



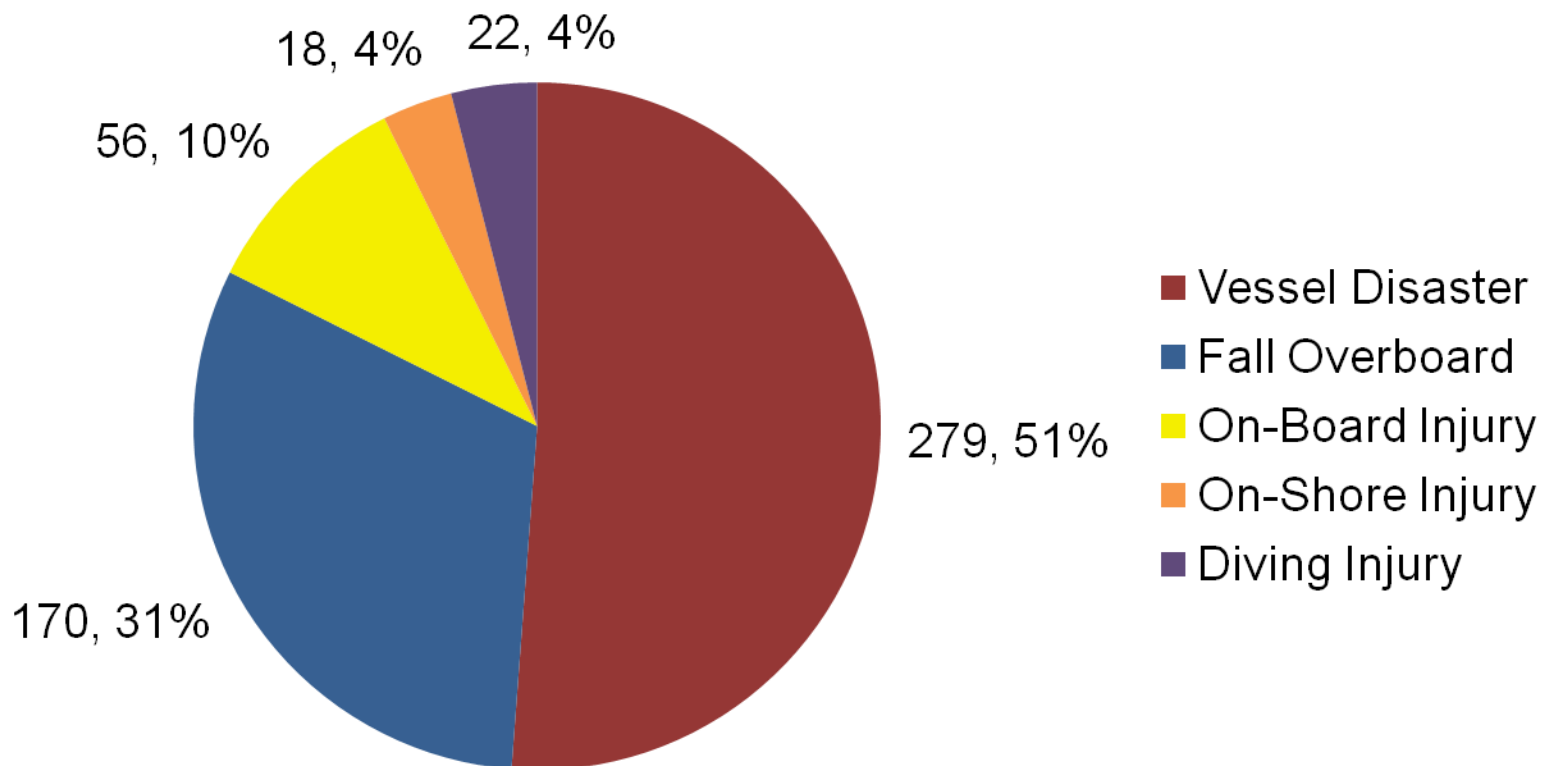
Risk Factor Analysis for Fatal Vessel Losses and Fatal On-board Injuries

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Occupational Safety and Health*

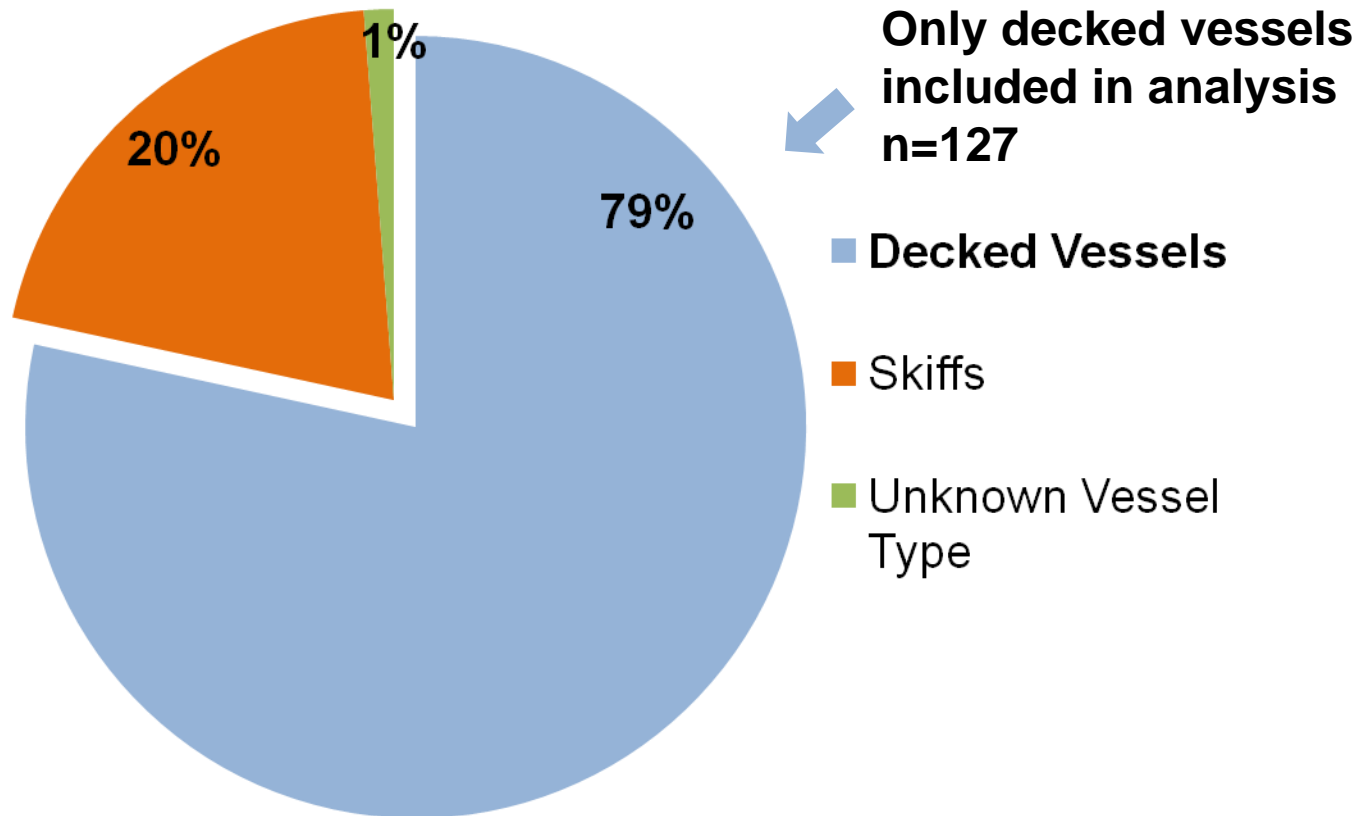
What do we know?

- There were 545 fishing fatalities during 2000-2010

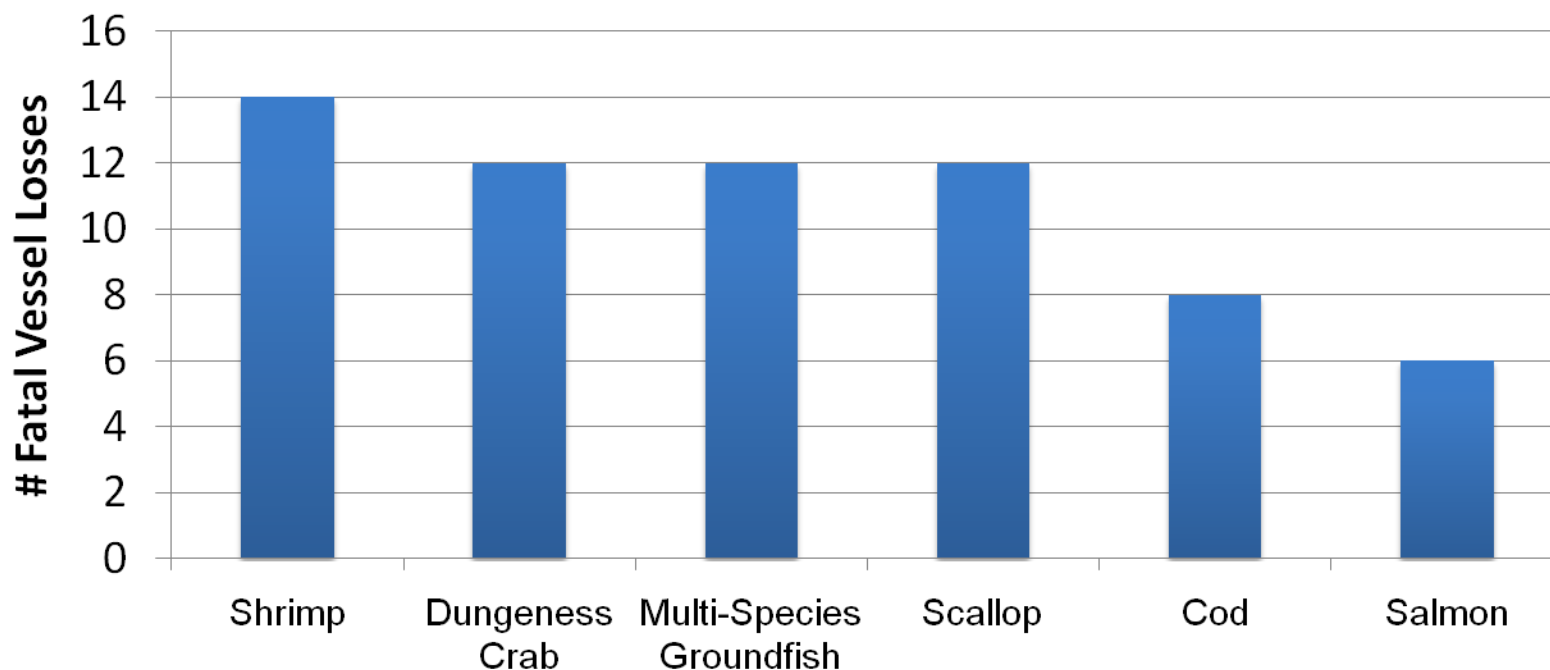


Fatal Vessel Disasters 2000 - 2010

- 279 fatalities occurred in 162 events
- 20% occurred on skiffs



Fisheries with >5 Fatal Disasters During 2000-2010

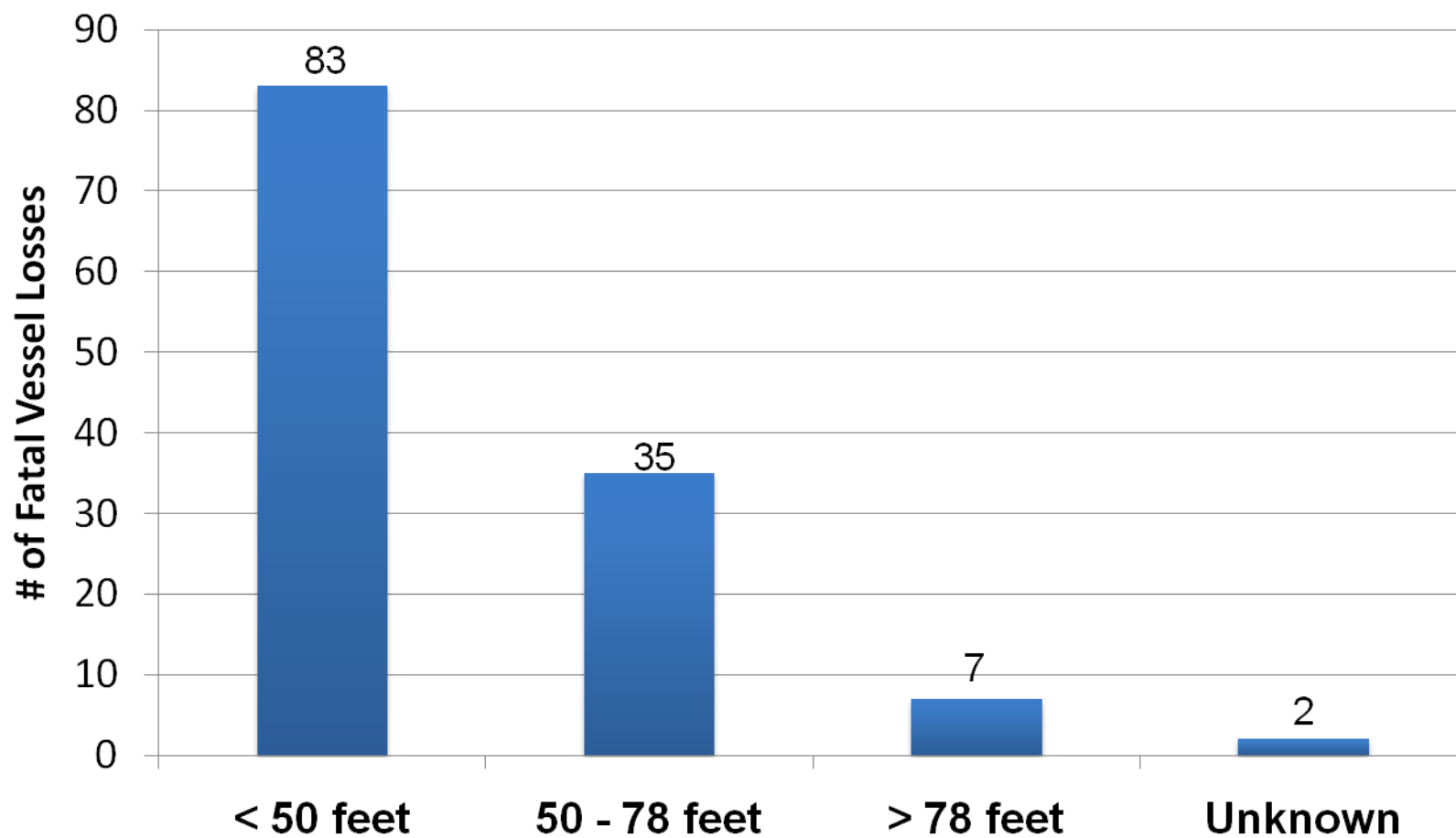


63 events occurred in
other/unknown fisheries

Shrimp- trawlers
Groundfish- trawlers
Scallop- dredges
Cod- pot/longline/trawl
Salmon- troll/drift gillnet

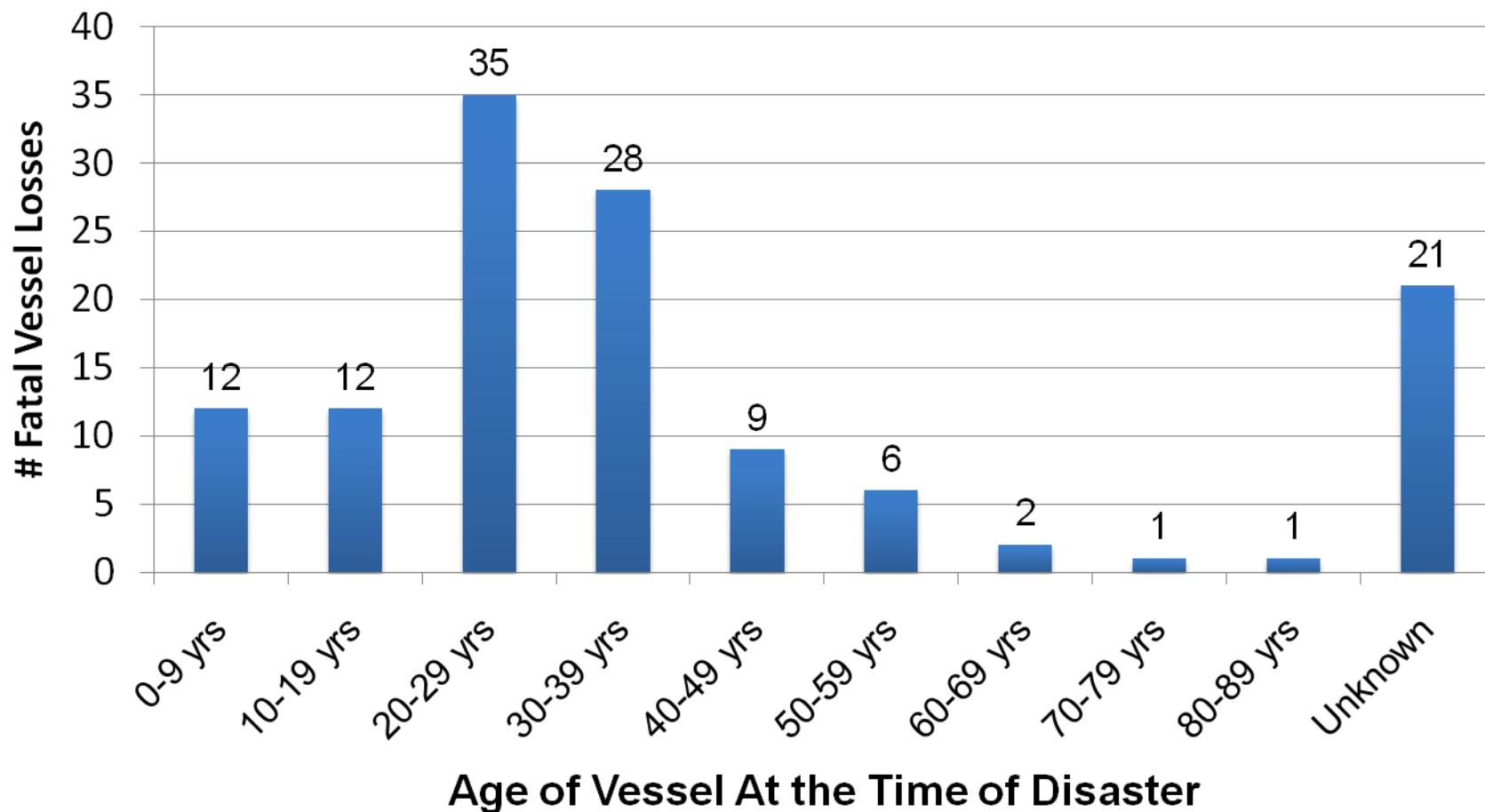
Vessel Characteristics, n=127

Vessel Length



Vessel Characteristics, n=127

Age of Vessel



Environmental Characteristics

- 76, 60% of the vessel losses were weather related
 - Average wave height
10.5 feet
 - Average wind speed
30 mph



Initiating and Other Events, 3 fields

Related to Vessel

Capsize

Engine failure

Fire/explosion

Flooding***

Instability ***

Listing

Steering failure

Related to Env Conditions or Human Factors

Collision/allision

Crossing hazardous bar

Gear caught on bottom

Prop entanglement

Struck by large wave

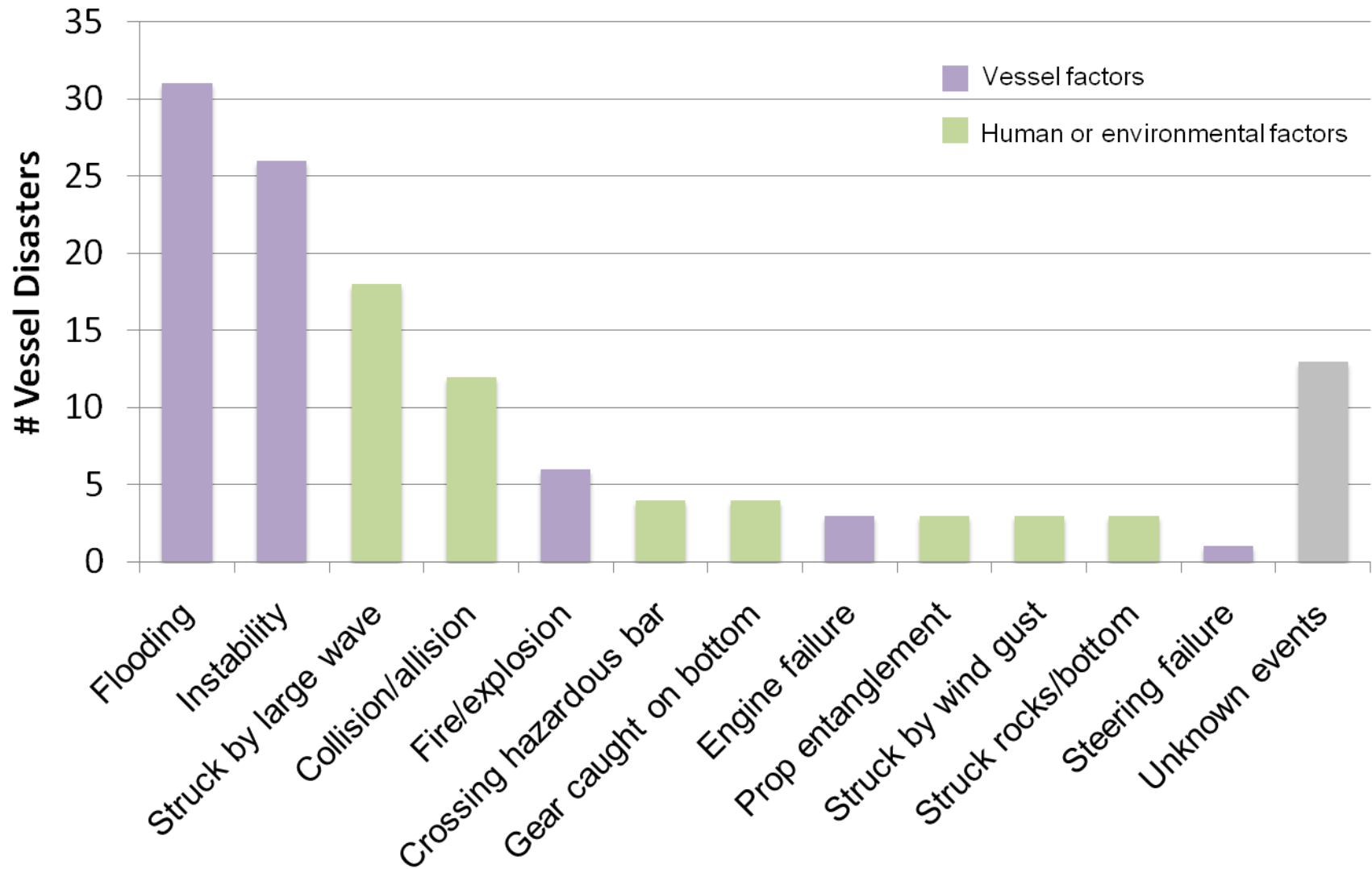
Struck by wind gust

Struck rocks/bottom



***can provide further detail

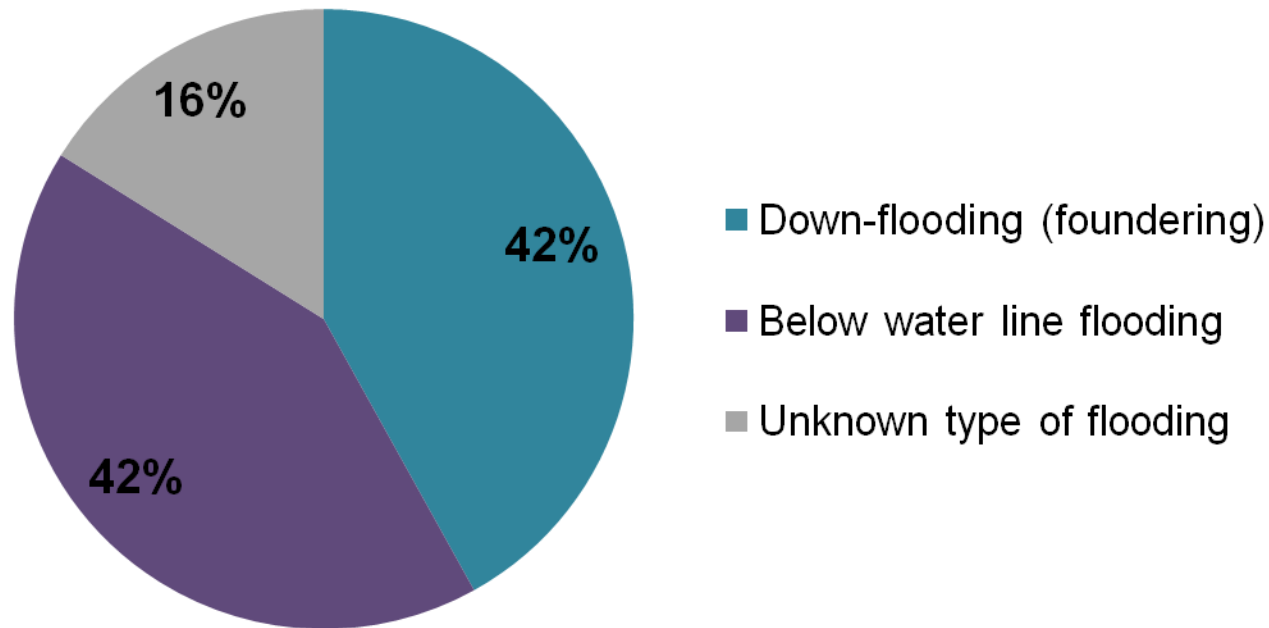
Initiating Events, n=127



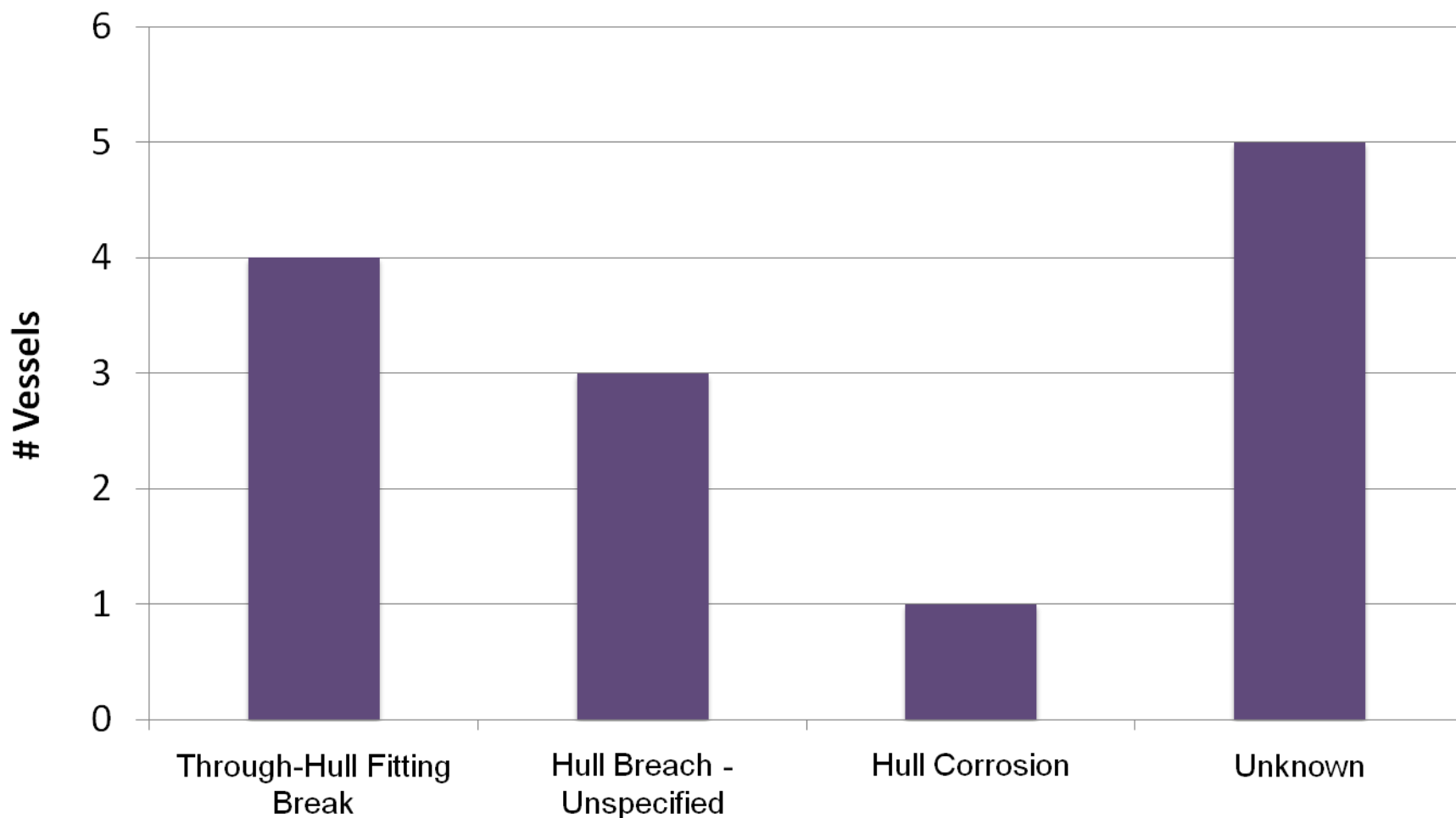
Flooding as Initiating Event

- Flooding was the initiating event in 31, 24% of fatal vessel disasters
- All down-flooding events occurred during heavy weather

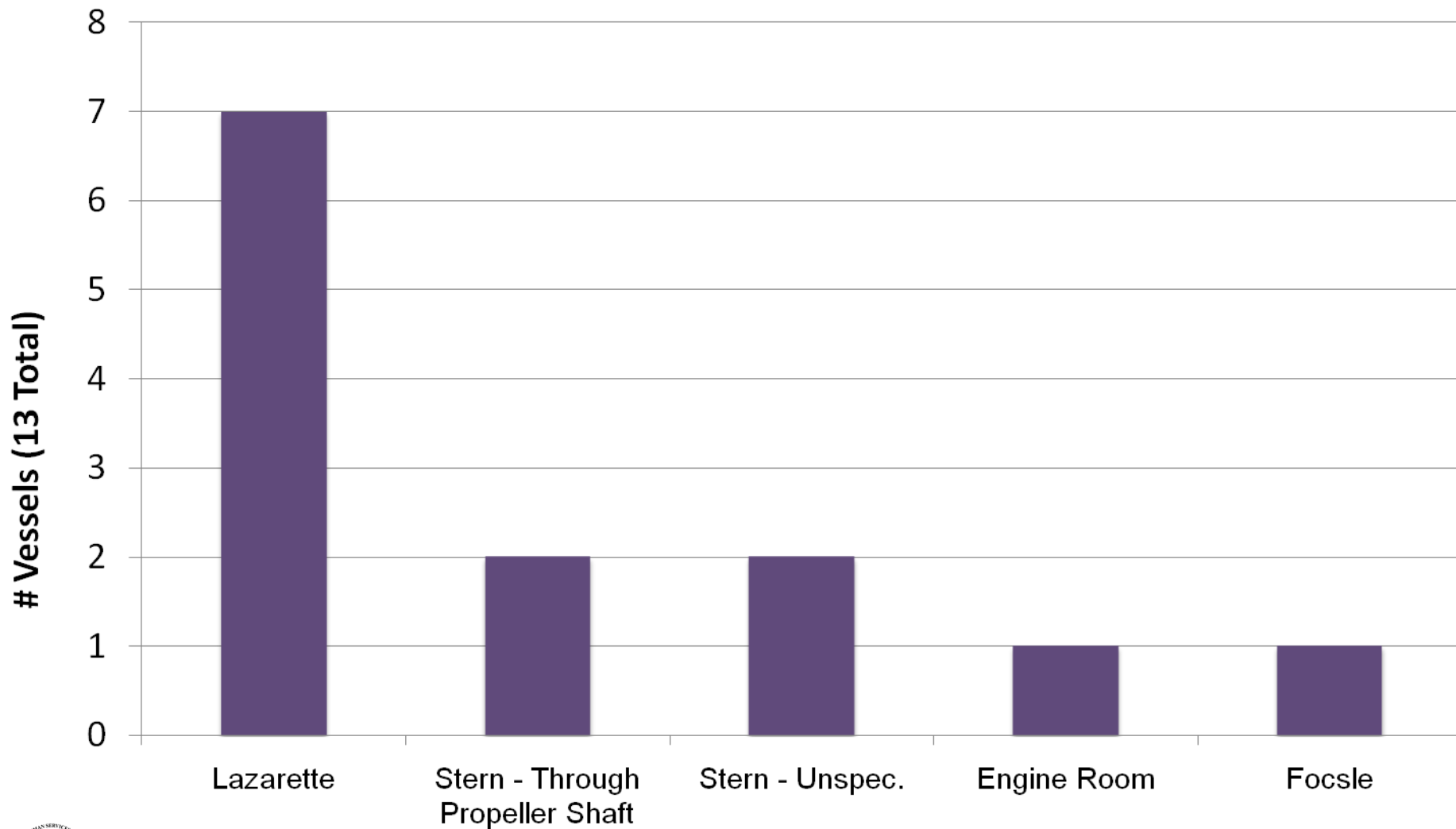
Type of Initiating Flooding



Cause of Flooding Below Water Line, n=13



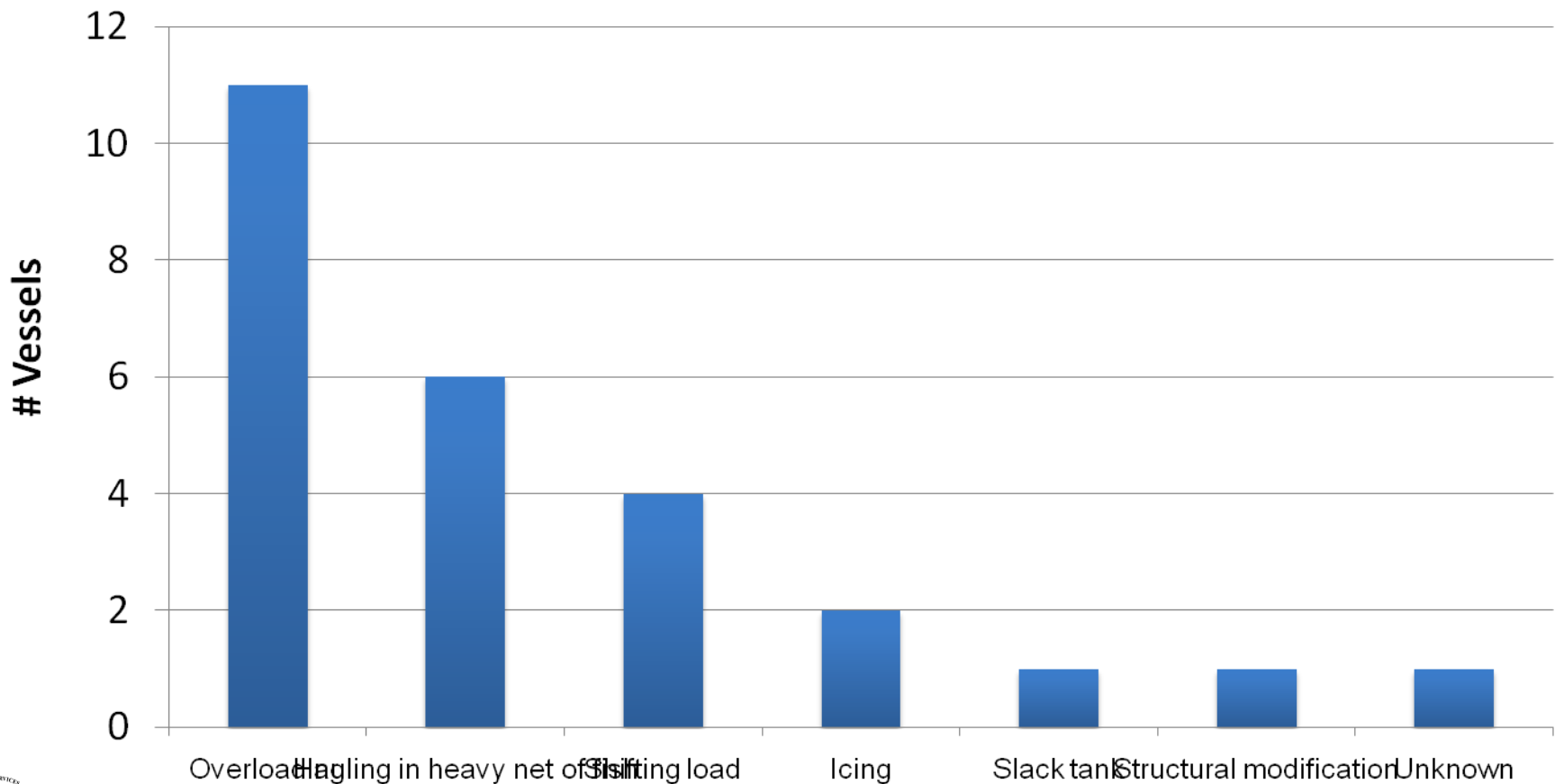
Location of Flooding Below Water Line, n=13



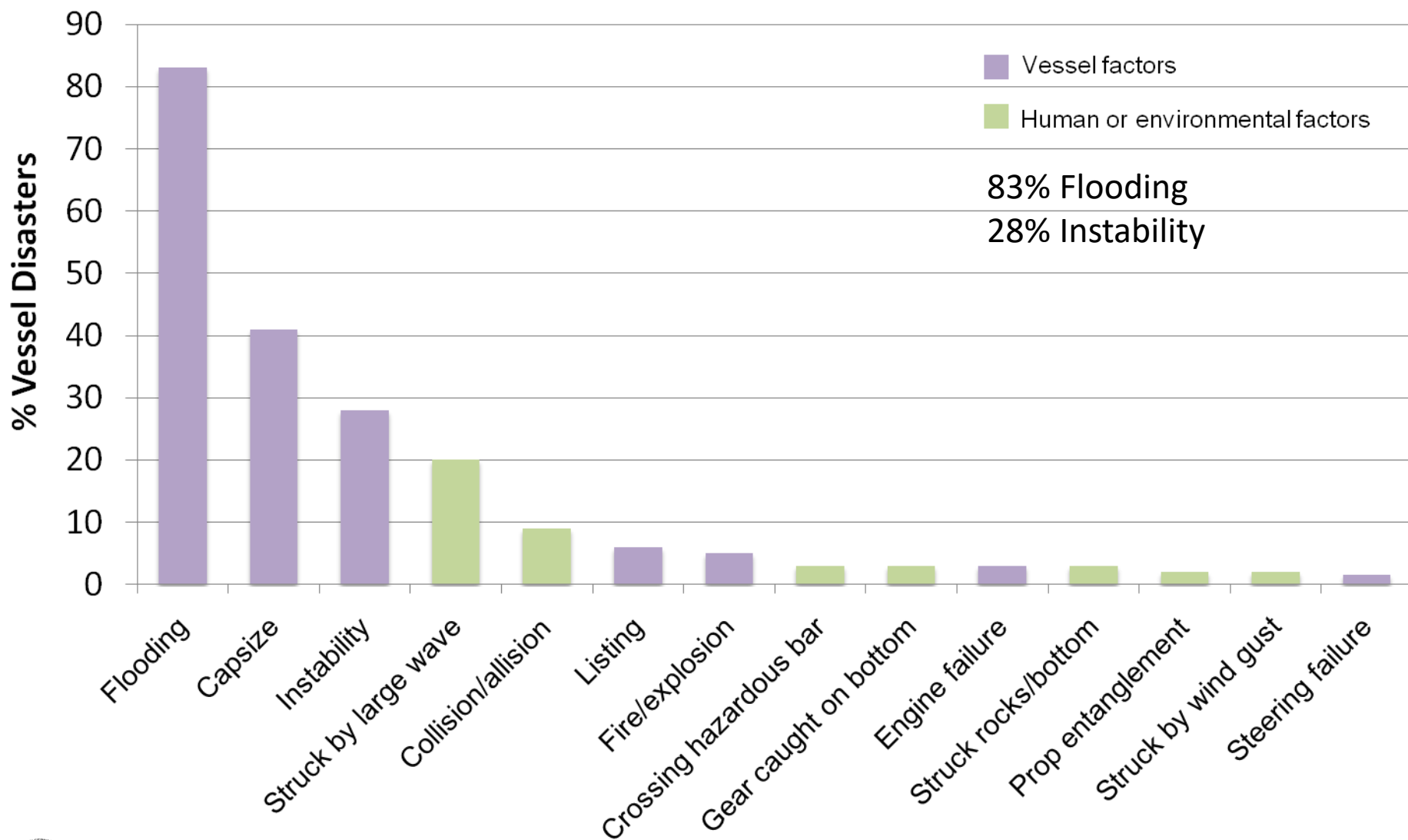
Instability as Initiating Event

- Instability was the initiating event in 26 (20%) vessel disasters

Cause of Instability



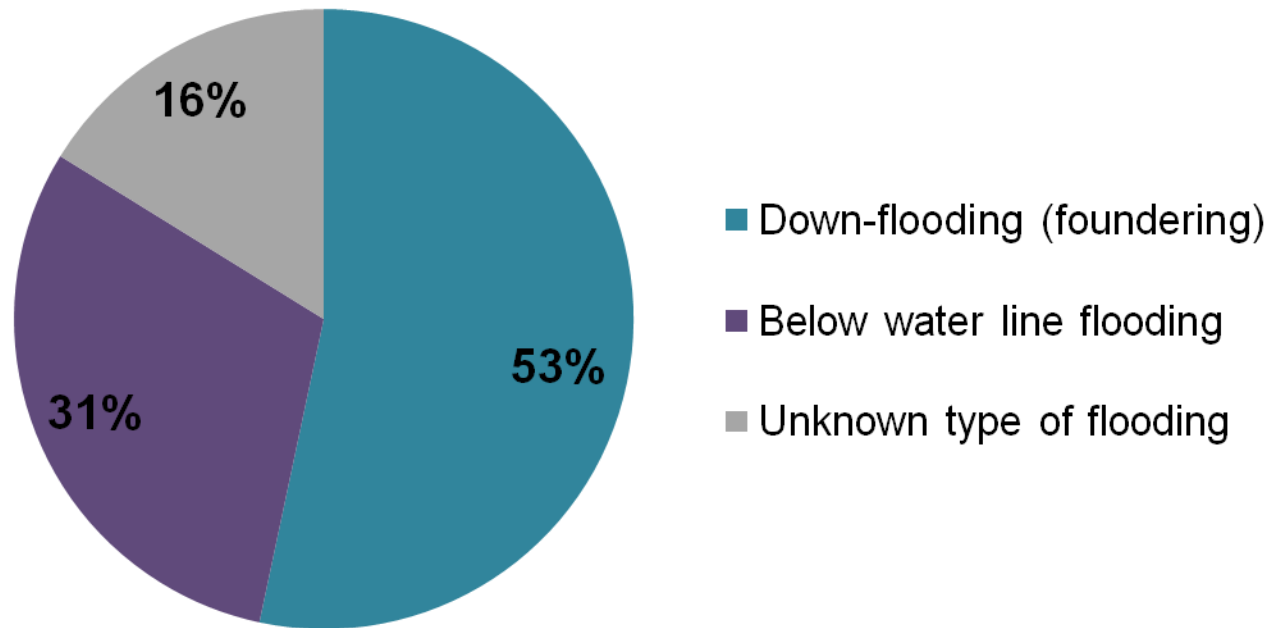
Initiating and Other* Events



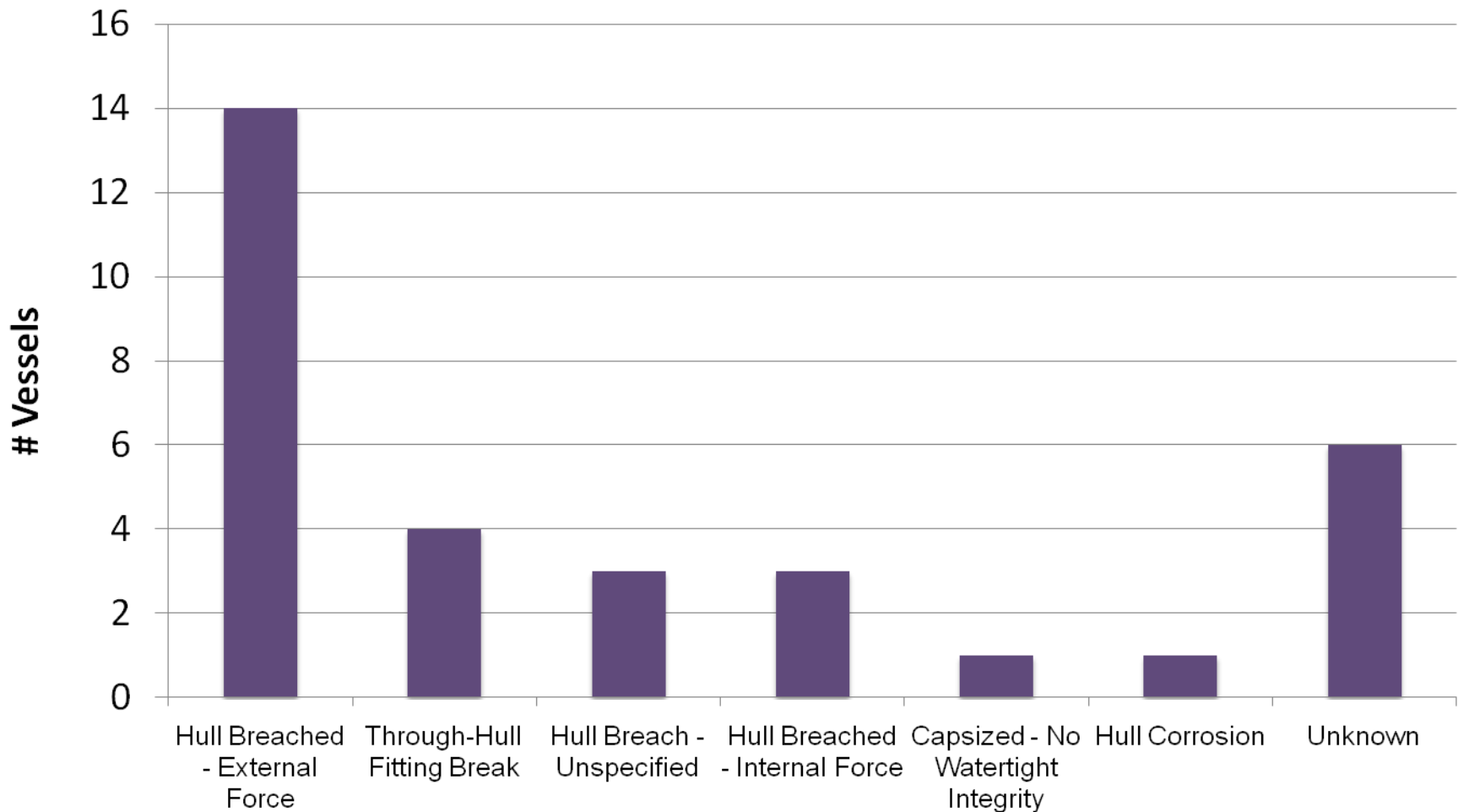
Flooding in any event field

- Flooding occurred in 105, 83% of fatal losses
- Almost all Down-flooding occurred in heavy weather

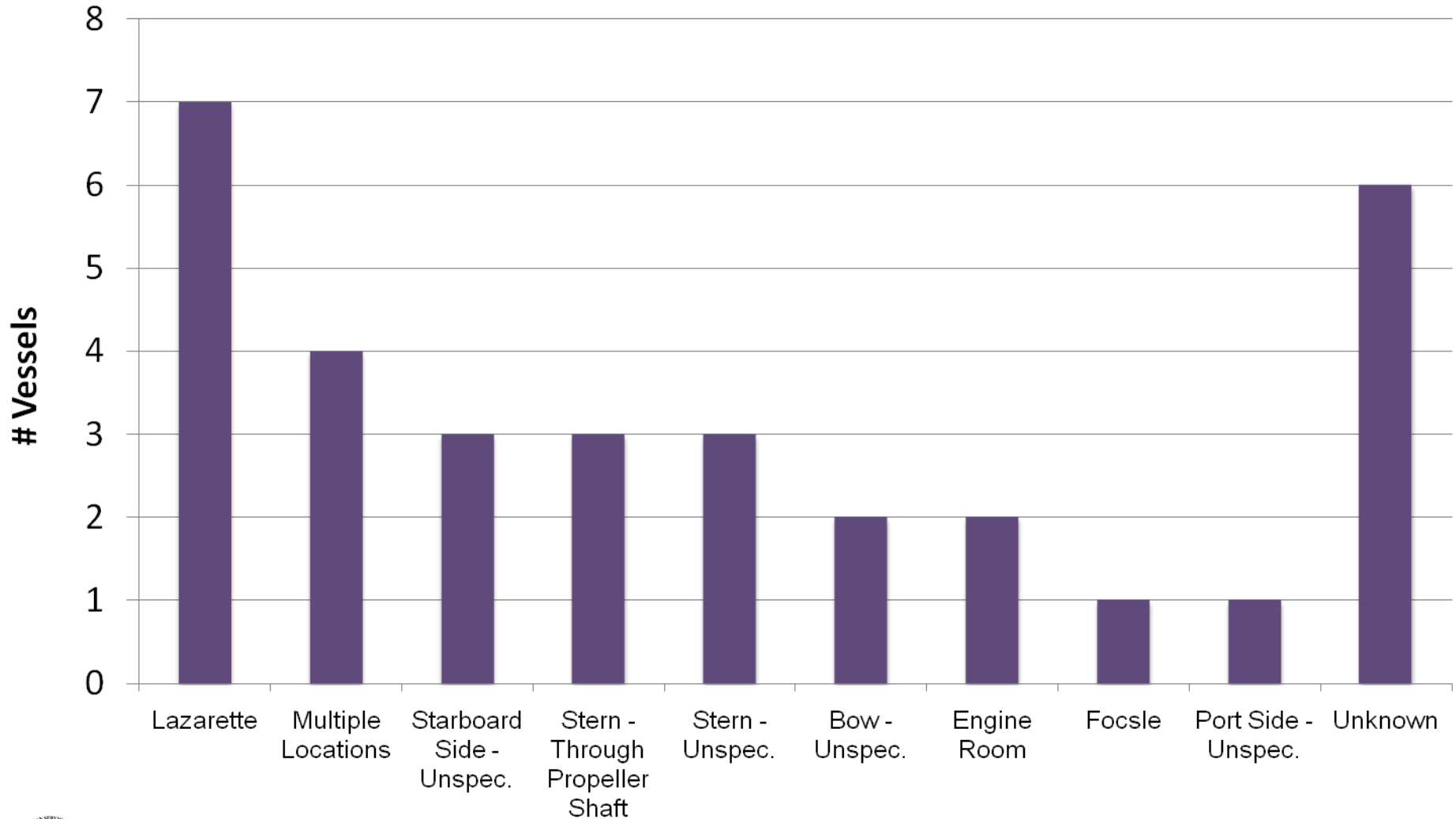
Type of Flooding



Cause of Flooding Below Water Line, n=32

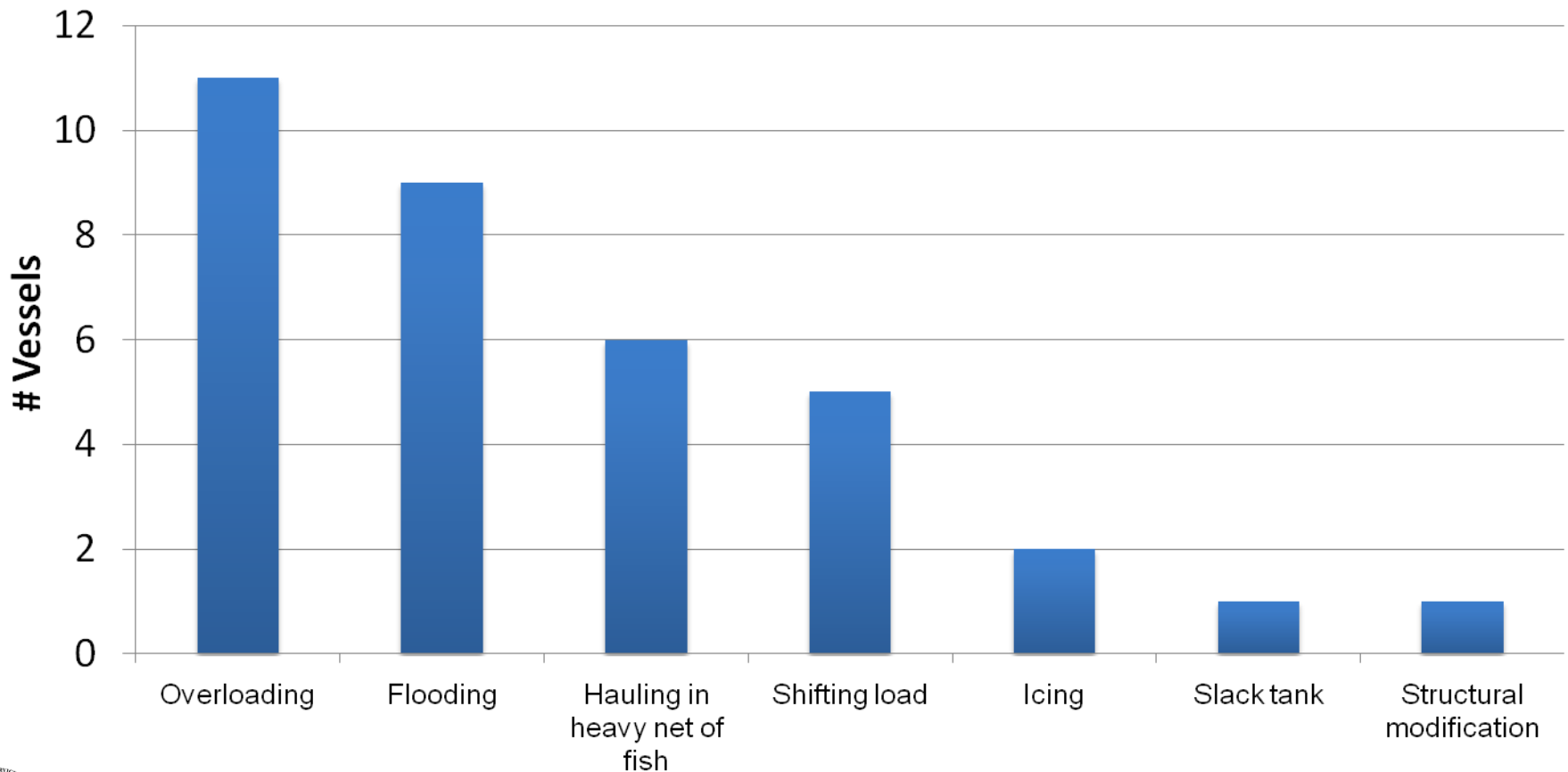


Location of Flooding Below Water Line, n=32



Cause of Instability

- Instability involved in 35, 28% of vessel losses

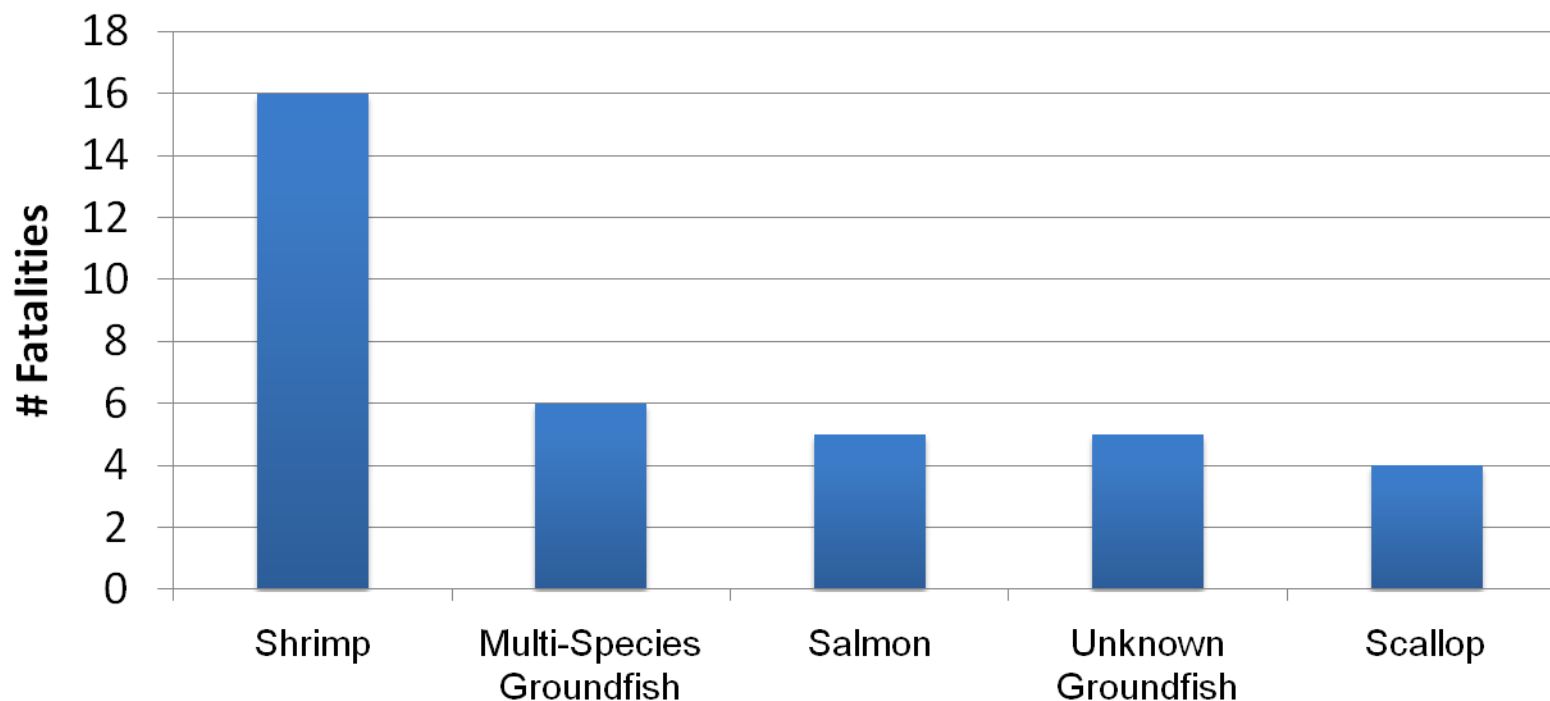


Fatal On-Board Injuries 2000-2010

- 56 fatal on-board injuries
 - 53 unintentional injuries included in analysis
 - 3 other fatalities were intentional (assault/suicide) & excluded from analysis



Fisheries with >3 Fatal Onboard Injuries, 2000-2010, n=53

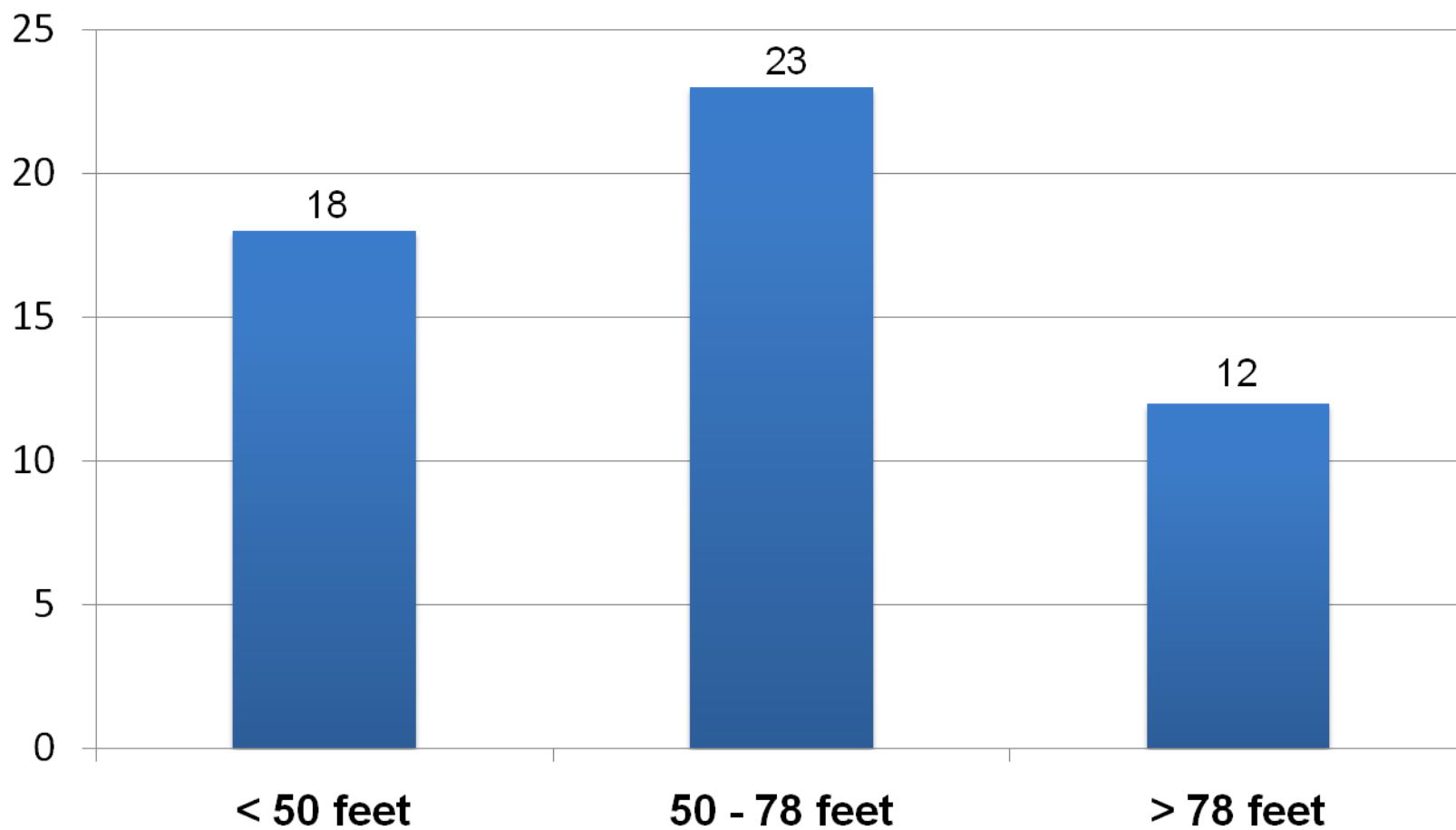


17 other or unknown fisheries



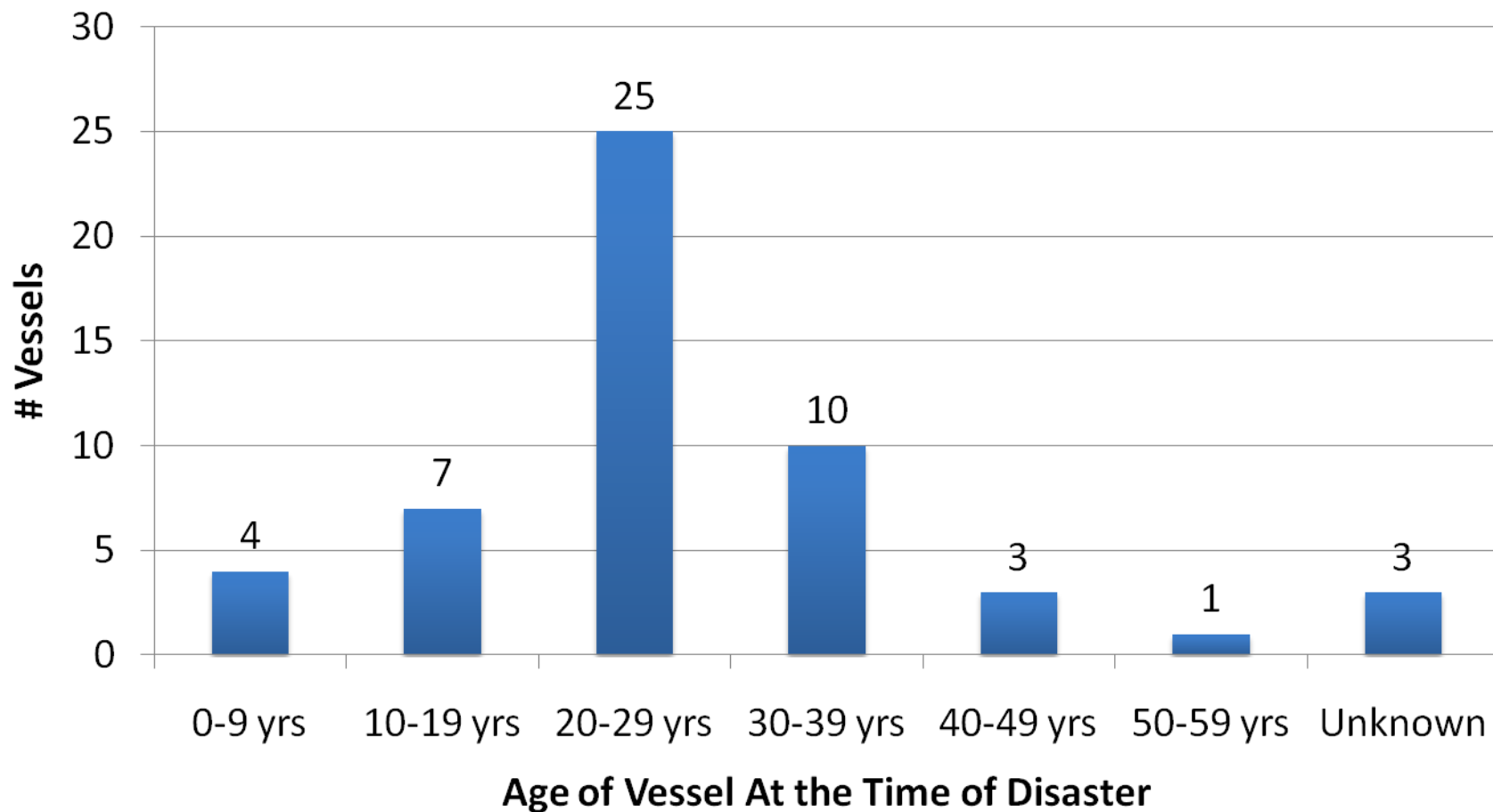
Vessel Characteristics, n=53

Vessel Length

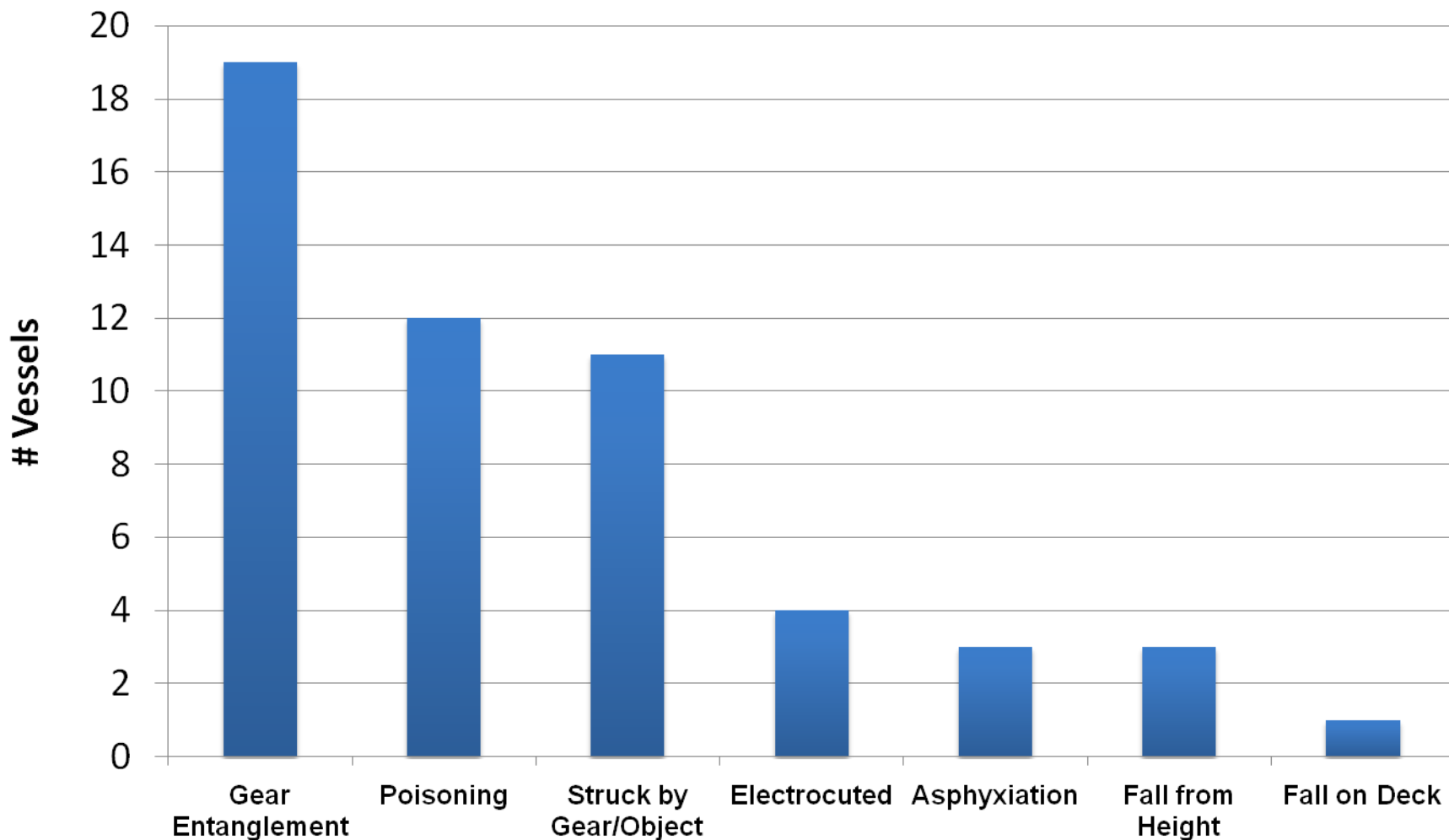


Vessel Characteristics, n=53

Age of Vessel

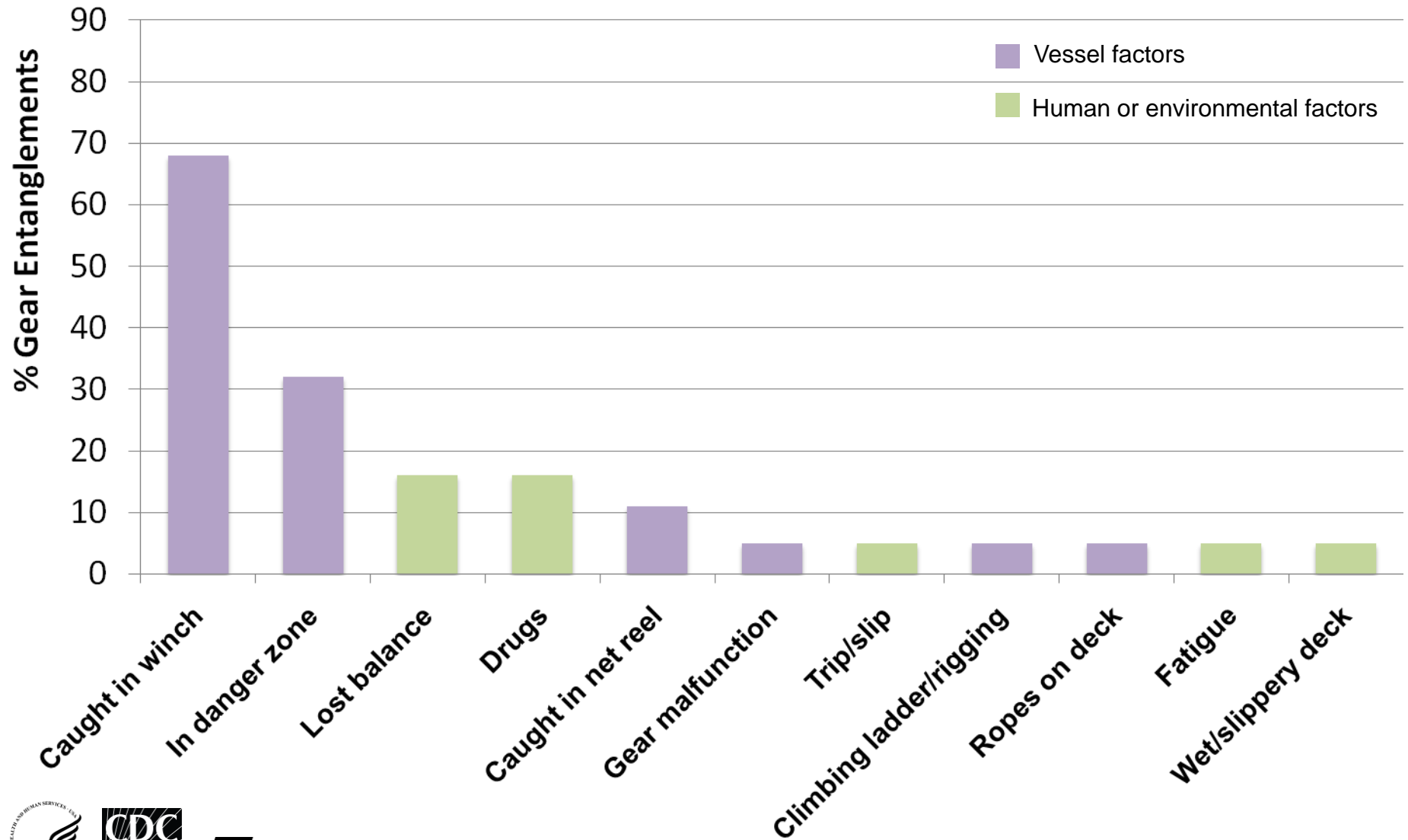


Type of On-Board Injuries, n=53

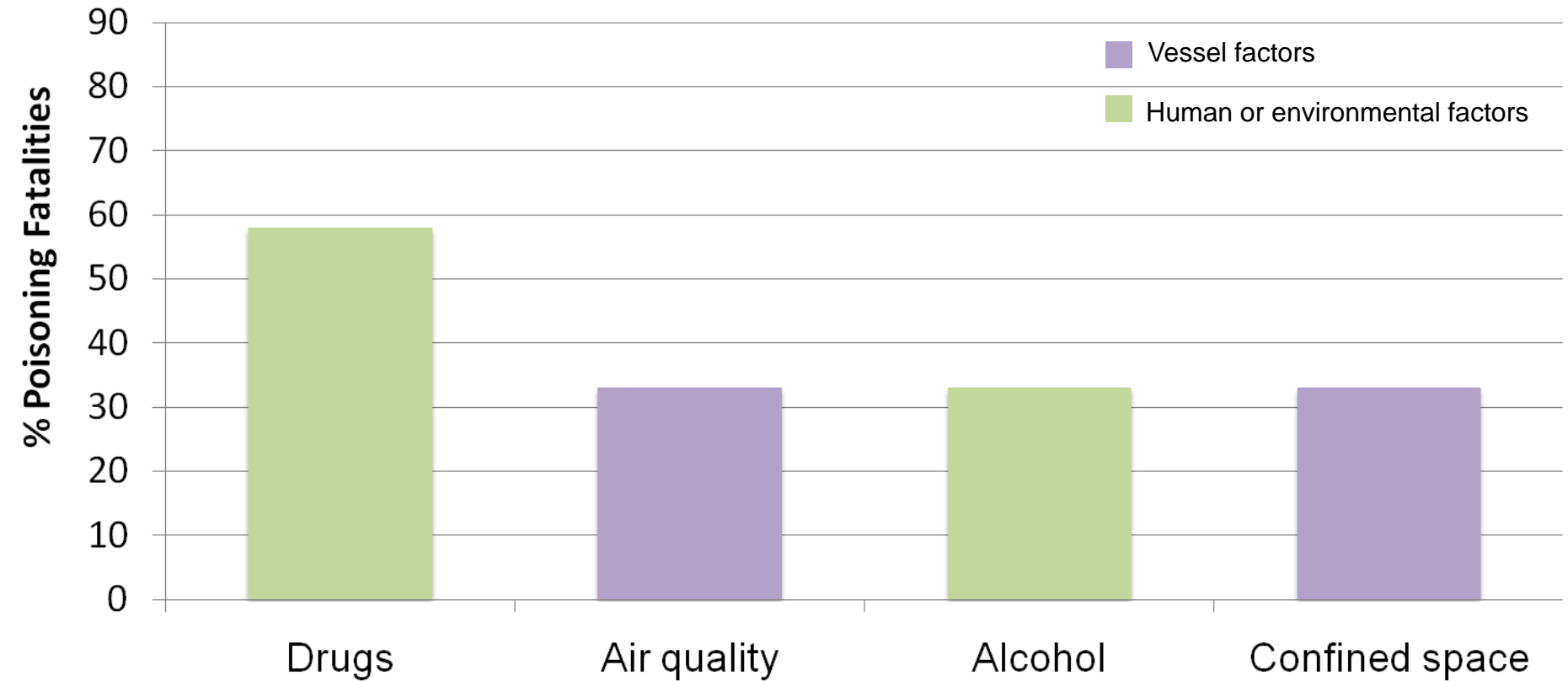


Contributing Factors*

Gear Entanglements, n=19

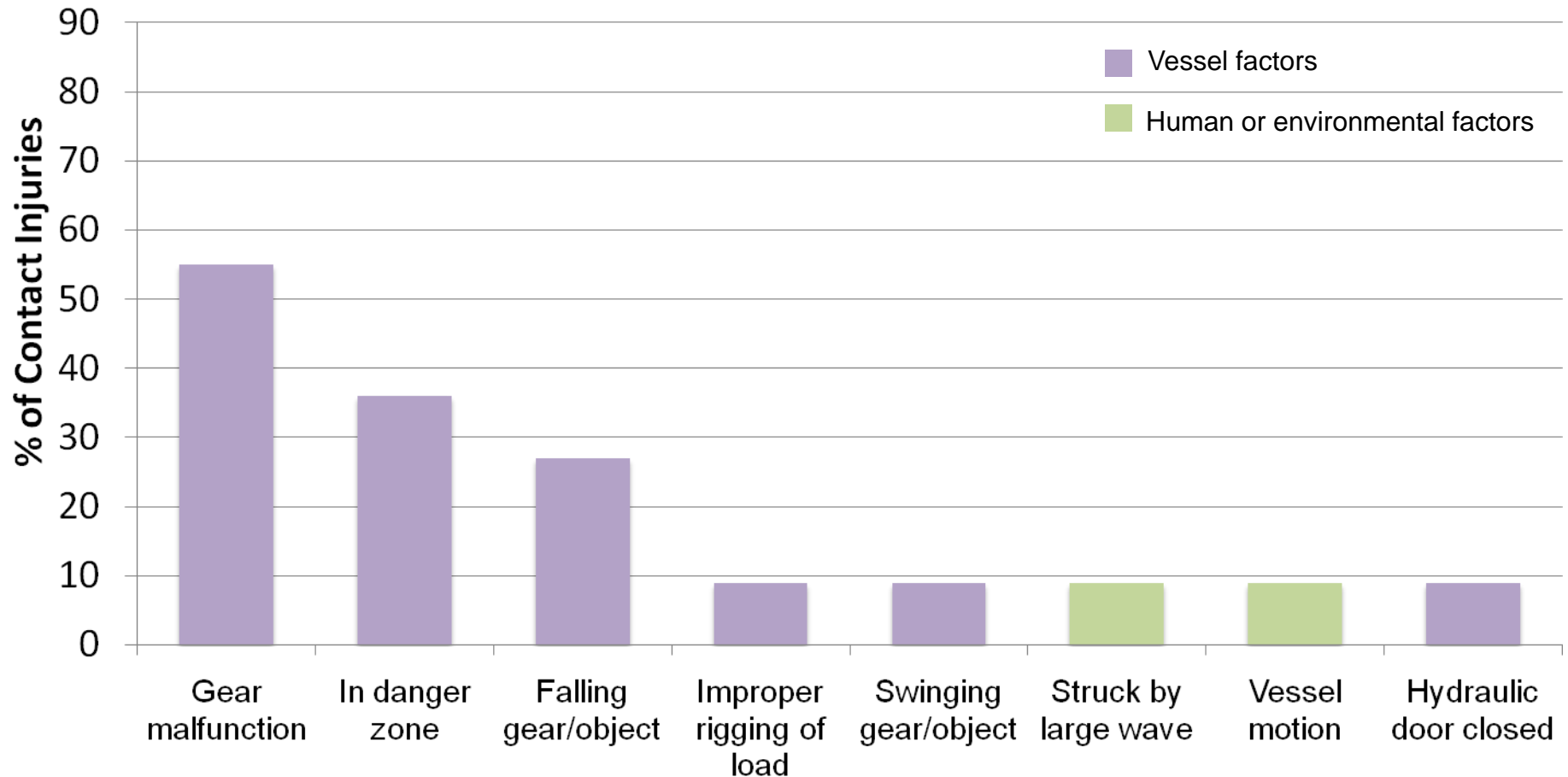


Contributing Factors* to Poisoning, n=12



*not mutually exclusive

Contributing Factors* Struck by Object, n=11



Discussion

- Skiffs account for 20% of all fatal vessel losses and were not included in this analysis
- Each fishery has unique hazards
- Most vessels <50 feet and 20-29 years old
- Non-fatal losses in injuries are missing

Discussion

- Flooding involved in 83%*
 - Downflooding ~50%
 - Usually weather related
 - Below Waterline flooding ~30%
 - Usually external forces
 - Unknown type ~20%
- Instability involved in 28%*
 - Overloading and Heavy load of fish

*some events had both instability and flooding

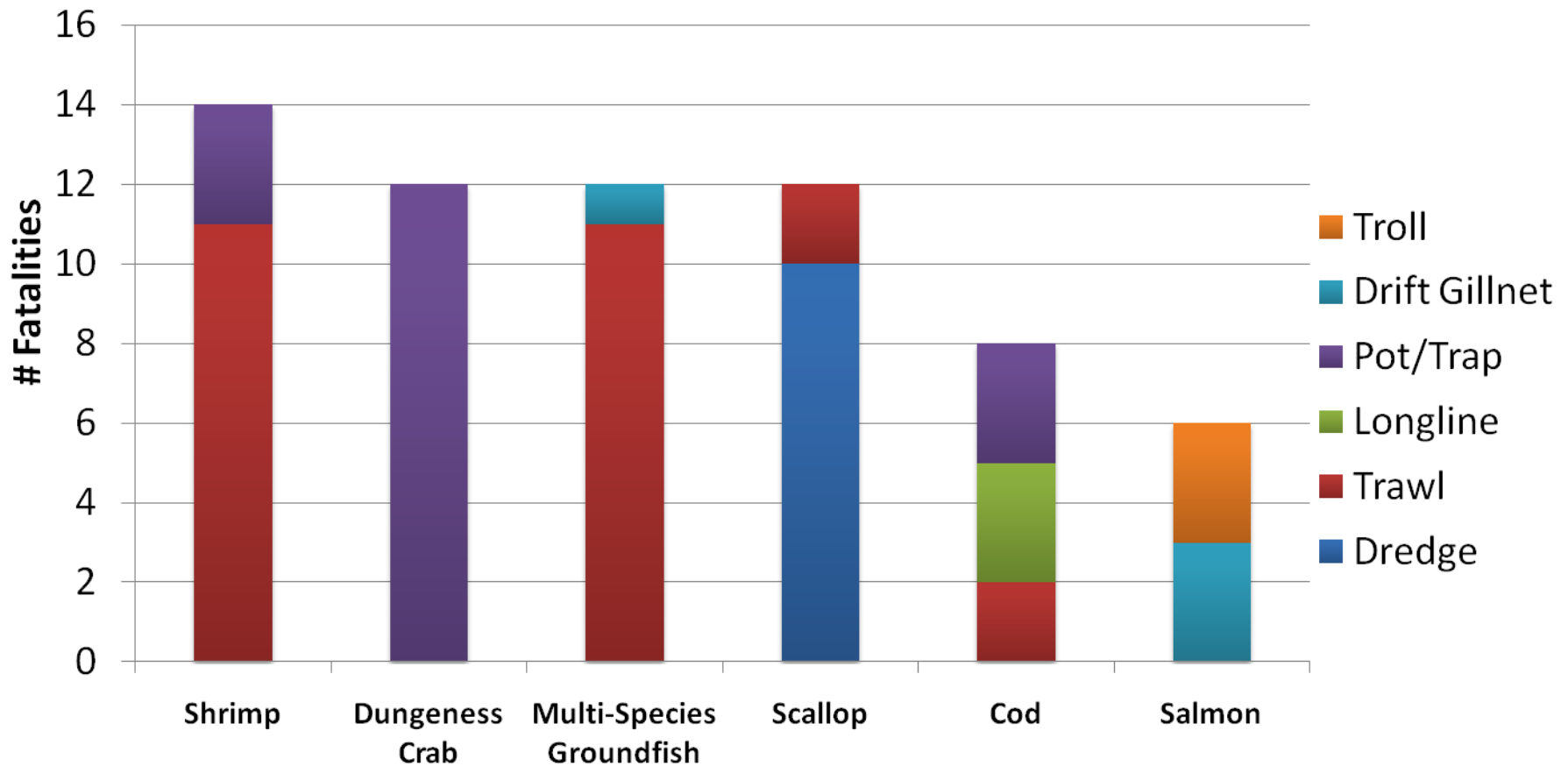


Discussion

- On-Board Injuries
 - Gear entanglements
 - Winches
 - Struck by objects
 - Gear malfunction



Fisheries with >5 Fatal Disasters During 2000-2010, by Gear Type



Human Characteristics

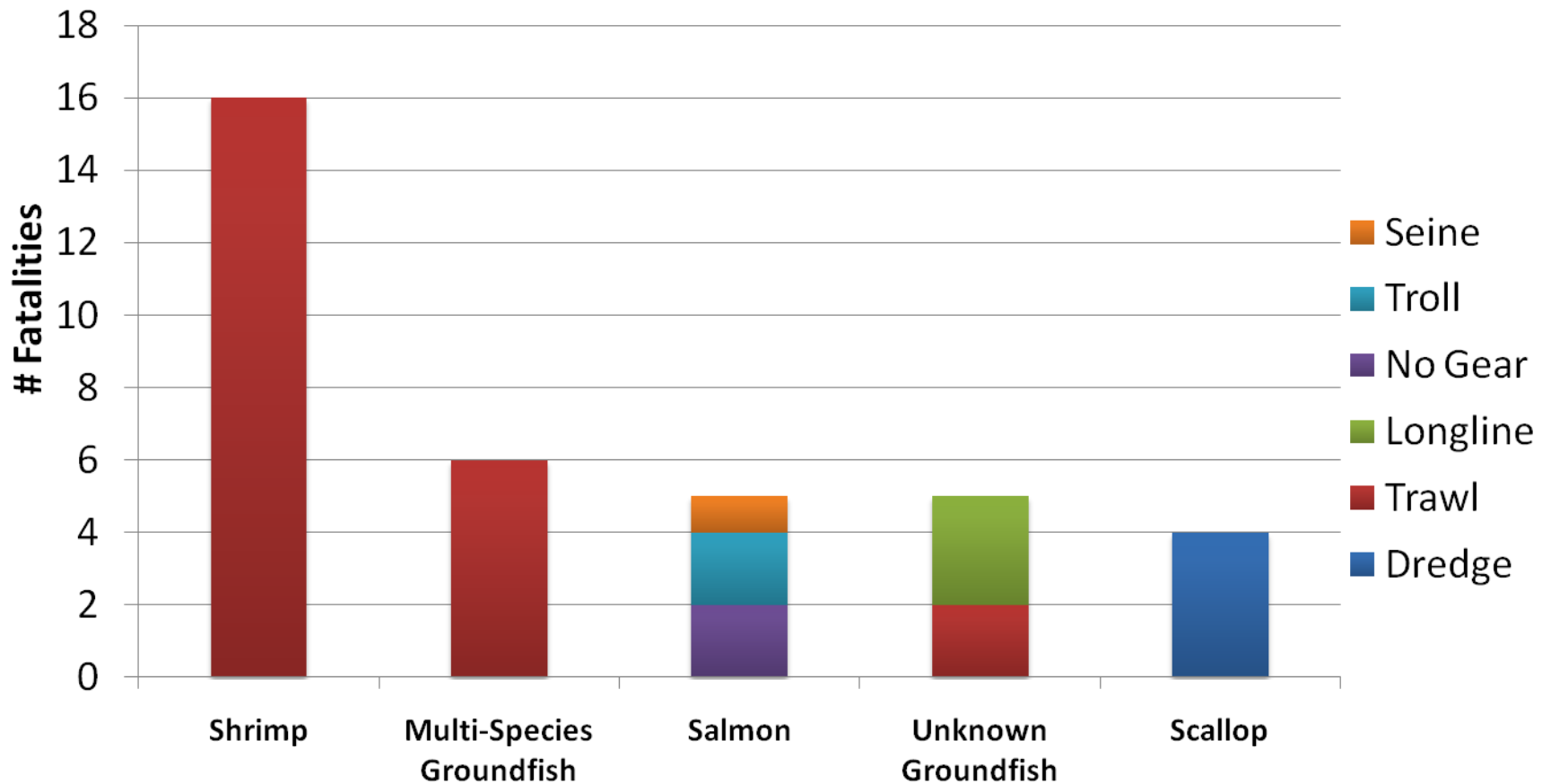
- Only 41 (10%) fishermen known to have safety training*
- Average 13 years fishing experience**
- 35 fishermen tested positive for illegal drugs
- 10 tested positive for alcohol with BAC >0

**Out of 421 fishermen involved in a fatal loss*

Note that training status unknown for majority of fishermen

***Experience only known for 164 fishermen*

Fisheries with >3 Fatal Disasters During 2000-2010, by Gear Type



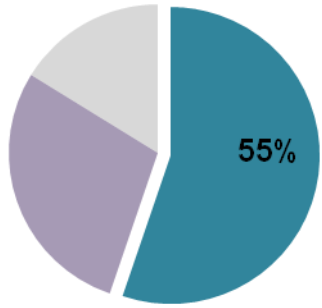
Environmental & Human Characteristics

- Only 2 (4%) of the on-board injuries were weather related
- Only 2 (4%) of fishermen known to have safety training*
- Average 18 years fishing experience**
- 13 (25%) fishermen tested positive for illegal drugs
- 4 tested positive for alcohol with BAC >0

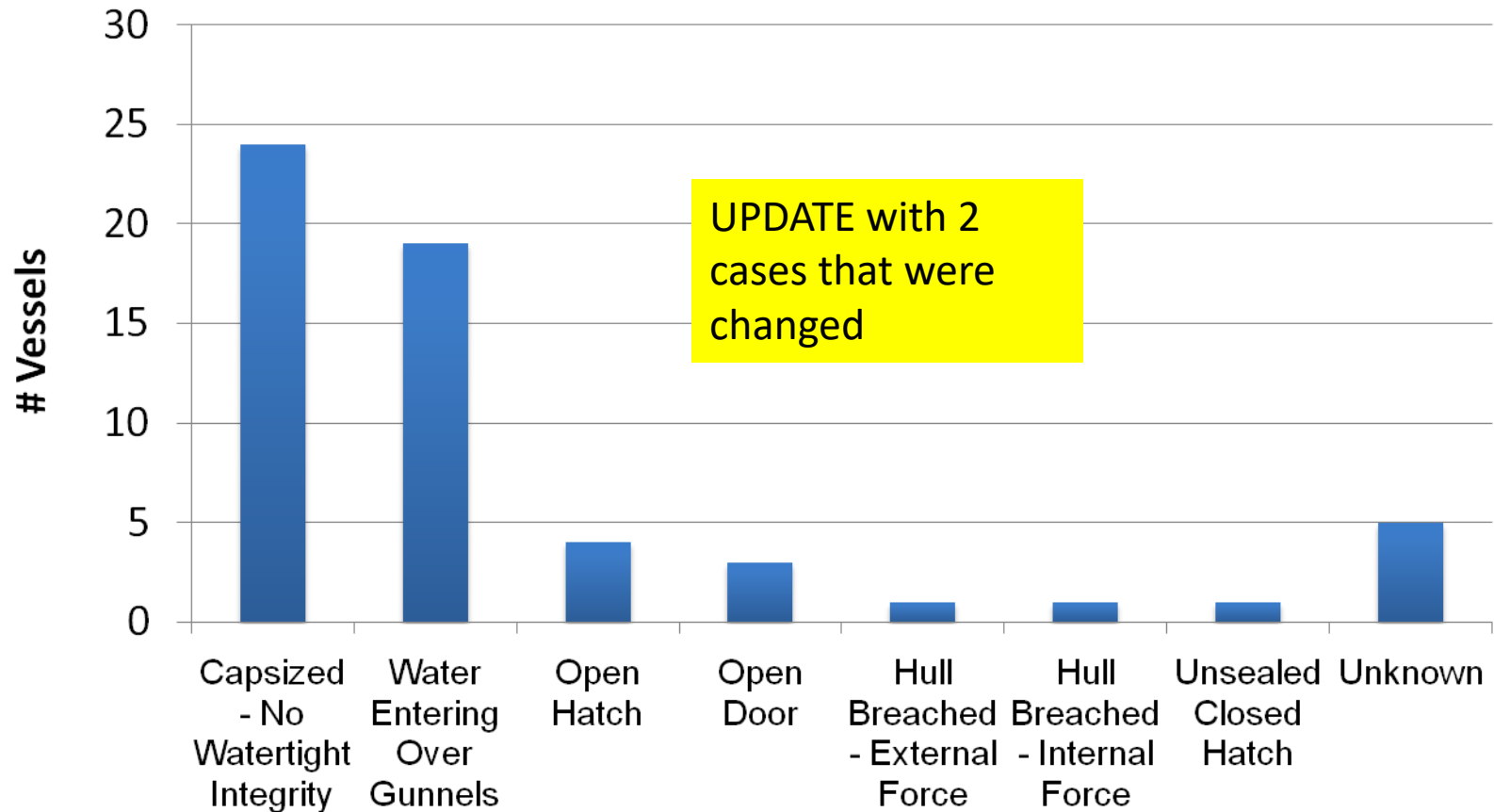
**Safety training status unknown for majority of fishermen*

***For 20 fishermen where experience known*

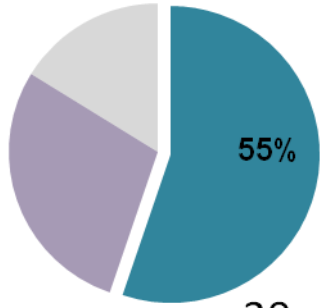
Down-Flooding



Cause of Flooding



Down-Flooding



Location of Flooding

