European Maritime Safety Agency

# ANNUAL OVERVIEW OF MARINE CASUALTIES AND INCIDENTS 2017

EMSA

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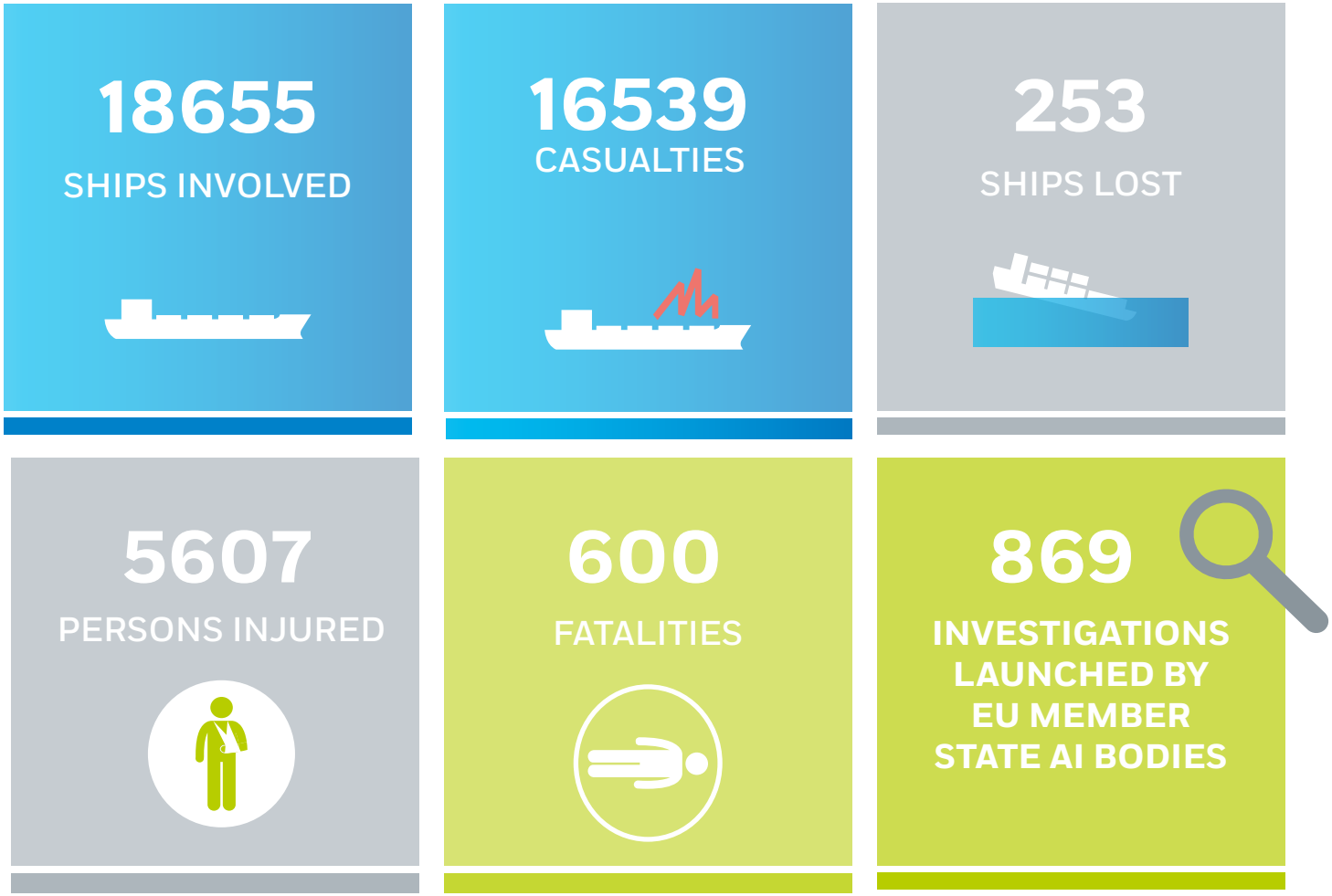
EMSA

# OVERVIEW OF KEY FIGURES

Key figures for the period 2011 - 2016




Collision, CITY OF ROTTERDAM – PRIMULA SEAWAYS, ships damaged, 12/03/2015

# CONTENTS

Photo credits: DK/DMAIB; UK/MAIB; PL/PKBWM; SE/SHK; GR/HBMCI; RNLI Cleethorpes; MT/MSIU; gCaptain; USA/NTSB; Uwe Bialkowski

Front cover caption: Loss of control, SEA WORKER, cargo damage, 27/01/2016



Statistics, tables, graphs, charts and maps have been generated by EMSA based on information contained in EMCIP.

## EXECUTIVE SUMMARY

During 2016 there were 106 reported fatalities, 957 persons injured, 26 ships lost and 123 investigations launched.

With 3145 marine casualties and incidents in 2016, the total number reported in EMCIP since its establishment has reached 16500. Since 2014, the number of reported accidents seems to have stabilised at around 3200 occurrences per year. While the number of very serious and serious marine casualties and incidents remained at levels similar to previous years, a limited but continuing increase of less serious accidents reported was noted. However, some under-reporting of marine casualties and incidents appears still to exist, although there has been continuous improvement since the implementation of the relevant EU legislation in 2011. Estimates indicate that under-reporting relates mostly to the less serious casualties and incidents.

Over the period 2011-2016, half of the casualties were of a navigational nature, such as contacts, grounding/stranding or collision. Amongst occupational accidents, 40% were attributed to slipping, stumbling and falling of persons. Human erroneous action represented 60% of accidental events and 71% of accidental events were linked to shipboard operations as a contributing factor. Of all casualties, 42% took place in port areas. The number of ships lost has reduced by 50% since 2014.

In 2016, the number of cargo ships involved in marine casualties and incidents has decreased to 1400. A significant decrease of fatalities was noted in 2016, reaching the lowest level of 2012.

Despite a decrease in the number of fishing vessels lost in 2016, a significant increase of fatalities and injuries was noted.

Although during the period 2011 – 2016 the number of fatalities on board passenger ships is dominated by the Costa Concordia (32 fatalities and 17 injured persons in 2012) and the Norman Atlantic (11 fatalities and 31 injured persons in 2014), since 2014 a continuous decrease of fatalities and injuries is evident.

A reduction of service ships lost was noted in 2016, as well as the number of fatalities and injuries.

Finally, for ships of other types, those indicators revealed an increase in 2016.

Across the period 2011 – 2016, EU States' investigative bodies have launched 869 investigations and 695 reports have been published. Among the 1300 safety recommendations issued, 28% related to operational practices, in particular safe working practices. Half of the safety recommendations were addressed to shipping companies and the rate of positive responses was about 66%.


Collision, TRANSFORZA –KUGUAR, 1 ship lost, 16/02/2015

CHAPTER 1

# INTRODUCTION


Fire, ARDENT II, ship lost, 16/08/2016

## Background

**The purpose of the European Maritime Safety Agency is to ensure a high, uniform and effective level of maritime safety, maritime security, prevention of and response to pollution caused by ships as well as response to marine pollution caused by ships and by oil and gas installations.**

EMSA's activities cover the following main areas:

- providing technical and scientific assistance to the Member States and the European Commission in the proper development and implementation of EU legislation on maritime safety, security, prevention of pollution by ships and maritime transport administrative simplification;
- monitoring the implementation of EU legislation through visits and inspections;
- improving cooperation with, and between, Member States;
- building capacity of national competent authorities;
- providing operational assistance, including developing, managing and maintaining integrated maritime services related to ships, ship monitoring and enforcement;
- carrying out operational preparedness, detection and response tasks with respect to pollution caused by ships and marine pollution by oil and gas installations; and
- at the request of the Commission, providing technical operational assistance to non-EU countries around relevant sea basins.

As a body of the European Union, the Agency sits at the heart of the EU maritime safety and pollution response network and collaborates with many industry stakeholders and public bodies, in close cooperation with the Commission and the Member States.

[1] **Directive 2009/18/EC of the European Parliament and of the Council of 23 April 2009 establishing the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Council Directive 1999/35/EC and Directive 2002/59/EC of the European Parliament and of the Council.**

Following the entry into force of Directive 2009/18/EC[1] establishing the fundamental principles governing the investigation of accidents in the maritime transport sector, EU States shall, among other obligations:

- establish independent, impartial and permanent accident investigative bodies. Landlocked countries without a maritime fleet are not obliged to comply with this provision, other than to designate a focal point. This is the case currently for the Czech Republic and Slovakia;
- require to be notified of marine casualties and incidents. This obligation covers casualties and incidents that:
  - involve ships flying the flag of one of the Member States;
  - occur within Member States' territorial seas and internal waters;
  - involve other substantial interests of the Member States;
- investigate casualties depending upon their severity. Casualties which are classified as very serious shall be investigated; serious casualties shall be assessed in order to decide whether or not to undertake a safety investigation;
- publish investigation reports; and
- notify the European Commission of marine casualties and incidents via EMCIP.

**EMCIP is the European Marine Casualty Information Platform; a centralised database for EU States to store and analyse information on marine casualties and incidents.**

This EMSA-run platform is populated with data by the competent national authorities. It is this data which forms the basis of the Annual Overview of Marine Casualties and Incidents.

In this publication, the terms "Europe" and "EU Member States" are considered to be the 28 EU Member States plus the EFTA States, Iceland and Norway to which the Directive applies.

## Scope

**EMSA has the obligation to provide a yearly overview of marine casualties and incidents under the Agency's founding Regulation (EC) No 1406/2002, as amended.**

This publication contains statistics on marine casualties and incidents that: involve ships flying a flag of one of the EU States; occur within EU States' territorial sea and internal waters as defined in UNCLOS; or involve other substantial interests of the EU States.

Considering the date of the implementation of the Accident Investigation Directive in 2011, this publication covers the period from 1st January 2011 to 31st December 2016. The data can be subject to changes over time as EU States add more information or older cases to the EMCIP database. For this reason, the figures extracted from the database in July 2017 and presented in this publication are likely to be slightly different to those presented throughout the year in various fora or in the next edition to be published in 2018.

The figures are presented in this publication to provide a general overview of the safety of maritime transport in the scope of European interests. However, it is limited by the quantity and nature of information presently contained in EMCIP and is therefore not intended as a comprehensive technical analysis. This is due to the fact that implementation of the Accident Investigation Directive has only been required since 17 June 2011 as well as due to progressive implementation by some Member States. Should further information about specific cases be required, readers are invited to contact the national competent Investigative bodies (whose contact details can be found in Appendix 4 of the publication).

## Content of the review

**This publication has been organised in such a way as to cover the main aspects of maritime safety as given in the Directive and as included in the Agency's remit. This edition focuses on the main types of ships: cargo ships, fishing vessels, passenger vessels, service ships and other ships. Each chapter is divided into the following sections: detailed ship types, nature of marine casualties and incidents, location, events and contributing factors and consequences. A final chapter describes the activities of the EU investigative bodies.**

More information about the Agency's activities related to marine accidents can be found at:

http://www.emsa.europa.eu/implementation-tasks/accident-investigation.html
https://emcipportal.jrc.ec.europa.eu/

A list of acronyms and definitions as well as extra information on the casualty categories used can be found in Appendix 1. Appendix 2 illustrates the data model and Appendix 3 contains the detailed list of ships used in EMCIP. The list of investigative bodies in Europe can be found in Appendix 4.

## NOTICE

Article 1 of Directive 2009/18/EC of the European Parliament and of the Council of 23 April 2009 establishing the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Council Directive 1999/35/EC and Directive 2002/59/EC of the European Parliament and of the Council states:

"The purpose of the Directive 2009/18/EC of 23 April 2009 is to improve maritime safety and the prevention of pollution by ships, and so reduce the risk of future marine casualties, by:

(a) facilitating the expeditious holding of safety investigations and proper analysis of marine casualties and incidents in order to determine their causes; and

(b) ensuring the timely and accurate reporting of safety investigations and proposals for remedial action.

Investigations under this Directive shall not be concerned with determining liability or apportioning blame."

The information contained in this document is to be used only for the improvement of maritime safety and the prevention of pollution by ships. It shall not be used for determining liability or apportioning blame.

## DISCLAIMER

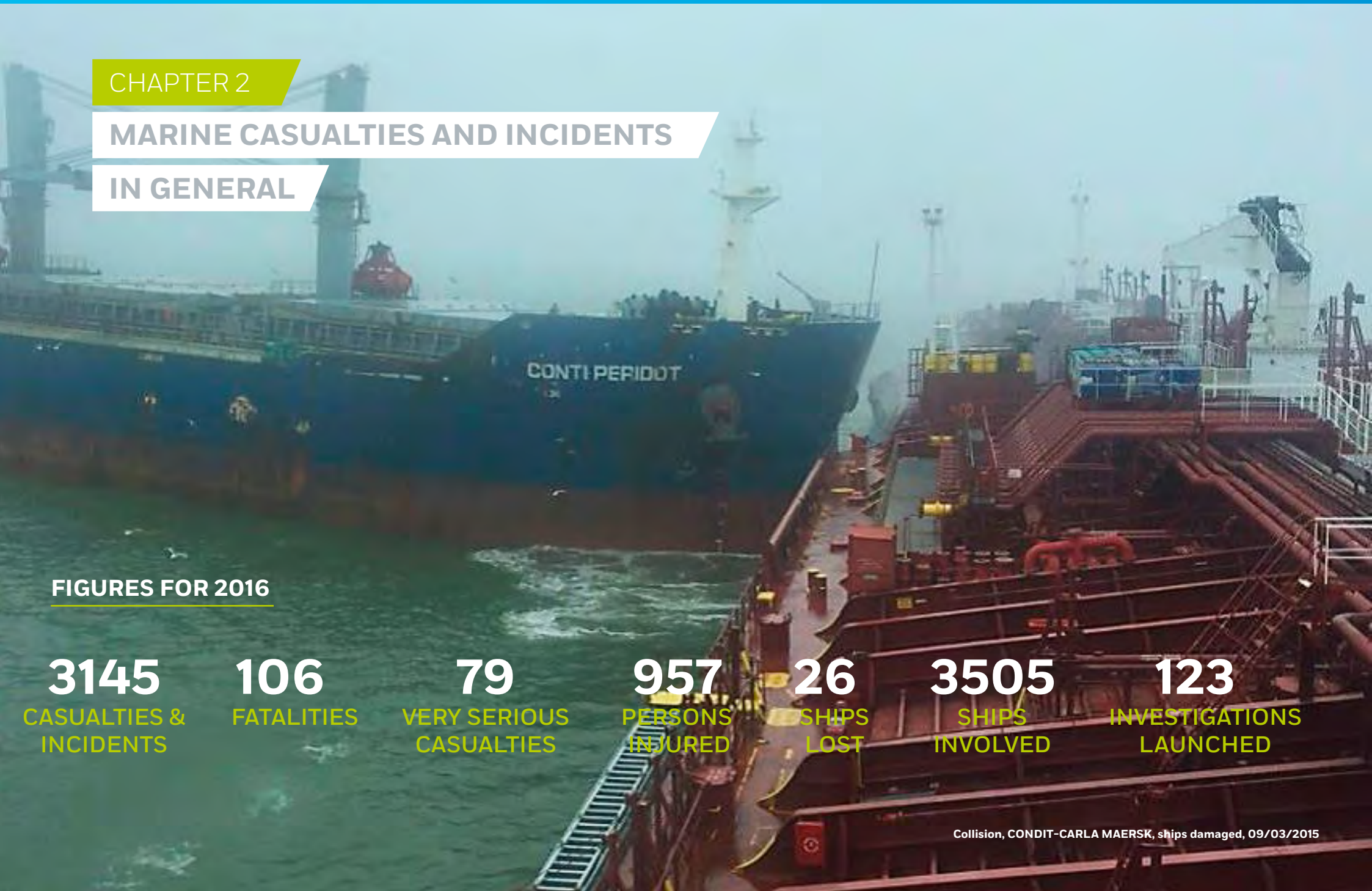
The marine casualty and incident data presented is strictly for information purposes only. The statistics presented are from the data stored in the European Marine Casualty Information Platform (EMCIP) by the investigative bodies of the EU States. It reflects the information at the time the data was extracted (03/07/2017). While every care has been taken in preparing the content of the report to avoid errors, the Agency makes no warranty as to the accuracy, completeness or currency of the statistics in the report. The Agency shall not be liable for any kind of damages or other claims or demands incurred as a result of incorrect, insufficient or invalid data, or arising out of or in connection with the use, copying or display of the content, to the extent permitted by European and national laws. The information contained in the report should not be construed as legal advice.

## ACKNOWLEDGEMENTS

The Agency wishes to acknowledge the contribution made by the EU States and the European Commission and to thank them for their support in the conduct of this work and in the preparation of this report.

CHAPTER 2

# MARINE CASUALTIES AND INCIDENTS IN GENERAL




## FIGURES FOR 2016

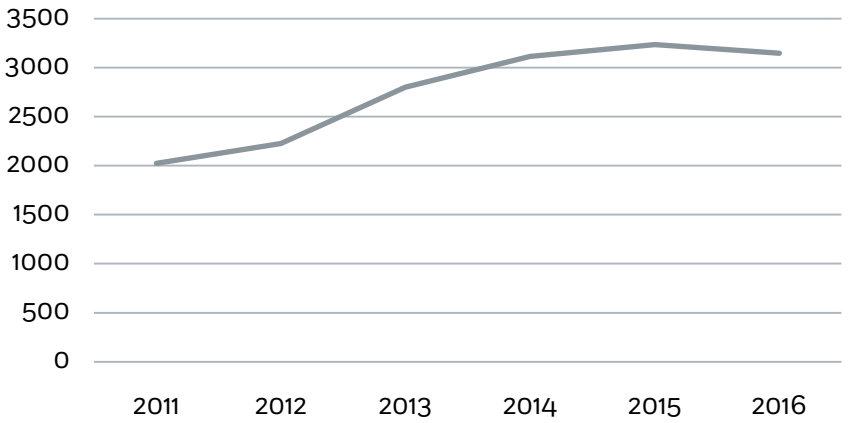
| 3145 | 106 | 79 | 957 | 26 | 3505 | 123 |
|---|---|---|---|---|---|---|
| CASUALTIES & INCIDENTS | FATALITIES | VERY SERIOUS CASUALTIES | PERSONS INJURED | SHIPS LOST | SHIPS INVOLVED | INVESTIGATIONS LAUNCHED |

Collision, CONDIT-CARLA MAERSK, ships damaged, 09/03/2015

## 2.1 NUMBER AND SEVERITY

**This section provides general information about the number of marine casualties and incidents and their severity.**

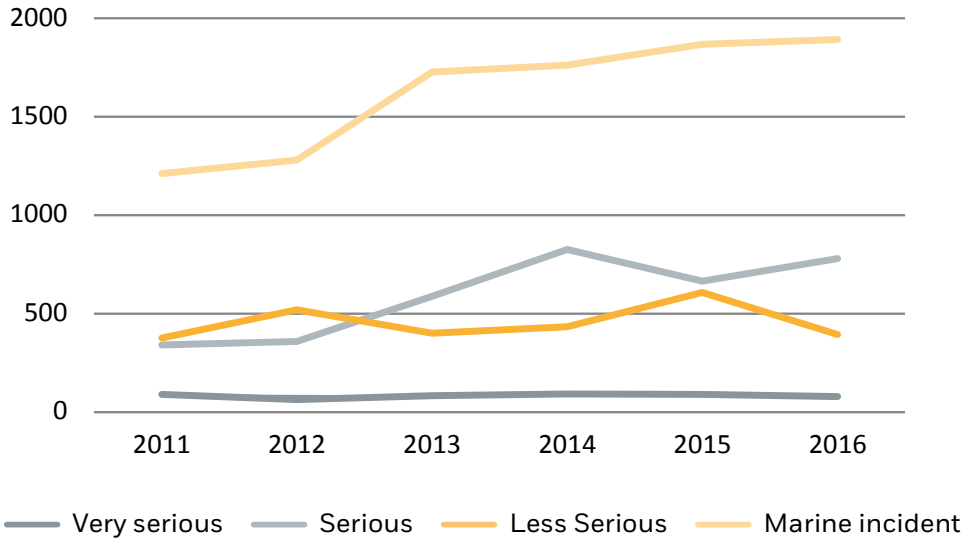
Figure 1: Number of reported marine casualties and incidents




**The total number of reported marine casualties and incidents is 16539.**

Since 2014, the number of reported casualties has stabilised at around 3200 per year. However, comparisons with various sources suggest that under-reporting of marine casualties and incidents continues, with a total of 4000 per year being a best estimate.

Figure 2: Number of marine casualties and incidents per severity



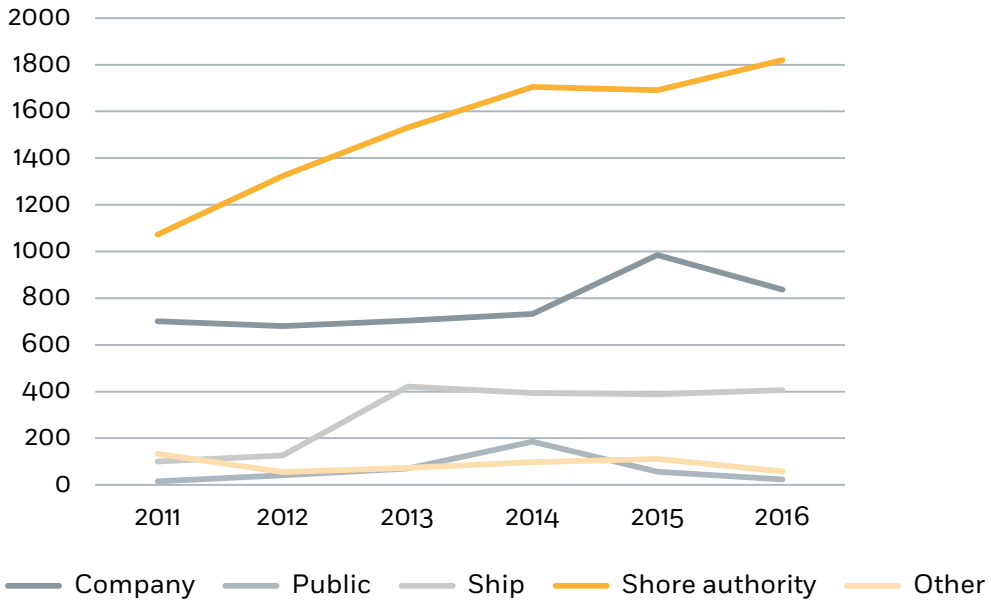

**The number of very serious casualties has been steady over the past 5 years. Of all casualties, 3.0% were reported to be very serious.**

Across the three other severity categories, the total number of casualties and incidents reported annually reflects an increase of reporting.

**In 2016, 2.5% of the reported marine casualties were very serious, 24.8% serious, 60.1% less serious and 12.6% were marine incidents.**

The under reporting of marine incidents remains the most significant issue within the reporting scheme defined by Directive 2009/18/EC.

Figure 3: Notification entities



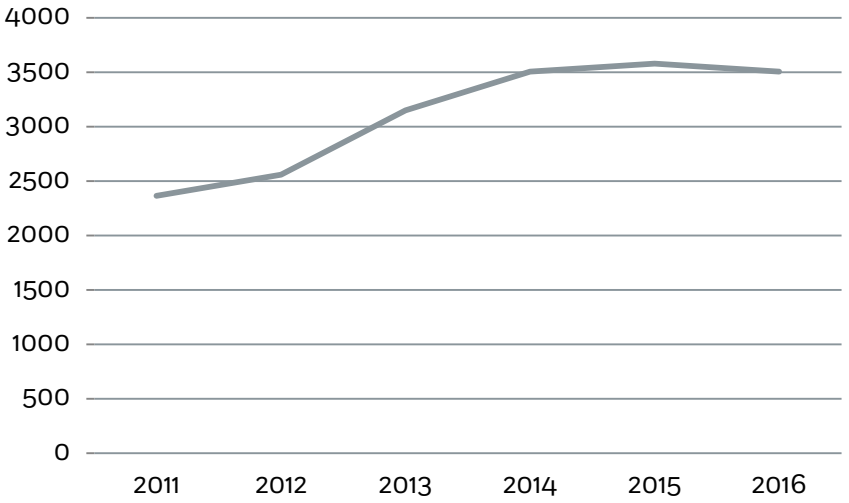

**55% of the marine casualties and incidents were reported to the Investigative bodies by the Shore Authorities.**

Marine casualties and incidents reported to the Investigative bodies by the Shore Authorities have continued increasing over the period 2011-2016. Shipping companies have reported less in 2016, while reporting directly from the ship has been constant for the 4 past years.

## 2.2 MAIN SHIP TYPES

**This section focuses on the ships involved in marine casualties and incidents. Ships have been classified by the main categories: cargo ship, fishing vessel, passenger ship, service ship and other ship.**

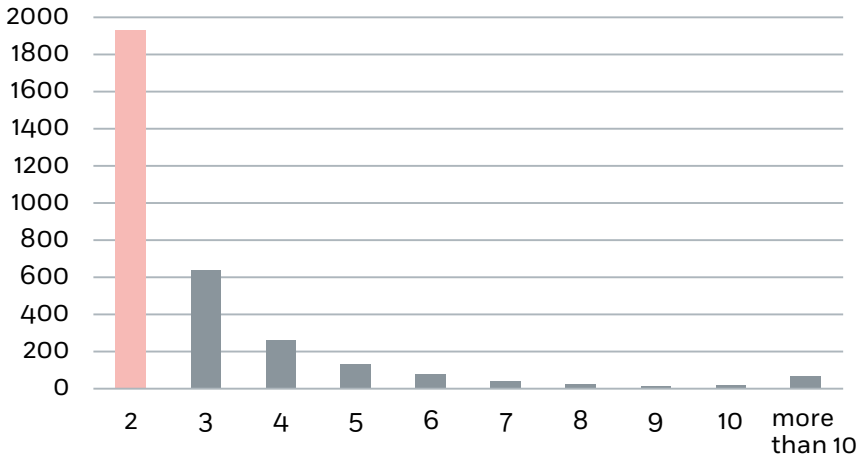
Figure 4: Number of ships involved in casualties




A casualty might involve more than one ship, in particular in the case of collision two or more ships could be involved.

**In the 16539 marine casualties and incidents that happened from 2011 to 2016, the total number of ships involved was 18655.**

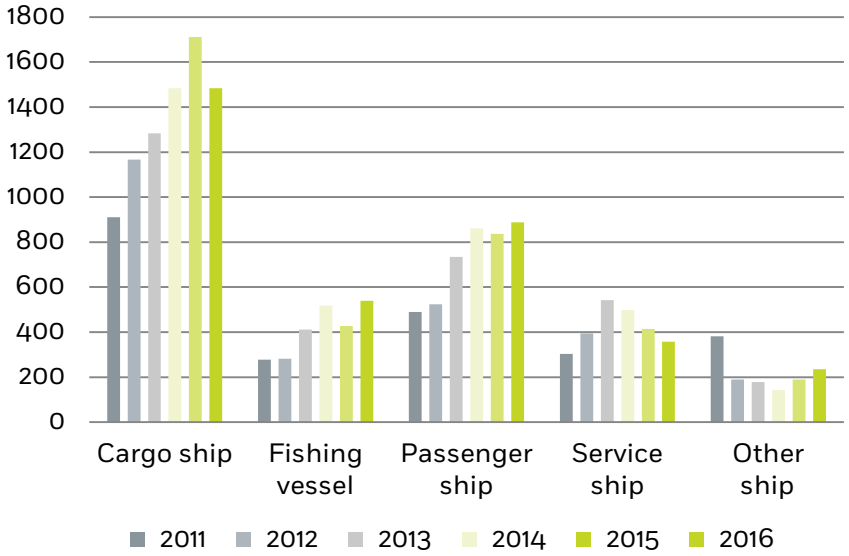
Figure 5: Number of individual ships involved in more than one casualty 2011-2016




Similarly, a single ship can be affected by several casualties (different dates, different nature of casualty, etc.).

**A total of 11686 individual ships were involved in marine casualties and incidents. 8478 of these ships were involved in one only. 3208 were involved in more than one, as shown in the distribution above.**

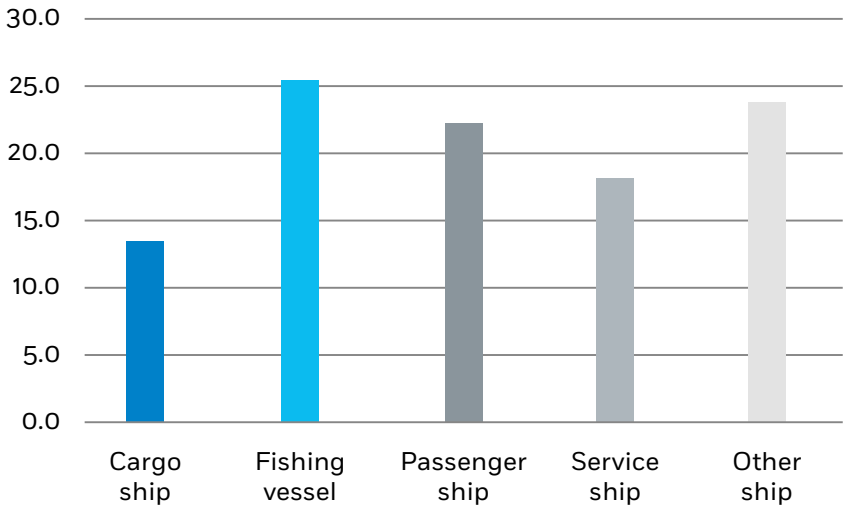
Figure 6: Distribution of ships involved by main category 2011-2016




**During the period 2011-2016, cargo ships were the main category involved (43%), followed by passenger ships (23%).**

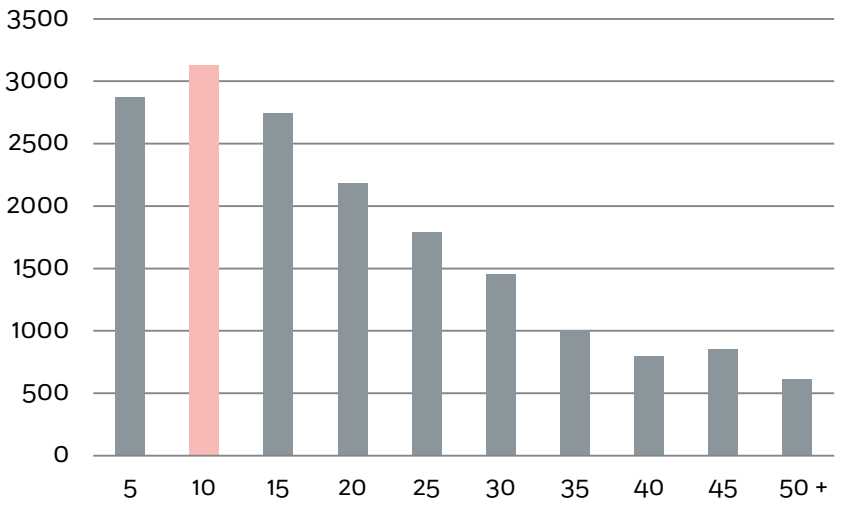
While the number of cargo ships and service ships decreased in 2016, an increase was noted in relation to fishing vessels, passenger ships and other types of ship.

Figure 7: Average age of ships involved by main category 2011-2016




**The youngest category of ships involved in marine casualties was cargo ships, whilst the oldest was fishing vessels.**

Figure 8: Distribution of involved ships' age 2011-2016

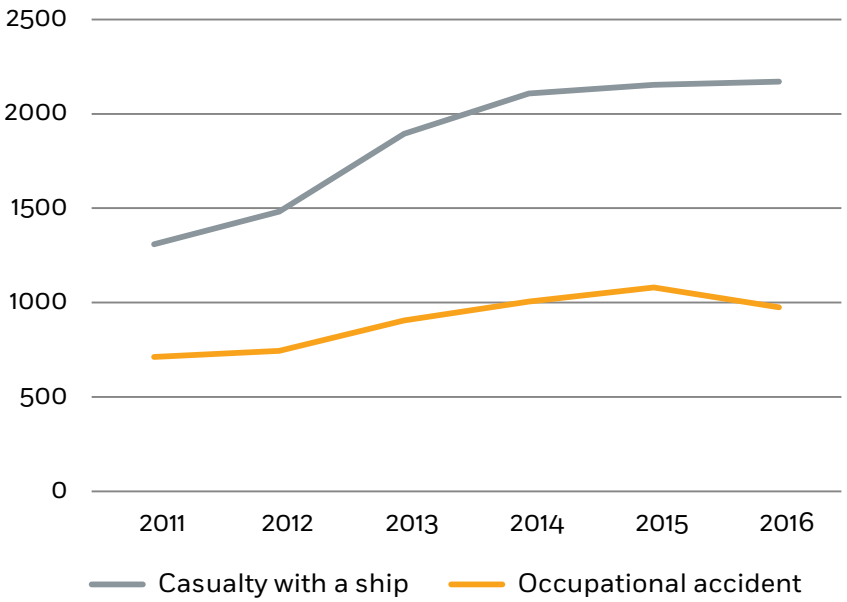



**The average age of all ships involved over the period 2011-2016 was 18.2 years. The highest number of ships involved was in the 5-9 year old segment.**

## 2.3 NATURE OF MARINE CASUALTIES AND INCIDENTS

**This section examines the different natures of marine casualties and incidents.**

Figure 9: Marine casualties and incidents by type

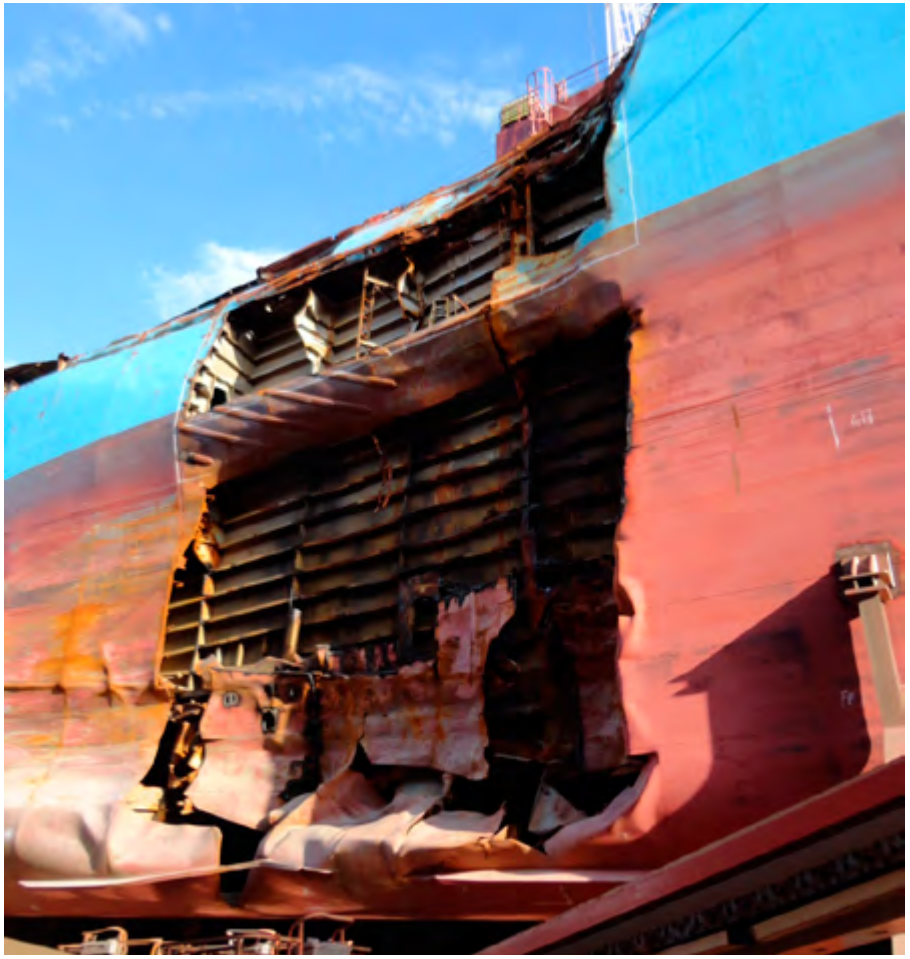



**A total of 11116 casualties with a ship and 5423 occupational accidents were recorded.**

The ratio 2/3 to 1/3 between casualties with a ship and occupational accidents remained stable from 2011 to 2016.

**In total, 17074 individual events were included in 16539 occurrences (there can be more than one event within an occurrence (e.g. loss of propulsion followed by grounding).**

**16102 occurrences were reported to have only one event.**

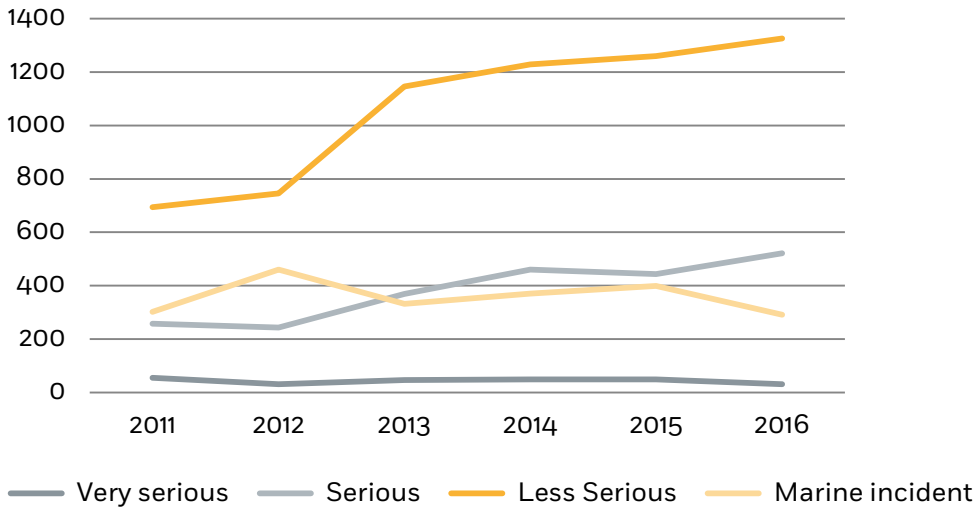


Collision, CONDIT-CARLA MAERSK, ships damaged, 09/03/2015

## 2.3.1 CASUALTY WITH A SHIP

**Marine casualties and incidents related to "casualties with a ship" are classified as "casualty events".**

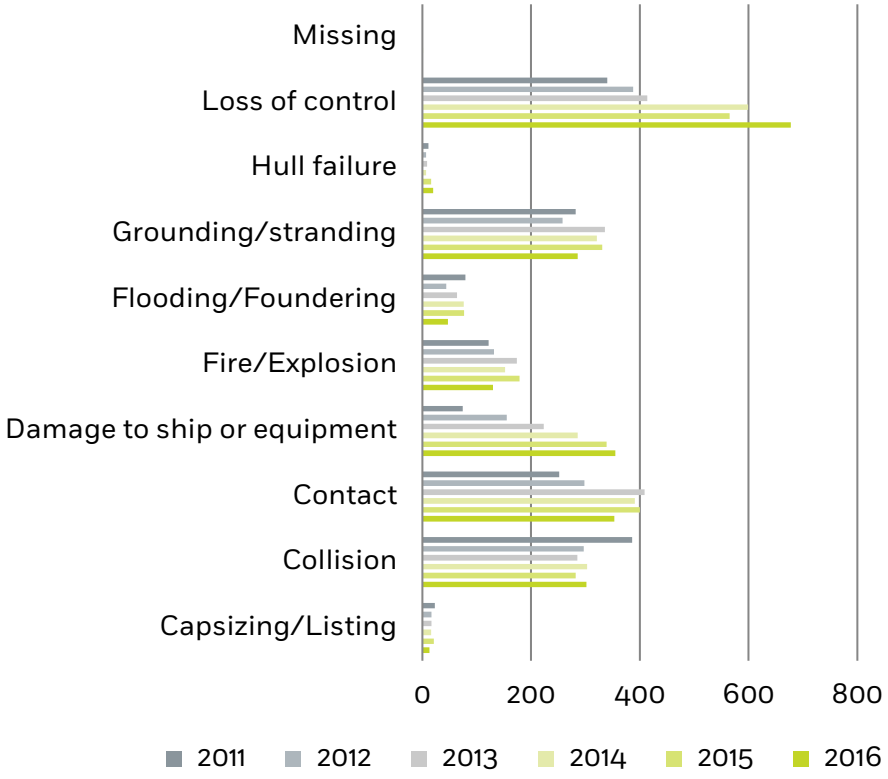
Figure 10: Severity of casualty with a ship




**From 2011 to 2016, 2.4% of casualties with a ship were very serious, 20.7% serious, 57.6% less serious and 19.3% marine incidents.**

The distribution follows that for all marine casualties and incidents (figure 2).

Figure 11: Distribution of casualty events with a ship

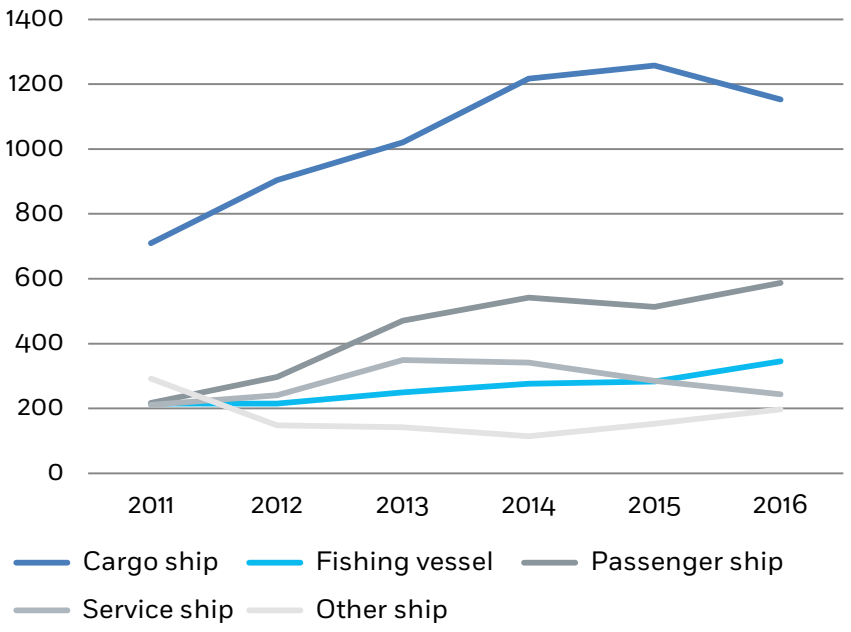



**The combination of contact (18%), collision (16%) and grounding/stranding (15.6%) shows that navigational casualties represent 50% of all casualties with ships.**

**10687 casualties with a ship have a unique casualty event.**

**429 casualties with a ship have more than one casualty event.**

Figure 12: Distribution of ships involved in a “casualty with a ship” by ship category




**During the period 2011-2016, Cargo ship was the most frequent ship type involved in “casualty with a ship” (47%), followed by Passenger ship (20%).**

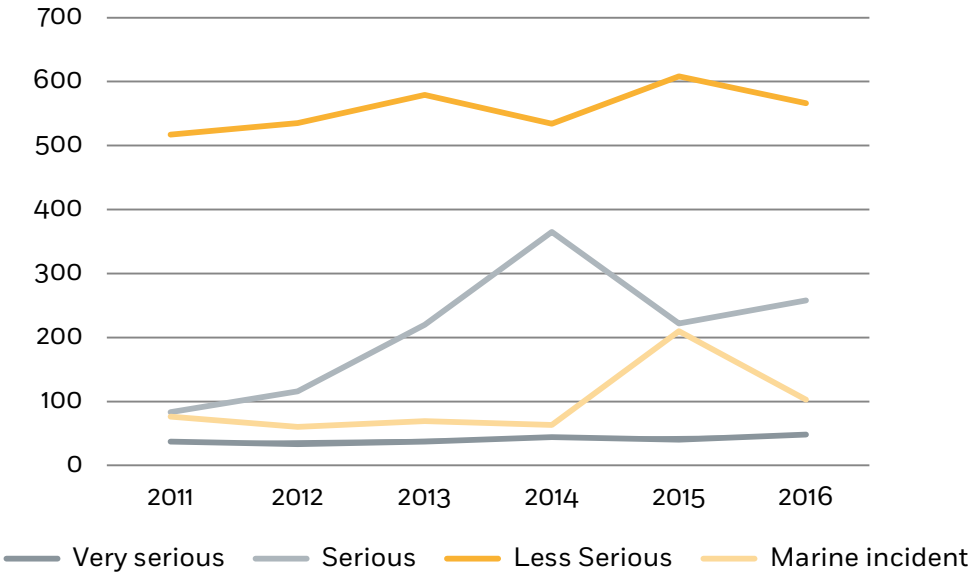
**13191 ships were involved in a “casualty with ship”.**

While the number of fishing vessels, service ships and other ships involved was steady over the past 3 years, the number of cargo ships has decreased below 1200 in 2016. However the number of passenger ships involved has increased up to 600.

## 2.3.2 OCCUPATIONAL ACCIDENTS

**Marine casualties and incidents related to “occupational accidents” are classified as “deviations”.**

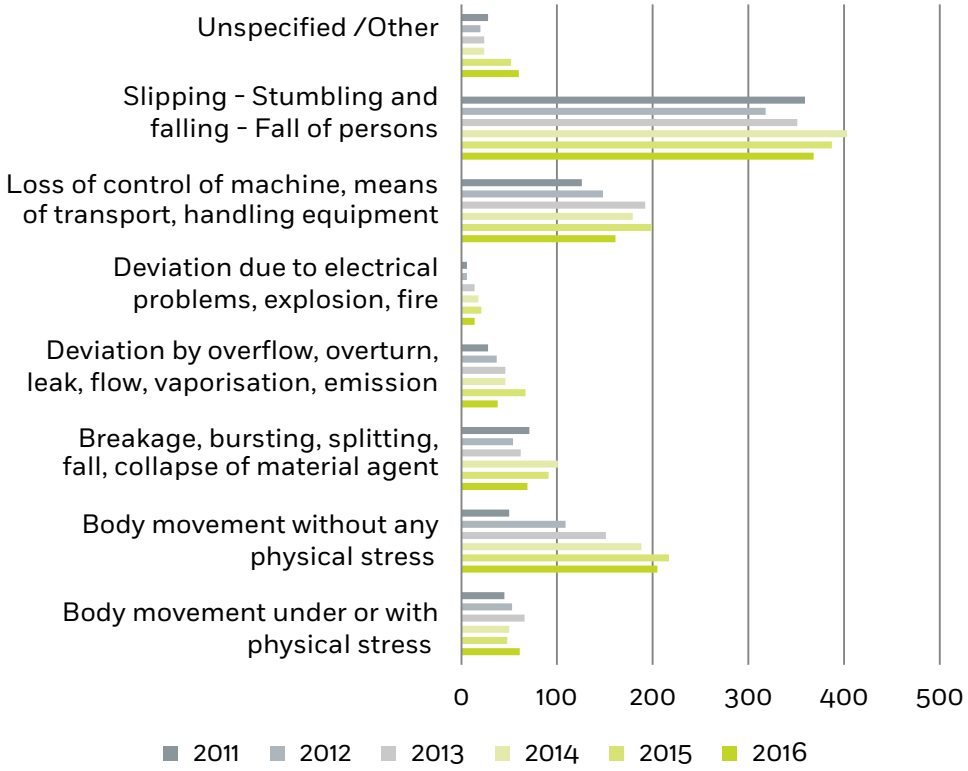
Figure 13: Type of severity in case of occupational accident




**From 2011 to 2015, 4.4% of the occupational accidents were very serious, 23.3% serious, 61.6% less serious and 10.7% marine incidents.**

As indicated in figure 2, a modification in the classification of injuries has led to a reduction in serious occupational accidents and an increase of less serious accidents and marine incidents.

Figure 14: Distribution of deviations

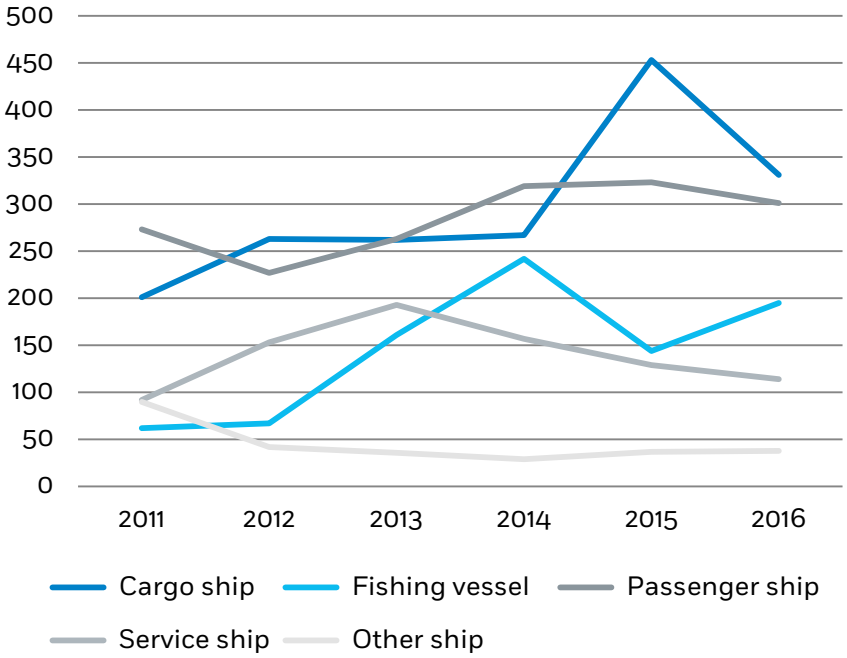



**Slipping - Stumbling and fall of persons was the most frequent event (40%), followed by loss of control of objects (18.5%) and body movement without physical stress (17%).**

**5415 occupational accidents had a unique event.**

**8 occupational accidents had more than one event.**

Figure 15: Distribution of voyage segments per ship type 2011-2015




**Cargo ships (32.5%) represent together with passenger ships (31.2%) the main categories of ship where occupational accidents occurred.**

**5464 ships were involved in an occupational accident.**

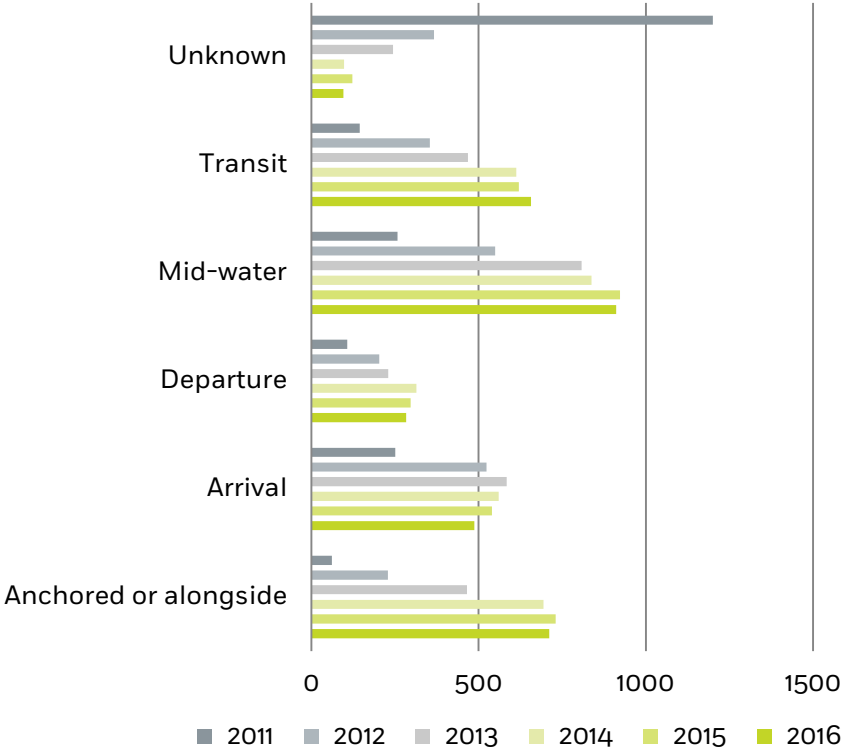
While the number of occupational accidents has decreased on board most of the ship types, in particular cargo ships, there was an increase of 35% on fishing vessels during 2016.

## 2.4 LOCATION OF MARINE CASUALTIES AND INCIDENTS

**This section provides information about the location of the ships when marine casualties or incidents occurred.**

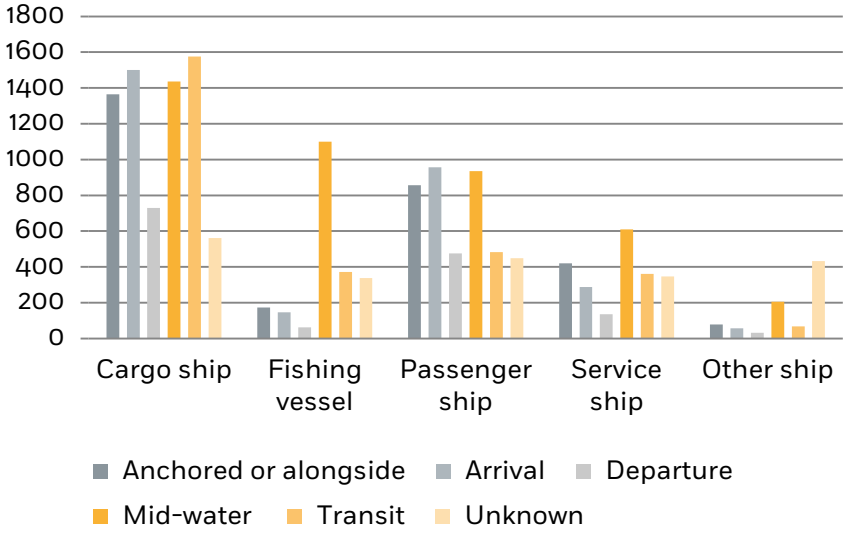
### 2.4.1 VOYAGE SEGMENTS

Figure 16: Distribution of voyage segments




**While the departure is the safest segment (7%) for all types of ship, the ”mid-water” is the least safe in general (26%).**

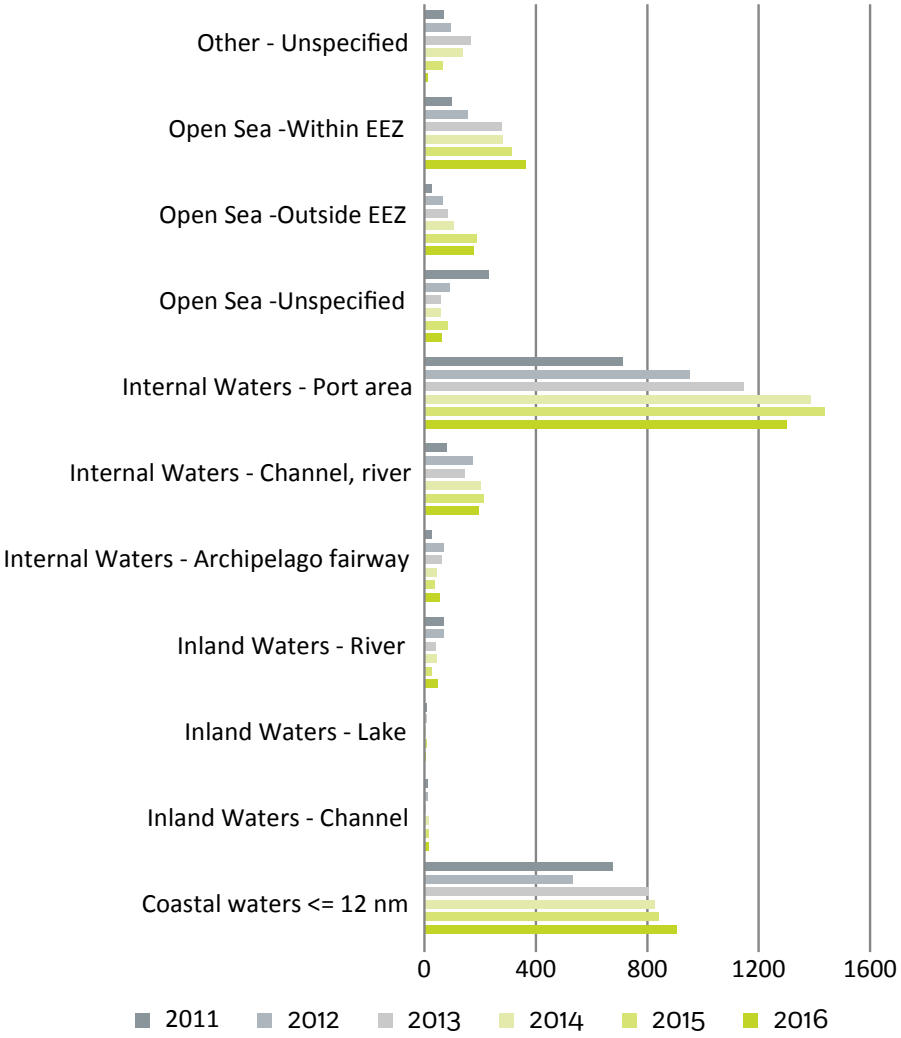
Figure 17: Distribution of voyage segments per ship type 2011-2016




**While the distribution of accidents is similar among the phases of a voyage for the various types of ships, the most unsafe one for fishing vessels is by far the mid-water.**

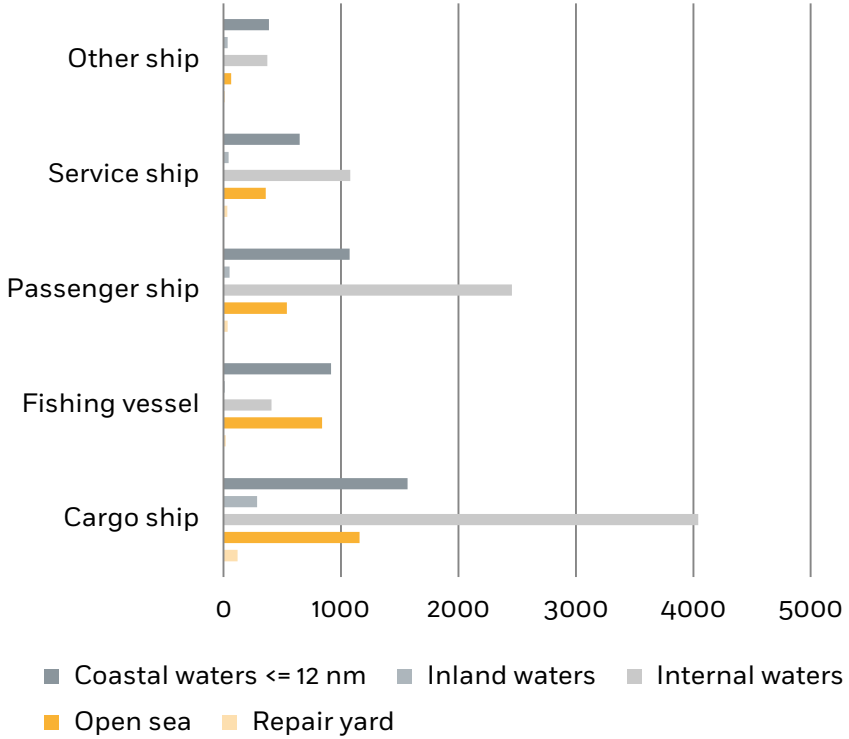
## 2.4.2 LOCATION

Figure 18: Distribution by location of marine casualties and incidents




**42% of the casualties took place in port areas, followed by 28% in coastal waters.**

Figure 19: Distribution by location of marine casualties and incidents per cargo ship type 2011-2016




**All types of ships have the highest numbers of casualties and incidents within internal waters.**

## 2.4.3 REGIONAL DISTRIBUTION

**This section provides information on the geographical location of the marine casualties and incidents reported.**

Figure 20: Global distribution 2011-2016

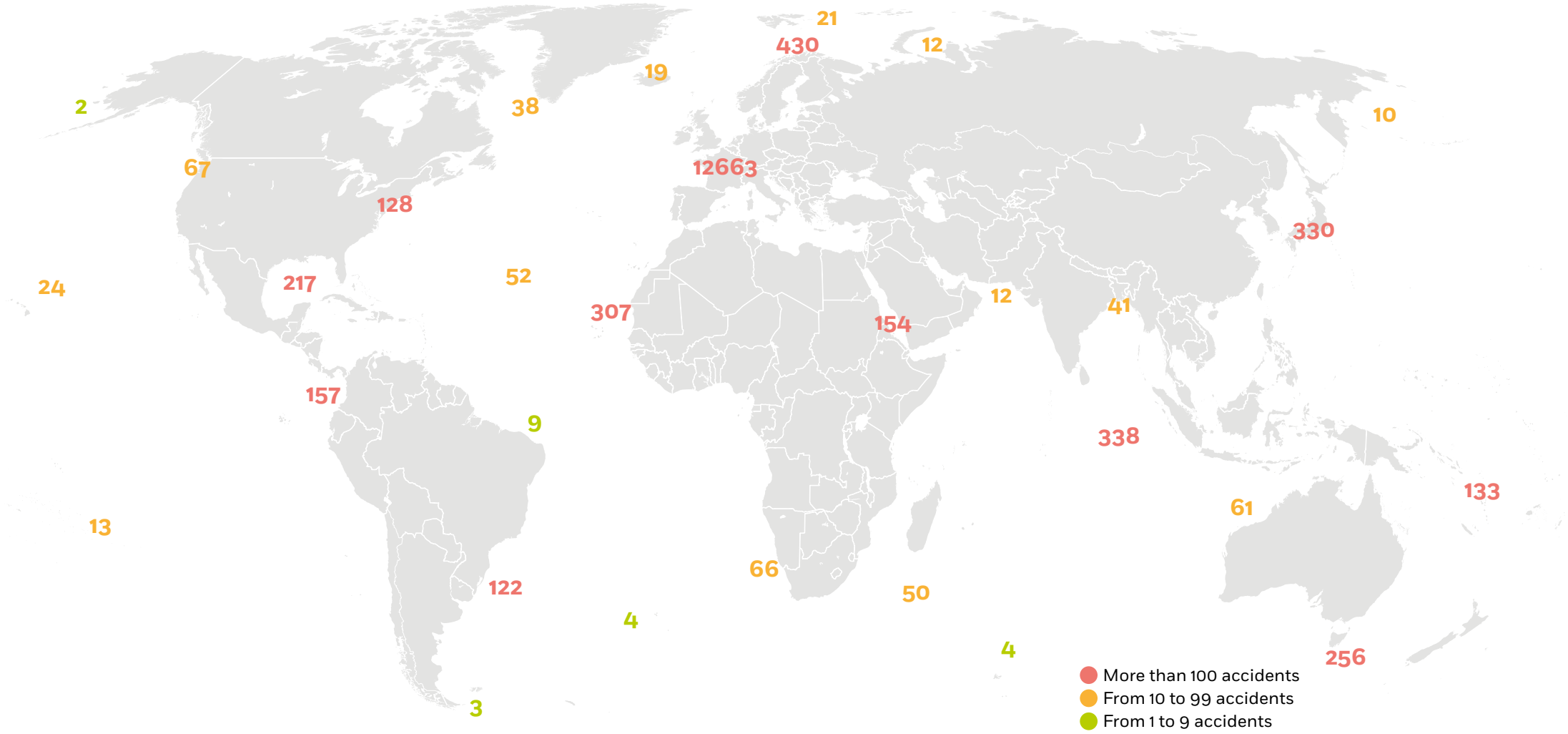


Figure 21: Distribution within the territorial sea and internal waters of EU States 2011-2016

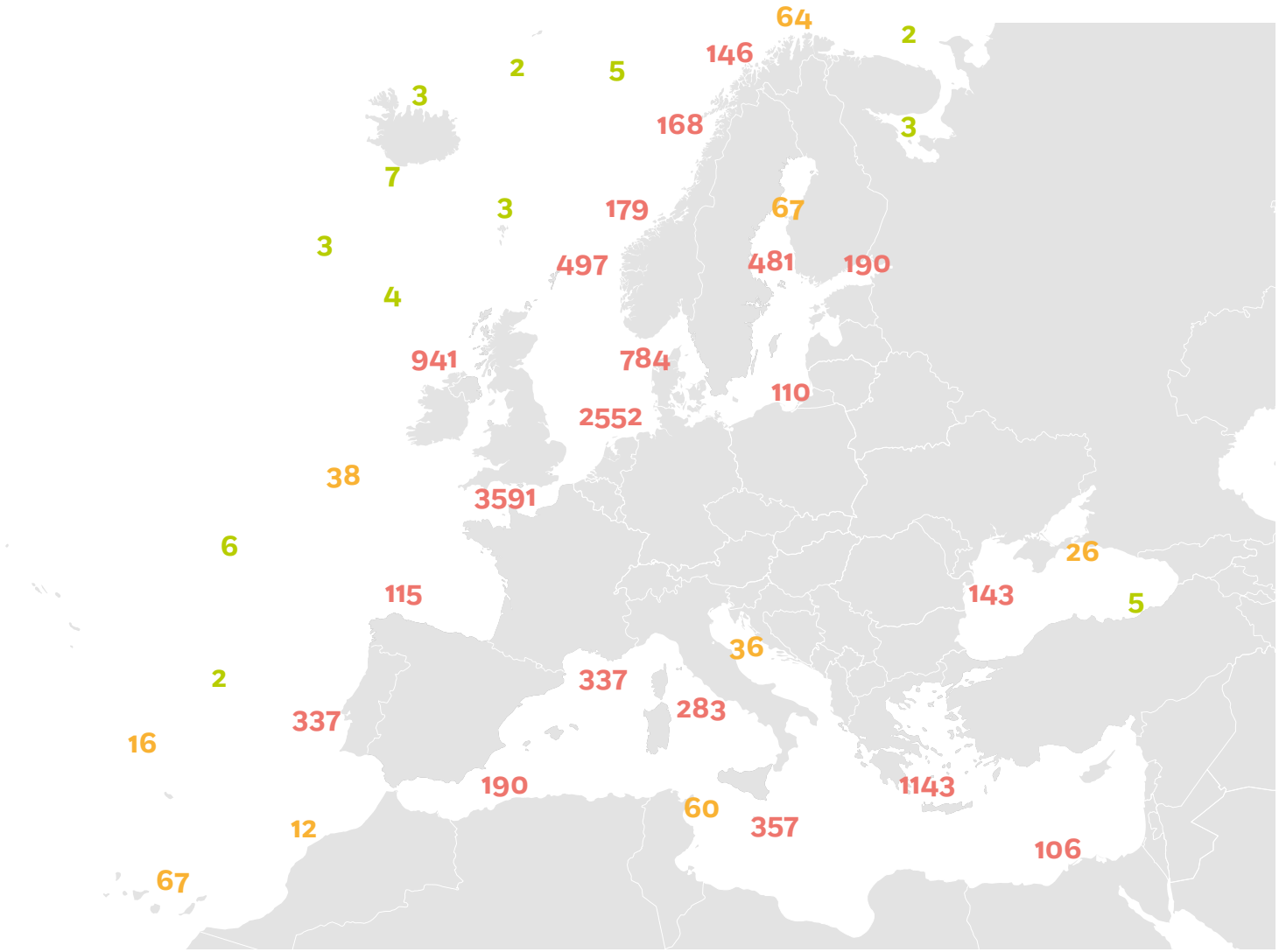


Figure 22: Distribution along the Atlantic Coast, in the North Sea and English Channel 2011-2016

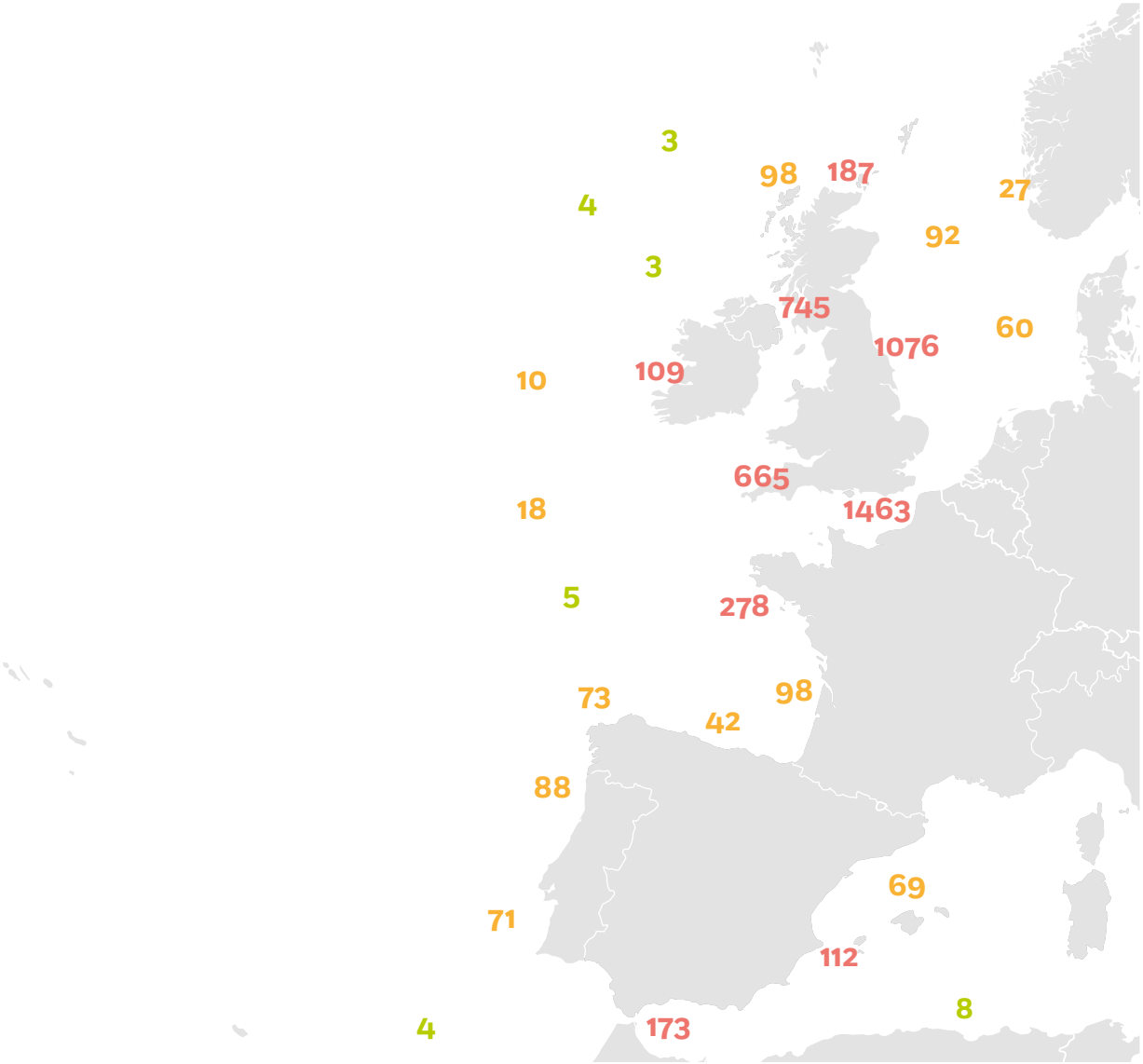


**Figure 23: Distribution in the Baltic Sea and approaches 2011-2016**

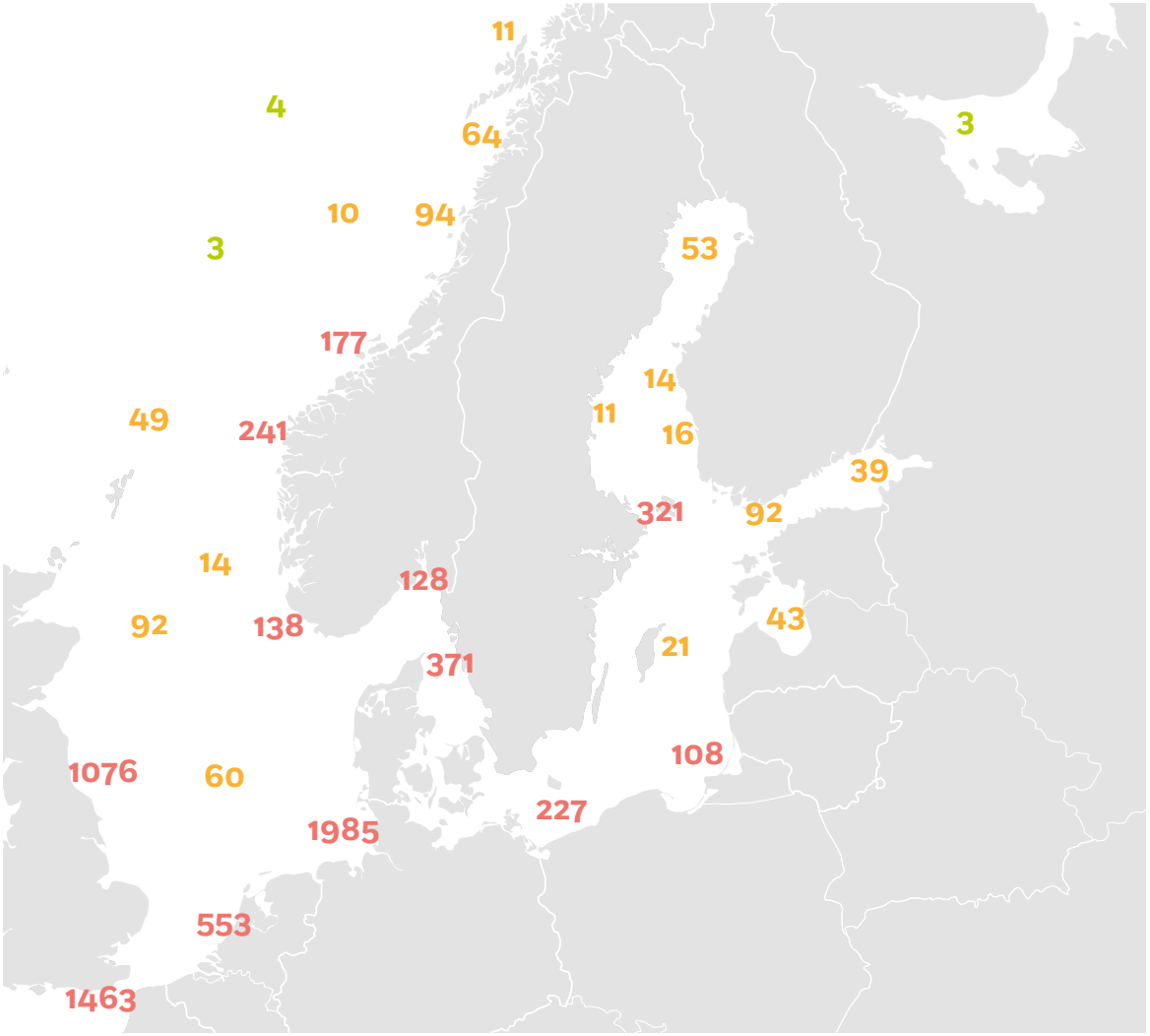
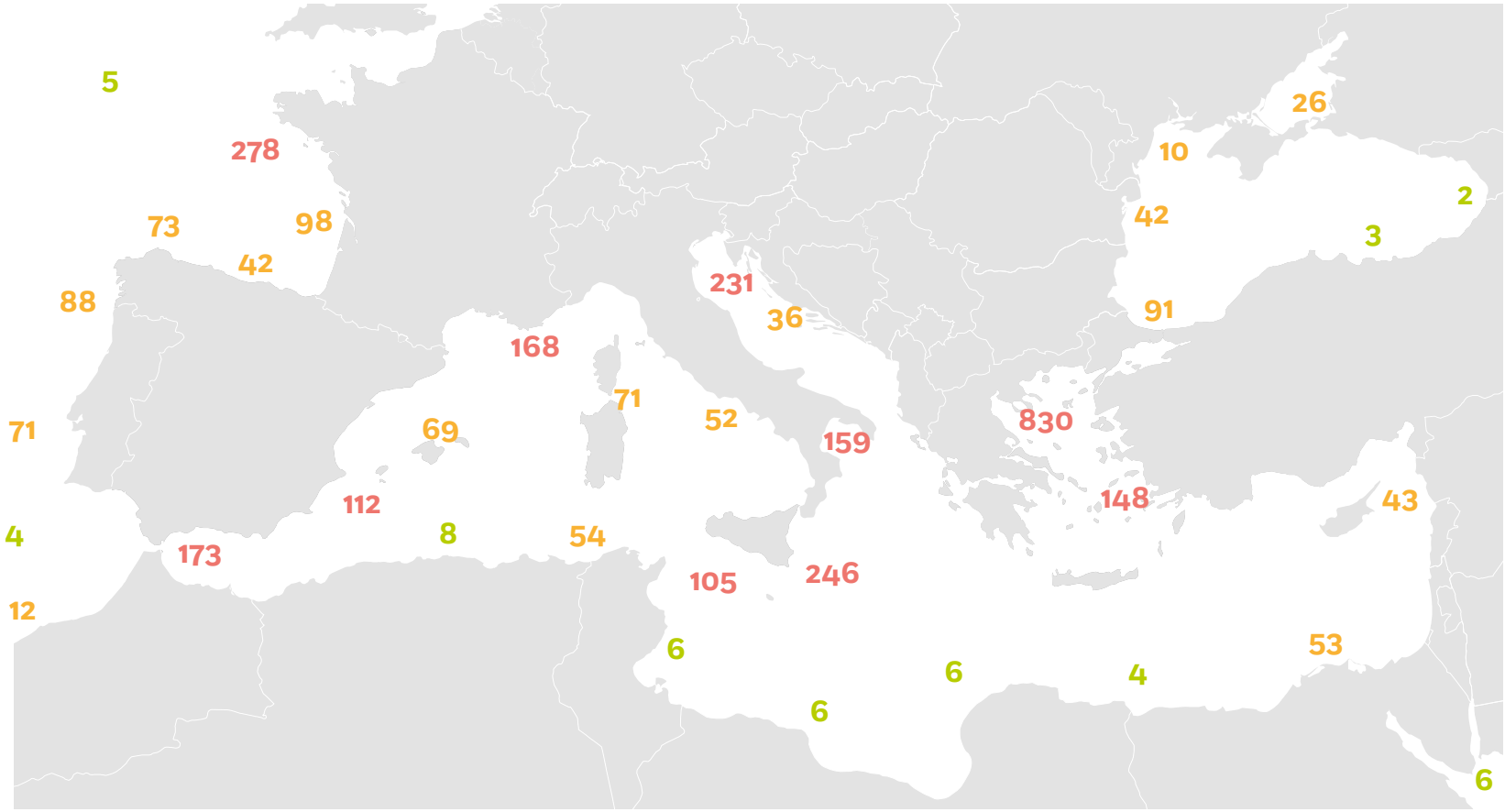


Figure 24: Distribution in the Mediterranean Sea and Black Sea 2011-2016



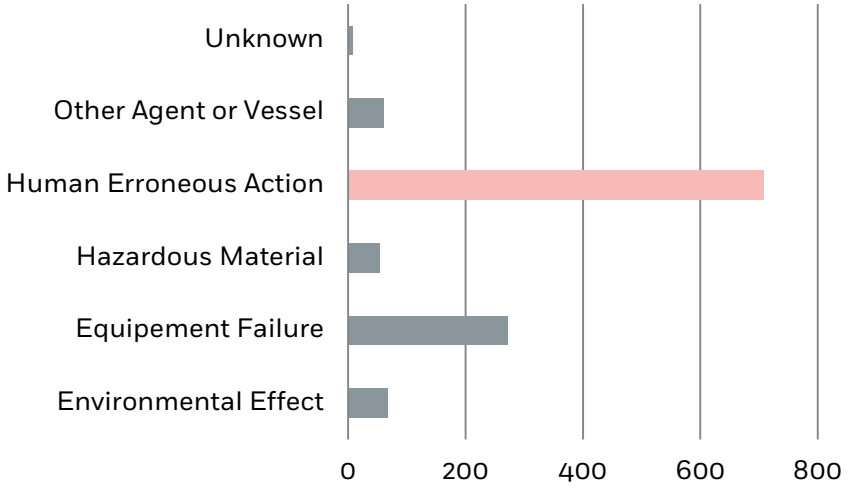
# 2.5 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

**This section addresses the events and contributing factors having led to casualties and incidents for the period 2011-2016.**

Investigators search for the root causes of the casualty or incident. Such causes comprise "accidental events" and "contributing factors". The Reporting Scheme used in EMCIP follows this approach. A detailed model of EMCIP can be found in Appendix 2.

## 2.5.1 ACCIDENTAL EVENTS

**Figure 25: Distribution of accidental events**

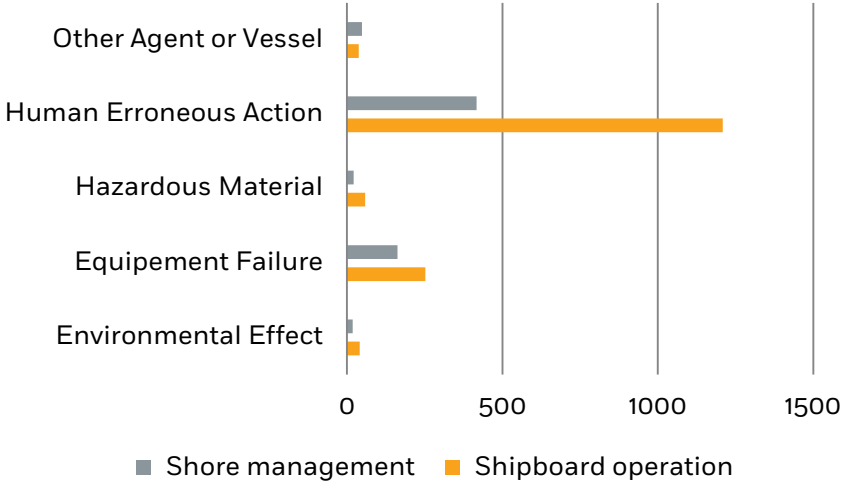



**From a total of 1170 accidental events analysed during the investigations, 60.5% were attributed to a Human Erroneous Action.**

## 2.5.2 CONTRIBUTING FACTORS

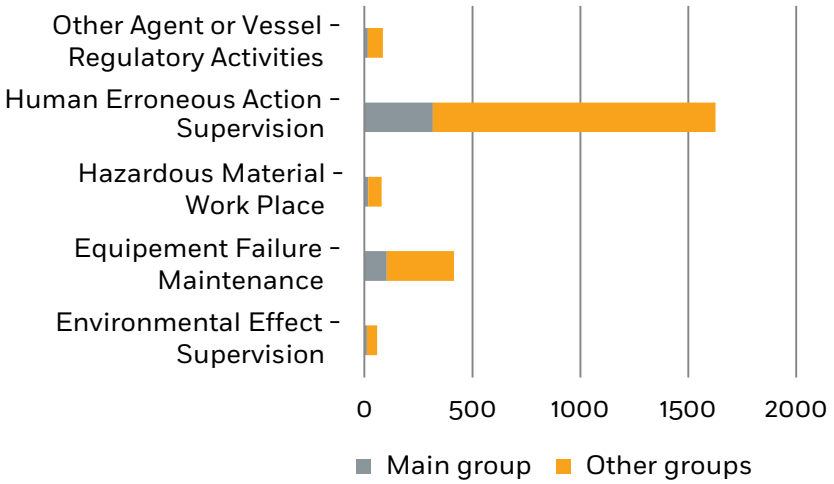
"Contributing factors" are separated into two categories, and then sub-divided into specific groups identifying the condition that contributed to an accidental event or worsened its consequence.

**Figure 26: Relationship between accidental events and the main contributing factors**




**Shipboard operations represented the main contributing factor at 71% of the total.**

Figure 27: Groups of Contributing Factors



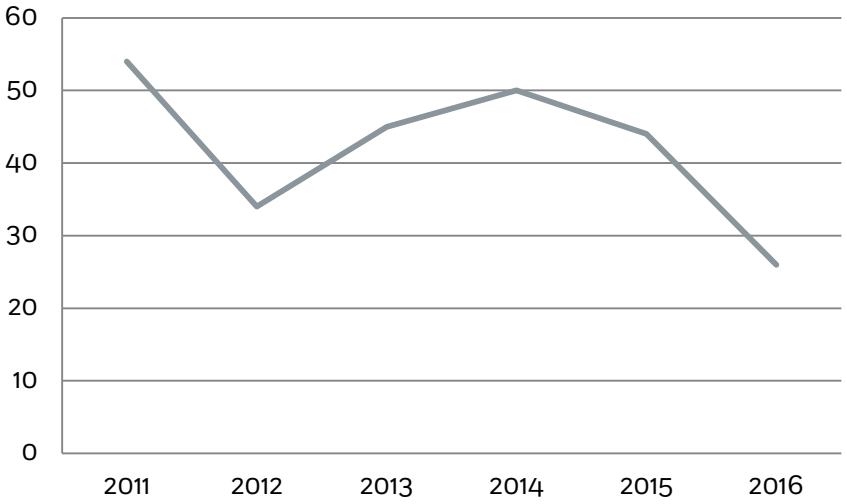

**This figure shows the contributing factor most quoted per category of accidental event (for example maintenance was quoted as contributing factor for 25% of accidental events described as equipment failure).**

## 2.6 CONSEQUENCES

**This section contains information about the consequences of casualties to ships, persons or the environment.**

### 2.6.1 CONSEQUENCES TO SHIP

Figure 28: Number of ships lost

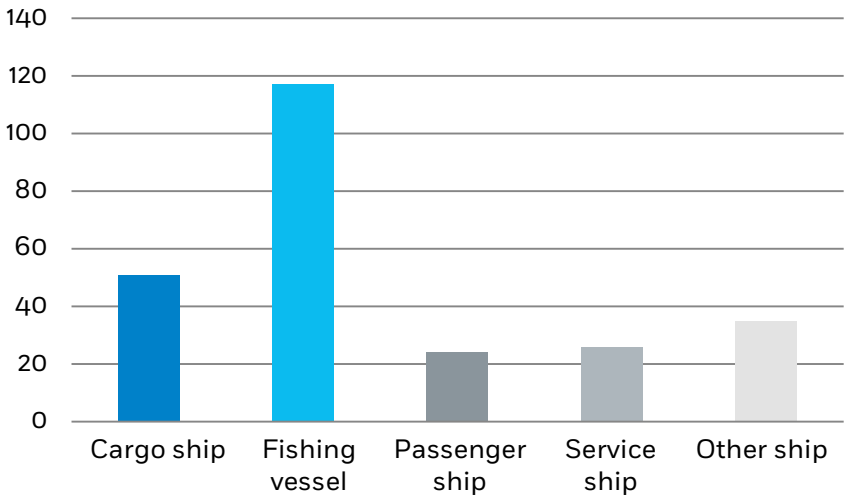



**A total of 253 ships were lost from 2011 to 2016.**

**172 ships were reported sunk, some of them being recovered.**

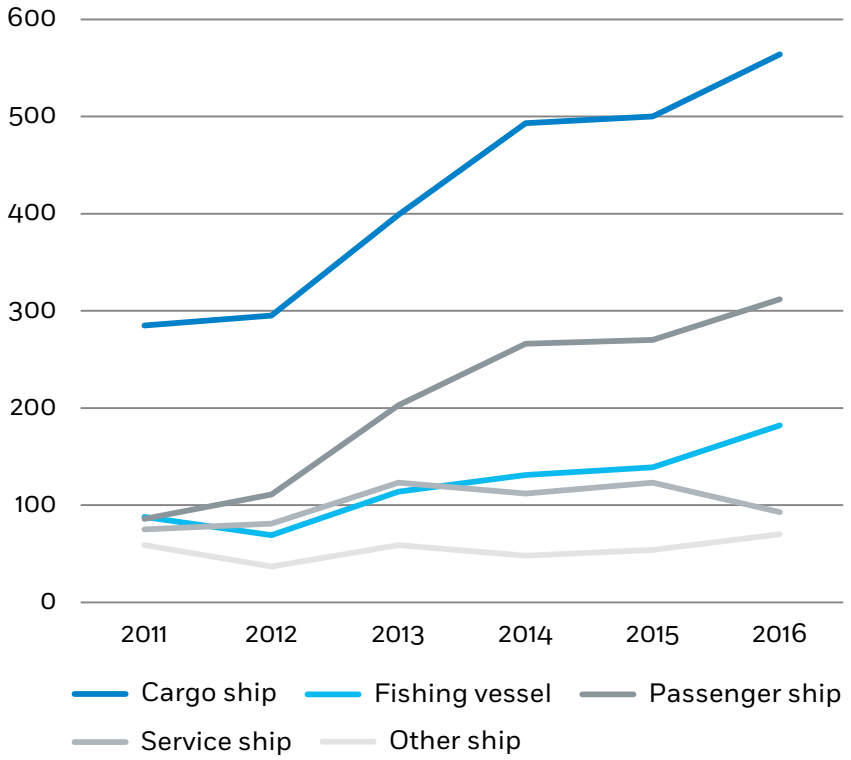
**In 72 cases, the initial casualty event was collision. The second most significant was flooding/foundering (68 cases).**

Figure 29: Distribution of ships lost per ship category 2011 - 2016




**With a total of almost 120, fishing vessel remains the category of ship that encountered the highest number of ships lost.**

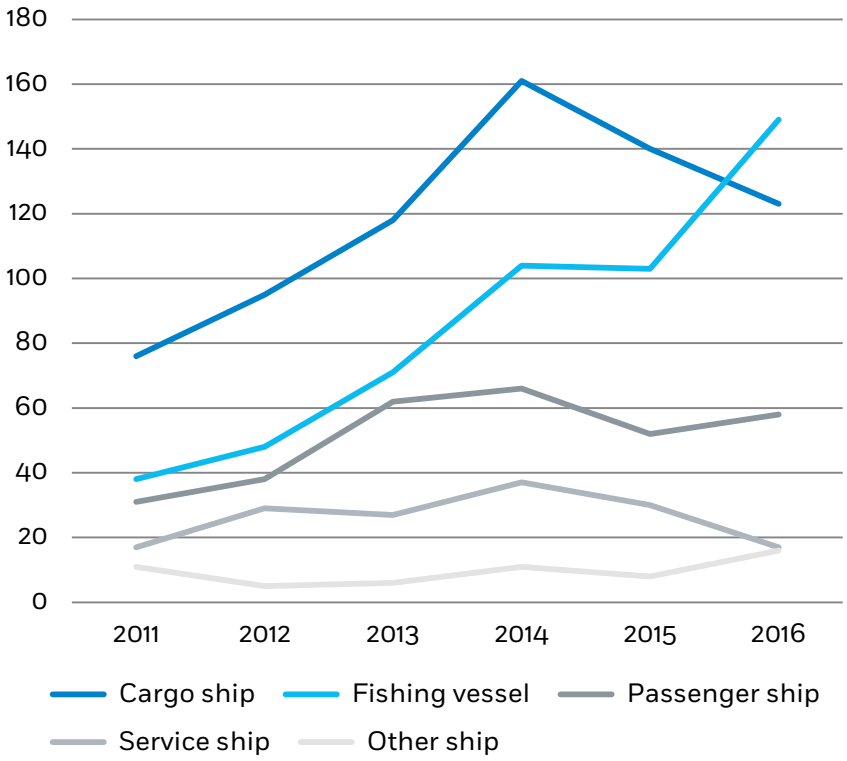
Figure 30: Number of ships damaged




**5441 ships reported some damage, the largest category being cargo ships (47%).**

The number of damaged ships has increased for all ship types, except for service ships.

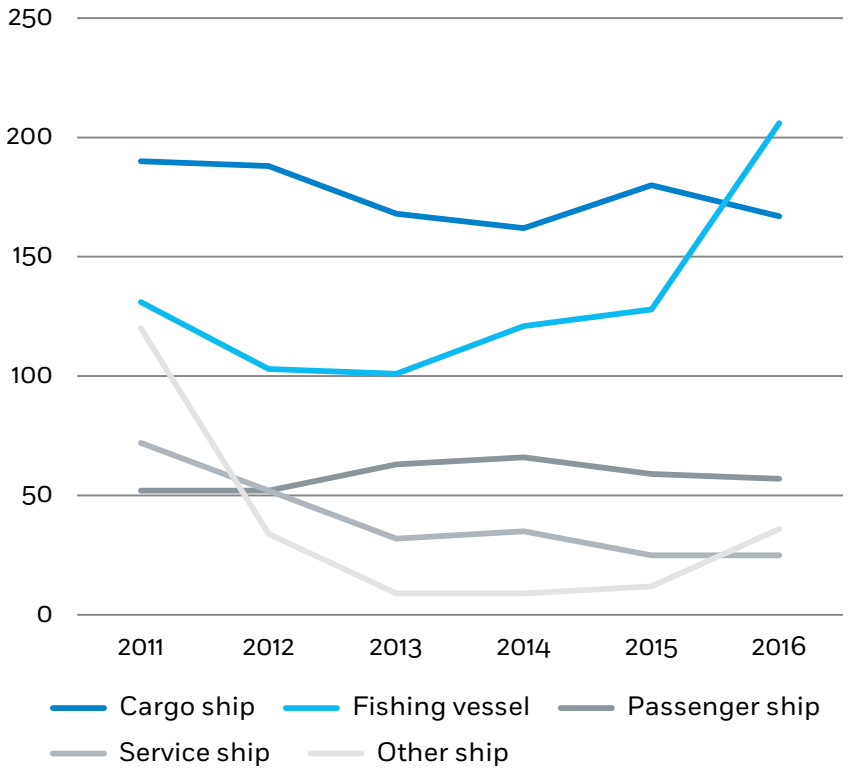
Figure 31: Number of ships considered unfit to proceed




**A total of 1747 ships were reported to be "unfit to proceed".**

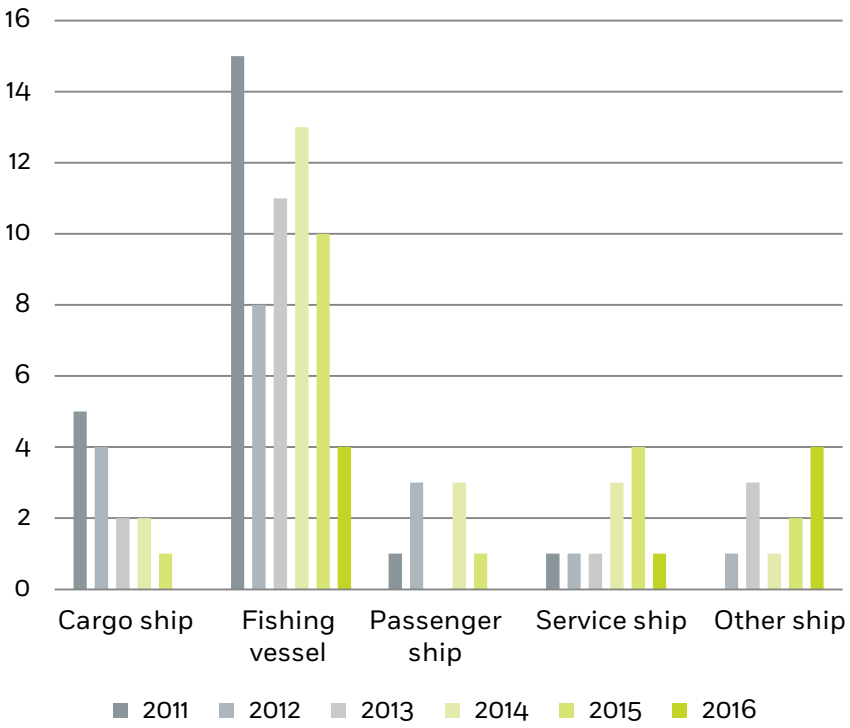
While the number of cargo ships reported unfit to proceed has significantly decreased since 2014, a continuous increase was noted over 2011-2016 for fishing vessels.

Figure 32: Number of ships requiring towage or shore assistance




**2655 ships overall needed towage or shore assistance, with a significant increase for fishing vessels in 2016.**

Figure 33: Distribution of fatalities by deviations



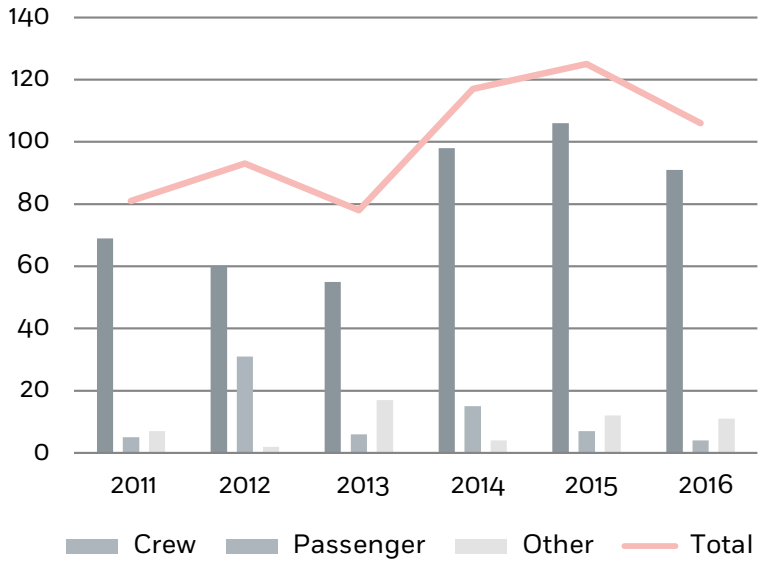

**A total of 105 ships were abandoned. Of these, 61 were fishing ships.**

**The number of abandoned ships per year has significantly dropped from 22 to 9 within 3 years.**

## 2.6.2 CONSEQUENCES TO PERSONS

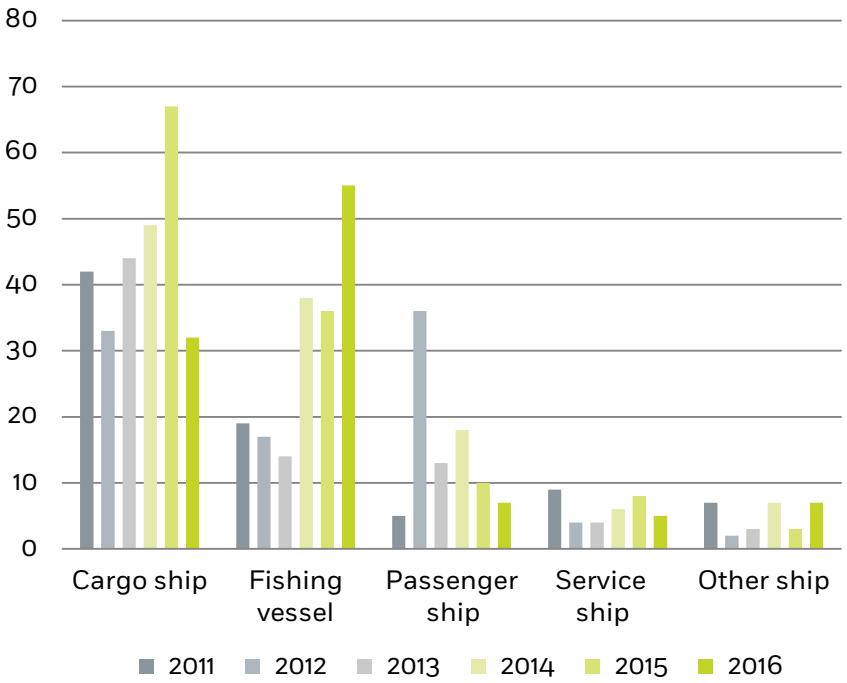
### 2.6.2.1 FATALITIES

Figure 34: Distribution of fatalities by categories of person



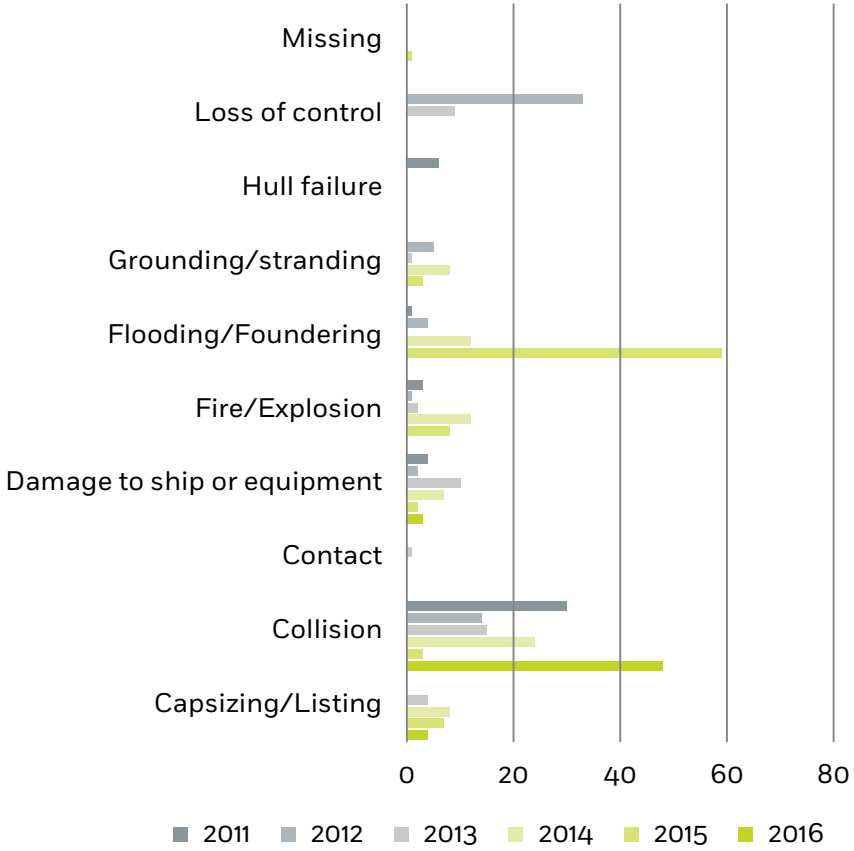

**The total number of lives lost during the period 2011-2016 was 60, with a decrease in 2016. With 479 fatalities, crew have been the most affected category of persons.**

Figure 35: Distribution of fatalities by ship category



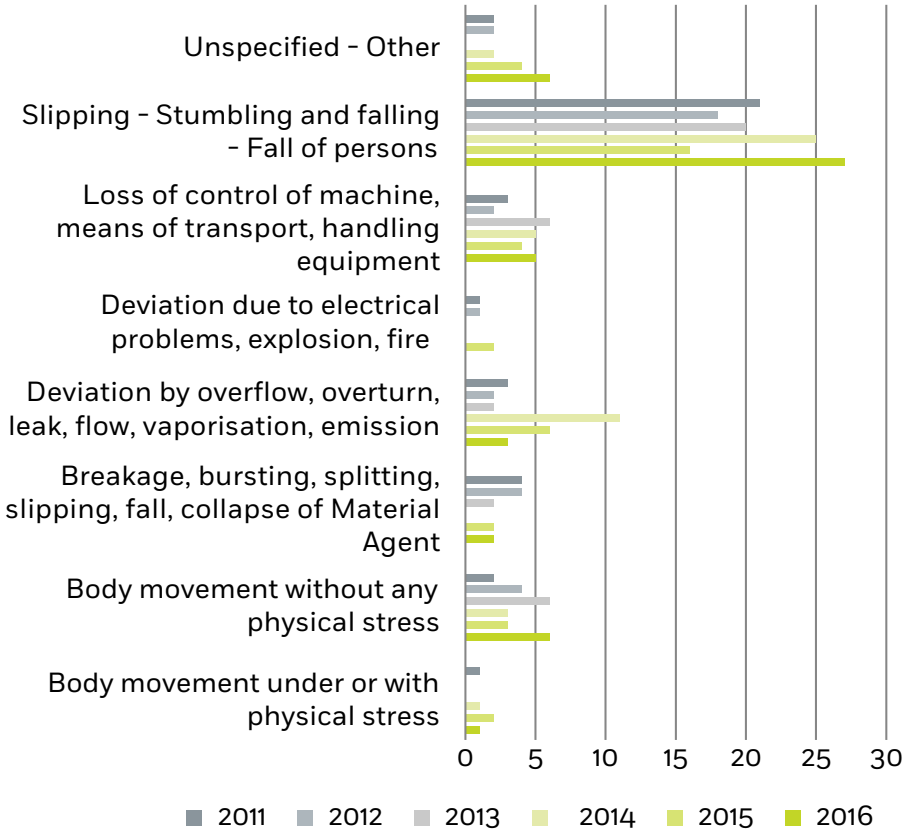

**Evolution of fatalities per ship types has been irregular over the 5 year period. While it was stable for service and other ships, 2012 was the worst year for passenger ships, 2016 for fishing vessels and 2015 for cargo ships.**

Figure 36: Distribution of fatalities by casualty events




**Fatalities mainly occurred during a collision (38%) or flooding/foundering (21%).**

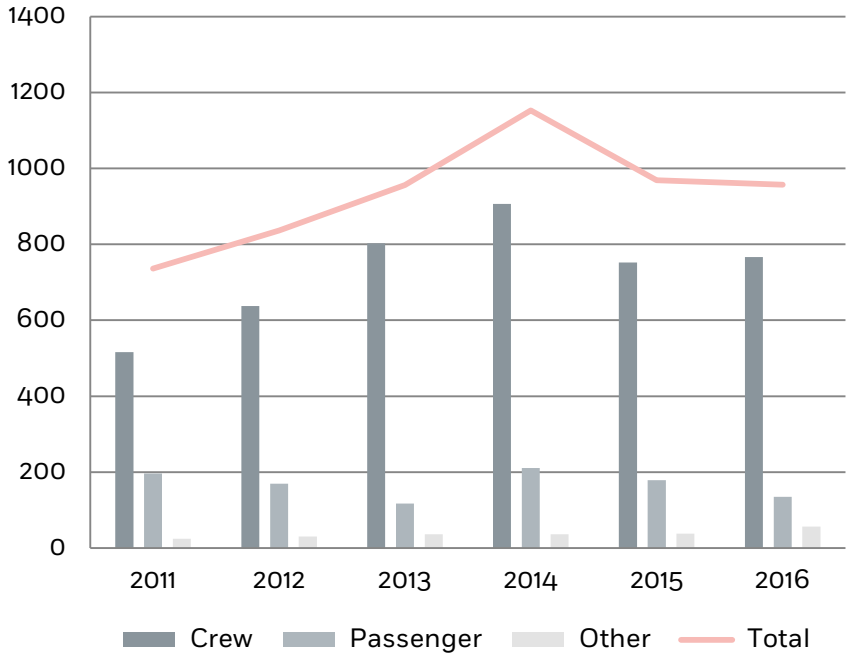
Figure 37: Distribution of fatalities by deviation




**Slipping/falls of persons is the main cause of fatalities (52%) due to occupational accidents**

## 2.6.2.2 INJURIES

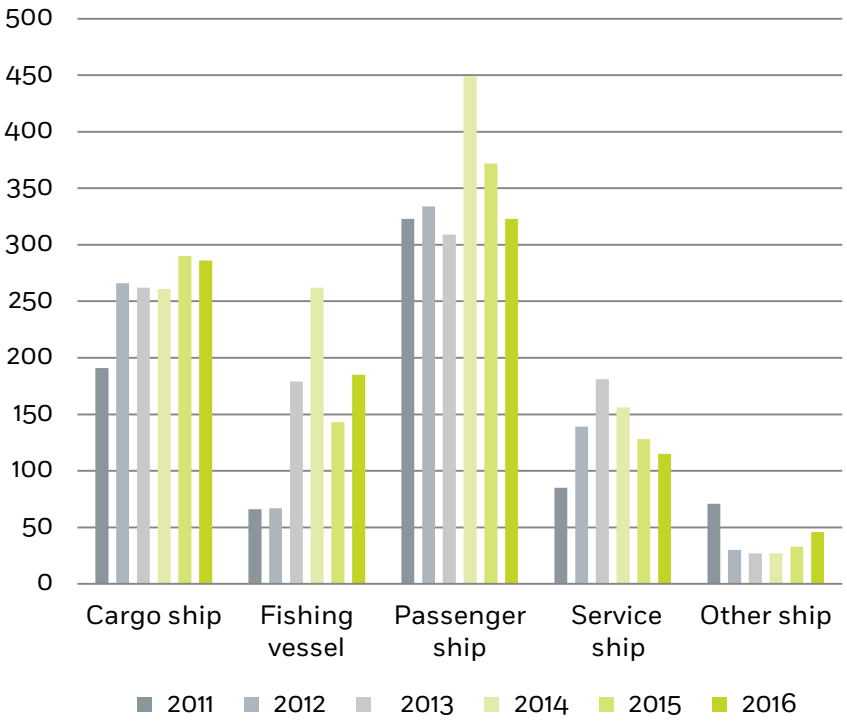
Figure 38: Distribution of injuries by category of person




**Among the total of 16539 casualties from 2011 to 2016, 4930 accidents resulted in a total of 5607 injured persons. The decrease of injuries initiated in 2015, with less than 1000 people injured, continued in 2016.**

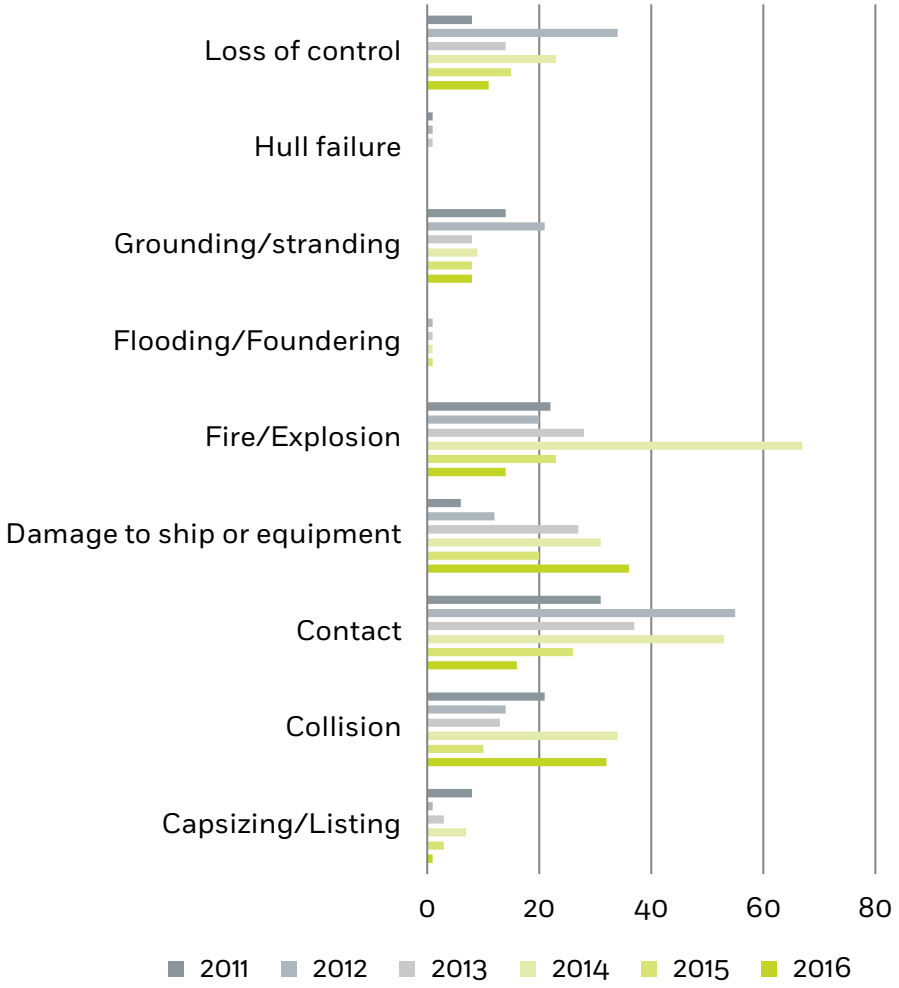
Crew represent the main category of persons injured at sea (4380 during the period 2011-2016).

Figure 39: Distribution of injured people by ship type



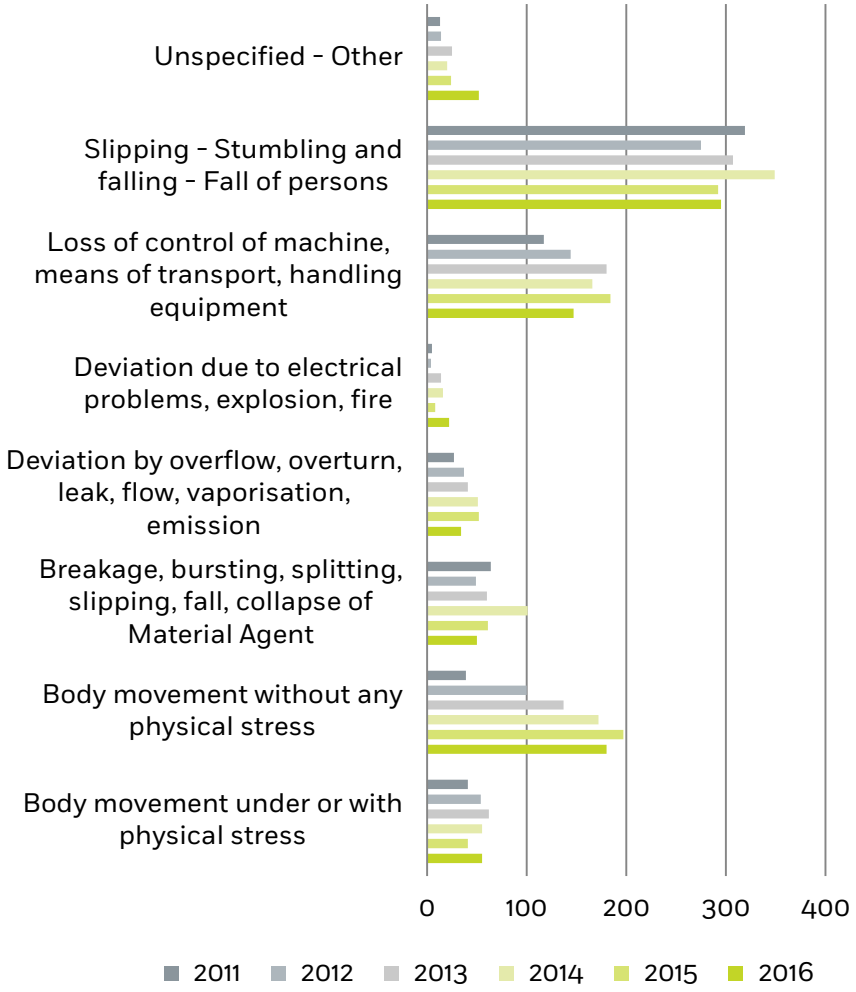

**2110 persons were injured on board passenger vessels.**

Figure 40: Distribution of injuries by casualty event




**48% of the injuries took place during navigational events (contact, collision and grounding/standing).**

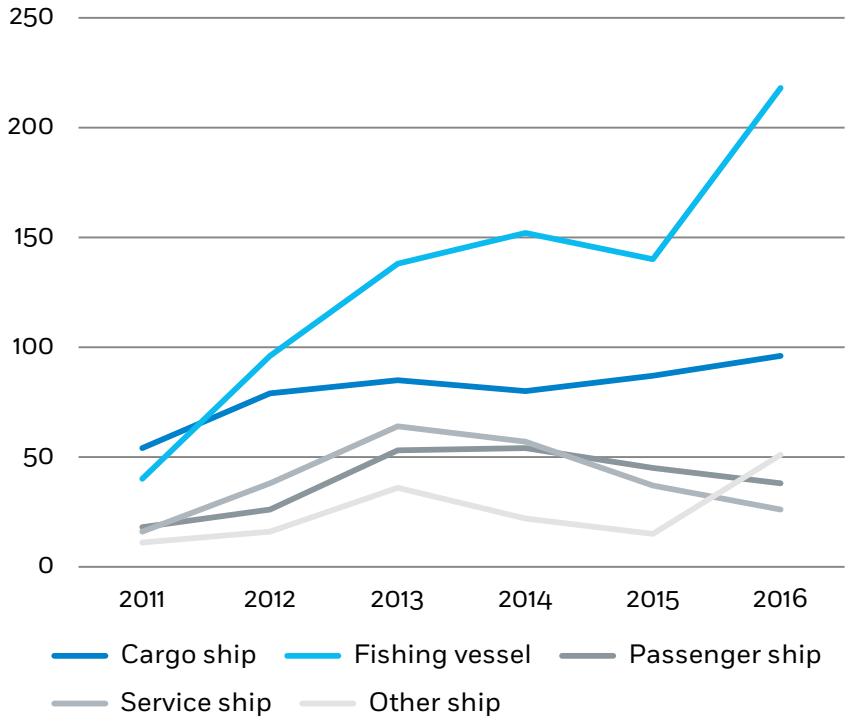
Figure 41: Distribution of injuries by deviation




**As with fatalities, most of the injuries (37%) occurred during slipping/falls of persons.**

## 2.6.3 OTHER CONSEQUENCES

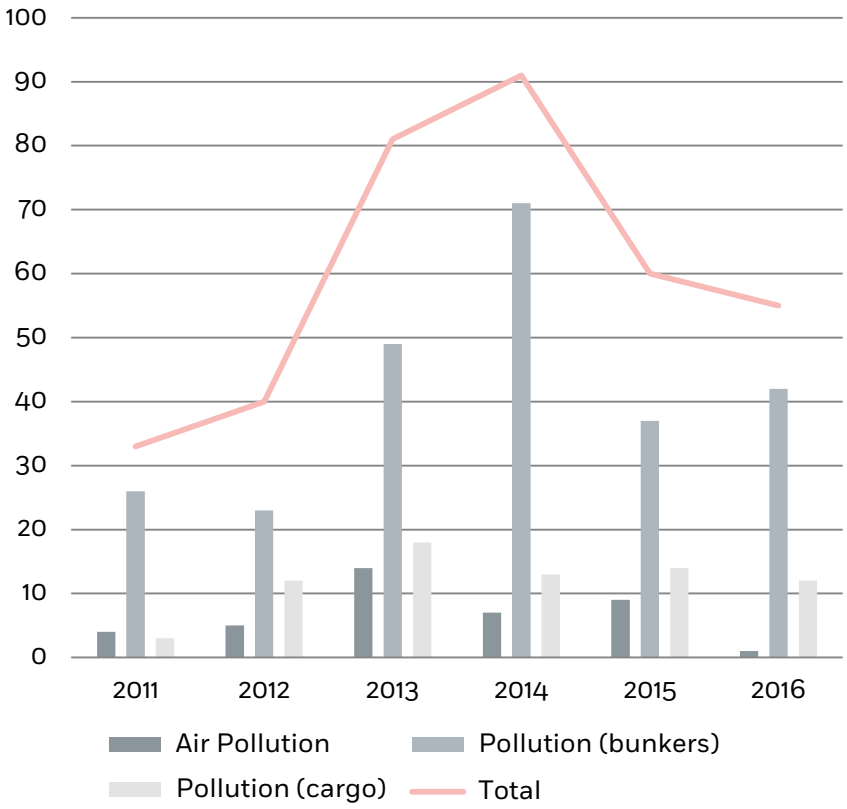
Figure 42: Distribution of Search and Rescue (SAR) operations by ship type




**1888 ships needed a SAR operation of which 784 were fishing vessels.**

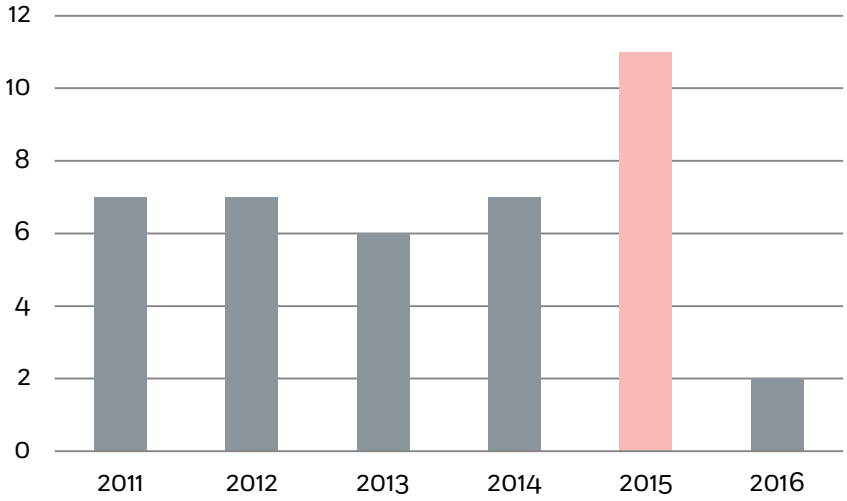
**69% of the SAR operations related to ship casualties and 31% to occupational accidents.**

Figure 43: Types of pollution




**360 cases of pollution were reported. Among them, 320 affected the sea, whilst 40 were air pollution. In the majority of the cases (248), sea pollution was caused by the release of ship's bunkers and other pollutants (e.g. residues, lubricating or hydraulic oils).**

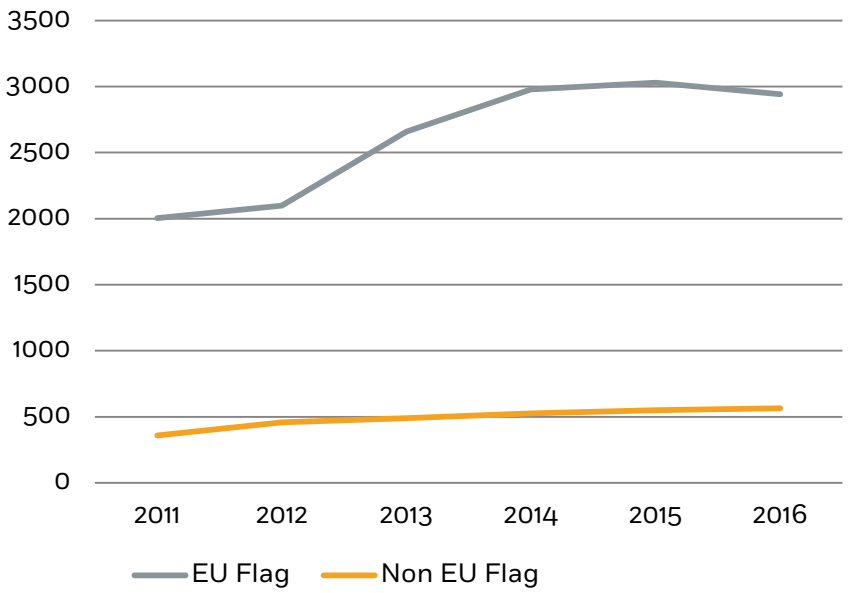
Figure 44: Distribution of oil pollution response




**Oil pollution response was deployed mainly after grounding/ stranding (13 cases), or collision between ships (8 times). A significant decrease occurred in 2016.**

## 2.7 INVOLVEMENT OF EU STATES AS FLAG STATE, COASTAL STATE OR SUBSTANTIALLY INTERESTED STATE

Figure 45: Distribution of ship flags




**15710 ships flagged under an EU Member State were involved in a marine casualty or incident.**

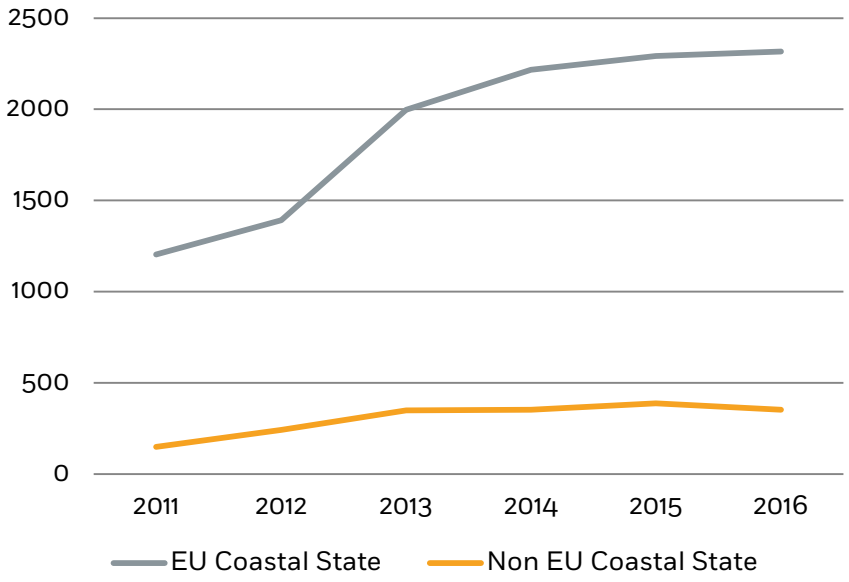
28 EU Member States were involved as flag of the ship, Austria and Slovenia being not affected over the period 2011 - 2016.

2945 ships flagged under a total of 95 non-EU countries were involved in a marine casualty or incident.

The flag of 106 ships was not identified.

The higher ratio of EU flag States affected by a marine casualty or incident in comparison with non-EU flag States is due to the scope of the Directive 2009/18/EC: marine casualties and incidents on-board ships flagged in non-EU countries and not involving substantial EU interests are not covered by the EU legislation and therefore not reported to EMCIP.

Figure 46: Distribution of Coastal States




**In 13213 cases, at least one coastal State was reported to be affected by the marine casualty or incident. Considering the total number of marine casualties and incidents (16539), this means that 80% of the accidents happened in territorial seas or internal waters.**

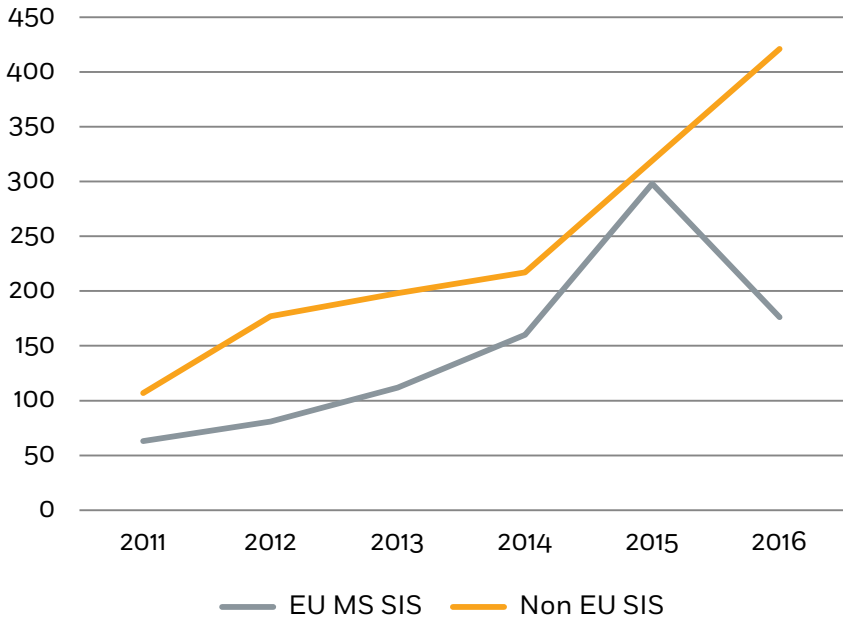
The grand total of coastal States affected was 13248, as more than one Coastal State could be affected by the same marine casualty or incident.

27 EU Member States were involved as a coastal State 11418 times. Czech Republic, Luxembourg and Slovakia were the three EU Member States not involved.

137 non-EU countries were reported as coastal State 1830 times.

As with EU flag ships, there is a higher ratio of EU coastal States affected by a marine casualty or incident in comparison with non-EU coastal States. Again, it should be noted that marine casualties and incidents in coastal waters of non-EU countries and not involving substantial EU interests are not covered by the AI Directive.

**Figure 47: Distribution of substantially interested States (SIS) other than flag or coastal States**




**Other than flag States or coastal States as described previously, in 2163 marine casualties and incidents, at least one substantially interested State was reported. Considering the total number of marine casualties and incidents (16539), a State different from the flag or the coastal State was interested in 13% of marine casualties and incidents.**

**The significant increase of substantially interested states could be explained by a more accurate identification of entities other than the flag State or the coastal State, as well as a better knowledge of the EU and International legislation on casualty investigation by such entities.**

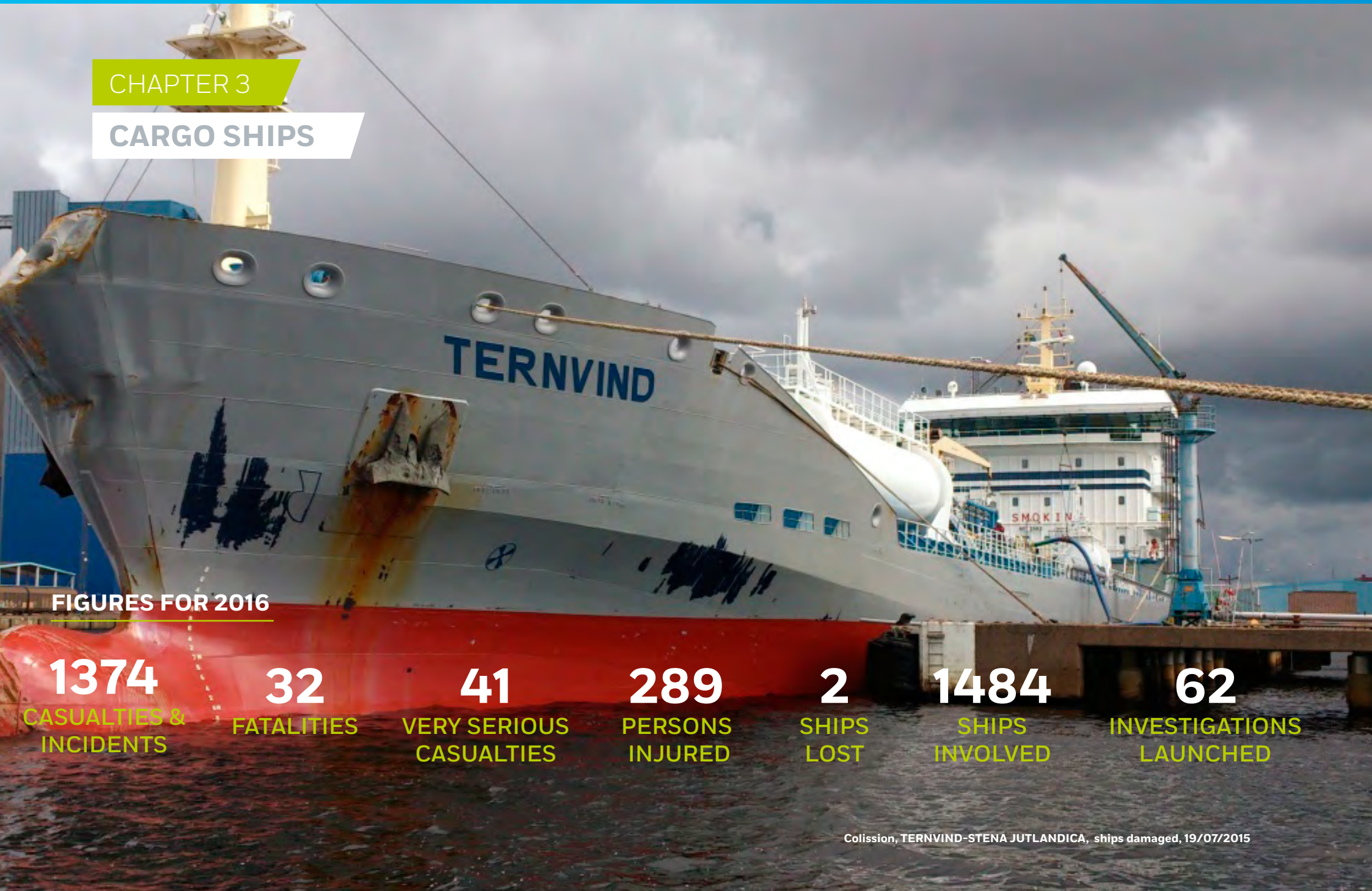
A total of 2329 substantially interested States were registered, bearing in mind that a single occurrence can involve more than one substantially interested State.

26 EU Member States were involved as substantially interested States 890 times, while Austria, Czech Republic, Slovakia and Slovenia were not affected.

109 non-EU countries were substantially interested States 1439 times.

CHAPTER 3

# CARGO SHIPS




## FIGURES FOR 2016

**1374** CASUALTIES & INCIDENTS

**32** FATALITIES

**41** VERY SERIOUS CASUALTIES

**289** PERSONS INJURED

**2** SHIPS LOST

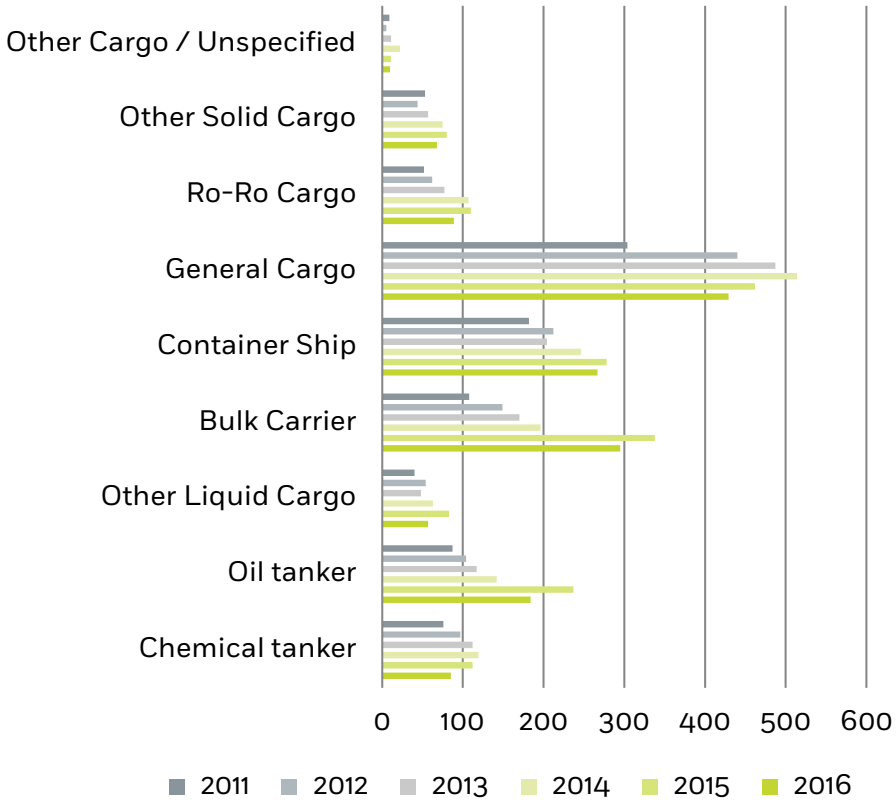
**1484** SHIPS INVOLVED

**62** INVESTIGATIONS LAUNCHED

Colission, TERNVIND-STENA JUTLANDICA, ships damaged, 19/07/2015

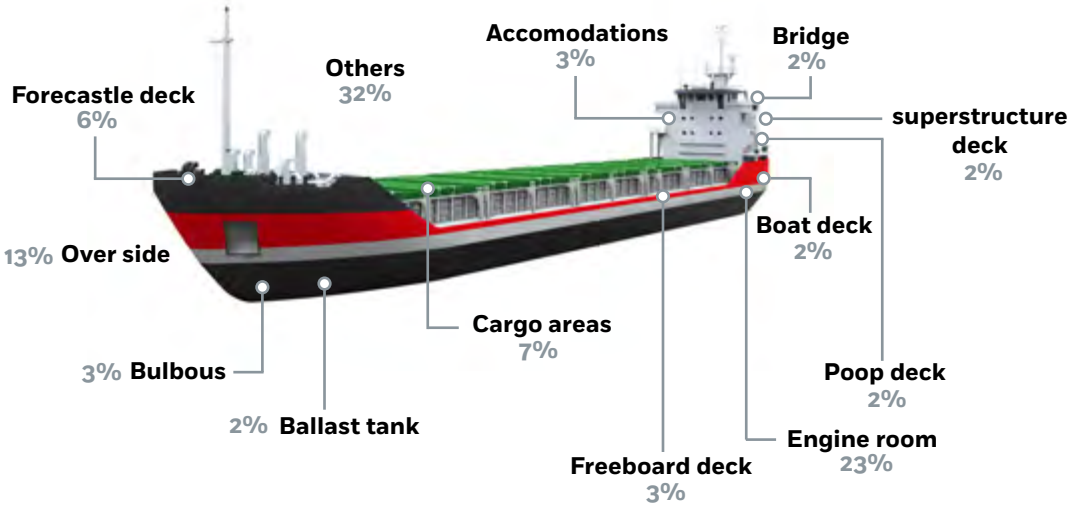
## 3.1 DETAILED DISTRIBUTION

Figure 48: Distribution of cargo ships involved



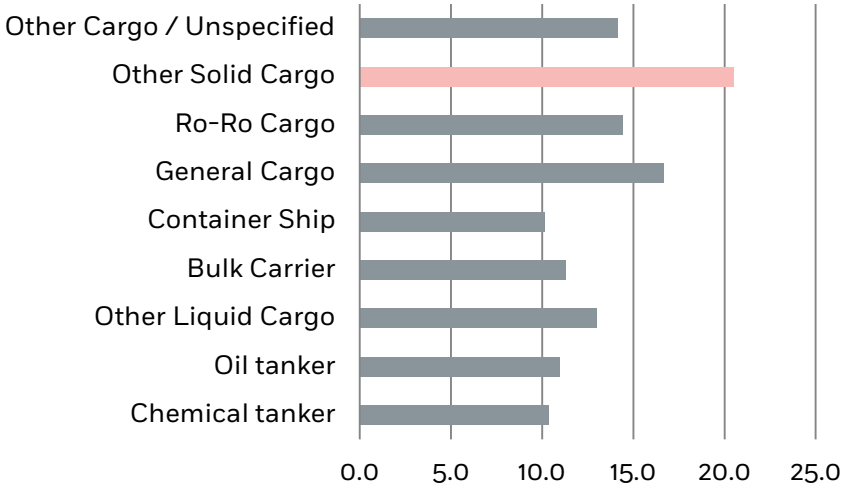

**The subcategory most frequently involved was "General Cargo" (33%), followed by Container ships (17%) and Bulk carriers (16%). The number of occurrences has decreased for all types of cargo ships in 2016.**

Figure 49: Main places of casualties involving cargo ships 2011-2016



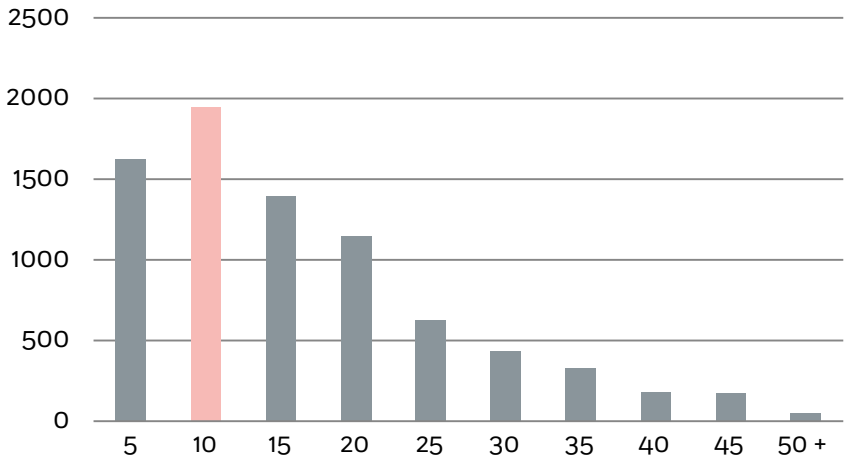

**Places were specified in 8040 cases. The main location of marine casualties and incidents was the Engine Room (1810 cases), followed by Over Side (1011 cases).**

Figure 50: Average age by type of cargo ships involved 2011-2016



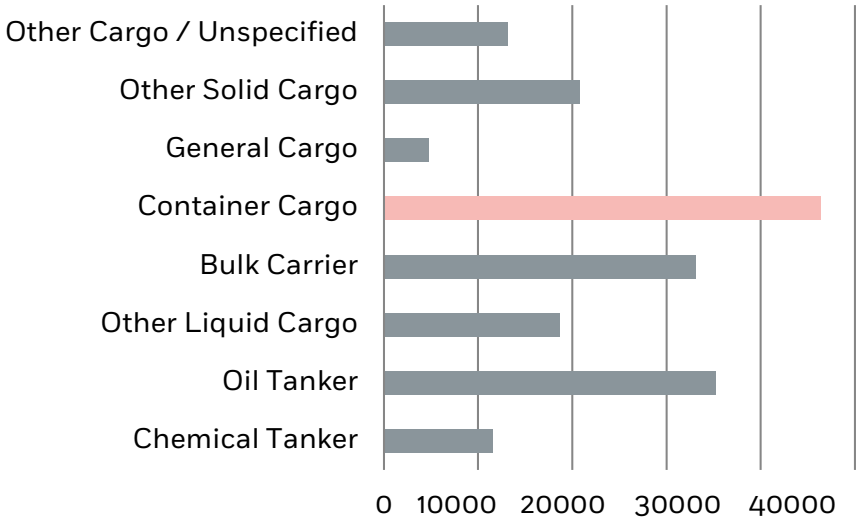

**The youngest ship category is container ship (10.1y) while the oldest is other solid cargo (20.5).**

Figure 51: Age distribution of involved cargo ships 2011-2016



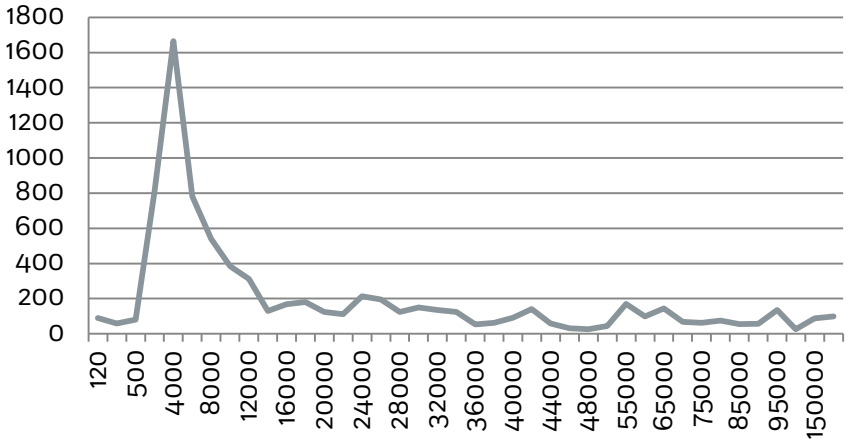

**The average age of cargo ships involved in casualties and incidents was 13.5 years over the period 2011-2016.**

Figure 52: Average GT of cargo ships involved by main category 2011-2016




**General cargo ships had the lowest average GT (4695), while container ships represented the highest average GT (46330).**

Figure 53: GT distribution of involved cargo ships 2011-2016

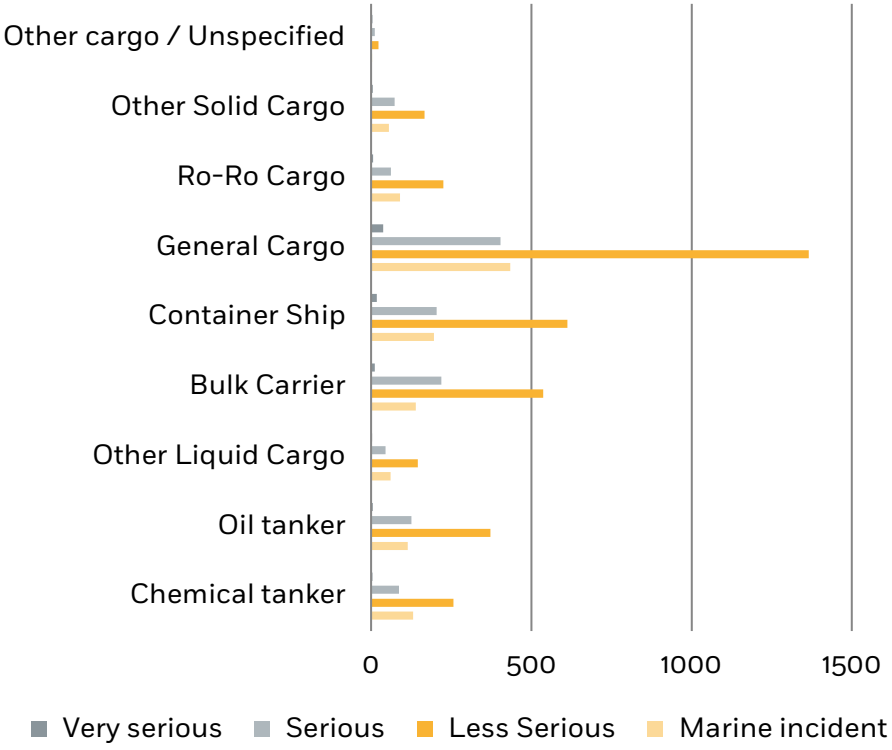



**The average Gross Tonnage of cargo ships involved in marine casualties is 22920. A peak of ships with GT around 4000 is in line with the average GT of general cargos involved, this size of cargo ships representing the main part of the cargo fleet.**

## 3.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

### 3.2.1 CASUALTY WITH A SHIP

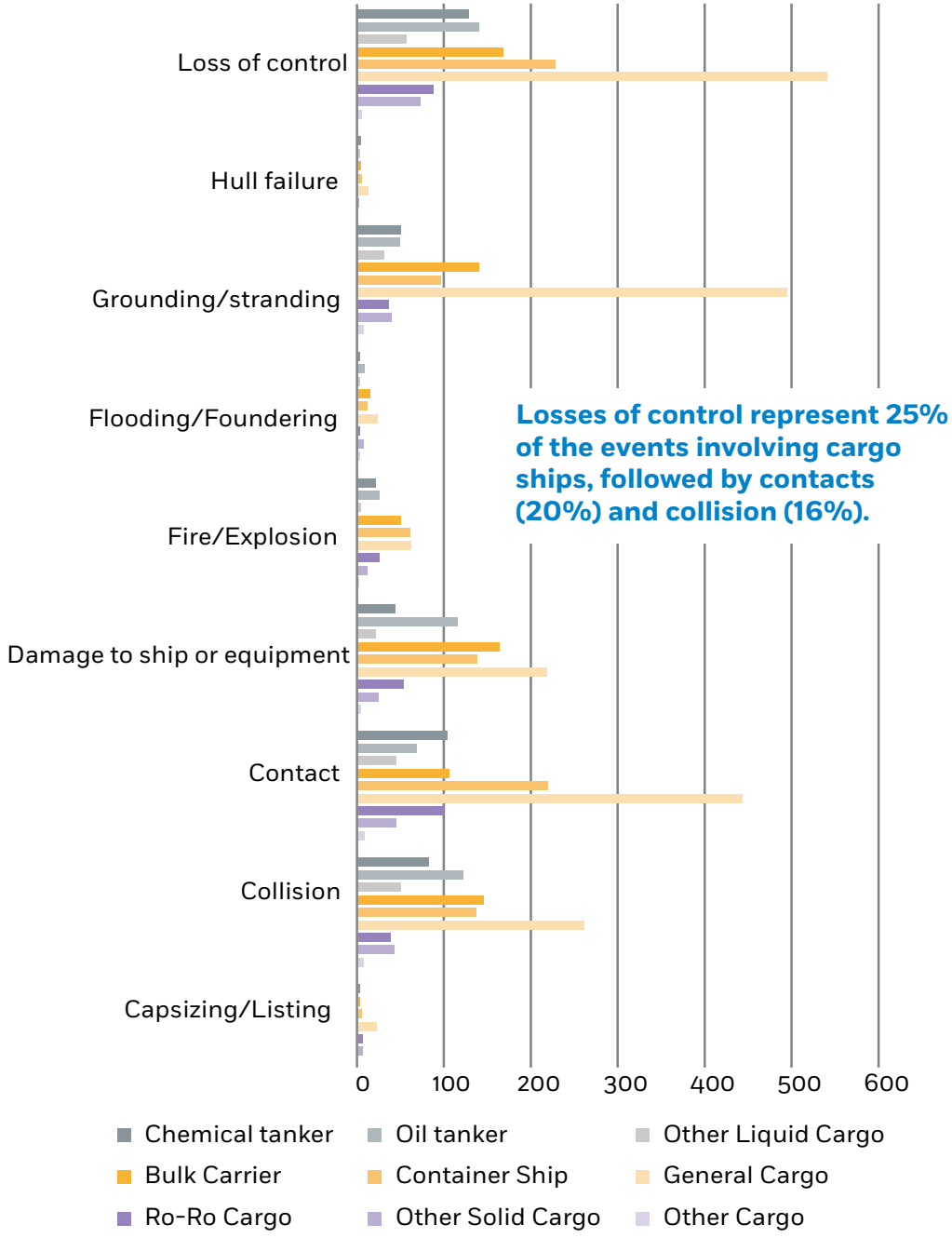
Figure 54: Distribution of severity per cargo ship type 2011-2016




**For cargo ships, the number of very serious casualties with a ship, as a proportion of all reported casualties and incidents involving cargo ships, is lower (1.5%) than the average for all ship types (2.4%).**

**36% of the casualties and incidents were related to General Cargo ships.**

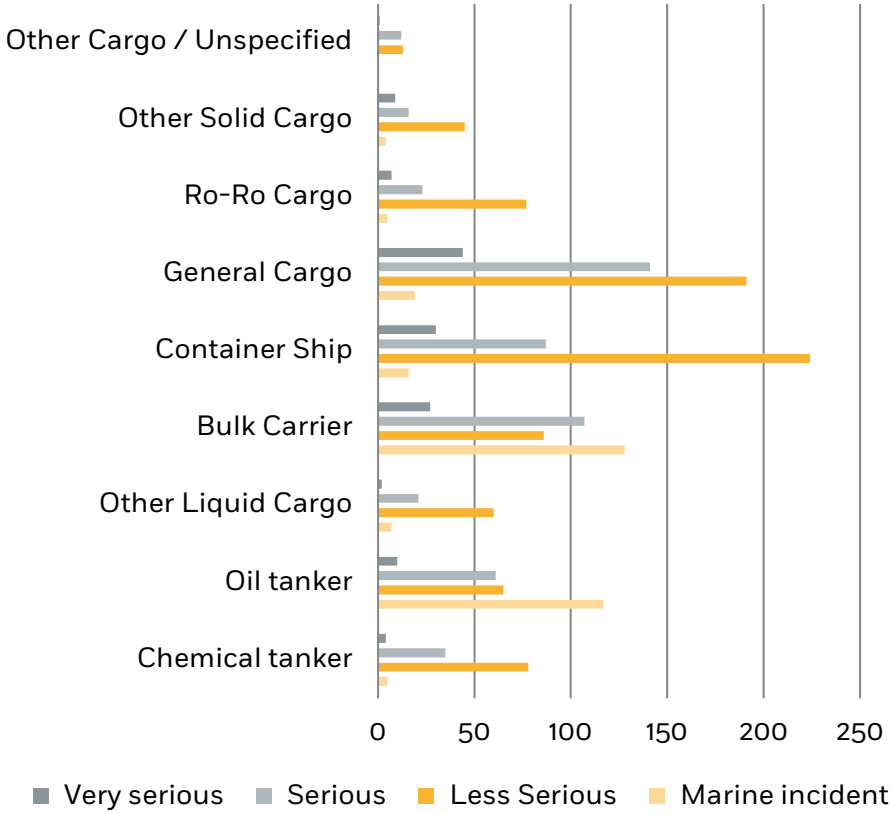
Figure 55: Distribution of casualty events per cargo ship type 2011-2016




**Losses of control represent 25% of the events involving cargo ships, followed by contacts (20%) and collision (16%).**

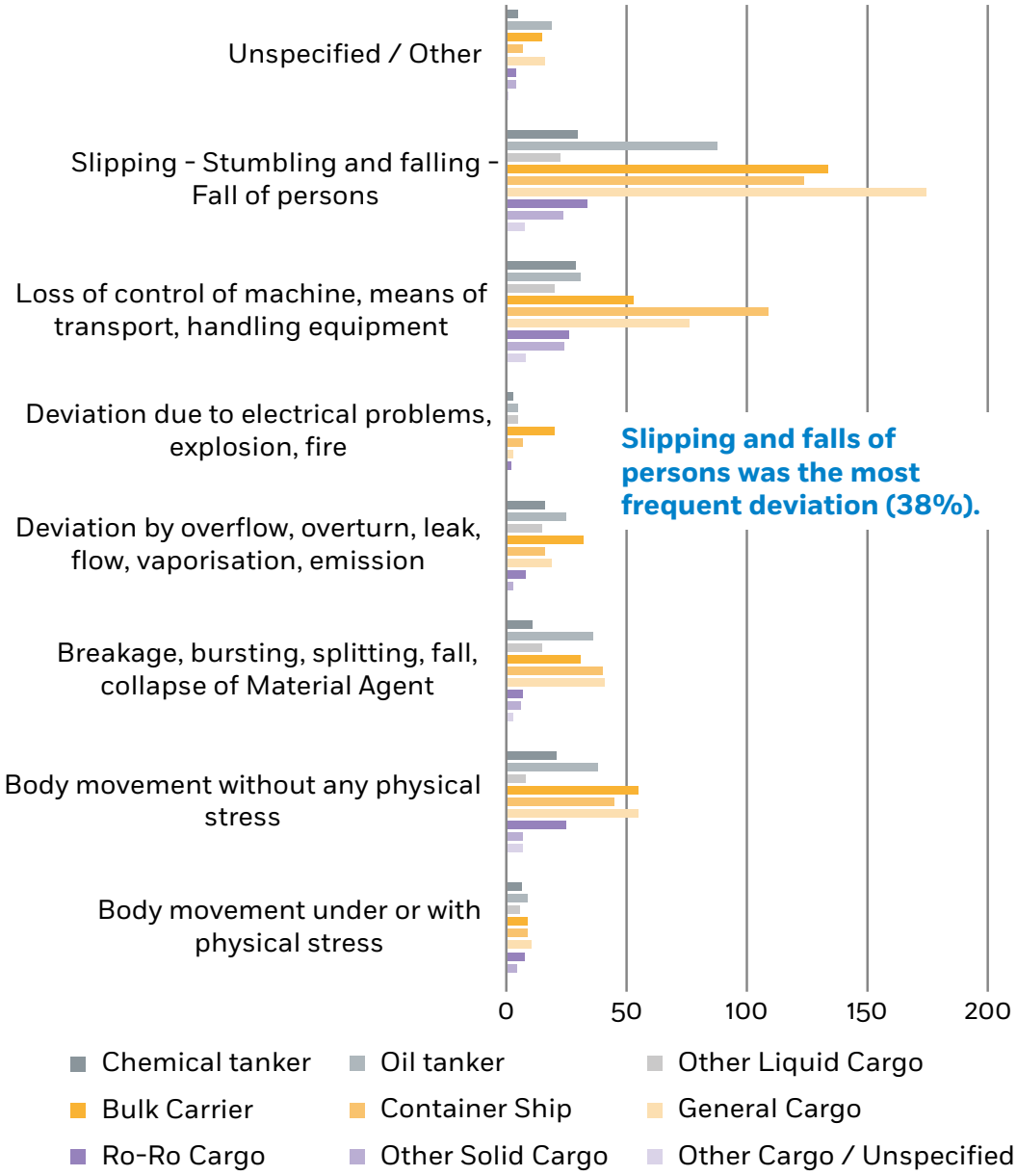
## 3.2.2 OCCUPATIONAL ACCIDENT

Figure 56: Severity of occupational accidents per cargo ship type 2011-2016




**The proportion of very serious occupational accidents is higher (7.5%) than the average for all ship types (4.4%). 22% of the cases were related to general cargo ships and 20% to container ships.**

Figure 57: Distribution of deviations per cargo ship type 2011-2016



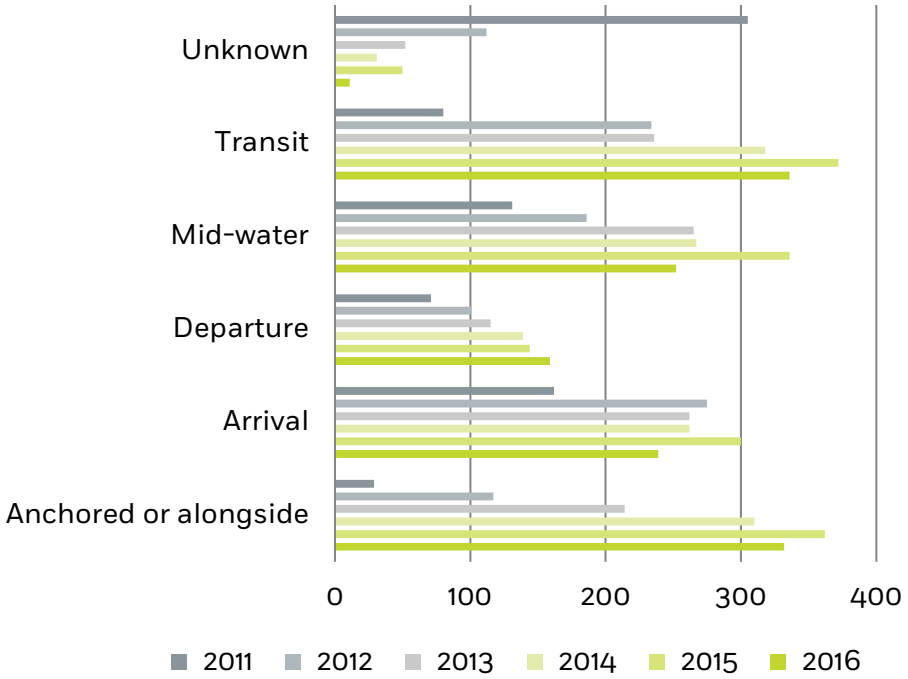

**Slipping and falls of persons was the most frequent deviation (38%).**

## 3.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

**This section provides information about the location of cargo ships when marine casualties or incidents occurred.**

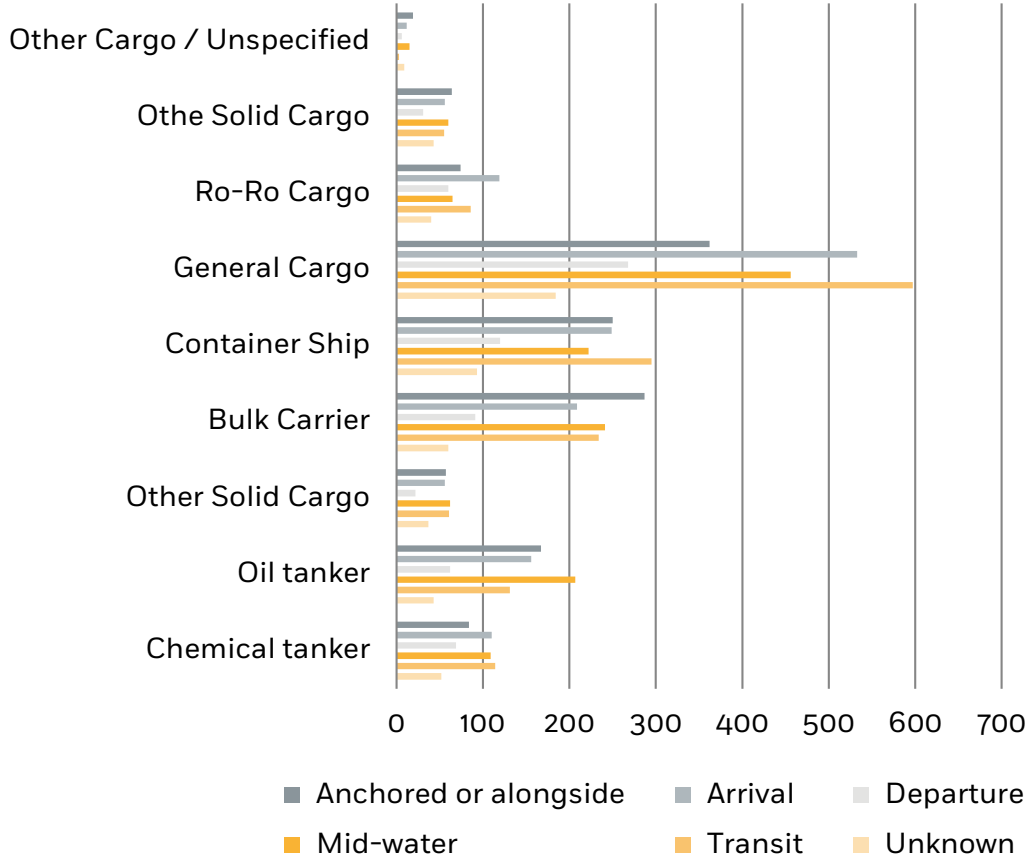
### 3.3.1 VOYAGE SEGMENTS

Figure 58: Distribution by voyage segment




**The departure phase remained the safest voyage segment over the period (10% of the cases).**

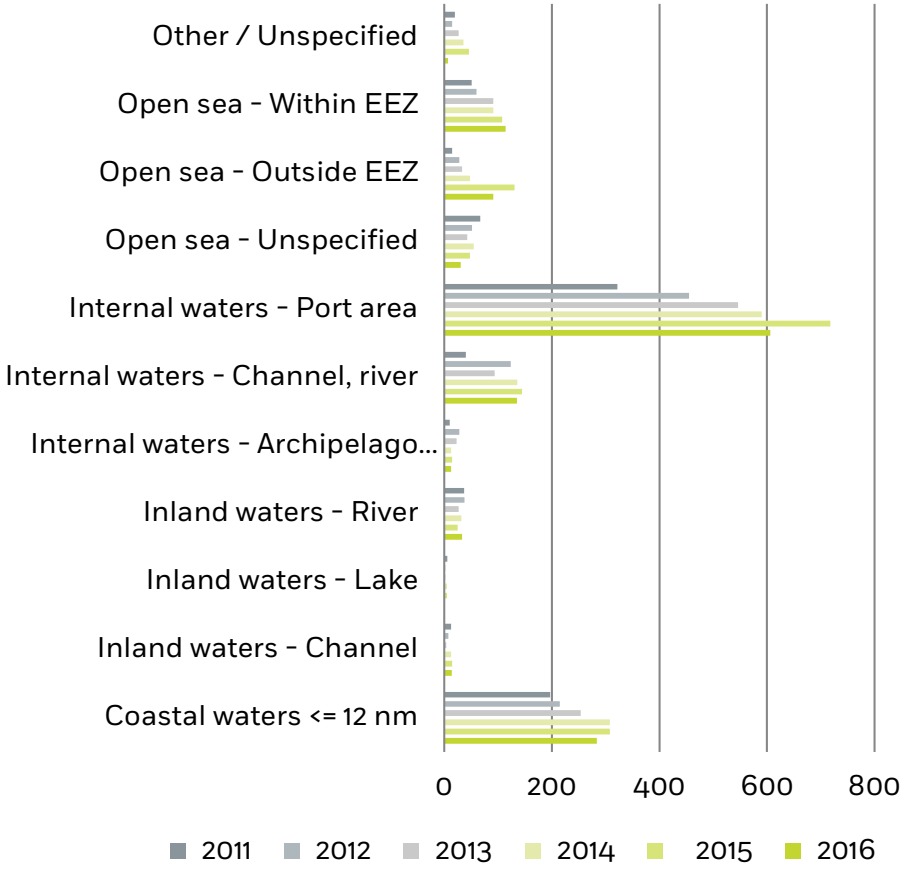
Figure 59: Distribution by voyage segment per cargo ship type 2011-2016




**Distribution of marine casualties and incidents is similar across the voyage segments for all cargo ship types.**

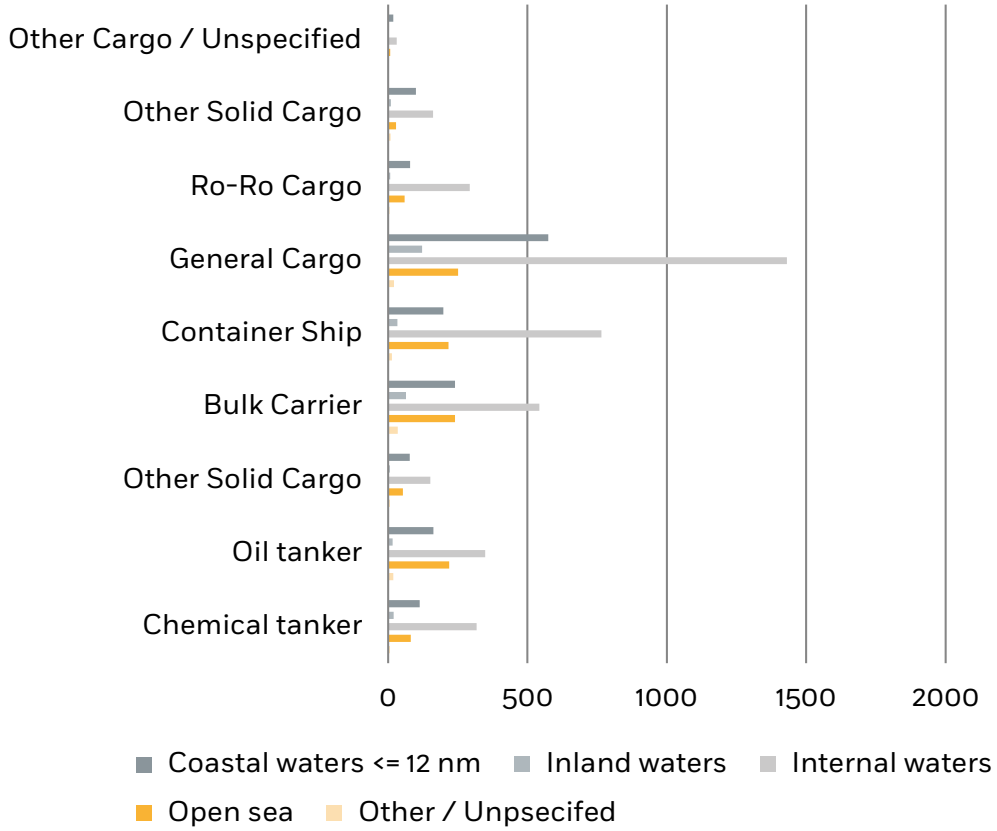
## 3.3.2 LOCATION

Figure 60: Distribution by location of marine casualties and incidents




**45% of the casualties took place in port areas, followed by 22% in coastal waters.**

Figure 61: Distribution by location of marine casualties and incidents per cargo ship type 2011-2016




**All types of cargo ships have the highest numbers of casualties and incidents within internal waters (56%).**

## 3.3.3 REGIONAL DISTRIBUTION

**Figure 62: Regional distribution of marine casualties and incidents 2011-2016**

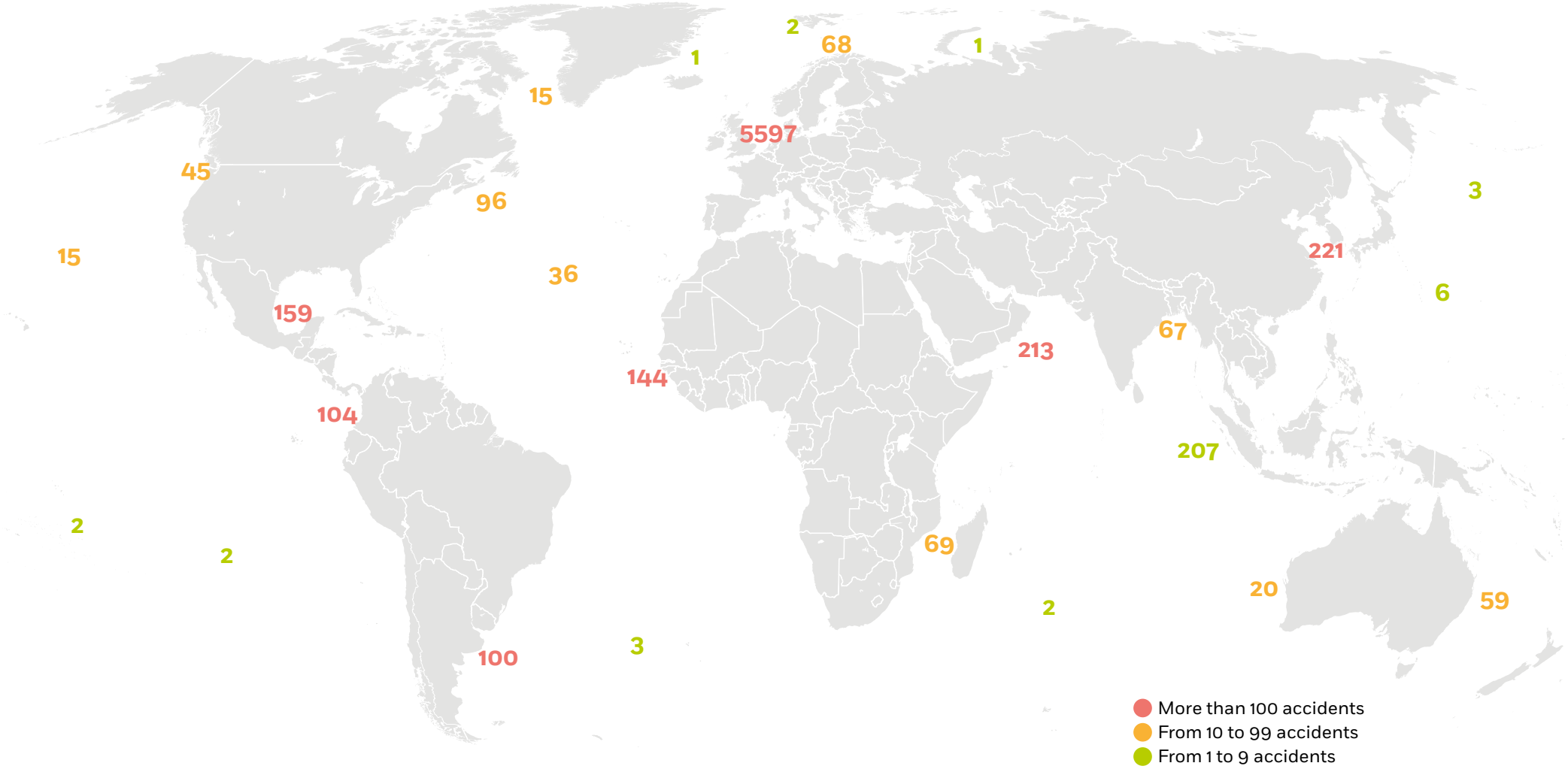
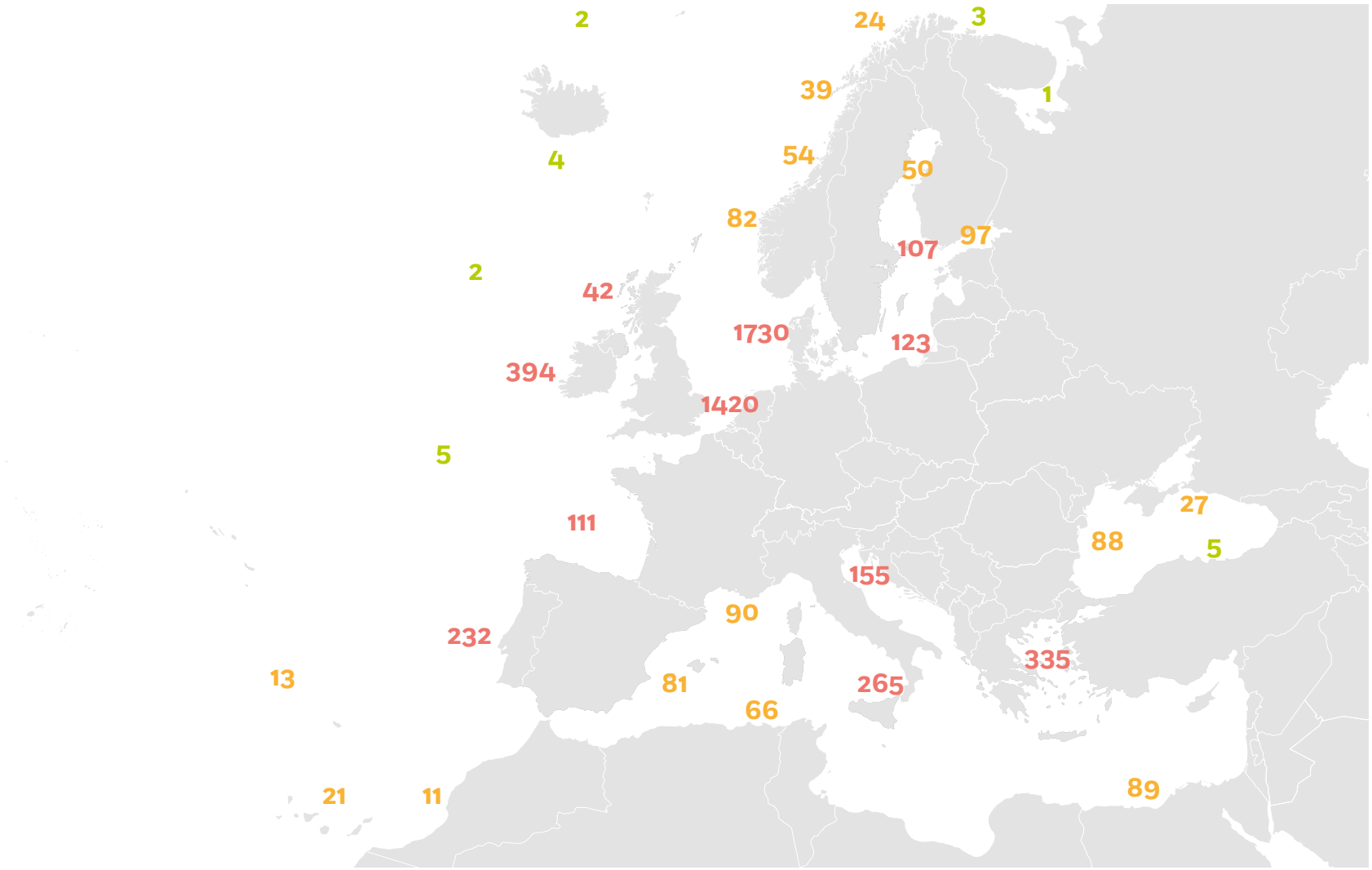
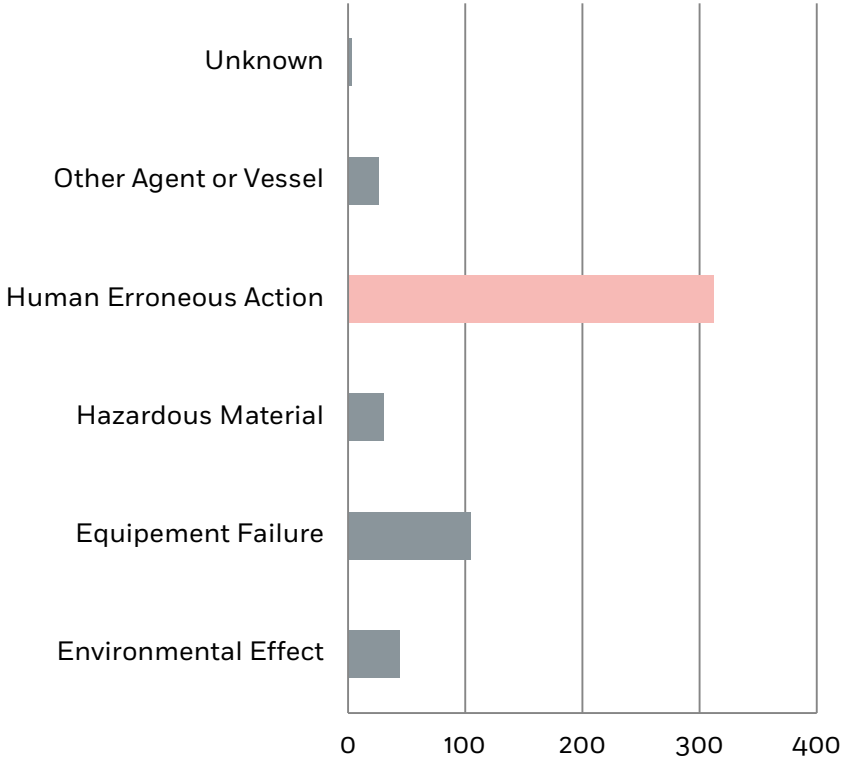


Figure 63: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2016



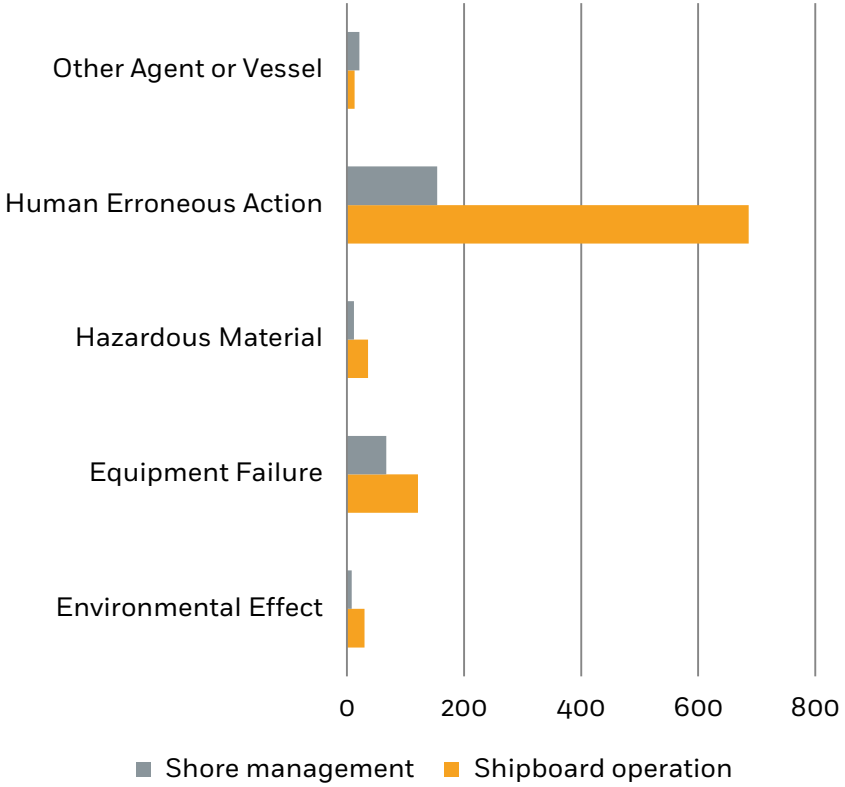
## 3.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 64: Accidental Events 2011-2016



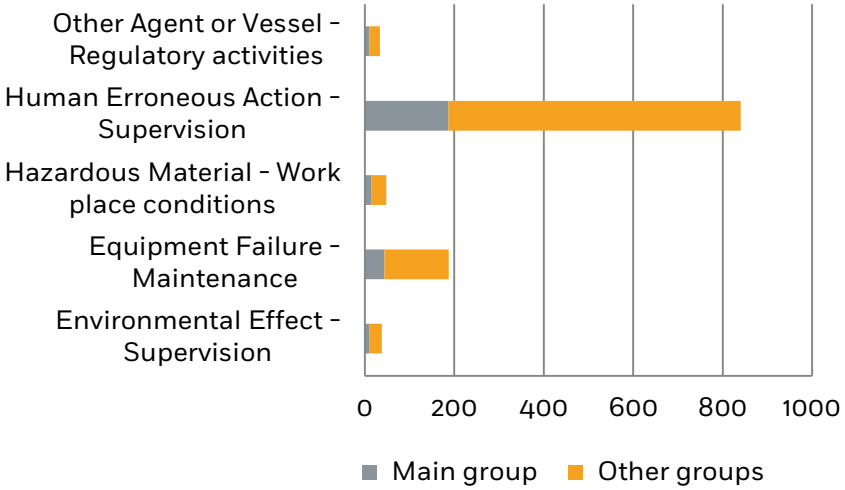

**Among the 520 accidental events related to cargo ships, human erroneous actions were quoted most often (60%), followed by equipment failure (20%).**

Figure 65: Relationship between Accidental Events and the main Contributing Factors 2011-2016




**For almost all accidental events, shipboard operation appeared to be the most significant contributing factor (77%).**

Figure 66: Groups of Contributing Factors 2011-2016

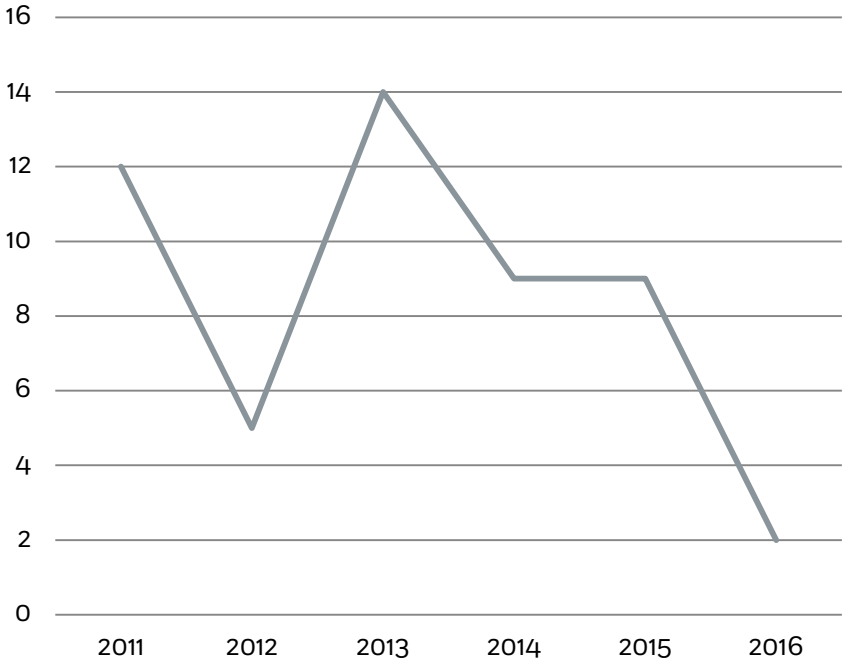



**This figure indicates the contributing factor that was most quoted per category of accidental event. For example, supervision was most quoted as the significant contributing factor when the accidental event was human erroneous action and environmental effect.**

## 3.5 CONSEQUENCES

### 3.5.1 CONSEQUENCES TO SHIPS

Figure 67: Cargo ships lost



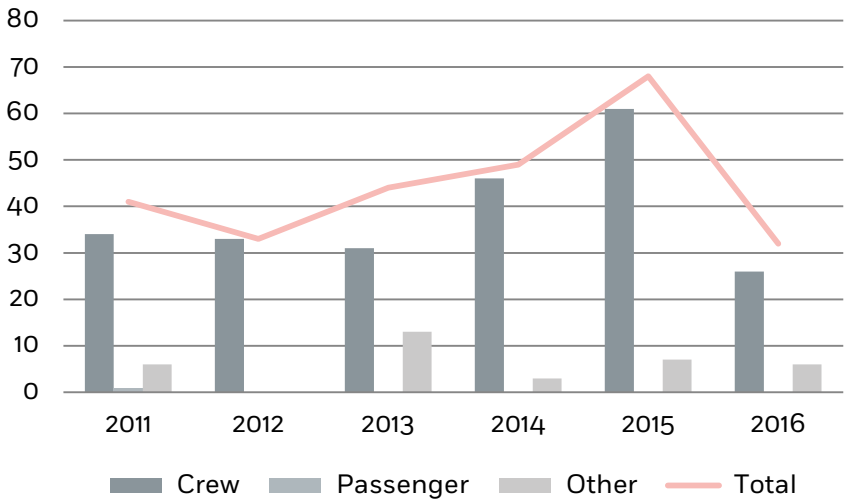

**Among cargo ships that were lost, 49% were general cargo.**

**A continuous decrease was noted since 2013.**

## 3.5.2 CONSEQUENCES TO PERSONS

### 3.5.2.1 FATALITIES

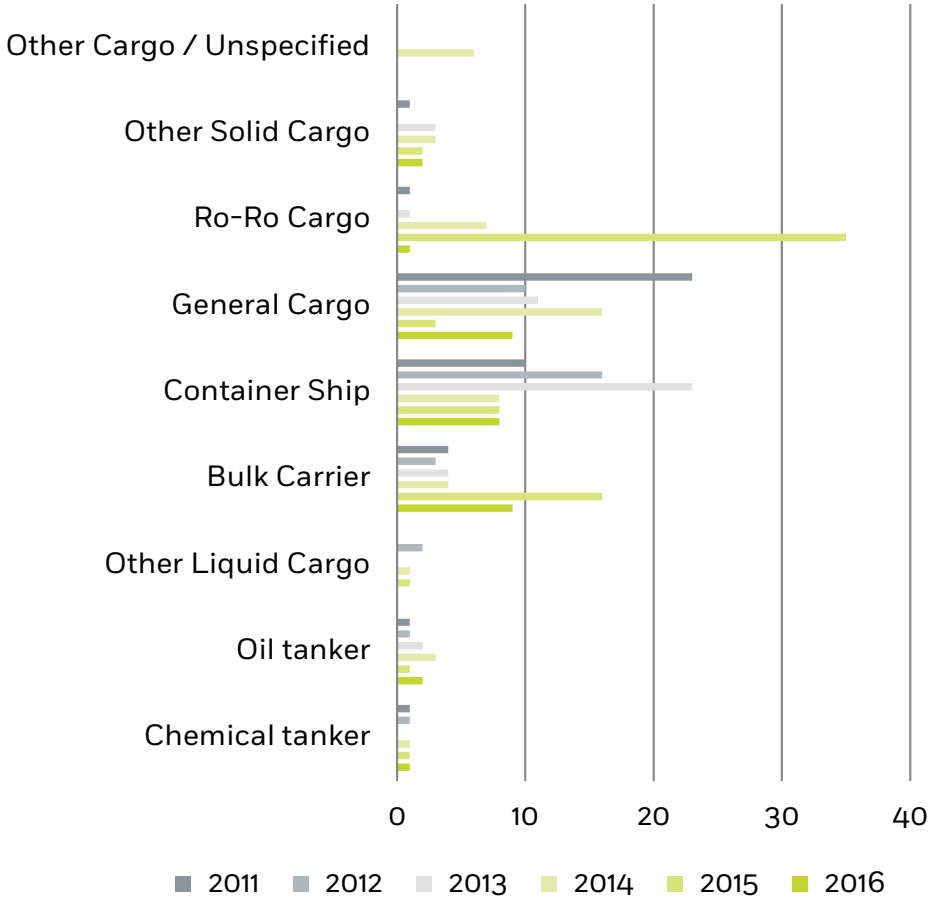
Figure 68: Number of fatalities




**The number of fatalities on board cargo ships decreased by 50% in 2016.**

**Fatalities of crew comprised 87% of cases.**

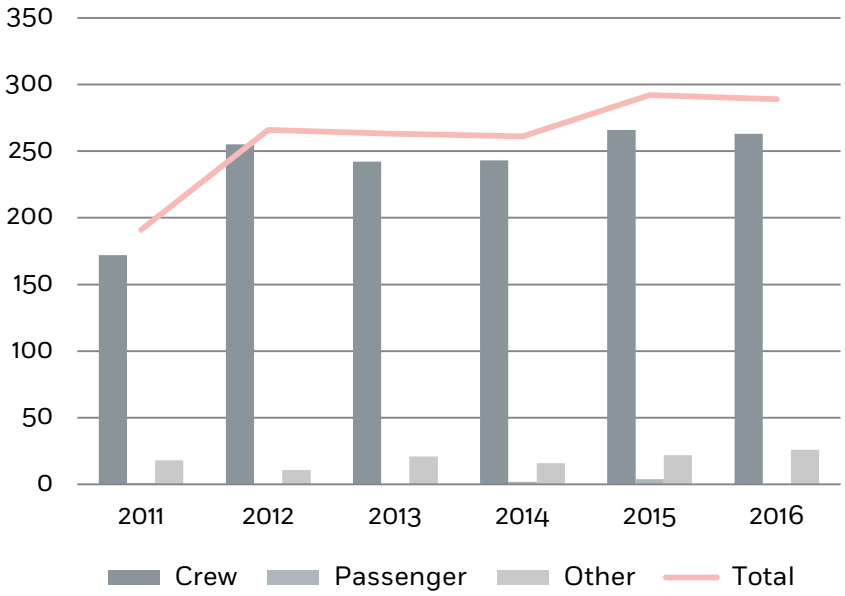
Figure 69: Distribution of fatalities per cargo ship type




**While more fatalities occurred on board container ships (27%) and general cargo ships (27%) across the period, a significant decrease was noted in 2016 (-52%). The number of fatalities was very high on board ro-ro cargo ships in 2015, due to the sinking of El Faro on 02/10/2015 with 33 victims.**

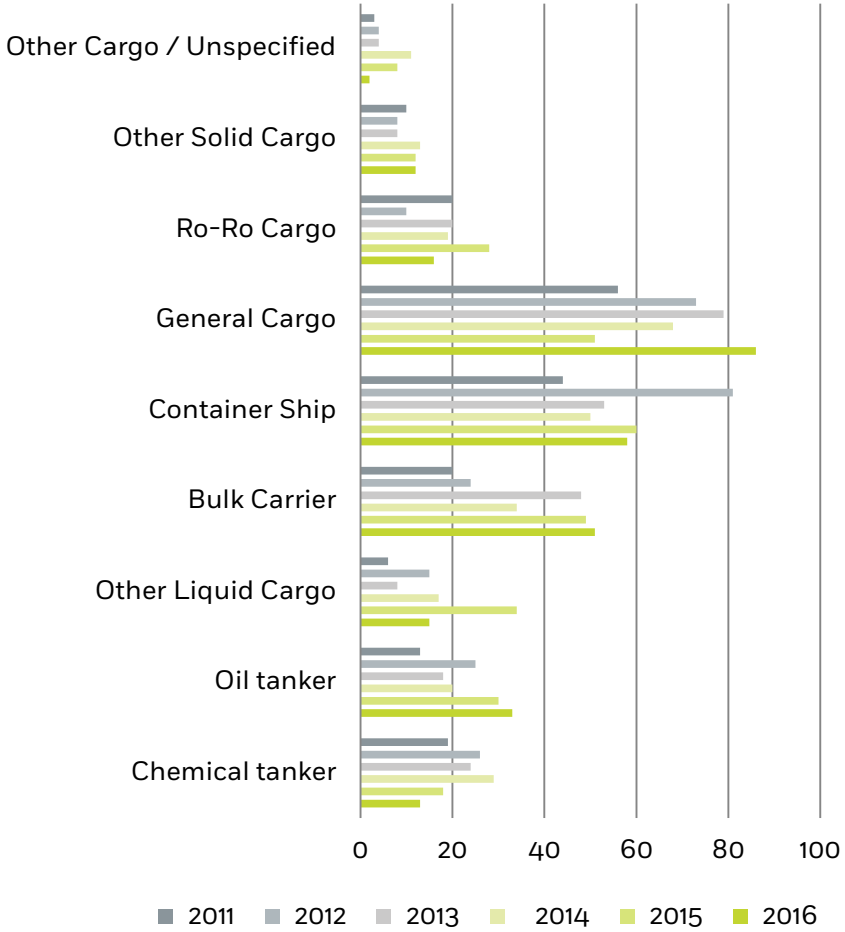
### 3.5.2.2 INJURIES

Figure 70: Number of injuries




**The number of injuries has been stable with an average number of 240 per year among the crew category.**

Figure 71: Distribution of injuries per cargo ship type




**While 27% of injuries happened on board general cargo ships, container ships also accounted for 22%.**

CHAPTER 4

# FISHING VESSELS


## FIGURES FOR 2016

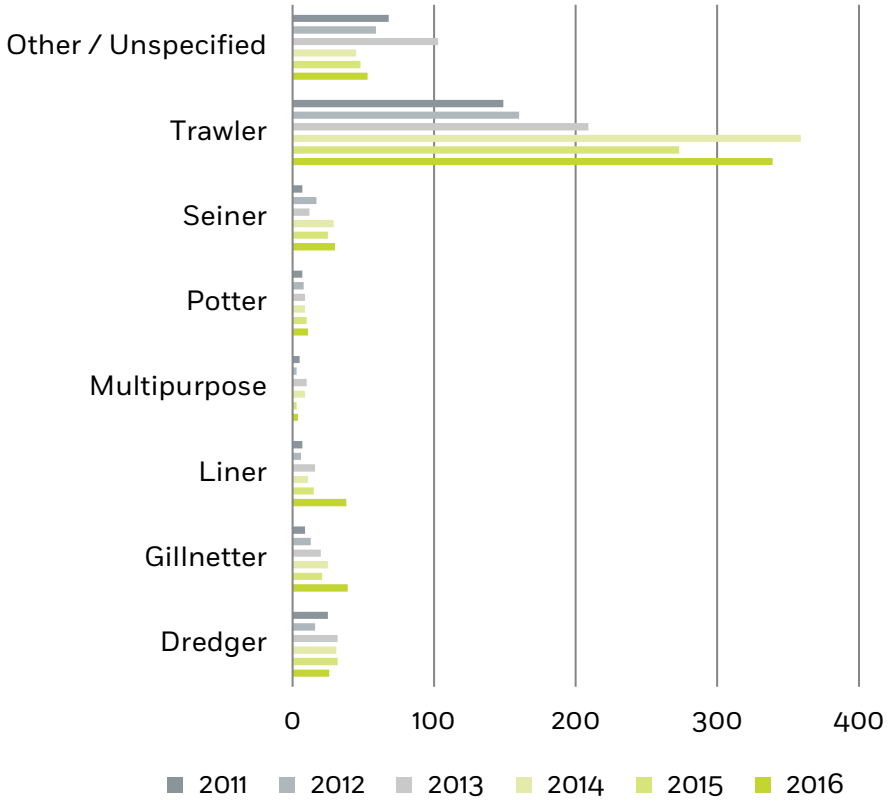
| 525 | 55 | 30 | 184 | 14 | 540 | 43 |
|---|---|---|---|---|---|---|
| CASUALTIES & INCIDENTS | FATALITIES | VERY SERIOUS CASUALTIES | PERSONS INJURED | SHIPS LOST | SHIPS INVOLVED | INVESTIGATIONS LAUNCHED |

Grounding, SAINT-CHRISTOPHE 1 – SAGITTAIRE, 1 vessel lost, 10/03/2016

The Directive only applies to marine casualties and incidents involving fishing vessels with a length of more than 15 metres. Fishing vessels of less than 15 metres fall within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive.

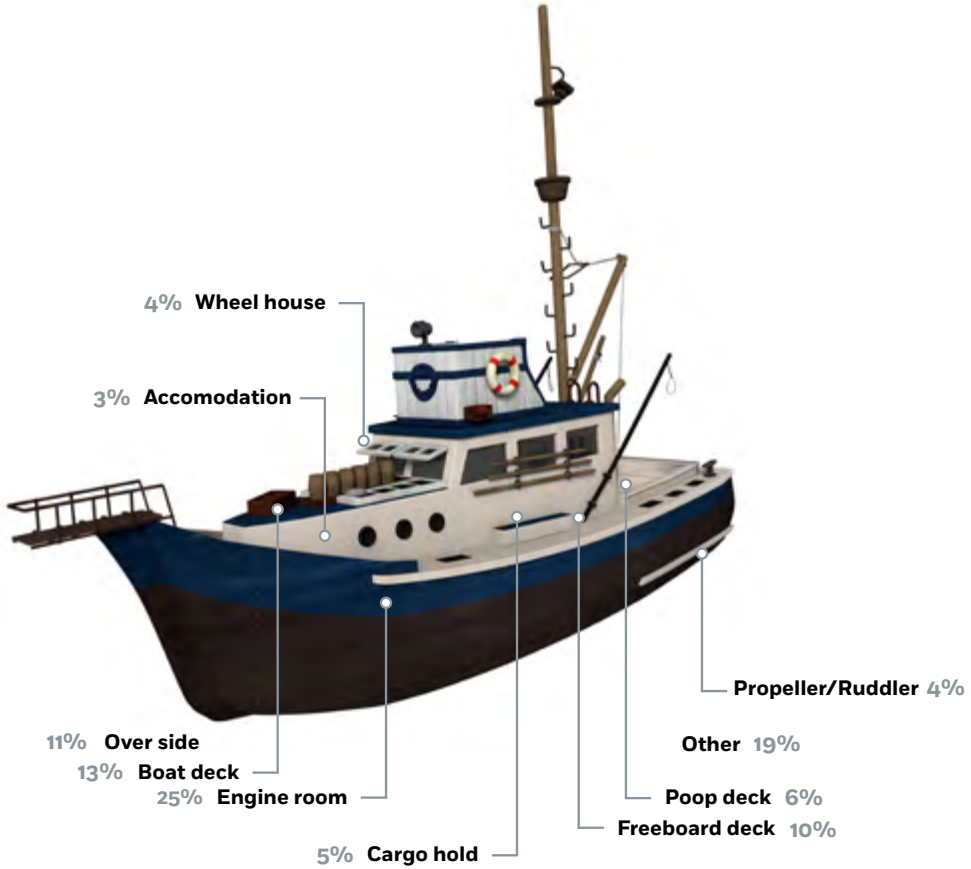
## 4.1 DETAILED DISTRIBUTION

Figure 72: Distribution by fishing vessel type



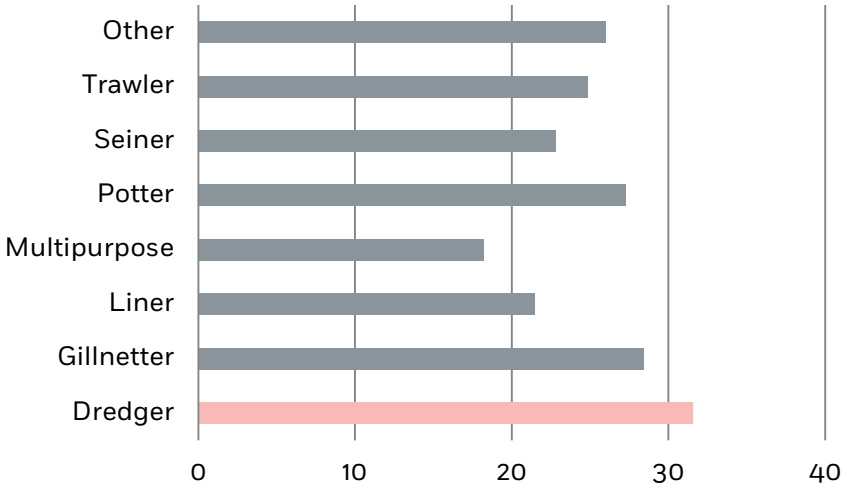

**Among fishing vessels involved, the most specified subcategory was trawlers (61%), followed by dredgers (11% cases) and gillnetters (5%).**

Figure 73: Main places of casualties involving fishing vessels 2011-2016



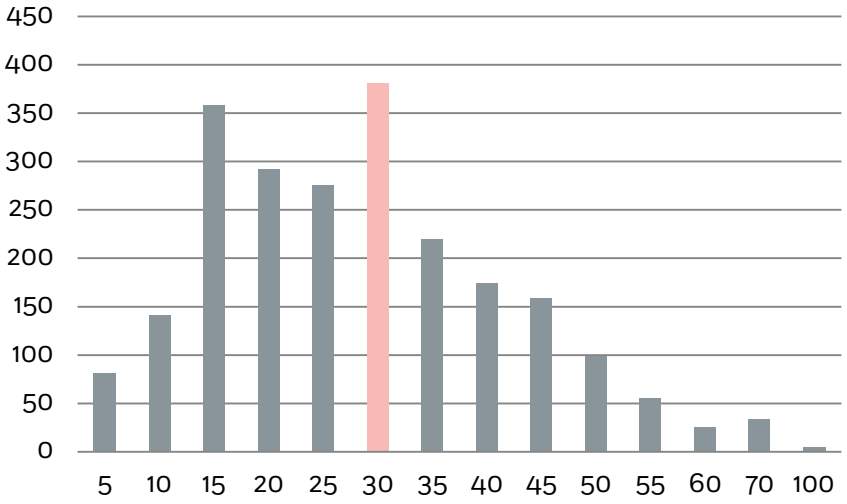

**Places were specified in 2185 cases. The most quoted location of casualties was the Engine Room (537 cases), followed by the over side (236 cases).**

Figure 74: Average age by type of fishing vessels involved 2011-2016



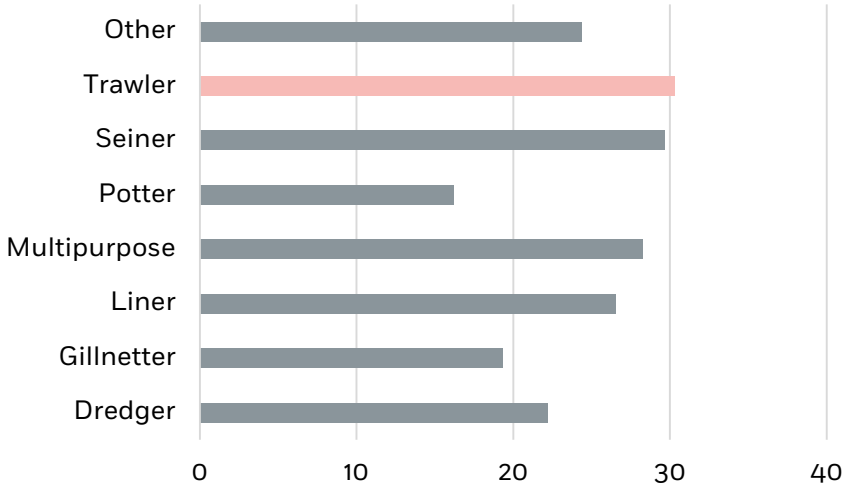

**The youngest ship category is multipurpose fishing vessel (18.3y) while the oldest is dredgers (31.6y).**

Figure 75: Age distribution of involved fishing vessels 2011-2016



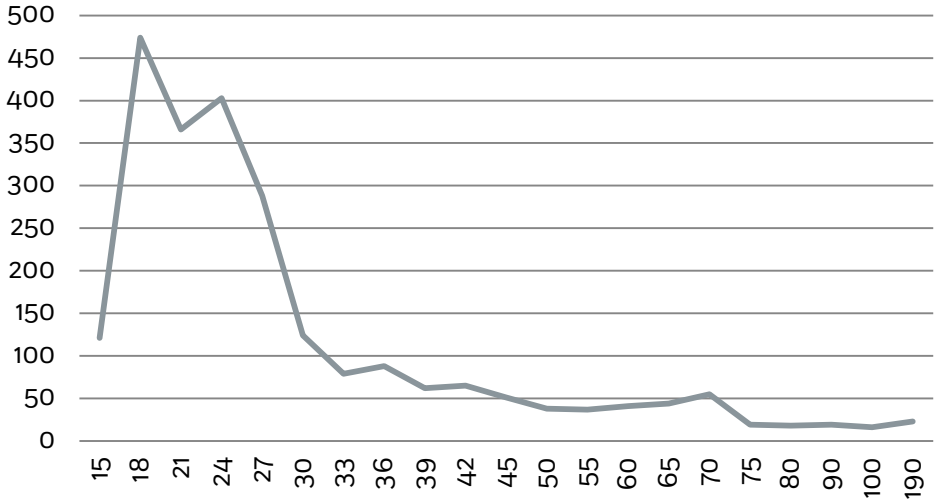

**The average age of fishing vessels involved in casualties and incidents was 25.3 years over the period 2011-2016.**

Figure 76: Average length of fishing vessels involved by main category 2011-2016




**All types of fishing vessels had an average length between 15 and 30m.**

Figure 77: Length distribution of fishing vessels involved 2011-2016

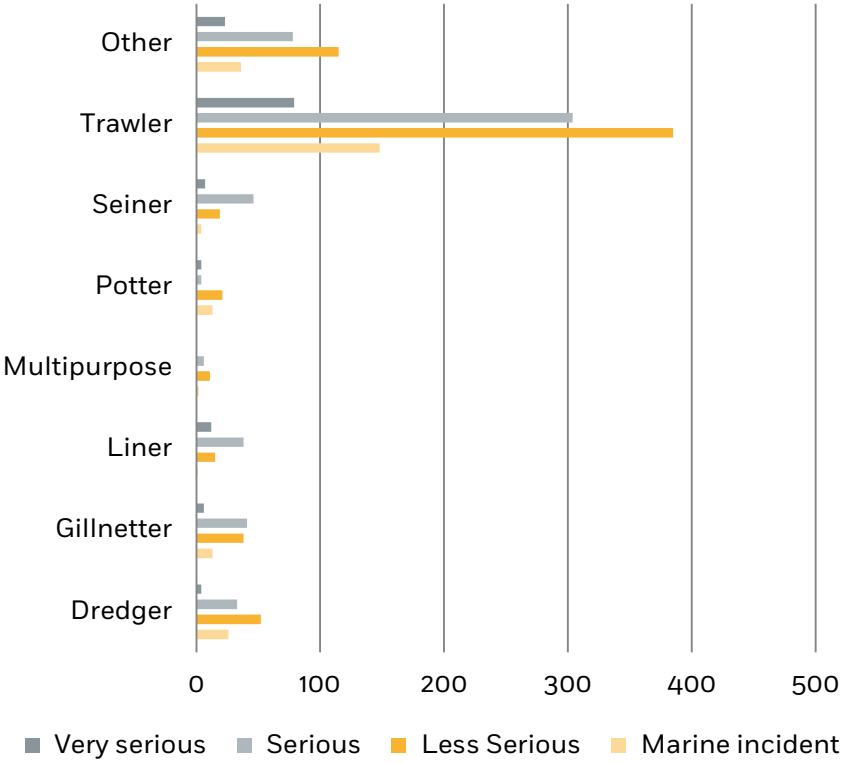



**The average length of fishing vessels involved was 28m. The vast majority of fishing vessels belonged to the segment 18-24m.**

## 4.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

### 4.2.1 CASUALTY WITH A SHIP

Figure 78: Distribution of severities per fishing vessel type 2011-2016

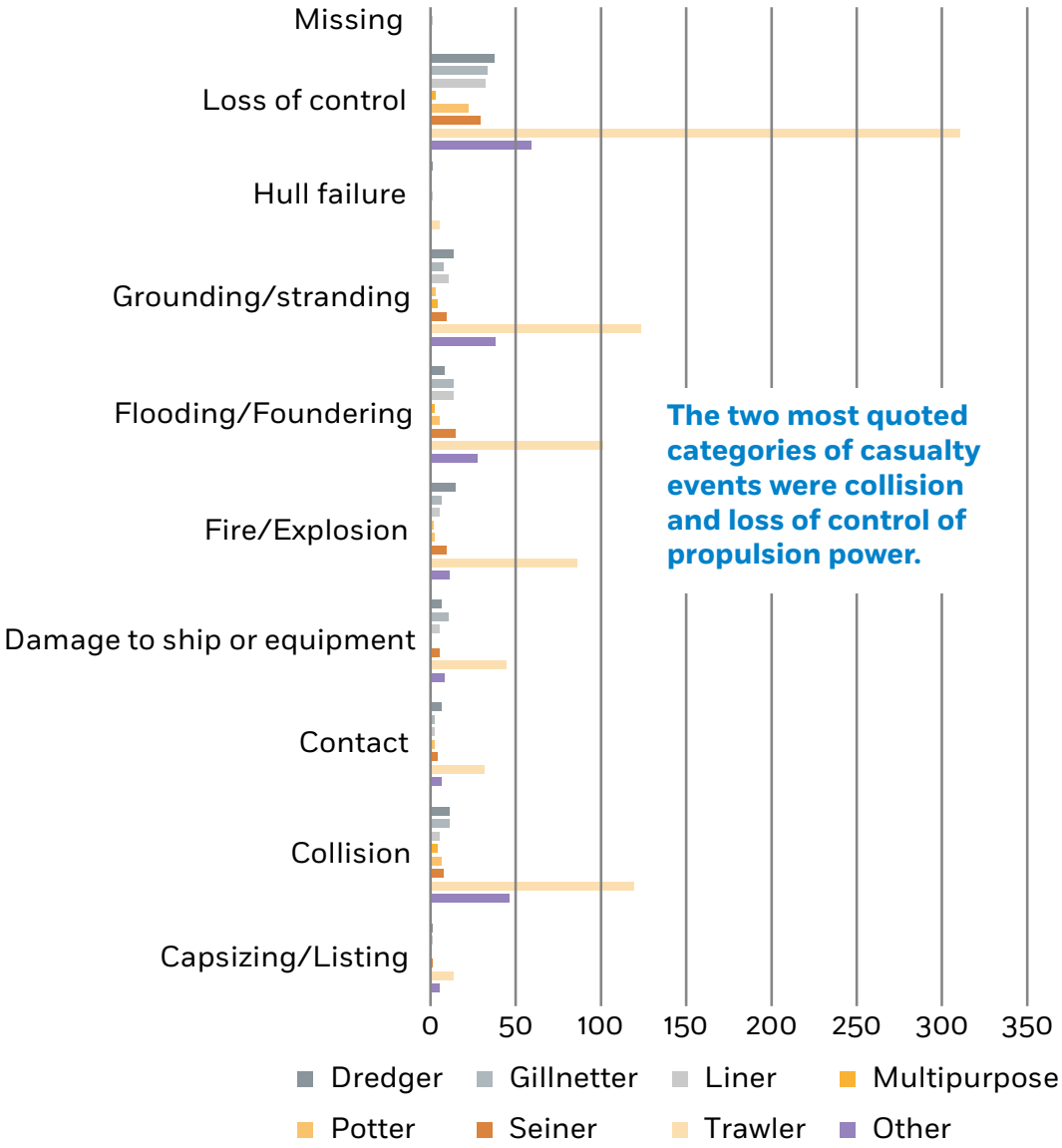



**Amongst all fishing vessels, 58% of the casualties with a ship involved a trawler.**

**The rate of very serious casualties with a ship on board fishing vessels is much higher (8.5%) than the general average for all ship types (2.4%).**

**Amongst all fishing vessels, 58.5% of the very serious casualties involved trawlers. Within the trawler category, 8.6% of the accidents were very serious.**

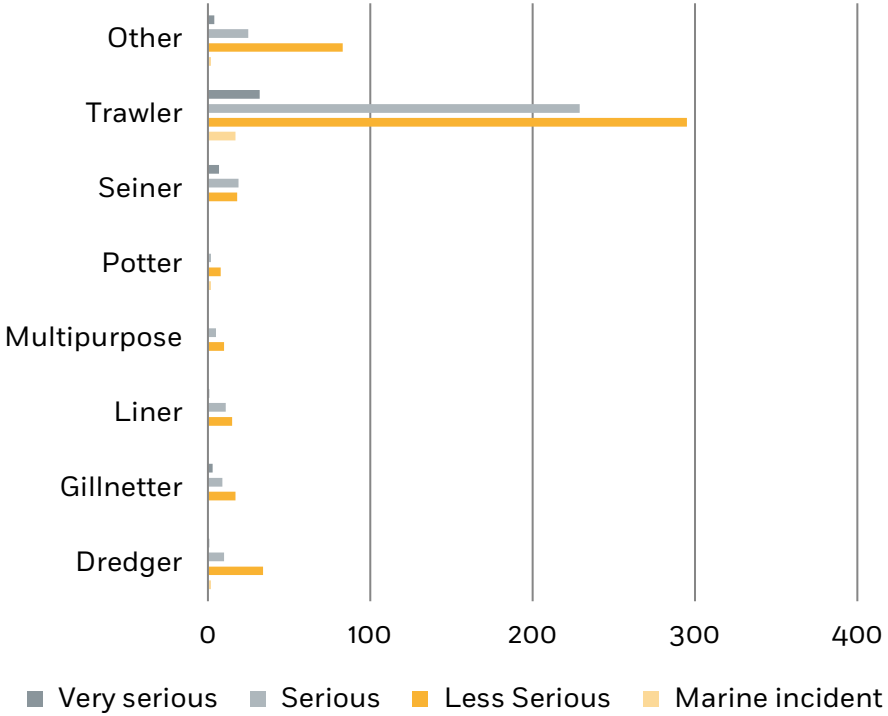
Figure 79: Distribution of casualty events per fishing vessel type 2011-2016




**The two most quoted categories of casualty events were collision and loss of control of propulsion power.**

## 4.2.2 OCCUPATIONAL ACCIDENTS

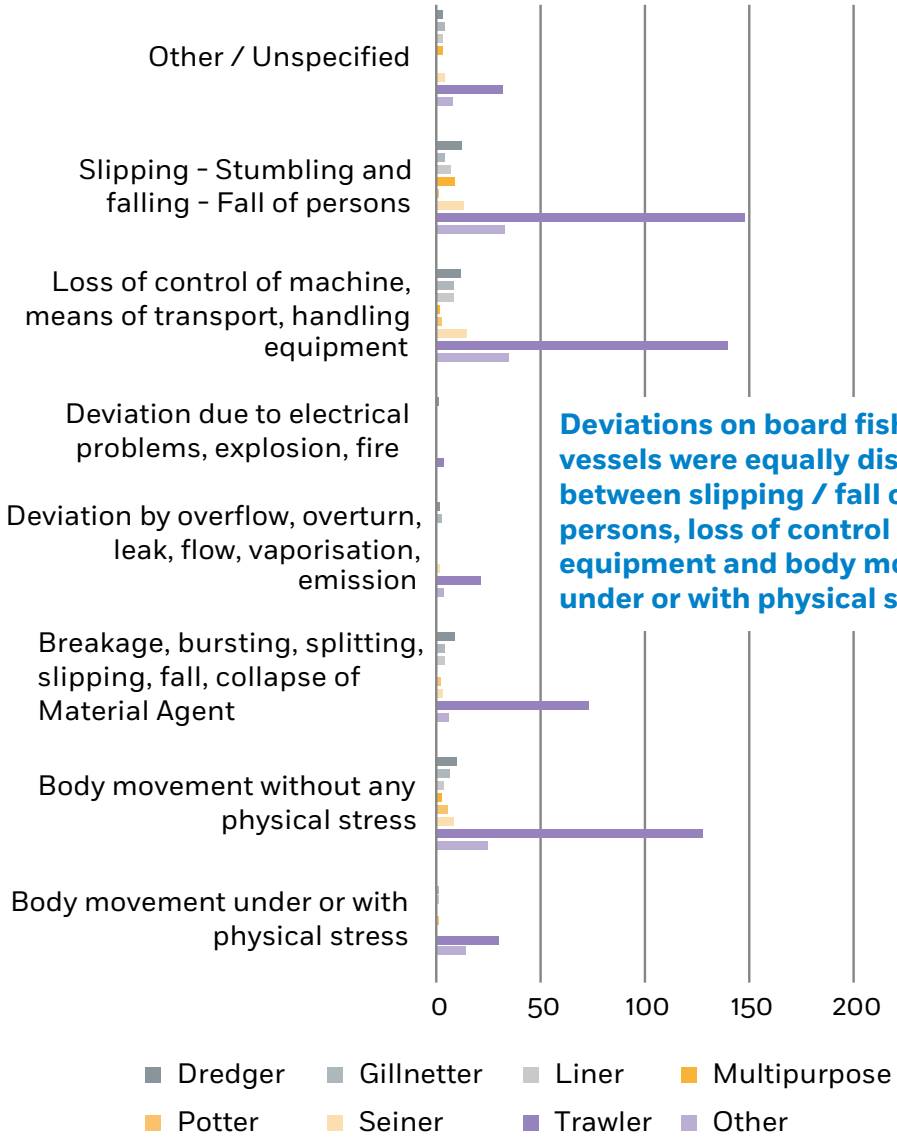
Figure 80: Severity of occupational accidents per fishing vessel type 2011-2016




**66% of the occupational accidents took place on board trawlers. Within this category, 6% of the events were very serious.**

**The rate of very serious occupational accidents related to fishing vessels is 5.5%: slightly above the general average of 4.4% for all ship types.**

Figure 81: Distribution of deviations per fishing vessel type 2011-2016



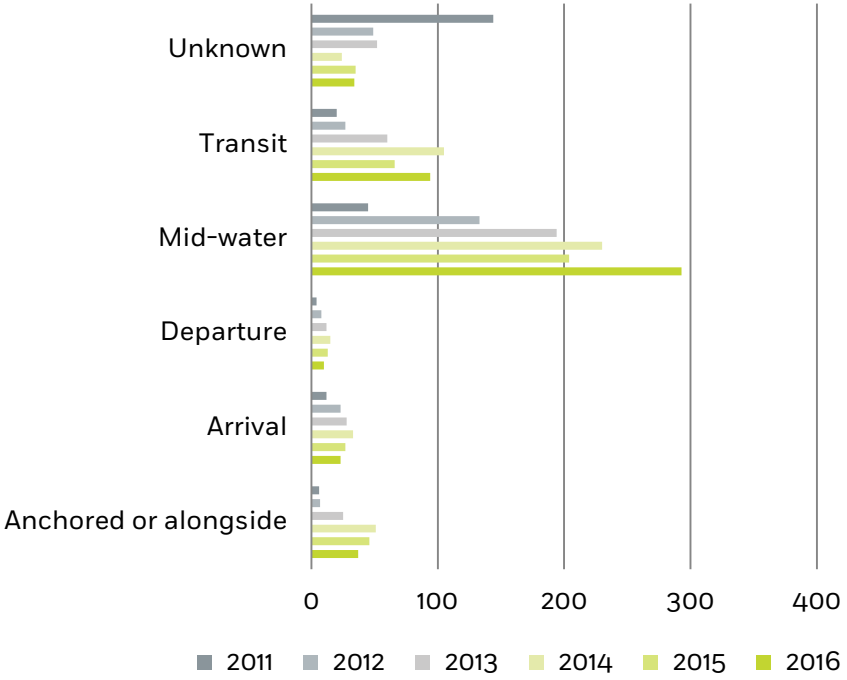

**Deviations on board fishing vessels were equally distributed between slipping / fall of persons, loss of control of an equipment and body movement under or with physical stress.**

## 4.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

**This section provides information about the location of the fishing vessels when marine casualties or incidents occurred.**

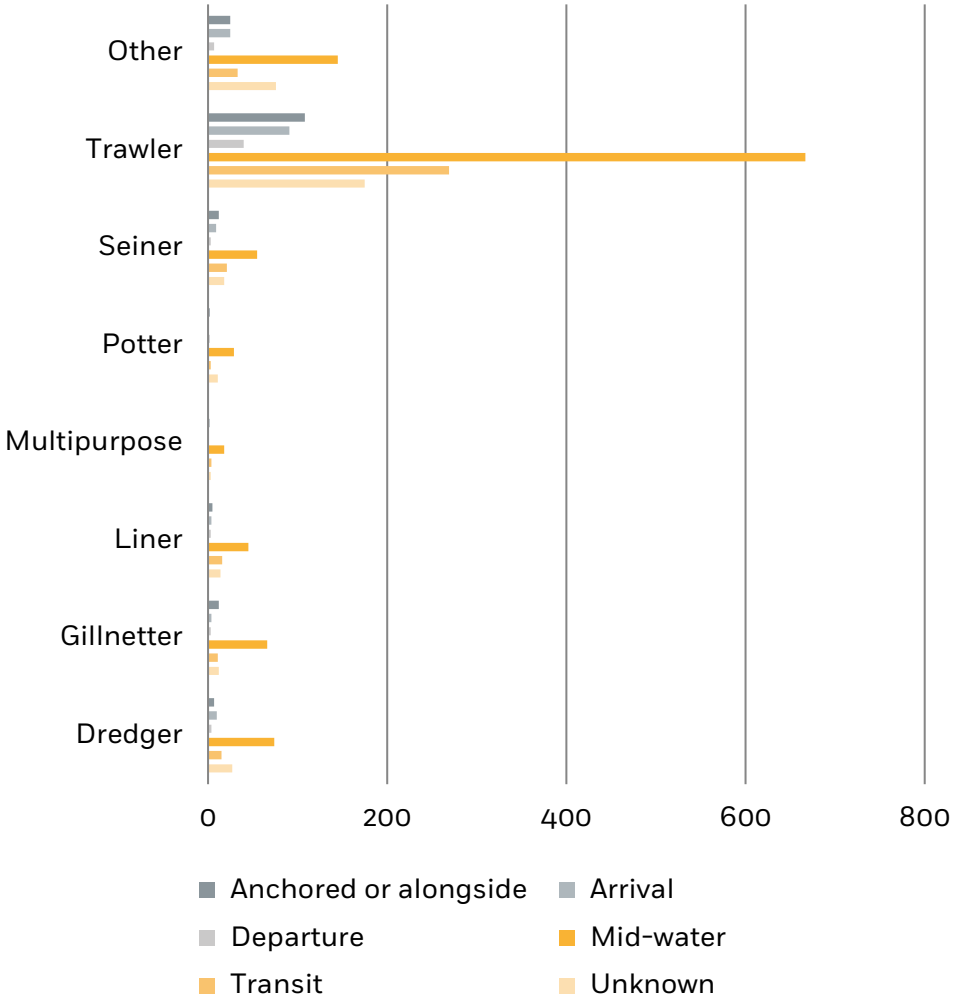
### 4.3.1 VOYAGE SEGMENTS

Figure 82: Distribution by voyage segment




**50% of casualties to fishing vessels occurred during the mid-water phase of the voyage, when fishing operations take place.**

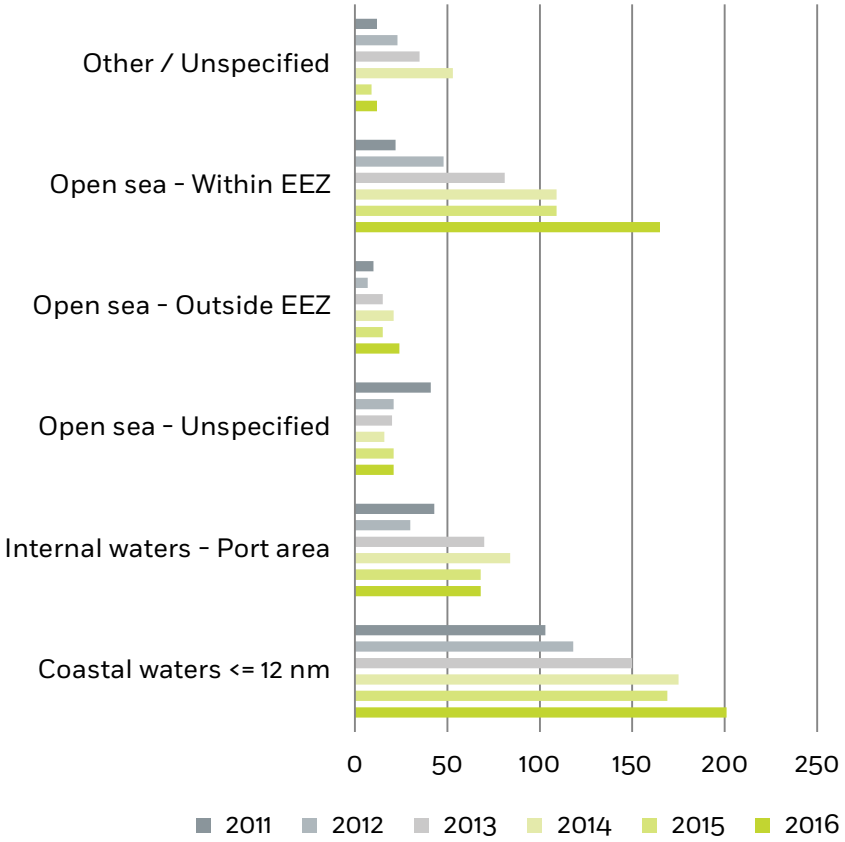
Figure 83: Distribution by voyage segment per fishing vessel type 2011-2016




**A predominance of accidents for all types of fishing vessels during the mid-water part of the voyage is notable.**

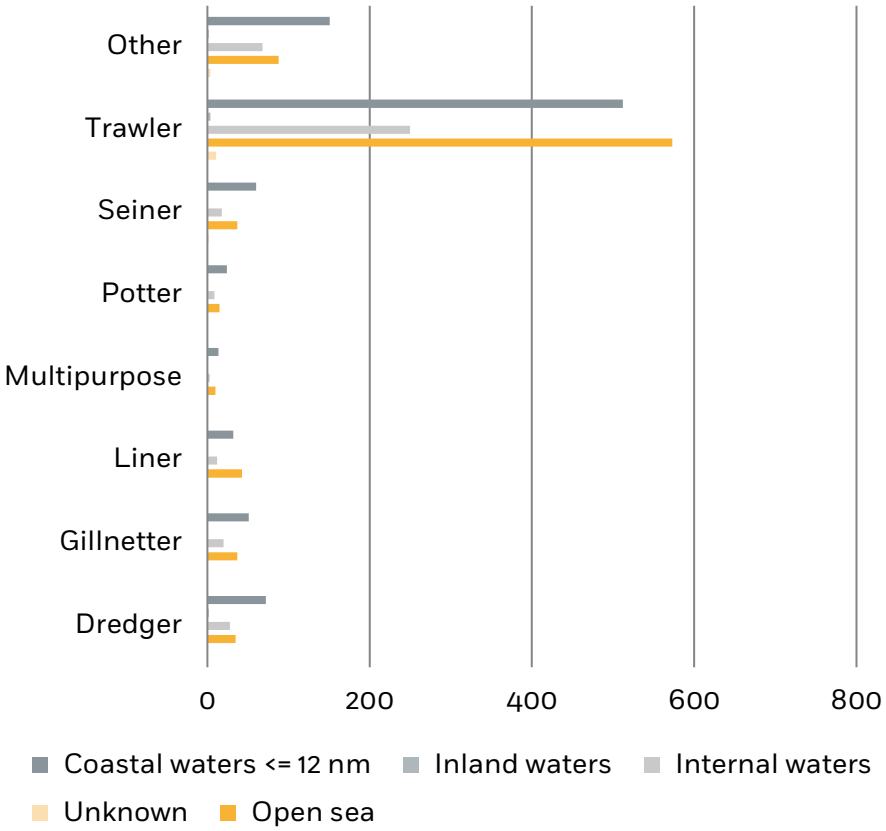
## 4.3.2 LOCATION

Figure 84: Distribution by location of marine casualties and incidents




**42% of the casualties took place in coastal waters, followed by 24% in open sea within the EEZ.**

Figure 85: Distribution by location of the marine casualties and incidents per fishing vessel type 2011-2016




**For all fishing vessel types, accidents mostly took place in coastal waters or open sea.**

## 4.3.3 REGIONAL DISTRIBUTION

**Figure 86: Regional distribution of marine casualties and incidents 2011-2016**

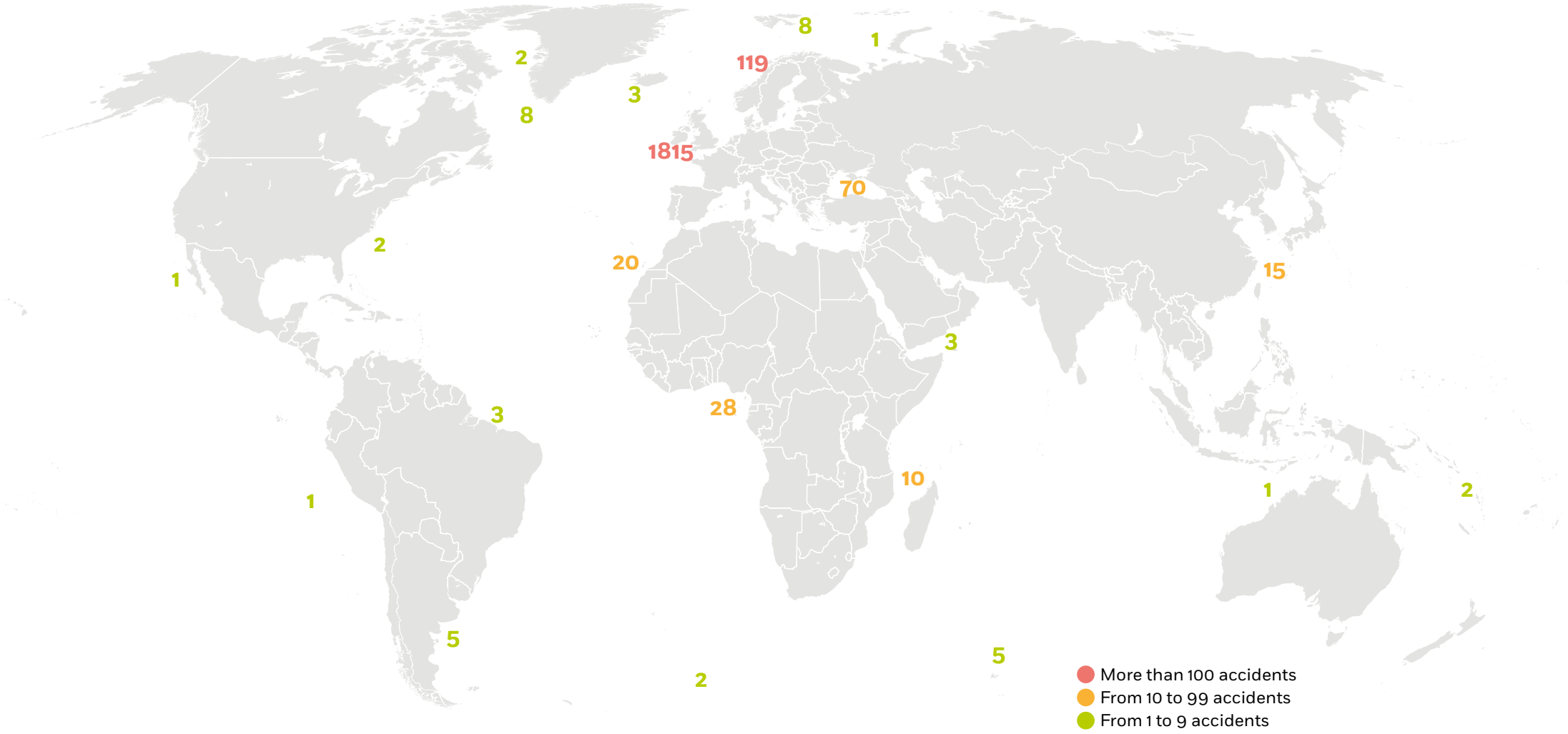
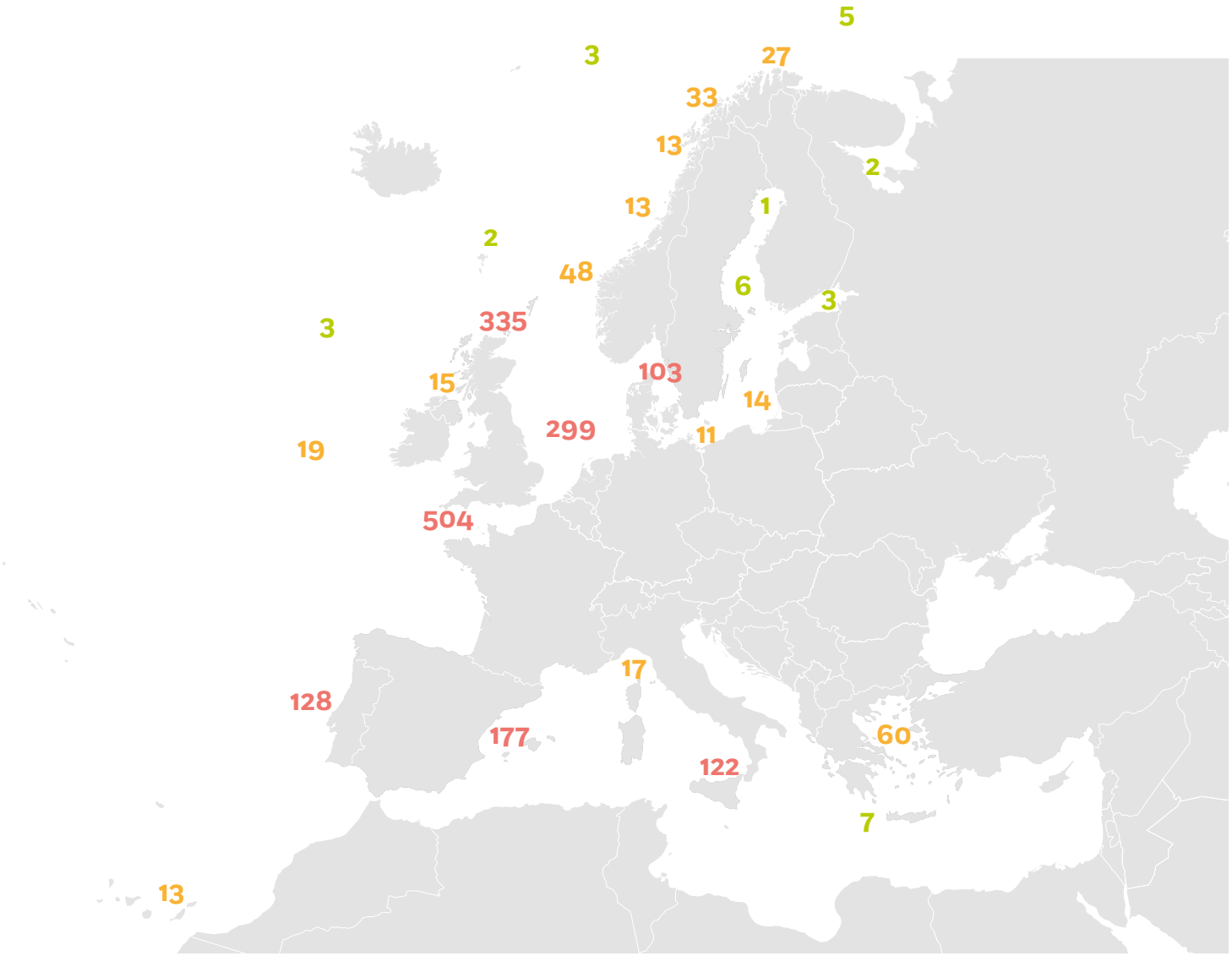
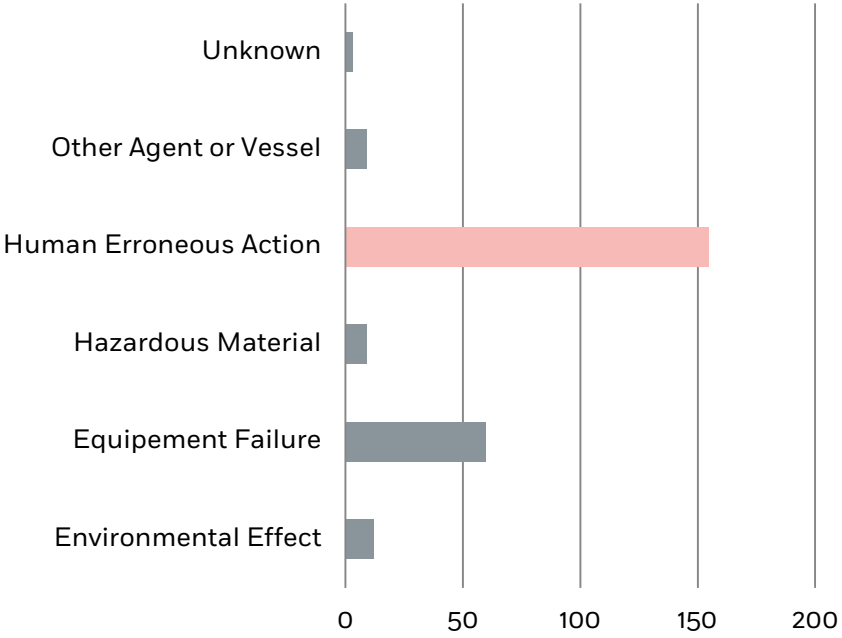


Figure 87: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2016



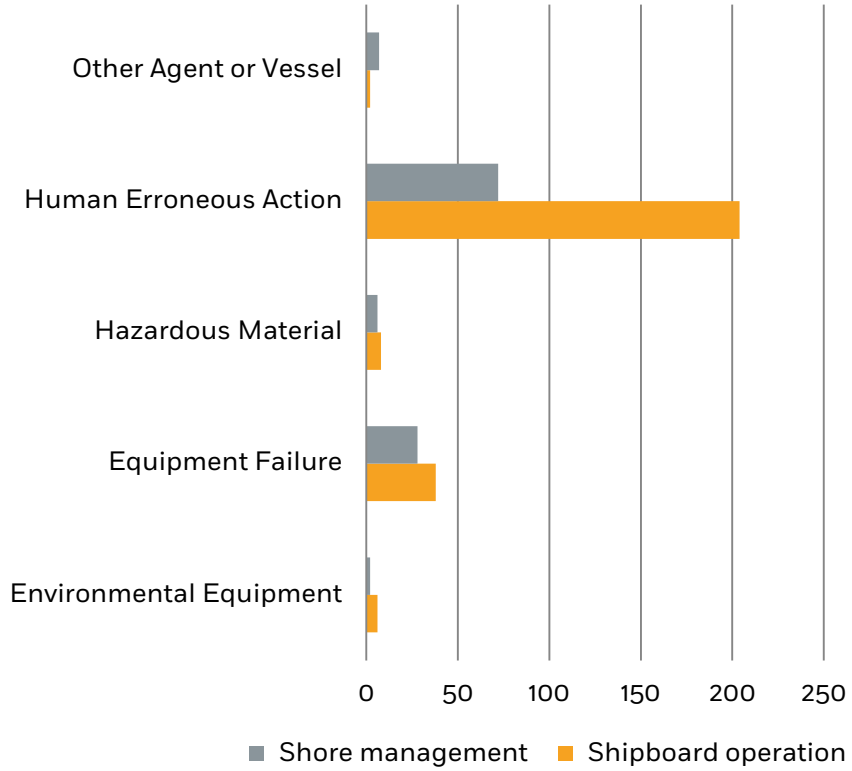
## 4.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 88: Accidental events 2011-2016



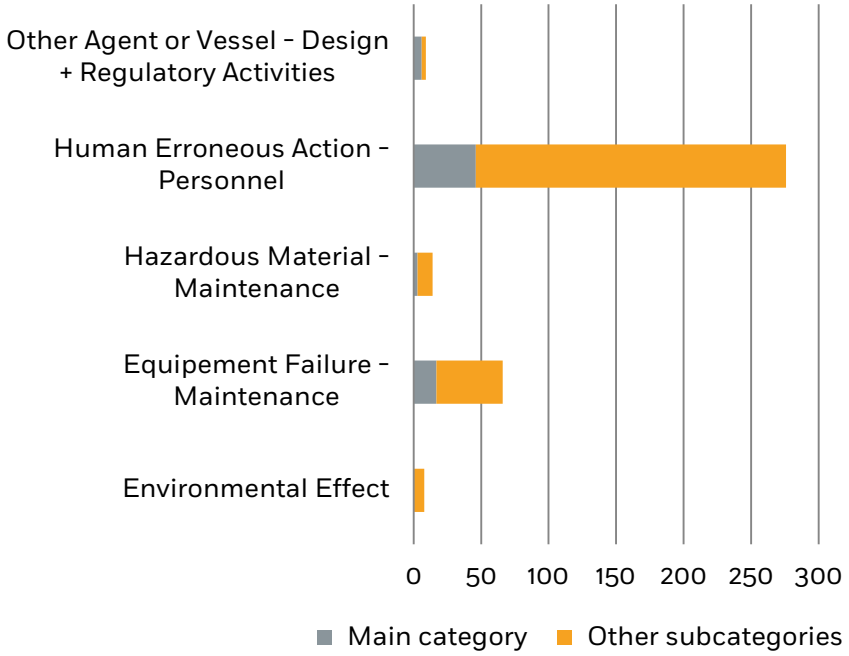

**From a total of 248 accidental events analysed during the investigations, 63% were attributed to a Human Erroneous Action.**

Figure 89: Relationship between Accidental Events and the main Contributing Factors 2011-2016




**On board fishing vessels, shipboard operations were the most quoted contributing factor with 69% of the total.**

Figure 90: Groups of Contributing Factors 2011-2016

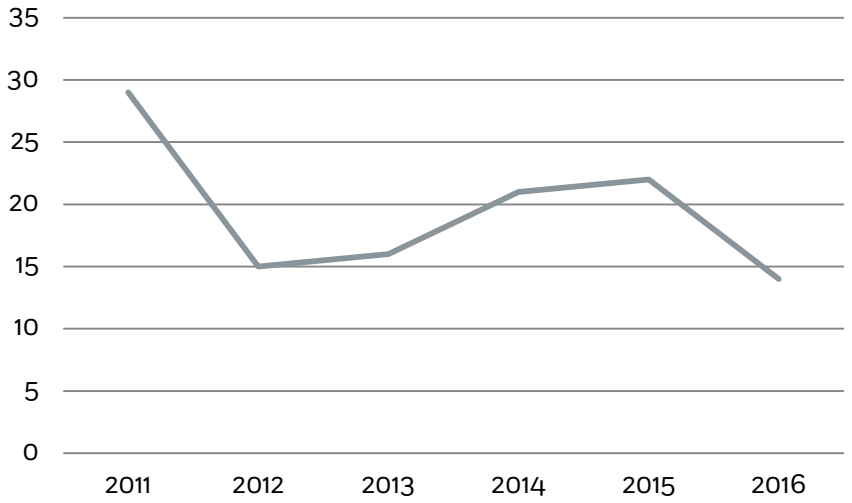



**This figure provides the contributing factor that was most quoted per category of accidental event. “Maintenance” was quoted as the most significant contributing factor when the accidental event was Equipment Failure.**

## 4.5 CONSEQUENCES

### 4.5.1 CONSEQUENCES TO SHIPS

Figure 91: Fishing vessels lost



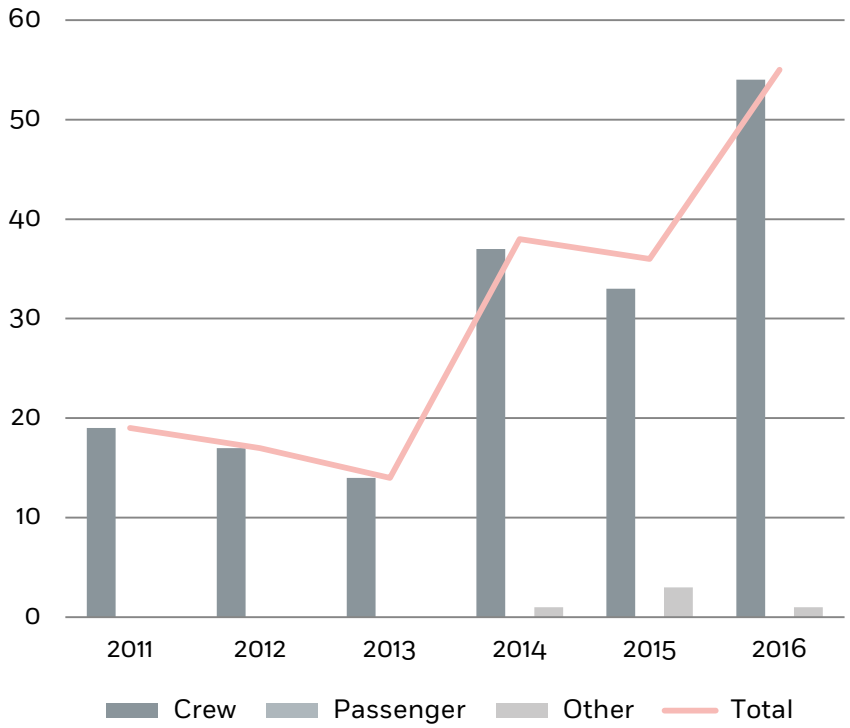

**After 4 years of increase, the number of fishing vessels lost decreased in 2016.**

**Among them, 56%were trawlers.**

## 4.5.2 CONSEQUENCES TO PERSONS

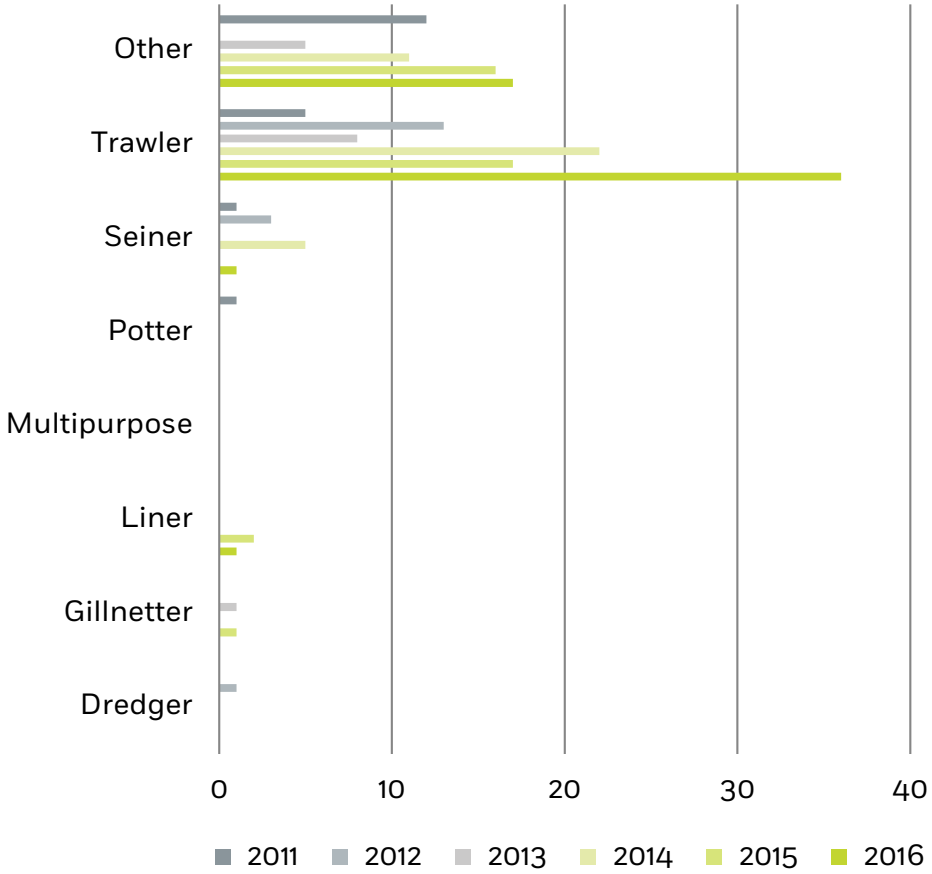
### 4 5.2.1 FATALITIES

Figure 92: Number of fatalities




**Over the period 2011-2016, the number of fatalities has increased and 55 fishermen lost their lives in 2016.**

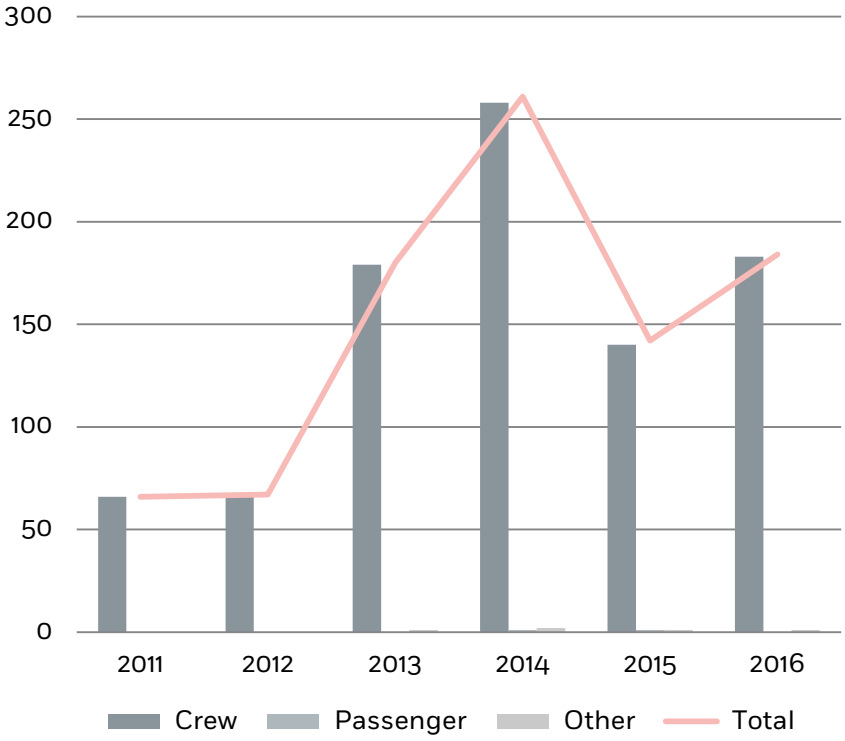
Figure 93: Distribution of fatalities per fishing vessel type




**56% of the fatalities occurred on board trawlers.**

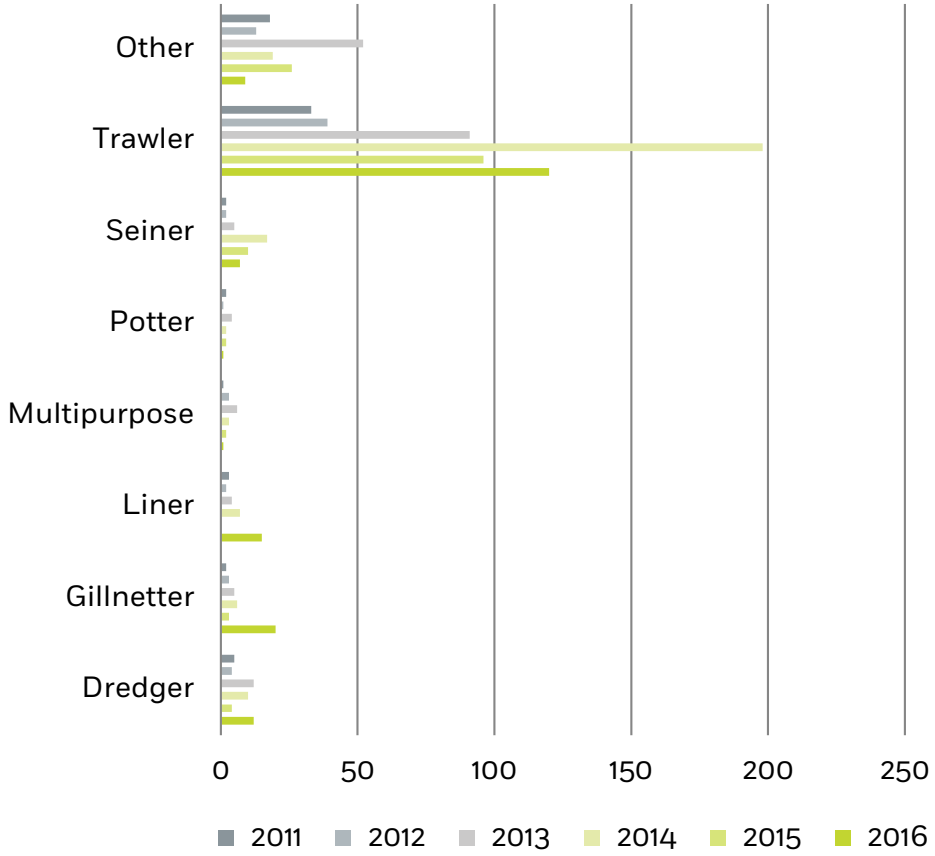
### 4.5.2.2 INJURIES

Figure 94: Number of injuries




**Over the period 2011-2016, the annual average number of people injured is 150.**

Figure 95: Distribution of injuries per fishing vessel type



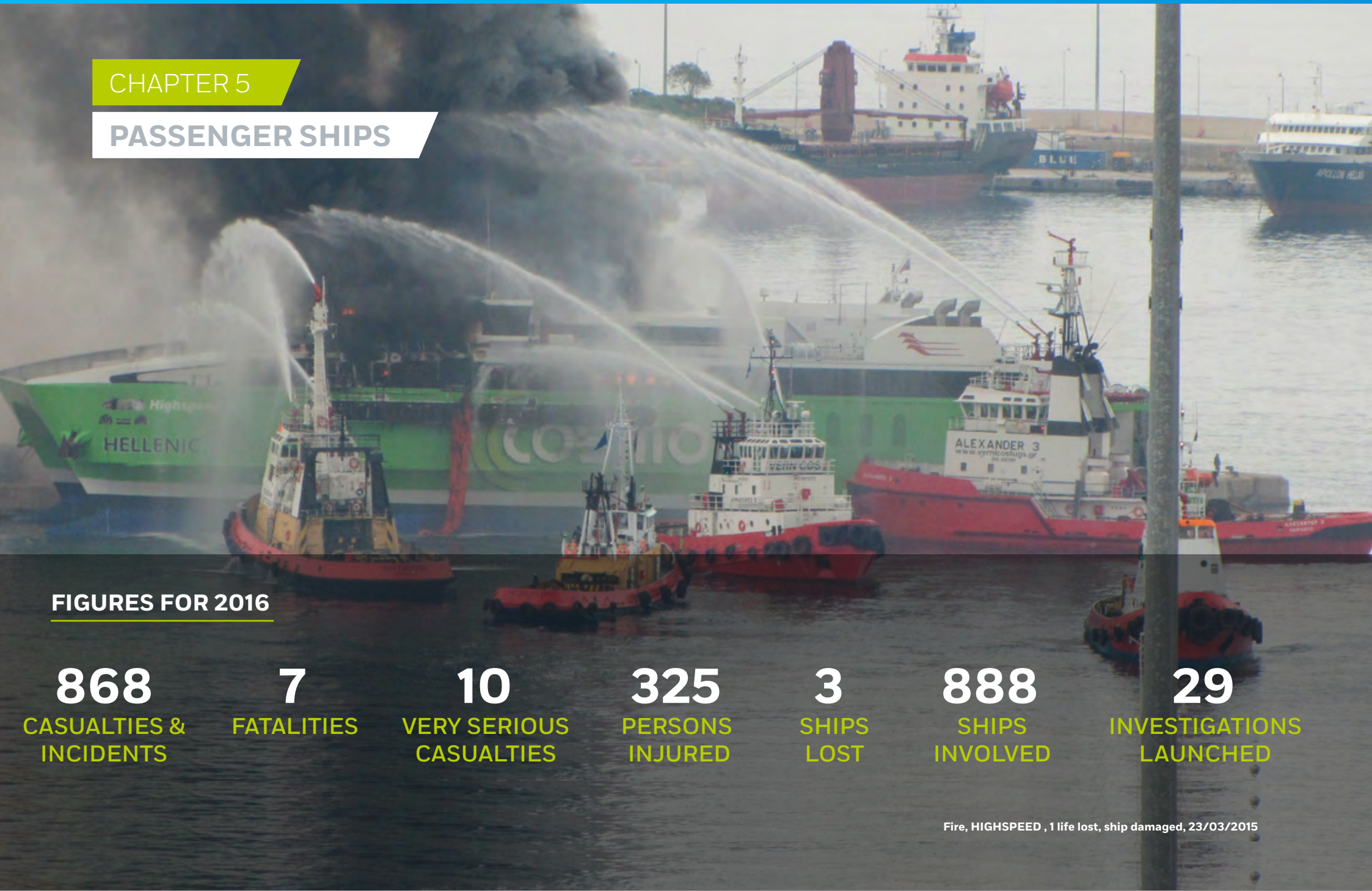

**64% of the injuries took place on-board trawlers.**

CHAPTER 5

# PASSENGER SHIPS

## FIGURES FOR 2016

| 868 | 7 | 10 | 325 | 3 | 888 | 29 |
|---|---|---|---|---|---|---|
| CASUALTIES & INCIDENTS | FATALITIES | VERY SERIOUS CASUALTIES | PERSONS INJURED | SHIPS LOST | SHIPS INVOLVED | INVESTIGATIONS LAUNCHED |




**Fire, HIGHSPEED , 1 life lost, ship damaged, 23/03/2015**

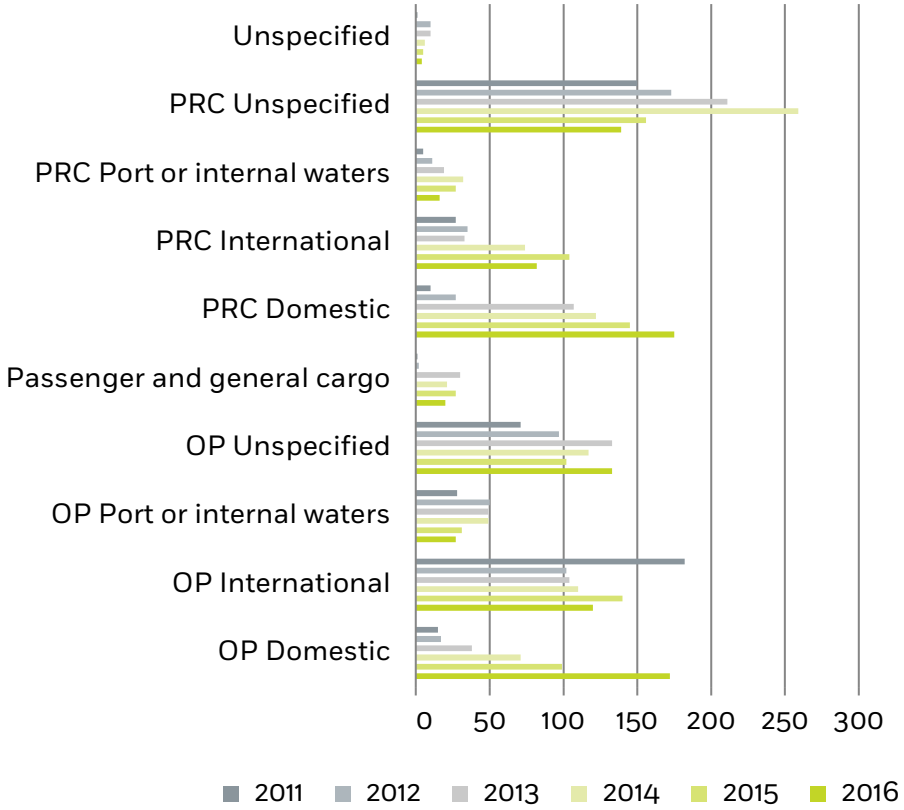
The Directive does not apply to marine casualties and incidents involving only inland waterway passenger vessels operating in inland waterways. Such ships are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive.

## 5.1 DETAILED DISTRIBUTION

**Among the Passenger ships involved, the most quoted subcategory was ships carrying only Passengers on International voyage (17%), followed by "Passenger and Ro-Ro cargo" ships (also known as "Ferries") during domestic voyages (14%).**

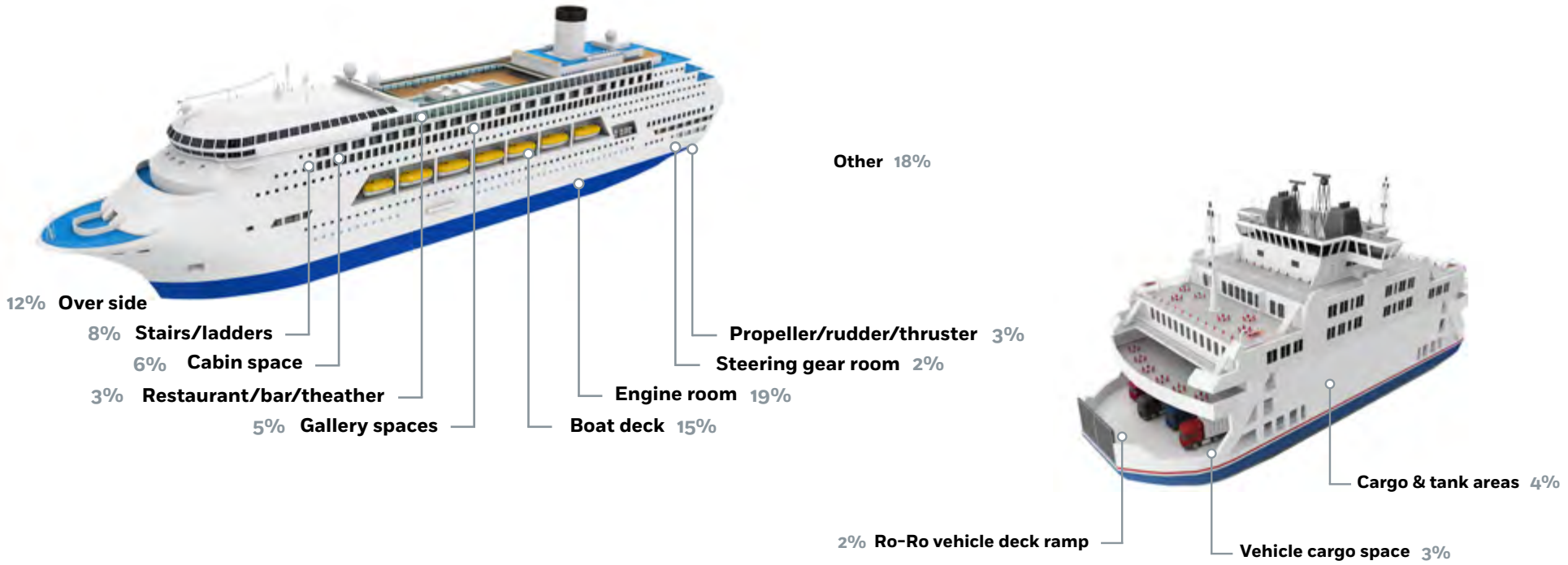
**An increase of casualties related to domestic voyages was noticed in 2016, in particular on ships carrying only passengers (+74%).**

**Figure 96: Distribution of passenger ship types involved**



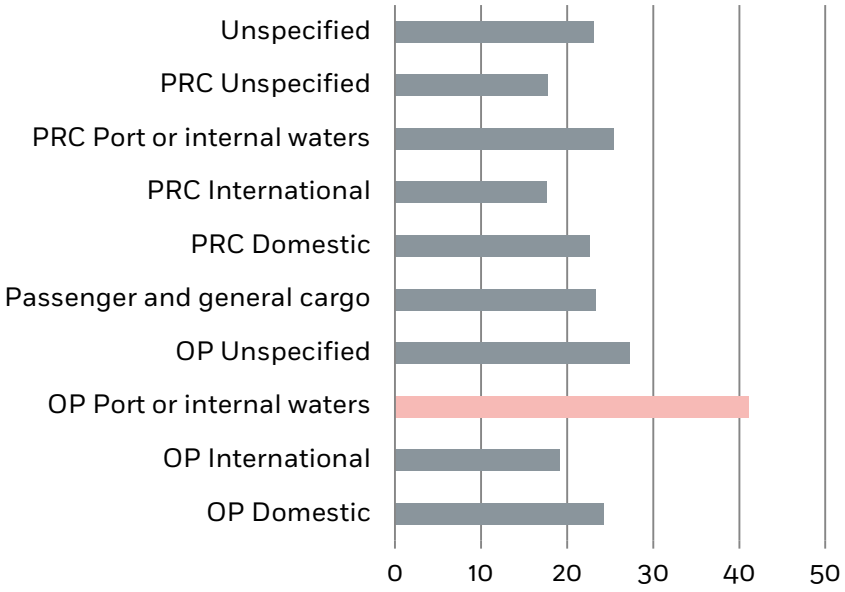

**OP: Only passenger**
**PRC: Passenger and ro-ro cargo**
*(acronyms used throughout chapter)*

Figure 97: Main places of casualties involving passenger ships 2011-2016



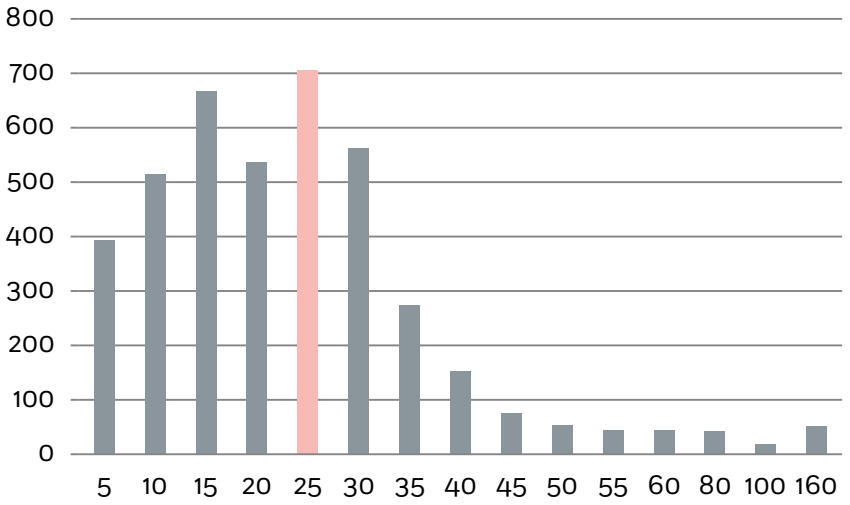

**The place on board was specified in 4071 cases. The most quoted location of accidents was the Engine Room (771 cases), followed by Over Side (475 cases).**

Figure 98: Average age by type of passenger ships involved 2011-2016



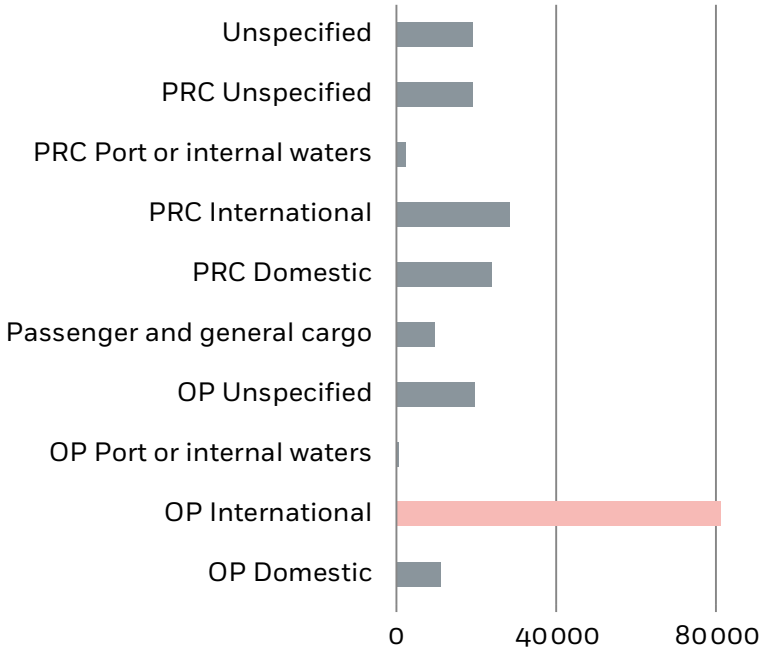

**The youngest ship category is PRC in international voyage (17.6y) while the oldest is OP Port or Internal waters (41.1y).**

Figure 99: Age distribution of passenger ships involved 2011-2016



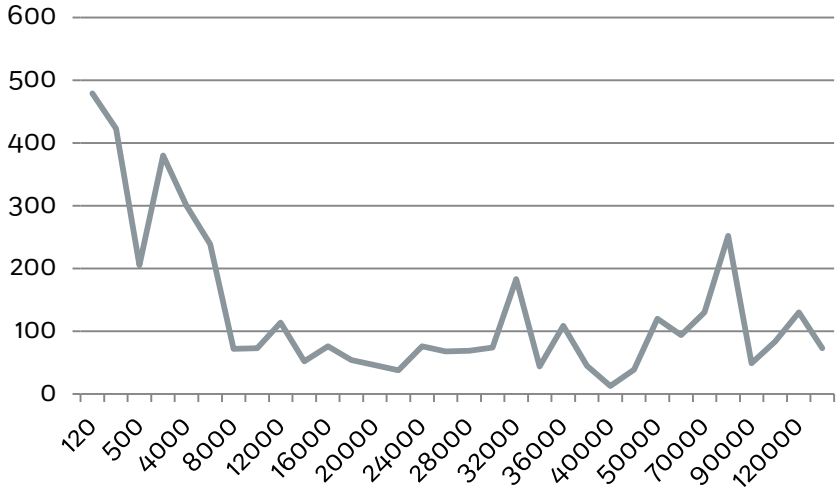

**The average age of passenger ships involved in casualties and incidents was 22.2 years over the period 2011-2016.**

Figure 100: Average GT of passenger ships involved by main category 2011-2016




**Passenger ships operating in port or internal waters had the lowest GT average (1000), whilst passenger ships carrying only passengers represented the highest GT average (81170).**

Figure 101: GT distribution of passenger ships involved 2011-2016

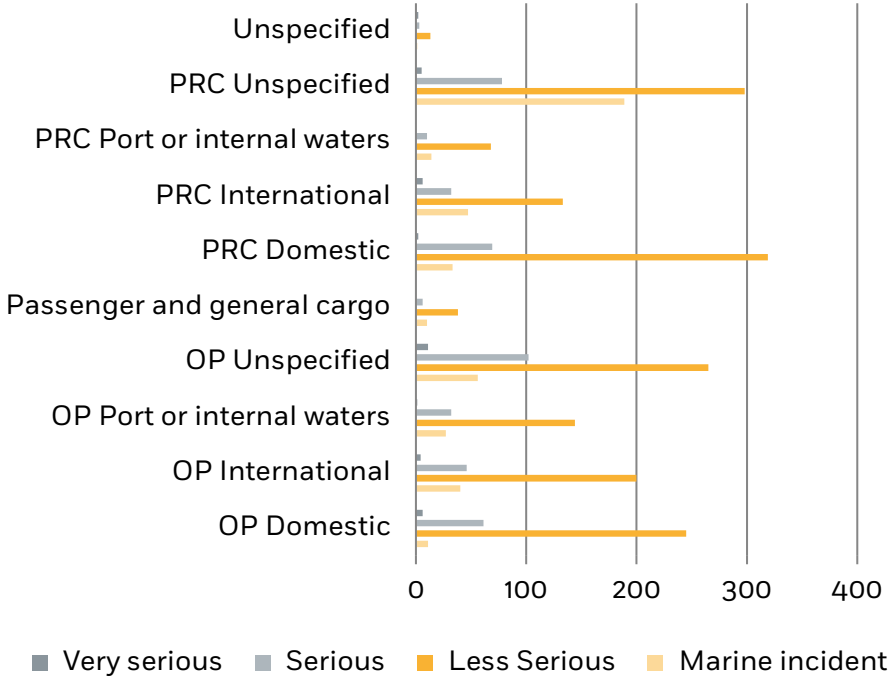



**The average Gross Tonnage of passenger ships involved in marine casualties is 21500. Various categories of passenger ships can be identified in the figure above: lowest GT for port operations, PRC International (ferries) around 32000 and OP international around 80000.**

## 5.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

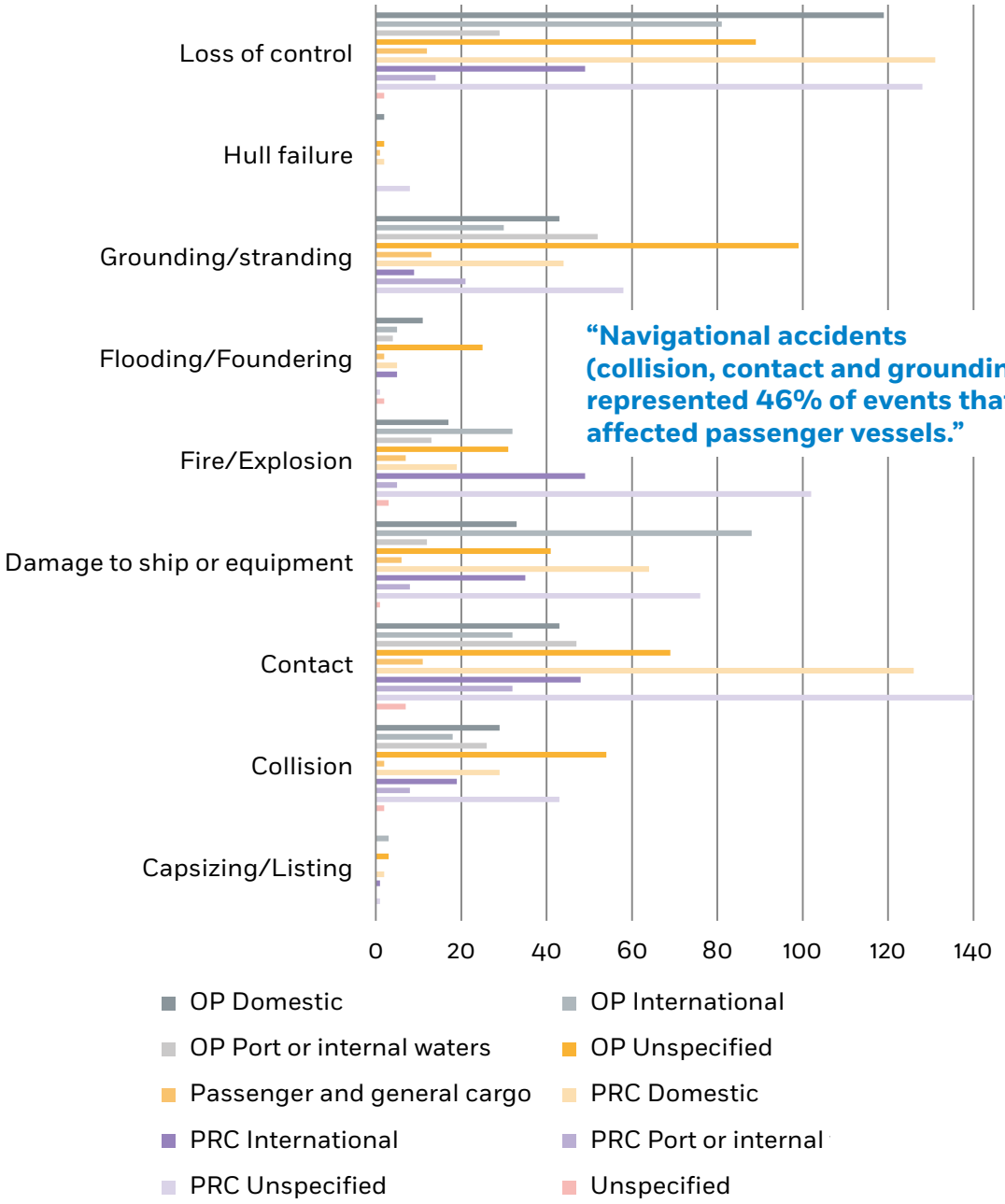
### 5.2.1 CASUALTY WITH A SHIP

Figure 102: Distribution of severities by passenger ship type 2011-2016




**The rate of passenger ships involved in a very serious casualty with a ship remained low (1.3%) in comparison with the general average for all ship types (2.4%).**

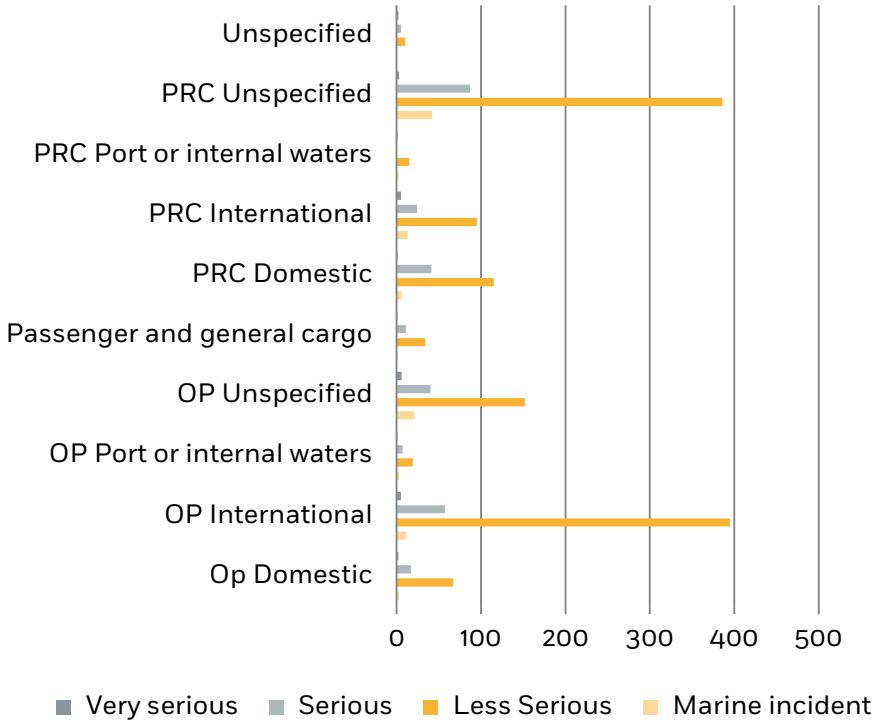
Figure 103: Distribution of casualty events per passenger ship type 2011-2016




**"Navigational accidents (collision, contact and grounding) represented 46% of events that affected passenger vessels."**

## 5.2.2 OCCUPATIONAL ACCIDENTS

**Figure 104: Severity of occupational accidents per passenger ship type 2011-2016**

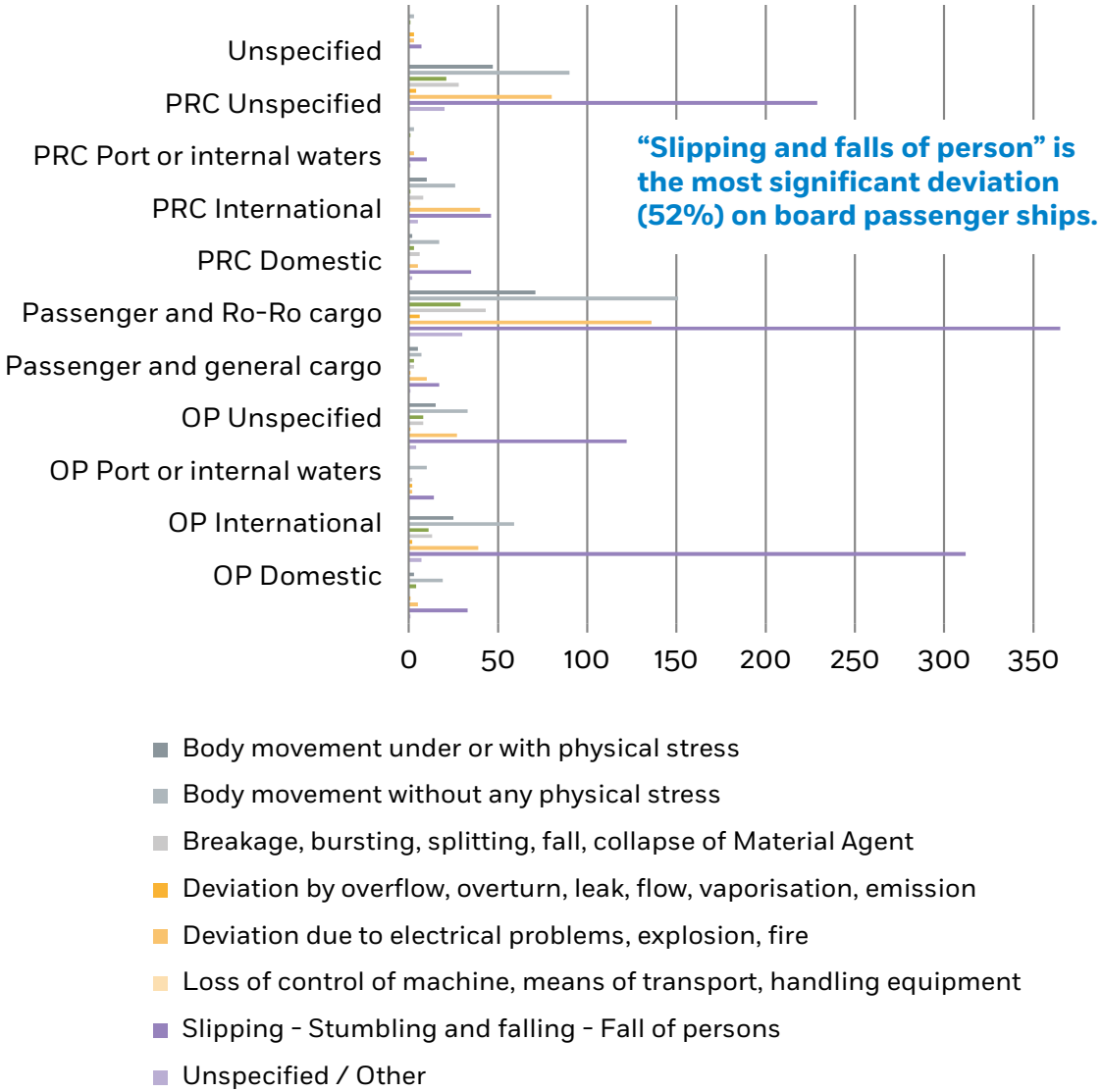



OP: Only passenger
PRC: Passenger and ro-ro cargo

**Occupational accidents happened mainly on board ships carrying only passengers on international voyages or on board ships carrying passengers and roro cargo.**

**The number of very serious occupational accidents is much lower (1.6%) than the general average (4.4%).**

**Figure 105: Distribution of deviations per passenger ship type 2011-2016**



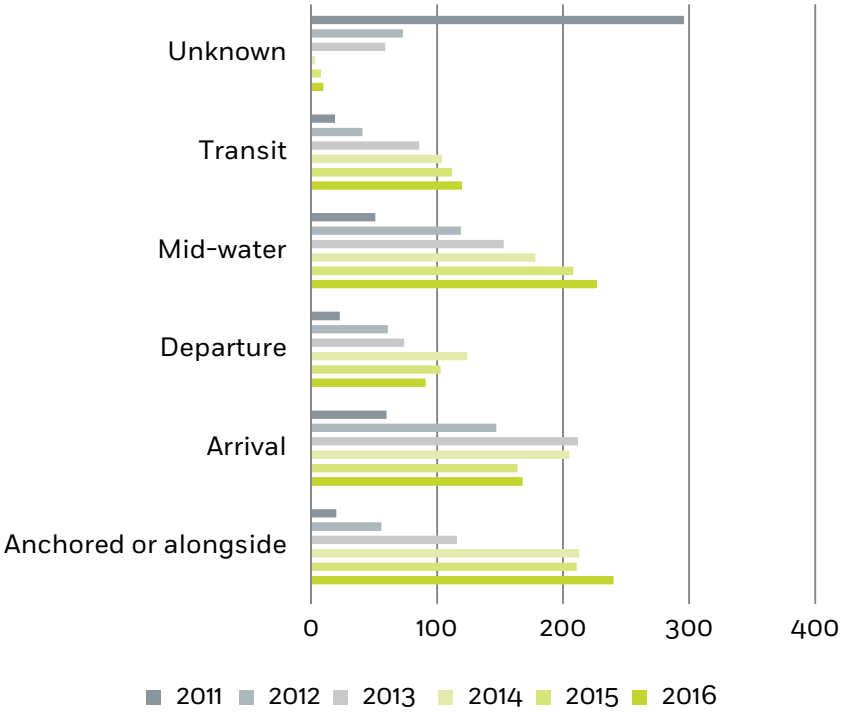

**"Slipping and falls of person" is the most significant deviation (52%) on board passenger ships.**

## 5.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

**This section provides information about the location of the ships when marine casualties or incidents occurred.**

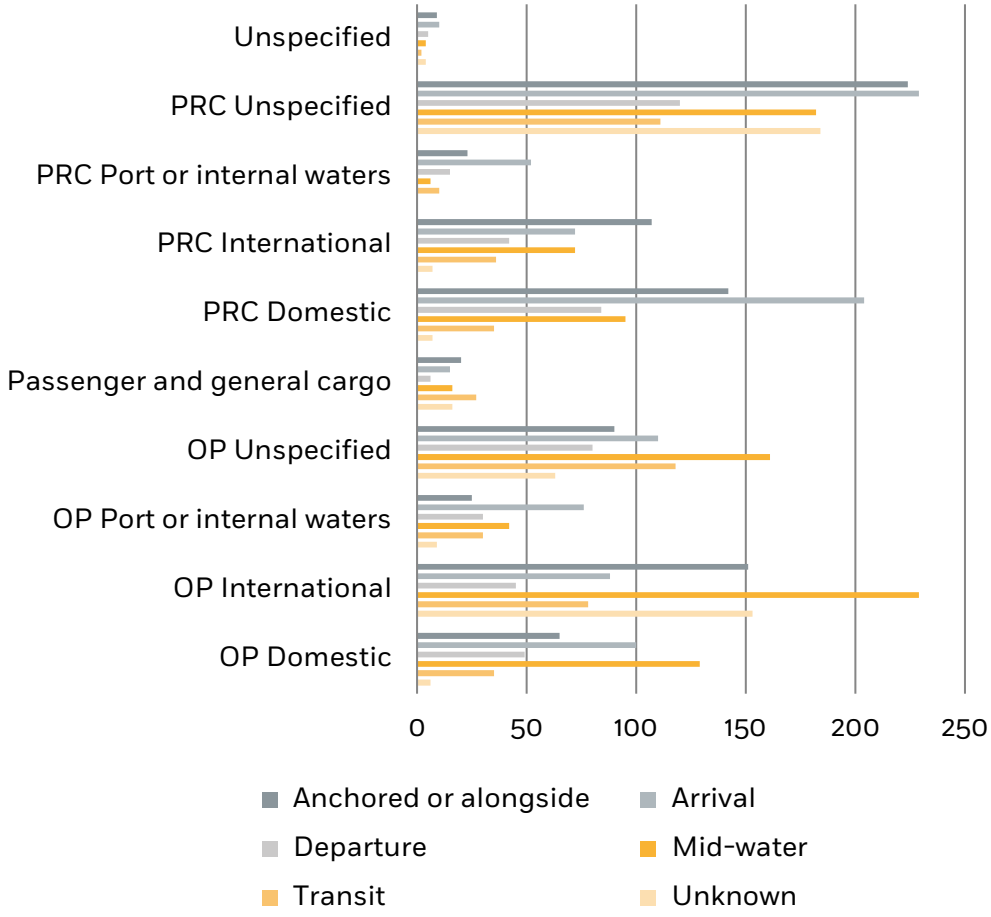
### 5.3.1 VOYAGE SEGMENTS

Figure 106: Distribution by voyage segment




**Despite a reduction of the number of marine casualties and incidents in 2015, the number of occupational accidents increased again in 2016. The arrival phase of a voyage has been in general the least safe one. The continuous increase of casualties to passenger ships during the mid-water phase is also noted.**

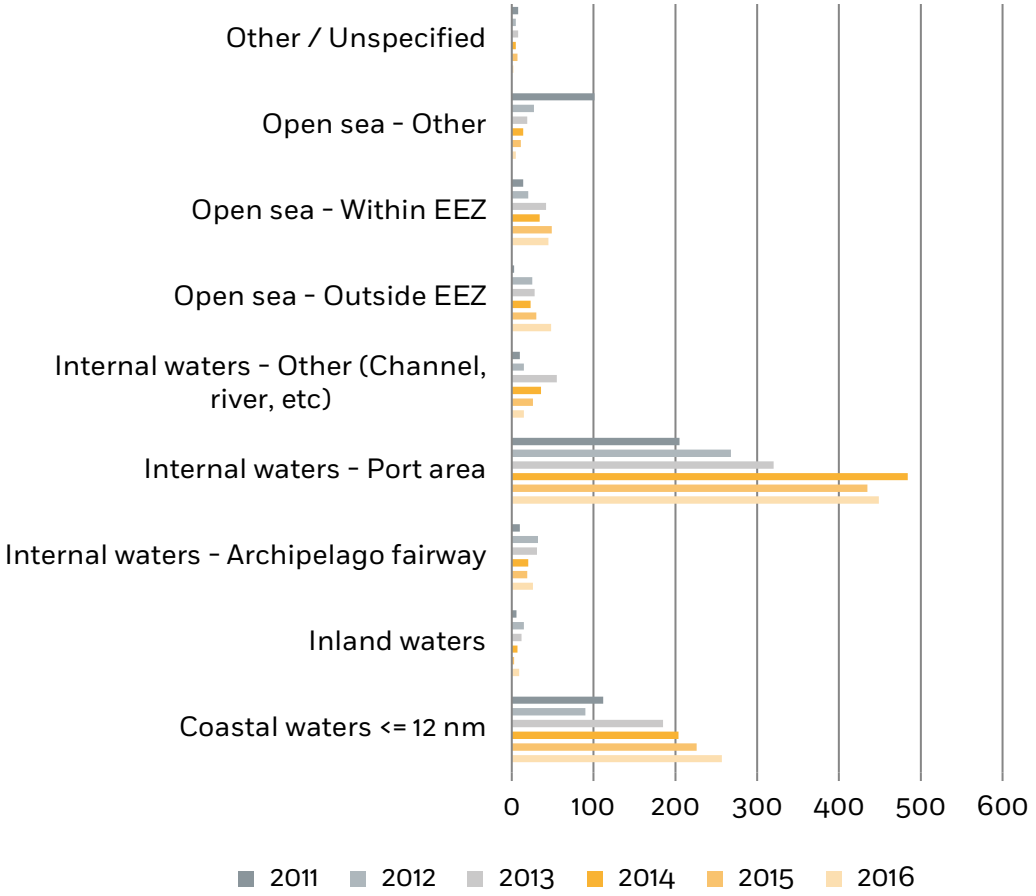
Figure 107: Distribution by voyage segment per passenger ship type 2011-2016




**Apart from passenger and ro-ro cargo on international voyages, the predominance of casualties during the mid-water and arrival phases is clear, just ahead of when ships are anchored or alongside.**

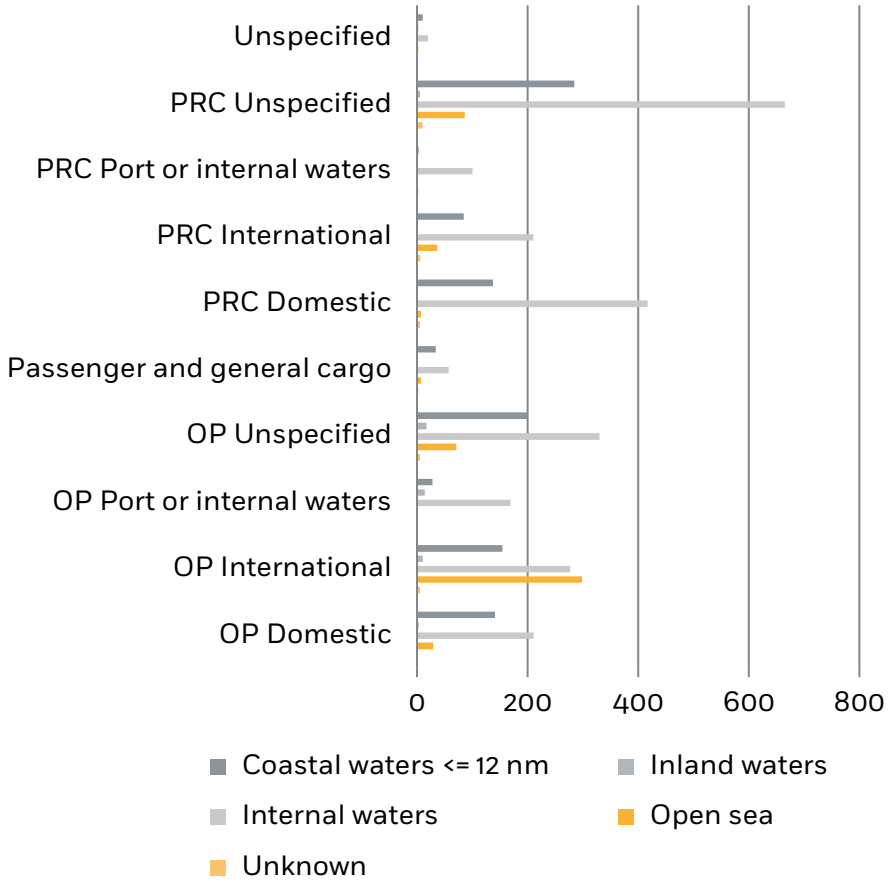
## 5.3.2 LOCATION

Figure 108: Distribution by location of the marine casualties and incidents




**52% of the casualties took place in internal waters and port areas, followed by 26% in coastal waters.**

Figure 109: Distribution by location per passenger ship type 2011-2016




**For all types of passenger ships, the majority of casualties took place in internal waters (59% of all cases).**

## 5.3.3 REGIONAL DISTRIBUTION

**Figure 110: Regional distribution of marine casualties and incidents 2011-2016**

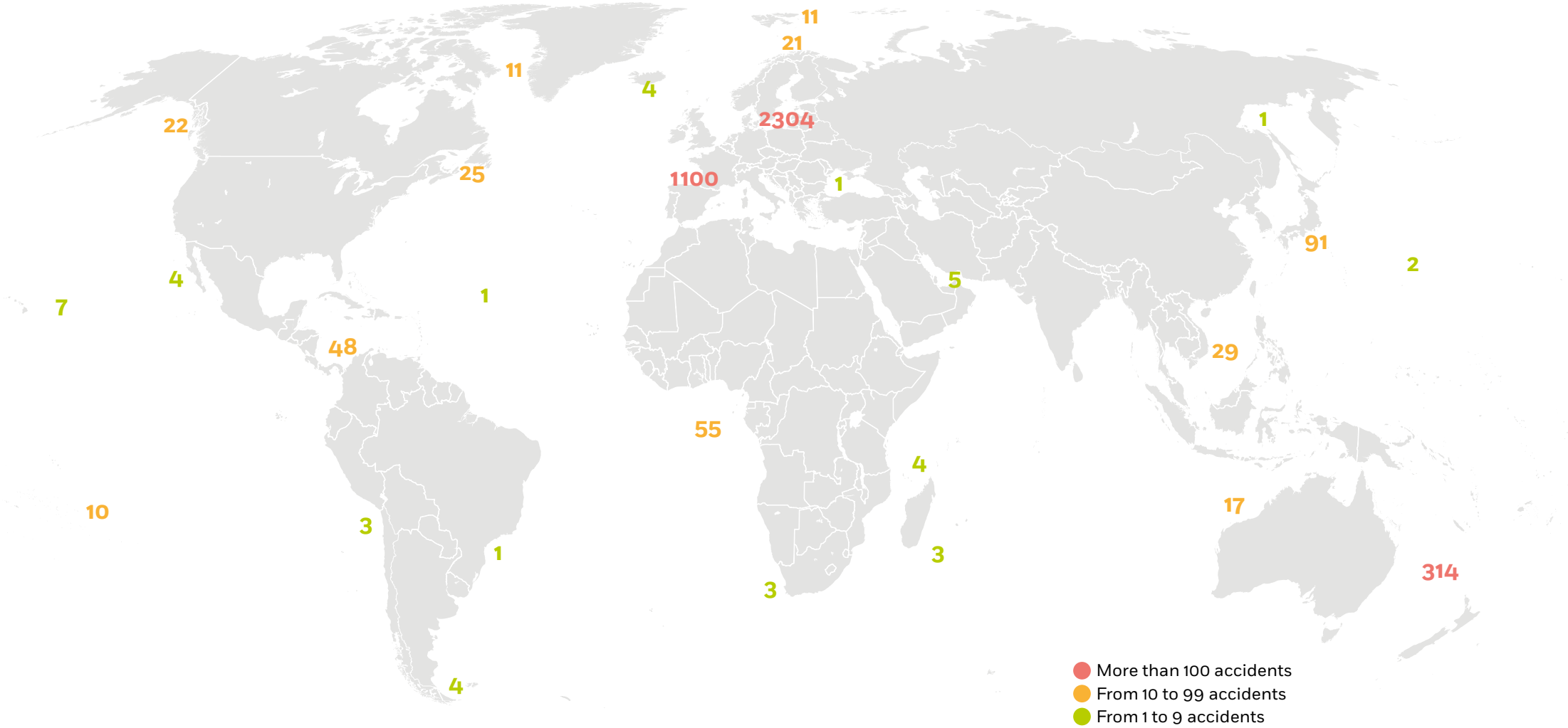
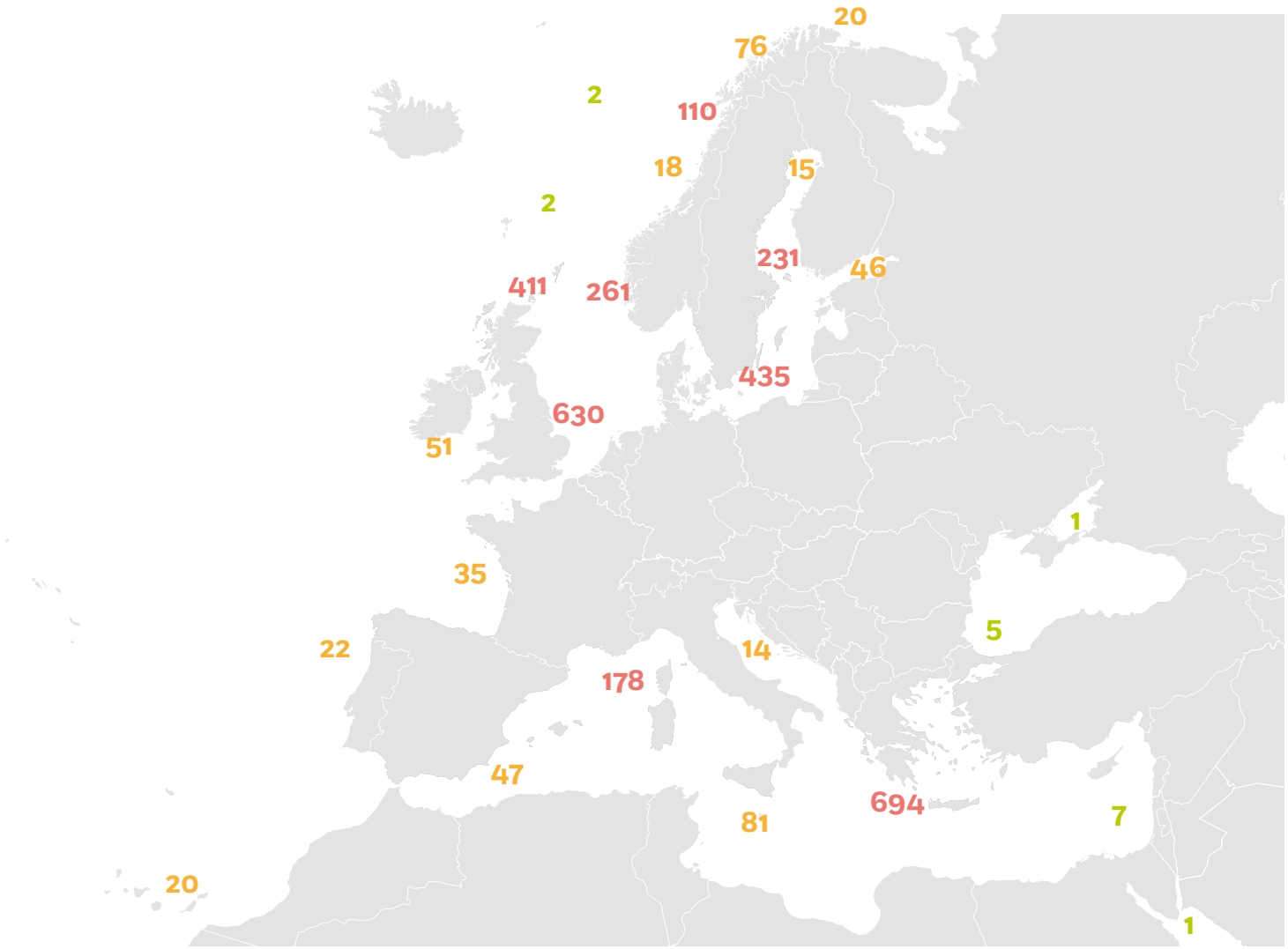
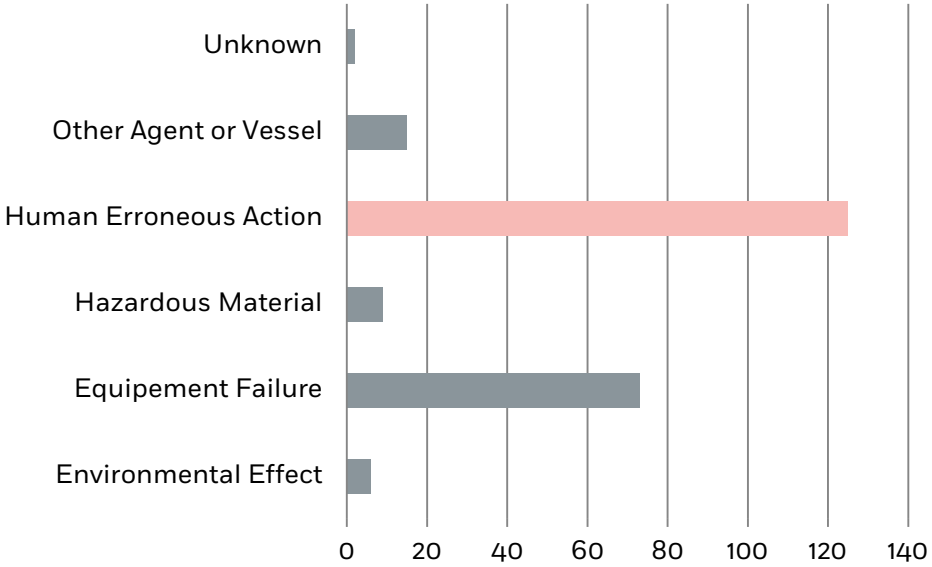


**Figure 111: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2016**



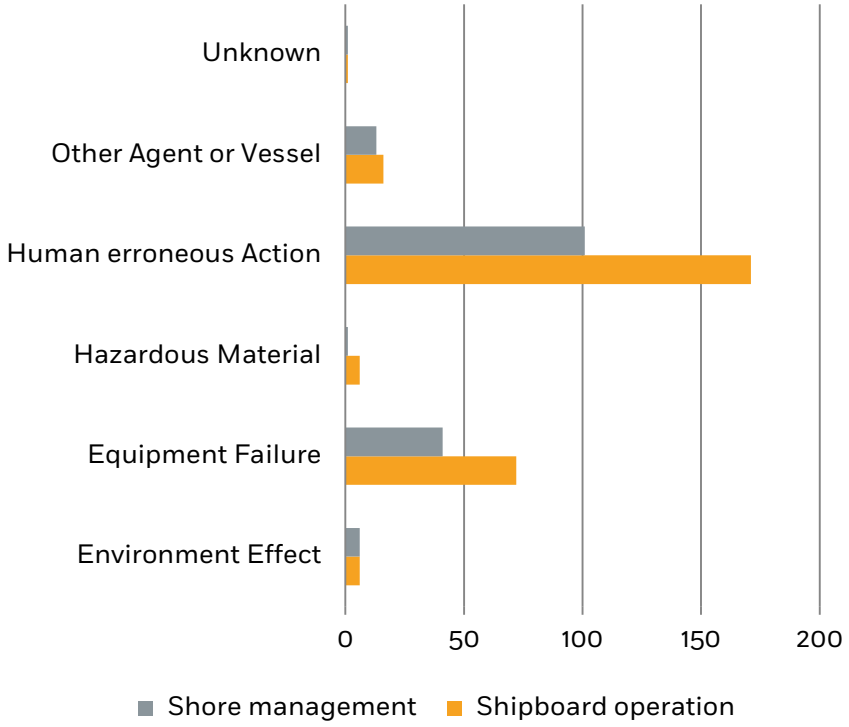
## 5.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 112: Accidental events 2011-2016



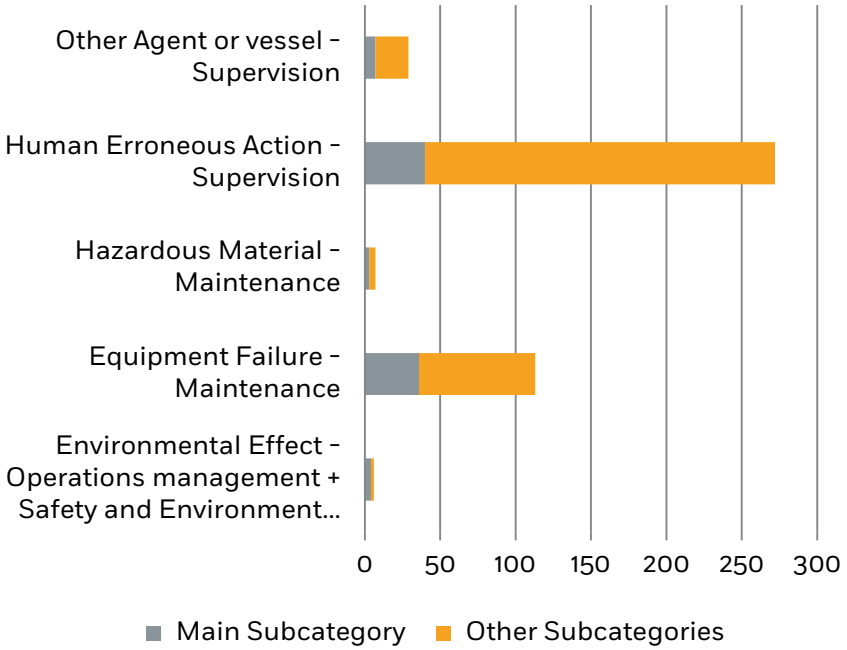

**From a total of 230 accidental events analysed during the investigations 54% were attributed to a Human Erroneous Action.**

Figure 113: Relationship between Accidental Events and the main Contributing Factors 2011-2016




**Shipboard operations represented the main contributing factor with 63% of the total.**

Figure 114: Groups of Contributing Factors 2011-2016

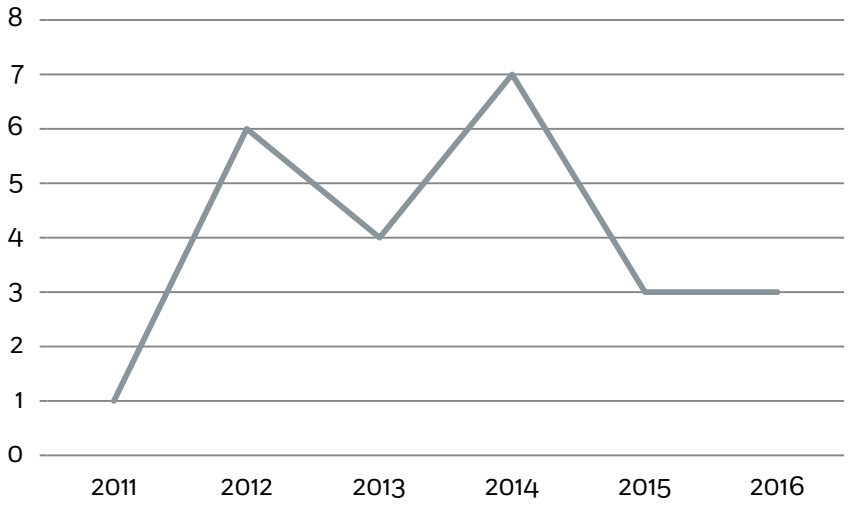



**This figure provides the most quoted contributing factor per category of accidental event. "Supervision" was quoted as the most significant contributing factor when the accidental event was "Human Erroneous Action".**

## 5.5 CONSEQUENCES

### 5.5.1 CONSEQUENCES TO SHIPS

Figure 115: Passenger ships lost



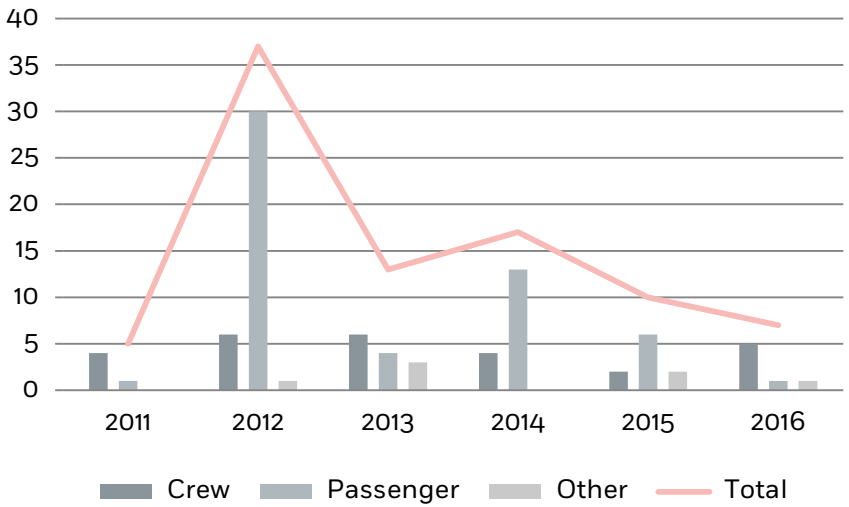

**Among the 24 passenger ships that were lost, 14 were passenger ships "carrying only passengers".**

**Since 2014, the number of passenger ships lost has been reducing.**

## 5.5.2 CONSEQUENCES TO PERSONS

### 5.5.2.1 FATALITIES

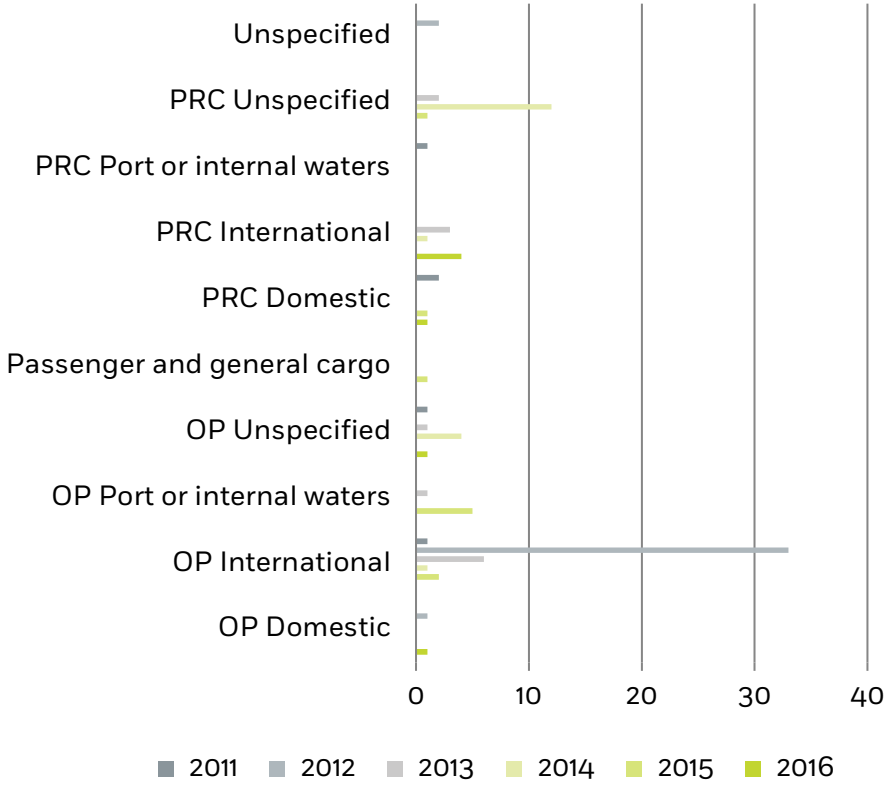
Figure 116: Number of fatalities




**Since the year 2012, the number of fatalities has regularly decreased.**

**62% of the victims were passengers.**

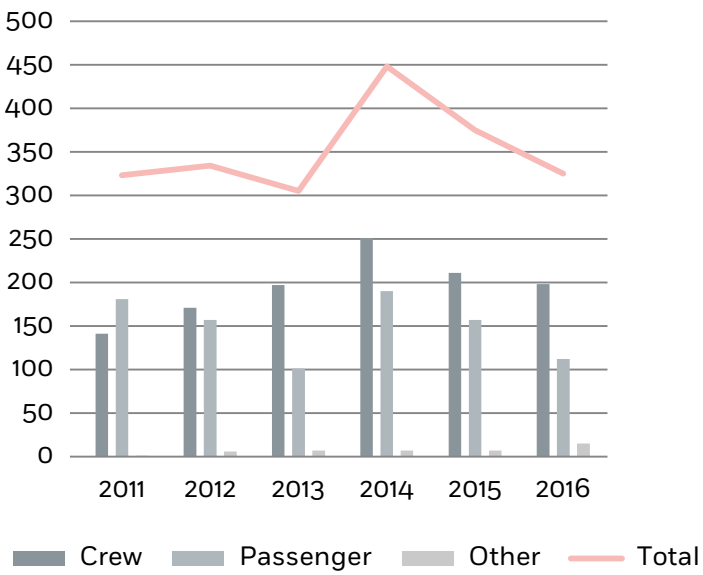
Figure 117: Distribution of fatalities per passenger ship type




**Besides the 2 major events, Costa Concordia in 2012 and Norman Atlantic in 2014, fatalities occurred evenly across the passenger ship types.**

## 5.5.2.2 INJURIES

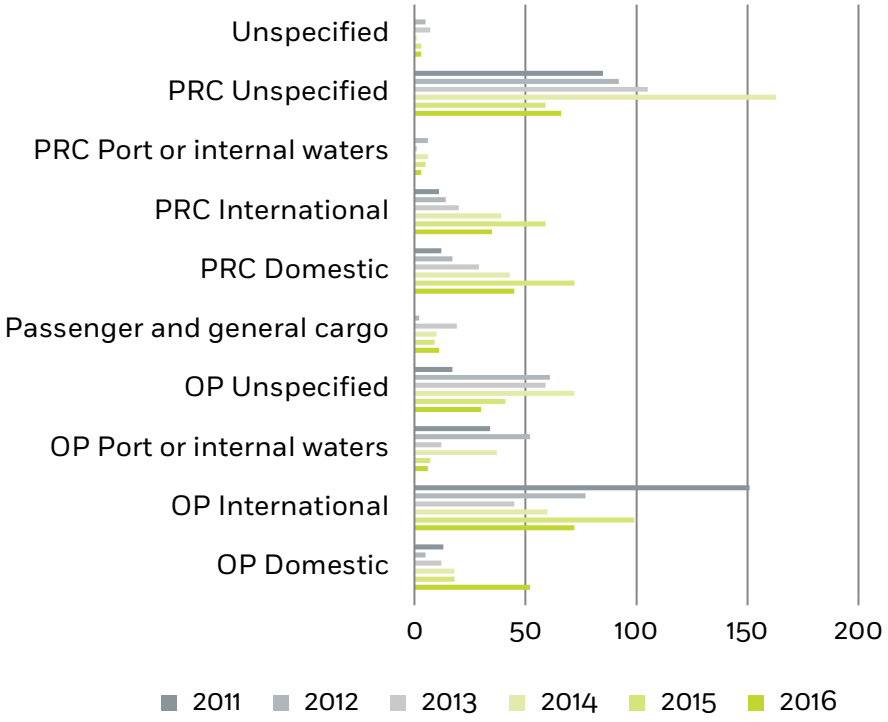
Figure 118: Number of injuries




**After 4 years of continuous increase of injuries, the number of victims continued decreasing since 2015.**

**Injuries happened mainly to seafarers (55%).**

Figure 119: Distribution of injuries per passenger ship type

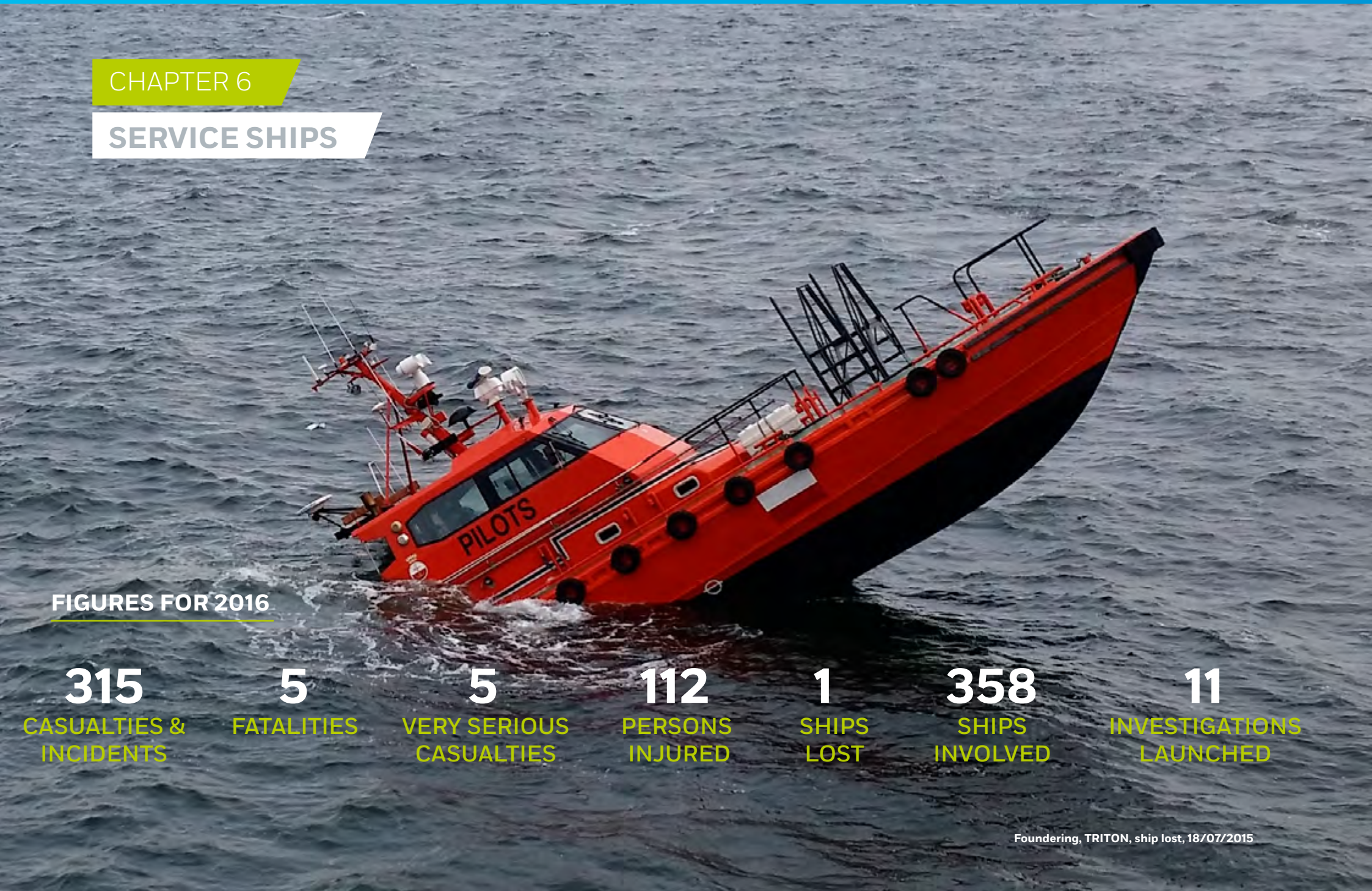



**An equal number of the injuries took place on board passenger ships carrying only passengers and those transporting vehicles.**

Contact, KARSIBOR III, ship damaged, 22/07/2013

CHAPTER 6

# SERVICE SHIPS




## FIGURES FOR 2016

| 315 | 5 | 5 | 112 | 1 | 358 | 11 |
|---|---|---|---|---|---|---|
| CASUALTIES & INCIDENTS | FATALITIES | VERY SERIOUS CASUALTIES | PERSONS INJURED | SHIPS LOST | SHIPS INVOLVED | INVESTIGATIONS LAUNCHED |

Foundering, TRITON, ship lost, 18/07/2015

The Directive does not apply to marine casualties and incidents involving only ships of war and troop ships and other ships owned or operated by a Member State and used only on government non-commercial service and fixed offshore drilling units. Such vessels are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive.

## 6.1 DETAILED DISTRIBUTION

**The main subcategory was represented by Tugs (22%), followed by Special Purpose ships (16%) and Dredgers (16% cases).**

**The number of service ships involved generally continued decreasing in 2016, except for dredgers.**

Figure 120: Distribution of service ship types involved

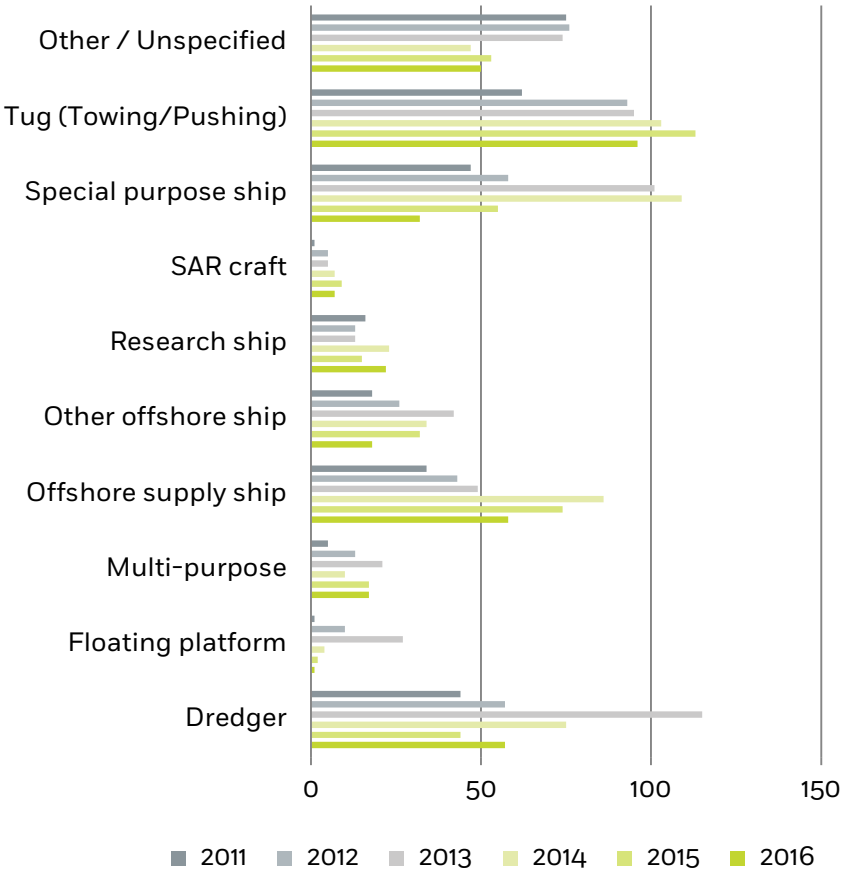
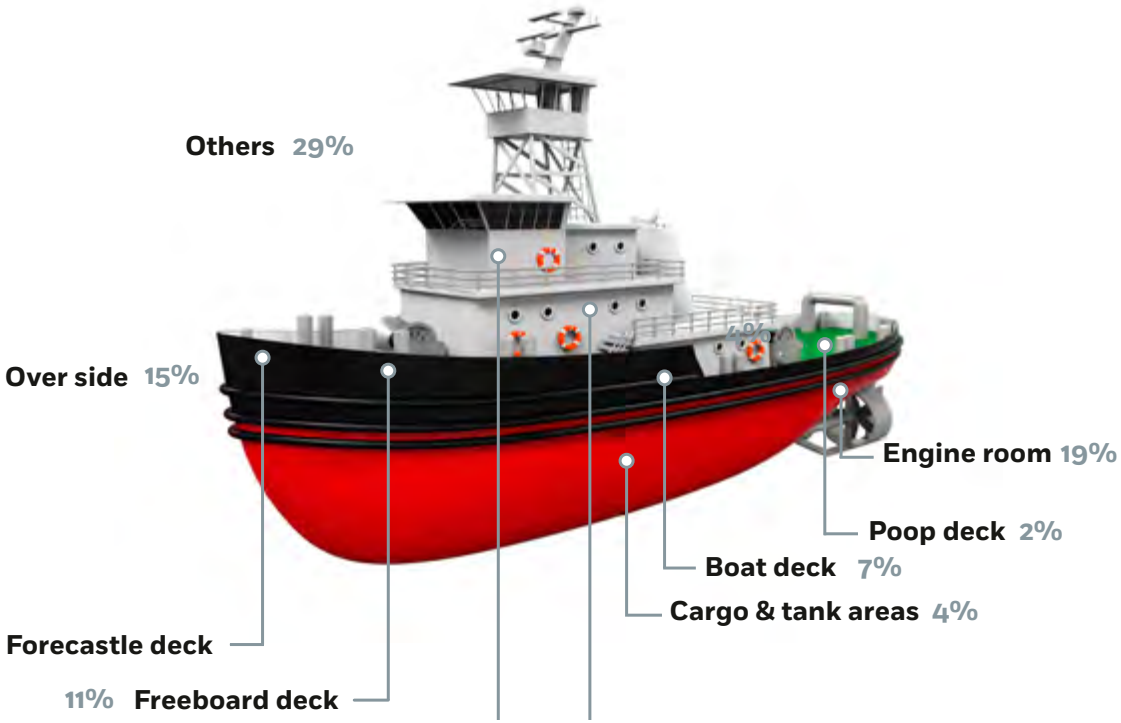
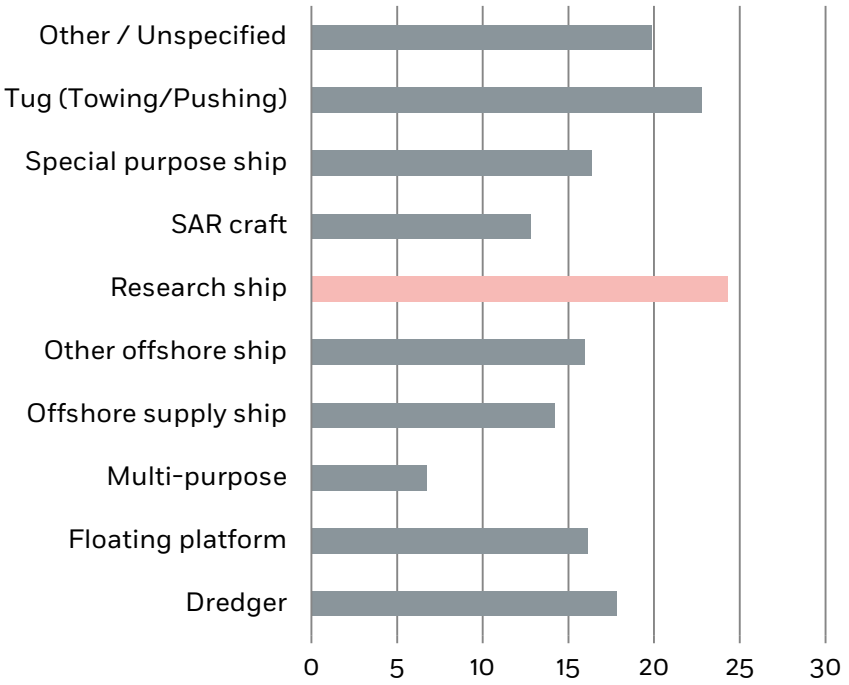


Figure 121: Main places of casualties involving service ships 2011-2016



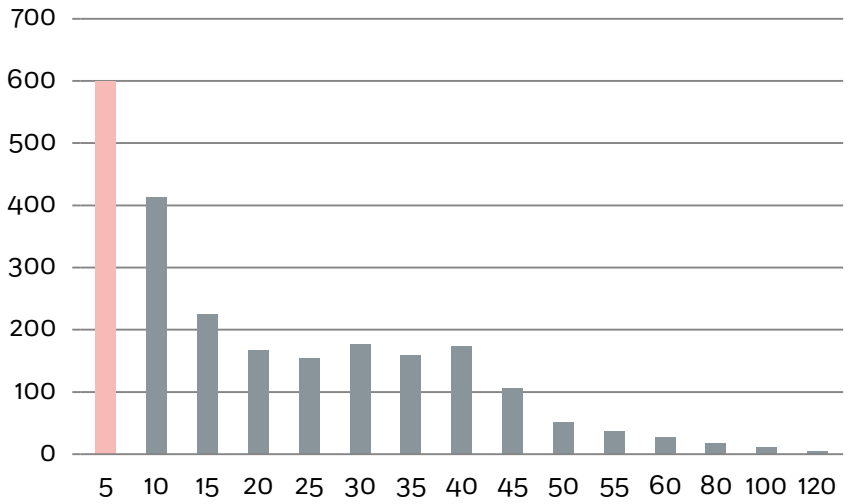

**Places were specified in 2304 cases. The main location of casualties was Engine Room (435 cases), followed by Over side (340 cases).**

Figure 122: Average age by type of service ships involved 2011-2016



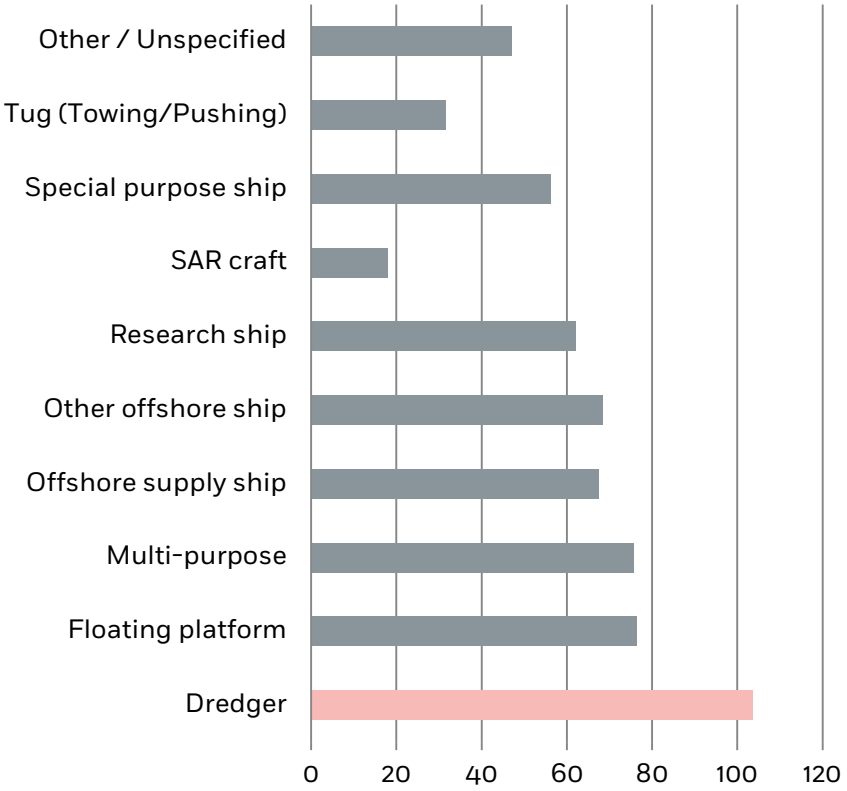

**The youngest ship category is multi-purpose ship (6.8y) while the oldest is research ship (24.3y).**

Figure 123: Age distribution of service ships involved 2011-2016




**The average age of service ships involved in casualties and incidents was 18.2 years over the period 2011-2016.**

Figure 124: Average length of service ships involved by main category 2011-2016




**The ships with the shortest length were Search and Rescue craft, the longest were Dredgers.**

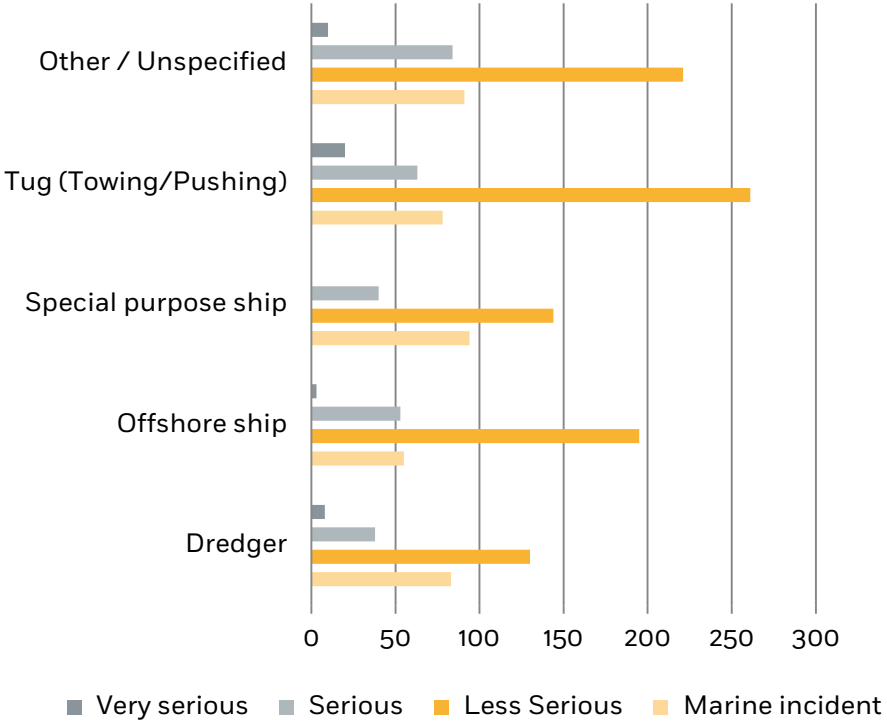
Figure 125: Length distribution of service ships involved 2011-2016


**The average length of service ships involved was 60m. A peak of incidents involving ships with a length from 20 to 40m was noted.**

## 6.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

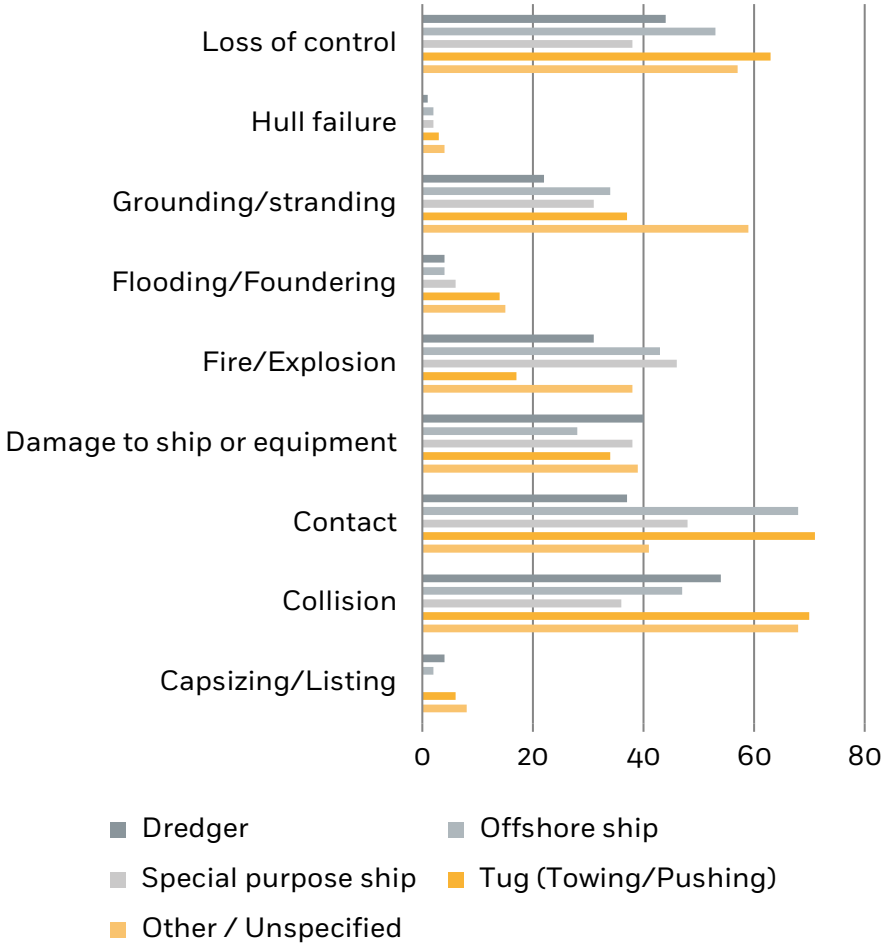
### 6.2.1 CASUALTY WITH A SHIP

Figure 126: Distribution of severity by service ship type 2011-2016




**The rate of very serious casualties with a ship is equivalent (2.5%) to the general average for all ship types (2.4%).**

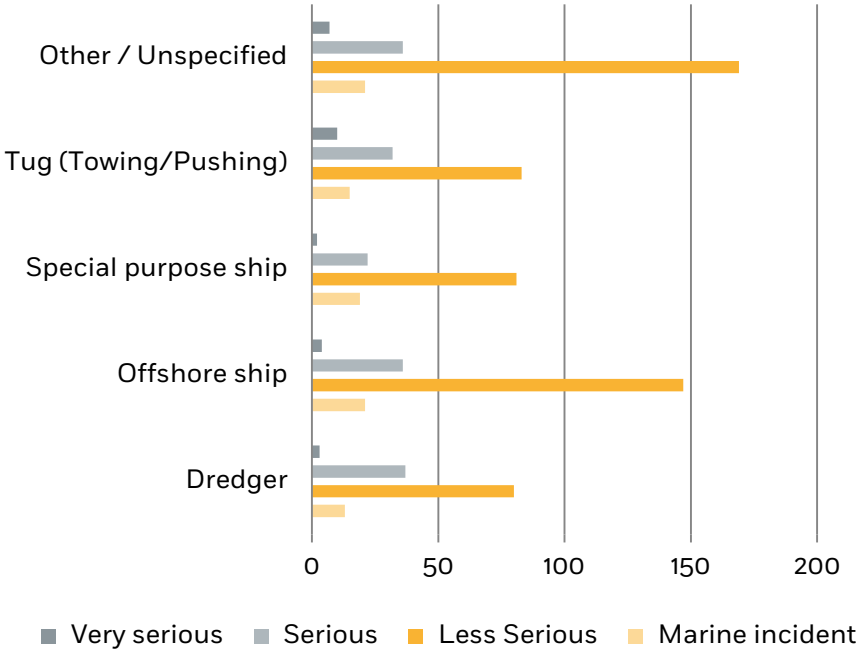
Figure 127: Distribution of casualty events per service ship type 2011-2016




**Navigational accidents (Collision, contact and grounding) are the main casualty events (51%) across all the service ship types.**

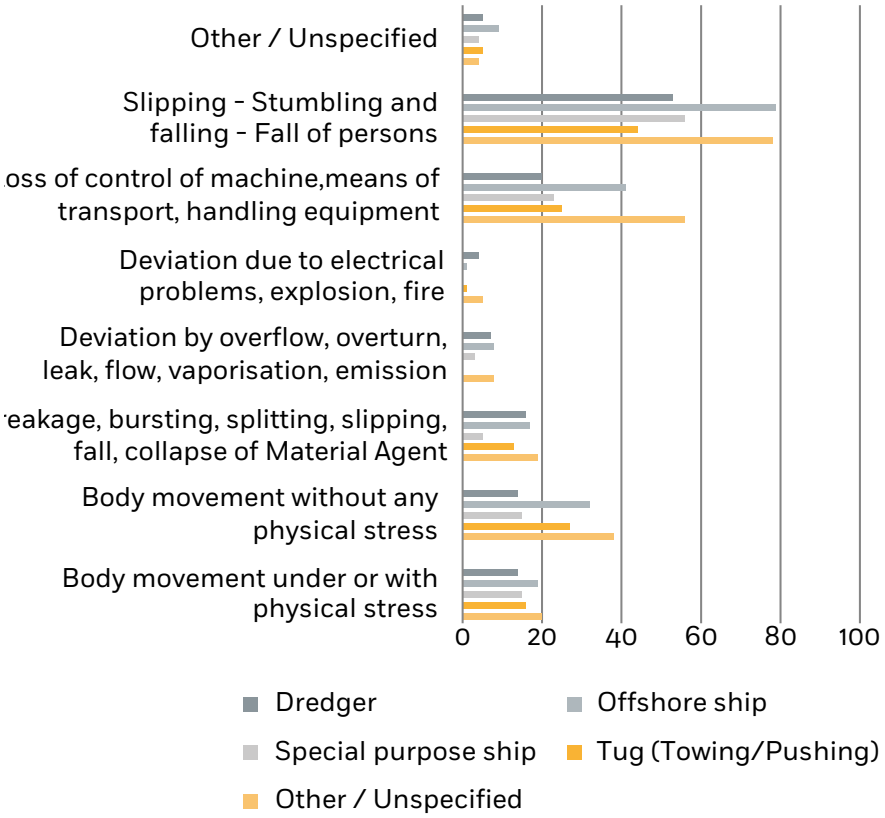
## 6.2.2 OCCUPATIONAL ACCIDENT

Figure 128: Severity of occupational accidents per service ship type 2011-2016




**The number of very serious occupational accidents on board service ships is lower (3.1%) than the average for all ship types (4.4%).**

Figure 129: Distribution of deviations per service ship type 2011-2016



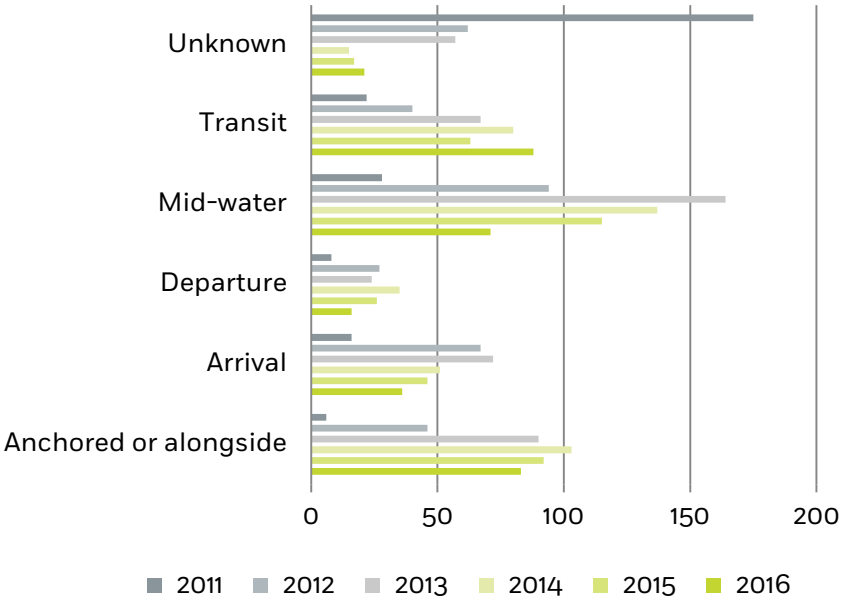

**Slipping and falls of persons constitute the most significant deviation (38%), generally on board all service ships.**

## 6.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

**This section provides information about the location of the ships when marine casualties or incidents occurred.**

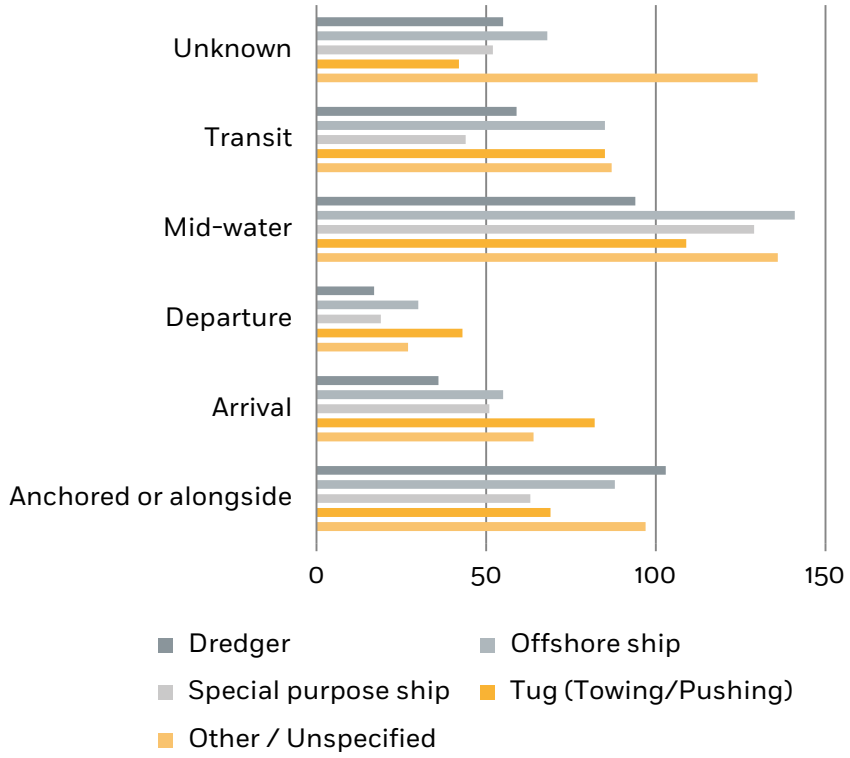
### 6.3.1 VOYAGE SEGMENTS

Figure 130: Distribution by voyage segment




**Despite a significant decrease of casualties to service ships in the 2013, the mid-water phase has been the least safe voyage phase.**

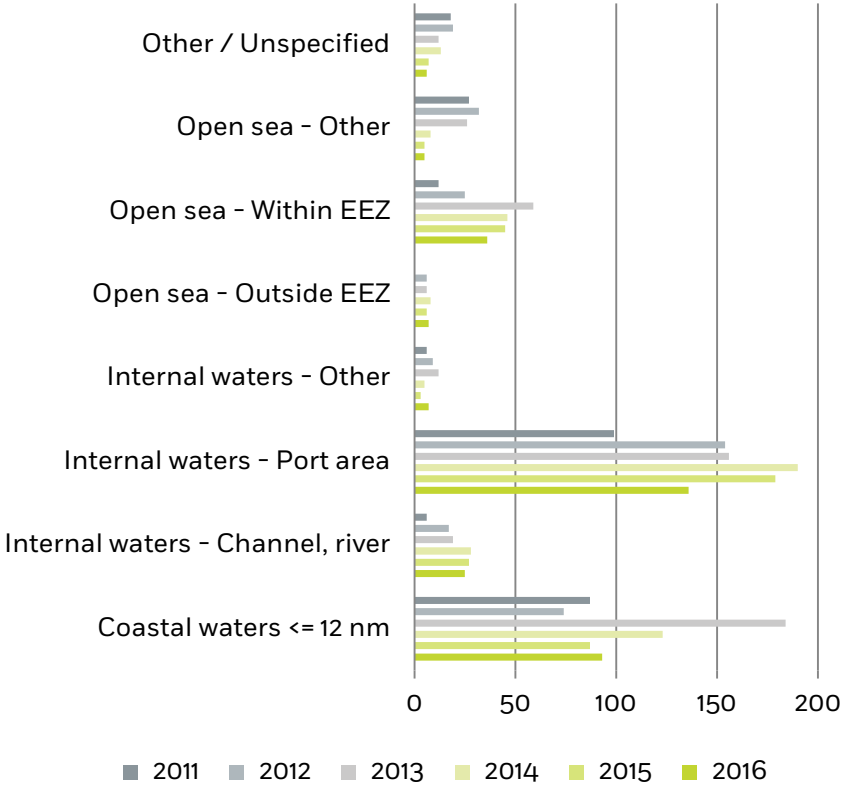
Figure 131: Distribution by voyage segment per service ship type 2011-2016




**Apart from the dredgers that had casualties mainly when anchored or alongside, all other types of service ships had casualties during the mid-water phase of the voyage.**

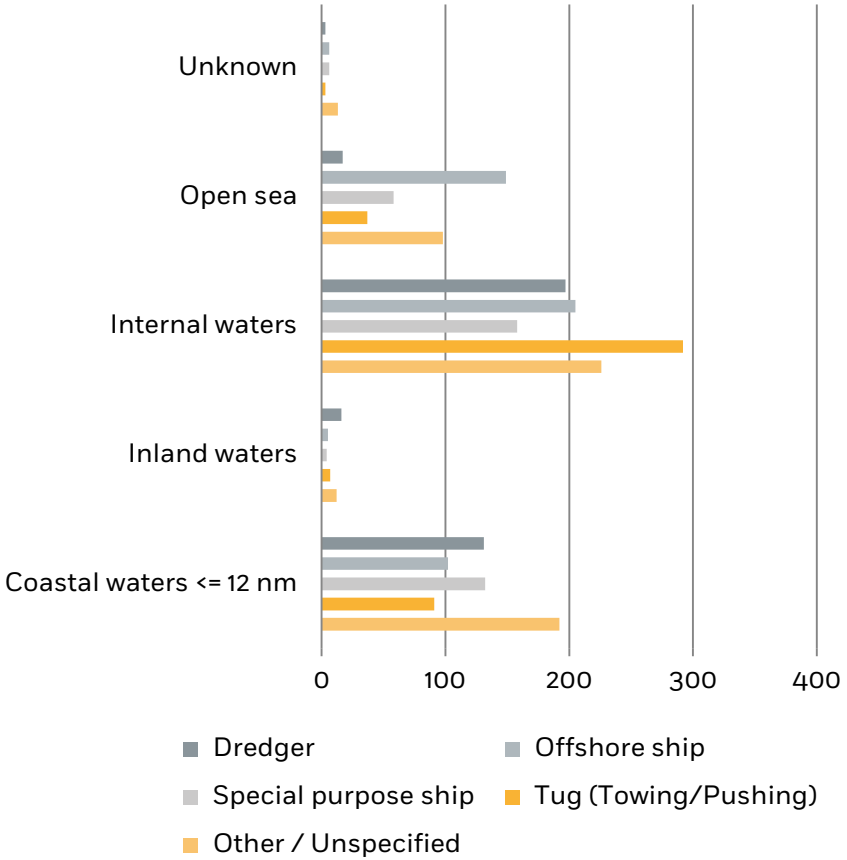
## 6 3.2 LOCATION

Figure 132: Distribution by location of the marine casualties and incidents




**42% of the casualties took place in internal waters and port areas, followed by 30% in coastal waters.**

**Figure 133: Distribution by location of the marine casualties and incidents per service ship type 2011-2016**




**Internal waters and port areas were the main location of accidents whatever the type of service ship.**

## 6.3.3 REGIONAL DISTRIBUTION

**Figure 134: Global distribution of marine casualties and incidents 2011-2016**

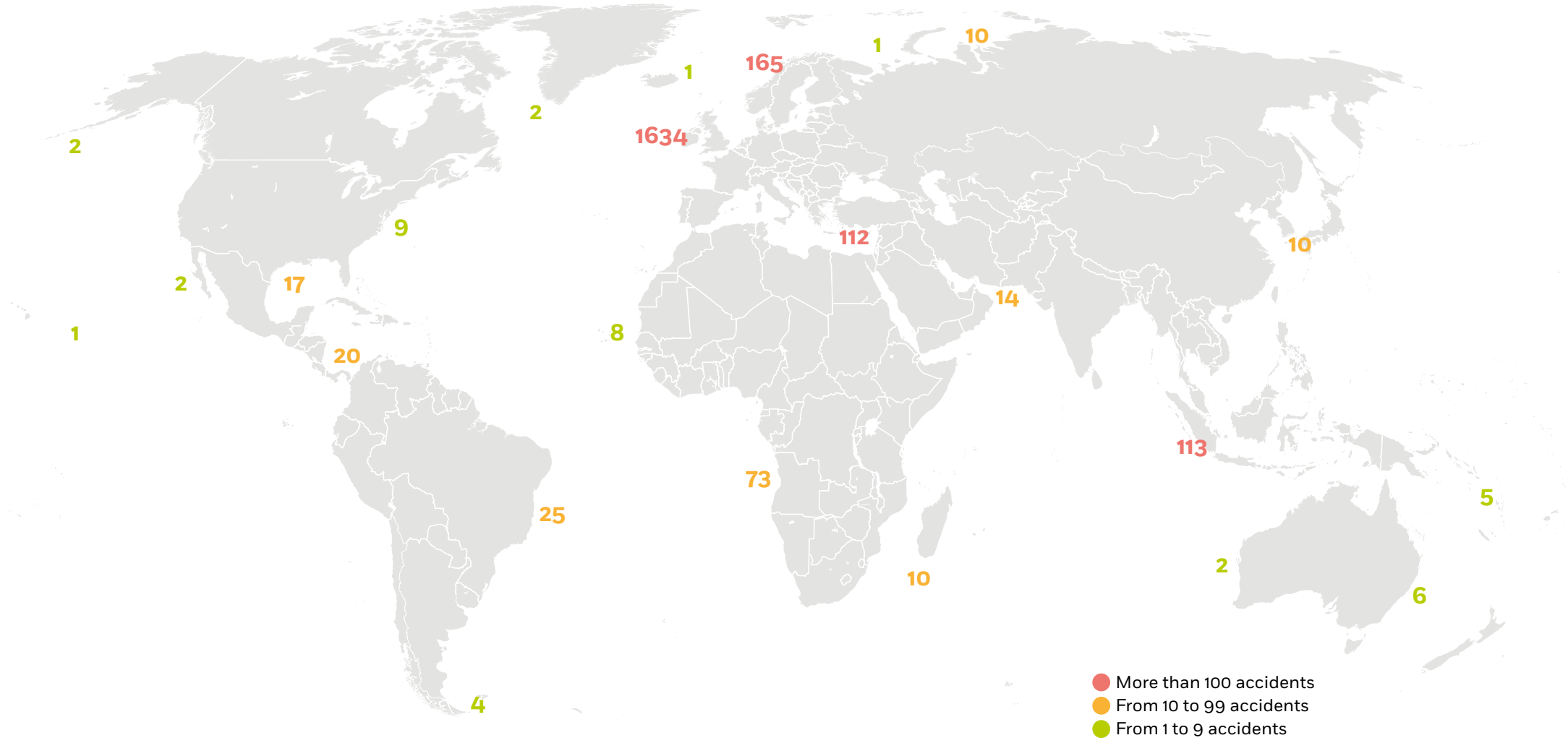
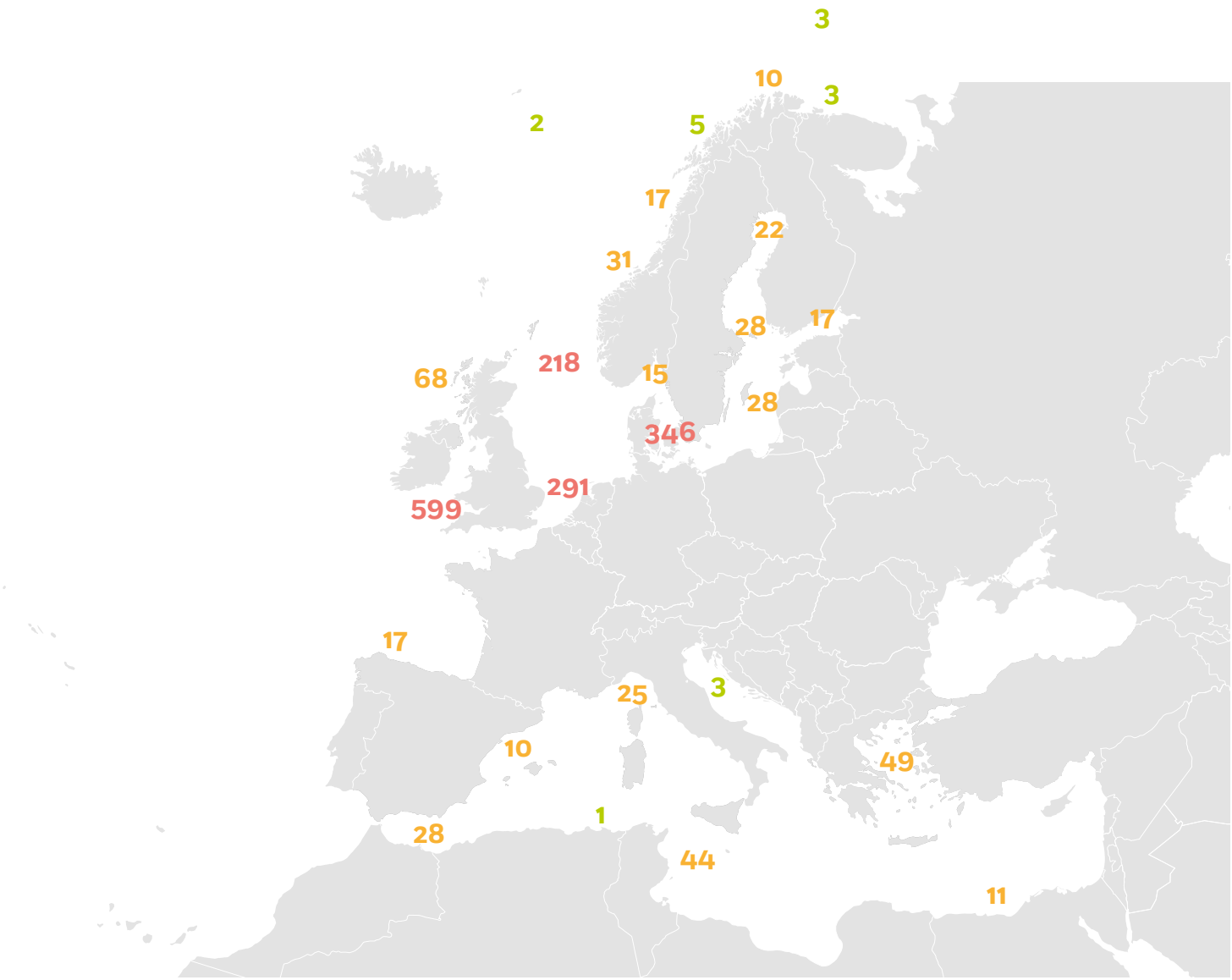
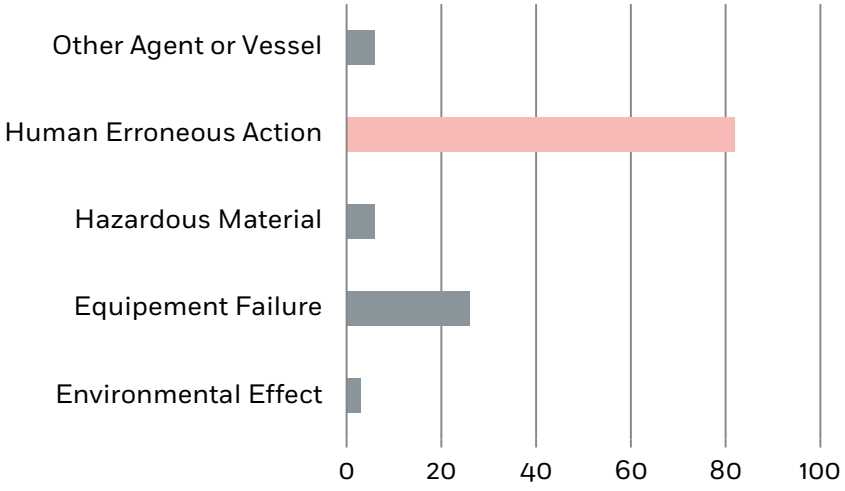


Figure 135: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2016



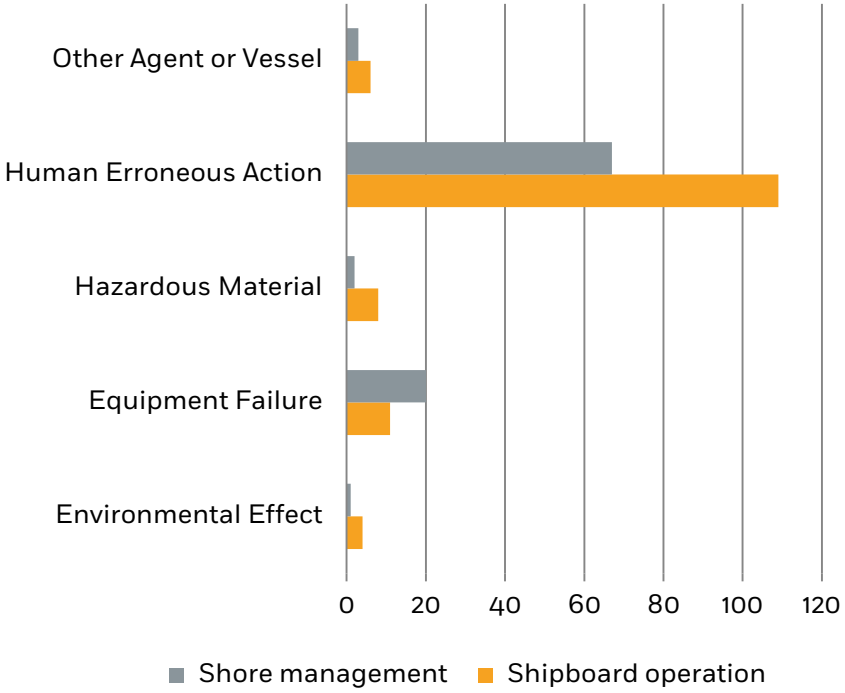
## 6.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 136: Accidental Events 2011-2016



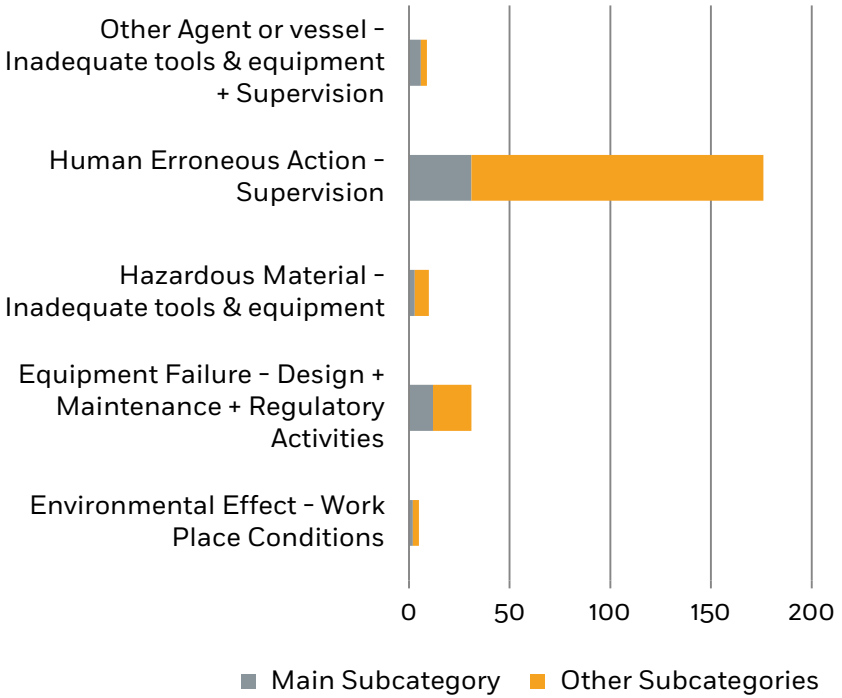

**From a total of 123 accidental events analysed during the investigations 67% were attributed to a Human Erroneous Action.**

Figure 137: Relationship between Accidental Events and the main Contributing Factors 2011-2016




**When reported, shipboard operations represented the main contributing factor with 60% of the total.**

Figure 138: Groups of Contributing Factors 2011-2016

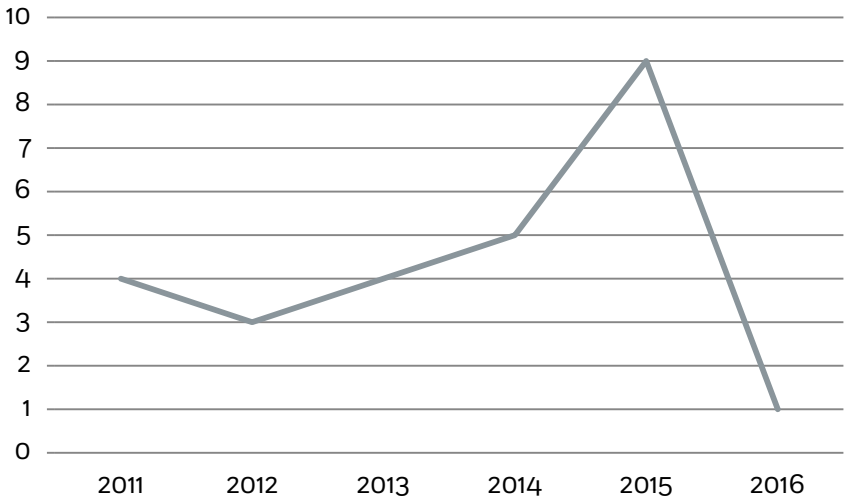



**Supervision was quoted as the most significant contributing factor when the accident event was human erroneous action.**

## 6.5 CONSEQUENCES

### 6.5.1 CONSEQUENCES TO SHIPS

Figure 139: Service ships lost



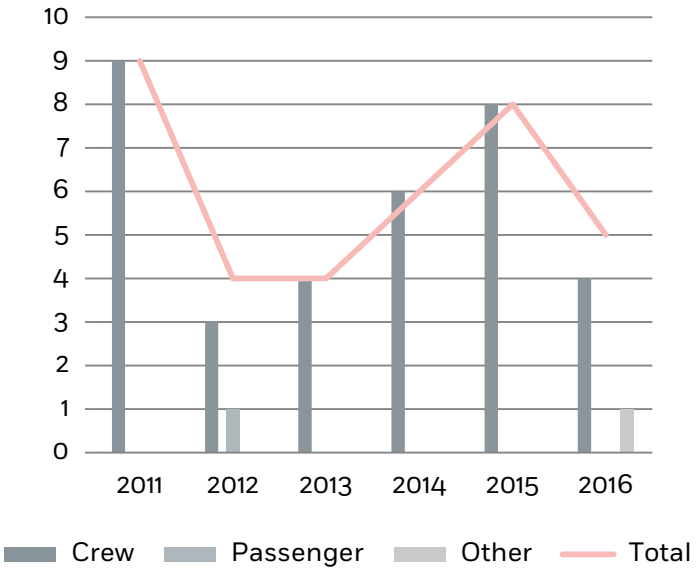

**After a continuous increase of service ships lost from 2012 to 2015, a significant decrease was noted in 2016.**

**Among the 26 ships sunk, 11 were tugs.**

## 6.5.2 CONSEQUENCES TO PERSONS

### 6.5.2.1 FATALITIES

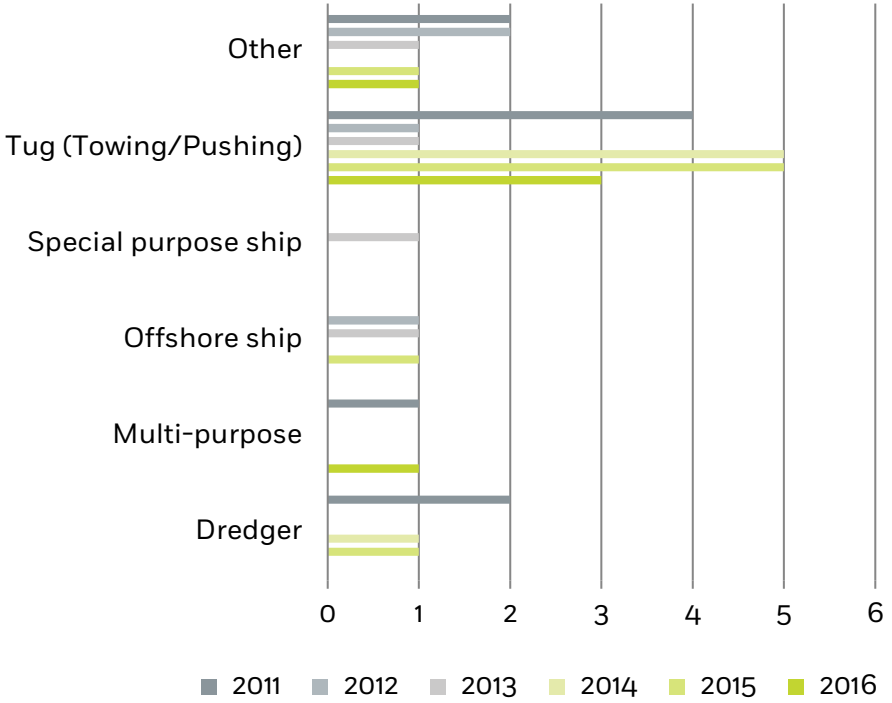
Figure 140: Number of fatalities




**After an increase of fatalities from 2013 to 2015, the number of victims decreased in 2016.**

**Almost all victims were crew members.**

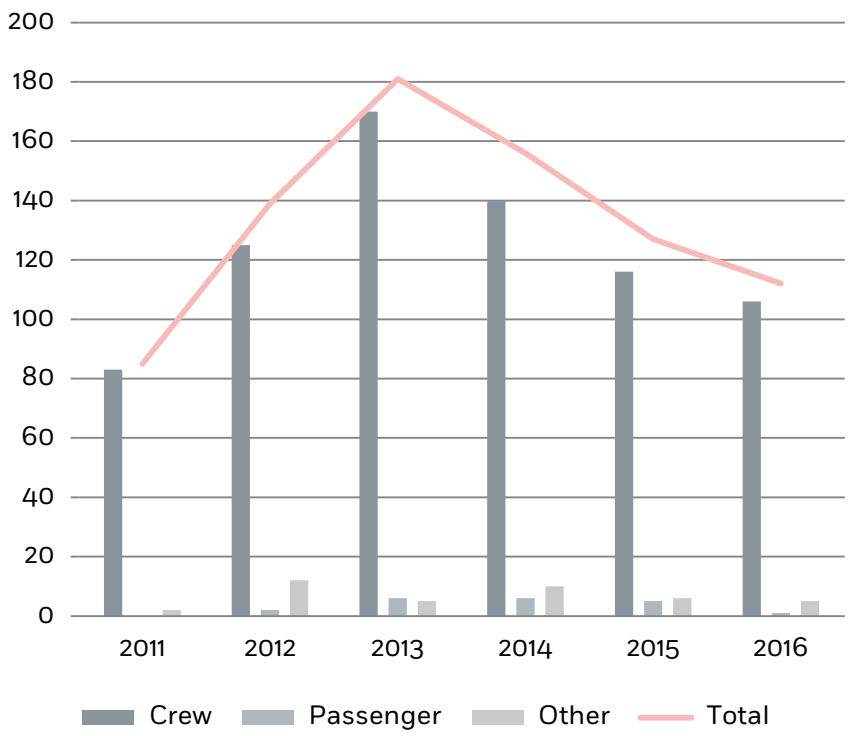
Figure 141: Distribution of fatalities per service ship type




**53% of the fatalities occurred on board tugs.**

### 6.5.2.2 INJURIES

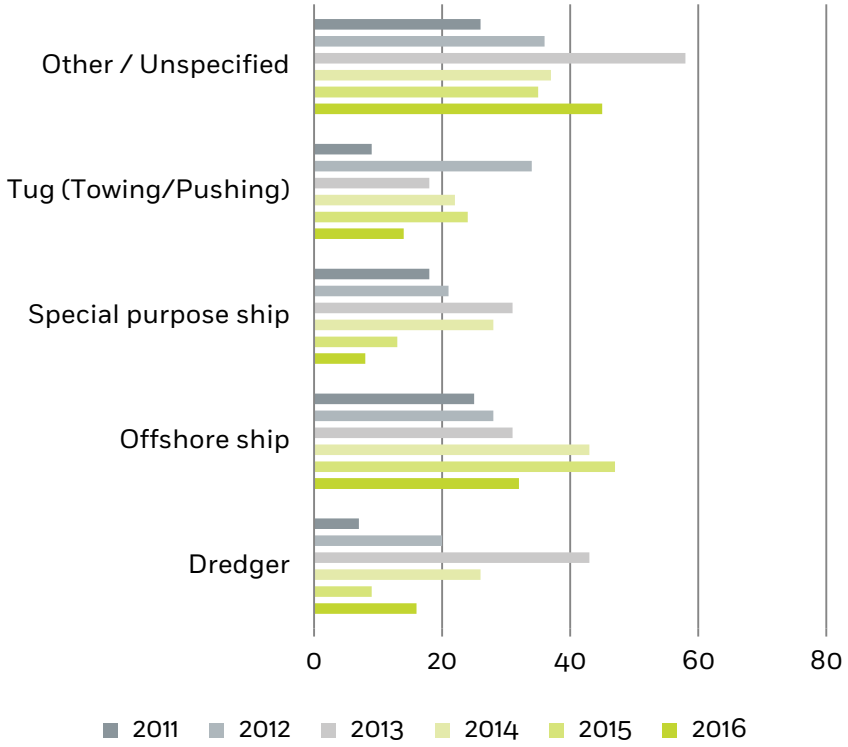
Figure 142: Number of injuries




**After an increase of injuries in 2013, the number of persons injured has decreased for three consecutive years.**

**Crew members were the main victims of injuries (93%).**

Figure 143: Distribution of injuries per service ship type

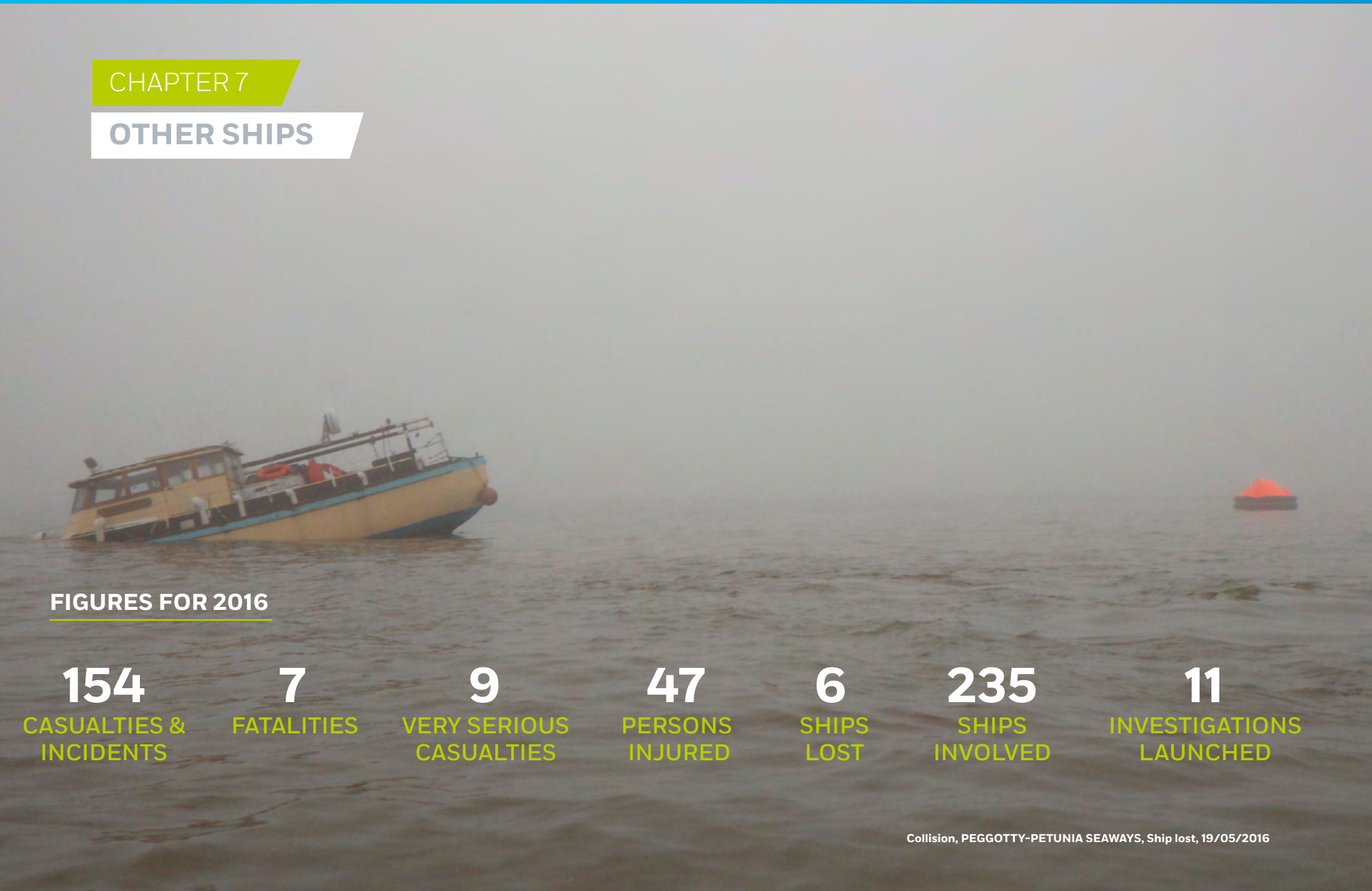



**The marine casualties and incidents resulting in injuries were equally distributed among the service ship types. This was also the case for the decrease of injuries, apart from offshore ships.**


Fall over board, SKAWLINK III, 1 life lost, 29/09/2016

CHAPTER 7

# OTHER SHIPS



## FIGURES FOR 2016

| 154 | 7 | 9 | 47 | 6 | 235 | 11 |
|---|---|---|---|---|---|---|
| CASUALTIES & INCIDENTS | FATALITIES | VERY SERIOUS CASUALTIES | PERSONS INJURED | SHIPS LOST | SHIPS INVOLVED | INVESTIGATIONS LAUNCHED |

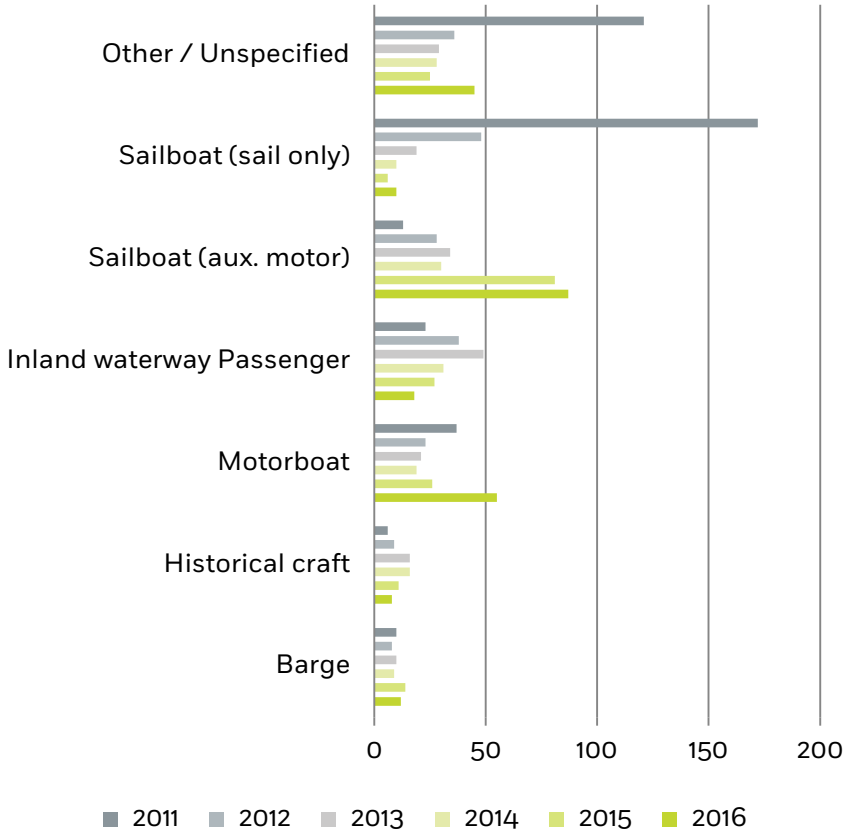
Collision, PEGGOTTY-PETUNIA SEAWAYS, Ship lost, 19/05/2016

The Directive does not apply to marine casualties and incidents involving only ships not propelled by mechanical means, wooden ships of primitive build, pleasure yachts and pleasure craft not engaged in trade, unless they are or will be crewed and carrying more than 12 passengers for commercial purposes. Such vessels are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive (e.g. a collision between a cargo ship and a recreational craft).

## 7.1 DETAILED DISTRIBUTION

**From 2011 to 2016, 1318 other type ships were involved in 869 marine casualties and incidents.**

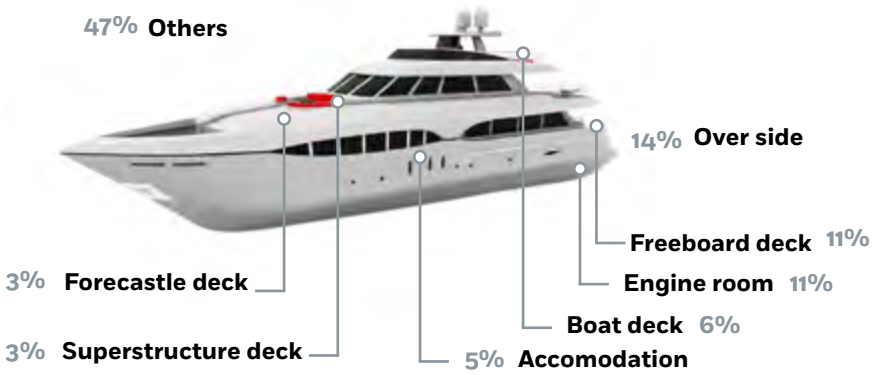
Figure 144: Distribution of other ships involved




**Among the other types of ship involved, the main subcategory was represented by recreational sailboats (aux. motor) (21%), followed by recreational sailboats (sail only) (20%) and Inland Waterway Passenger ships (14%).**

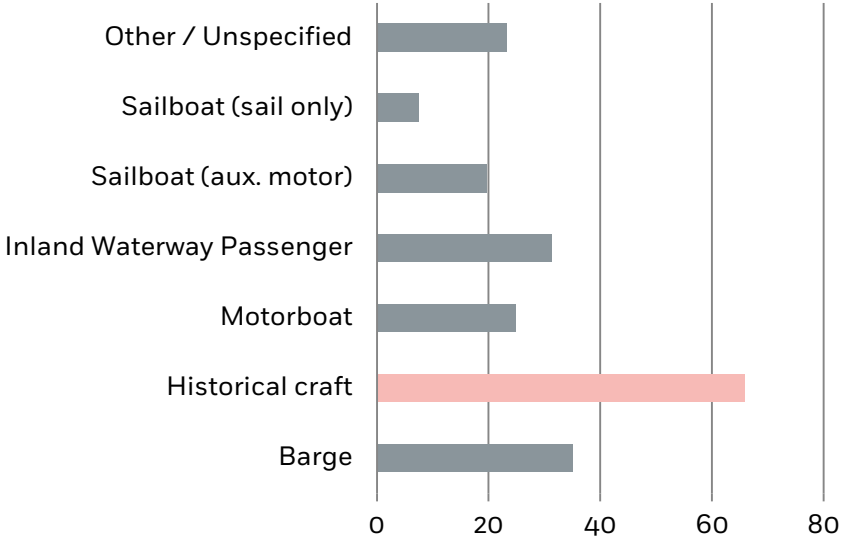
**A significant increase of casualties involving the category motorboat was noted in 2016 (+80%).**

Figure 145: Main places of casualties involving other type ships 2011-2016



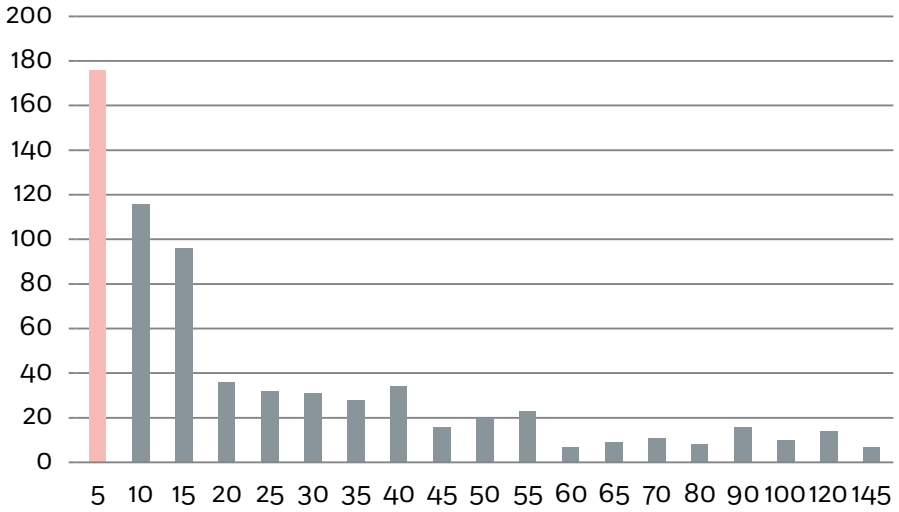

**Places were specified in 1203 cases. The main location of accidents was Over Side (173 cases), followed by Freeboard Deck (129 cases) and Engine Room (128 cases).**

Figure 146: Average age by type of other types of ship involved 2011-2016



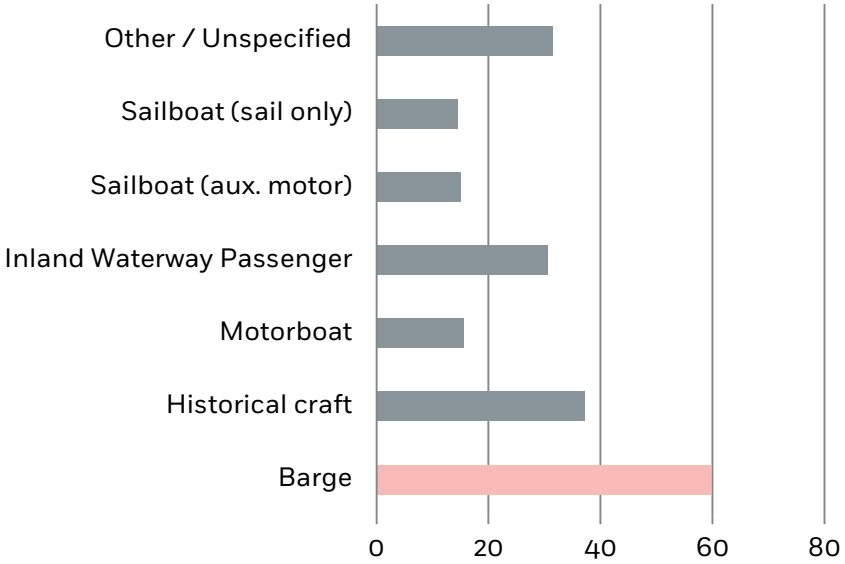

**The youngest ship category is sailboat with sail only (7.4 y) while the oldest is historical ships (65.9 y).**

Figure 147: Age distribution of other types of ship involved



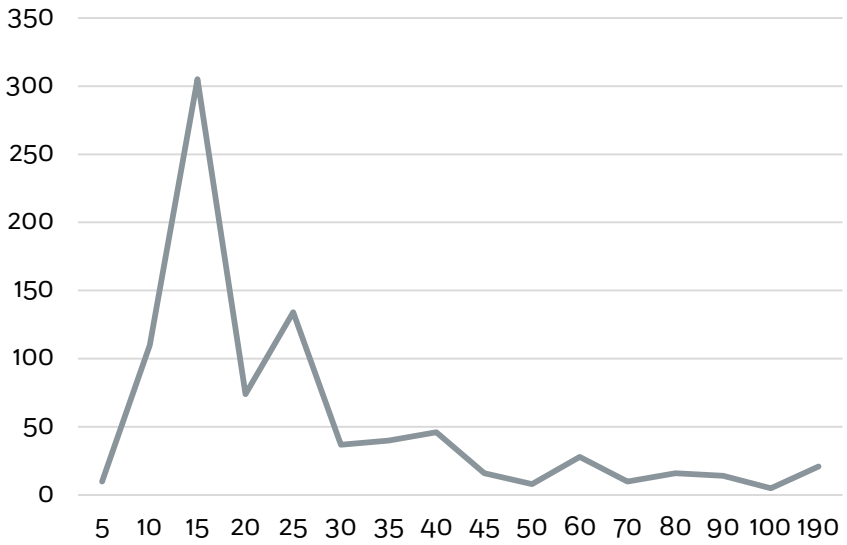

**The average age of cargo ships involved in casualties and incidents was 23.5 years over the period 2011-2016.**

Figure 148: Average GT of other types of ship involved by main category 2011-2016




**With an average length of 60m, barges were the longest ships involved in this category. Sailboats and motorboats were the smallest.**

Figure 149: Length distribution of other types of ship involved 2011-2016

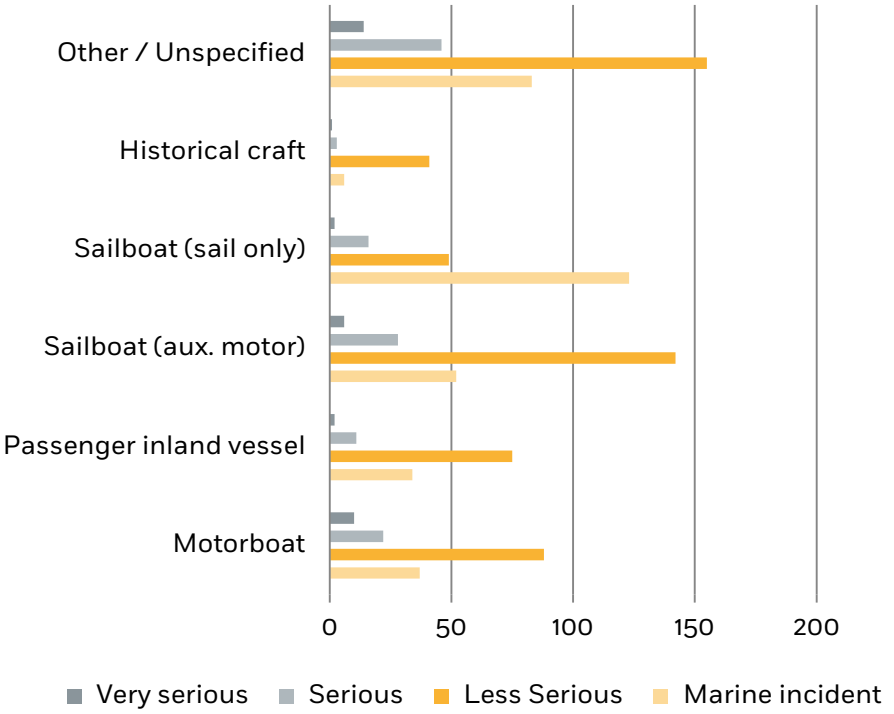



**The average length of other types of ships involved was 24m. A peak is noted for ships with a length around 15m, which is characteristic for the two main types of ships within this category: sailboats and motorboats.**

## 7.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

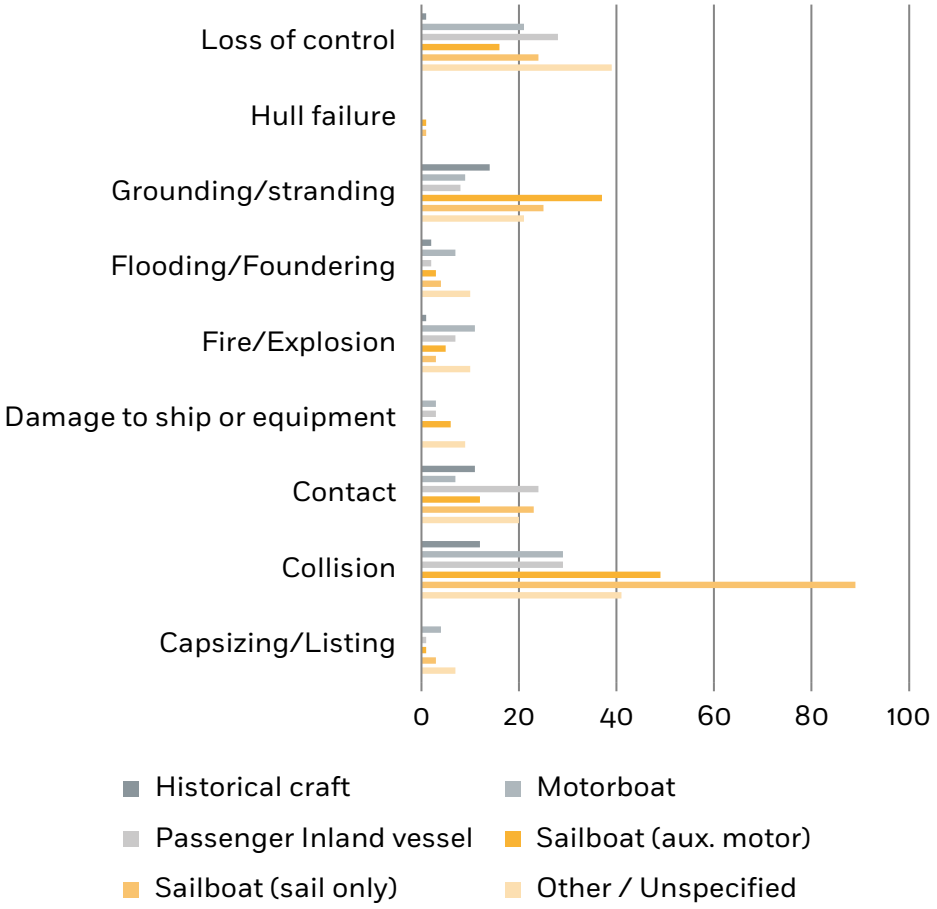
### 7.2.1 CASUALTY WITH A SHIP

Figure 150: Distribution of severity by other ship type 2011-2016




**The rate of very serious casualties with a ship is higher (3.3%) than the general average (2.4%).**

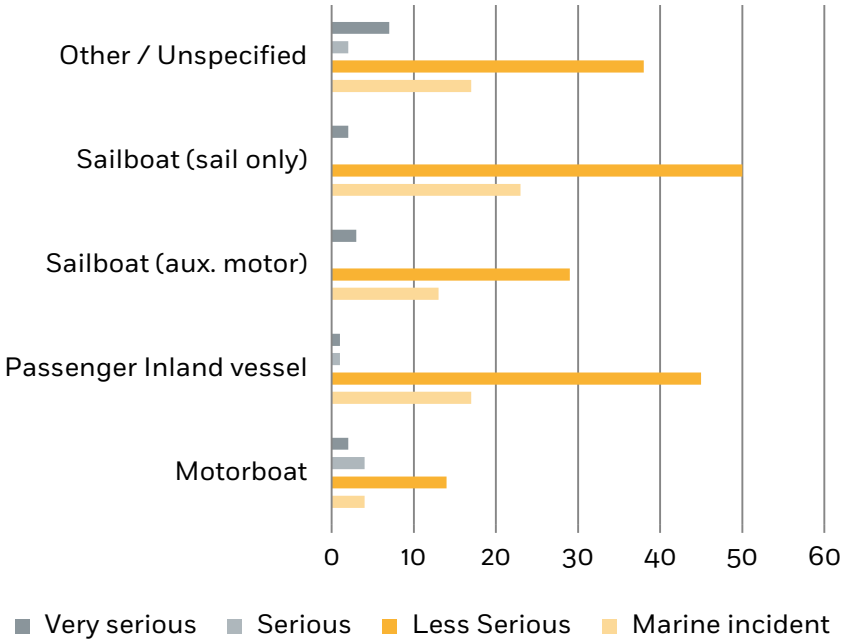
Figure 151: Distribution of casualty events per other ship type 2011-2016




**The ships within this category, despite being excluded from the scope of Directive 2009/18/EC, were however recorded as they were involved in a collision with a ship falling under the scope. This explains the very high rate of collision as casualty event.**

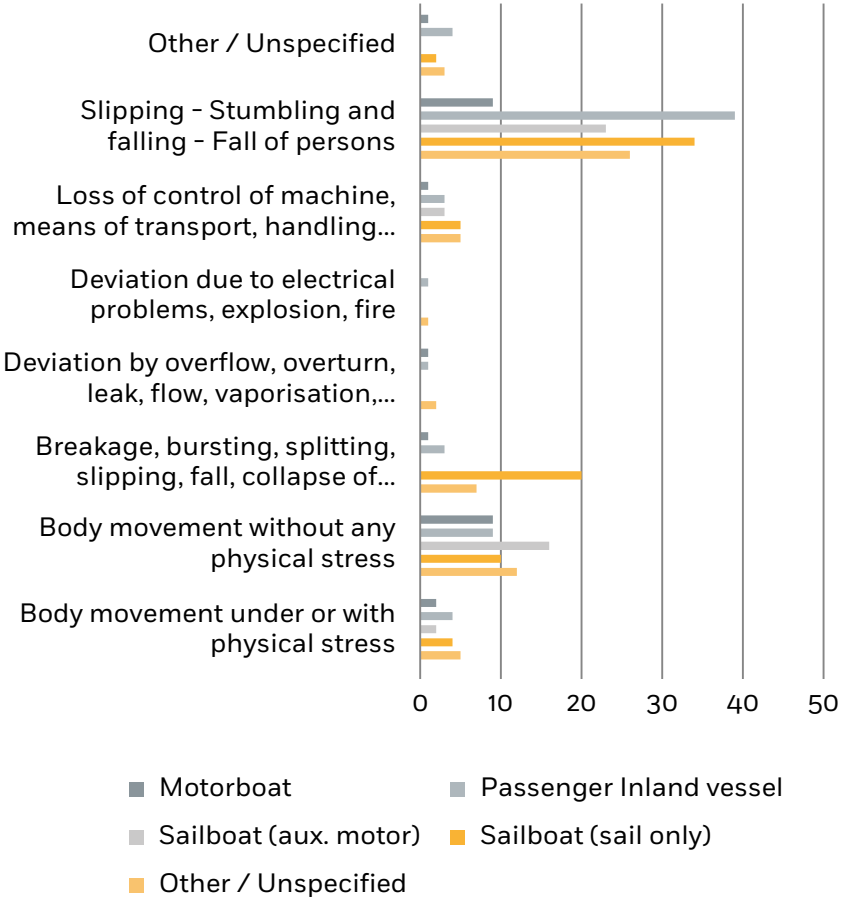
## 7.2.2 OCCUPATIONAL ACCIDENT

Figure 152: Severity of occupational accidents per other ship type 2011-2016




**The rate of very serious occupational accidents (5.5%) is higher than the general average for all ship types (4.4%).**

Figure 153: Distribution of deviations per other ship type 2011-2016



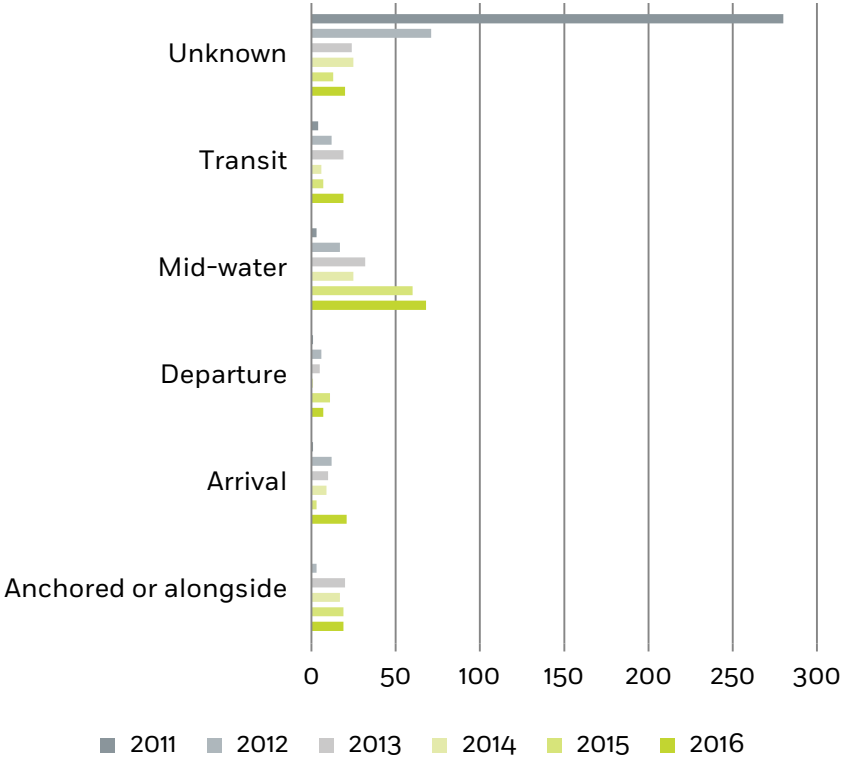

**Slipping and fall of persons was the most quoted deviation that occurred on board this category of ships (49%).**

## 7.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

**This section provides information about the location of the ships when marine casualties or incidents occurred.**

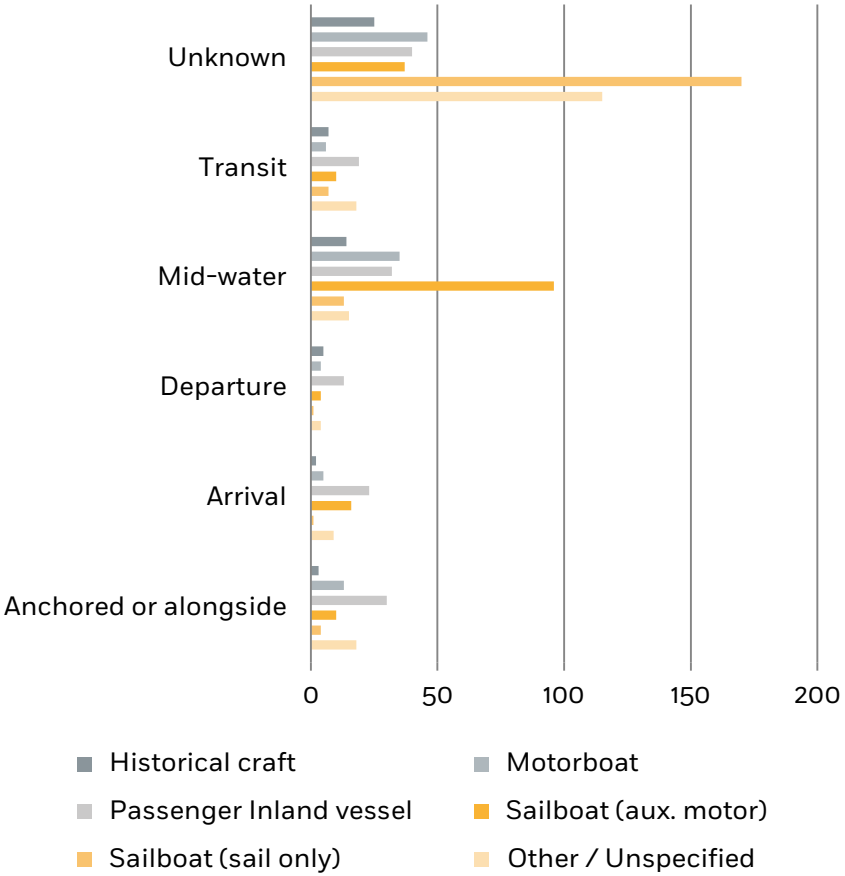
### 7.3.1 VOYAGE SEGMENTS

Figure 154: Distribution by voyage segment




**The increase of casualties and incidents occurring mostly during the mid-water phase of the voyage, continued in 2016.**

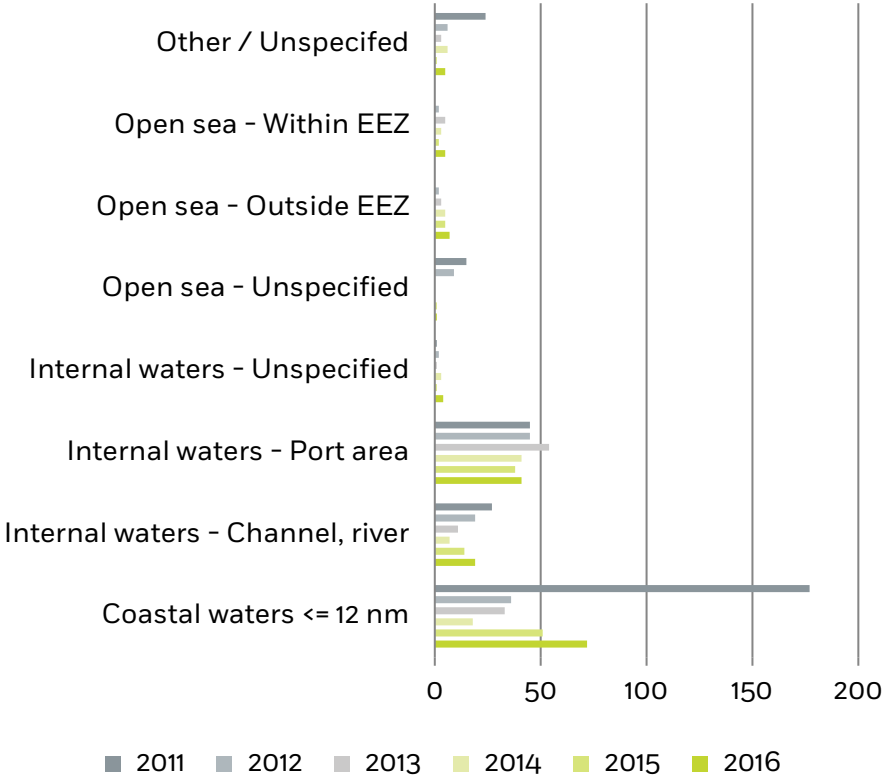
Figure 155: Distribution by voyage segment per other ship types 2011-2016




**The mid-water phase of a voyage is confirmed to be the least safe, whatever the ship type.**

## 7.3.2 LOCATION

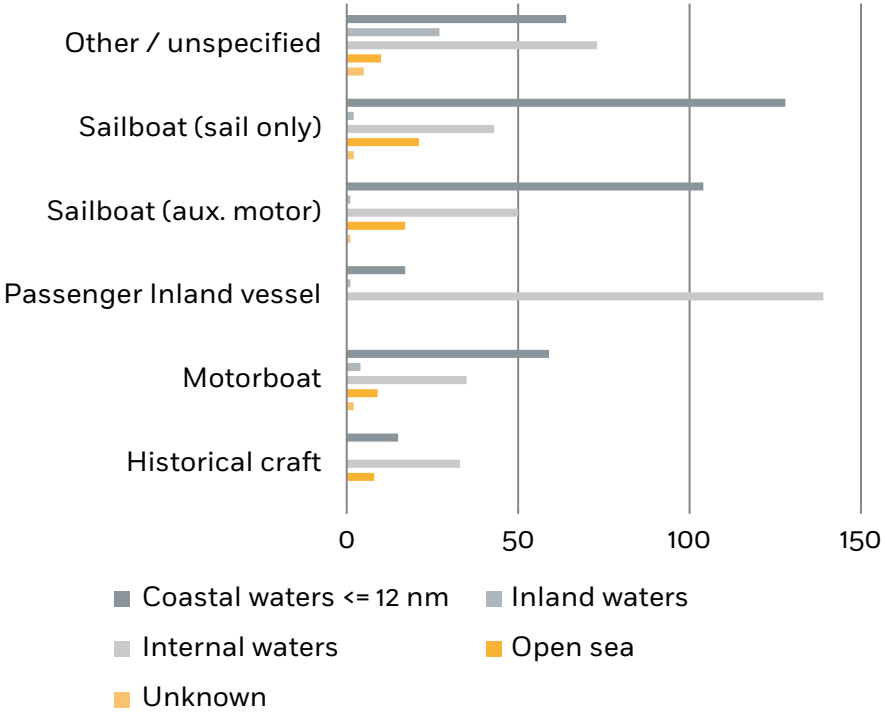
Figure 156: Distribution by location of the marine casualties and incidents




**44% of the casualties took place in coastal waters, followed by 30% in port areas.**

**The increase of marine casualties and incidents in coastal waters noted in 2015 continued in 2016.**

Figure 157: Distribution by location of marine casualties and incidents per other ship type 2011-2016




**For half of the categories of ships, coastal waters saw most of the casualties, while for the other half, casualties took place in the internal waters and port areas.**

### 7.3.3 Regional distribution

Figure 158: Regional distribution of marine casualties and incidents 2011-2016

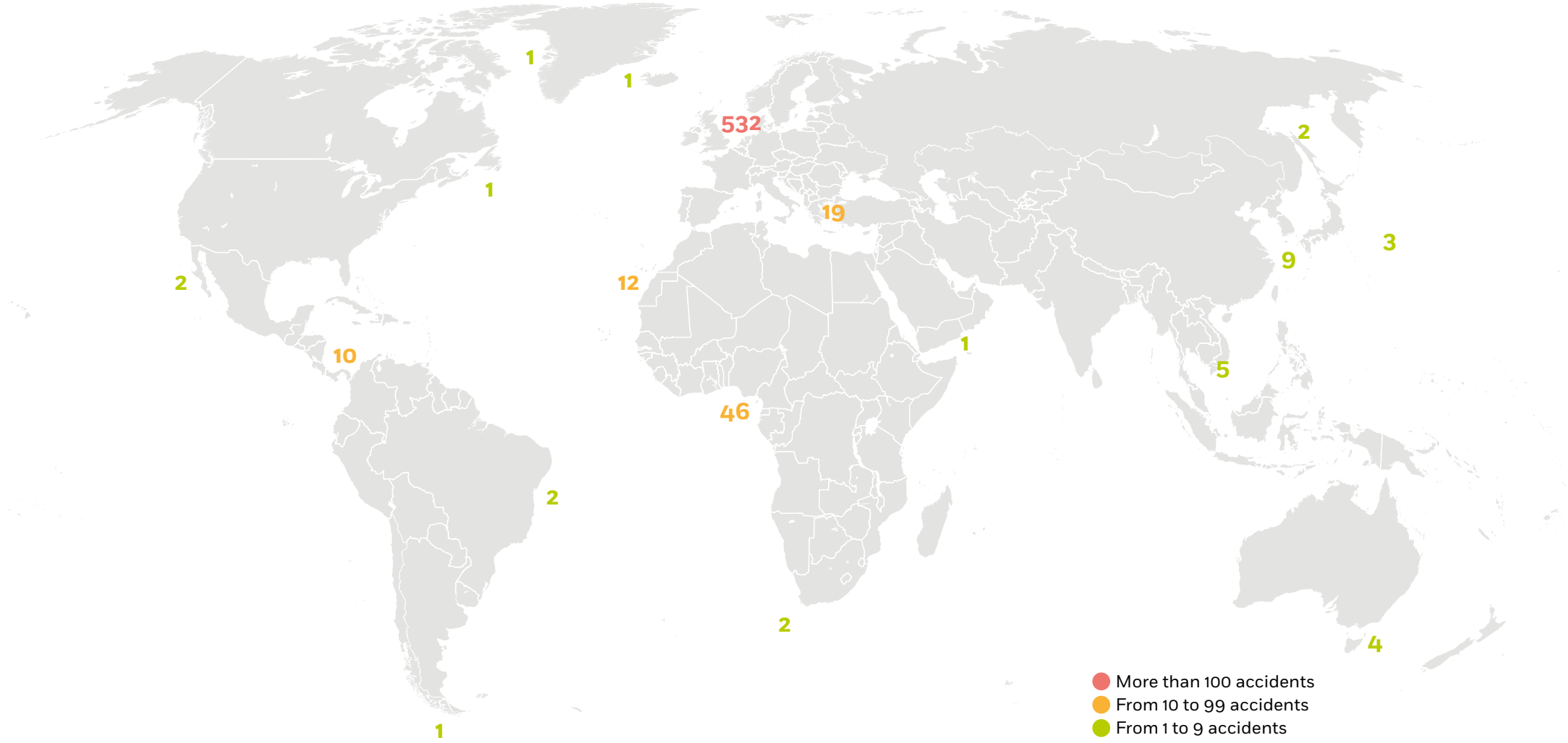
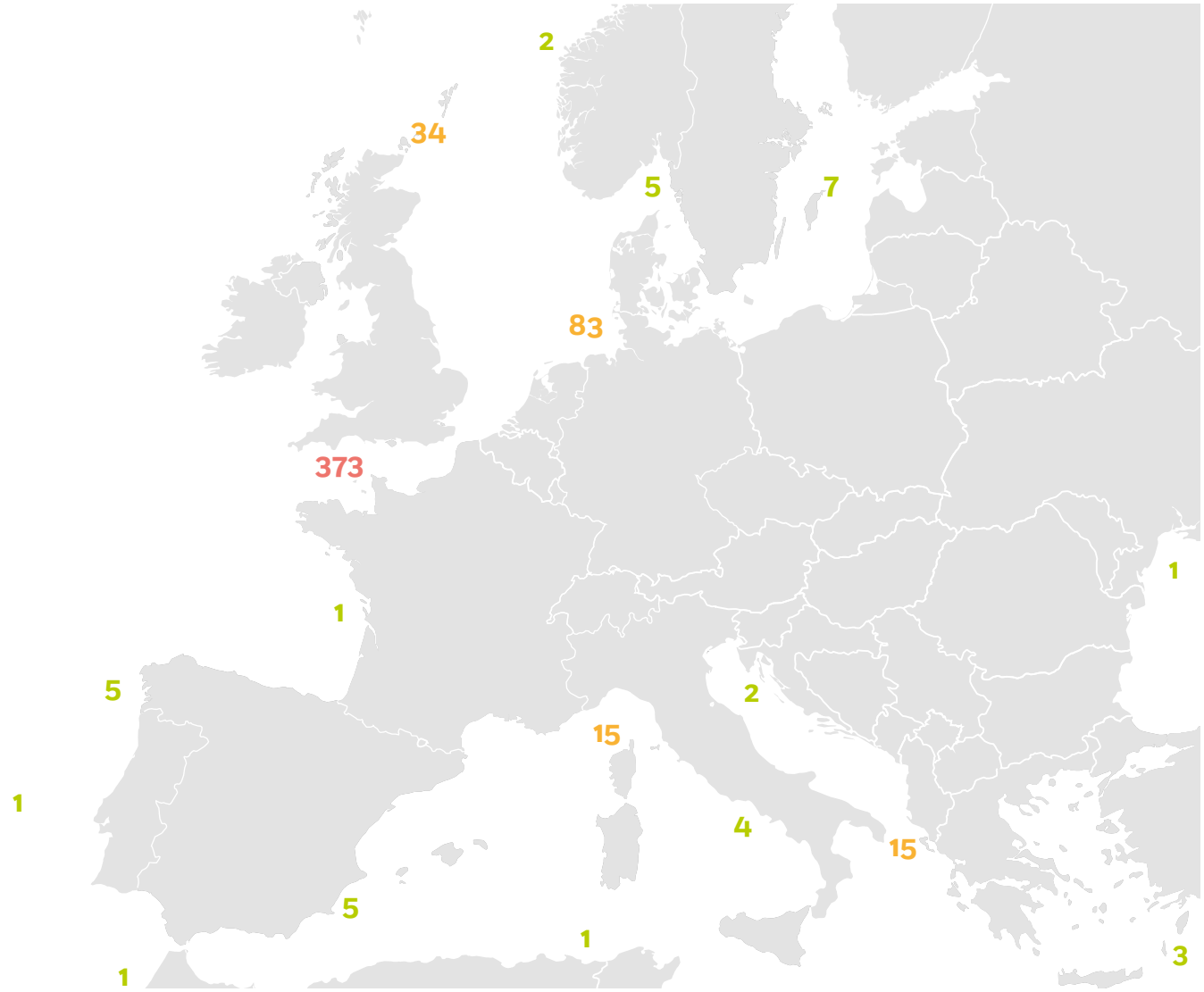


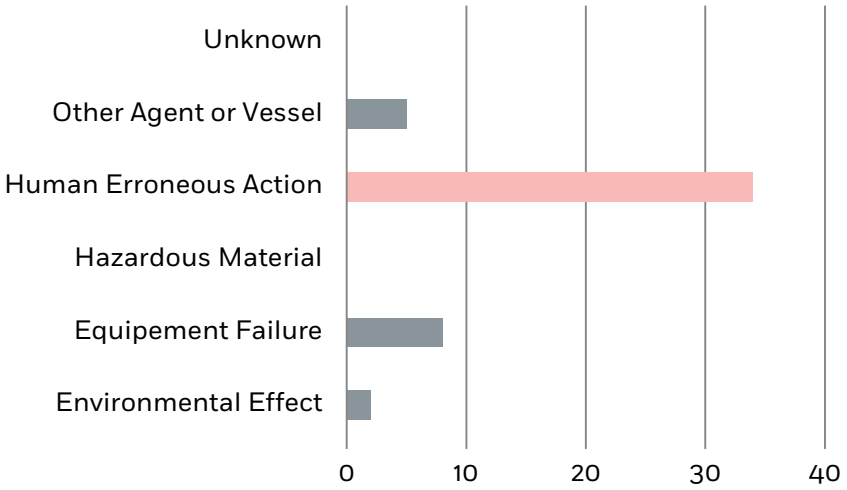
Figure 159: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU States 2011-2016



## 7.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

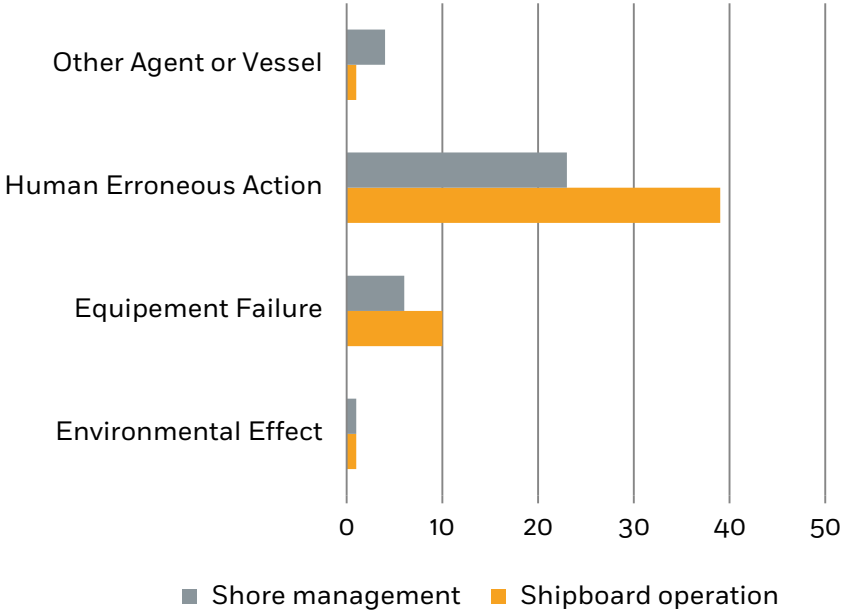
Due the limited number of cases and therefore little information about accidental events in this ship type, the figures below should be considered as indicative rather than conclusive. However possible conclusions that can be made follow the conclusions made for the four other categories of ship.

Figure 160: Accidental Events 2011-2016



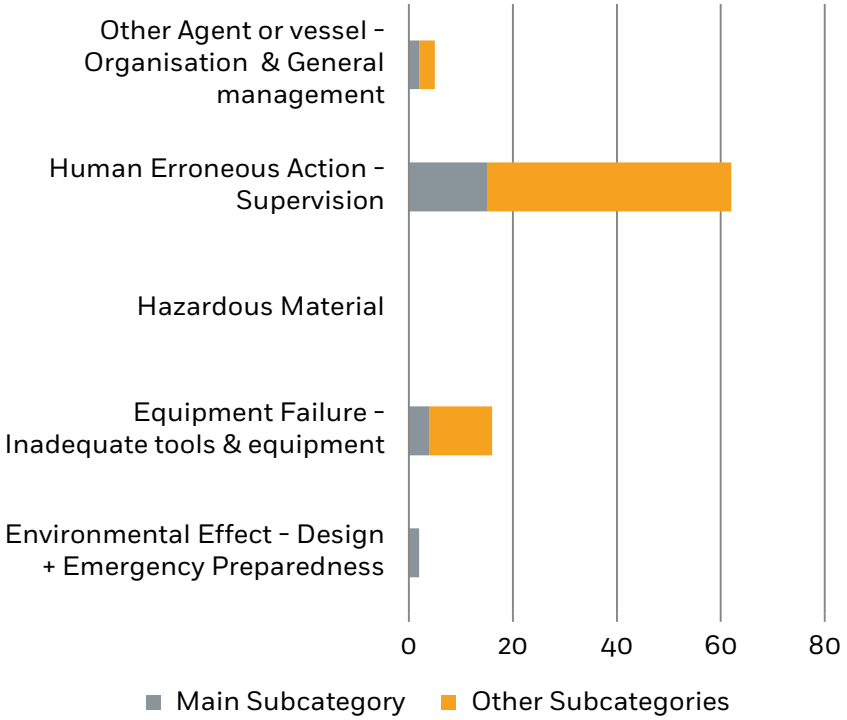

**From a total of 49 accidental events analysed during the investigations, 69% were attributed to Human Erroneous Action.**

Figure 161: Relationship between Accidental Events and the main Contributing Factors 2011-2016




**When reported, shipboard operations was most quoted as contributing factor with 60% of the total.**

Figure 162: Groups of Contributing Factors 2011-2016

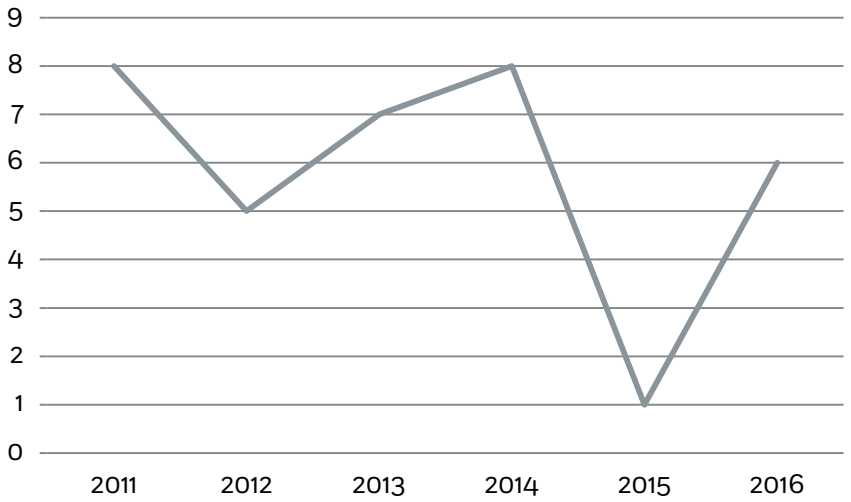



**This figure indicates the contributing factor that was most quoted per category of accidental event. "Supervision" was most quoted when the accidental event was human erroneous action, while inadequate tools and equipment were the most quoted contributing factor when the accidental event was equipment failure.**

## 7.5 CONSEQUENCES

### 7.5.1 CONSEQUENCES TO SHIPS

Figure 163: Other ships lost



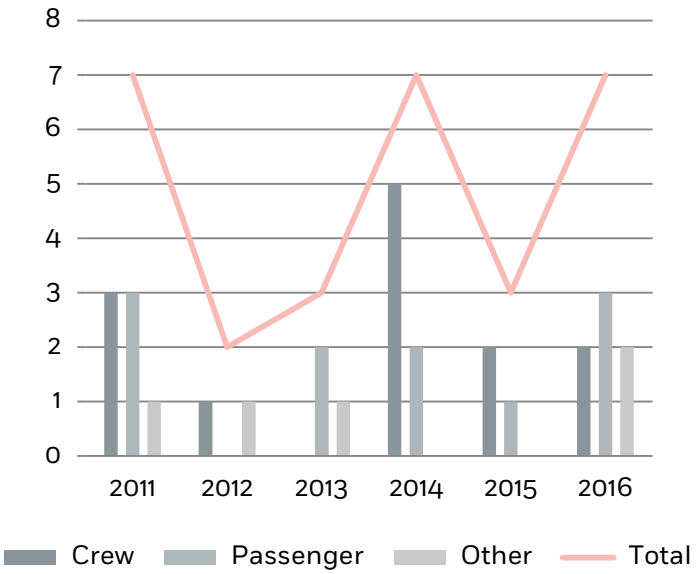

**After only one lost ship was recorded in this ship category in 2015, the number of ships lost in 2016 increased up to the average number of losses (6 per year).**

**Out of the 35 other type ships that were lost, the majority were recreational craft (60%).**

## 7.5.2 CONSEQUENCES TO PERSONS

### 7.5.2.1 FATALITIES

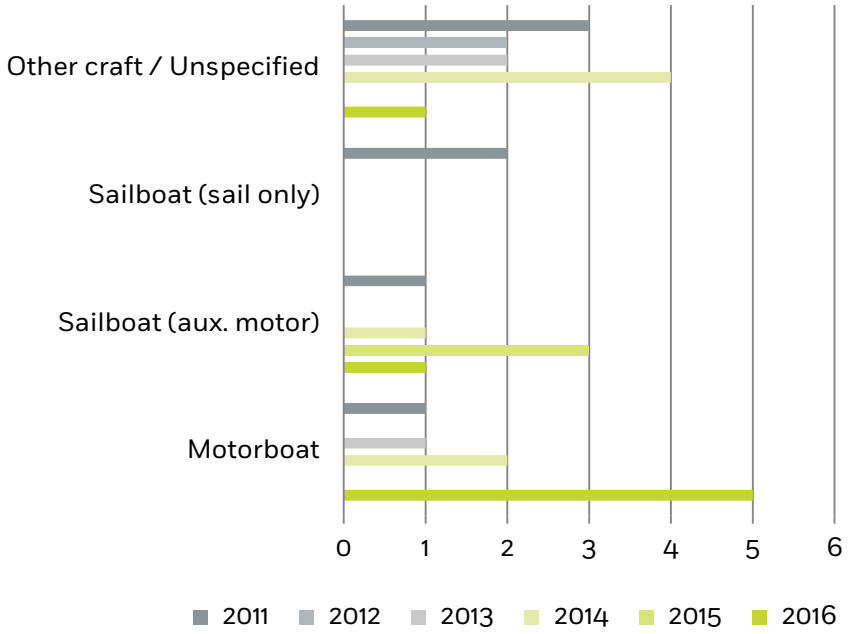
Figure 164: Number of fatalities




**The average number of fatalities over the period 2011-2016 is 5.**

**Crew members and passengers were mainly affected.**

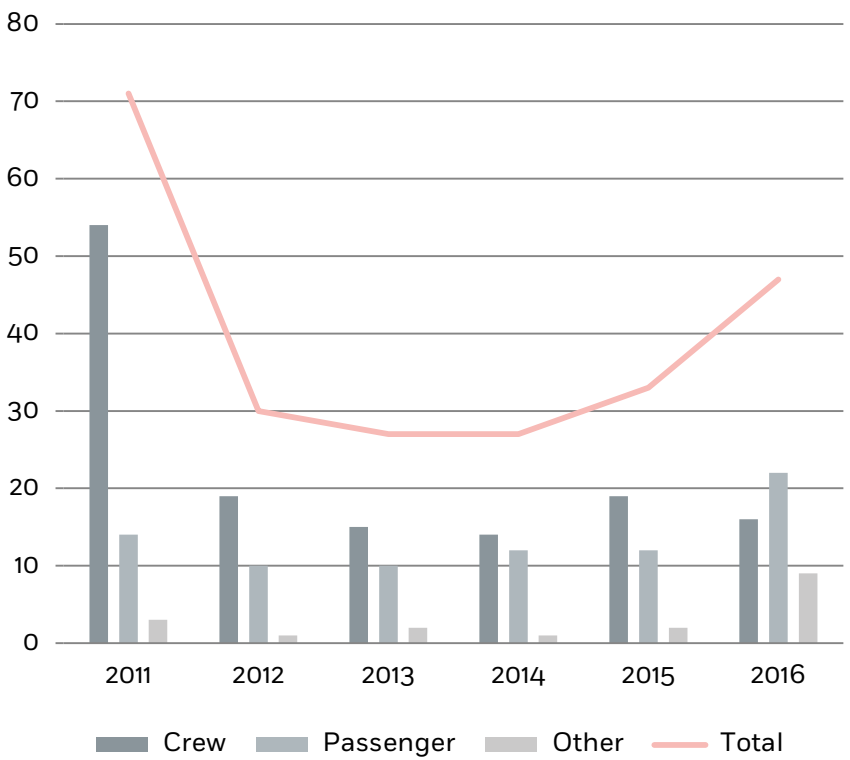
Figure 165: Distribution of fatalities per other ship type




**Most fatalities occurred on board leisure craft (motorboat or sailboat) (57%).**

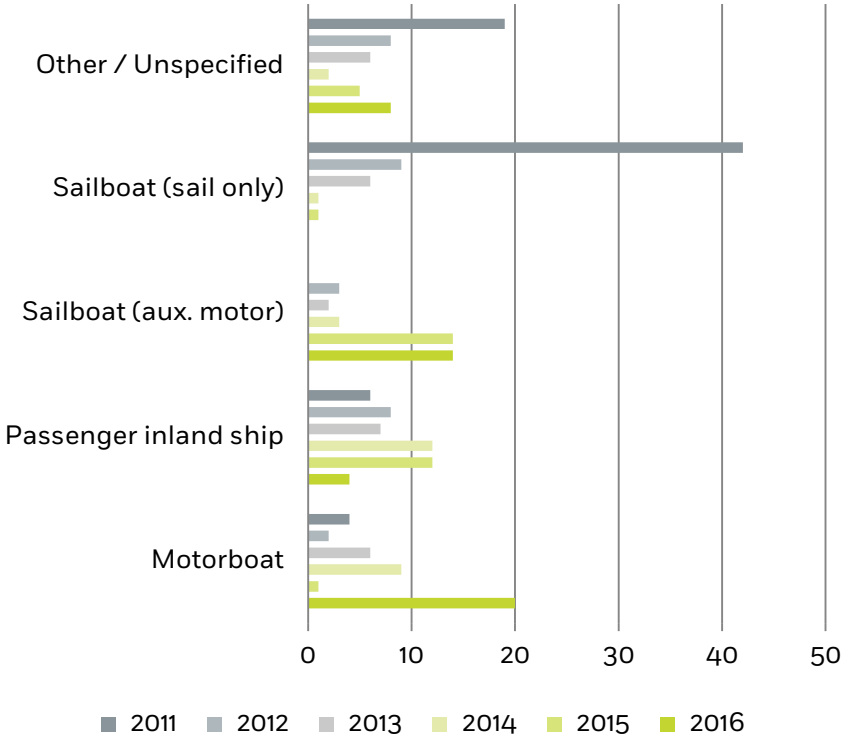
### 7.5.2.2 INJURIES

Figure 166: Number of injuries




**The number of injuries has increased from 2014.**

Figure 167: Distribution of injuries per other ship type




**Most injuries occurred on leisure boats (59%) but a significant number also happened on passenger inland vessels (21%).**


Flooding, ZANDER, 2 lives lost, 24/11/2014

CHAPTER 8

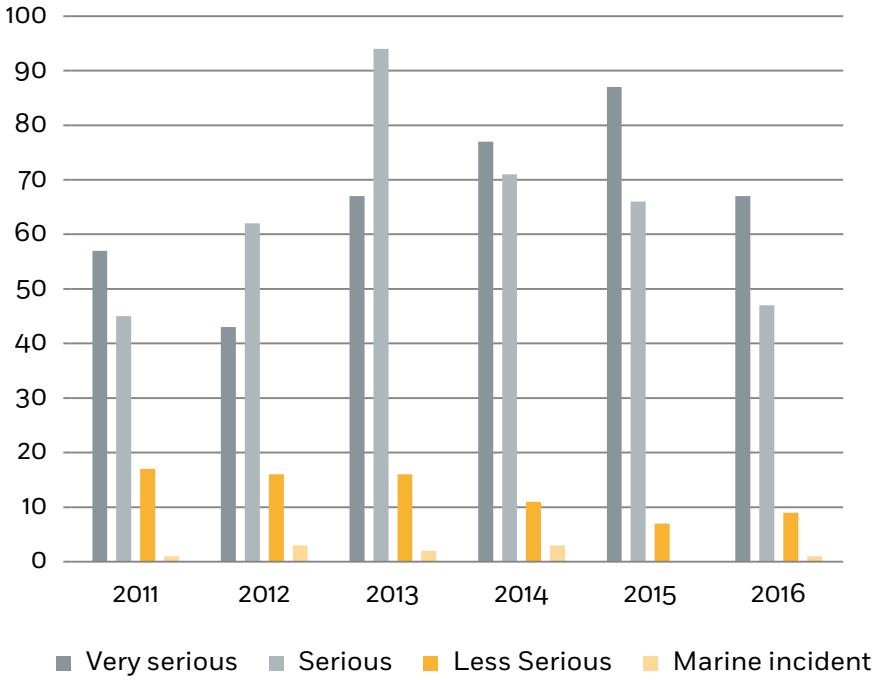
# ACTION TAKEN BY INVESTIGATIVE BODIES

Grounding, HAMBURG, ship damaged, 11/05/2015

This chapter describes the activities undertaken by the investigative bodies of EU Member States regarding the investigations performed, reports published and safety recommendations issued.

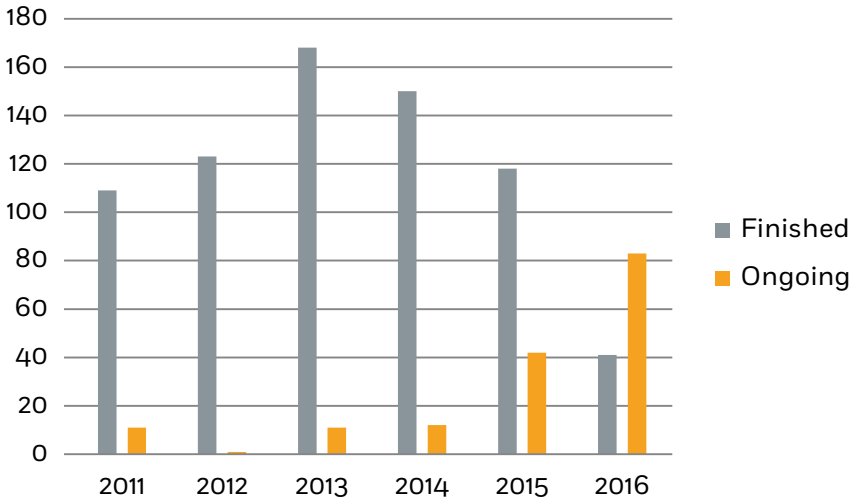
## 8.1 SAFETY INVESTIGATIONS

Figure 168: Number of investigations launched by severity of marine casualties and incidents




**A total of 869 investigations were launched during the five-year period, 46% of these being related to very serious casualties and 44% to serious casualties.**

Figure 169: Status of investigations launched

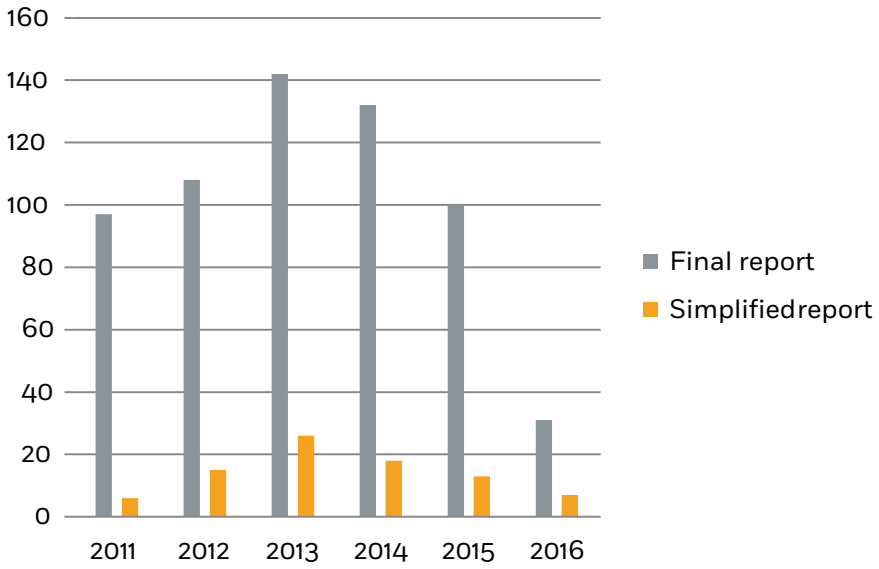



**709 investigations were reported by the investigative bodies as being concluded.**

**When the data were extracted for this publication, 23 investigations had yet to be started.**

## 8.2 INVESTIGATION REPORTS

Figure 170: Number of investigation reports published

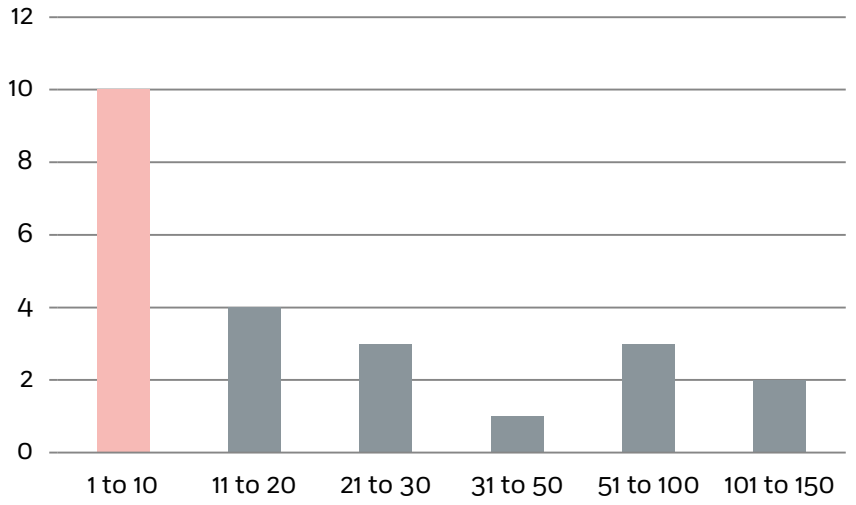



**695 investigation reports were published during the six-year period. The type of report, whether final or simplified, is decided by the investigative body depending on the severity of the casualty and/or the potential to prevent future casualties.**

The list of all investigation reports published in EMCIP as per Article 17 of the Accident Investigation Directive 2009/18/EC can be found on the EMCIP Portal at the following address:

https://emcipportal.jrc.ec.europa.eu/index.php/Investigation-reports

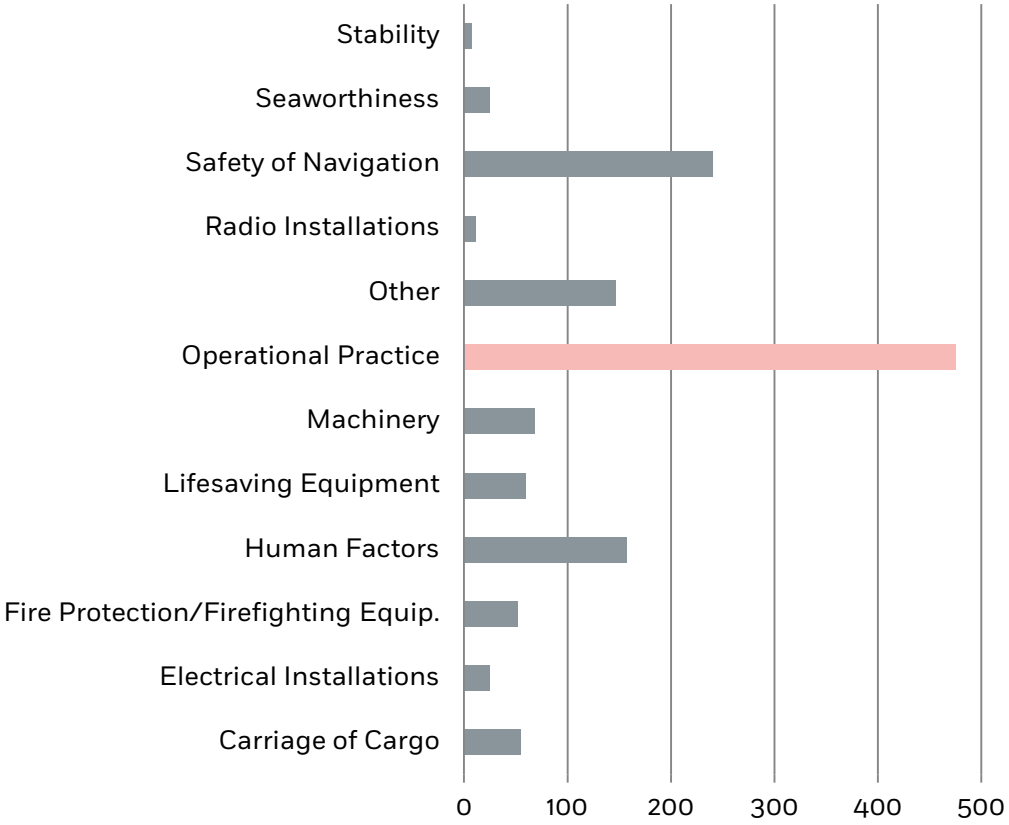
Figure 171: Number of reports published by Member States 2011-2016




**23 Member States have published at least one report. 71% of the reports were published by 5 Member States.**

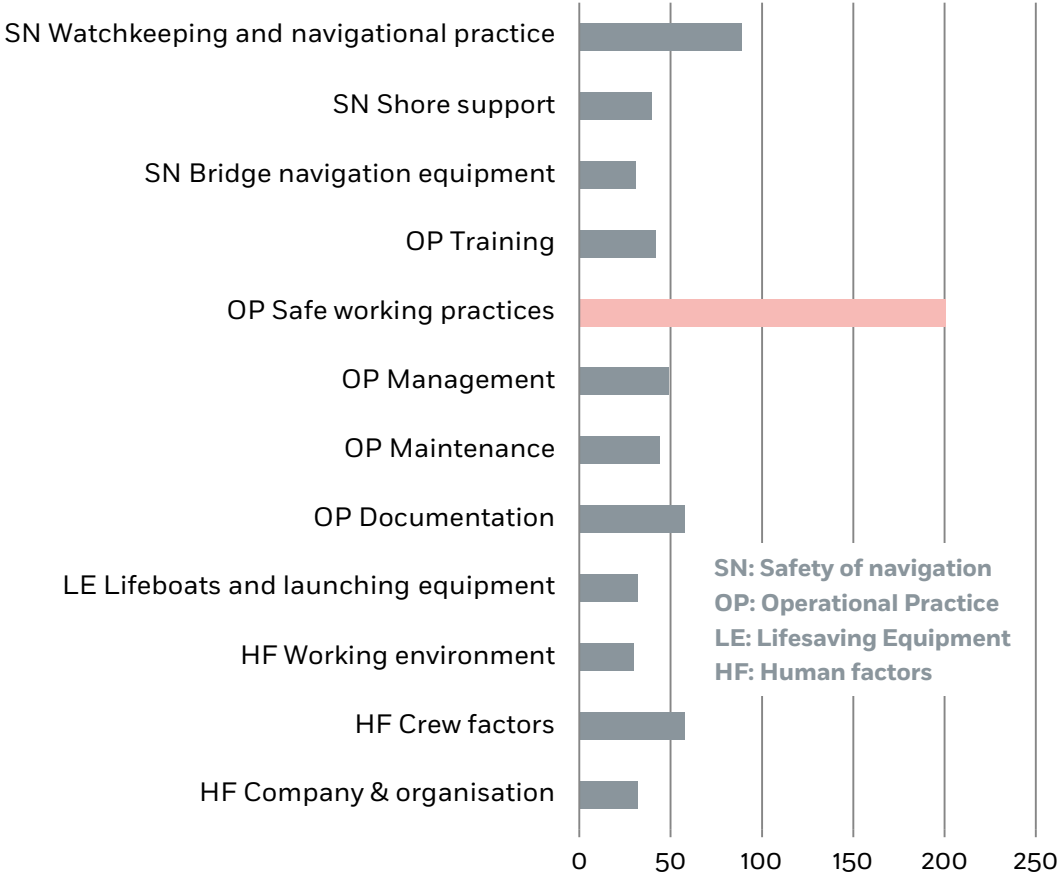
## 8.3 SAFETY RECOMMENDATIONS

Figure 172: Distribution of safety recommendations issued per focus area 2011-2016



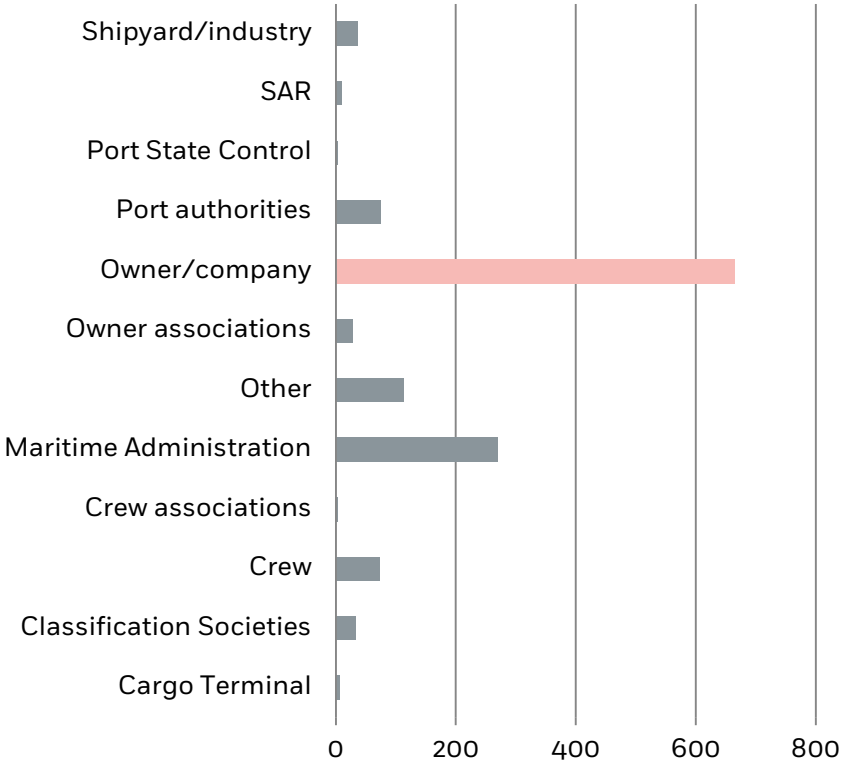

**A total of 1322 safety recommendations have been issued. Each safety recommendation could be related to one or more focus areas. As shown in the figure above, they covered a range of 12 focus areas, the main one being operational practices (36%), followed by safety of navigation (18%) and human factors (12%).**

Figure 173: Distribution of main sub-focus area quoted more than 30 times 2011-2016



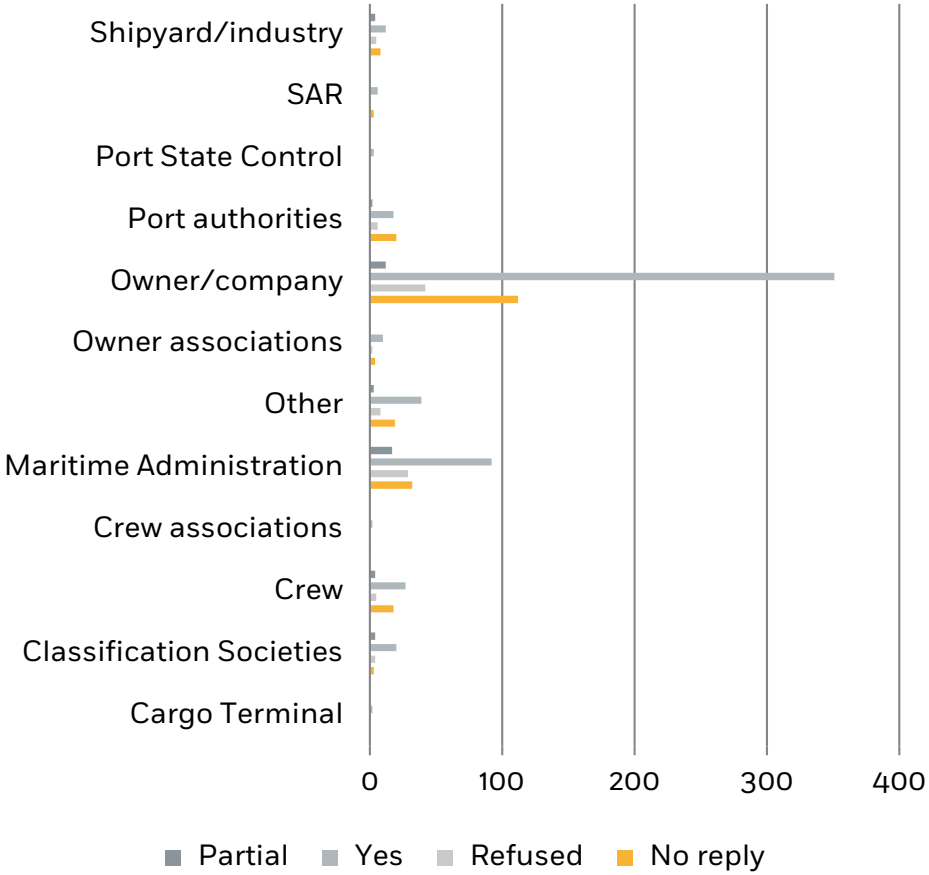

**Among 77 possible sub-focus areas to classify the safety recommendations, the 12 most quoted ones are evenly spread (from 4% to 12% each) apart from "Operational Practice – Safe Working practices" (28%).**

Figure 174: Addressees of Safety Recommendations 2011-2016




**From a total of 1322 addressees that received at least one safety recommendation, 50% were the owners or the companies of the ships involved in the accidents, and 20% were the maritime administrations.**

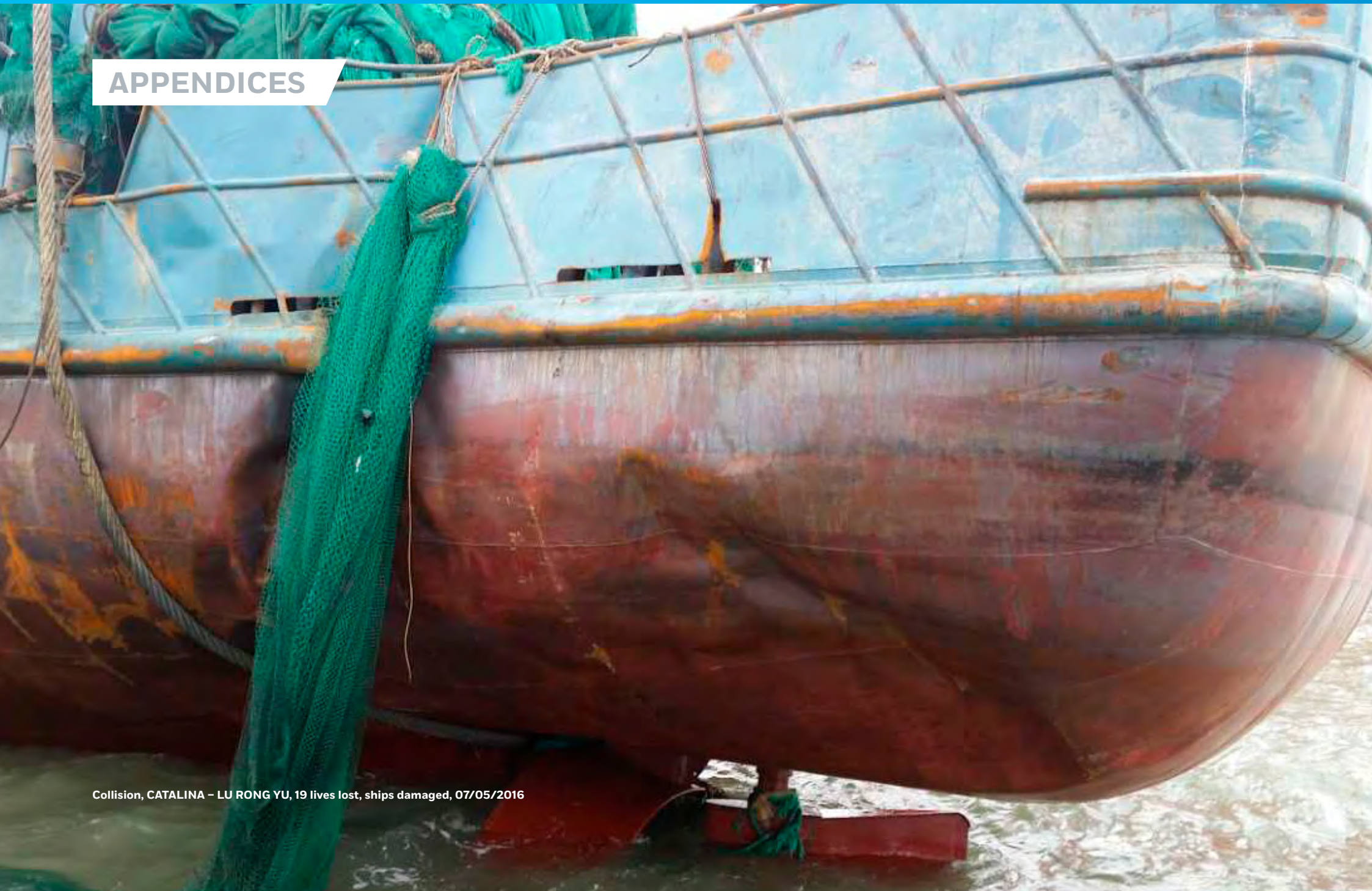
Figure 175: Responses to Safety Recommendations 2011-2016




**Out of the 952 answers provided by the addressees, 66% of safety recommendations were considered positively (fully or partially), while 11% were refused.**


**Fall over board, SELANDIA SWAN, 1 life lost, 23/07/2015**

# APPENDICES



Collision, CATALINA – LU RONG YU, 19 lives lost, ships damaged, 07/05/2016

# APPENDIX 1

## ACRONYMS

EMSA: European Maritime Safety Agency

EMCIP: European Marine Casualty Information Platform

EU: European Union

EC: European Commission

IMO: International Maritime Organization

SAR: Search and Rescue

## DEFINITIONS FROM THE IMO CASUALTY INVESTIGATION CODE AND THE DIRECTIVE 2009/18/EC

Specific terms used in this publication are also used for marine safety investigation purposes and have the following meanings:

1. A **coastal State** means a State in whose territory, including its territorial sea, a marine casualty or marine incident occurs.

2. **Flag State** means a State whose flag a ship is entitled to fly.

3. A **marine casualty** means an event, or a sequence of events, that has resulted in any of the following which has occurred directly in connection with the operations of a ship:

    1. the death of, or serious injury to, a person;
    2. the loss of a person from a ship;
    3. the loss, presumed loss or abandonment of a ship;
    4. material damage to a ship;
    5. the stranding or disabling of a ship, or the involvement of a ship in a collision;
    6. material damage to marine infrastructure external to a ship, that could seriously endanger the safety of the ship, another ship or an individual; or
    7. severe damage to the environment, or the potential for severe damage to the environment, brought about by the damage of a ship or ships.

However, a marine casualty does not include a deliberate act or omission, with the intention to cause harm to the safety of a ship, an individual or the environment.

4. A **marine incident** means an event, or sequence of events, other than a marine casualty, which has occurred directly in connection with the operations of a ship that endangered, or, if not corrected, would endanger the safety of the ship, its occupants or any other person or the environment.

However, a marine incident does not include a deliberate act or omission, with the intention to cause harm to the safety of a ship, an individual or the environment.

5. A **marine safety investigation** means an investigation or inquiry into a marine casualty or marine incident, conducted with the objective of preventing marine casualties and marine incidents in the future. The investigation includes the collection and analysis of evidence, the identification of causal factors and the making of safety recommendations as necessary.

6. A **marine safety investigation report** means a report that contains:

    1. a summary outlining the basic facts of the marine casualty or marine incident and stating whether any deaths, injuries or pollution occurred as a result;
    2. the identity of the flag State, owners, operators, the company as identified in the safety management certificate, and the classification society (subject to any national laws concerning privacy);
    3. where relevant the details of the dimensions and engines of any ship involved, together with a description of the crew, work routine and other matters, such as time served on the ship;
    4. a narrative detailing the circumstances of the marine casualty or marine incident;

5. analysis and comment on the causal factors including any mechanical, human and organizational factors;
6. a discussion of the marine safety investigation's findings, including the identification of safety issues, and the marine safety investigation's conclusions; and
7. where appropriate, recommendations with a view to preventing future marine casualties and marine incidents.

7. A **material damage** in relation to a marine casualty means:

1. damage that:
   1.1 significantly affects the structural integrity, performance or operational characteristics of marine infrastructure or a ship; and
   1.2 requires major repair or replacement of a major component or components; or
2. destruction of the marine infrastructure or ship.

8. The term **"serious casualty"** shall be understood in accordance with the updated definition contained in Circular MSC-MEPC.3/Circ.3 of the IMO Maritime Safety Committee and Marine Environment protection Committee of 18 December 2008; it says:

**Serious casualties** are casualties to ships which do not qualify as very serious casualties and which involve a fire, explosion, collision, grounding, contact, heavy weather damage, ice damage, hull cracking, or suspected hull defect, etc., resulting in:

- immobilization of main engines, extensive accommodation damage, severe structural damage, such as penetration of the hull under water, etc., rendering the ship unfit to proceed* or
- pollution (regardless of quantity); and/or
- a breakdown necessitating towage or shore assistance.

*** The ship is in a condition, which does not correspond substantially with the applicable conventions, presenting a danger to the ship and the persons on board or an unreasonable threat of harm to the marine environment.**

9. A **serious injury** means an injury which is sustained by a person, resulting in incapacitation where the person is unable to function normally for more than 72 hours, commencing within seven days from the date when the injury was suffered.

10. A **severe damage to the environment** means damage to the environment which, as evaluated by the State(s) affected, or the flag State, as appropriate, produces a major deleterious effect upon the environment.

11. **Substantially interested State** means a State:

1. which is the flag State of a ship involved in a marine casualty or marine incident; or
2. which is the coastal State involved in a marine casualty or marine incident; or
3. whose environment was severely or significantly damaged by a marine casualty (including the environment of its waters and territories recognized under international law); or
4. where the consequences of a marine casualty or marine incident caused, or threatened, serious harm to that State or to artificial islands, installations, or structures over which it is entitled to exercise jurisdiction; or
5. where, as a result of a marine casualty, nationals of that State lost their lives or received serious injuries; or
6. that has important information at its disposal that the marine safety investigating State(s) consider useful to the investigation; or
7. that for some other reason establishes an interest that is considered significant by the marine safety investigating State(s).

12. **Territorial sea** (section 1 of Part II of the United Nations Convention on the Law of the Sea) refers to the area within which the sovereignty of a coastal State extends, beyond its land territory and internal waters and, in the case of an archipelagic State, its archipelagic waters, to an adjacent belt of sea, described as the territorial sea. It is a belt of coastal water extending at most 12 nautical miles (22.2 km; 13.8 mi) from the baseline (usually the mean low-water mark) of a coastal State.

13. A **very serious marine casualty** means a marine casualty involving the total loss of the ship or a death or severe damage to the environment.

Other definitions can be found in the:

"IMO Code for the Investigation of Marine Casualties and Incidents" which shall mean the Code for the investigation of Marine Casualties and Incidents annexed to resolution A.849(20) of the IMO Assembly of 27 November 1997. + RESOLUTION MSC.255(84) (adopted on 16 May 2008) ADOPTION OF THE CODE OF THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES FOR A SAFETY INVESTIGATION INTO A MARINE CASUALTY OR MARINE INCIDENT (CASUALTY INVESTIGATION CODE) + RESOLUTION A.1075(28) adopted on 24 February 2014

The scope of the Accident Investigation Directive 2009/18/EC can be found in its Article 2.

Other information can be found on:

http://www.emsa.europa.eu/implementation-tasks/accident-investigation.html or on
https://emcipportal.jrc.ec.europa.eu/

## OTHER EXPRESSIONS, AS PER EMCIP TAXONOMY

1. An **accidental event** is an event that is assessed to be inappropriate and significant in the sequence of events that led to the marine casualty or marine incident.

2. **Casualty events** are unwanted events in which there was some kind of energy release with impact on people and/or ship including its equipment and its cargo or environment. They are classified in:

- **Capsizing/Listing** is a casualty where the ship no longer floats in the right-side-up mode due to: negative initial stability (negative metacentric height), or transversal shift of the centre of gravity, or the impact of external forces.
  - **Capsizing** when the ship is tipped over until disabled;
  - **Listing** when the ship has a permanent heel or angle of loll.
- **Collision** - a casualty caused by ships striking or being struck by another ship, regardless of whether the ships are underway, anchored or moored. This type of casualty event does not include ships striking underwater wrecks. The collision can be **with other ship** or with multiple ships or **ship not underway**.
- Contact - a casualty caused by ships striking or being struck by an external object. The objects can be: **Floating object (cargo, ice, other or unknown); Fixed object**, but not the sea bottom; or **Flying object**.
- **Damage to equipment** - damage to equipment, system or the ship not covered by any of the other casualty type.
- **Grounding/stranding** - a moving navigating ship, either under command, under Power, or not under command, **Drift**(ing), striking the sea bottom, shore or underwater wrecks.
- **Fire/explosion** - an uncontrolled ignition of flammable chemicals and other materials on board of a ship:

- **Fire** is the uncontrolled process of combustion characterised by heat or smoke or flame or any combination of these.
- **Explosion** is an uncontrolled release of energy which causes a pressure discontinuity or blast wave.

- **Flooding/foundering** is a casualty event when the ship is taking water on board.

  - **Foundering** will be considered when the vessel has sunk. Foundering should only be regarded as the first casualty event if we do not know the details of the flooding which caused the vessel to founder. In the chain of events foundering can be the last casualty event in this case there is the need to add accidental events.
  - **Flooding** – refers to a casualty when a vessel takes water on board and can be:

    - **Progressive** if the water flow is gradual.
    - **Massive** if the water flow is extensive.

- **Hull failure** - a failure affecting the general structural strength of the ship.

- **Loss of control** - a total or temporary loss of the ability to operate or manoeuvre the ship, failure of electric power, or to contain on board cargo or other substances:

  - **Loss of electrical power** is the loss of the electrical supply to the ship or facility;
  - **Loss of propulsion power** is the loss of propulsion because of machinery failure;
  - **Loss of directional control** is the loss of the ability to steer the ship;
  - **Loss of containment** is an accidental spill or damage or loss of cargo or other substances carried on board a ship.

- **Missing** - a casualty to a ship whose fate is undetermined with no information having being received on the loss and whereabouts after a reasonable period of time.

- **Non-accidental events** are intentional events as a result of illegal or hostile acts therefore they are not marine casualties or incidents. They are:

  - **Acts of war**, any act, against a ship or the people on board, by a State that would effectively terminate the normal international law of peacetime and activate the international law of war;
  - **Criminal acts**, any crime, including an act, omission, or possession under the laws of a State or local government, which poses a substantial threat to people on board of a ship or to property (e.g. terrorism, sabotage, piracy);
  - **Illegal discharge** is an intentional discharge of polluting substances, oil or other noxious substances, from ships; and
  - **Other**, other intentional act that incur loss of or damage to a ship or environmental damage or harm to people on board.
    Non-accidental events are not considered as marine casualties or incidents and are not covered by the scope of the Accident Investigation Directive (2009/18/EC).

3. **Contributing factor** is a condition that may have contributed to an accidental event or worsened its consequence (e.g. man/machine interaction, inadequate illumination).

4. Occupational accidents are grouped under **deviations**, which consist in the description of the event deviating from normality leading to the accident:

- **Deviation due to electrical problems, explosion, fire - Not specified**

  - Electrical problem due to equipment failure - leading to indirect contact
  - Electrical problem - leading to direct contact
  - Explosion
  - Fire, flare up
  - Other Deviations not listed above

**Deviation by overflow, overturn, leak, flow, vaporisation, emission**

- Solid state - overflowing, overturning
- Liquid state - leaking, oozing, flowing, splashing, spraying
- Gaseous state - vaporisation, aerosol formation, gas formation
- Pulverulent material - smoke generation, dust/particles in suspension/ emission of
- Other Deviations not listed above

**Breakage, bursting, splitting, slipping, fall, collapse of Material Agent**

- Breakage of material - at joint, at seams
- Breakage, bursting - causing splinters (wood, glass, metal, stone, plastic, others)
- Slip, fall, collapse of Material Agent - from above (falling on the victim)
- Slip, fall, collapse of Material Agent - from below (dragging the victim down)
- Slip, fall, collapse of Material Agent - on the same level
- Other deviations not listed above

**Loss of control (total or partial) of machine, means of transport or handling equipment, handheld tool, object, animal**

- Loss of control (total or partial) - of machine (including unwanted start-up) or of the material being worked by the machine
- Loss of control (total or partial) - of means of transport or handling equipment, (motorised or not)
- Loss of control (total or partial) - of hand-held tool (motorised or not) or of the material being worked by the tool
- Loss of control (total or partial) - of object (being carried, moved, handled, etc.)
- Loss of control (total or partial) - of animal
- Other Deviations not listed above

**Slipping - Stumbling and falling - Fall of persons**

- Fall of person - to a lower level
- Slipping - Stumbling and falling - Fall of person - on the same level
- Fall overboard of person
- Other deviations not listed above

**Body movement without any physical stress (generally leading to an external injury)**

- Walking on a sharp object
- Kneeling on, sitting on, leaning against
- Being caught or carried away, by something or by momentum
- Uncoordinated movements, spurious or untimely actions
- Other Deviations not listed above

**Body movement under or with physical stress (generally leading to an internal injury)**

- Lifting, carrying, standing up
- Pushing, pulling
- Putting down, bending down
- Twisting, turning
- Treading badly, twisting leg or ankle, slipping without falling
- Other Deviations not listed above

**Shock, fright, violence, aggression, threat, presence**

- Shock, fright
- Violence, aggression, threat - between company employees subjected to the employer's authority
- Violence, aggression, threat - from people external to the company towards victims performing their duties
- Aggression, jostle - by animal
- Presence of the victim or of a third person in itself creating a danger for oneself and possibly others
- Other Deviations not listed above

**Other Deviations not listed above in this classification.**

5. Categories describing the **location** where the casualty or accident occurred are:

-Outside 12nm it will be regarded as **open sea**.

-If it is in waters up to 12 nautical miles it is **coastal waters ≤ 12 nm**.

-If it is in the waters on the landward side of the baseline of the territorial sea it is regarded as **internal waters (archipelago fairway, channel/river, port area)**,

-**Inland waters**, which includes any area of water defined by EU Member States and not categorized as 'sea'- e.g. canals, tidal and non-tidal rivers, lakes, and some estuarial waters (an arm of sea that extends inland to meet the mouth of a river).

-**Repair yard** and **unknown** are the two other possible values.

6. An **occupational accident** type means the mode in which a person on board was injured or killed. It can be:

- accident
- accident not related to ship operations
- illness
- suicide/homicide
- unknown

Illness, suicide and homicides are not covered by the scope of the Directive 2009/18/EC.

7. **Persons on board** are categorised as follow:

- Crew members / seafarers (any person who is employed or engaged or works in any capacity on board a ship);
- Passengers; and
- Others, for example persons working in harbours to load or unload ships

8. A **safety recommendation** is derived from the analysis and conclusions of the investigation and is related to particular subject areas, such as legislation, training, maintenance, etc.

Safety recommendations are addressed to those best placed to implement them, such as ship owners, maritime authorities, etc.

Member States shall ensure that safety recommendations are duly taken into account by the addressees and, where appropriate, be given an adequate follow-up in accordance with Community and International law.

9. The **ship type** is decided according to the ship's main activity:

- **Cargo ship** is a commercial ship designed for the carriage of various types of cargo, goods or products and up to a maximum of 12 passengers.

- **Fishing vessel** is a vessel equipped or used commercially for catching fish or other living resources at sea.

- **Passenger ship** is a ship designed to transport more than 12 passengers.

- **Service ship** is a ship designed for special services, like a tug or a dredger.

- **Other ship**, may be:

  - **Inland waterway vessel** is a vessel intended solely or mainly for navigation on inland waterways.
  - **Recreational craft** is a boat of any type, regardless of the means of propulsion, intended for sports or leisure purposes.
  - **Navy ship** is a ship operating under the Navy or other military organization.
  - **Unknown ship type**: occurrence for which it wasn't possible to identify the vessel type.

Such vessels are considered within the scope of the Directive only when they are involved in an occurrence together with a ship which is covered by the Directive (e.g. a collision between a cargo ship and a recreational craft).

In EMCIP, Marine casualties are separated into two different categories: a "**casualty with a ship**", when a ship, its equipment or cargo is affected by an accident and an **"occupational accident**", where the accident affects only a person.

10. **A sunken ship** means that the vessel lost her buoyancy. It does not imply the total loss of the ship.

11. As a consequence of a breakdown or immobilisation of the main engines or other event, the ships concerned needed **towage or shore assistance**.

12. **Unfit to proceed** means that the ship is in a condition, which does not correspond substantially with the applicable international conventions or national legislation, presenting a danger to the ship and the persons on board or an unreasonable threat of harm to the marine environment.

13. The **voyage segment** determines the section of the voyage being undertaken at the time of the marine casualty or incident. It can be:

- **Anchored or alongside**
- **Arrival or Departure**
- **Transit** (between the departure and mid-water or mid-water and arrival).
- **Mid-water** (between transit phases)

# APPENDIX 2

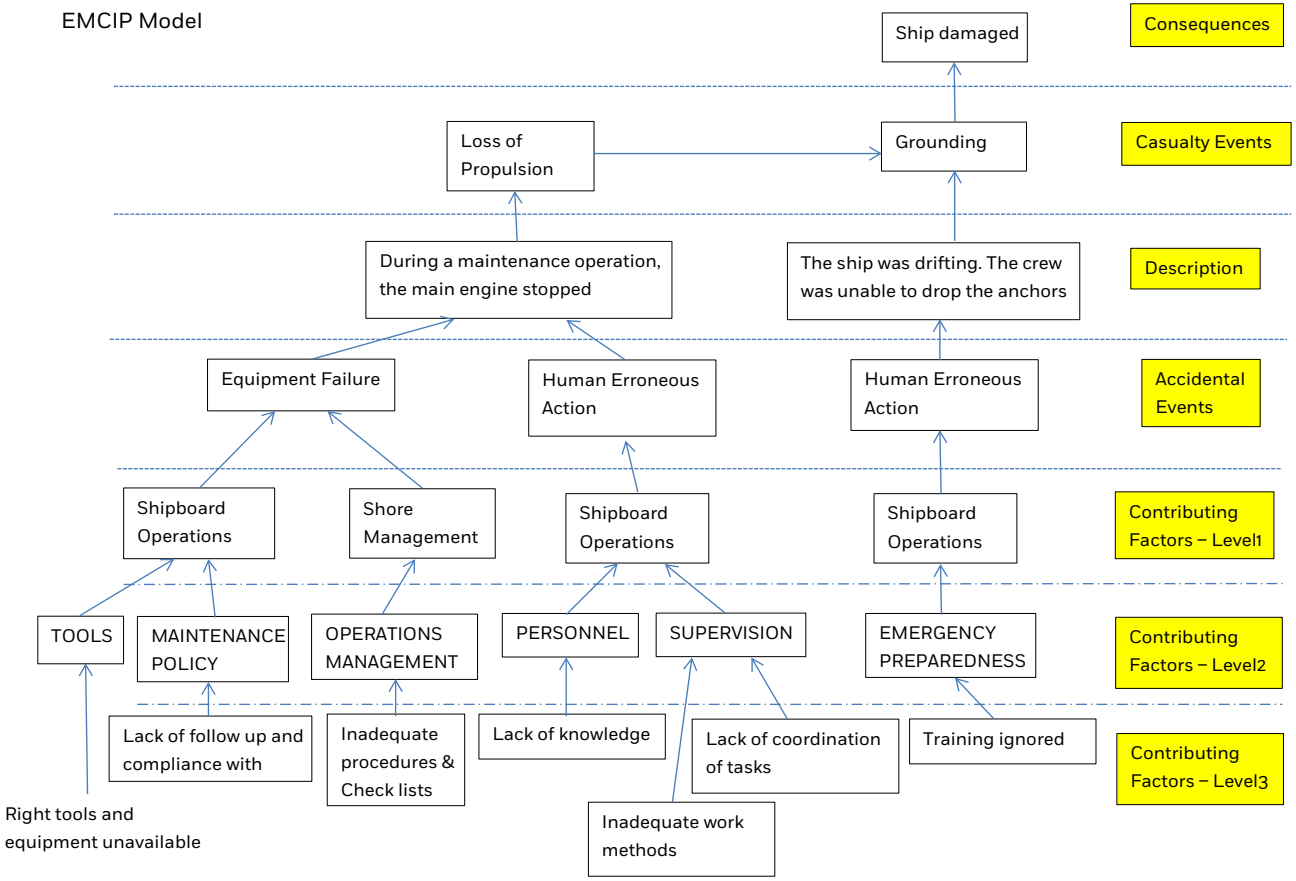



Figure 152: EMCIP Model

In order to report in a common way the information resulting from marine casualties, a codification of the various specific information was defined. Such codification provides also practical advice for a systematic investigation of marine casualties and incidents and allows the development of effective analysis and preventive action. It covers the different elements that connect the consequences of an accident to its root causes.

Such model is not only implemented at European level, but also at international level through the IMO resolution A28/Res.1075.

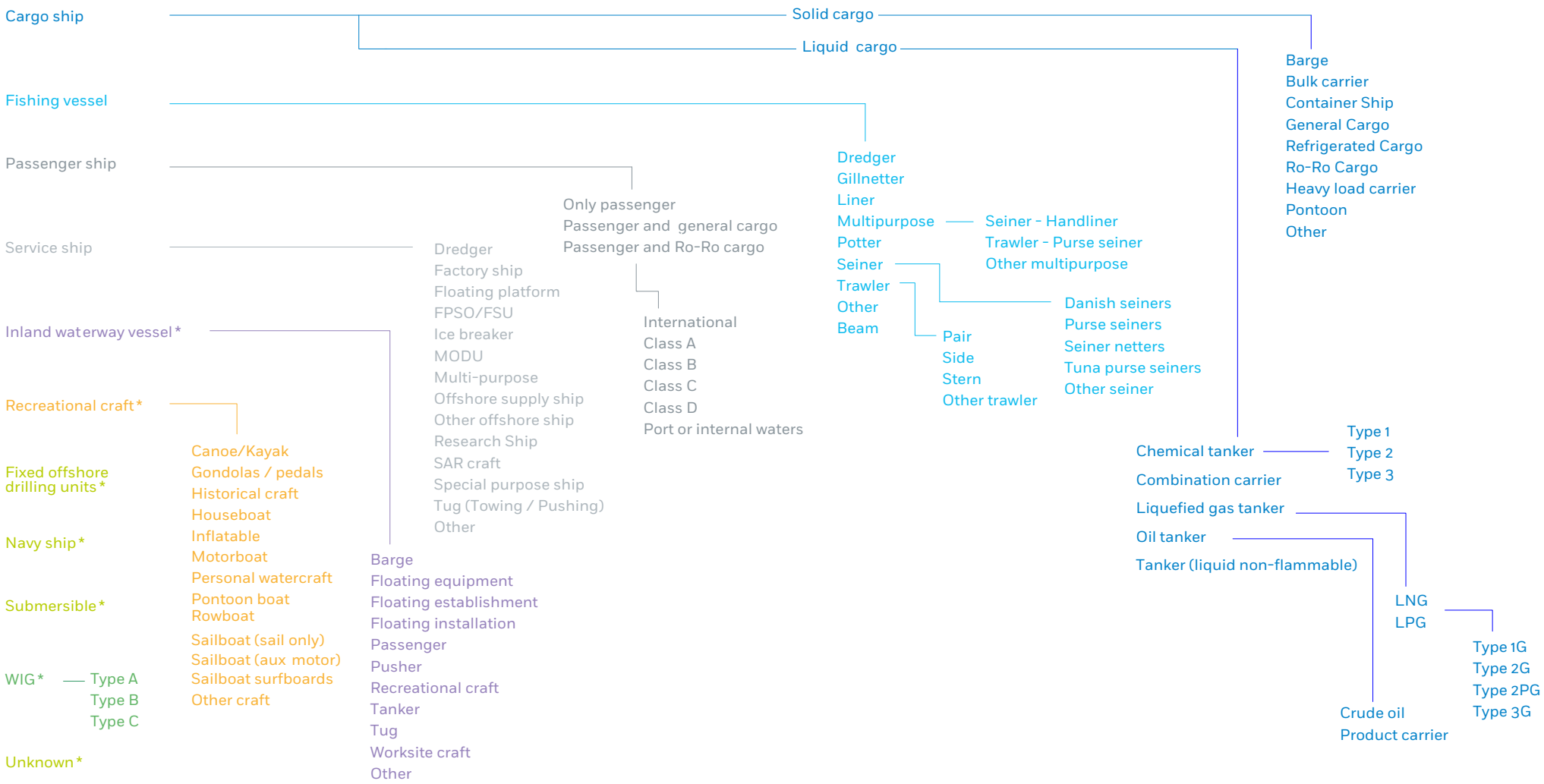
To support this model, a specific taxonomy related to marine casualties and incidents, composed by 630 fields, has been developed in the EMCIP database to store the various information collected during the investigation.

**Safety Recommendations issued by the Investigative bodies aim at "cutting the links" between the Contributing Factors, Accidental Events and Casualty events.**

**When safety issues have been properly identified during a safety investigation, and followed by relevant safety recommendations, a proper consideration by the addressee should prevent similar casualties.**

## APPENDIX 3

EMCIP Ship Type




* ships grouped under category “Other ships” in this publication

Note: supplementary classification called ‘Additional type of ship’: HSC (ACV, Hydrofoil, SES, Other), with sub-values A, B and other

# APPENDIX 4

## LIST OF NATIONAL INVESTIGATIVE BODIES IN THE EU

| Member State | Name of the national accident investigation body | Acronym | Website |
|---|---|---|---|
| **Austria** | Austrian Safety Investigation Authority | BAV/SUB | www.bmvit.gv.at |
| **Belgium** | Federal Public Service Mobility and Transport | FPS_TM | www.mobilit.belgium.be |
| **Bulgaria** | Maritime Accident Investigation Unit | MTITC | www.mtitc.government.bg |
| **Croatia** | Air, Maritime and Railway Traffic Accident Investigation Agency | AIN | www.ain.hr |
| **Cyprus** | Marine Accidents and Incidents Investigation service | MAIC | www.shipping.gov.cy |
| **Czech Republic** | Ministry of Transport, Czech Maritime Administration Navigation Department | MT_ND | www.mdcr.cz |
| **Denmark** | Danish Maritime Accident Investigation Board | DMAIB | www.dmaib.com |
| **Estonia** | Estonian Safety Investigation Bureau | ESIB | www.ojk.ee |
| **Finland** | Safety Investigation Authority of Finland | SIA | www.onnettomuustutkinta.fi |
| **France** | Marine Accident Investigation Office | BEAmer | www.bea-mer.developpement-durable.gouv.fr/ |
| **Germany** | Federal Bureau of Maritime Casualty Investigation | BSU | www.bsu-bund.de |
| **Greece** | Helenic Bureau Marine Casualties Investigation | HBMCI | www.hbmci.gov.gr |
| **Hungary** | Hungarian Transportation Safety Bureau | TSB | www.kbsz.hu |
| **Iceland** | Icelandic Marine Accident Investigation Board | ITSB | www.rnsa.is |
| **Ireland** | Marine Casualty Investigation Board | MCIB | www.mcib.ie |
| **Italy** | Direzione Generale Investigazioni Ferroviarie e Marittime | DIGIFEMA | www.mit.gov.it |
| **Latvia** | Transport Accident and Incident Investigation Bureau | TAIIB | www.taiib.gov.lv |
| **Lithuania** | Transport Accident and Incident Investigation Division | TAITS | www.en.tm.lt/ |
| **Luxembourg** | Administration of Technical Investigations | AET | www.mt.public.lu/transports/AET |
| **Malta** | Marine Safety Investigation Unit | MSIU | www.transport.gov.mt |
| **The Netherlands** | Dutch Safety Board | DSB | www.safetyboard.nl |
| **Norway** | Accident Investigation Board of Norway | AIBN | www.aibn.no |
| **Poland** | State Commission on Maritime Accident Investigation | PKBWM (SMAIC) | www.pkbwm.gov.pl |

| Member State | Name of the national accident investigation body | Acronym | Website |
|---|---|---|---|
| **Portugal** | Maritime Accident Investigation and Aeronautical Meteorology Authority | GAMA | www.gama.mm.gov.pt |
| **Romania** | Marine Accidents Investigation Department | MAID | www.mt.ro |
| **Slovenia** | Maritime Accident & Incidents Investigation Services | MAIIS | www.telecom.gov.sk |
| **Spain** | Standing Commission for Maritime Accident and Incident Investigation | CIAIM | www.ciaim.es |
| **Sweden** | Swedish Accident Investigation Authority | SHK | www.havkom.se |
| **United Kingdom** | Marine Accident Investigation Branch | MAIB | www.maib.gov.uk |
| **United Kingdom / Gibraltar** | Marine Accident Investigation Compliance Officer | MAICO | www.gibraltarship.com |


EMSA

# ABOUT THE EUROPEAN MARITIME SAFETY AGENCY

The European Maritime Safety Agency is one of the European Union's decentralised agencies. Based in Lisbon, the Agency provides technical, operational and scientific assistance to the European member States in the fields of maritime safety, maritime security, prevention of, and response to, pollution caused by ships as well as response to marine pollution caused by oil and gas installations. The Agency contributes to the overall efficiency of maritime traffic and maritime transport.

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