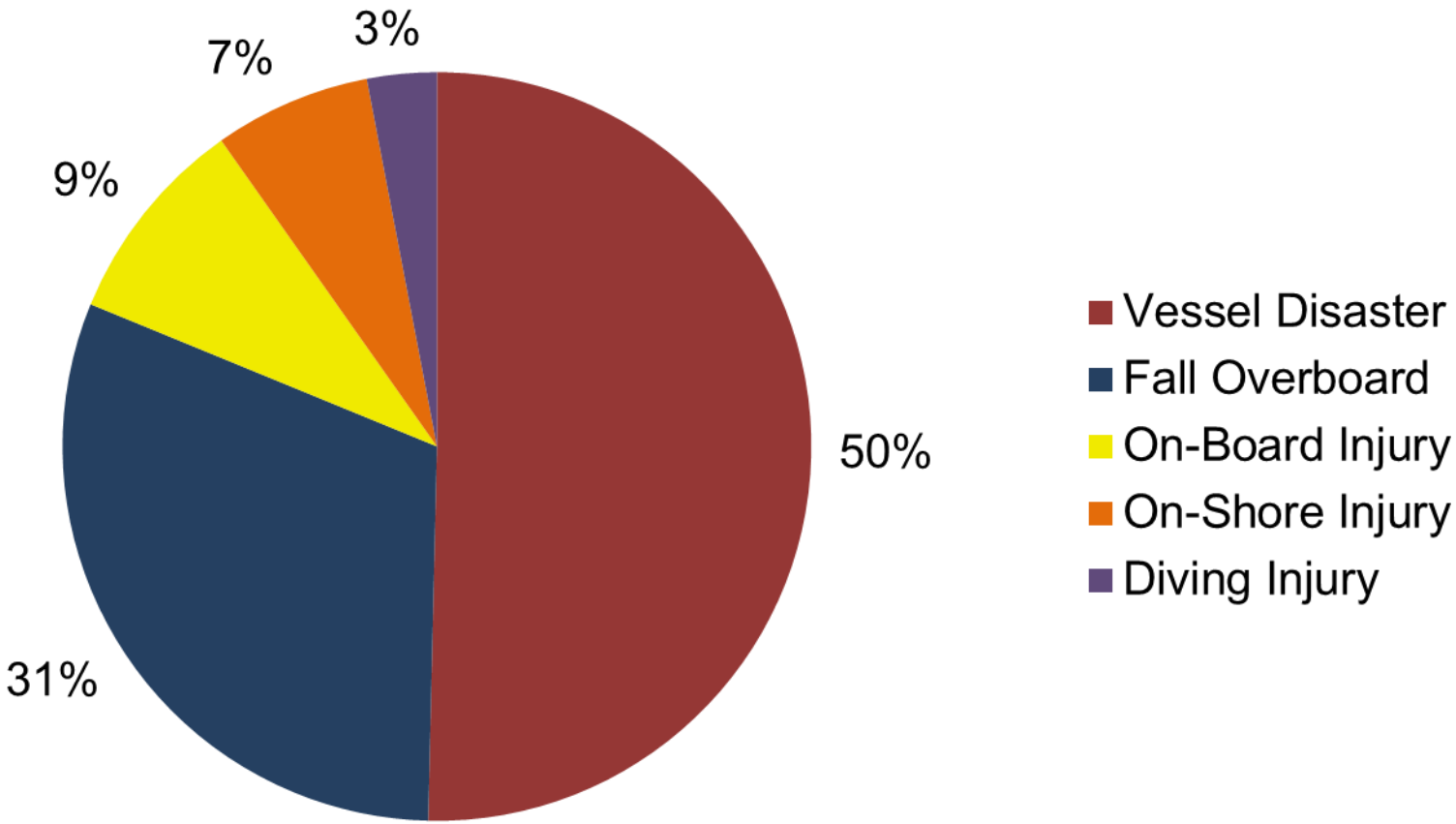
  - Fishing Vessel Safety Research
- **Regional Summaries**
  - **Alaska and West Coast**
- Casualty Analysis
  - Vsls >50ft

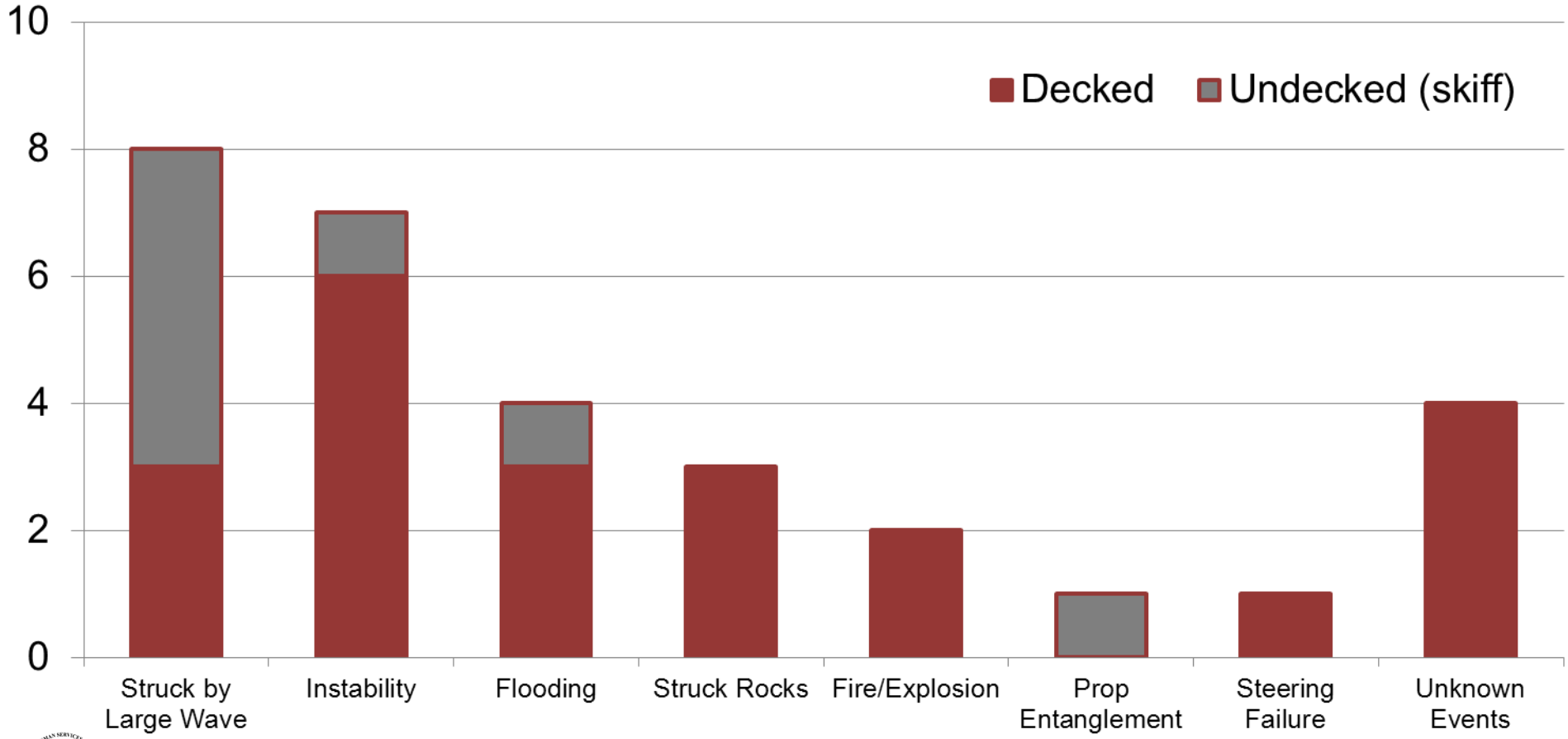

Alaska Commercial Fishing Fatalities, 2000-2009 (133 Total)
Vessel Disaster
Fall Overboard
On-Board Injury
On-Shore Injury
Diving Injury

Alaska Commercial Fishing Fatalities by Incident Type (133 Total)

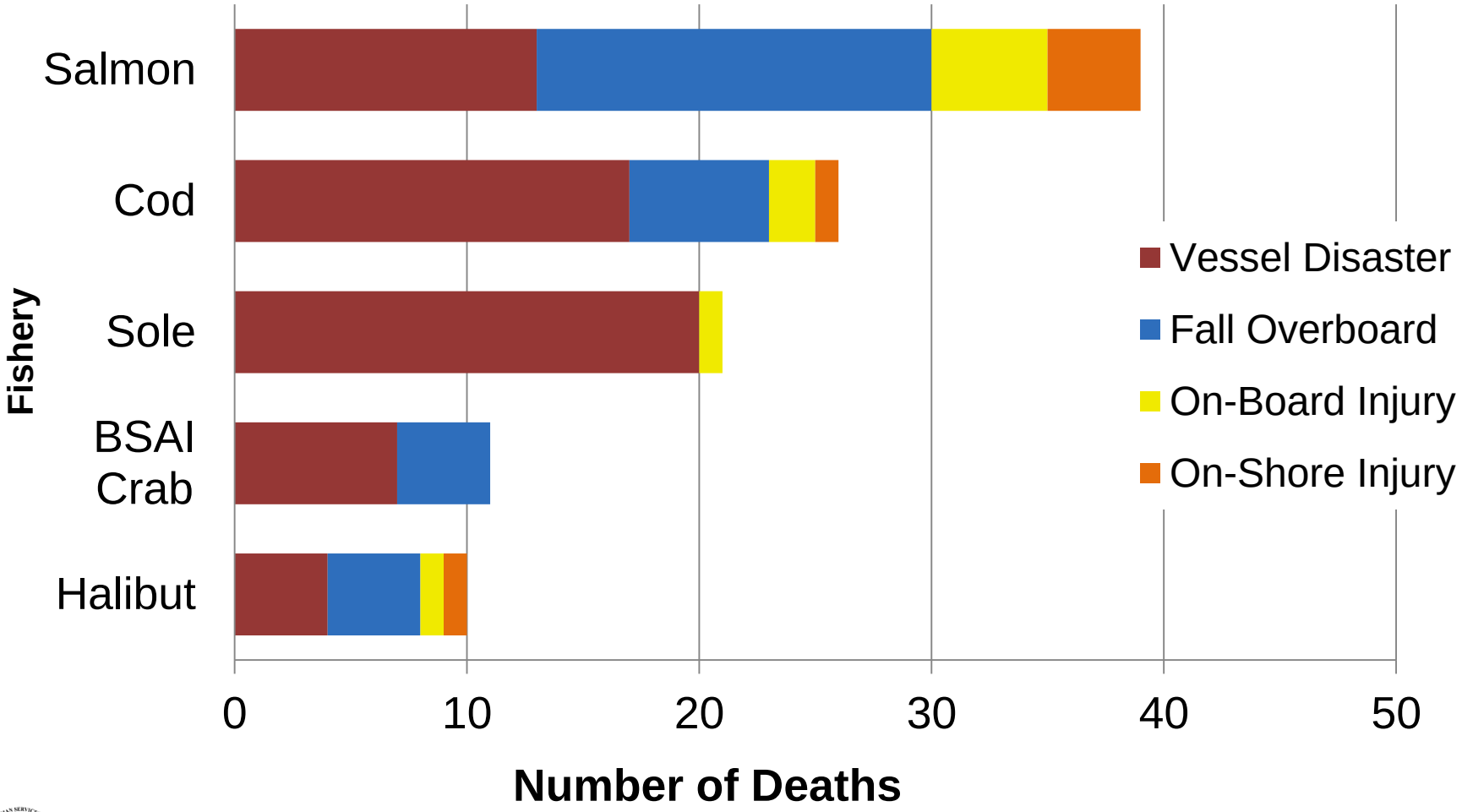


Initiating Events Contributing to Fatal Vessel Disasters, Alaska, 2000-2009

(30 Disasters with 67 Deaths)

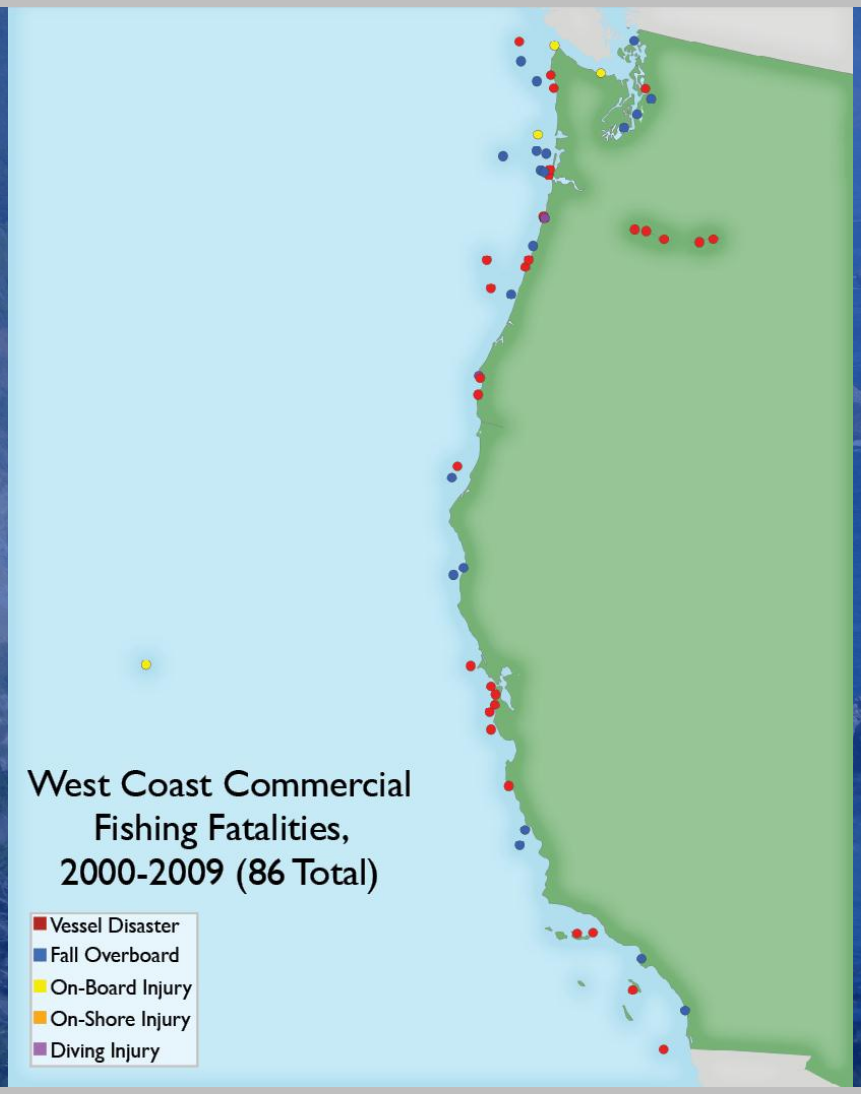


Alaska Fisheries with Ten or More Fatalities, 2000-2009 (107 of 133)

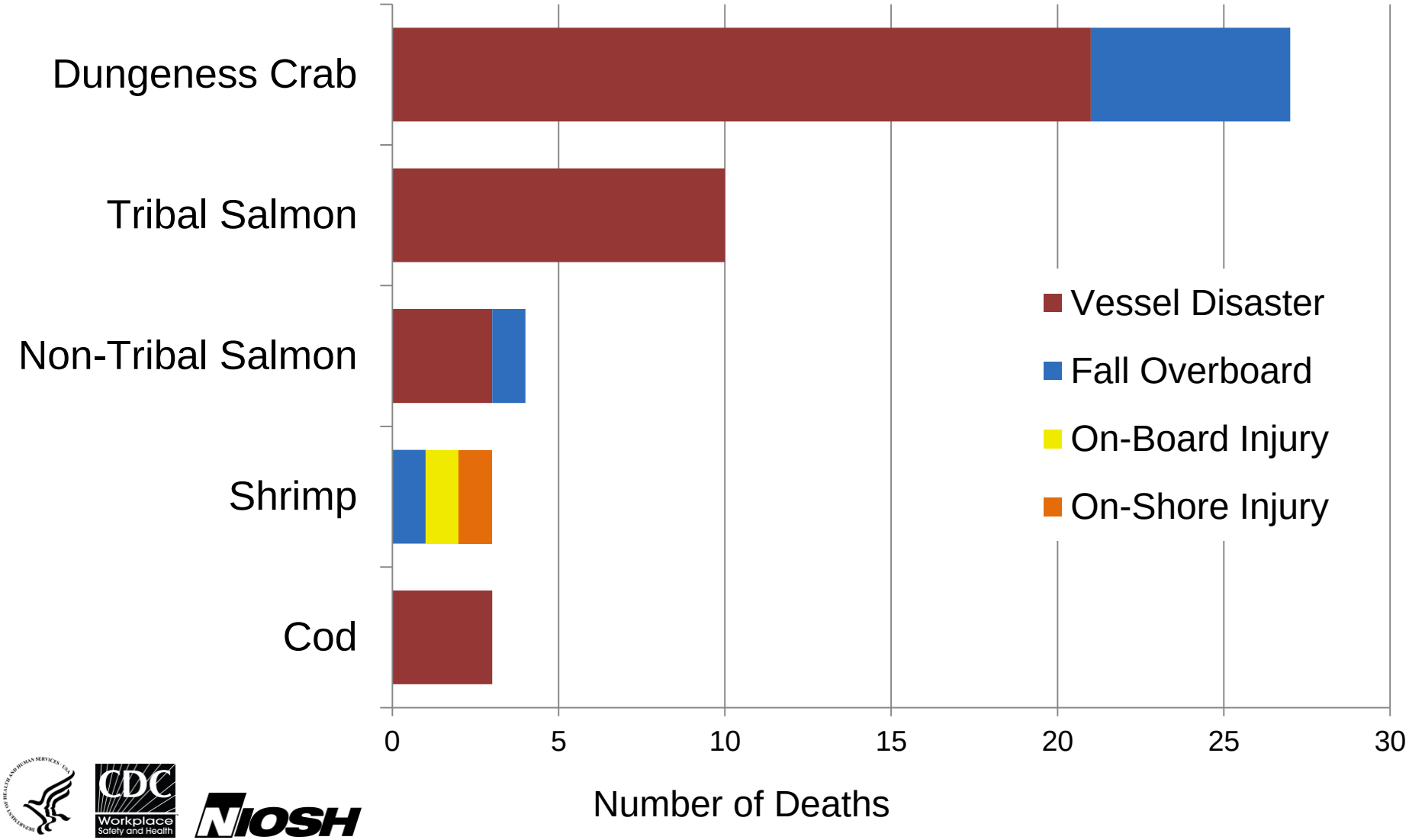


Smaller Fleets

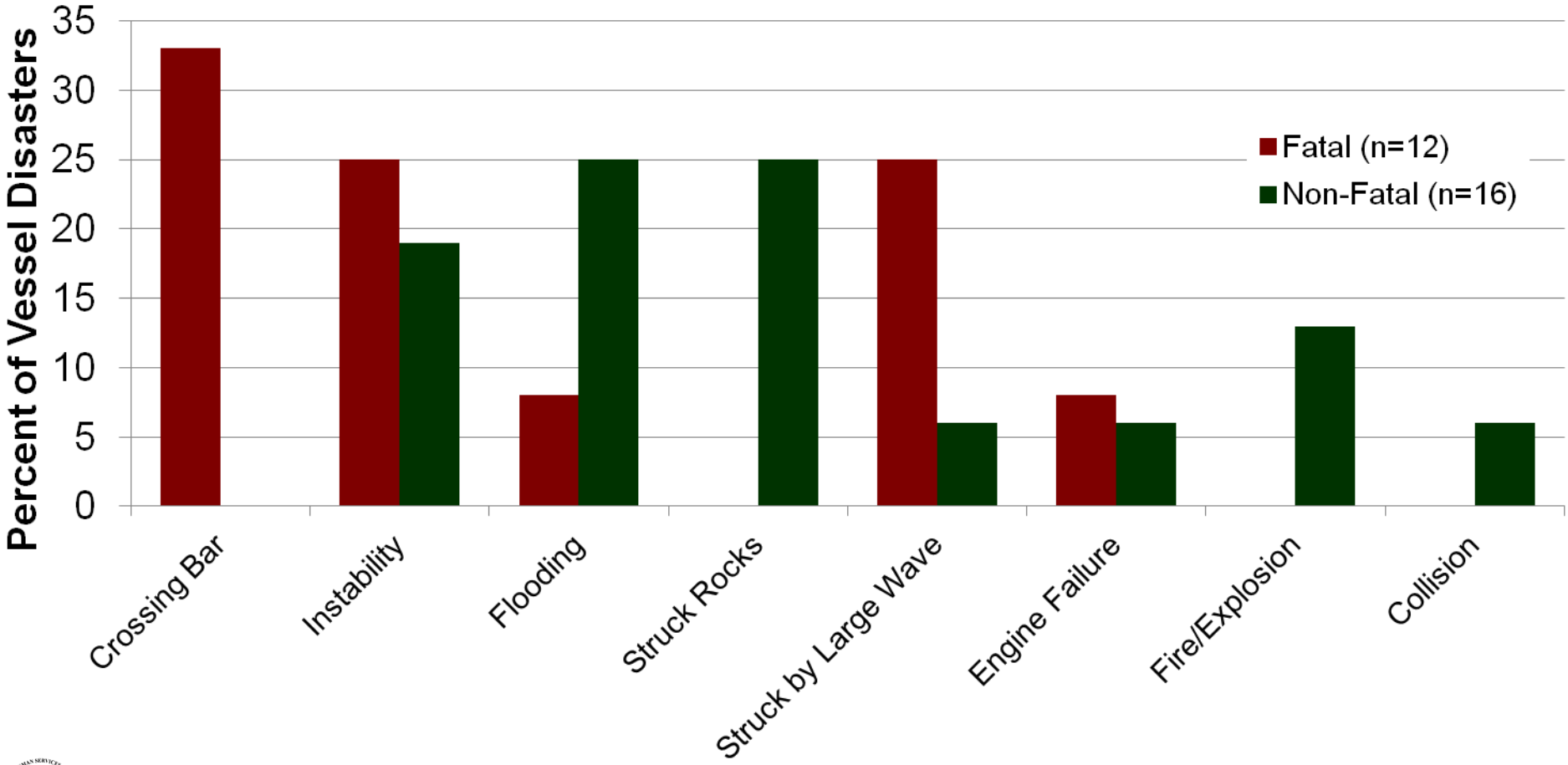
- Vessels under 50 ft.
  - Mandatory dockside exams
  - More training requirements


West Coast Commercial
Fishing Fatalities,
2000-2009 (86 Total)
Vessel Disaster
Fall Overboard
On-Board Injury
On-Shore Injury
Diving Injury

West Coast Fisheries with Three or More Fatalities, 2000-2009 (47 of 86)



Initiating Events Contributing to Fatal & Non-Fatal Vessel Disasters in the West Coast Dungeness Crab Fishery, 2000-2010



Typical Scenario

- Dungeness Crab Vessel
  - <50 feet
- Sudden Capsize
- Due to heavy weather
- No emergency equipment used
- Immersion suits vs. PFDs

Potential Areas for Intervention

- Prevent vessel loss in the first place
  - Bar crossing limitations
  - Weather cameras
  - Remove “race to fish”

- Increase PFD use in heavy weather and surf
  - PFD Evaluation

- Continued training – recent classes resulting in lives save

Overview

- NIOSH Background
  - Fishing Vessel Safety Research
- Regional Summaries
  - Alaska and West Coast
- **Casualty Analysis**
  - **Vessels >50ft**

NIOSH Assistance in…

- Providing data to identify risk-based prevention activities
- Identify affected fleets
- Quantify specific risks
- Prioritize fleets with highest risks

Alternate Safety Compliance

- Relevant to specific fleet
- Develop to achieve reasonable and attainable risk-based objectives
- “Fleet”: group of vessels
  - operating in similar area
  - using same gear to catch
  - seeking same species
  - and are of similar in size

Fatalities for AK and West Coast

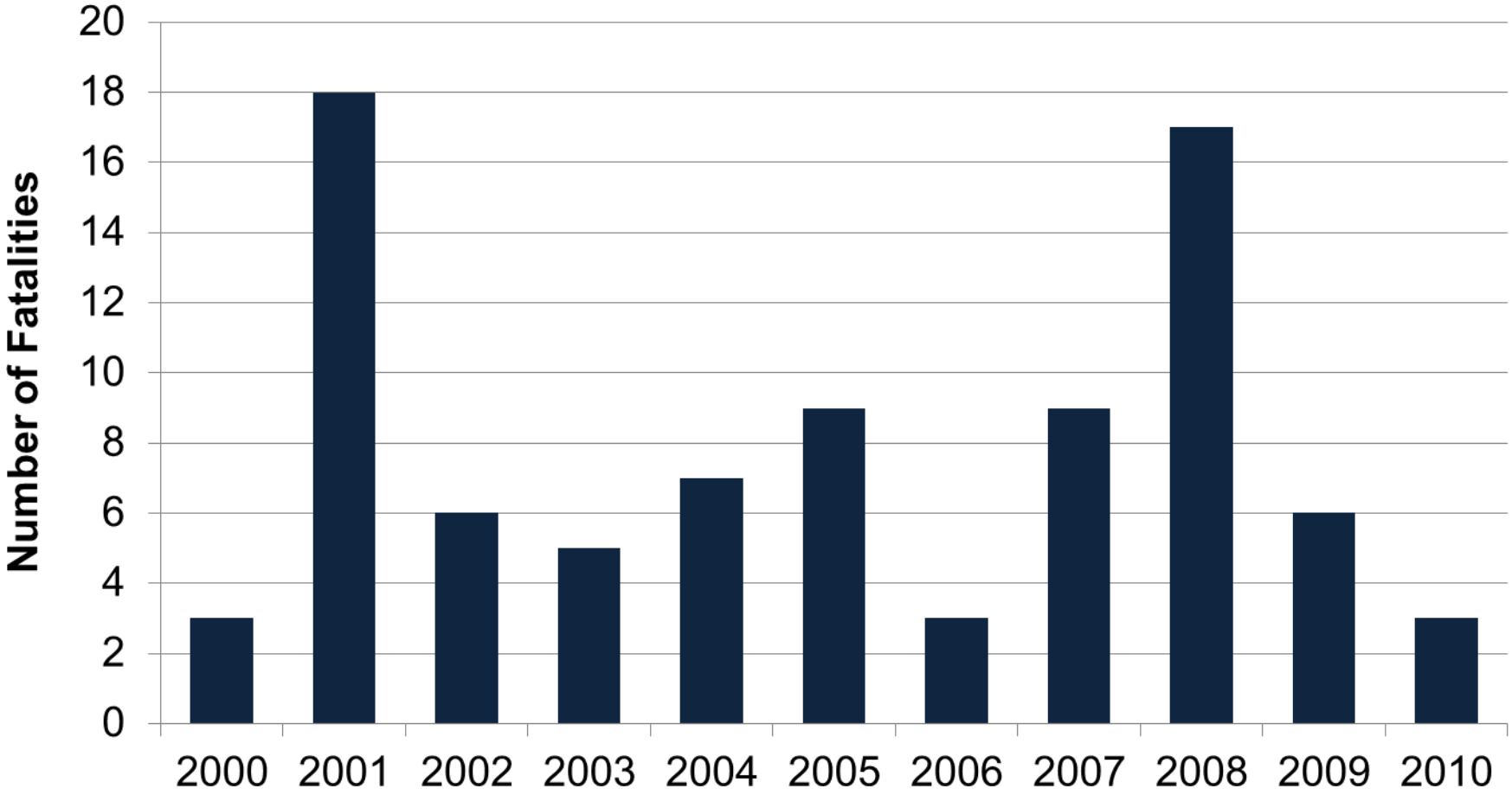
231 **All fatalities, D17/ D13/ D11, 2000-2010**

223 **Unintentional**

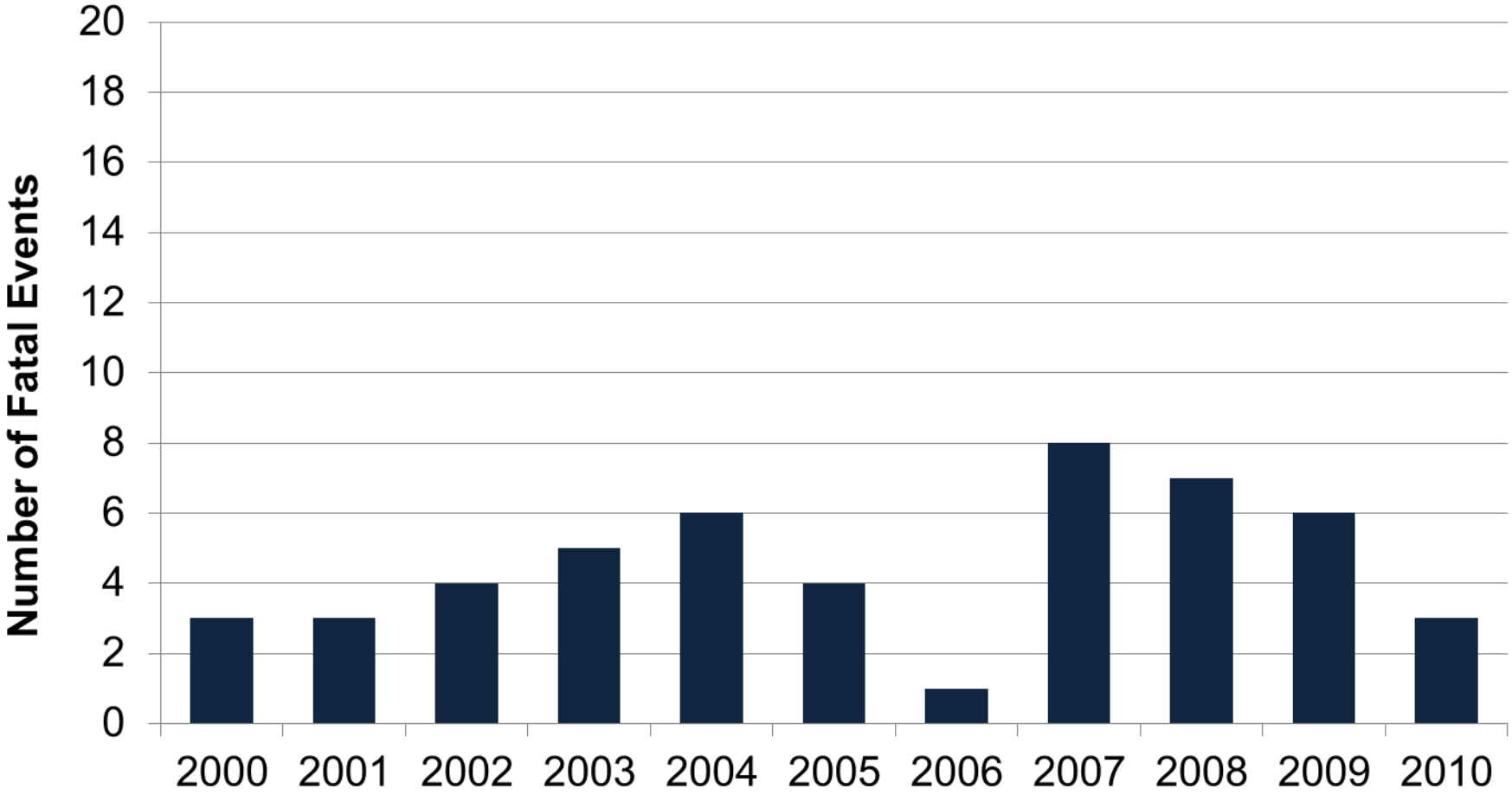
86 **Vessels ≥ 50 feet**

(39% of all fatalities)

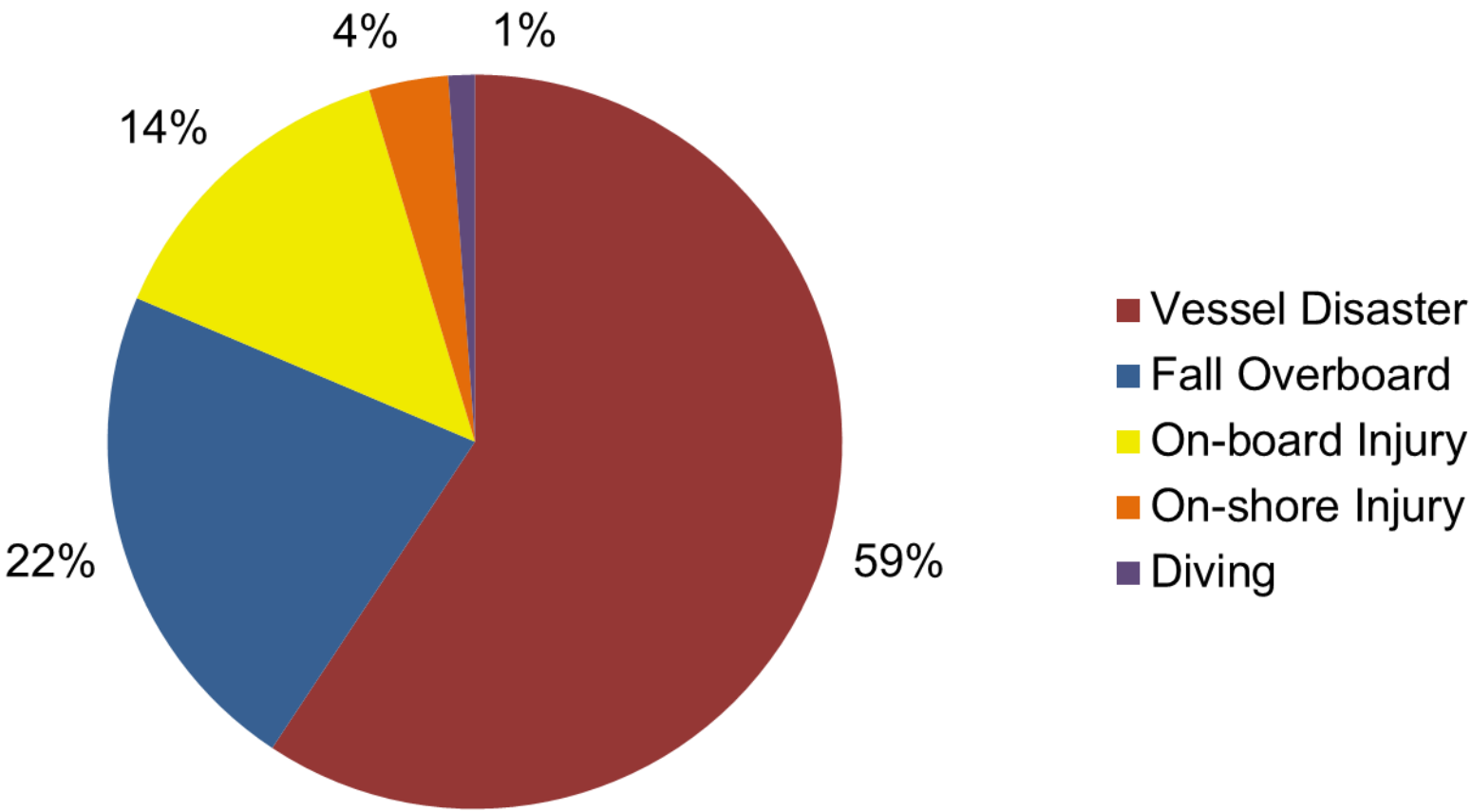
Fatalities by Year
AK and West Coast, Vessels ≥ 50’
(86 total)



Fatal Events by Year
AK and West Coast, Vessels ≥ 50’
(50 total)



Fatalities by Incident Type
AK and West Coast, Vessels ≥ 50’
(86 total)



Fatal Events by Incident Type
AK and West Coast, Vessels ≥ 50’
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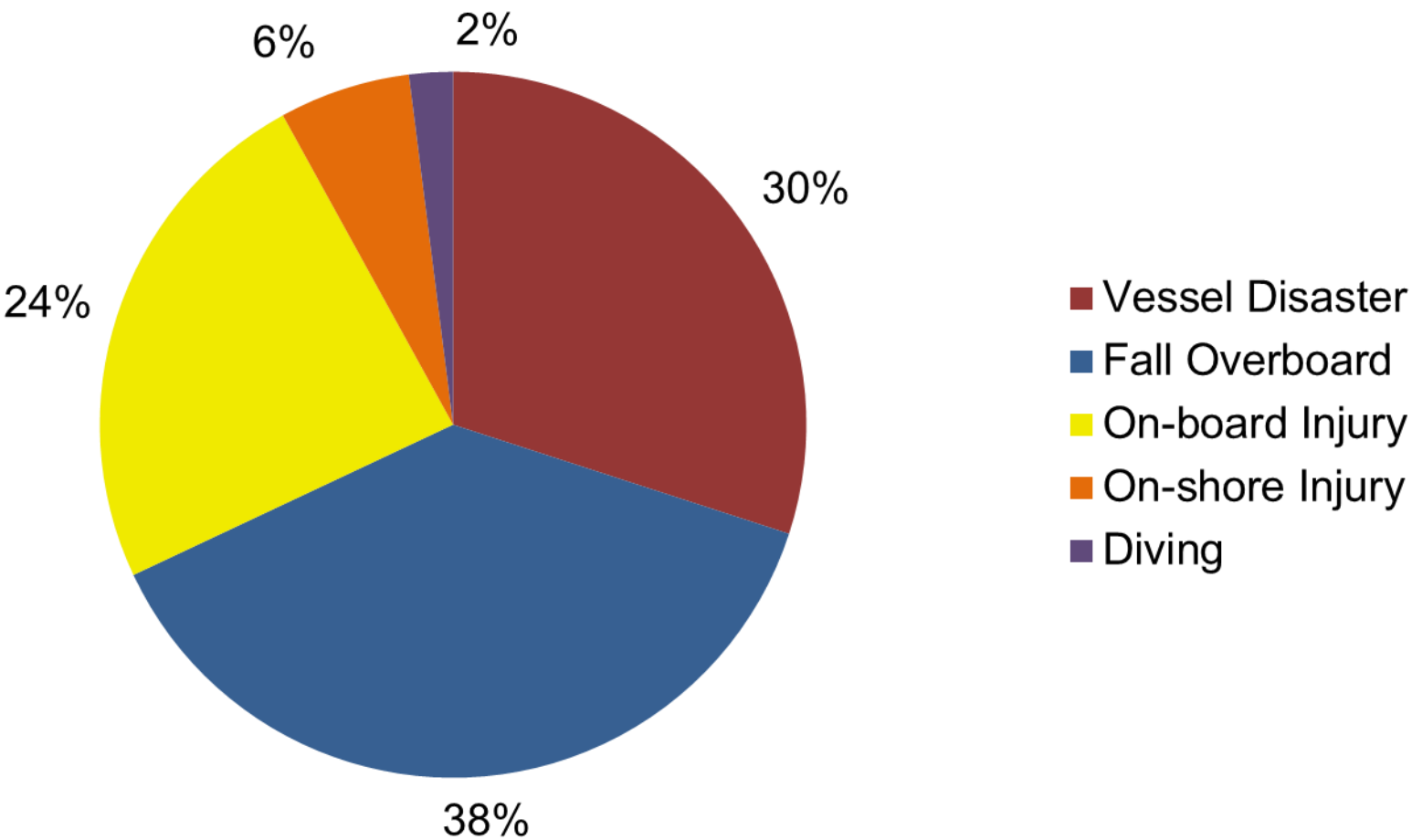
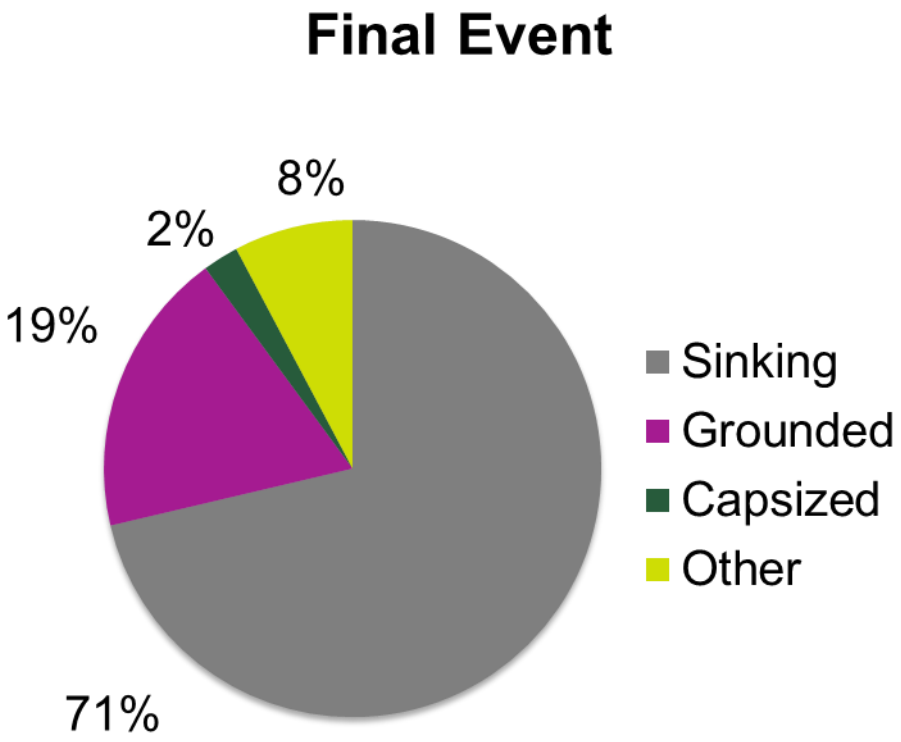


Non-fatal Vessel Losses AK and West Coast, Vessels ≥ 50’ (129 total)

Initiating Event	#
Struck Rocks/Bottom	35
Flooding	28
Fire/Explosion	23
Listing	12
Instability	11
Collision/Allision	8
Struck by Large Wave	6
Other & Unknown Events	6
Total	129



Handouts

- Summary of fleets based on fatal events (vessel losses, falls overboard, on board injuries and on shore injuries)

- Summary of fleets based on non-fatal vessel losses

Conclusions

- Scientific methodology can be applied to identify high-risk fleets
- Small vessels <50 feet account for 61% of fatalities
  - Prevention must still focus on
    - dungeness crab fleet (West Coast) and
    - gillnet/skiff salmon fleet (AK)
- Alternate Safety Compliance
  - include Falls Overboard Prevention and
  - onboard injury prevention
- Highest risk fleets include
  - Trawlers
  - Bering Sea crab vessels
  - Pot cod (Adak fishery)

Contact Information

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Bering Sea Crab Fleet Evaluation

1990-1999

- 73 fatalities
- 7-8/year
- 768/100,000
- Most fatalities
  - Capsizings
  - Within 24 hours of start

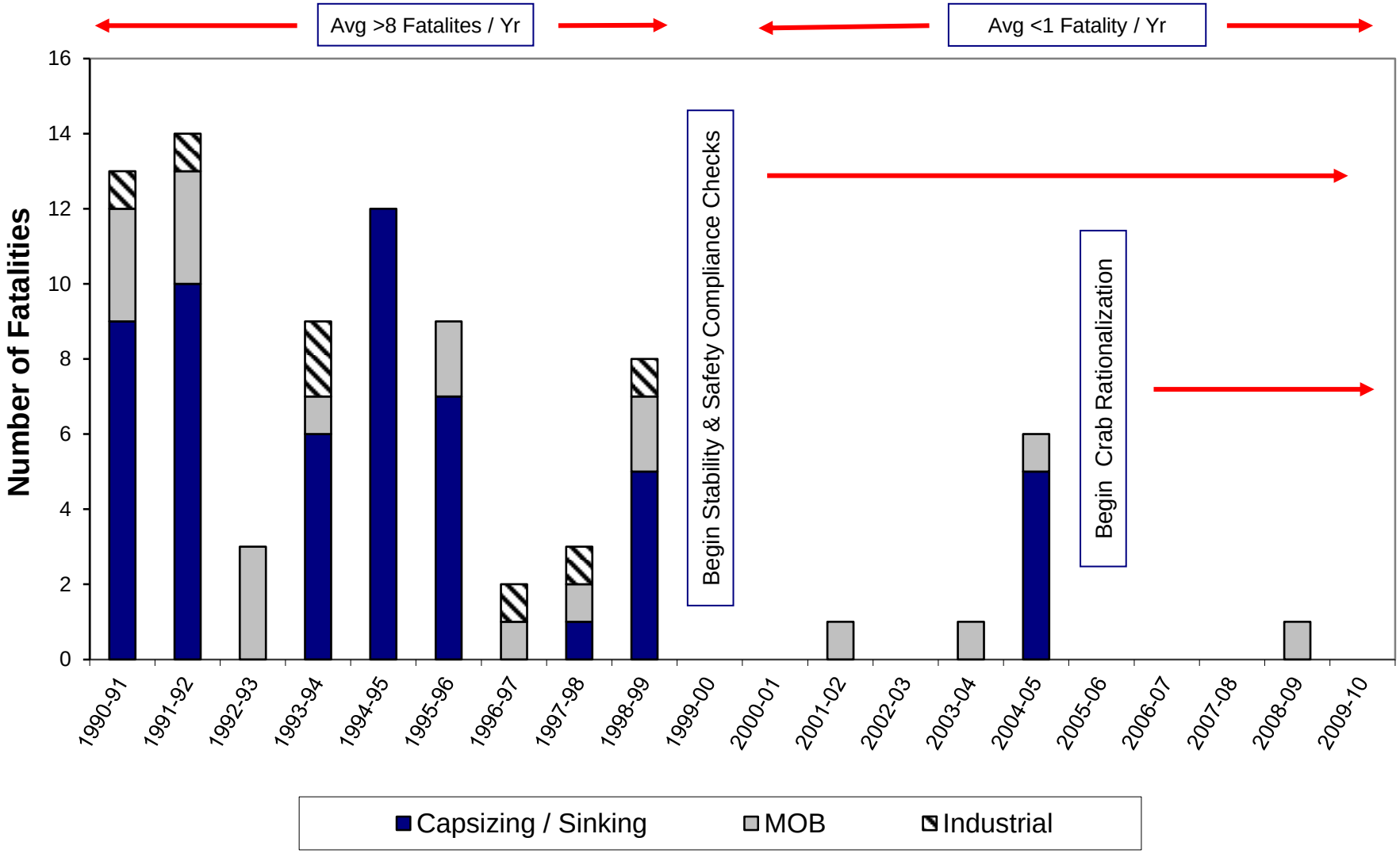
At the Dock Stability Checks

- October 1999
- USCG, crab industry, & NPFVOA
- Review vessel stability letters & examine safety equipment
- No stability reports, overloaded, or discrepancies with safety equipment were not allowed to get underway.

At the Dock Stability Check Results

- 74% reduction in overall fatalities
- 60% reduction in fatality rates
  - accounts for reduction in fleet size

Bering Sea / Aleutian Island Crab Fishery Fatalities (1990-2010)



Alternative Compliance & Safety Agreement Program (ACSA)

Voluntary program to bring freezer longliner and trawl vessels in Alaska into compliance with higher safety standards:

- Hull condition
- Watertight integrity
- Vessel stability
- Emergency training
- Lifesaving equipment