European Maritime Safety Agency

ANNUAL OVERVIEW OF MARINE CASUALTIES AND INCIDENTS 2018

EMSA

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EMSA

KEY FIGURES FOR 2011-2017

23264
SHIPS INVOLVED

20616
CASUALTIES & INCIDENTS

603
VERY SERIOUS CASUALTIES

6812
PERSONS INJURED

683
FATALITIES

1070
INVESTIGATIONS

Fire/explosion, SORRENTO, ship lost, 14 people injured, 28/04/2015

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CHAPTER 7

CHAPTER 8

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 is not to be used for determining liability or apportioning blame.

DISCLAIMER

The marine casualty and incident data presented here is for information purposes only. The statistics presented are extracted from data uploaded to the European Marine Casualty Information Platform (EMCIP) by the investigation bodies of the EU Member States. The publication reflects the information at the time the data was extracted (i.e. 07/06/2018). While every care has been taken in preparing the content of the report to avoid errors, the Agency assumes no responsibility for the accuracy and completeness of the statistics. EMSA shall not be liable for any kind of damages or other claims or demands incurred as a result of incorrect, insufficient/invalid data, or arising out of or in connection with the re-use of the content, to the extent permitted by European and national law. The information contained in this publication should not be construed as legal advice.

ACKNOWLEDGEMENTS

EMSA wishes to acknowledge the contribution made by the EU Member States and the European Commission and to thank them for their support in conducting this work and in preparing the publication.

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Front cover: France/FANC-Marine Nationale - Grounding/stranding, KEA TRADER, ship lost, 12/07/2017

The statistics, tables, graphs, charts and maps herein have been generated by EMSA based on the information contained in EMCIP.

EXECUTIVE SUMMARY

With 3301 occurrences reported in 2017, the total number of occurrences recorded in EMCIP has grown to over 20000. This amounts to an average of 3315 casualties per year over the past four years.

The number of very serious casualties has continuously decreased since 2014 with 74 reported in 2017. A similar improvement was noted for the number of ships lost, with 12 reports as compared with 41 in 2014.

During the 2011-2017 period, 405 accidents led to a total of 683 lives lost, which represents a significant decrease since 2015. Crew have been the most affected category of victims with 555 fatalities.

In 2017 there were 1018 injured persons reported. This number has remained relatively steady since 2014, at around 1000 per year. Again, crew represent the main category of persons injured at sea (5329 during the 2011-2017 period).

While the number of occurrences involving cargo ships and service ships stabilised and the number of passenger ships and 'other ships' slightly decreased in 2017, a continued increase has been noted in relation to fishing vessels since 2014.

More than 1500 cargo ships were involved in accidents that resulted in 25 fatalities in 2017, the lowest number since the EU legislation is in place.

With a total of almost 120, fishing vessels remains the category of ship with the highest number of ships lost over the 2011-2017 period. However, the number of fishing vessels lost dropped from 21 to six in two years' time. Moreover, there was a decrease from 60 to 13 lives lost in 2017.

Almost half of the casualties that occurred on board a passenger vessel involved ferries. While no ships were lost in 2017, the number of fatalities has also continued to decrease with less than five fatalities.

No service ships were lost in 2017. While the number of fatalities remained identical, fewer injuries were reported.

200 'other types' of ships have been involved in a marine accident. Despite the limited number of such ships, this resulted in an increase in fatalities and injuries, mainly on leisure boats with engines or sails.

Half of the casualties were related to issues of a navigational nature, such as contacts, grounding/stranding and collision. As concerns occupational accidents, 40% were attributed to the slipping, stumbling and falling of persons.

While the departure phase appeared to be the safest phase of a voyage for most ships, it was noted that casualties mainly occurred in internal waters and port areas.

Human error represented 58% of accidental events and 70% of accidental events had shipboard operations as a contributing factor.

EU Member State investigation bodies have launched 1070 investigations over the 2011-2017 period and almost 900 reports have been published. Among the 2000 safety recommendations issued, 40% were related to operational practices, and in particular to safe working practices. Half of the safety recommendations were addressed to the shipping companies and the positive response rate was around 50%.

Fire/explosion, ZEUS, ship damaged, four fatalities, one person injured, 23/09/2015

CHAPTER 1

INTRODUCTION

Grounding/stranding, STERNÖ, ship lost, 24/02/2018

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 European Commission, providing technical operational assistance to non-EU countries around relevant sea basins.

EMSA as a body of the European Union, 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.

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 Member States shall, among other obligations:

- establish independent, impartial and permanent accident investigation 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 Member 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.

[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.**

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 Member States; occur within EU Member States' territorial sea and internal waters as defined in UNCLOS; or involve other substantial interests of the EU Member 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 2017. The data can be subject to changes over time as EU Member States add more information or older cases to the EMCIP database. For this reason, the figures extracted from the database on 7 June 2018 and presented in this publication are likely to be slightly different to those presented throughout the year in various forum or in the next editions to be published.

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 the progressive implementation by some Member States. Should further information about specific cases be required, readers are invited to contact the national competent investigation 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 EMSA'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 investigation bodies.

More information about on EMSA'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 investigation bodies in Europe can be found in Appendix 4.


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ANNUAL OVERVIEW
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European Maritime Safety Agency
ANNUAL OVERVIEW
OF MARINE CASUALTIES AND
INCIDENTS 2015
EMSA


European Maritime Safety Agency
ANNUAL OVERVIEW
OF MARINE CASUALTIES AND
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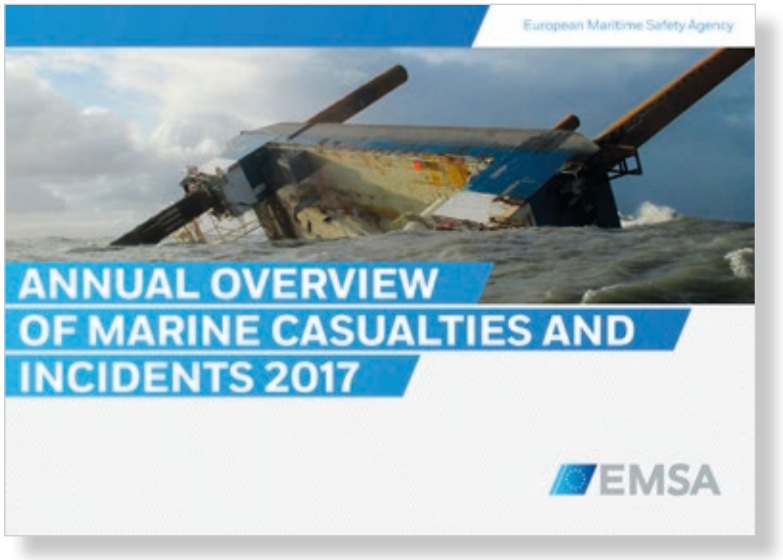
European Maritime Safety Agency
ANNUAL OVERVIEW
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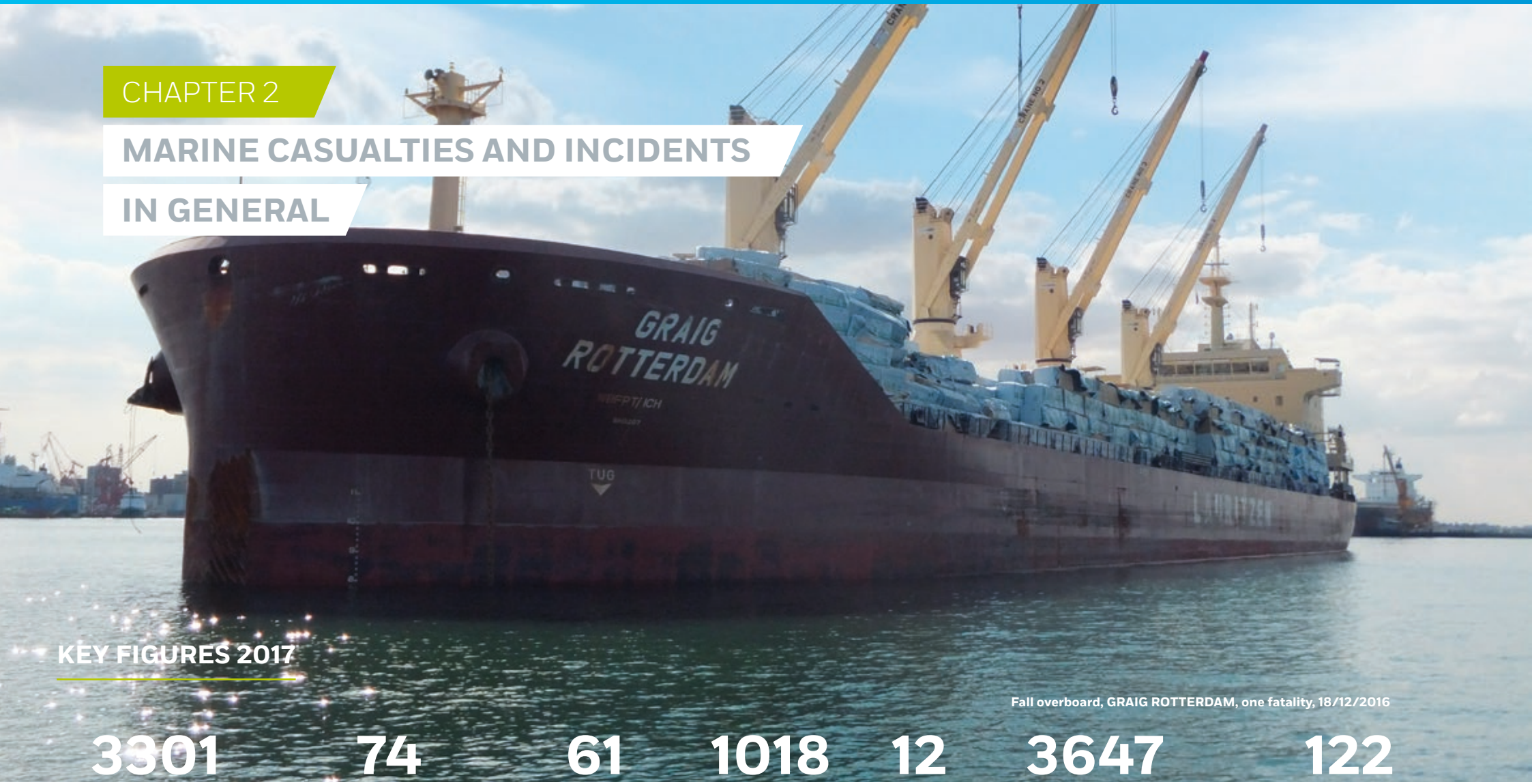
CHAPTER 2

MARINE CASUALTIES AND INCIDENTS IN GENERAL



KEY FIGURES 2017

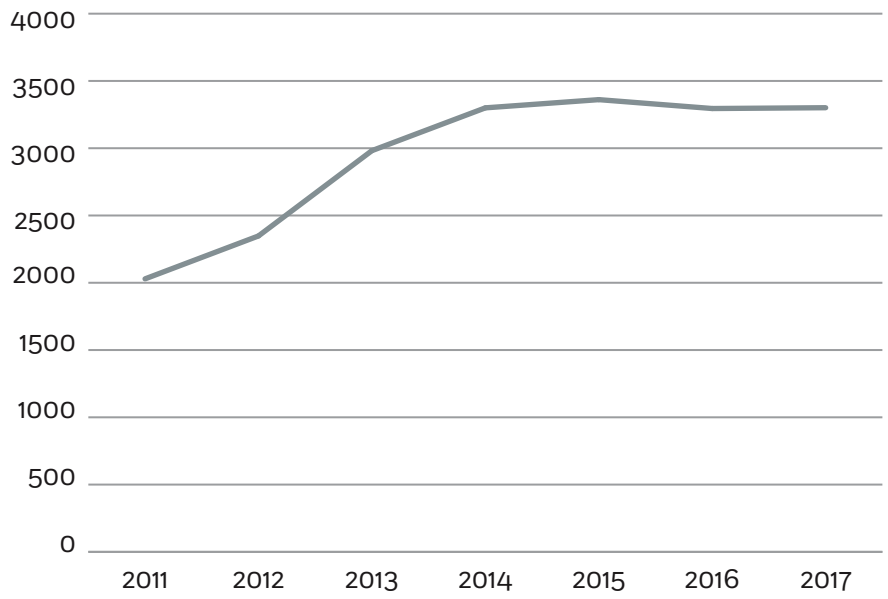
Fall overboard, GRAIG ROTTERDAM, one fatality, 18/12/2016

3301	74	61	1018	12	3647	122
CASUALTIES & INCIDENTS	VERY SERIOUS CASUALTIES	FATALITIES	PERSONS INJURED	SHIPS LOST	SHIPS INVOLVED	INVESTIGATIONS

2.1 NUMBER AND SEVERITY

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

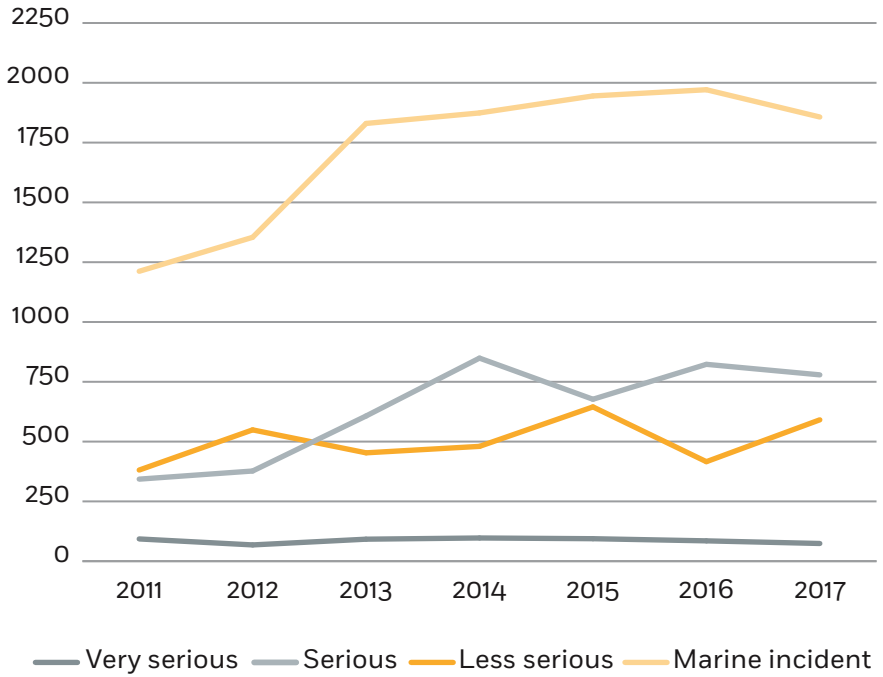
Figure 1: Number of reported marine casualties and incidents



The total number of reported marine casualties and incidents is 20 616.

Since 2014, the number of reported casualties has stabilised at around 3 200 per year. However, comparisons with various sources suggest that under-reporting of marine casualties and incidents continues, with a total of 4 000 occurences per year being a best estimate.

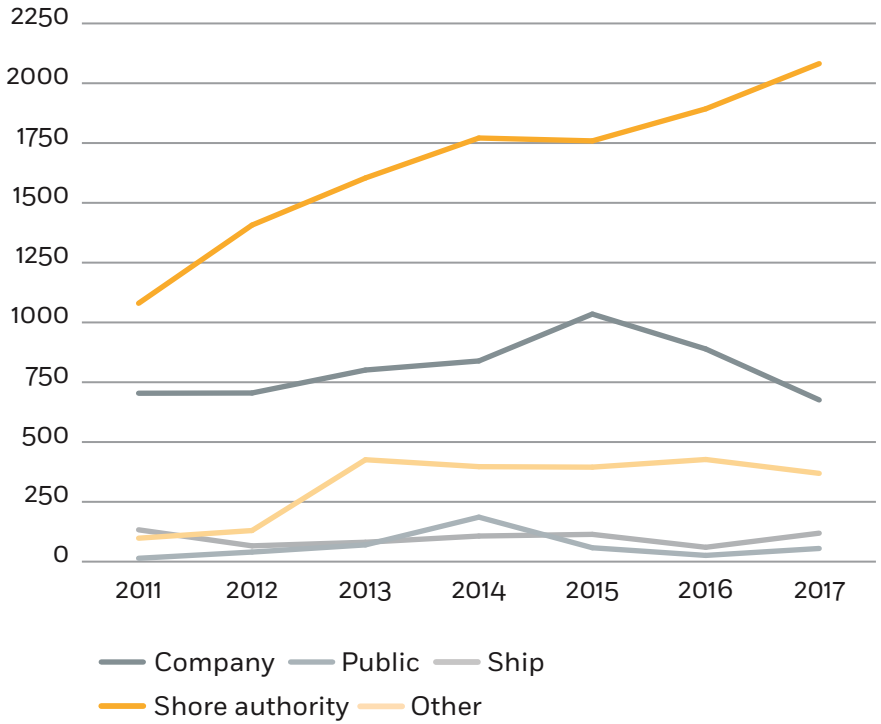
Figure 2: Number of marine casualties and incidents per severity



The number of very serious casualties has been steady over the past five years. Of all casualties, 2.9% were reported to be very serious.

In 2017, 2.2% of the reported marine casualties were very serious, 23.6% serious, 58.4% less serious and 17.9% were marine incidents.

Figure 3: Notification entities



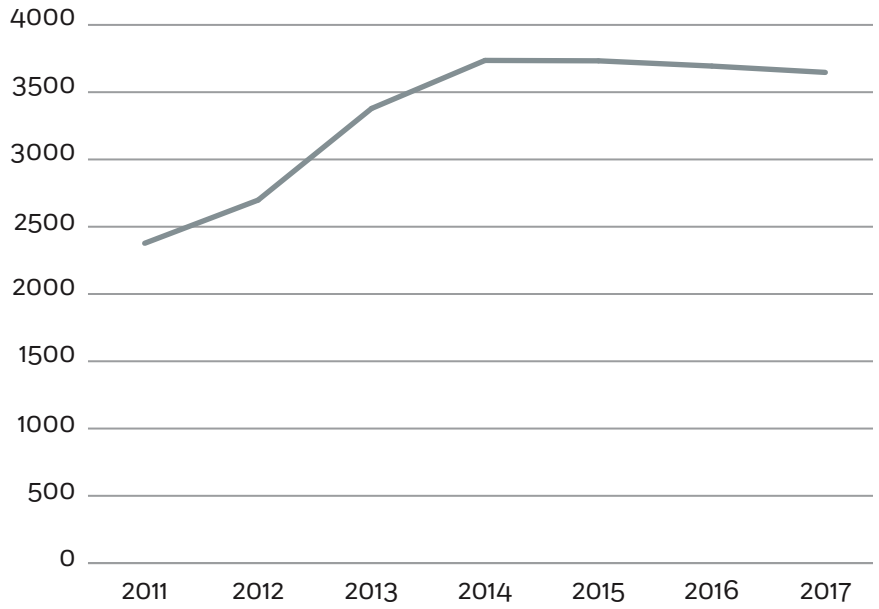
In 2017, 63.1% of the marine casualties and incidents were reported to the investigation bodies by the shore authorities.

Marine casualties and incidents reported to the investigation bodies by the shore authorities have continued increasing over the 2011-2017 period. Shipping companies have continued to report less since 2015, while reporting directly from the ship has been constant for the past five 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.

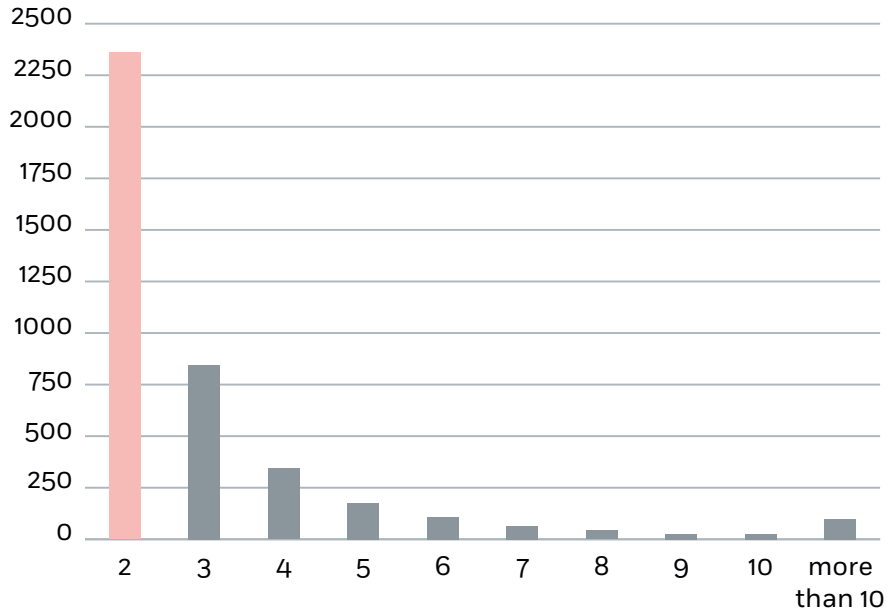
Figure 4: Number of ships involved in casualties



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

In the 20616 marine casualties and incidents that happened from 2011 to 2017, the total number of ships involved was 23264.

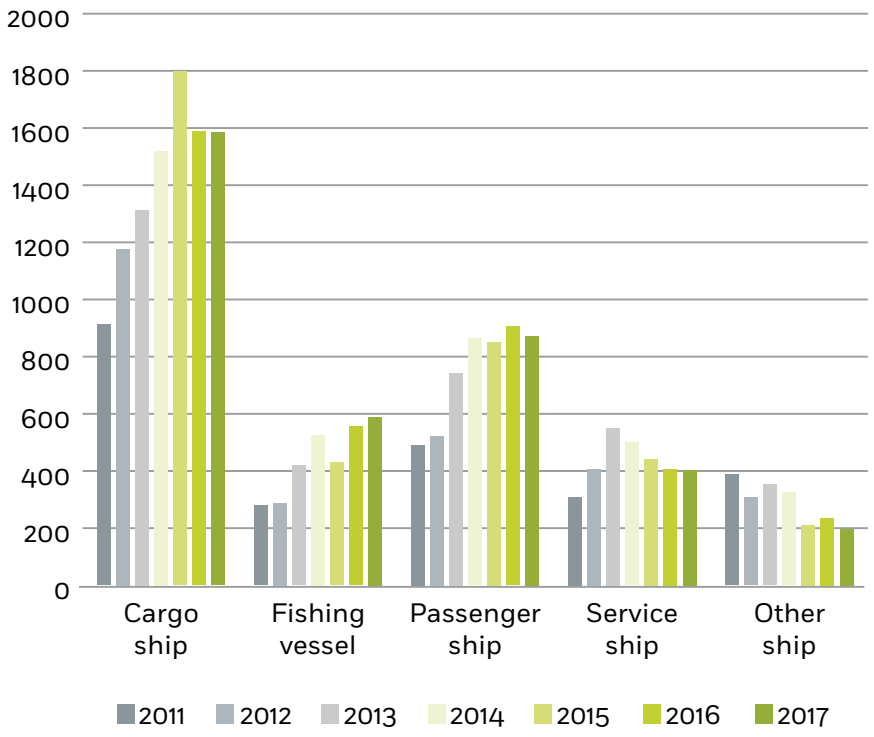
Figure 5: Number of individual ships involved in more than one casualty for 2011-2017



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

A total of 13960 individual ships were involved in marine casualties and incidents. 9870 of these ships were involved in one only. 4090 were involved in more than one, as shown in the distribution above.

Figure 6: Distribution of ships involved by main category



During the 2011-2017 period, general cargo ships were the main category involved (42.5%), followed by passenger ships (22.6%).

While the number of cargo ships and service ships stabilised and the number of passenger ships and other ships slightly decreased in 2017, a continued increase was noted in relation to fishing vessels.

Figure 6bis: Distribution of severity per ship type for 2011-2017

The distribution of occurrences according to their severity per ship type is very similar for cargo ships, passenger ships and service ships. The rate of serious casualties for fishing vessels is significantly high, in comparison to other occurrence severities affecting this type of ship.

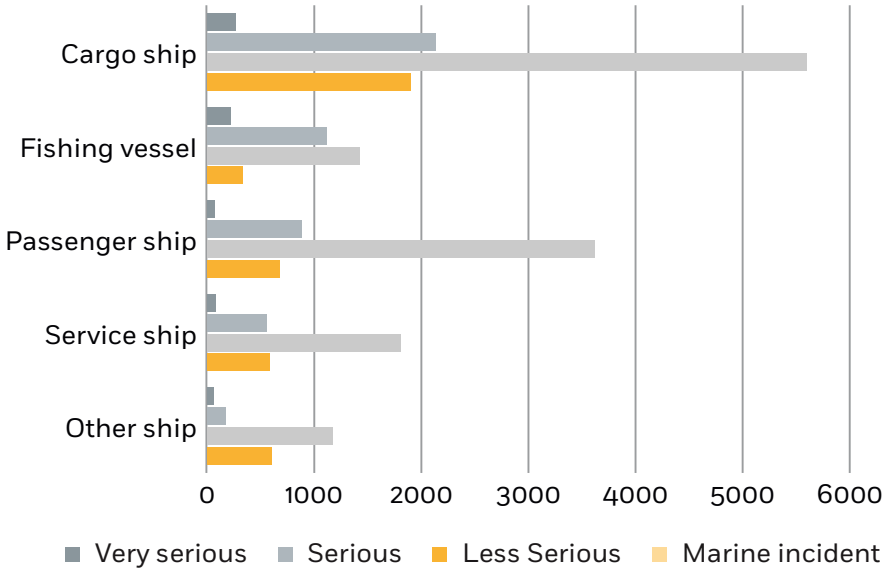
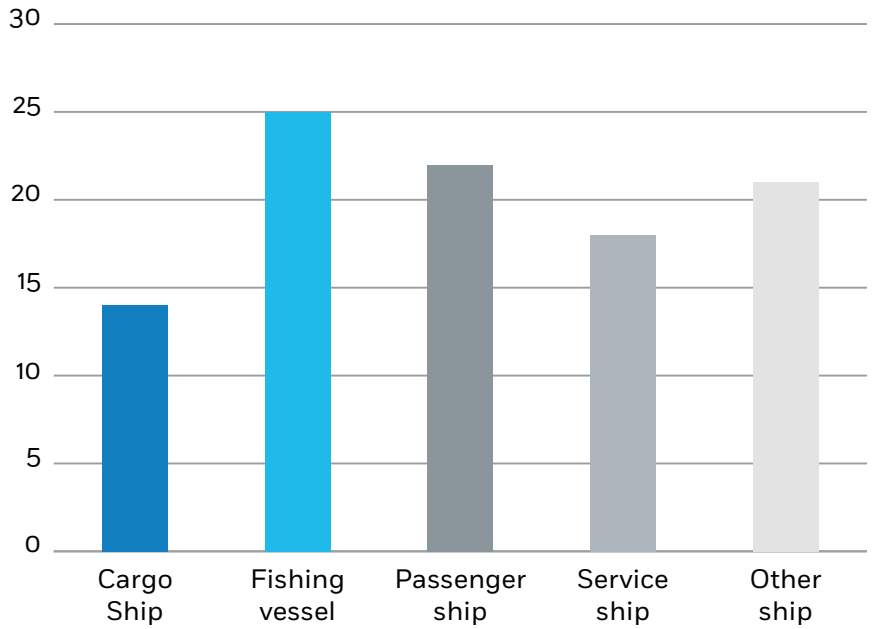
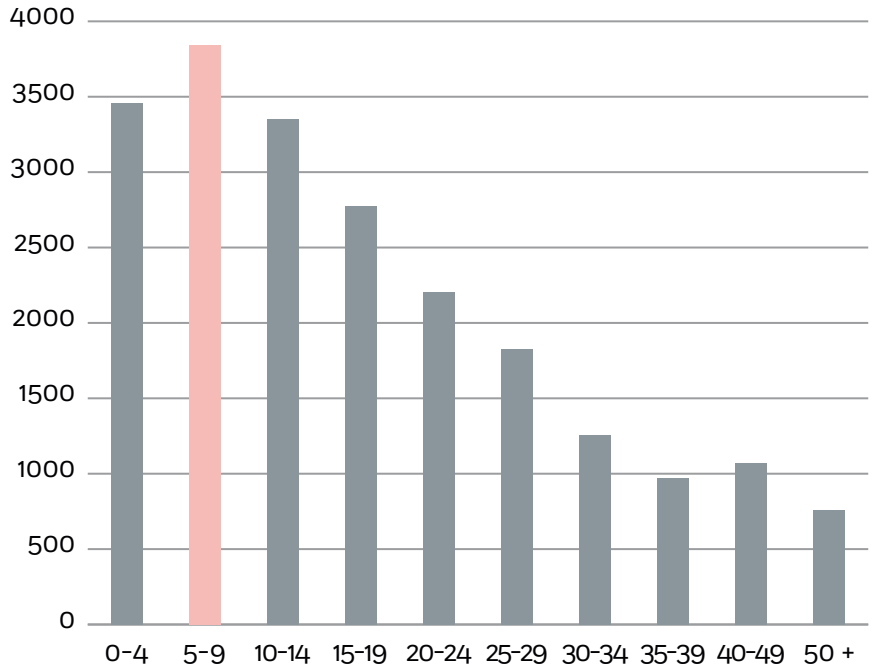


Figure 7: Average age of ships involved by main category 2011-2017



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

Figure 8: Distribution of ship age for 2011-2017

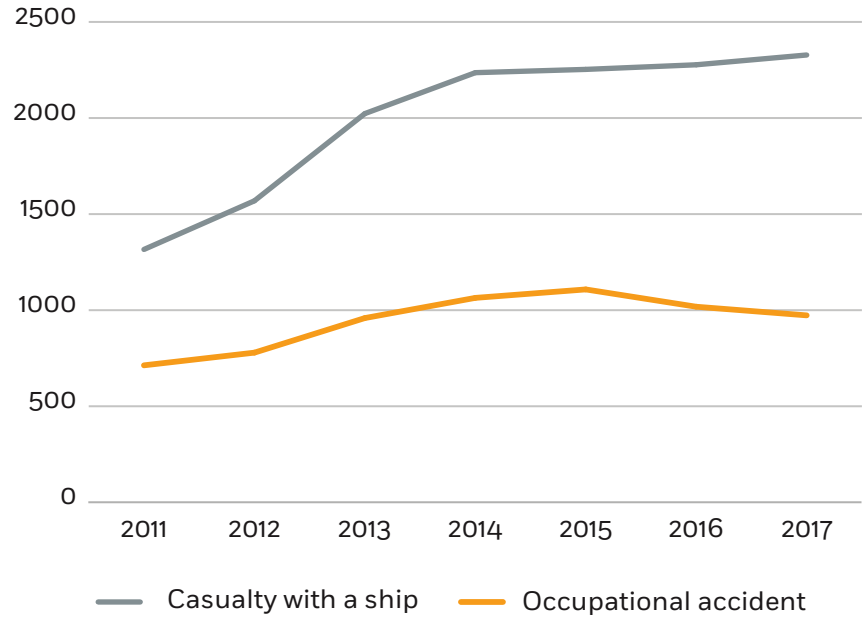


The average age of all ships involved over the 2011-2017 period was 18.4 years. The highest number of ships involved was in the 5-9 year old segment.

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 14 002 casualties with a ship and 6 614 occupational accidents were recorded.

The ratio 2/3 to 1/3 between casualties with a ship and occupational accidents remained stable from 2011 to 2017. However, there was a slight increase in the casualties with a ship (70% of the occurrences in 2017).

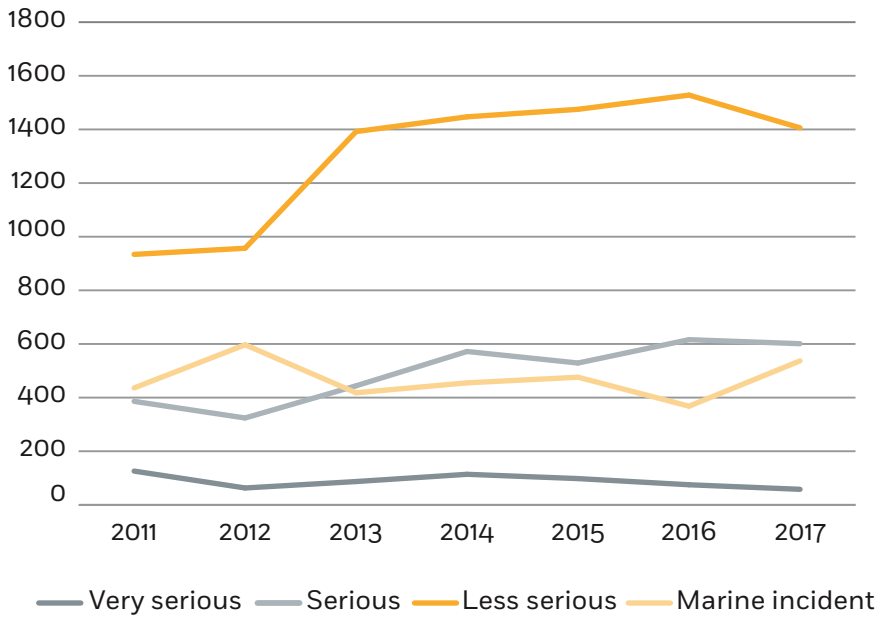
In total, 23 179 individual events were included in 20 616 occurrences (there can be more than one event within an occurrence (e.g. loss of propulsion followed by grounding).

18 522 occurrences were reported to have only one event.

2.3.1 CASUALTY WITH A SHIP

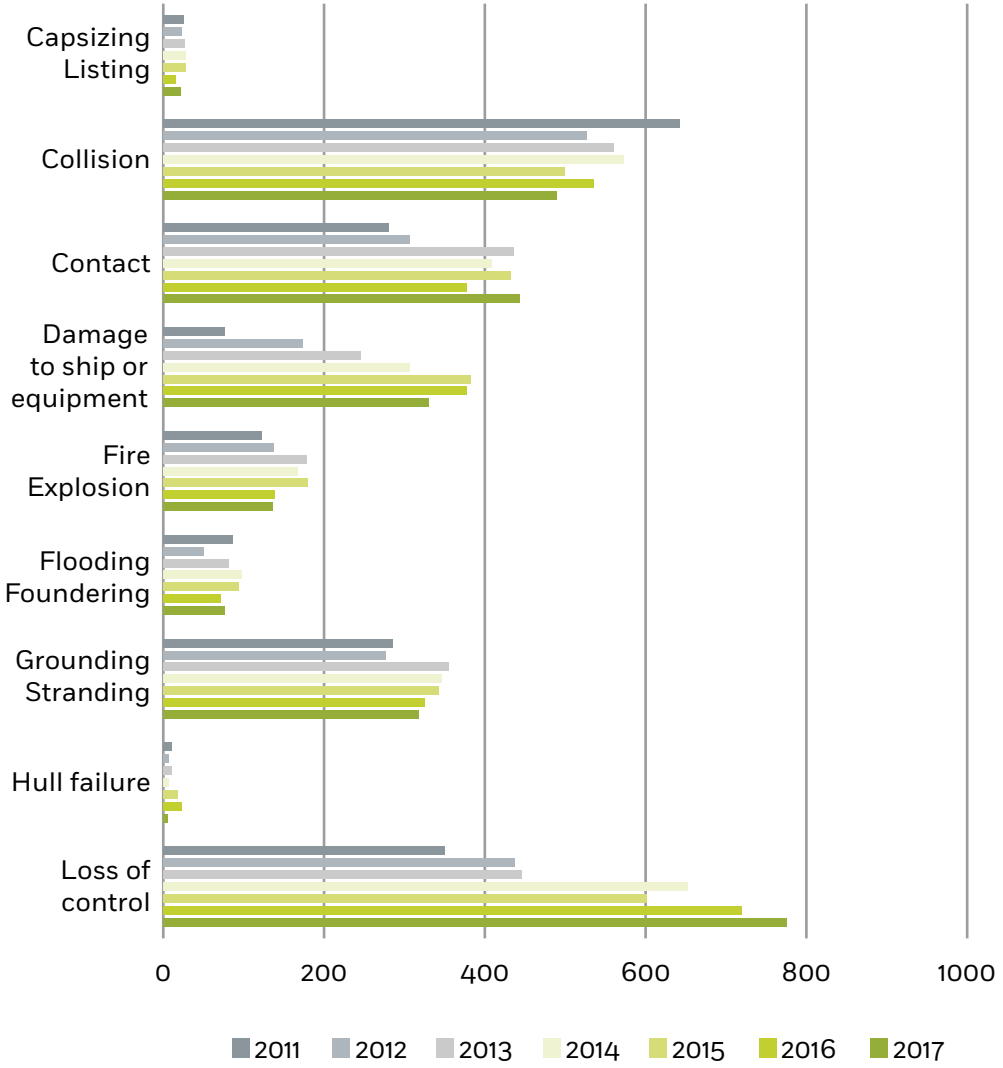
Marine casualties and incidents related to 'casualties with a ship' are classified as 'casualty events'.

Figure 10: Severity of casualty with a ship



From 2011 to 2017, 3.8% of casualties with a ship were very serious, 21% serious, 55.3% less serious and 19.9% marine incidents.

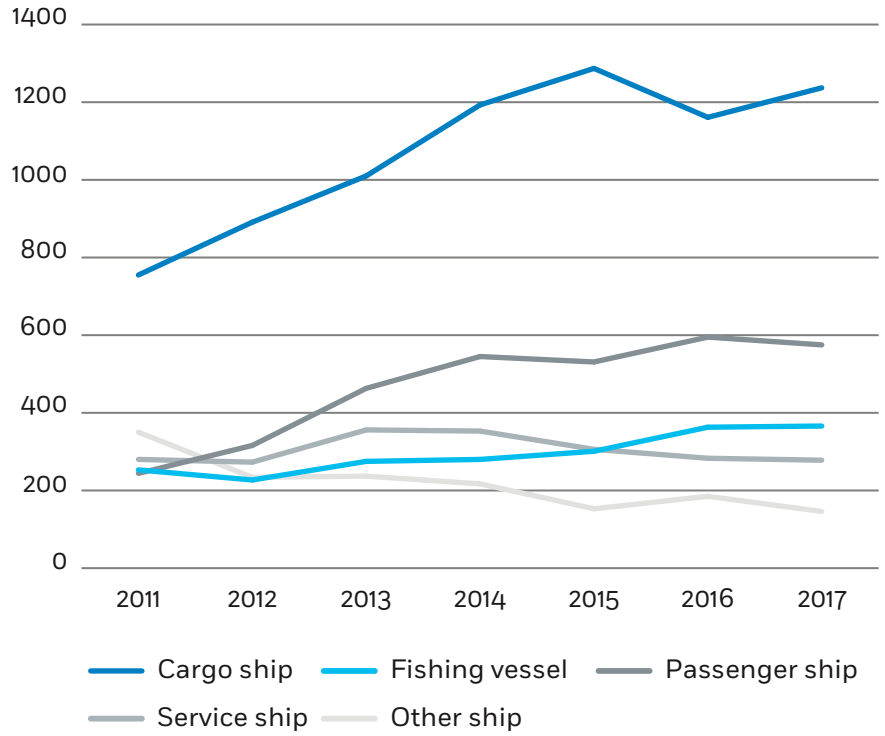
Figure 11: Distribution of casualty events with a ship



The combination of collision (23.2%) contact (16.3%), and grounding/ stranding (16.6%) shows that navigational casualties represent 56.1% of all casualties with ships. They also represent 37.8% of all occurrences.

11 952 casualties with a ship involve a single casualty event. 2 055 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 2011-2017 period, cargo ship was the most frequent ship type involved in a 'casualty with a ship' (45.6%), followed by passenger ship (19.8%).

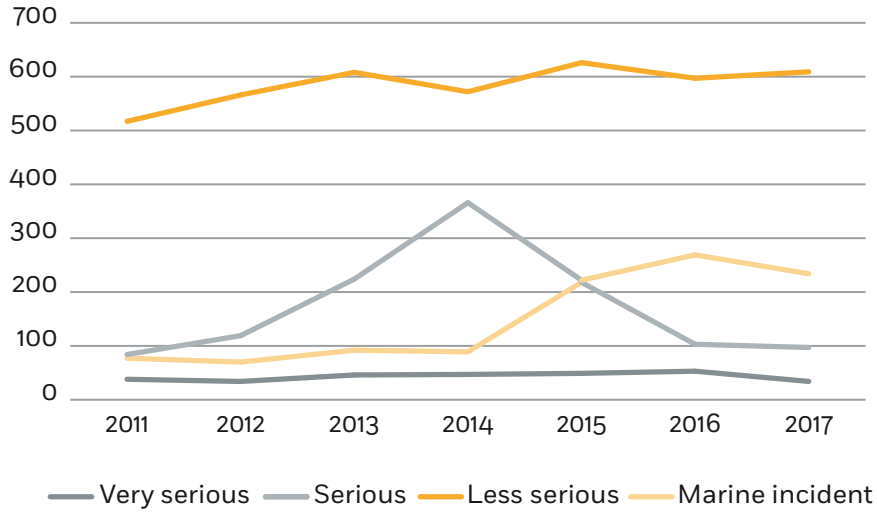
16610 ships were involved in a 'casualty with a ship'.

Apart from the number of cargo ships involved that increased to over 1200 in 2017, the number of other ship types was steady over the past four years.

2.3.2 OCCUPATIONAL ACCIDENTS

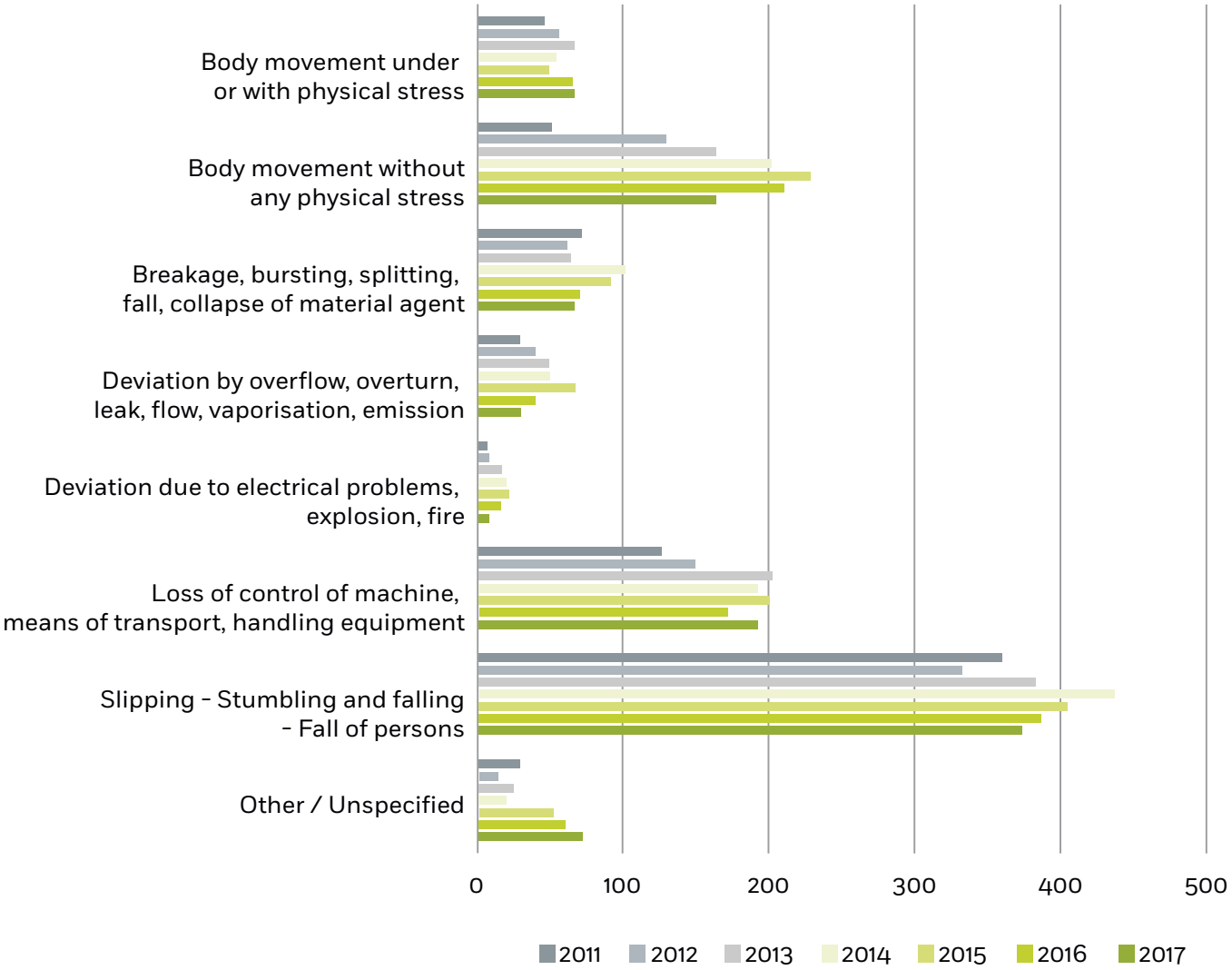
Marine casualties and incidents related to 'occupational accidents' are classified as 'deviations'.

Figure 13: Type of severity in case of occupational accident



From 2011 to 2017, 4.5% of the occupational accidents were very serious, 22.8% serious, 61.5% less serious and 11.2% were marine incidents.

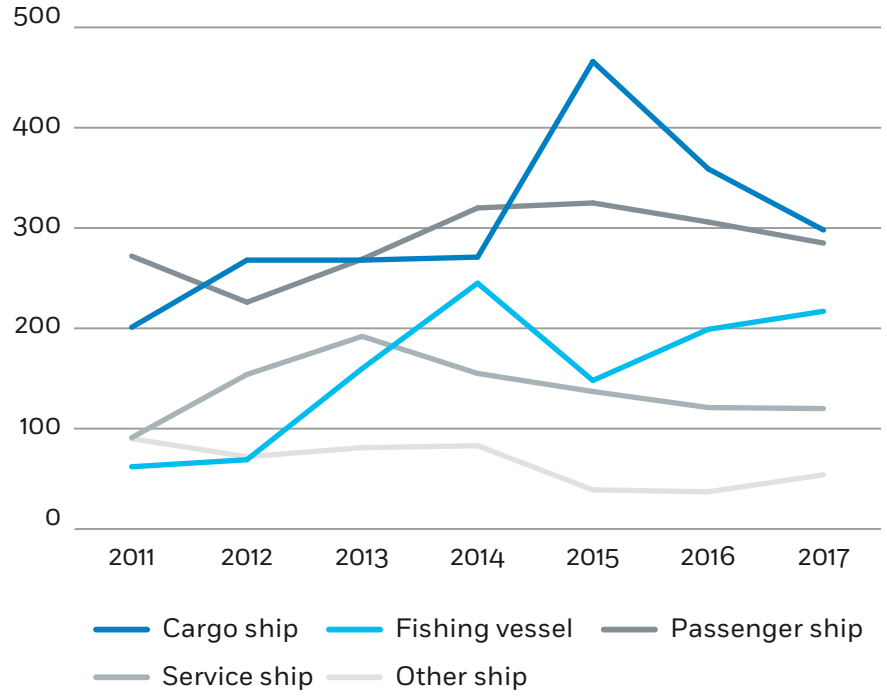
Figure 14: Distribution of deviations



Slipping - Stumbling and falling of persons was the most frequent event (40.2%), followed by loss of control of objects (18.6%) and body movement without physical stress (17.3%). Slipping/ stumbling/falling of persons also represents 11.6% of all occurrences.

6570 occupational accidents had a unique event. Nine occupational accidents had more than one event.

Figure 15: Distribution of ships involved in an occupational accident by ship category



Cargo ships (32%) represent together with passenger ships (30.1%) the main categories of ship where occupational accidents occurred.

6654 ships were involved in an occupational accident.

The number of occupational accidents has continued to decrease in 2017, in particular on board cargo ships. However, the number of fishing vessels involved has continued to increase since 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

While the departure is the safest segment (8.8%) for all types of ship, the 'mid-water' is the least safe in general (26.2%).

Figure 16: Distribution of voyage segments

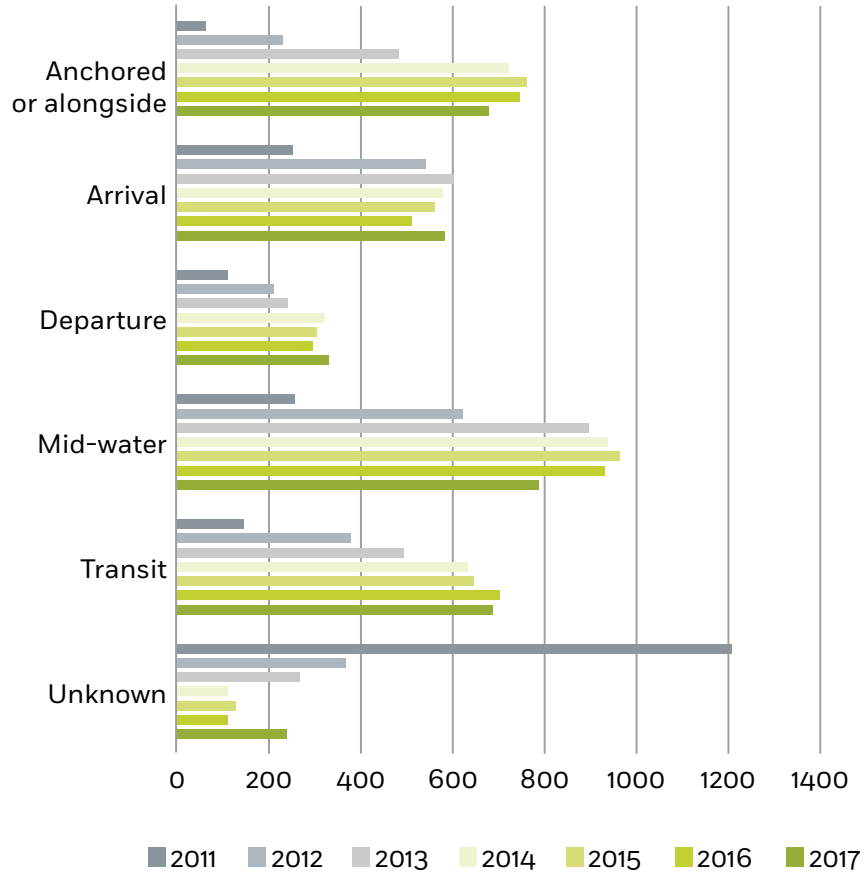
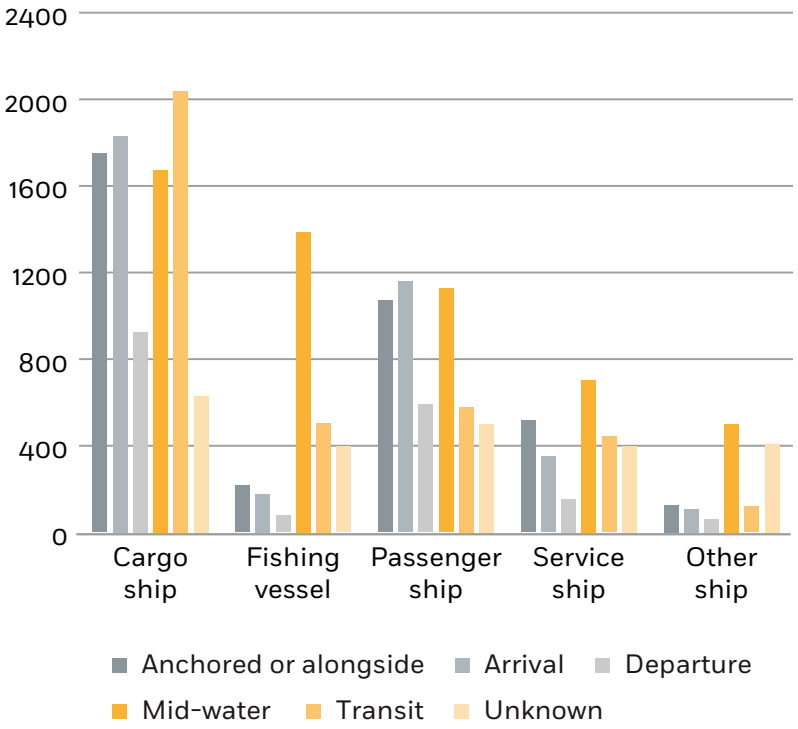


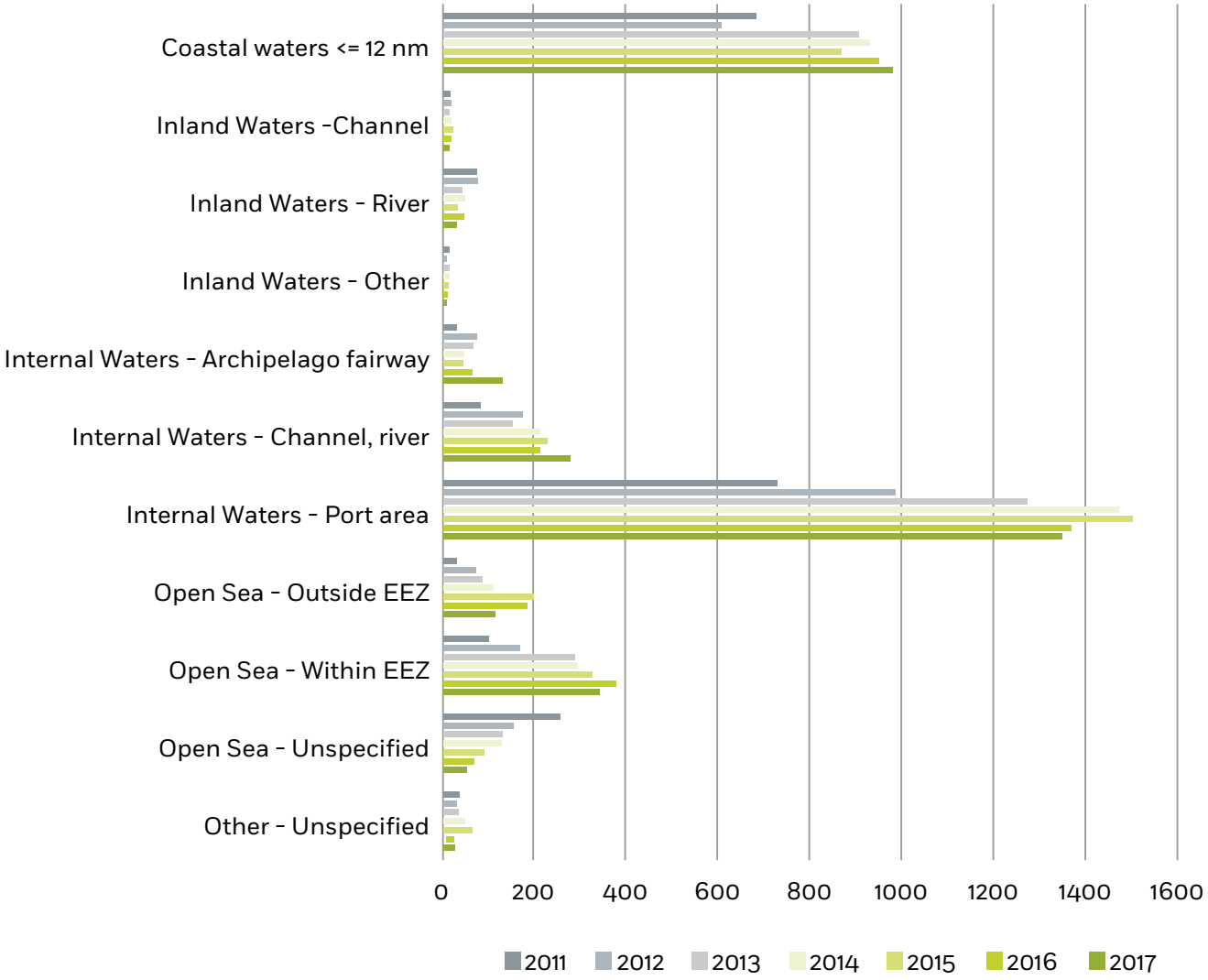
Figure 17: Distribution of voyage segments per ship type 2011-2017



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

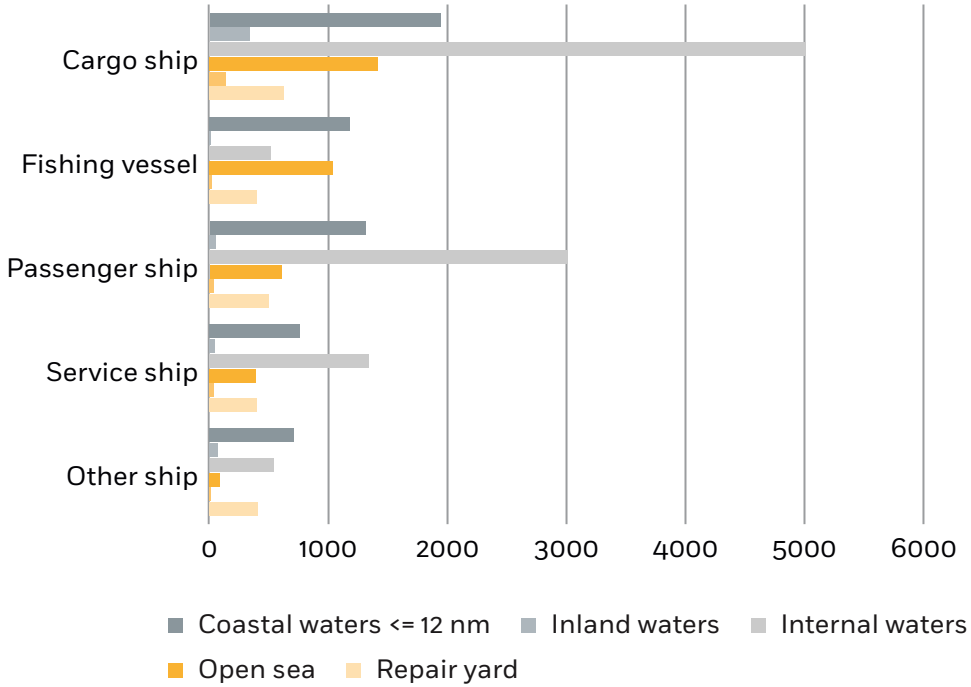
2.4.2 LOCATION

Figure 18: Distribution by location of marine casualties and incidents



42% of the casualties took place in port areas, followed by 28.6% in coastal waters

Figure 19: Distribution by location of marine casualties and incidents per cargo ship type 2011-2017



All All types of ships have the highest numbers of casualties and incidents within internal waters, followed by coastal 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 for 2011-2017

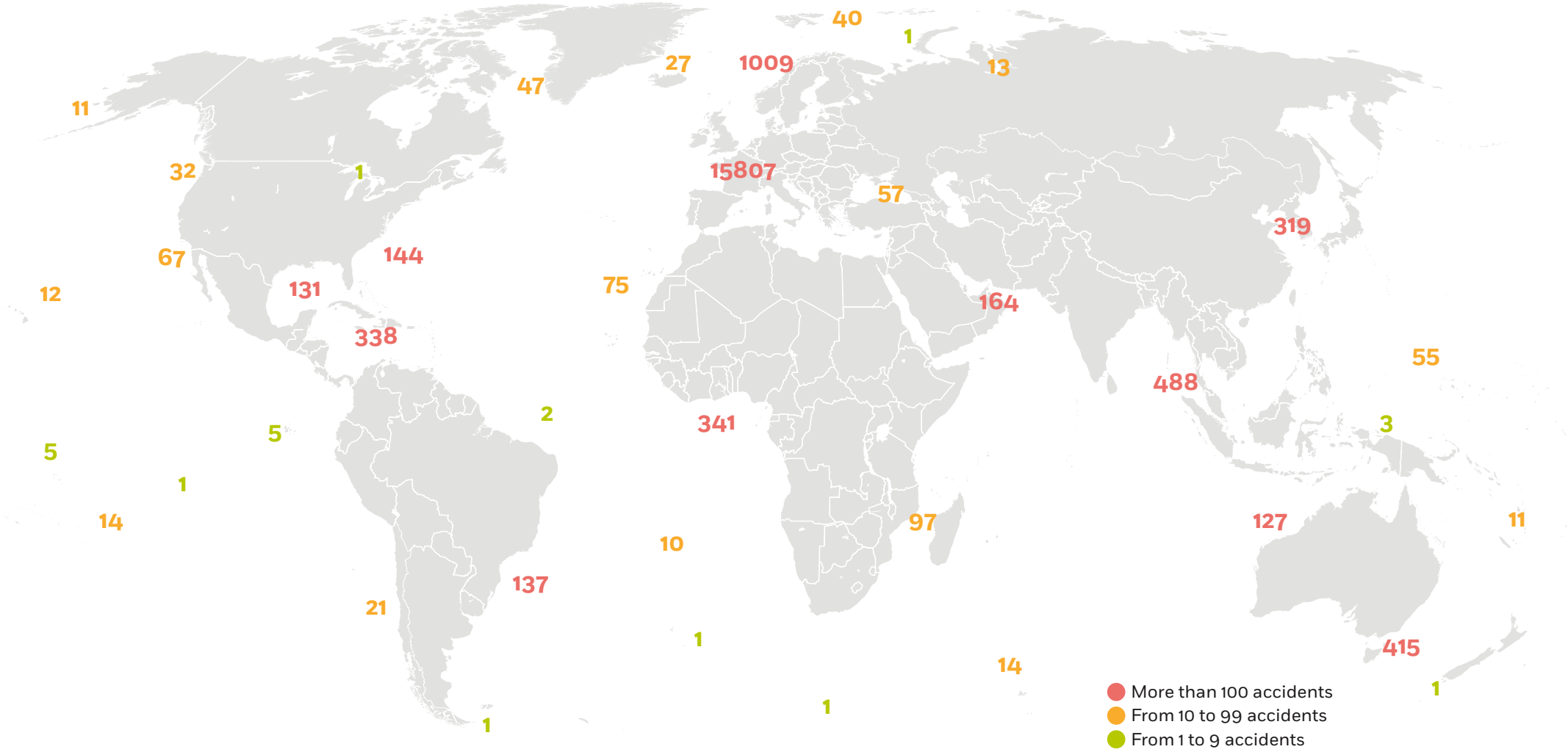


Figure 21: Distribution within the territorial sea and internal waters of EU Member States for 2011-2017

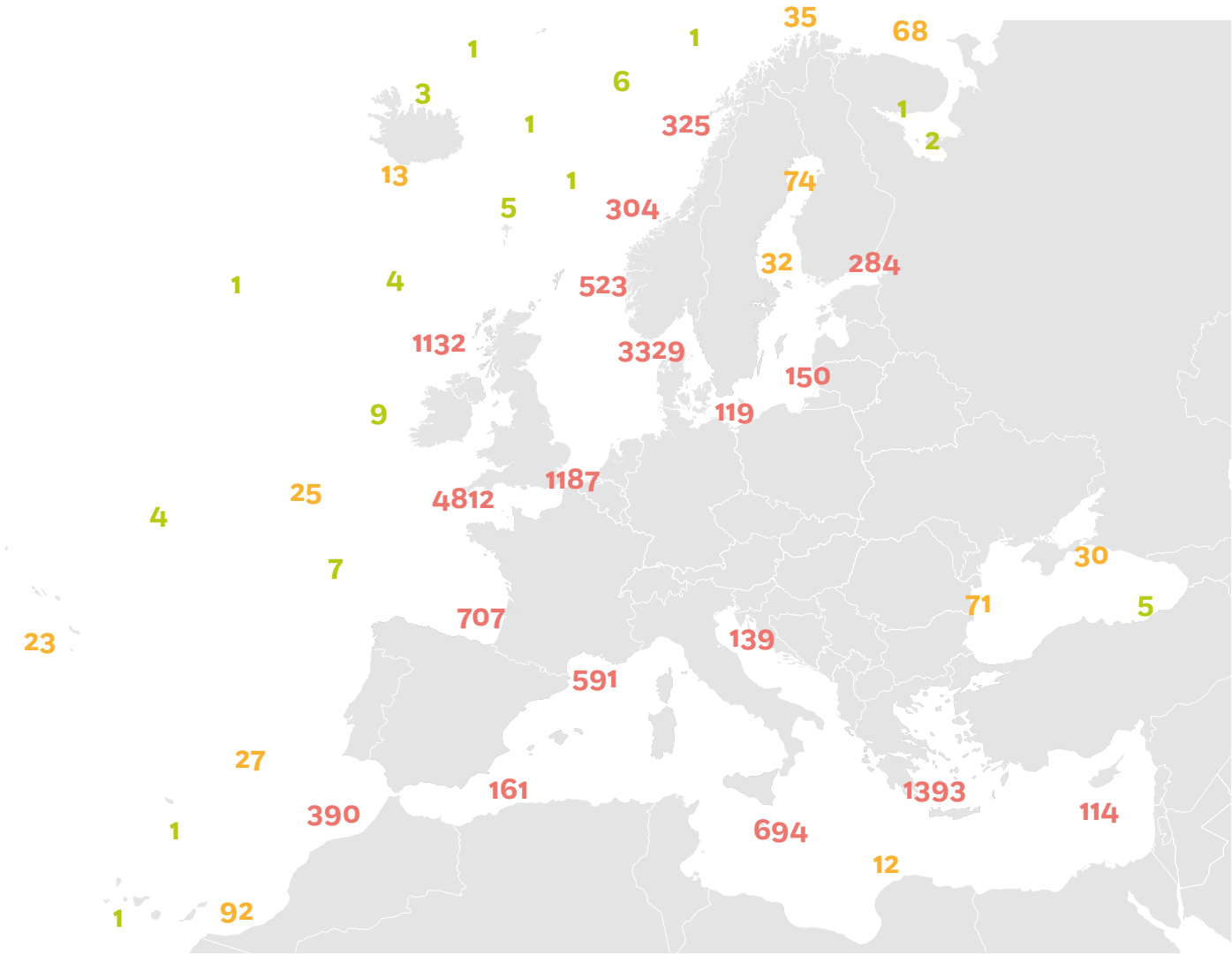


Figure 22: Distribution along the Atlantic Coast, in the North Sea and English Channel for 2011-2017

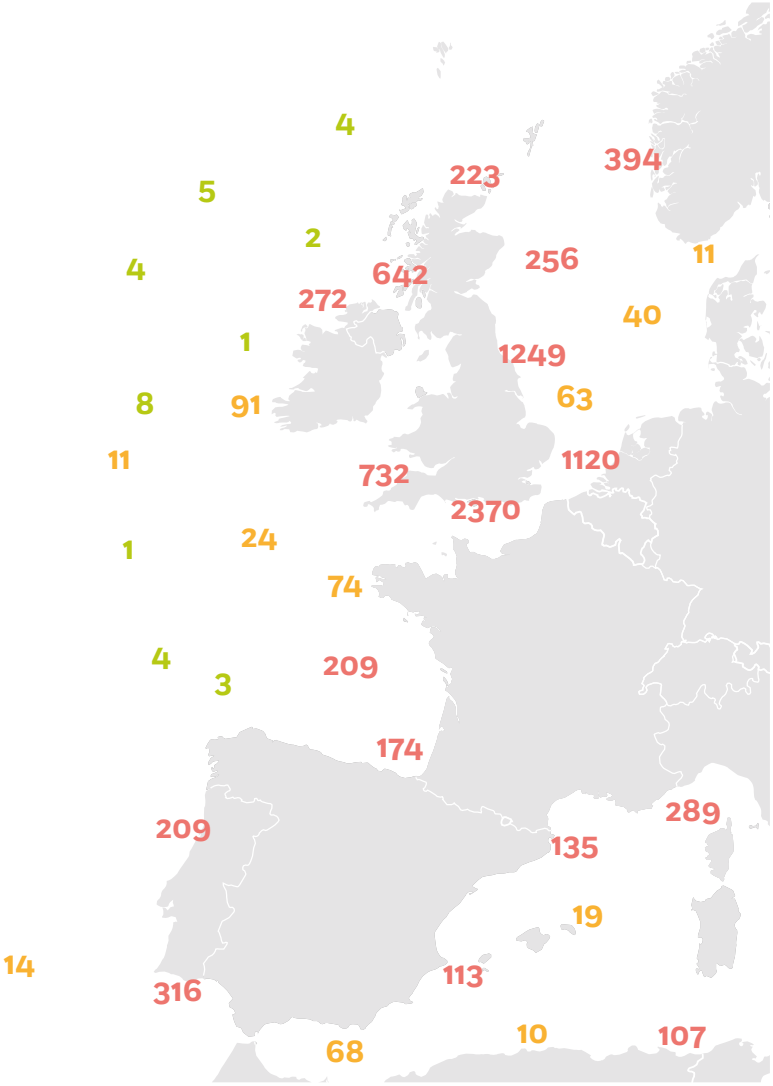


Figure 23: Distribution in the Baltic Sea and approaches for 2011-2017

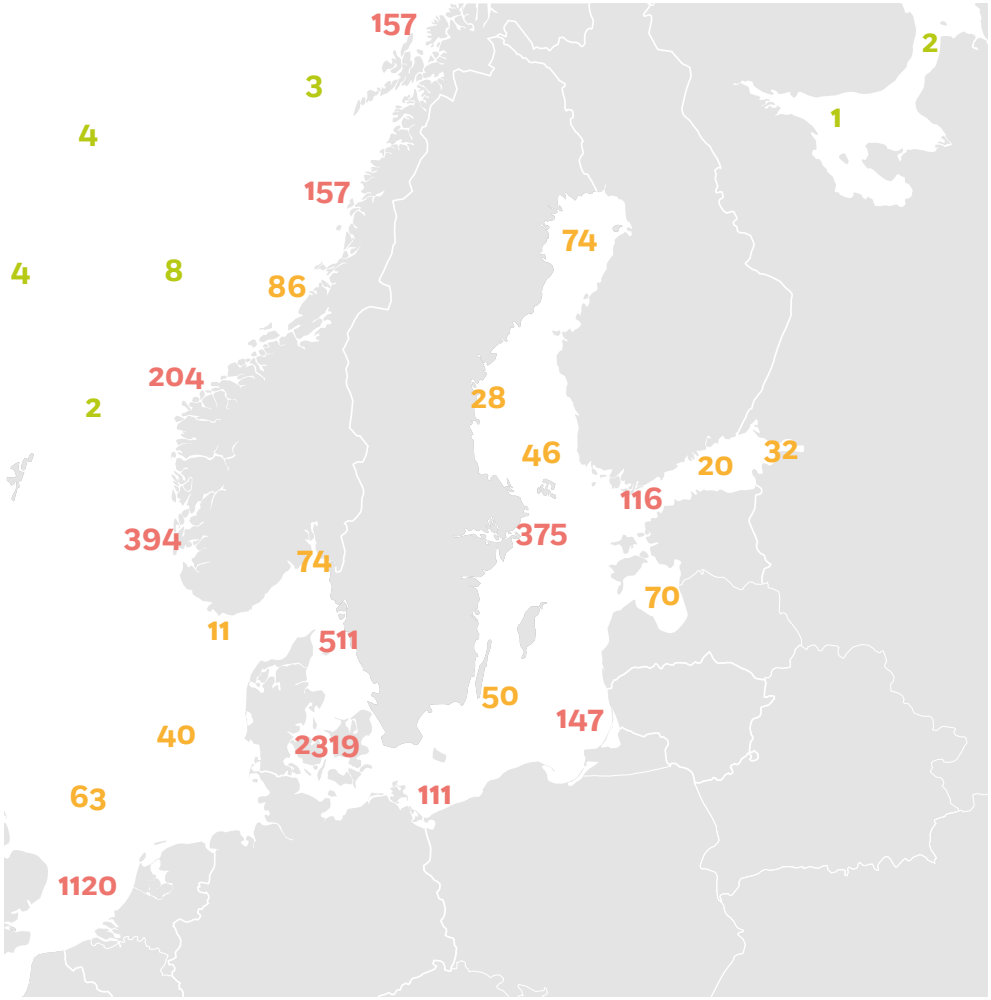
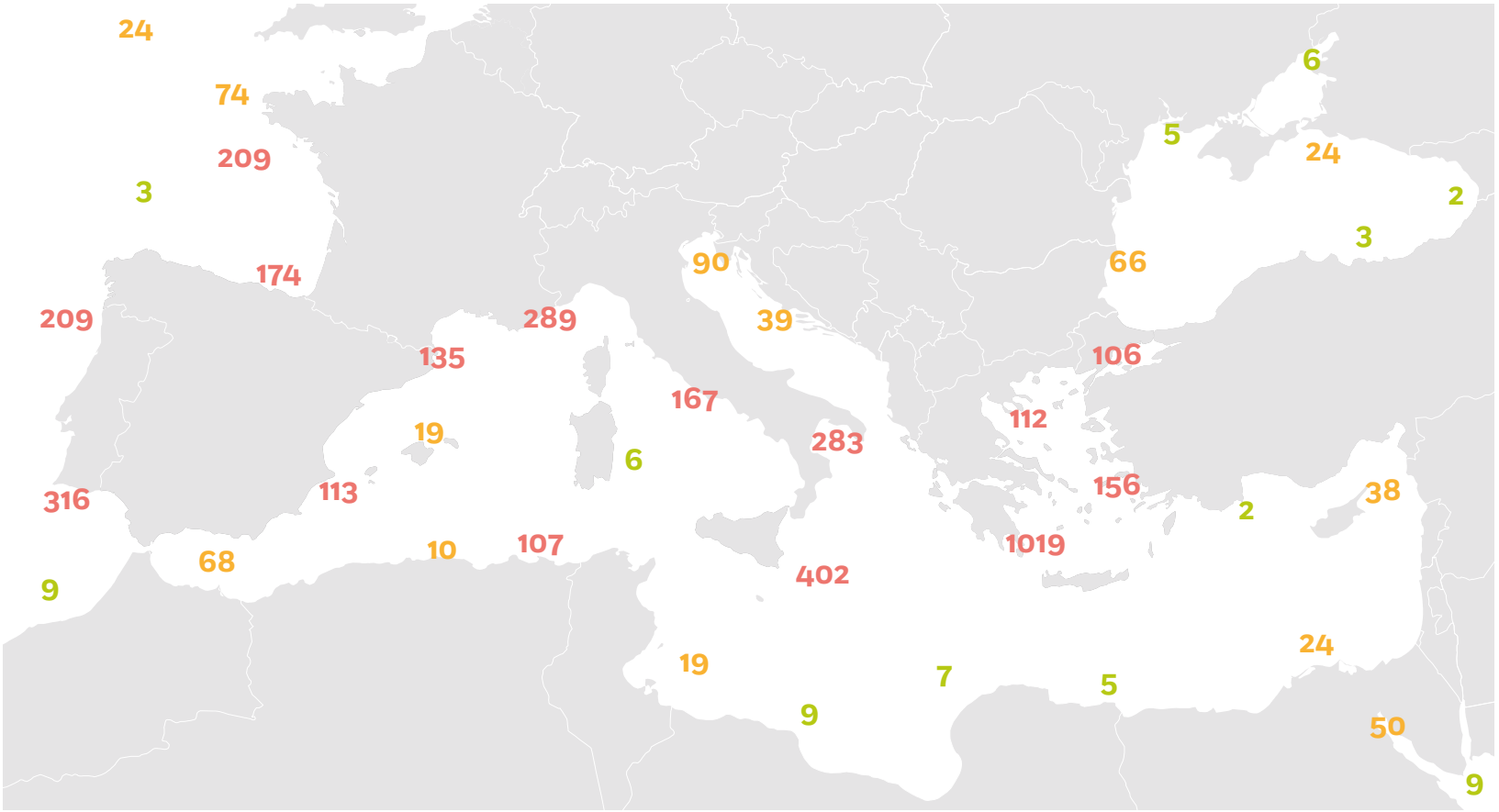


Figure 24: Distribution in the Mediterranean Sea and Black Sea for 2011-2017



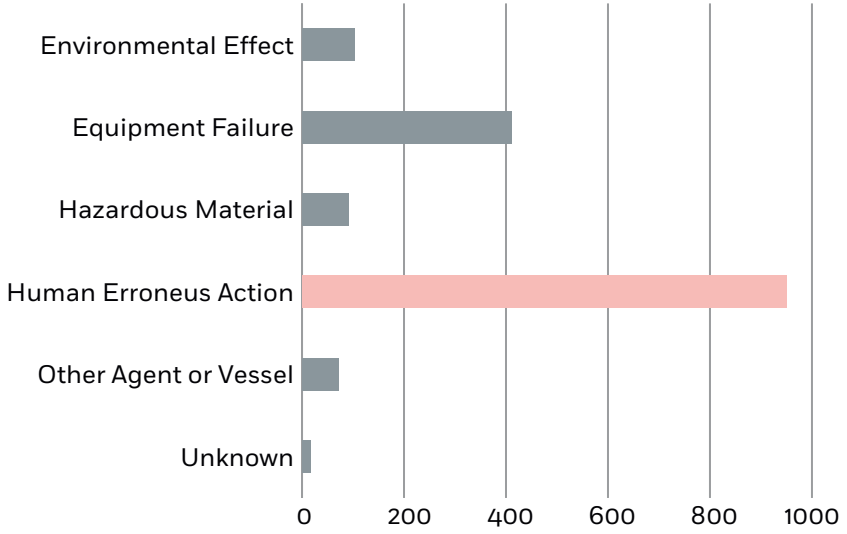
2.5 EVENTS AND CONTRIBUTING FACTORS

This section addresses the accidental events and contributing factors having led to casualties and incidents for the 2011-2017 period.

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

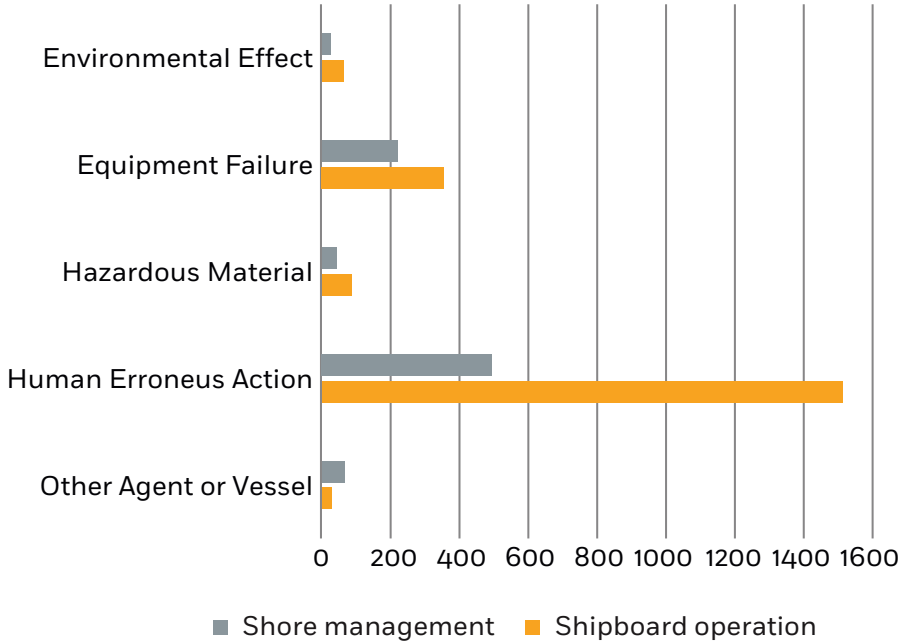


From a total of 1645 accidental events analysed during the investigations, 57.8% were attributed to a Human Erroneous Action.

2.5.2 CONTRIBUTING FACTORS

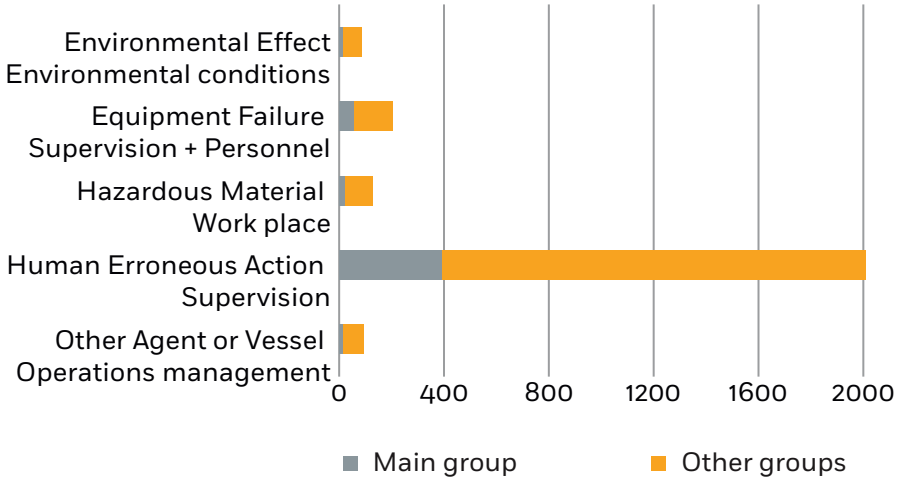
Contributing factors are separated into two categories, and then sub-divided into specific groups identifying the condition that contributed to an accidental event or worsened its consequence.

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



Shipboard operations represented the main contributing factor at 70.1% of the total.

Figure 27: Groups of Contributing Factors



This figure shows the contributing factor most reported per category of accidental event (for example supervision was quoted as a contributing factor for 19.6% of accidental events described as Human Erroneous Action).

2.6 CONSEQUENCES

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

2.6.1 CONSEQUENCES TO SHIP

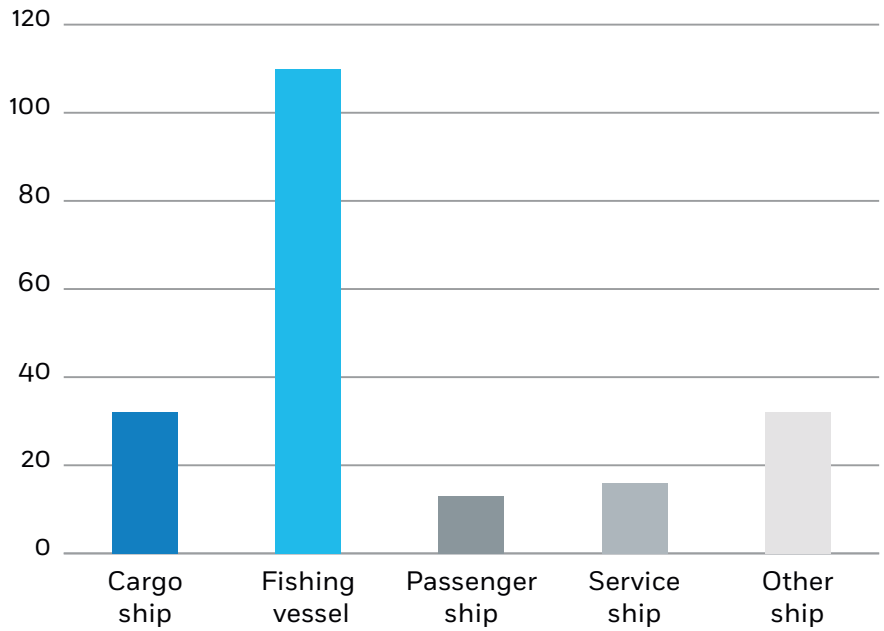
Figure 28: Number of ships lost

A total of 203 ships were lost over the 2011-2017 period.

284 ships were reported sunk, some of them being recovered.

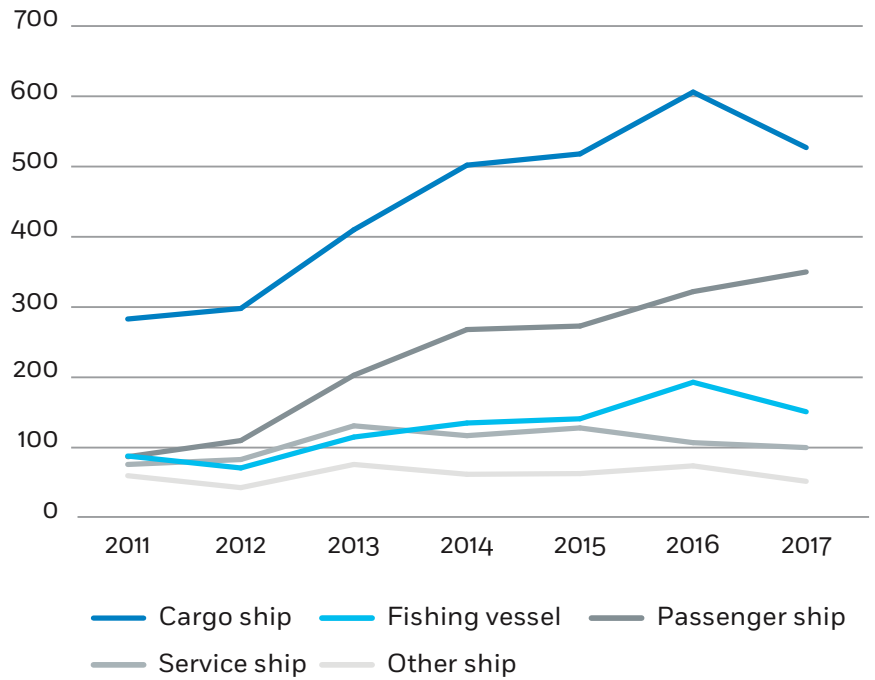
In 86 cases, the initial casualty event was flooding/ foundering. The second most significant was collision (43 cases).

Figure 29: Distribution of ships lost per ship category 2011 - 2017



Fishing vessel is the category with the most ships lost, with a total of almost 120.

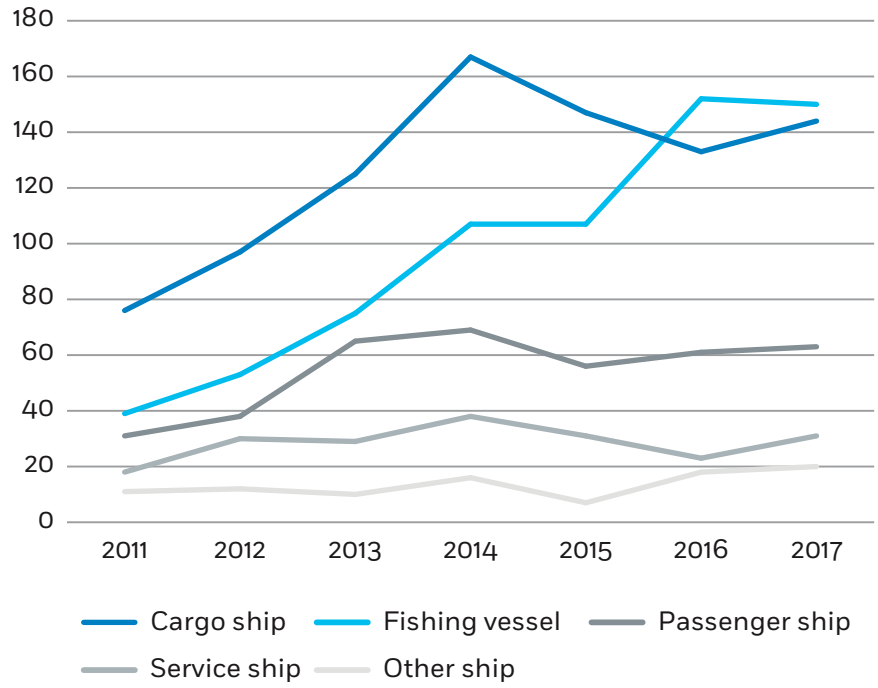
Figure 30: Number of ships damaged



6823 ships reported some damage, the largest category being cargo ships (46.1%).

In 2017 the number of damaged ships has decreased for all ship types, except for passenger ships.

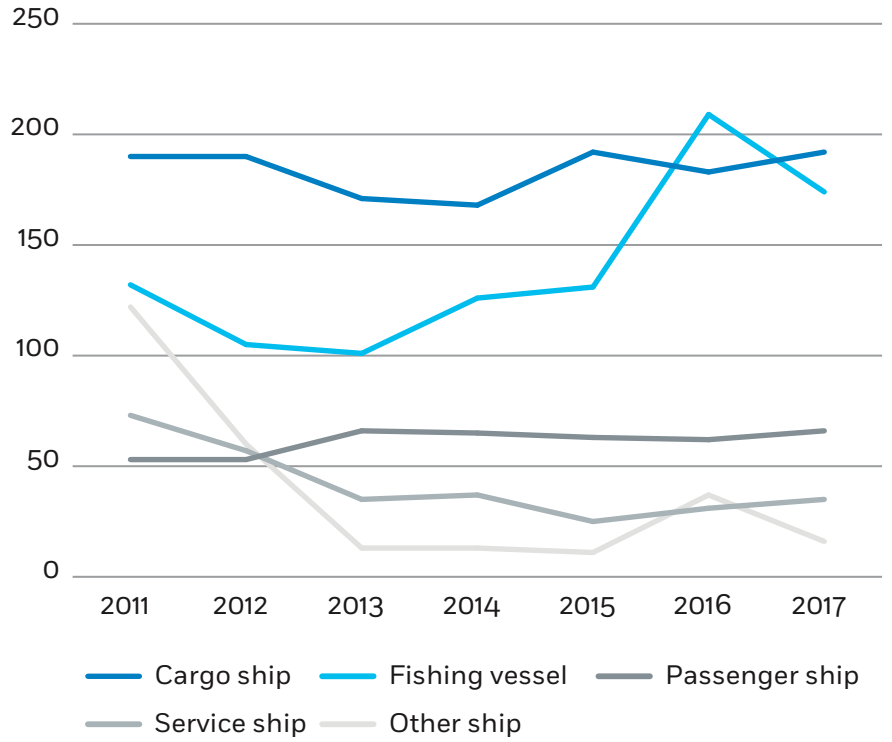
Figure 31: Number of ships considered unfit to proceed



A total of 2249 ships were reported to be 'unfit to proceed'.

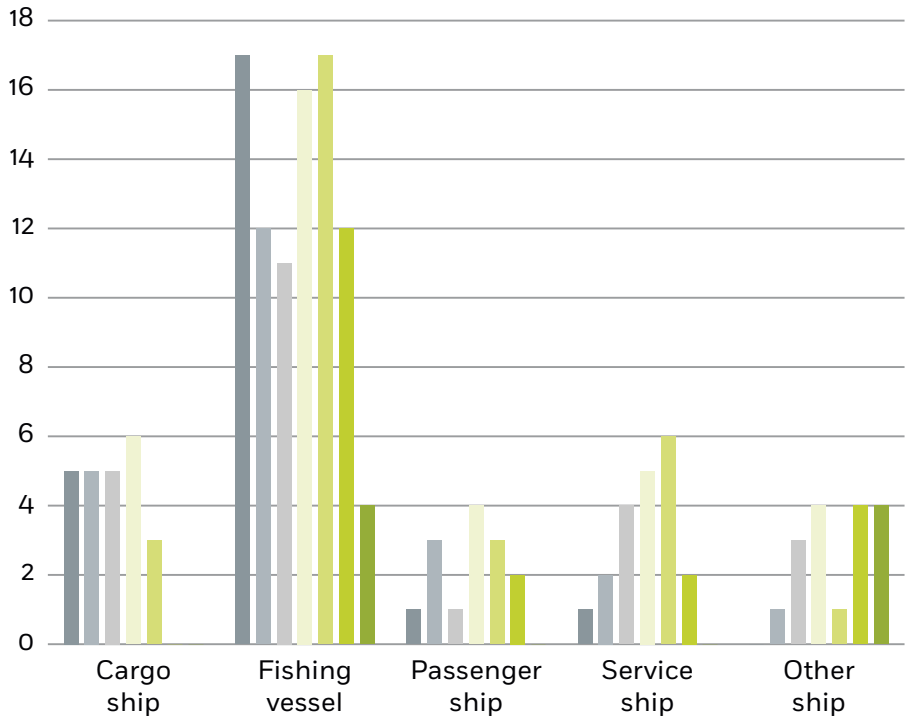
The number of ships reported unfit to proceed has been steady in 2017 in comparison with the figures for 2016.

Figure 32: Number of ships requiring towage or shore assistance



3257 ships overall needed towage or shore assistance over the 2011-2017 period, with a significant increase for fishing vessels in 2016.

Figure 33: Distribution of abandoned ships



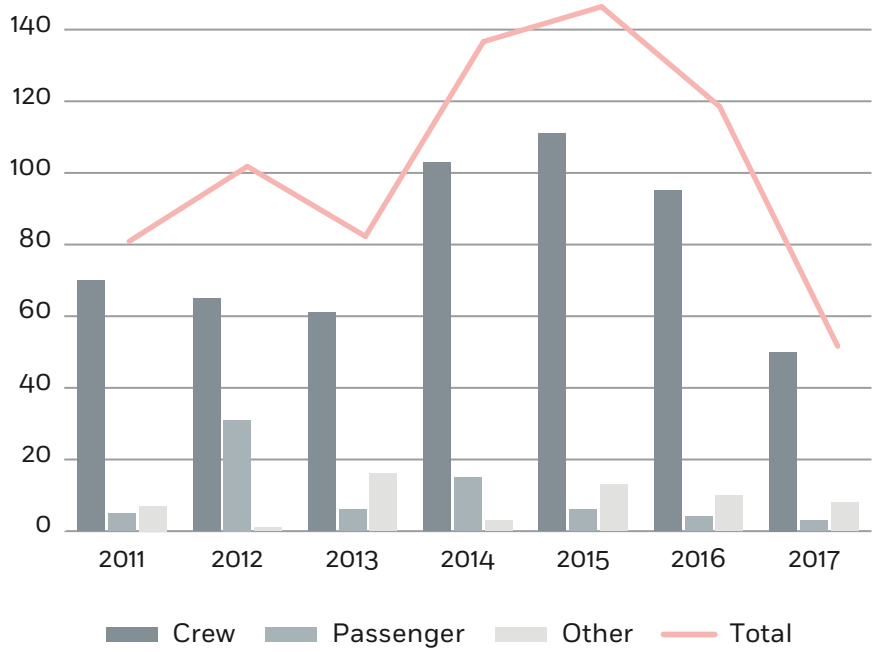
A total of 164 ships were abandoned. Of these, 89 were fishing vessels.

The number of abandoned ships per year has dropped significantly from 35 in 2014 to 8 in 2017.

2.6.2 CONSEQUENCES TO PERSONS

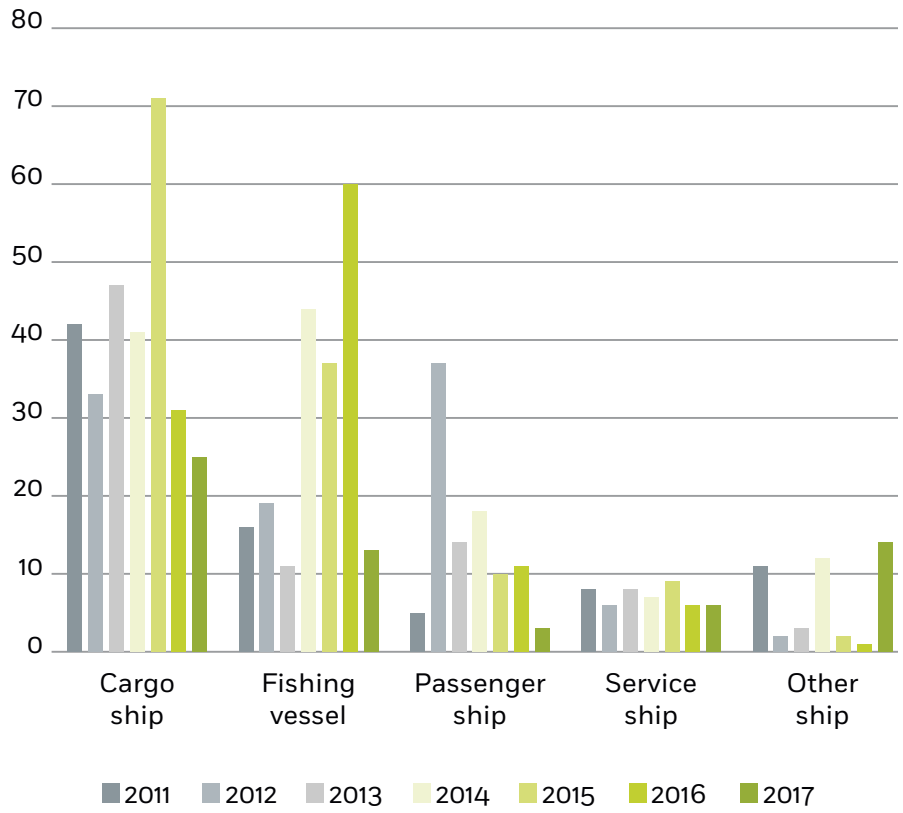
2.6.2.1 FATALITIES

Figure 34: Distribution of fatalities by categories of person



Over the 2011-2017 period, 405 accidents led to a total of 683 lives lost, with a very significant decrease since 2015. With 555 fatalities, crew is the most affected category of persons.

Figure 35: Distribution of fatalities by ship category



The evolution of fatalities per ship type has been irregular over the six year period. While it was stable for service ships, 2012 was the worst year for passenger ships, 2016 for fishing vessels, 2015 for cargo ships and 2017 for other ships.

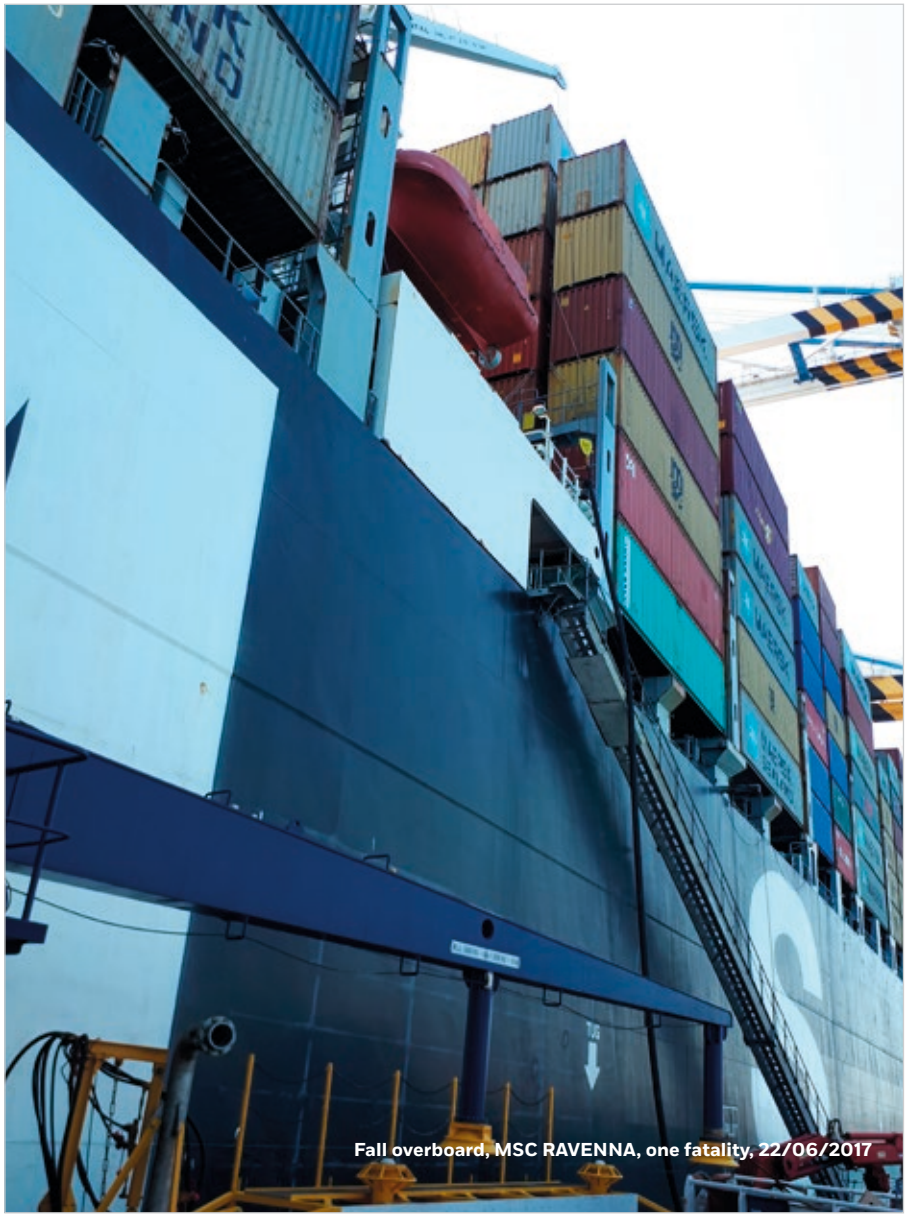
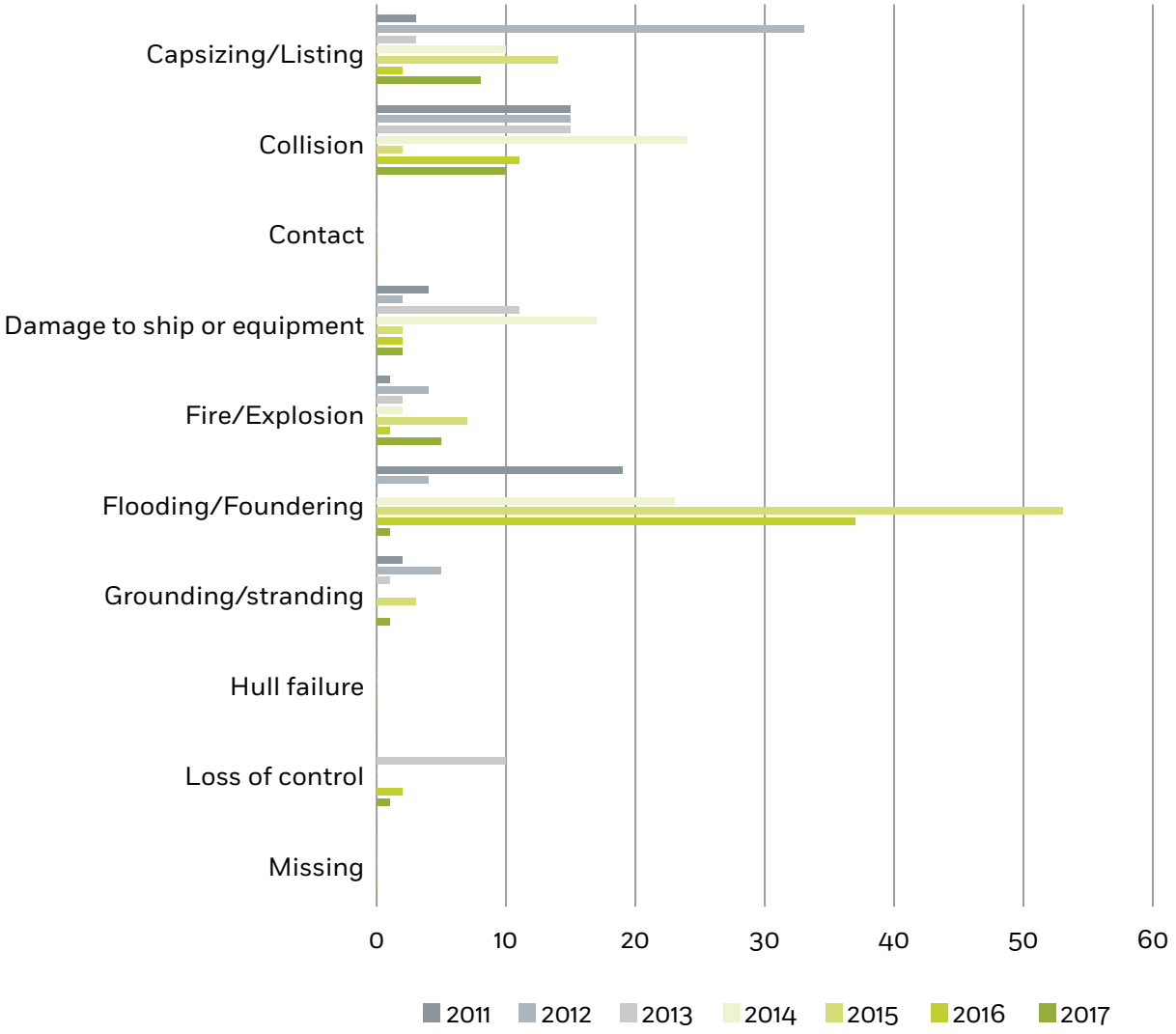
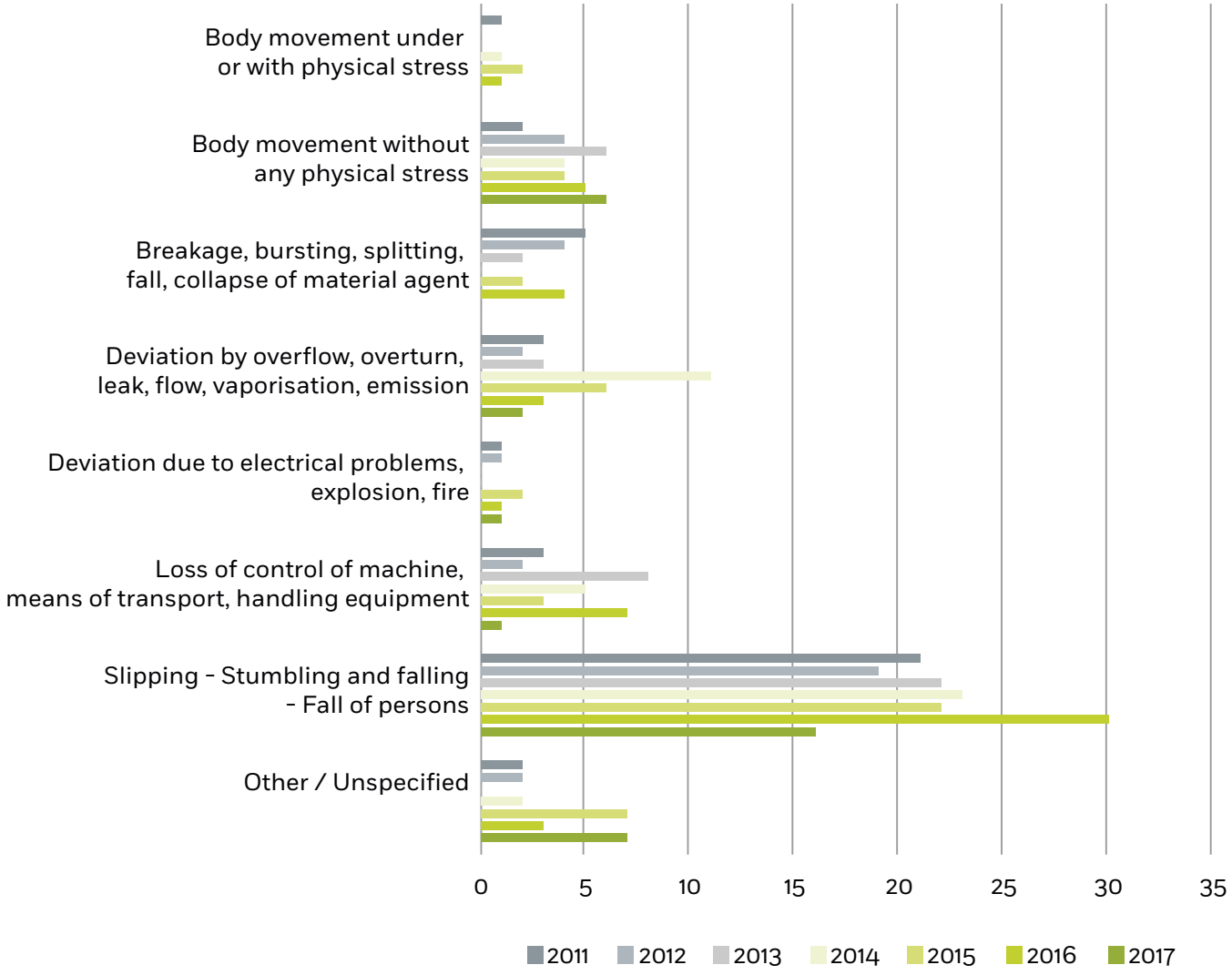

Fall overboard, MSC RAVENNA, one fatality, 22/06/2017

Figure 36: Distribution of fatalities by casualty events



Fatalities mainly occurred during a flooding/foundering (35.2%) or collision (23.6%).

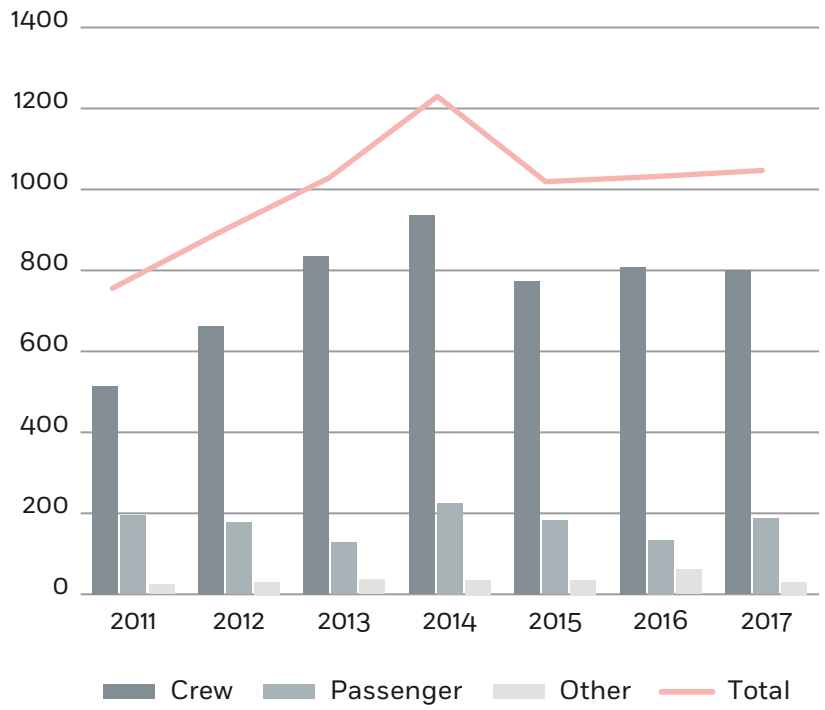
Figure 37: Distribution of fatalities by deviation



In terms of occupational accidents, slipping/falling of persons is the main cause of fatalities (52%).

2.6.2.2 INJURIES

Figure 38: Distribution of injuries by category of person

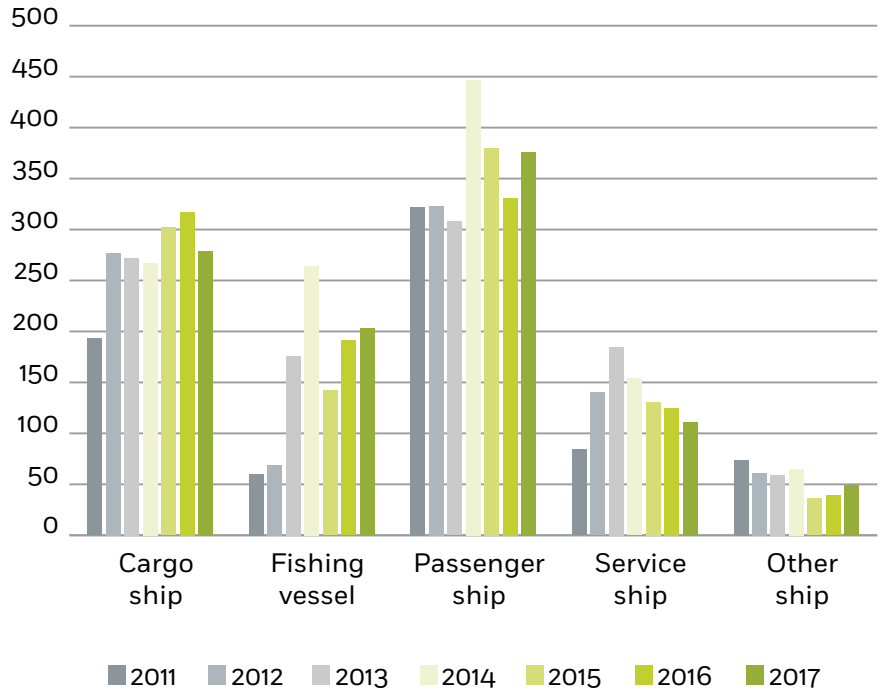


Among the total of 20616 casualties from 2011 to 2017, 5979 accidents resulted in a total of 6812 injured persons.

The number of injured persons is pretty constant since 2015, at around 1000 per year.

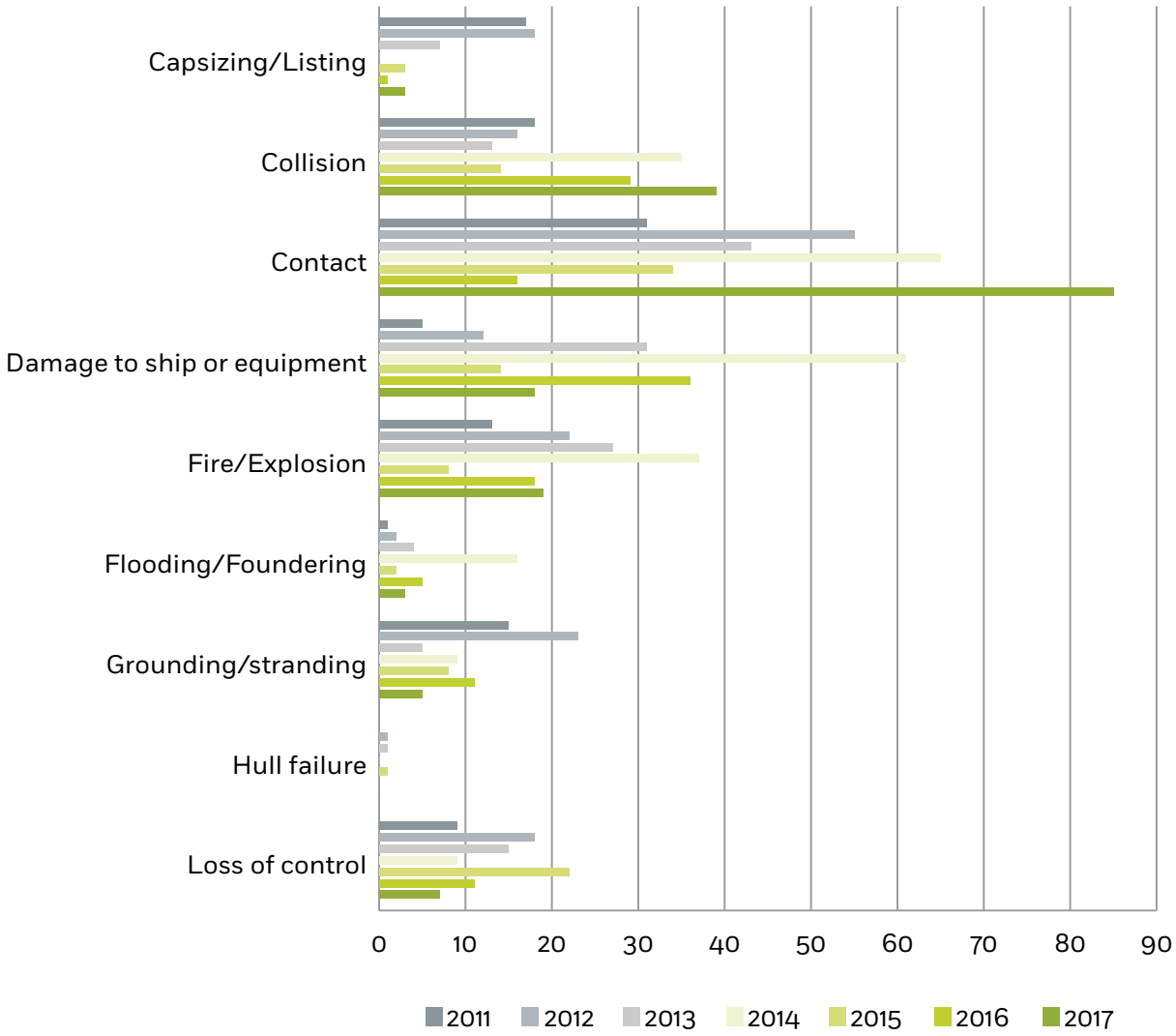
Crew represent the main category of persons injured at sea (5329 during the 2011-2017 period).

Figure 39: Distribution of injured people by ship type



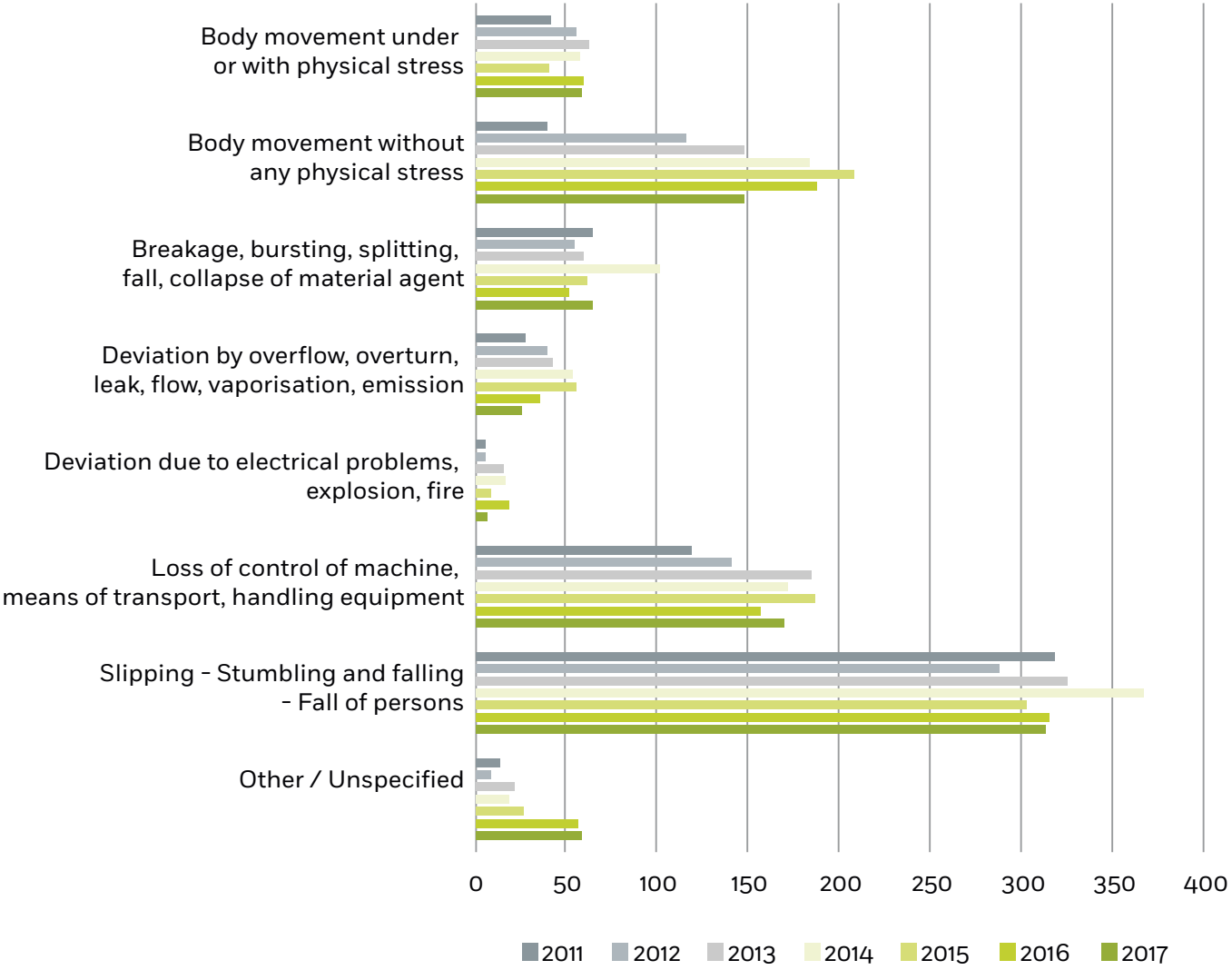
2487 persons were injured on board passenger vessels.

Figure 40: Distribution of injuries by casualty event



53.3% of the injuries took place during navigational events (contact, collision and grounding/standing).

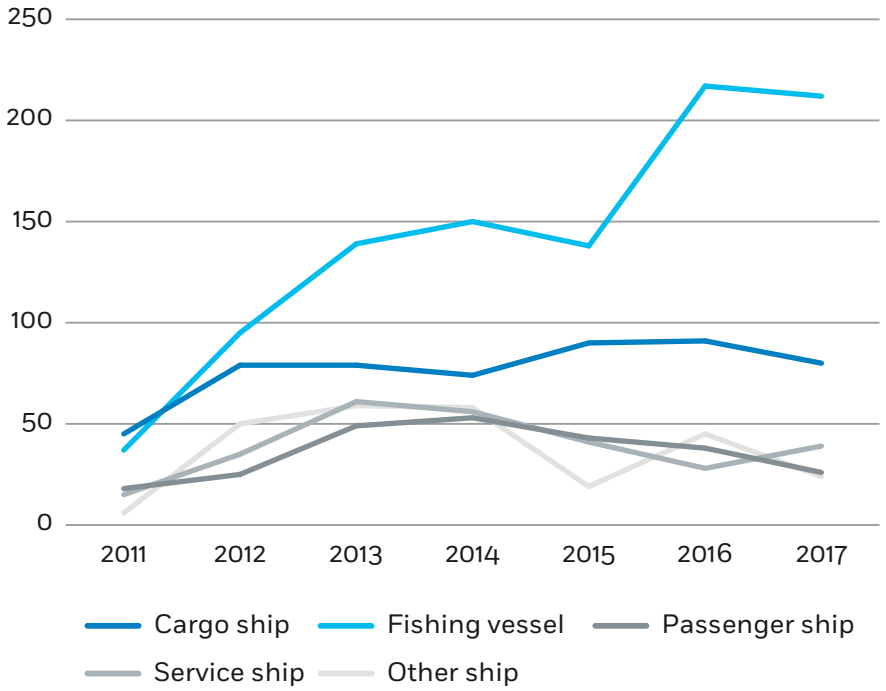
Figure 41: Distribution of injuries by deviation



As with fatalities, most of the injuries (38.6%) occurred during slipping/falls of persons.

2.6.3 OTHER CONSEQUENCES

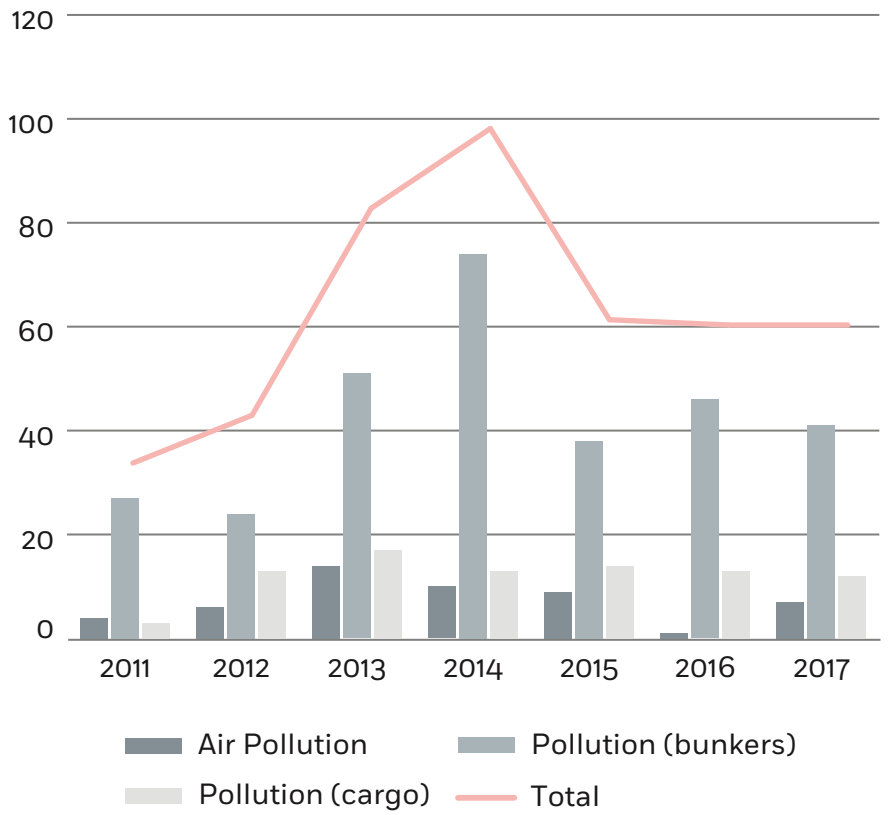
Figure 42: Distribution of Search and Rescue (SAR) operations by ship type



2314 ships needed a SAR operation of which 784 were fishing vessels.

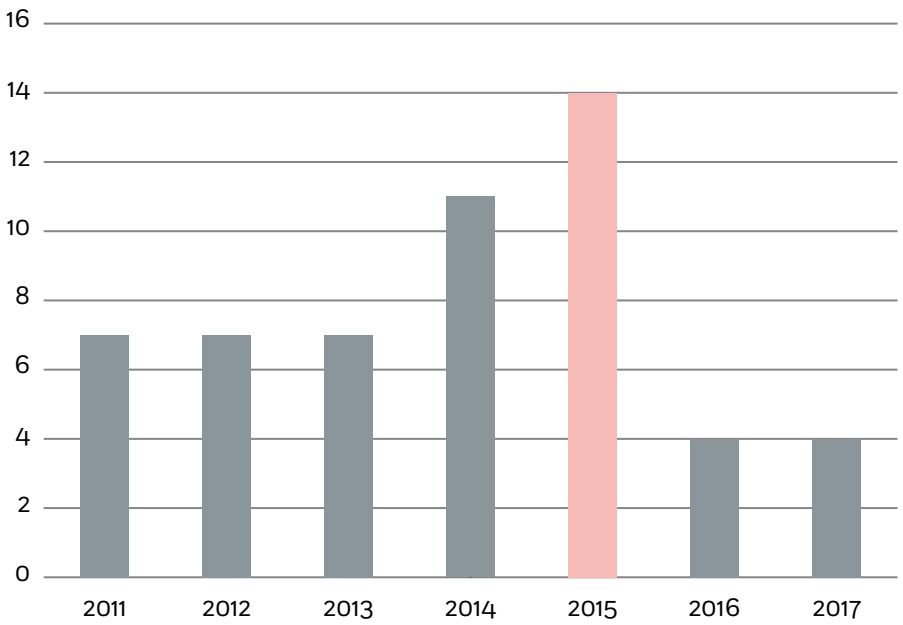
69% of the SAR operations related to ship casualties and 31% to occupational accidents.

Figure 43: Types of pollution



437 cases of pollution were reported. Among them, 386 affected the sea, while 51 were air pollution. In the majority of cases (301), sea pollution was caused by the release of ship's bunkers (fuel) and other pollutants (e.g. cargo residues, lubricating or hydraulic oils).

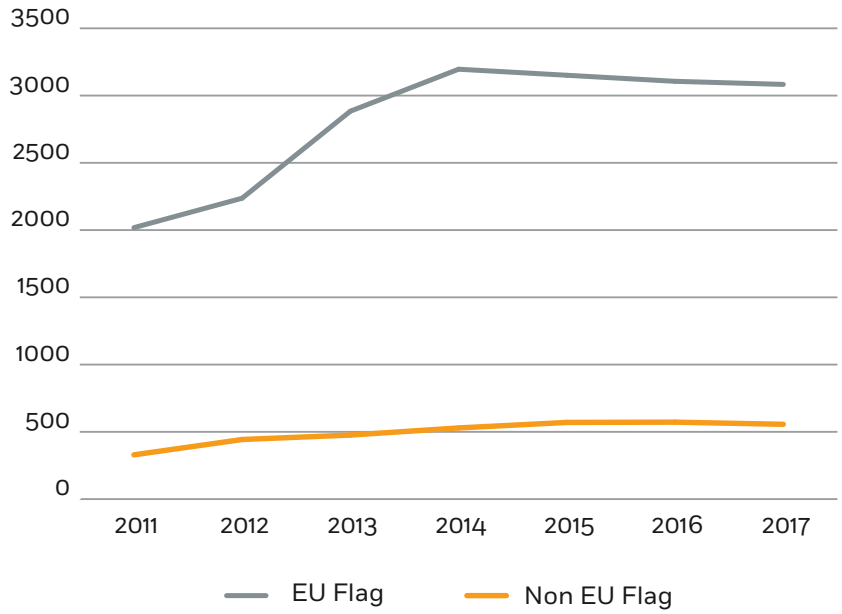
Figure 44: Distribution of oil pollution response



Oil pollution response was deployed mainly after grounding/ stranding (14 cases), or collision between ships (13 times). A significant decrease occurred since 2015.

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

Figure 45: Distribution of ship flags



19 675 ships flagged under an EU Member State were involved in a marine casualty or incident.

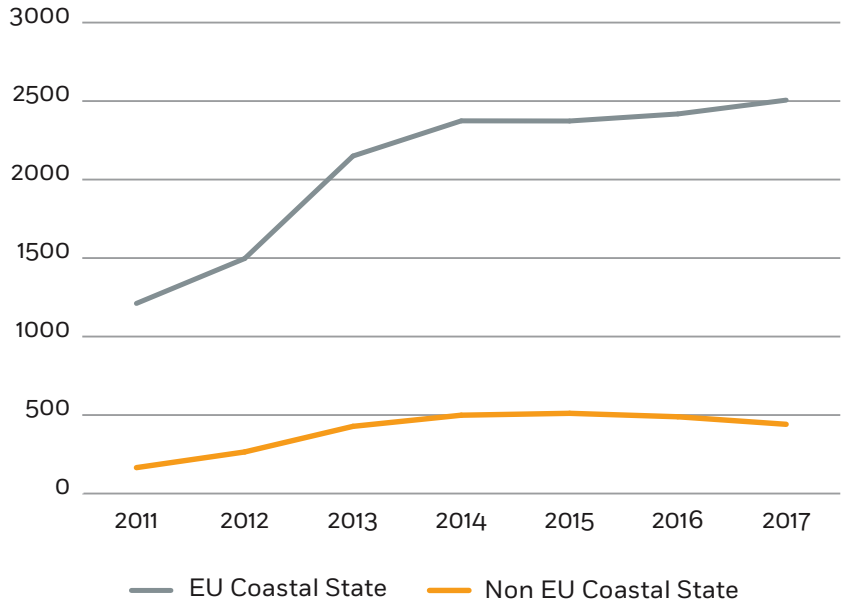
29 EU Member States were involved as flag of the ship, Slovenia being not affected over the 2011 - 2017 period.

3 475 ships flagged under a total of 105 non-EU countries were involved in a marine casualty or incident.

The flag of 114 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 16 679 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 (20616), this means that 80.9% of the accidents happened in territorial seas or internal waters.

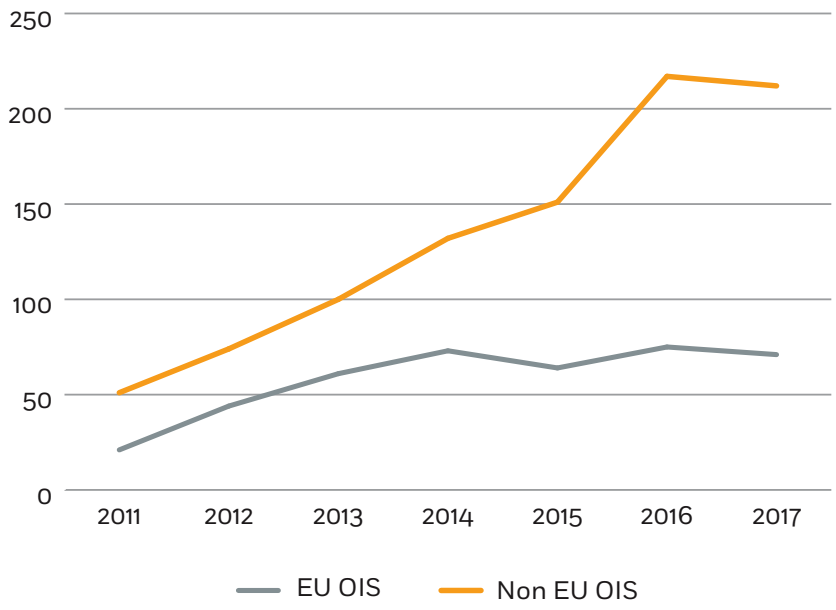
The grand total of incidents where a coastal States was affected was 16 722, as more than one Coastal State can be affected by the same marine casualty or incident.

25 EU Member States were involved as a coastal State 14 529 times. Austria, Czech Republic, Hungary, Luxembourg and Slovakia were the five EU Member States not involved.

144 non-EU countries were reported as coastal State 2 798 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 EU flagged vessels or 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 1259 marine casualties and incidents, at least one substantially interested State was reported. Considering the total number of marine casualties and incidents (20 616), 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.

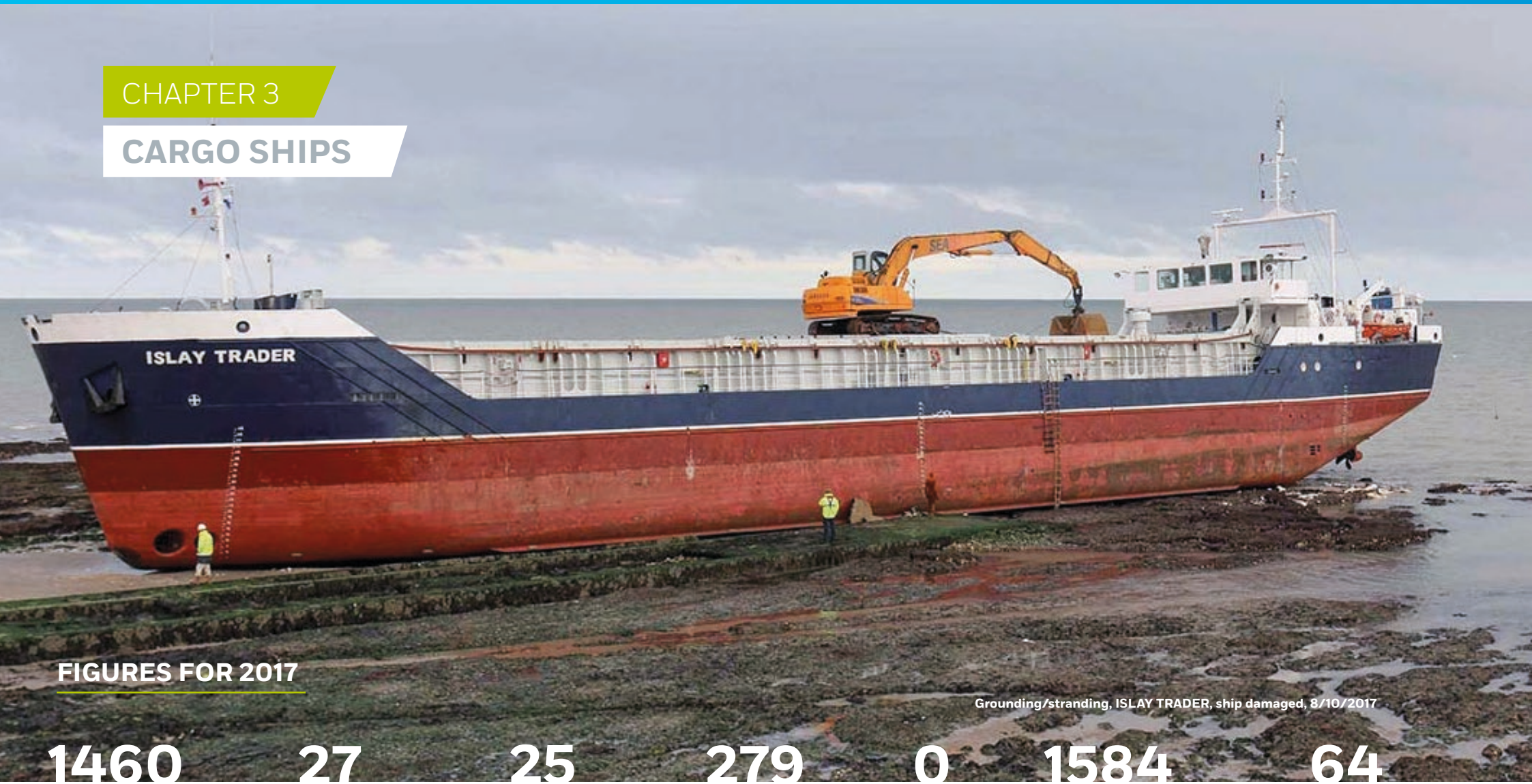
A total of 1346 substantially interested States were registered, bearing in mind that a single occurrence can involve more than one substantially interested State.

25 EU Member States were involved as substantially interested States 409 times, while Austria, Bulgaria, Czech Republic, Slovakia and Slovenia were not affected.

94 non-EU countries were substantially interested States 937 times.

CHAPTER 3

CARGO SHIPS



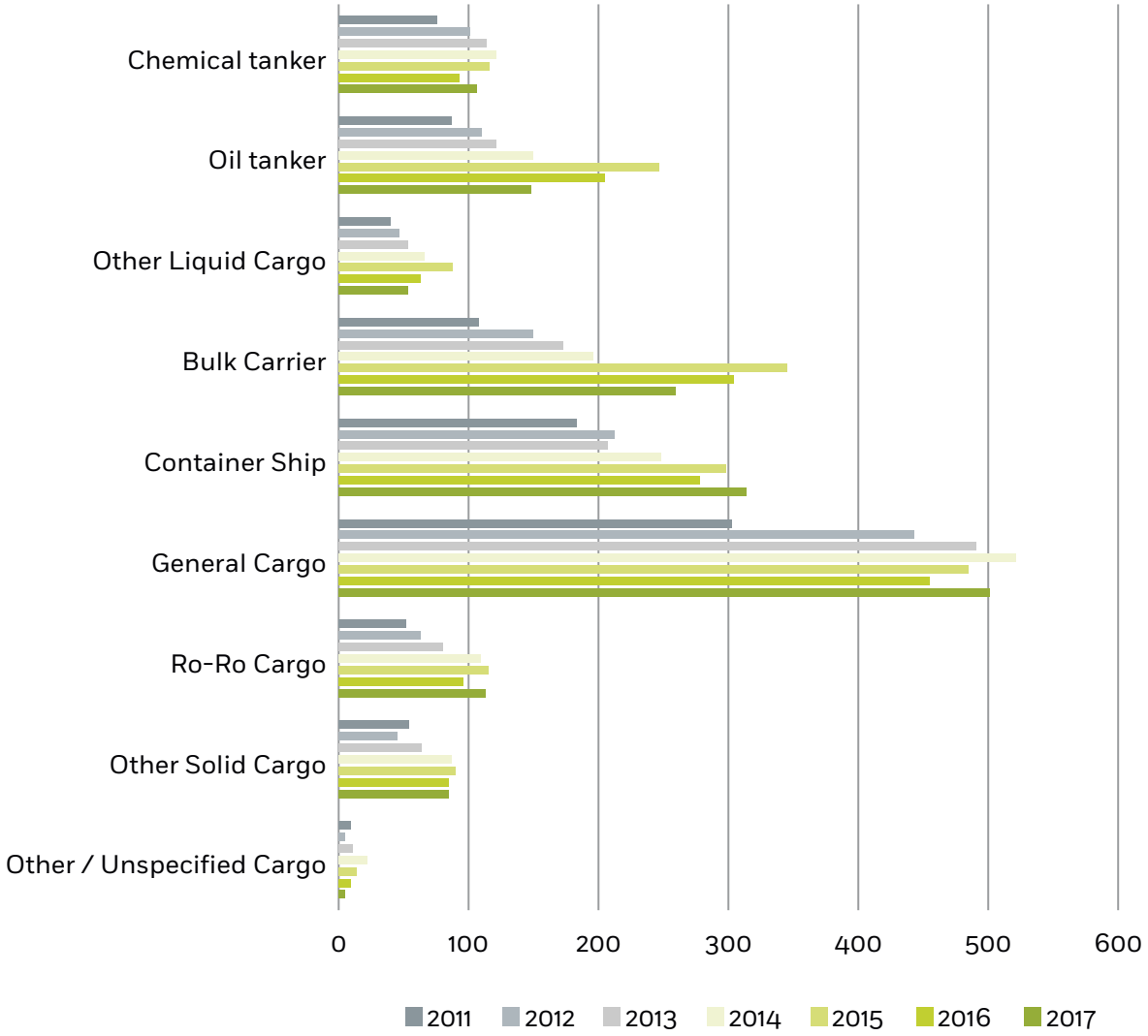
Grounding/stranding, ISLAY TRADER, ship damaged, 8/10/2017

FIGURES FOR 2017

1460	27	25	279	0	1584	64
CASUALTIES & INCIDENTS	VERY SERIOUS CASUALTIES	FATALITIES	PERSONS INJURED	SHIPS LOST	SHIPS INVOLVED	INVESTIGATIONS

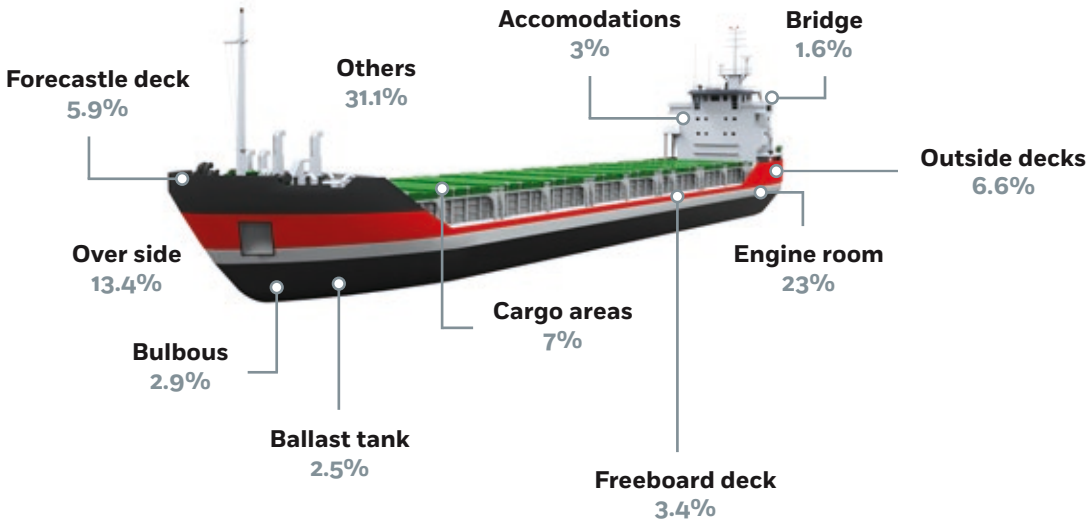
3.1 DETAILED DISTRIBUTION

Figure 48: Distribution of cargo ships involved



The sub-subcategory most frequently involved was general cargo (32.3%), followed by container ships (17.6%) and bulk carriers (15.5%).

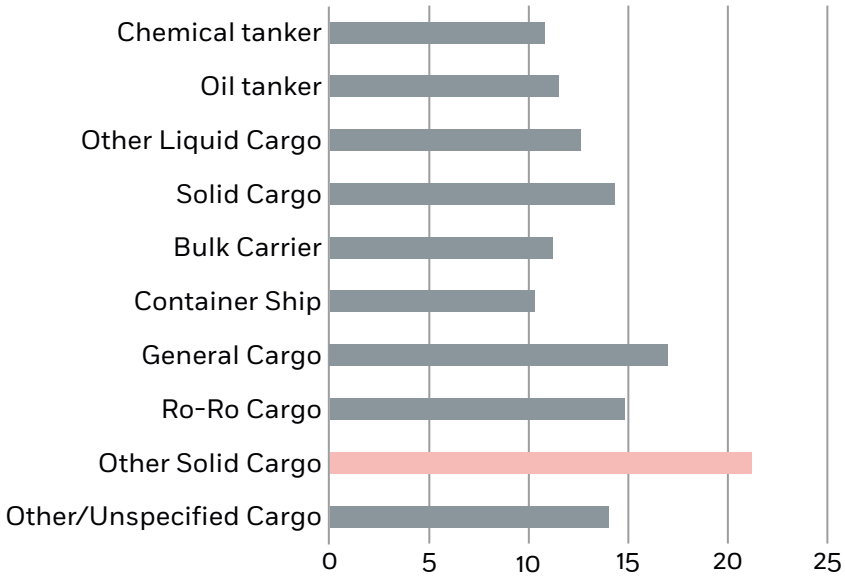
Figure 49: Main places of casualties involving cargo ships for 2011-2017



Places were specified in 9892 cases. The main location of marine casualties and incidents was the engine room (23%), followed by over side (13.4%).

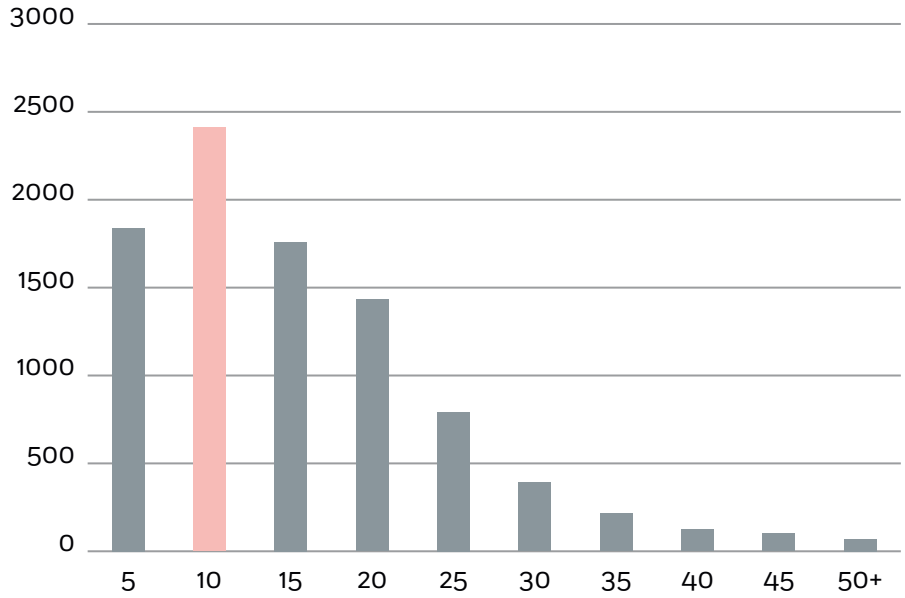

Equipment failure, TRAPEZITZA, ship damaged, 22/01/2017

Figure 50: Average age by type of cargo ships involved 2011-2017



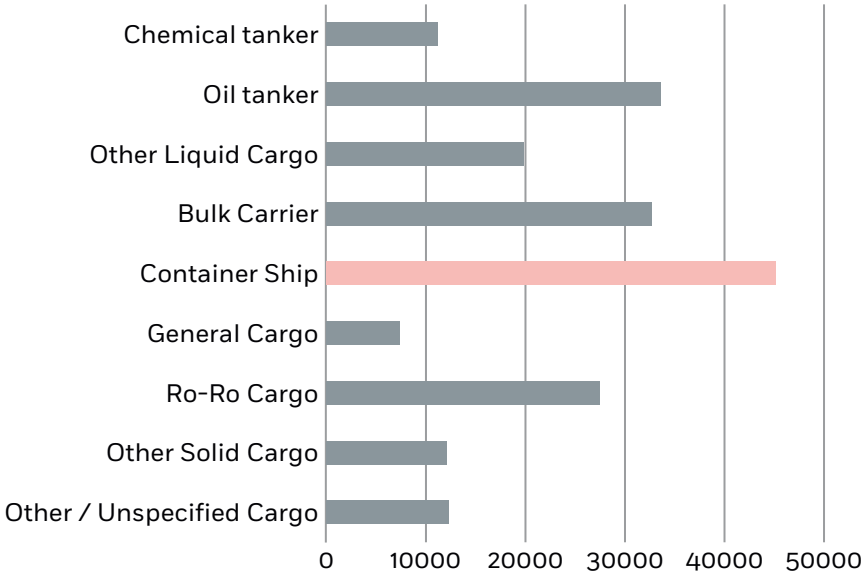
The youngest ship category is container ship (10.3 years) while the oldest is other solid cargo (21.2 years).

Figure 51: Age distribution of cargo ships involved for 2011-2017



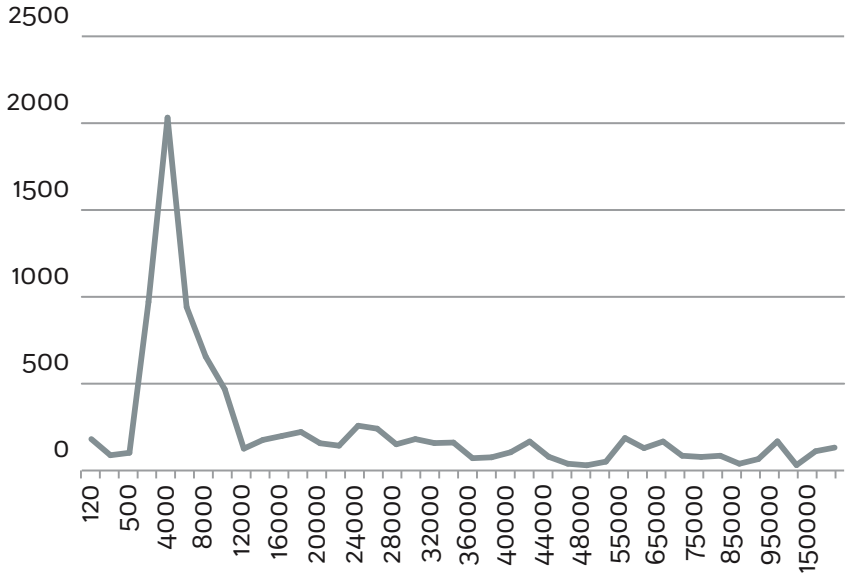
The average age of cargo ships involved in casualties and incidents was 13.7 years over the period 2011-2017.

Figure 52: Average GT of cargo ships involved by main category for 2011-2017



General cargo ships had the lowest average GT (7355), while container ships represented the highest average GT (45183).

Figure 53: GT distribution of cargo ships involved for 2011-2017

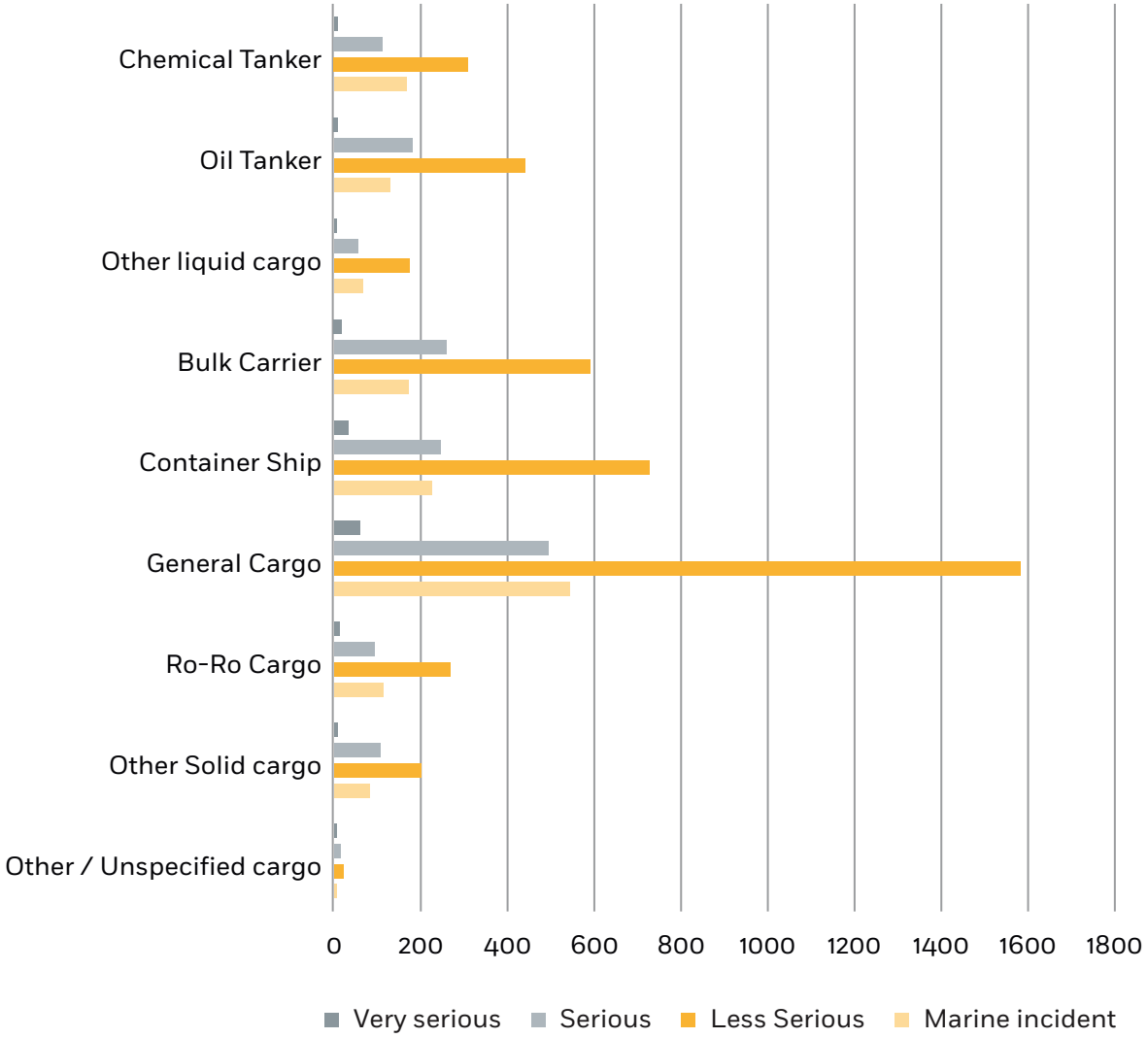


The average gross tonnage (GT) of cargo ships involved in marine casualties is 23181. A peak of ships with GT around 4000 is in line with the average GT of general cargos involved, this size of cargo ships representing the main part of the cargo fleet.

3.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

3.2.1 CASUALTY WITH A SHIP

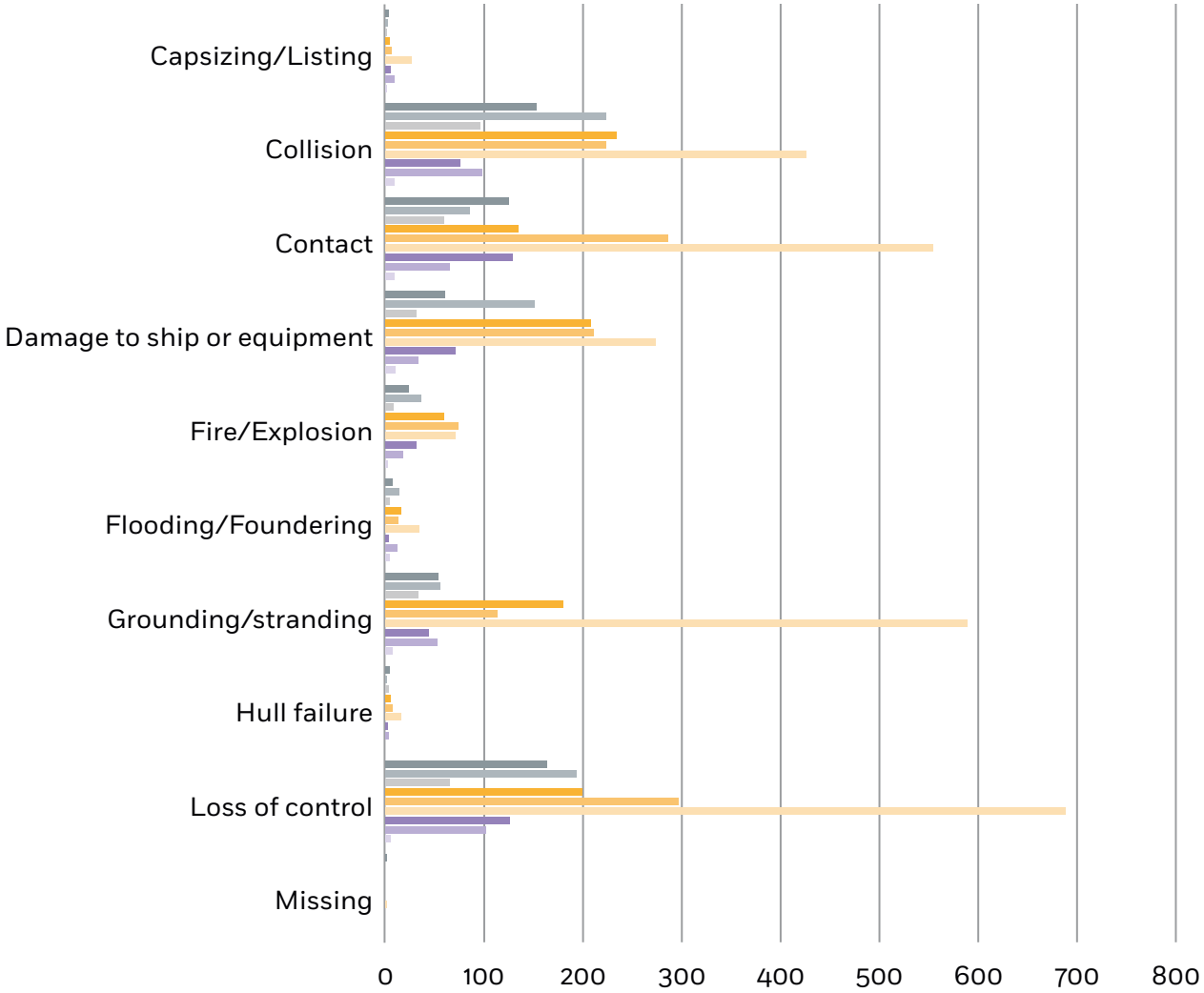
Figure 54: Distribution of severity per cargo ship type for 2011-2017



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 (2.1%) than the average for all ship types (3.8%).

35.6% of the casualties and incidents were related to general cargo ships.

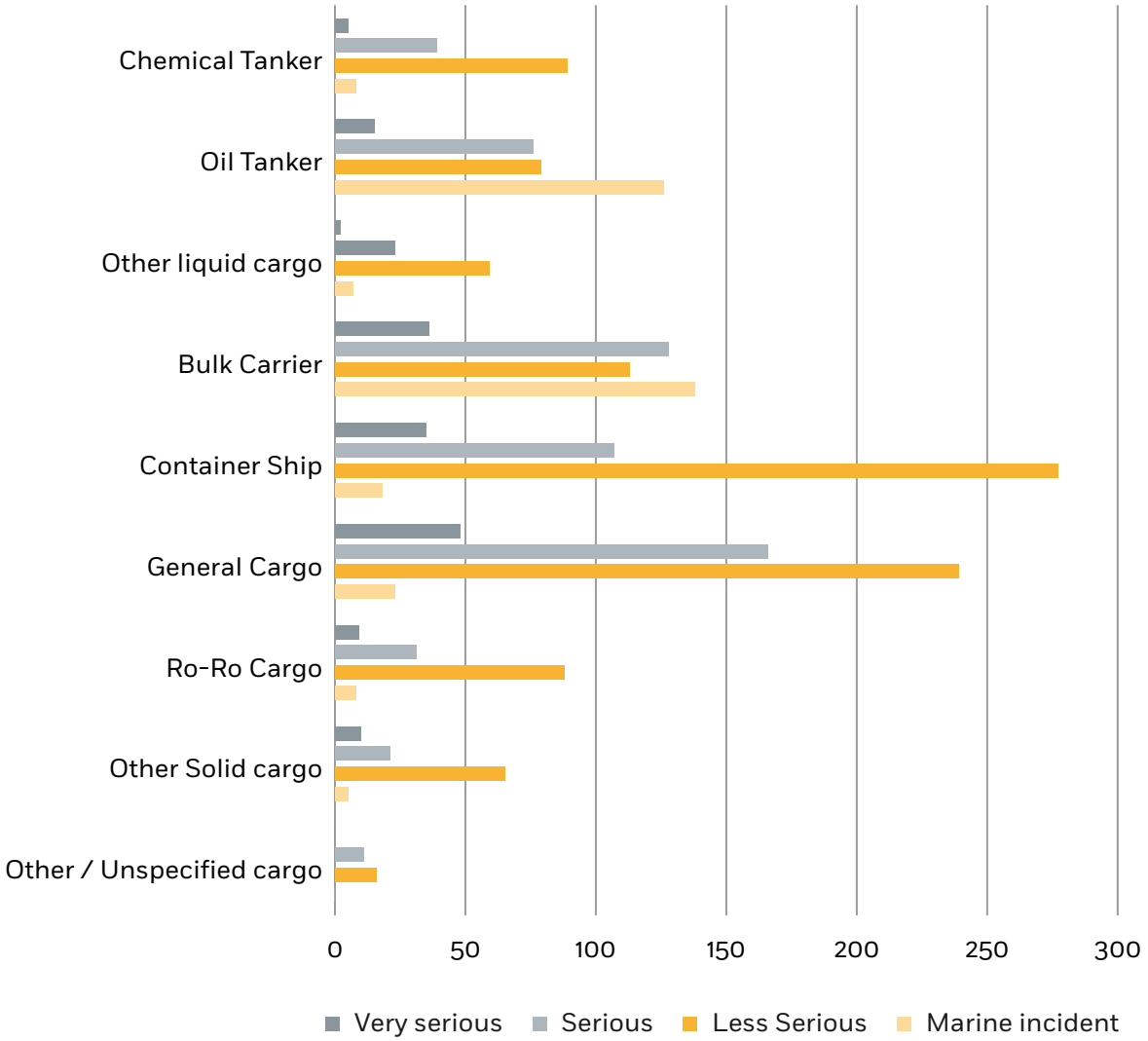
Figure 55: Distribution of casualty events per cargo ship type for 2011-2017



Loss of control represents 24.4% of the events involving cargo ships, followed by collision (20.4%) and contacts (19.2%).

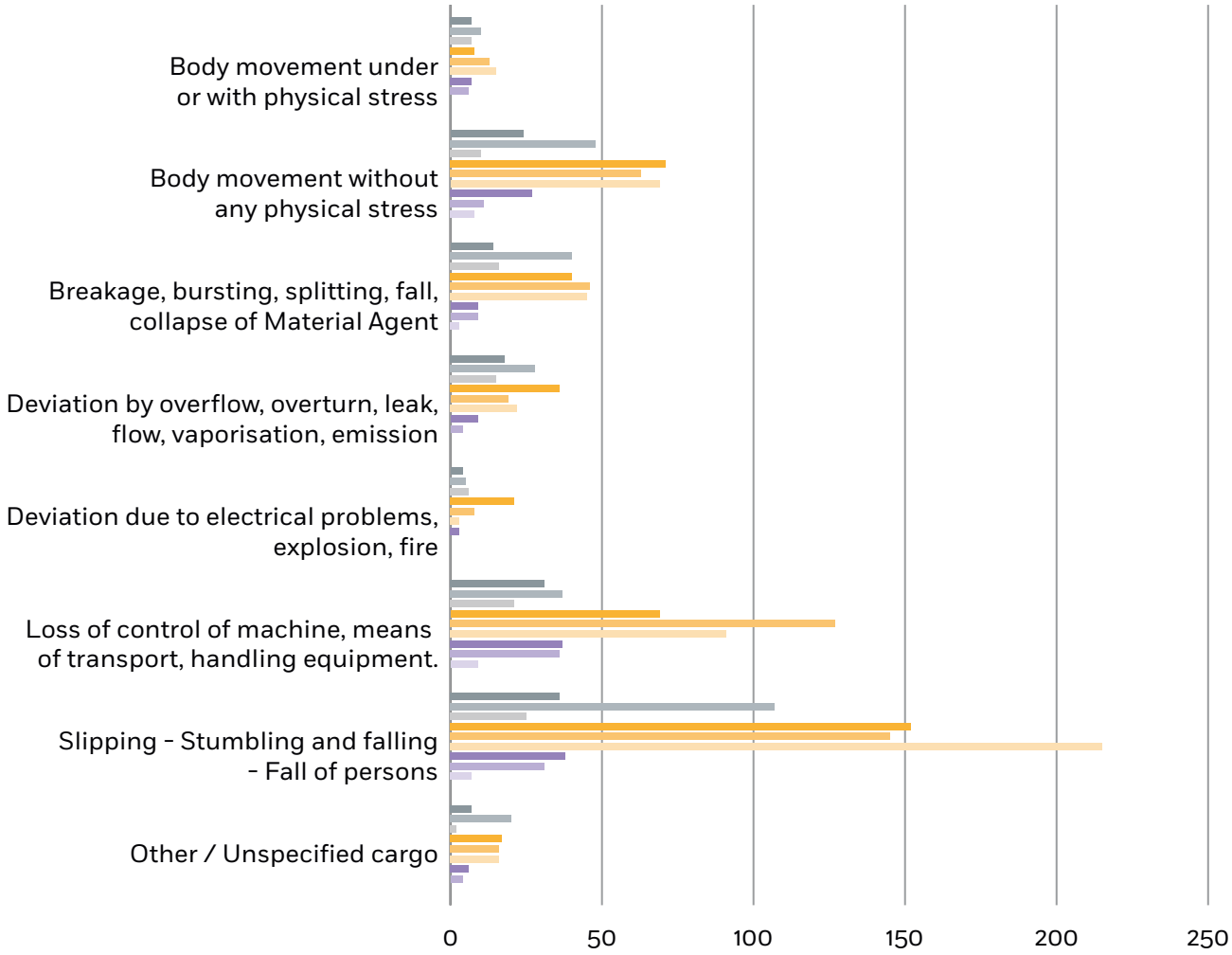
3.2.2 OCCUPATIONAL ACCIDENT

Figure 56: Severity of occupational accidents per cargo ship type 2011-2017



The proportion of very serious occupational accidents is higher (7.5%) than the average for all ship types (4.5%). 22.3% of the cases were related to general cargo ships and 20.5% to container ships.

Figure 57: Distribution of deviations per cargo ship type for 2011-2017



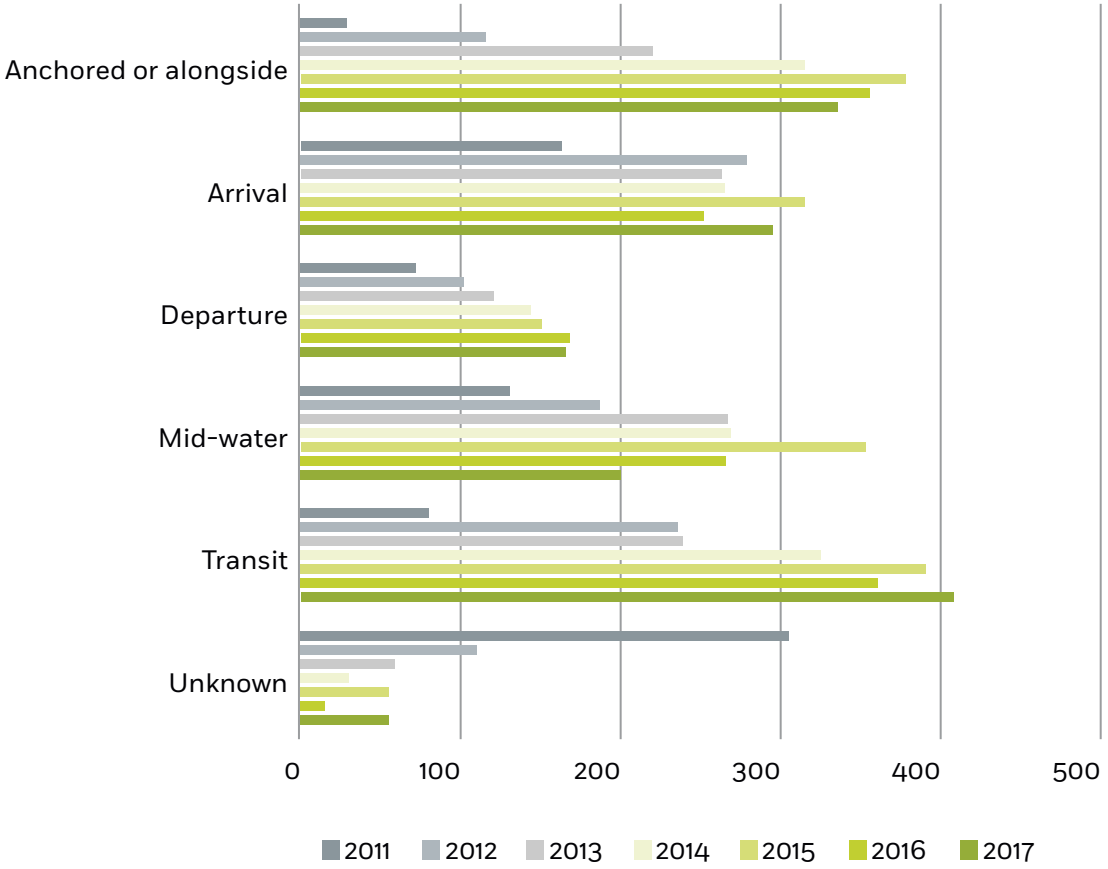
Slipping and falls of persons was the most frequent deviation (35.5%)proportion.

3.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

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

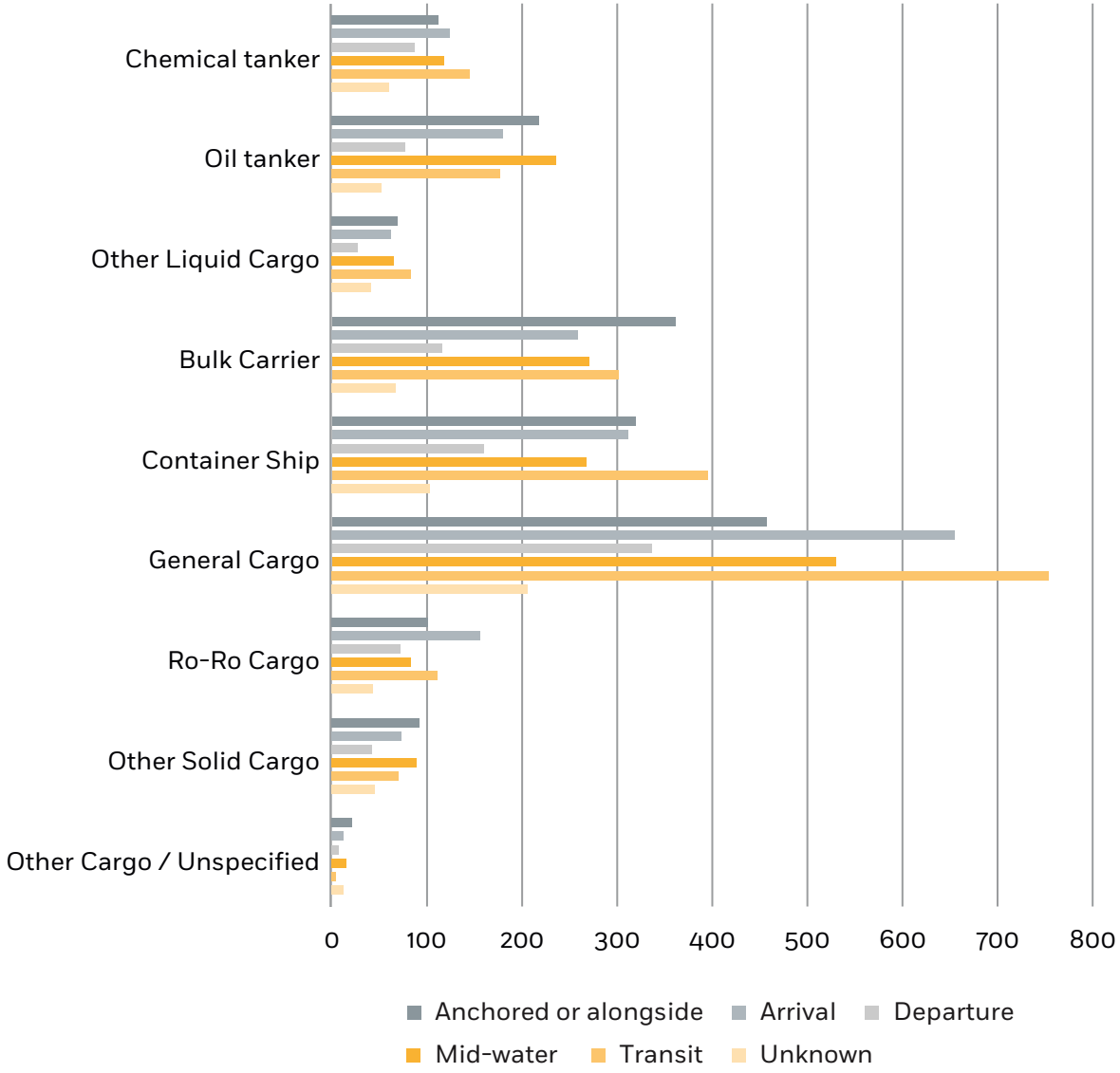
3.3.1 VOYAGE SEGMENTS

Figure 58: Distribution by voyage segment



The departure phase remained the safest voyage segment over the period (10.4% of the cases).

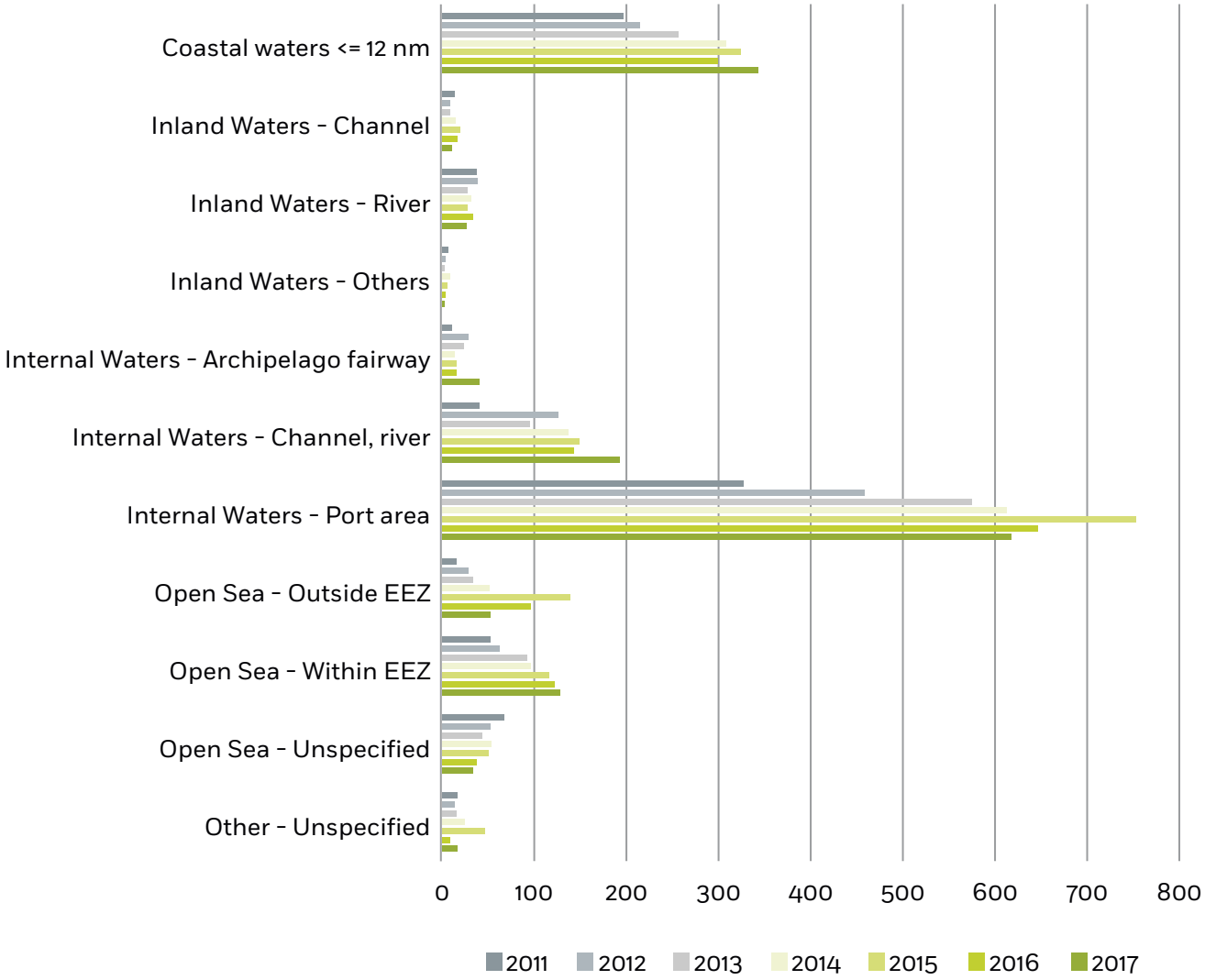
Figure 59: Distribution by voyage segment per cargo ship type for 2011-2017



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

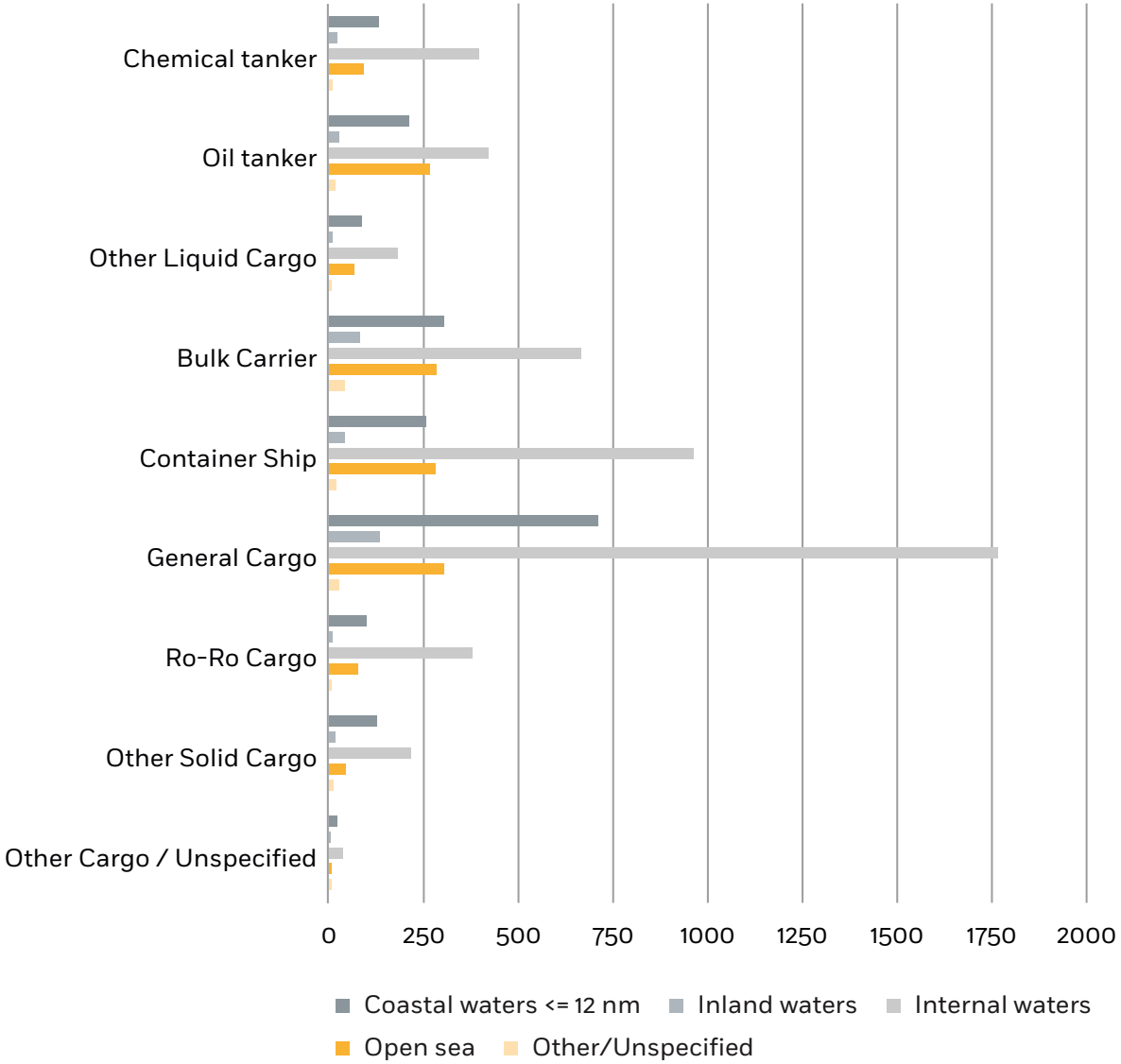
3.3.2 LOCATION

Figure 60: Distribution by location of marine casualties and incidents



45.1% of the casualties took place in port areas, followed by 21.9% in coastal waters.

Figure 61: Distribution by location of marine casualties and incidents per cargo ship type 2011-2017



All types of cargo ships have the highest numbers of casualties and incidents within internal waters (56.7%).

Grounding/stranding, GOODFAITH, ship lost, pollution, 11/02/2015

3.3.3 REGIONAL DISTRIBUTION

Figure 62: Regional distribution of marine casualties and incidents for 2011-2017

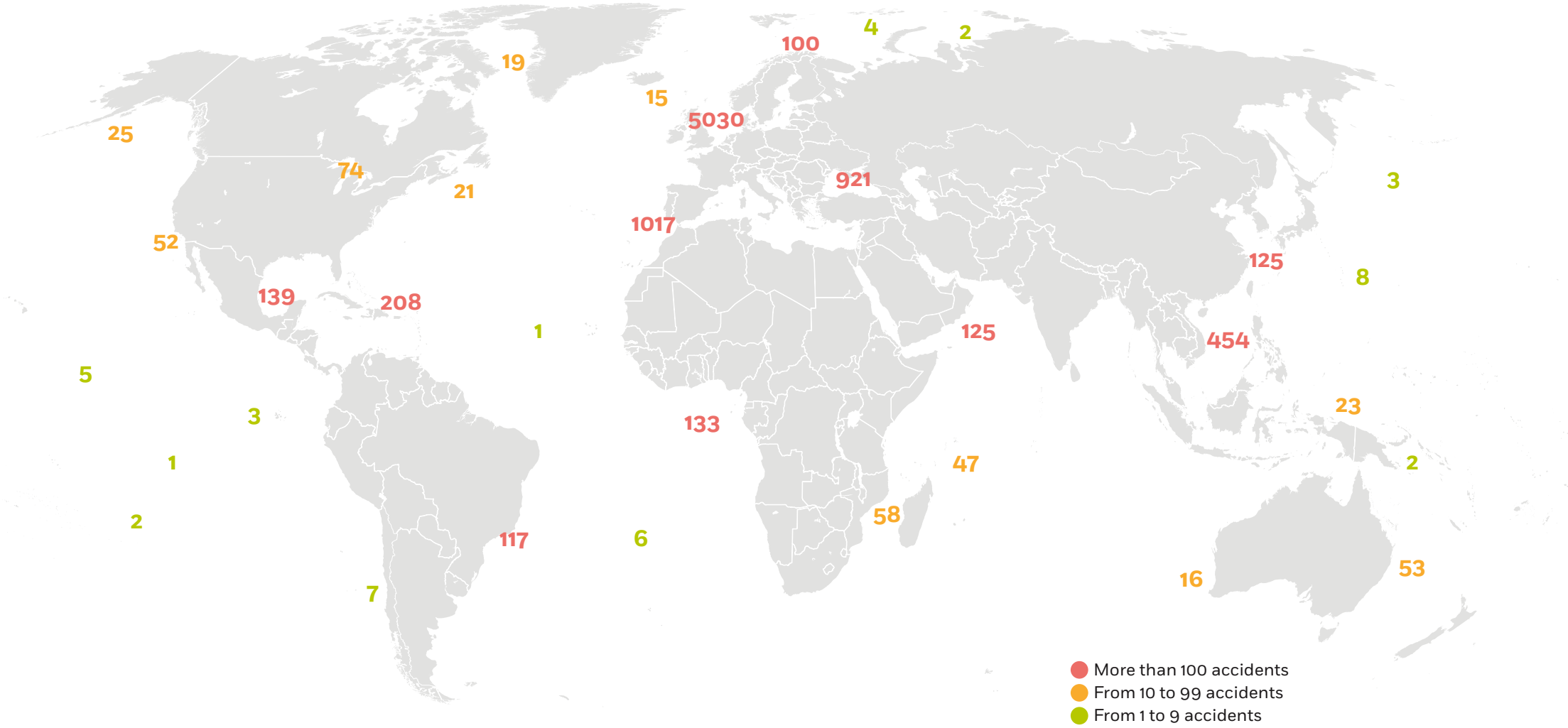
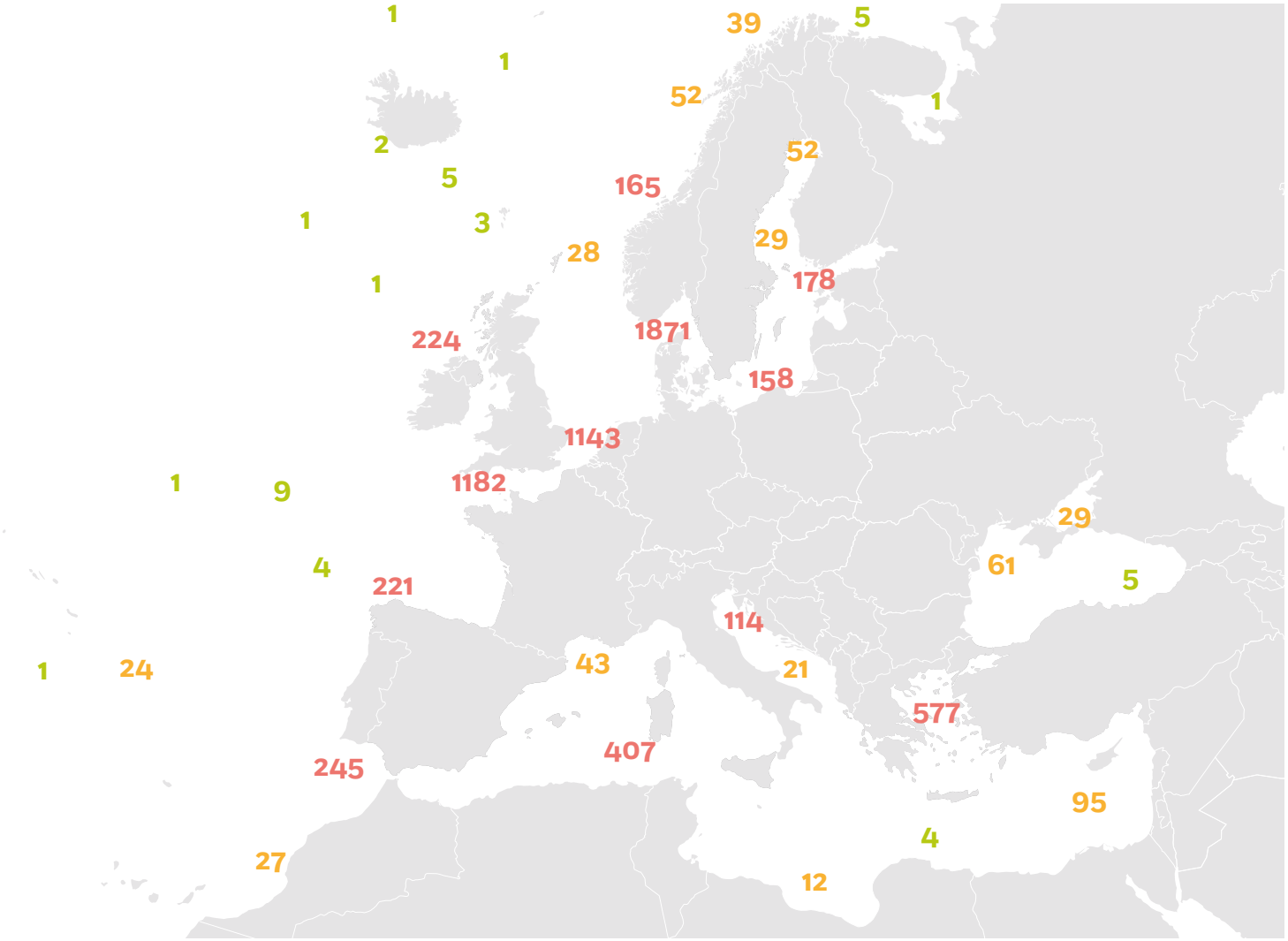
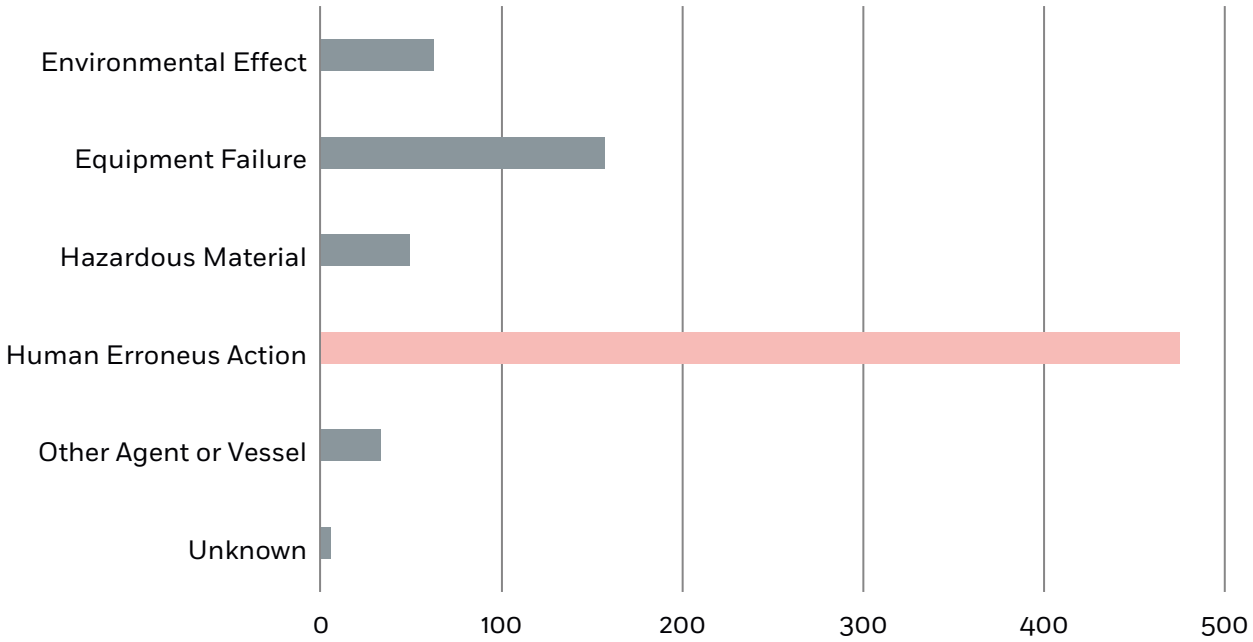


Figure 63: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU Member States for 2011-2017



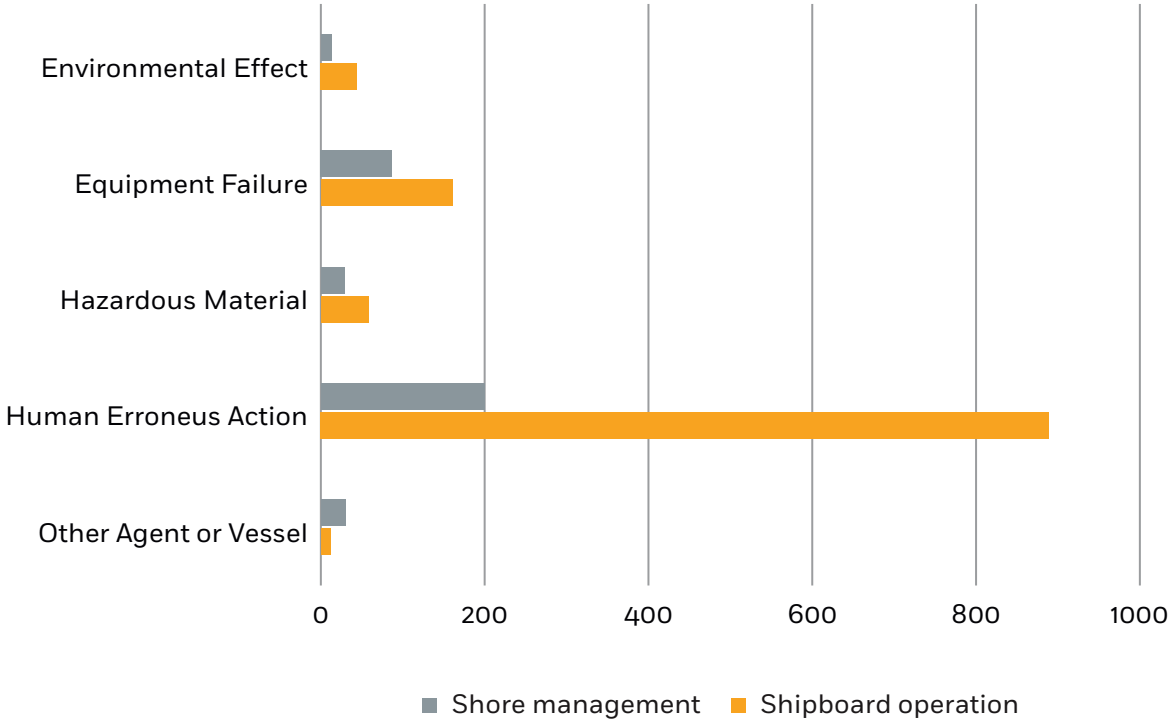
3.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 64: Accidental Events 2011-2017



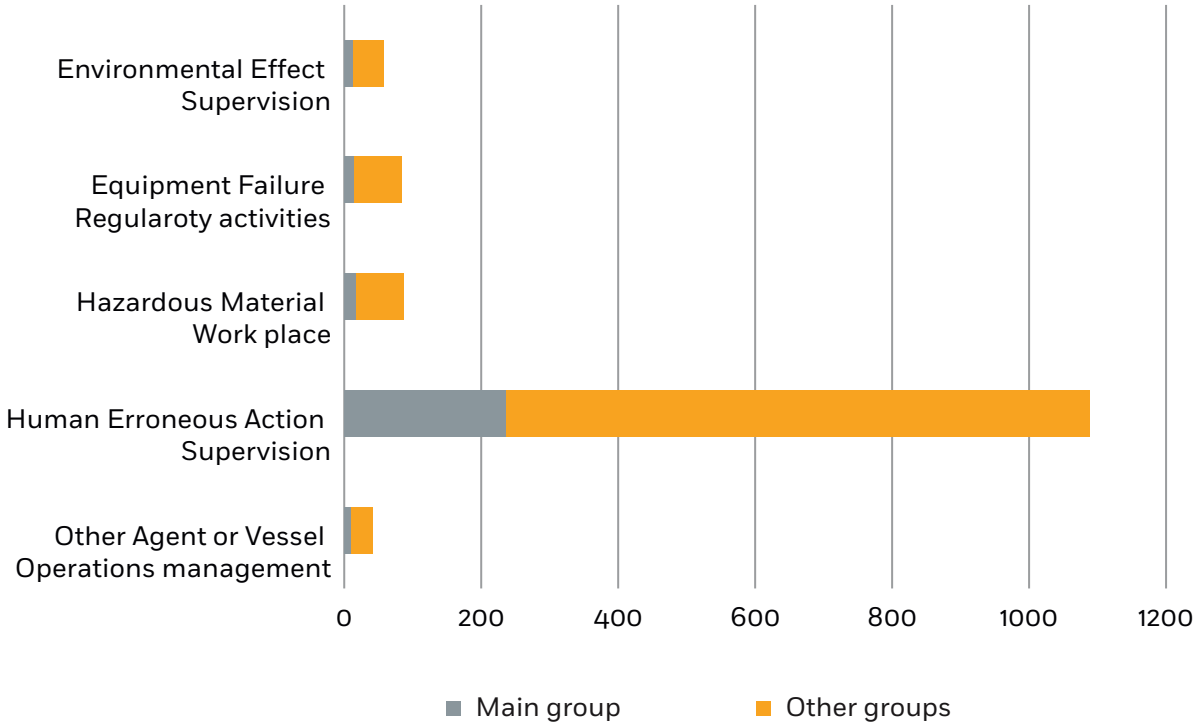
Among the 781 accidental events related to cargo ships, human erroneous actions were quoted most often (60.8%), followed by equipment failure (20.1%).

Figure 65: Relationship between Accidental Events and the main Contributing Factors for 2011-2017



For almost all accidental events, shipboard operation appeared to be the most significant contributing factor (76.4%).

Figure 66: Groups of contributing factors for 2011-2017

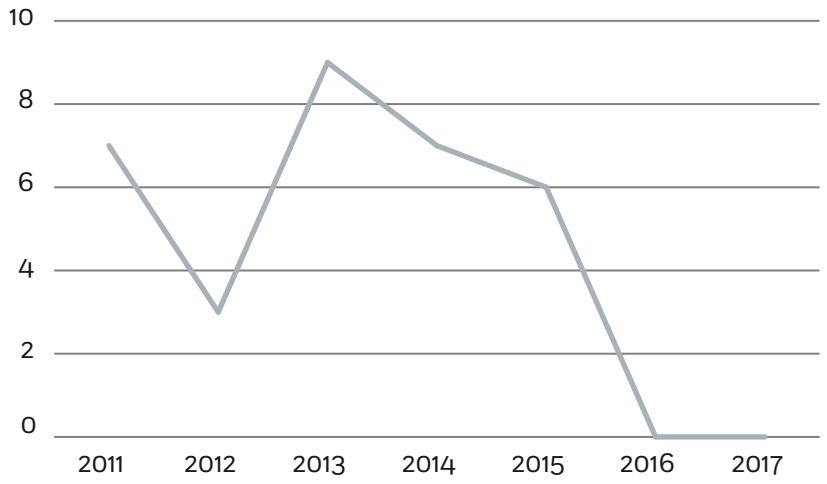


This figure indicates the contributing factor that was most quoted per category of accidental event. For example, supervision was most quoted as the significant contributing factor when the accidental event was human erroneous action and environmental effect.

3.5 CONSEQUENCES

3.5.1 CONSEQUENCES TO SHIPS

Figure 67: Cargo ships lost



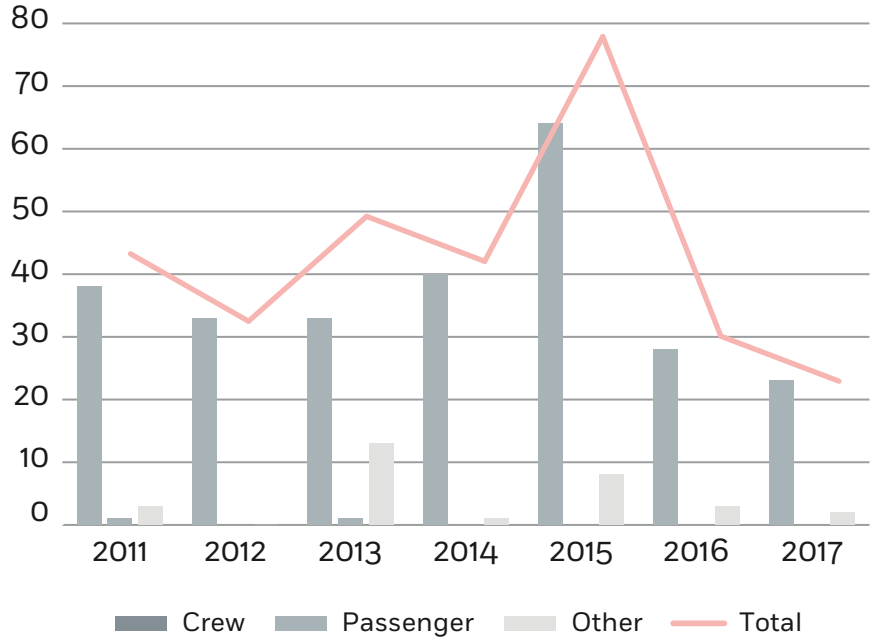
Among cargo ships that were lost, 62.5% were general cargo.

In addition to the continuous decrease noted since 2013 no cargo ship has been reported lost for the second consecutive year.

3.5.2 CONSEQUENCES TO PERSONS

3.5.2.1 FATALITIES

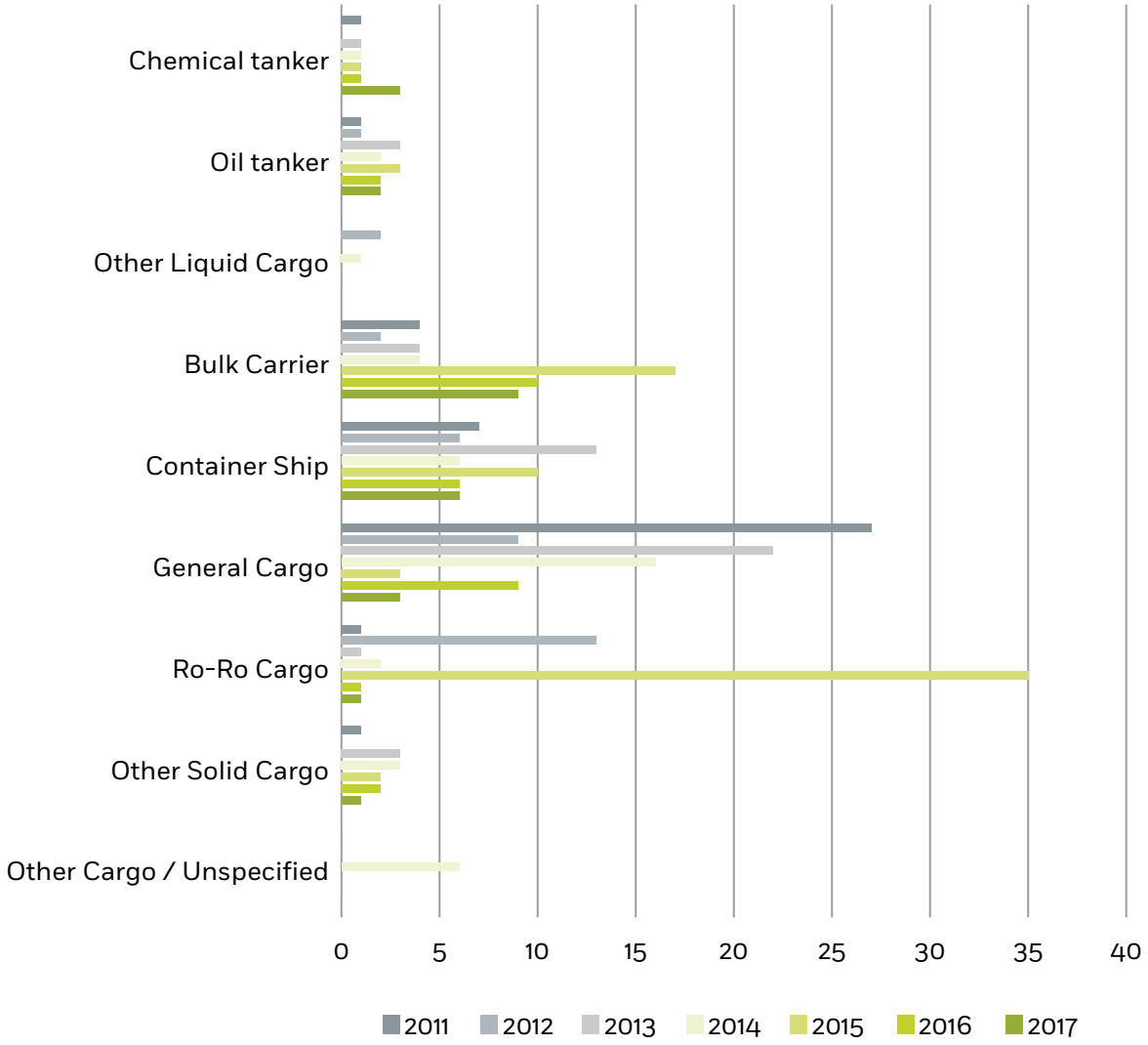
Figure 68: Number of fatalities



The number of fatalities on board cargo ships continued decreasing since 2016.

Fatalities of crew comprised 89.3% of cases.

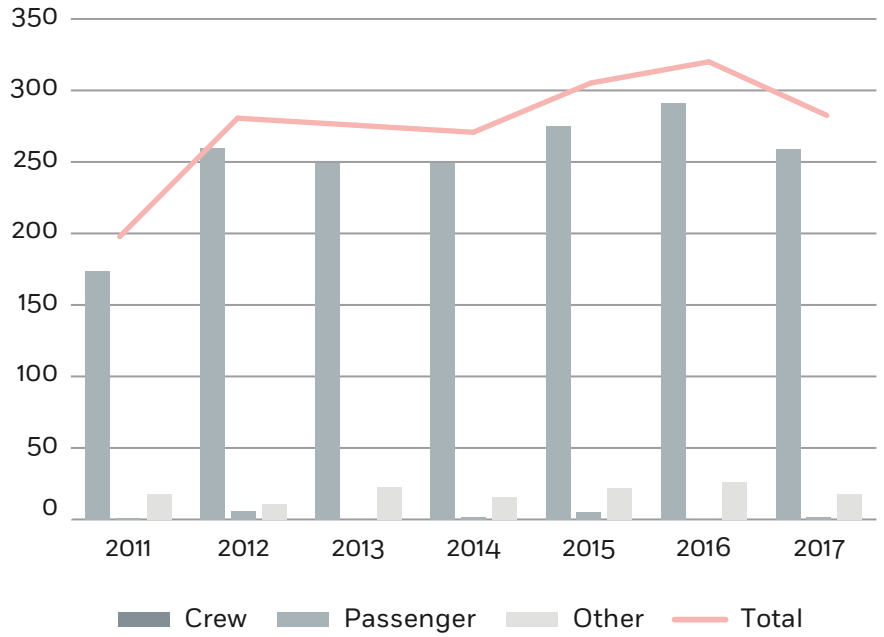
Figure 69: Distribution of fatalities per cargo ship type



A higher number of fatalities occurred on board general cargo ships (30.7%) across the period. The number of fatalities was very high on board ro-ro cargo ships in 2015, due to the sinking of El Faro on 2/10/2015 with 33 victims.

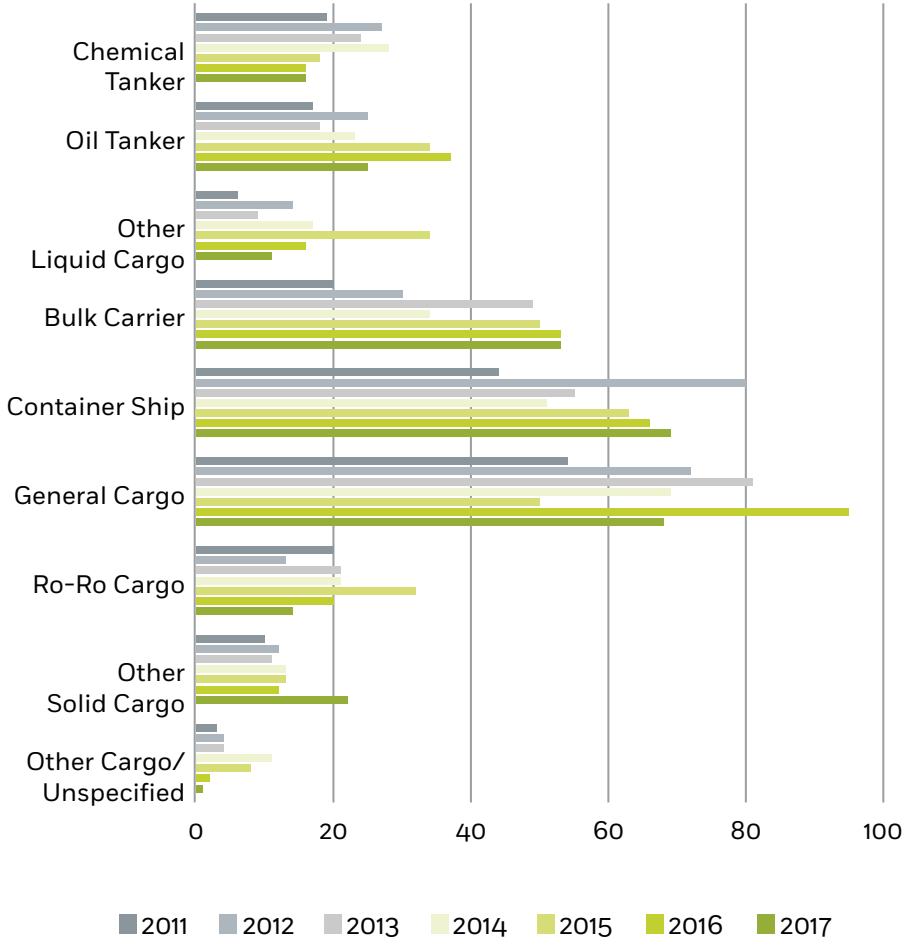
3.5.2.2 INJURIES

Figure 70: Number of injuries



The number of injuries has been stable with an average number of 251 per year among the crew category.

Figure 71: Distribution of injuries by cargo ship type



While 25.6% of injuries happened on board general cargo ships, container ships also accounted for 22.4%.

CHAPTER 4

FISHING VESSELS

Flooding, ELSA MARIA, ship lost, 2/11/2017

FIGURES FOR 2017

533	23	13	203	6	590	26
CASUALTIES & INCIDENTS	VERY SERIOUS CASUALTIES	FATALITIES	PERSONS INJURED	SHIPS LOST	SHIPS INVOLVED	INVESTIGATIONS

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 (59.5)%.

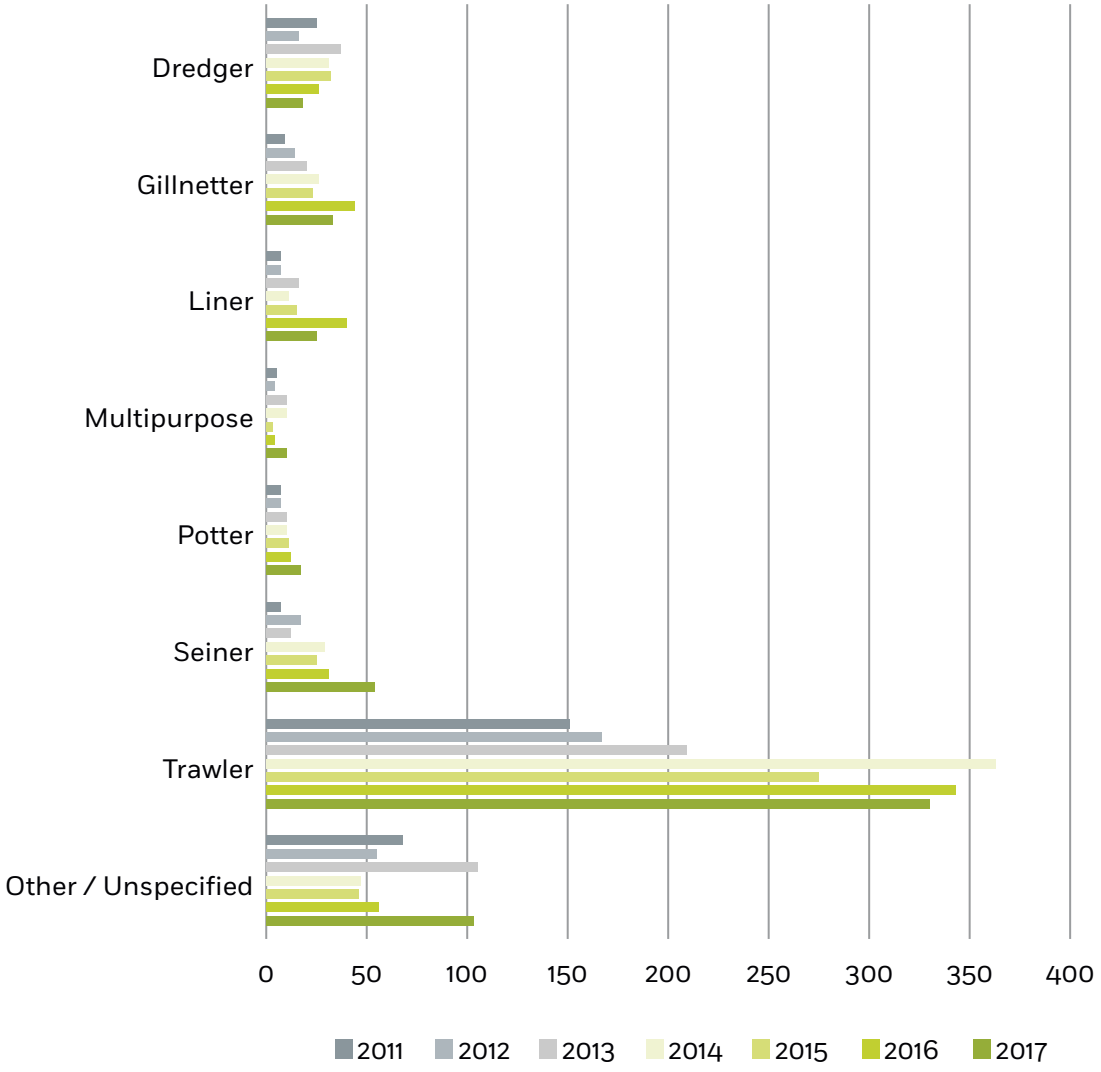
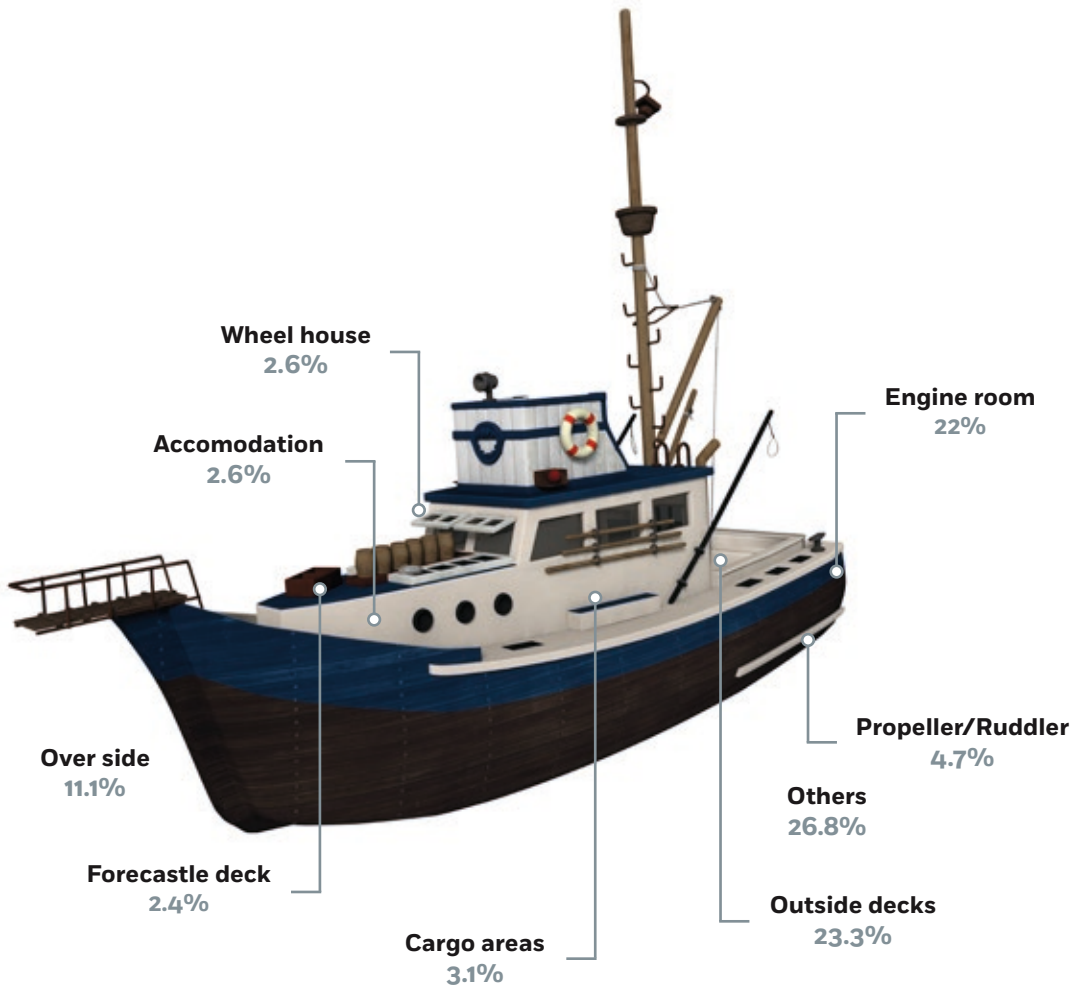
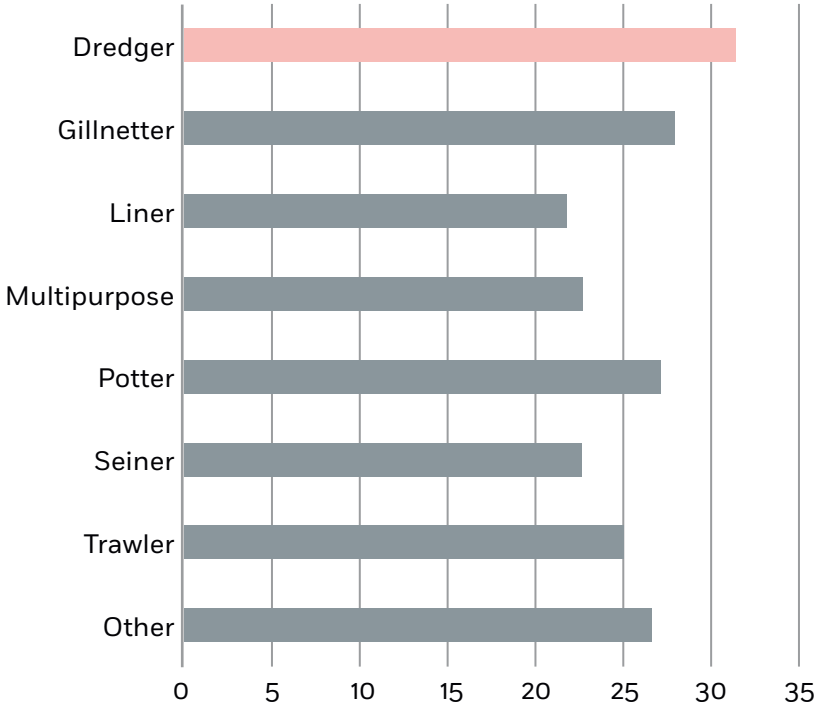


Figure 73: Main places of casualties involving fishing vessels 2011-2017



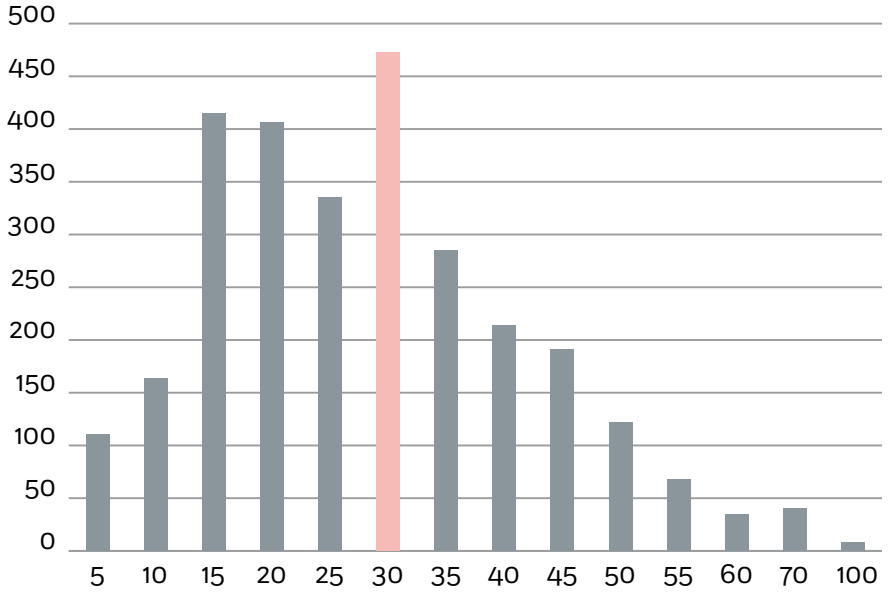
3088 places were specified in 2895 cases. The most quoted location of casualties was outside decks (720 cases), followed by engine room (679 cases).

Figure 74: Average age by type of fishing vessels involved 2011-2017



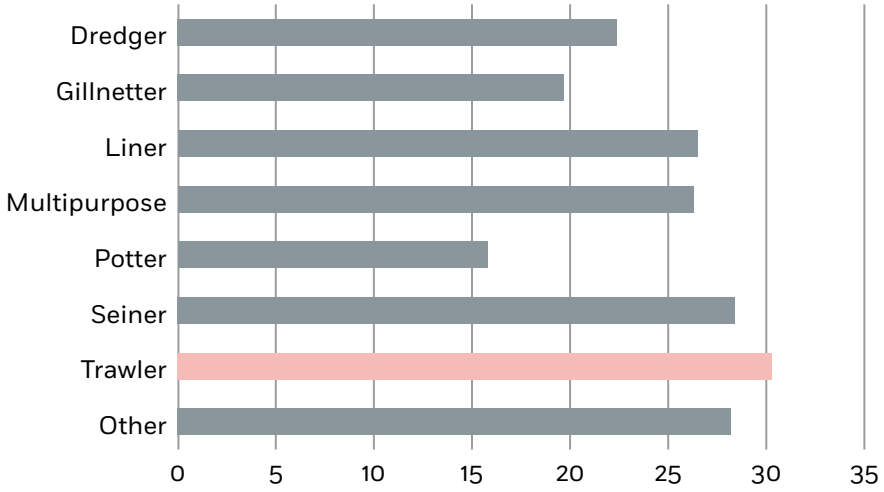
The youngest ship category is liner (21.8y) while the oldest is dredgers (31.4y).

Figure 75: Age distribution of involved fishing vessels for 2011-2017



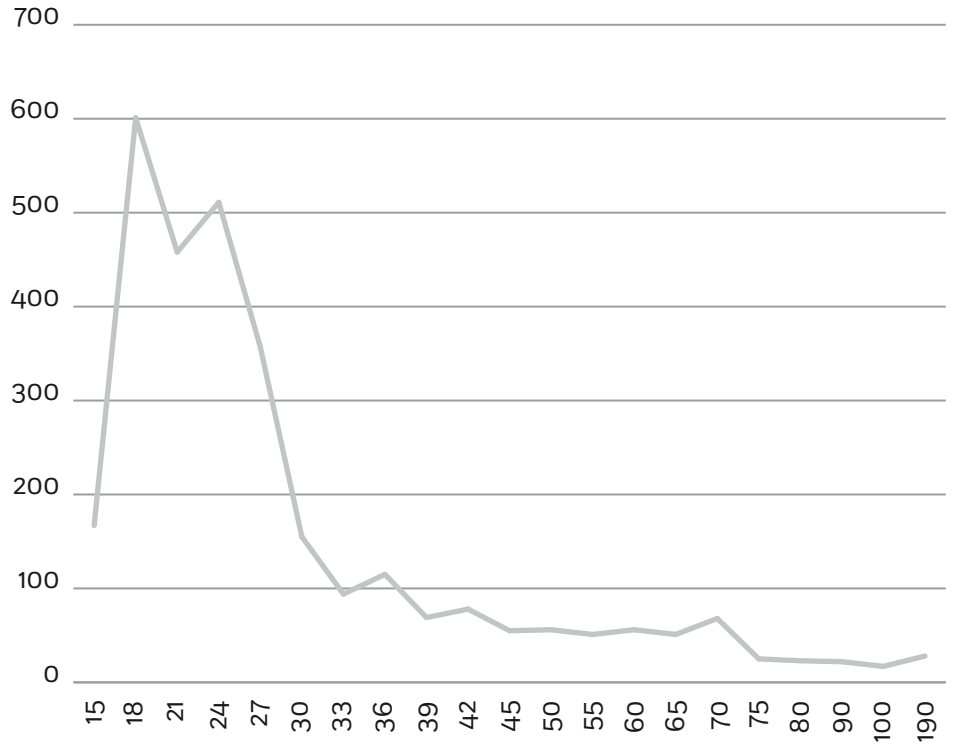
The average age of fishing vessels involved in casualties and incidents was 25.5 years over the 2011-2017 period.

Figure 76: Average length of fishing vessels involved by main category for 2011-2017



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

Figure 77: Length distribution of fishing vessels involved for 2011-2017

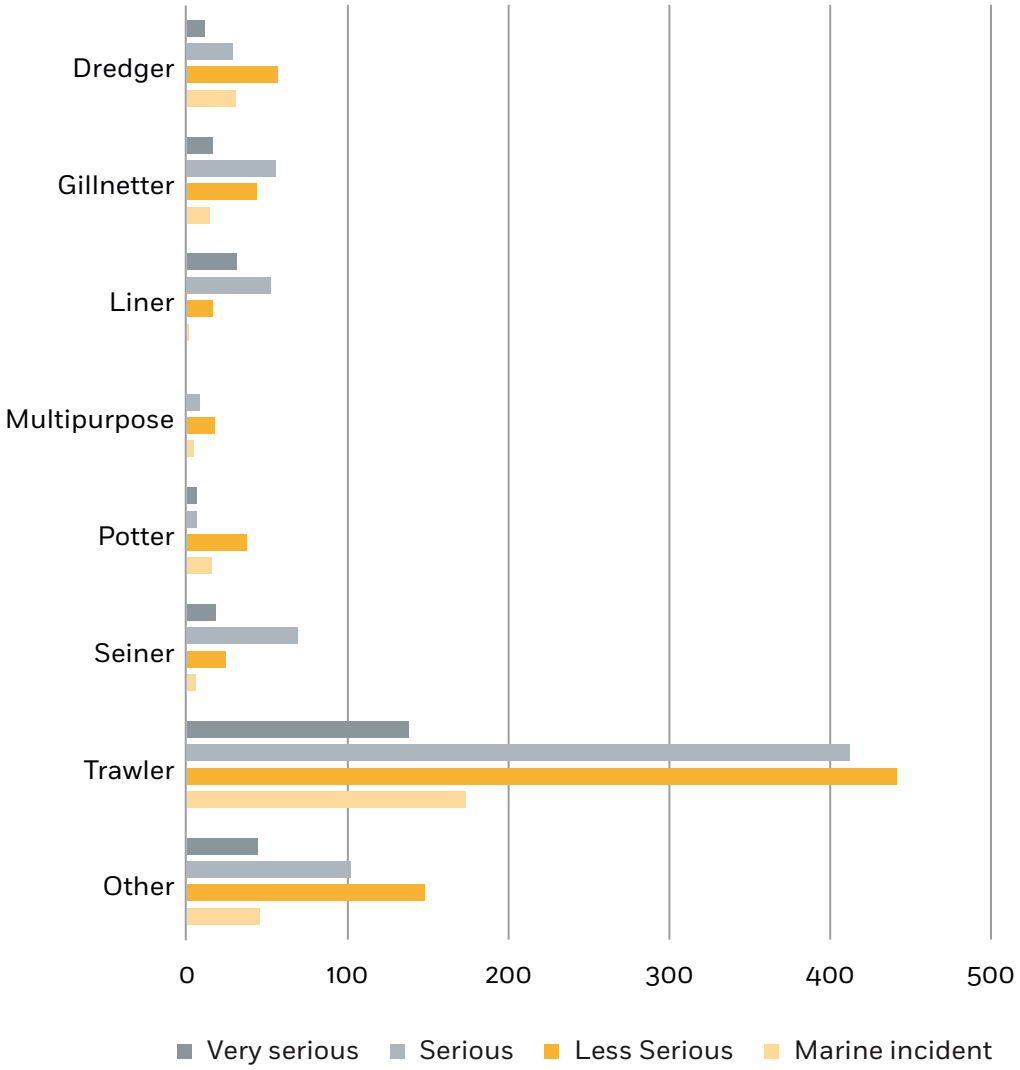


The average length of fishing vessels involved was 28.7m. The vast majority of fishing vessels fell within the 18-24m segment.

4.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

4.2.1 CASUALTY WITH A SHIP

Figure 78: Distribution of severities per fishing vessel type for 2011-2017

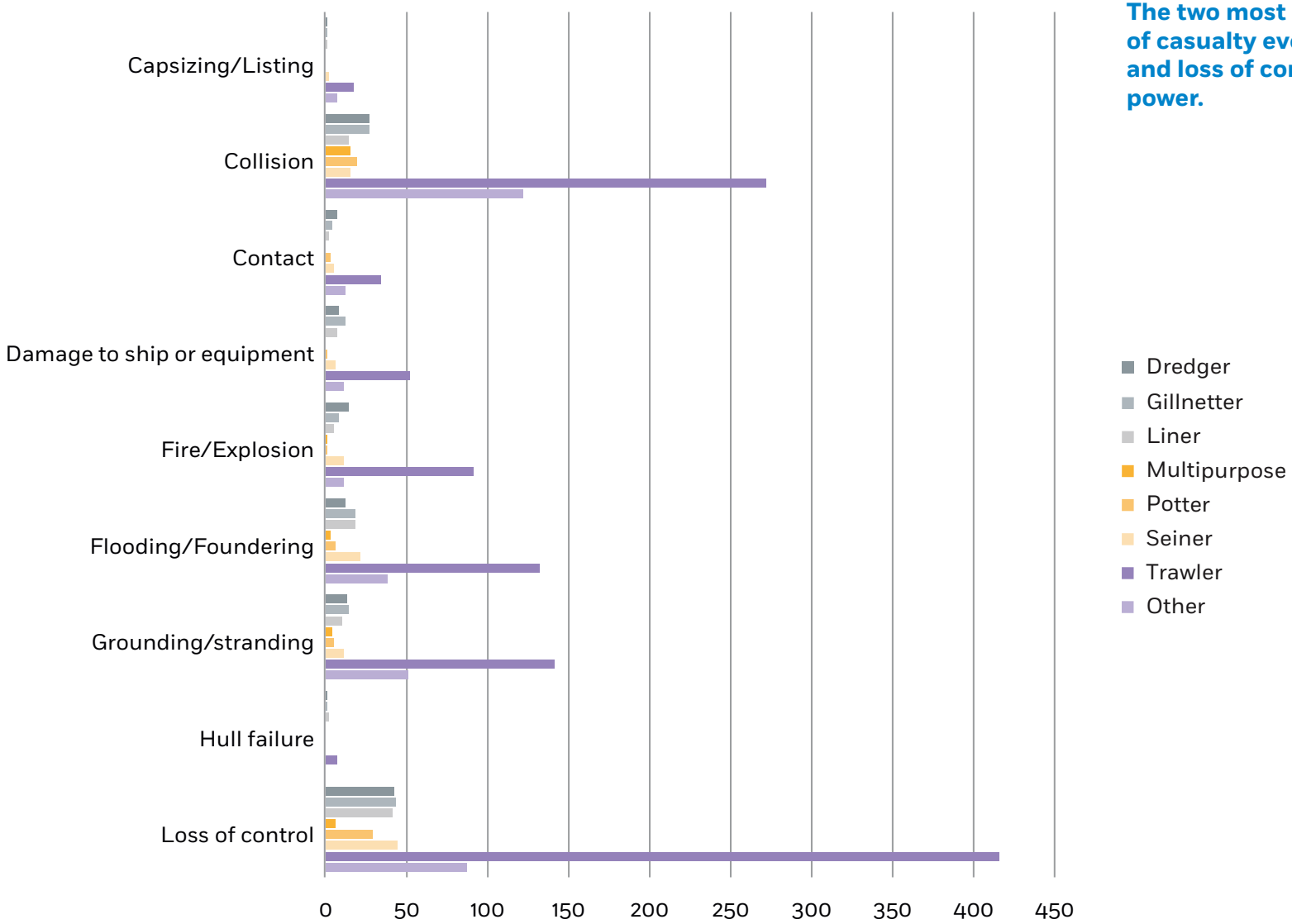


Among all fishing vessels, 56.4% of the casualties with a ship involved a trawler.

The rate of very serious casualties with a ship on board fishing vessels, is much higher (12.8%) than the general average for all ship types (3.8%).

Among all fishing vessels, 52.3% of the very serious casualties involved trawlers. Within the trawler category, 8.4% of the accidents were very serious.

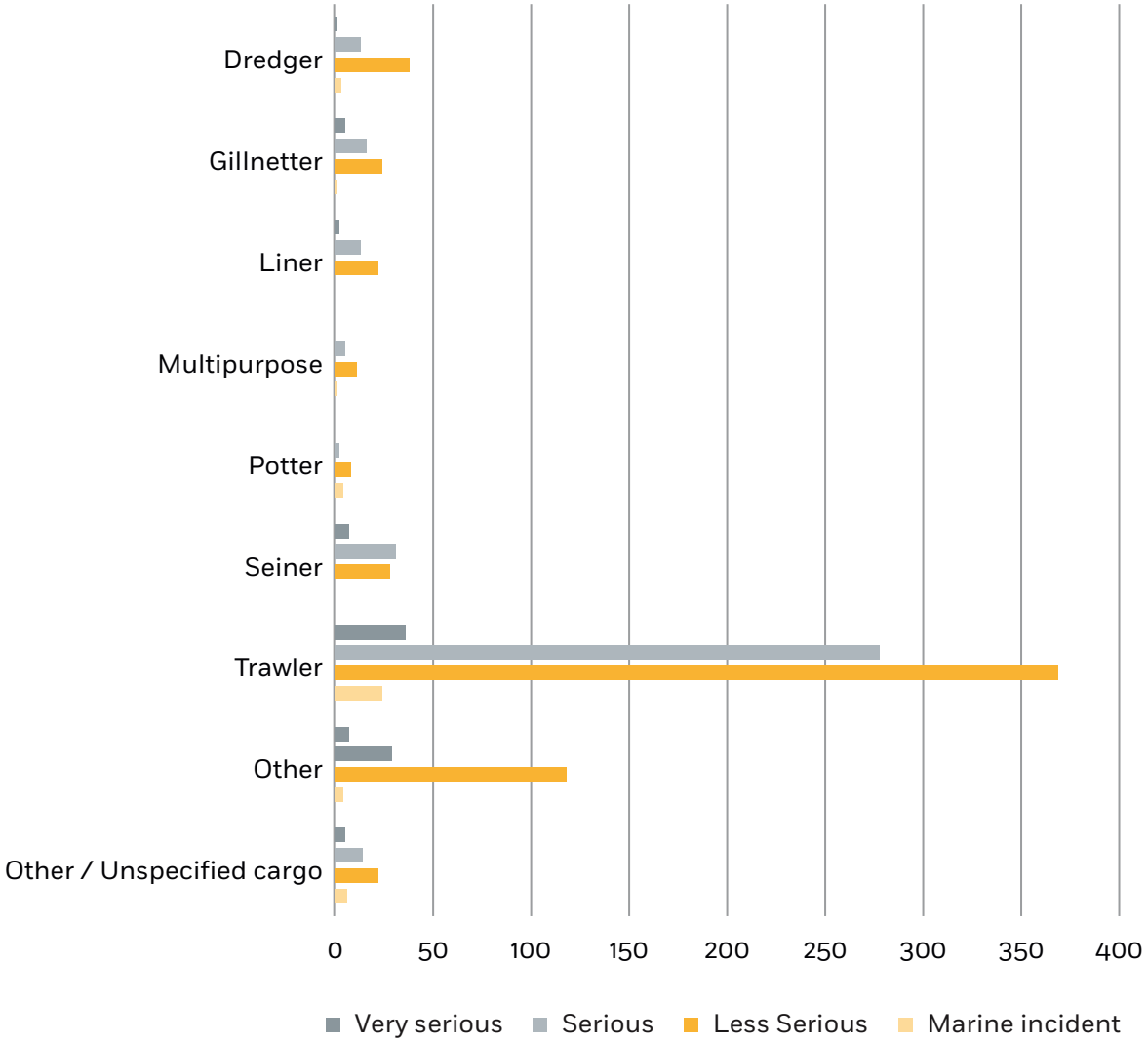
Figure 79: Distribution of casualty events per fishing vessel type for 2011-2017



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

4.2.2 OCCUPATIONAL ACCIDENTS

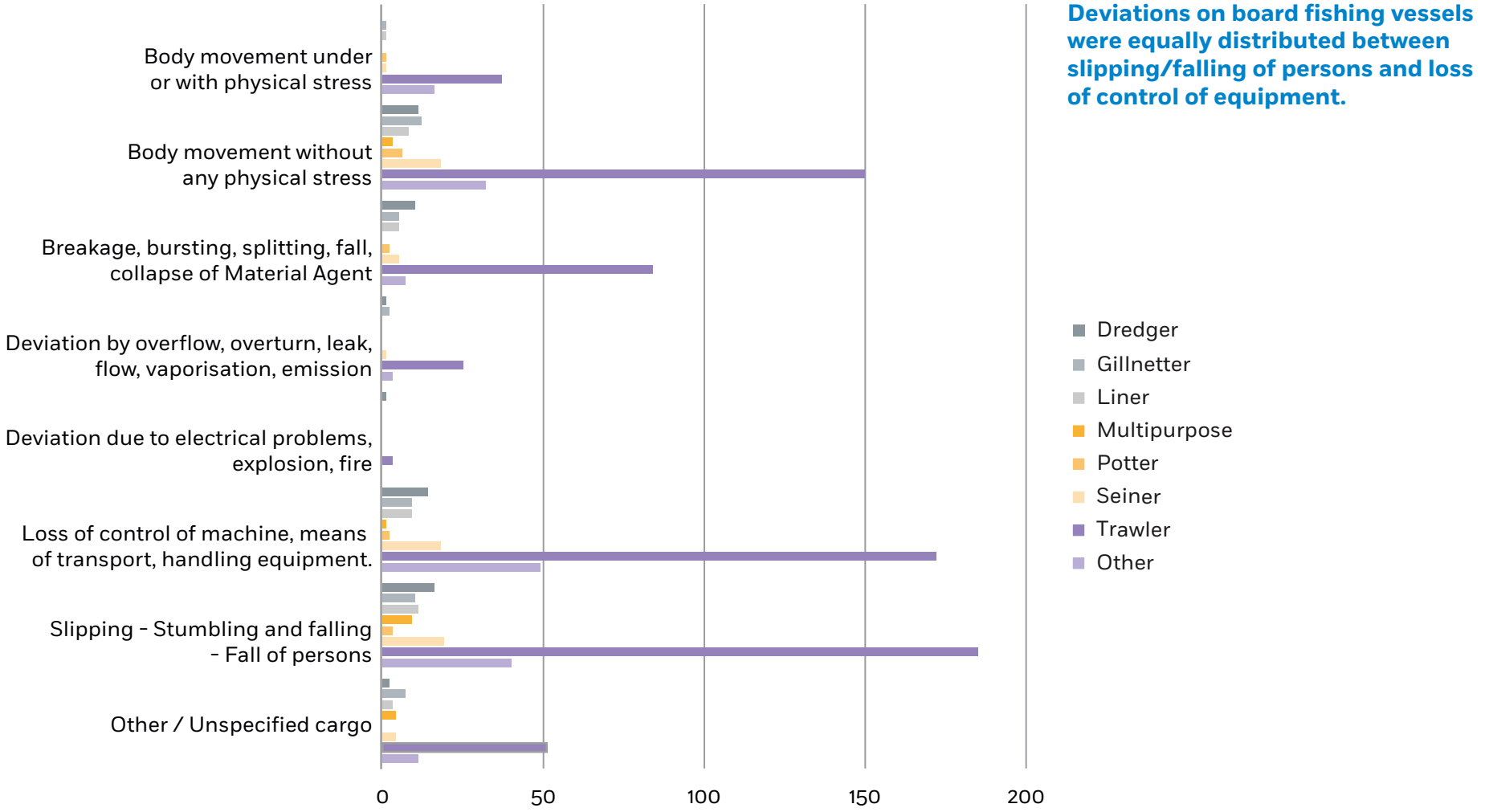
Figure 80: Severity of occupational accidents per fishing vessel type for 2011-2017



64.3% of the occupational accidents took place on board trawlers. Within this category, 5.1% of the events were very serious.

The rate of very serious occupational accidents related to fishing vessels is 5.3%, slightly above the general average of 4.5% for all ship types.

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



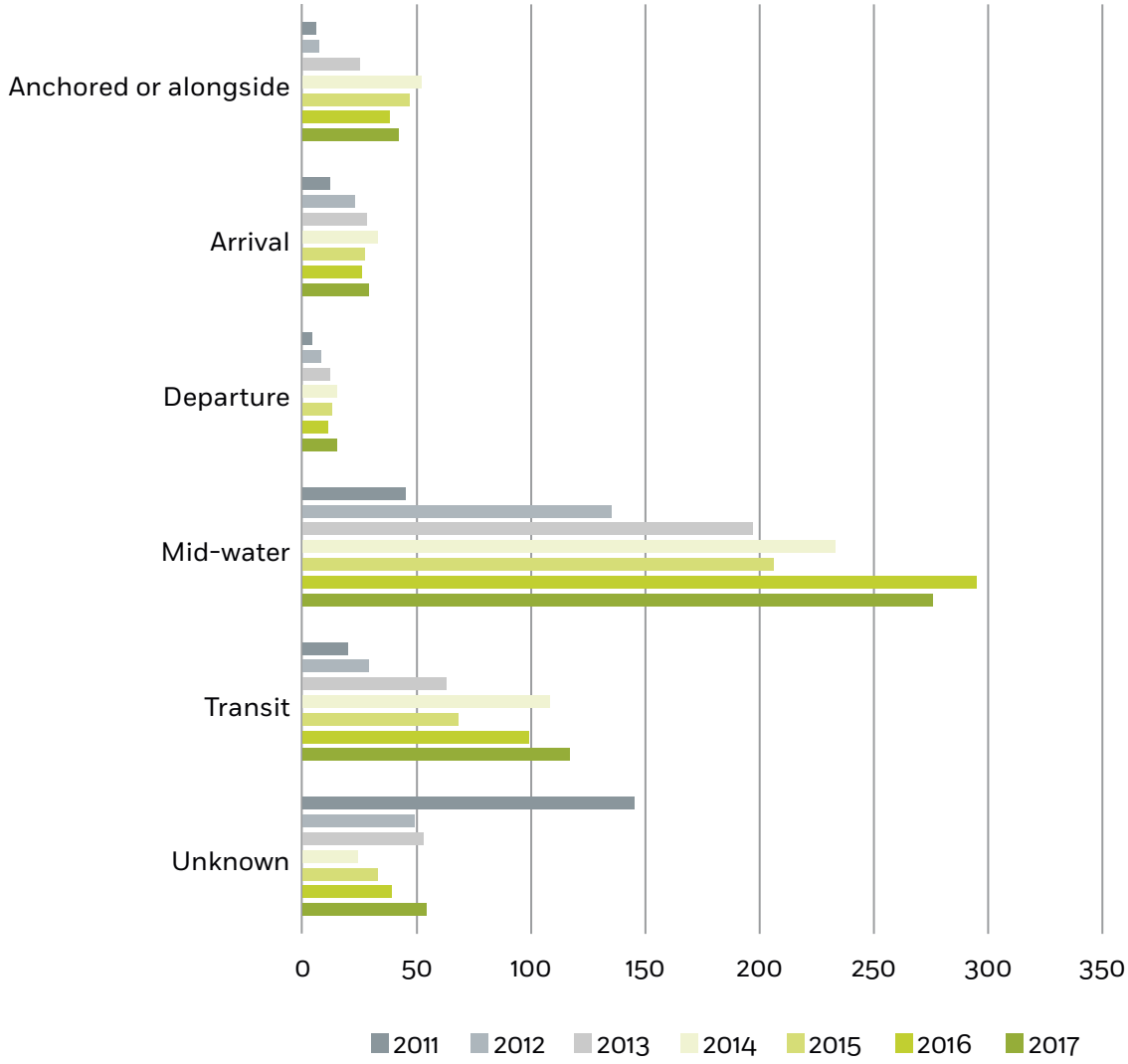
Deviations on board fishing vessels were equally distributed between slipping/falling of persons and loss of control of equipment.

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.

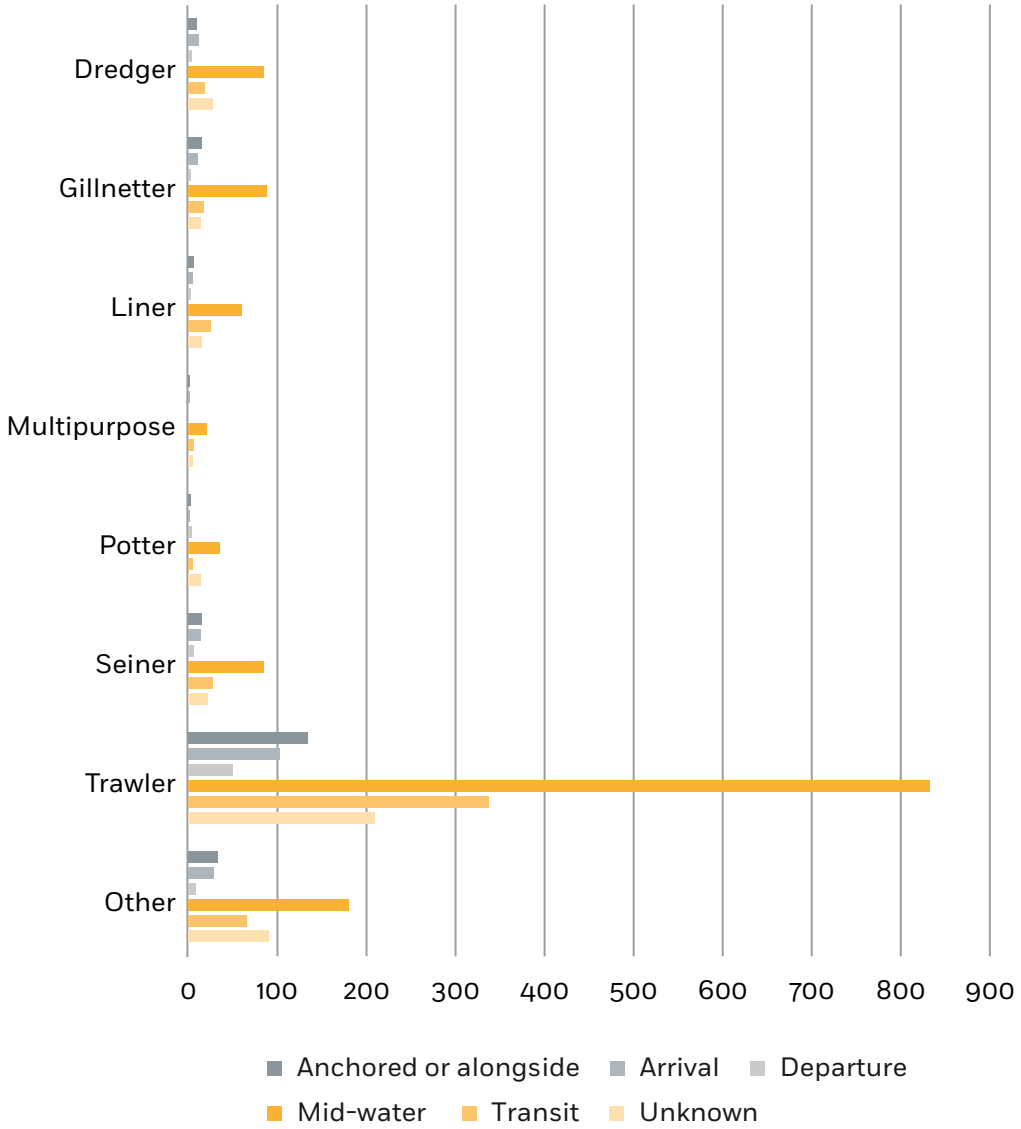
4.3.1 VOYAGE SEGMENTS

Figure 82: Distribution by voyage segment



50.2% of casualties to fishing vessels occurred during the mid-water phase of the voyage, when fishing operations take place.

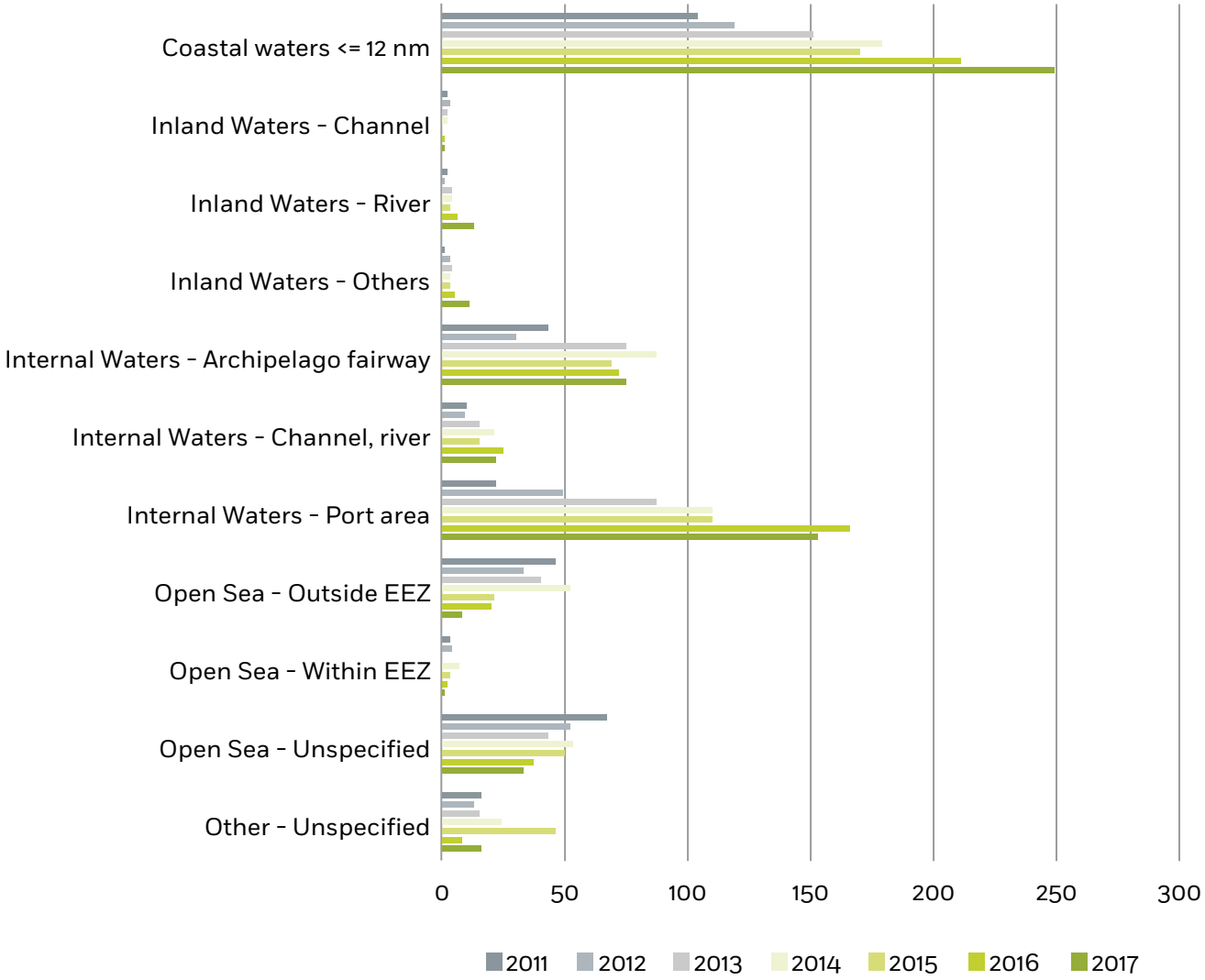
Figure 83: Distribution by voyage segment per fishing vessel type for 2011-2017



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

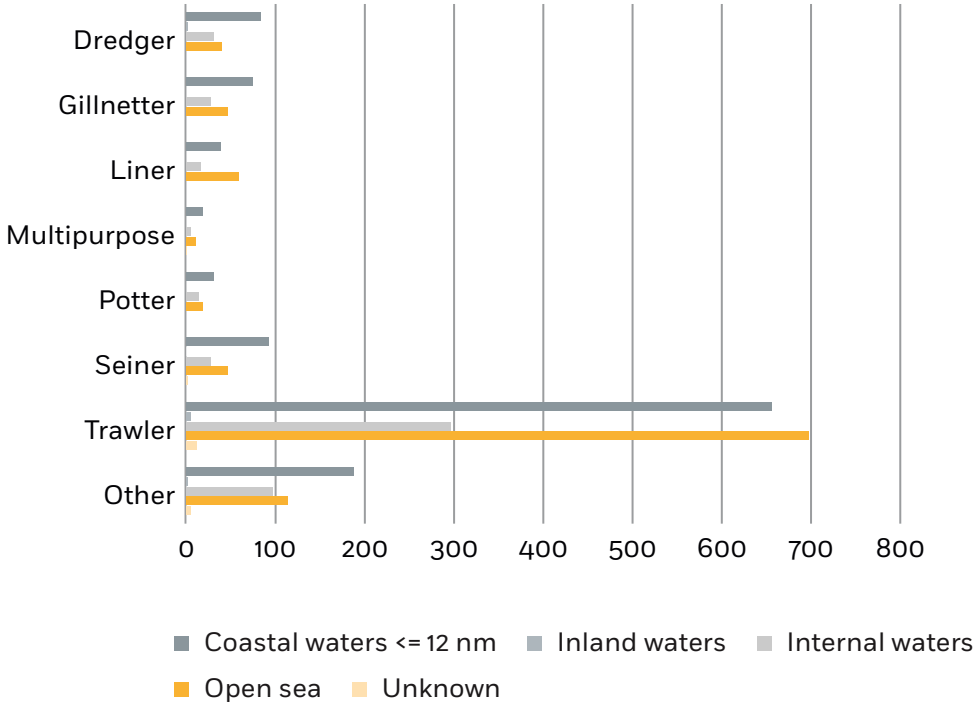
4.3.2 LOCATION

Figure 84: Distribution by location of marine casualties and incidents



42.8% of the casualties took place in coastal waters, followed by 25.2% in open sea within the EEZ.

Figure 85: Distribution by location of the marine casualties and incidents per fishing vessel type for 2011-2017




Fire/explosion, PORZ STREILHEN, ship lost, 28/11/2017

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 for 2011-2017

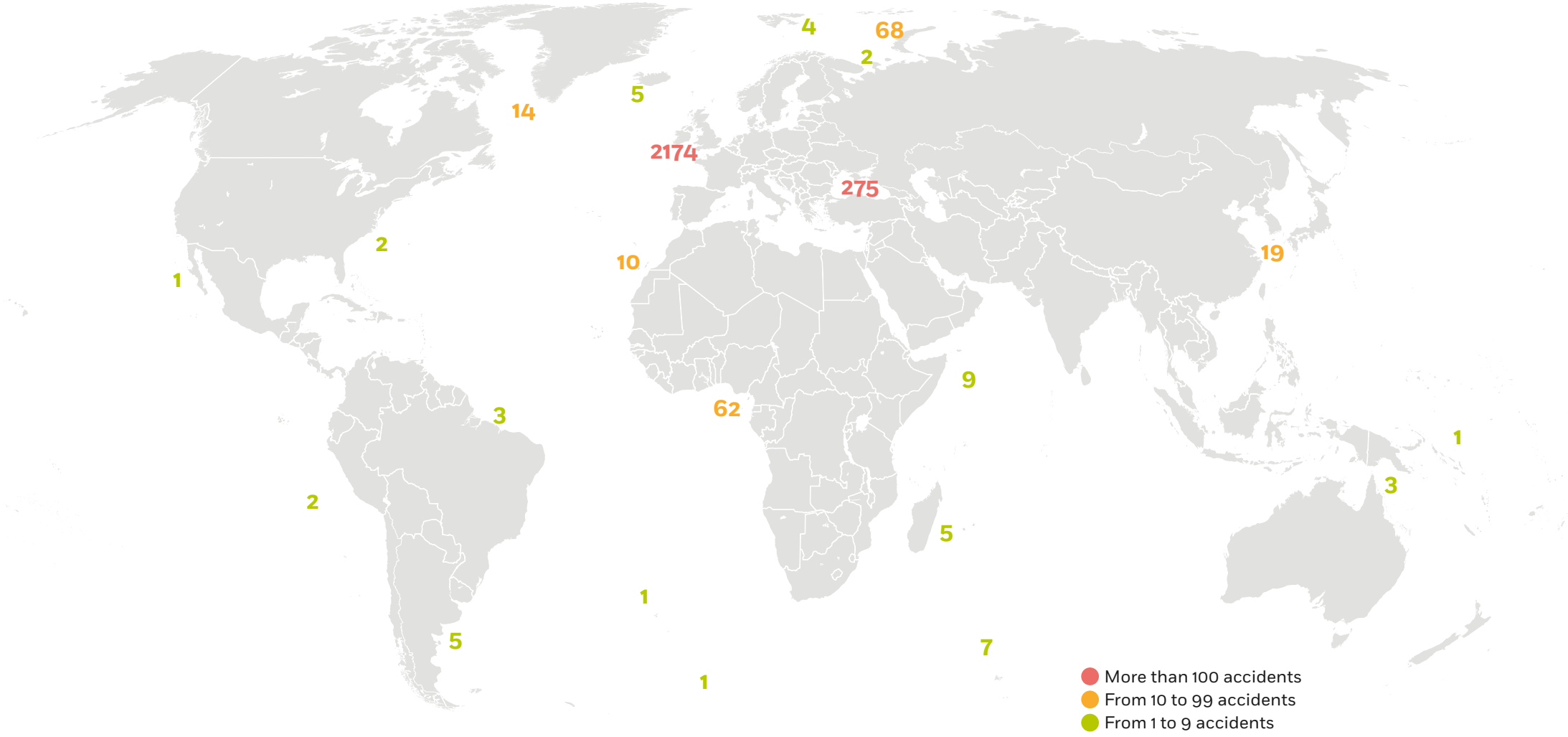
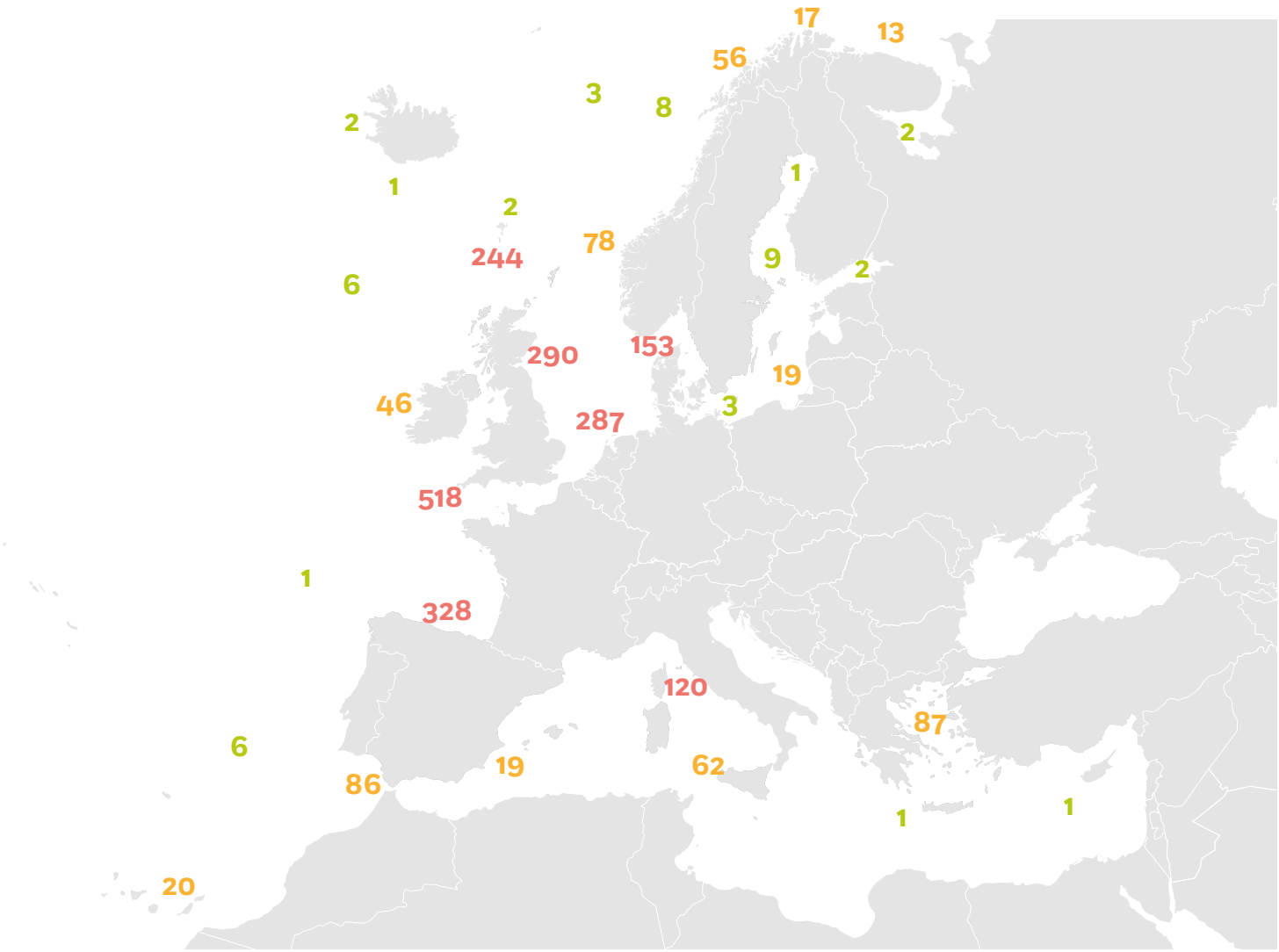
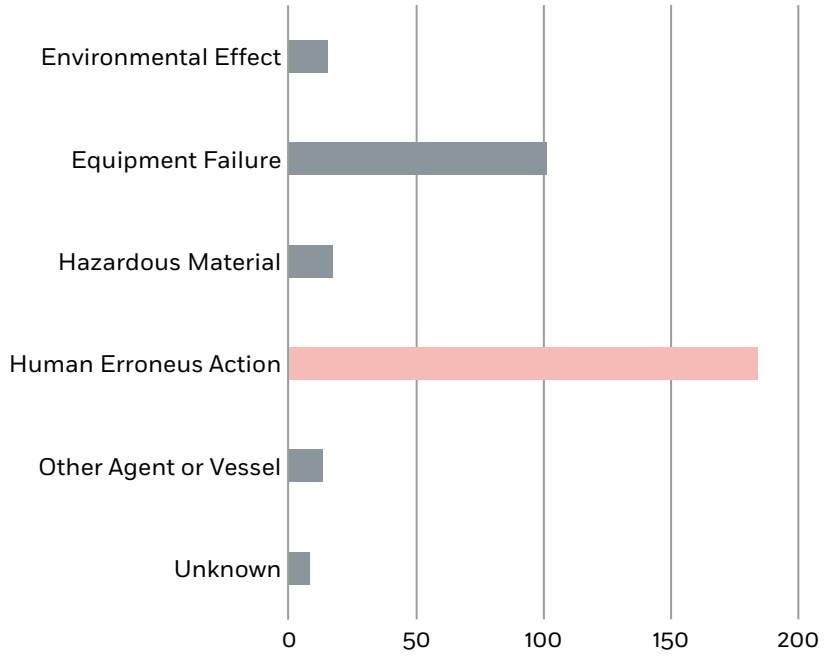


Figure 87: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU Member States for 2011-2017



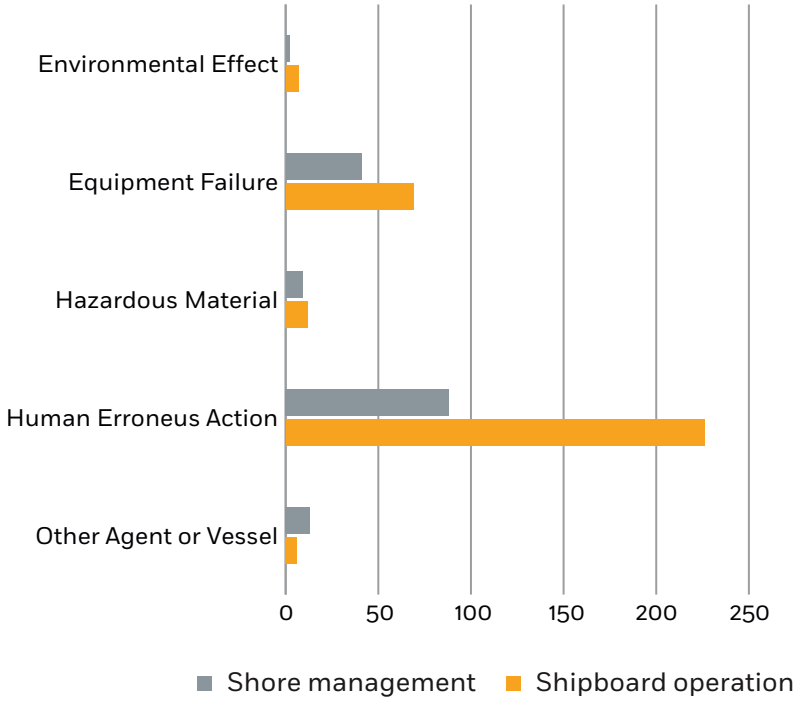
4.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 88: Accidental events for 2011-2017



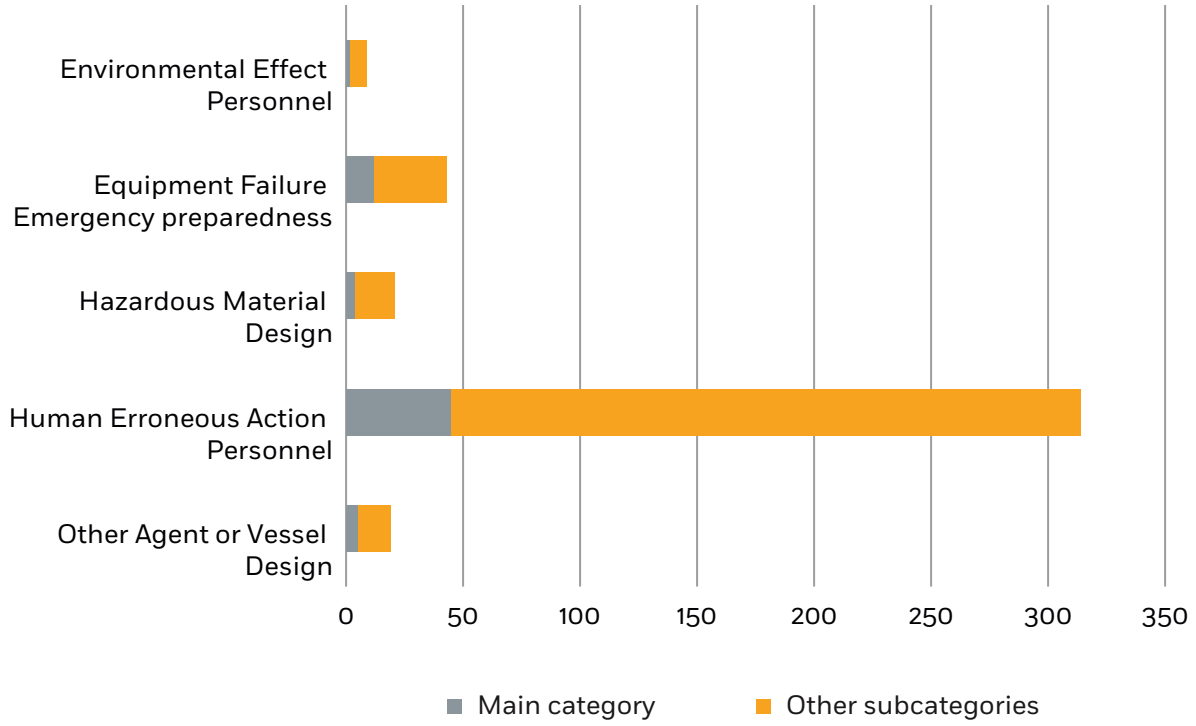
From a total of 338 accidental events analysed during the investigations, 54.4% were attributed to a Human Erroneous Action.

Figure 89: Relationship between Accidental Events and the main Contributing Factors for 2011-2017



On board fishing vessels, shipboard operations were the most quoted contributing factor with 67.7% of the total.

Figure 90: Groups of Contributing Factors for 2011-2017

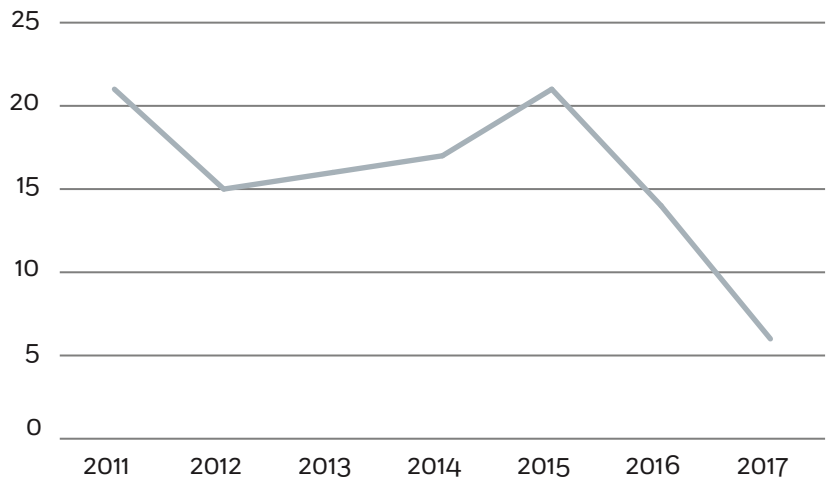


This figure provides the contributing factor that was most quoted per category of accidental event. For example, "emergency preparedness" was quoted as the most significant contributing factor when the accidental event was equipment failure.

4.5 CONSEQUENCES

4.5.1 CONSEQUENCES TO SHIPS

Figure 91: Fishing vessels lost



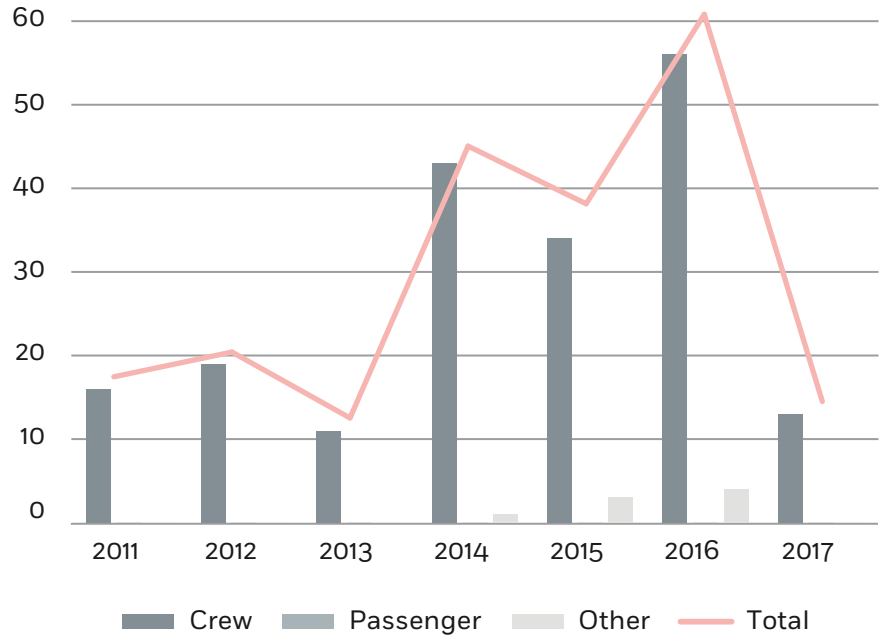
After four years of rising figures the number of fishing vessels has now been decreasing in 2015.

Among them, 55.5% were trawlers.

4.5.2 CONSEQUENCES TO PERSONS

4.5.2.1 FATALITIES

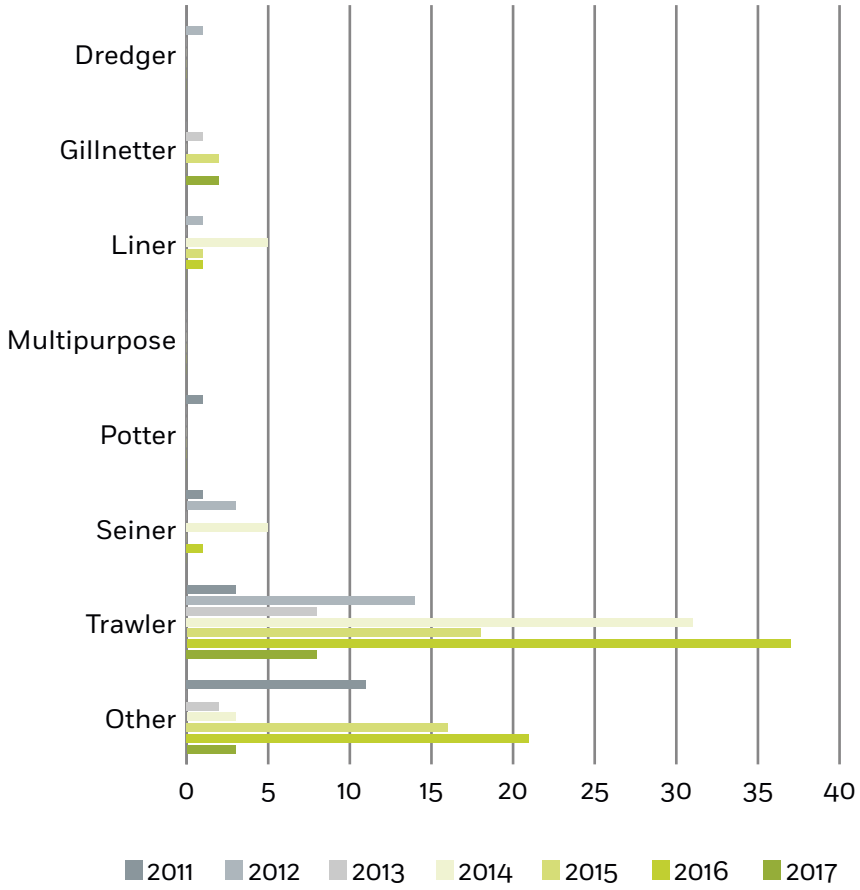
Figure 92: Number of fatalities



Over the 2011-2016 period, the number of fatalities increased and as many as 55 fishers lost their lives in 2016.

A significant decrease in the number of fatalities was noted in 2017 when 13 lives were lost.

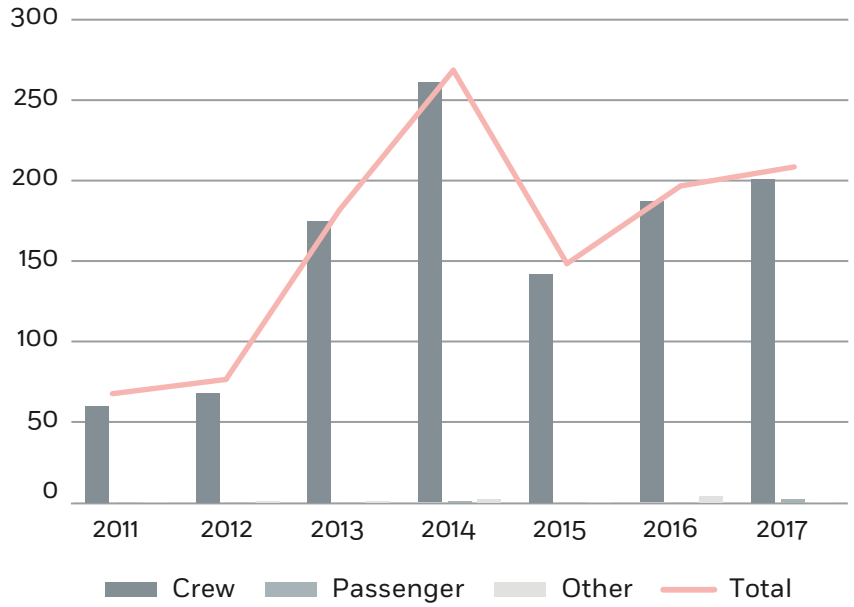
Figure 93: Distribution of fatalities per fishing vessel type



59.5% of the fatalities occurred on board trawlers.

4.5.2.2 INJURIES

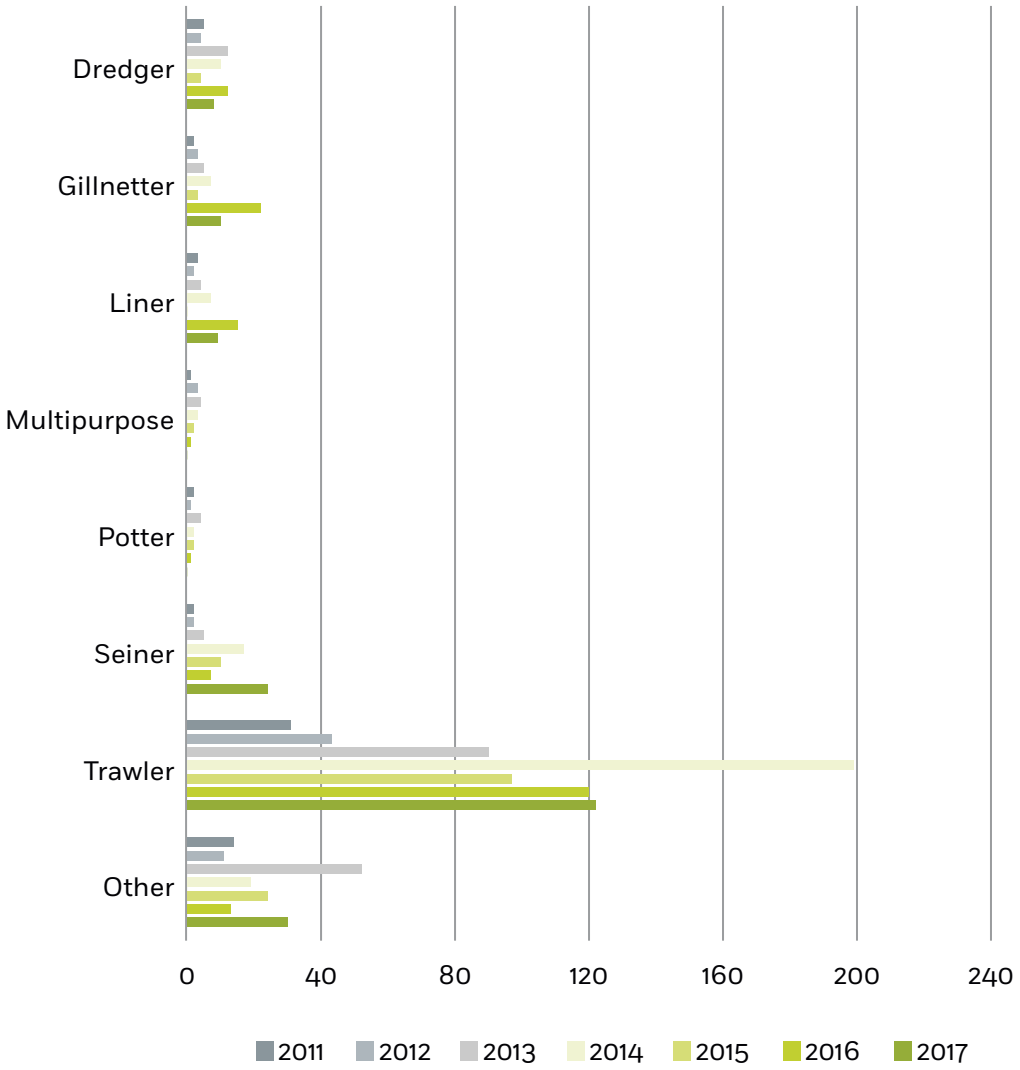
Figure 94: Number of injuries



Over the 2011-2017 period, the annual average number of people injured stands at 157.

A regular increase was noted since 2015.

Figure 95: Distribution of injuries by fishing vessel type



63.5% of the injuries took place on-board trawlers.

CHAPTER 5

PASSENGER SHIPS

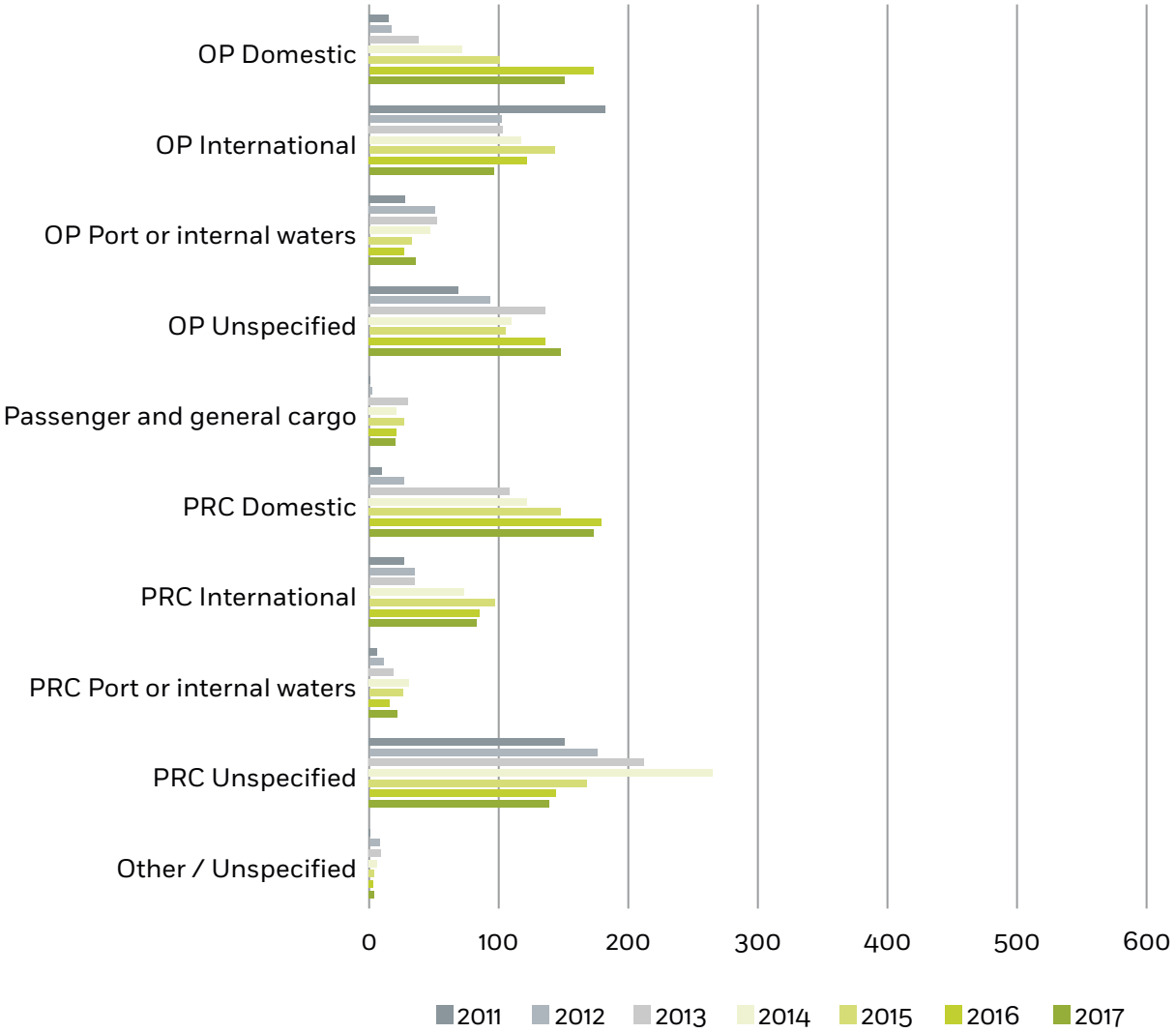
Grounding/stranding, ZLATINI ZAL, ship damaged, 1/04/2017

FIGURES FOR 2017

832	6	3	376	0	872	17
CASUALTIES & INCIDENTS	VERY SERIOUS CASUALTIES	FATALITIES	PERSONS INJURED	SHIPS LOST	SHIPS INVOLVED	INVESTIGATIONS

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

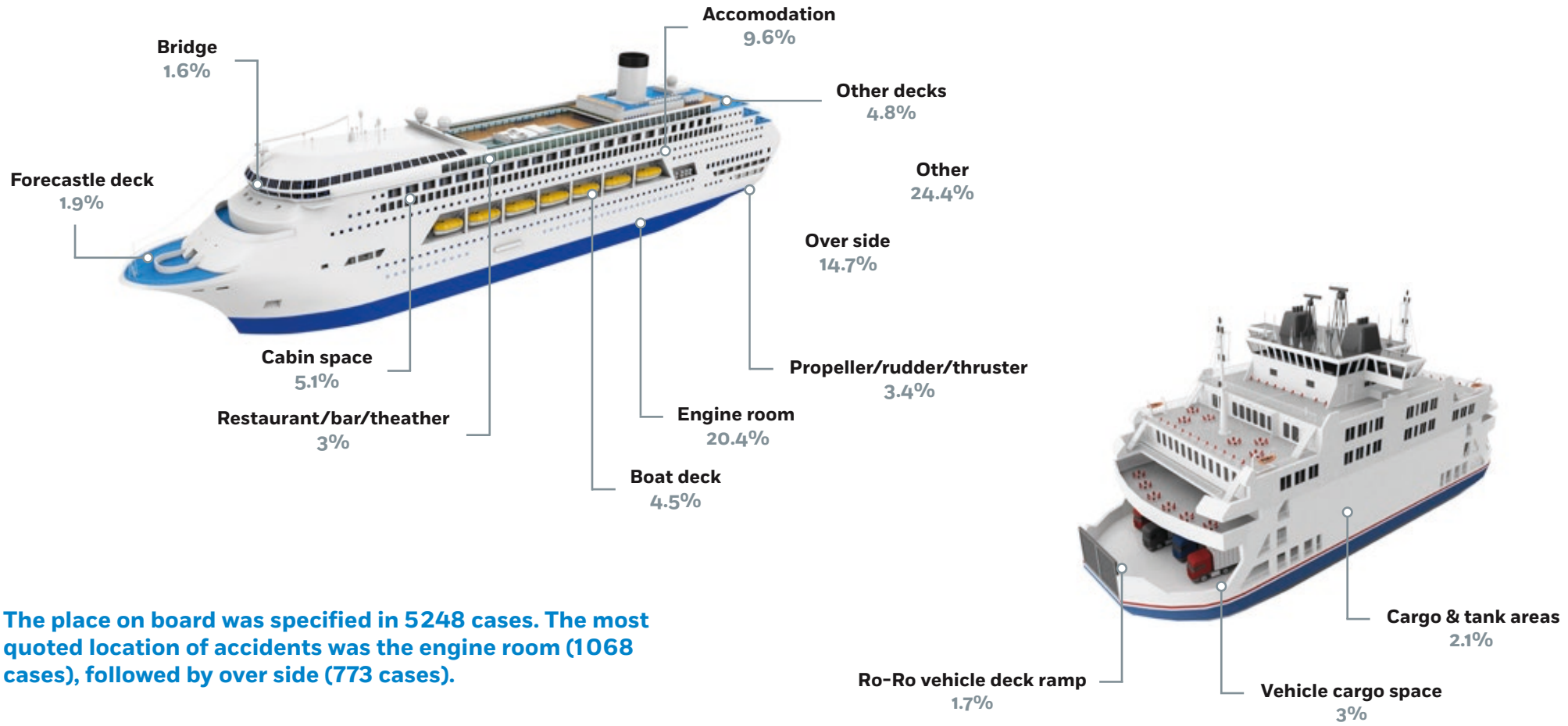


Among the passenger ships involved, the most quoted subcategory was 'passenger and ro-ro cargo' ships (also known as 'Ferries') during domestic voyages (49.3%) followed by ships carrying only passengers on international voyage (16.5%).

Figure 96: Distribution of passenger ship types involved

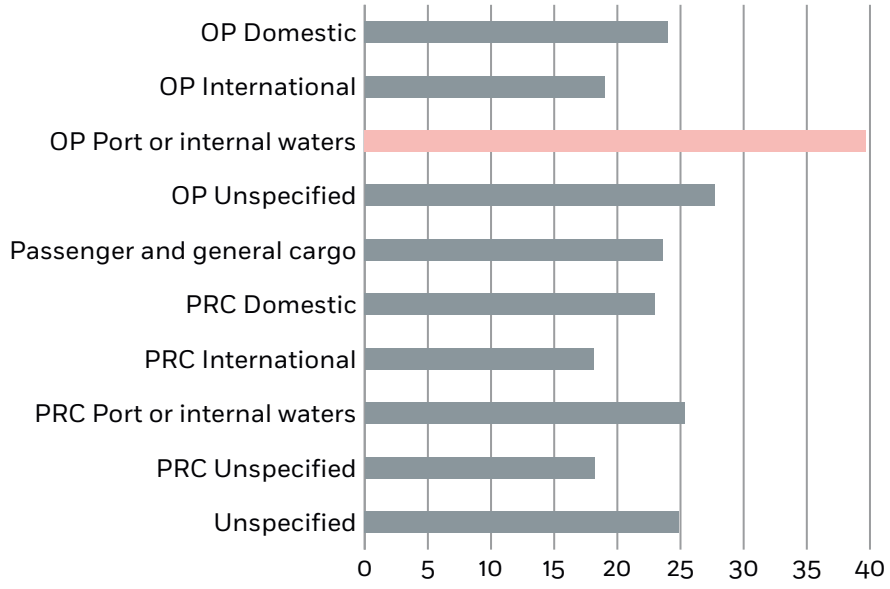
OP: Passenger ship carrying only passengers
PRC: Passenger ship carrying passengers and ro-ro cargo
(acronyms used throughout chapter)

Figure 97: Main places of casualties involving passenger ships for 2011-2017



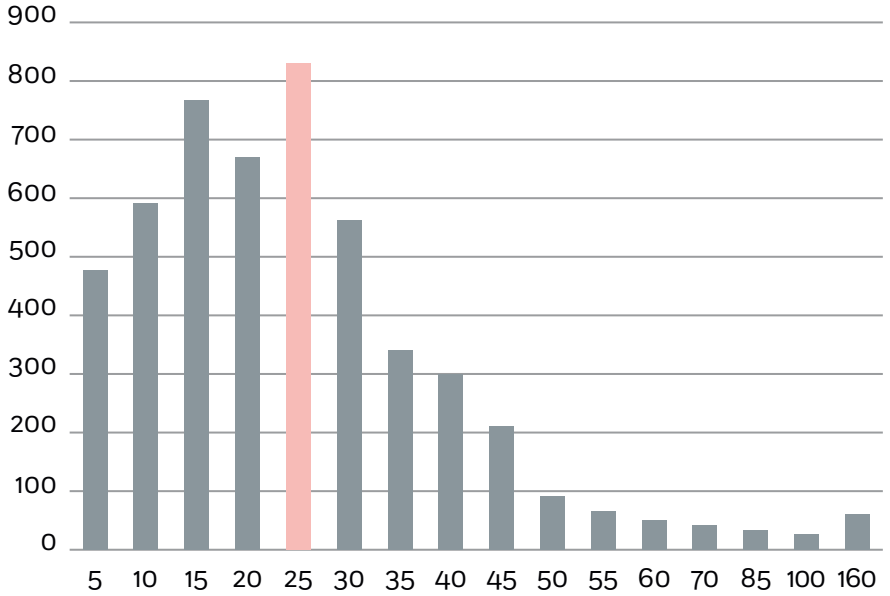
The place on board was specified in 5248 cases. The most quoted location of accidents was the engine room (1068 cases), followed by over side (773 cases).

Figure 98: Average age by type of passenger ships involved 2011-2017



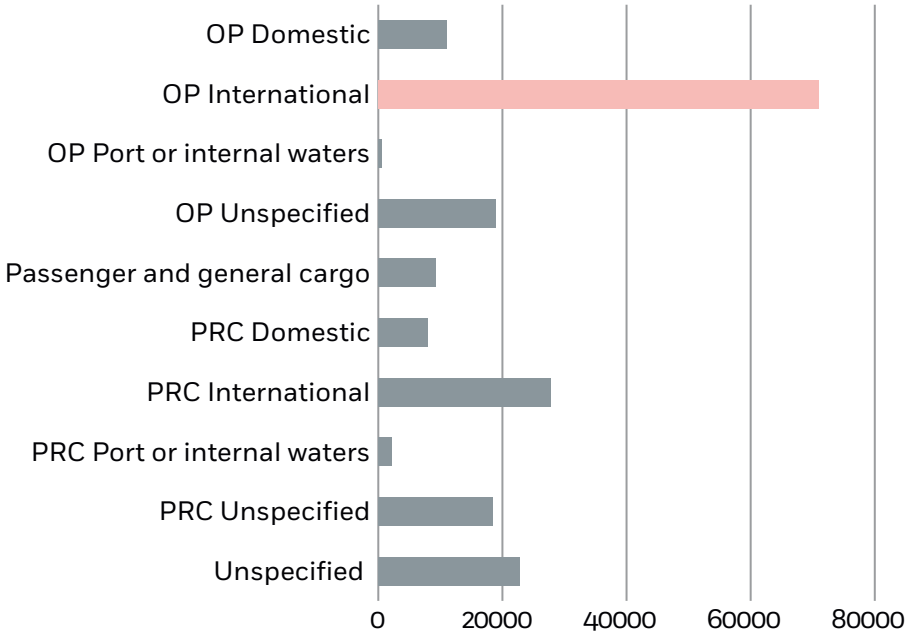
The youngest ship category is PRC in international voyage (18.1y) while the oldest is OP port or internal waters (39.7y).

Figure 99: Age distribution of passenger ships involved for 2011-2017



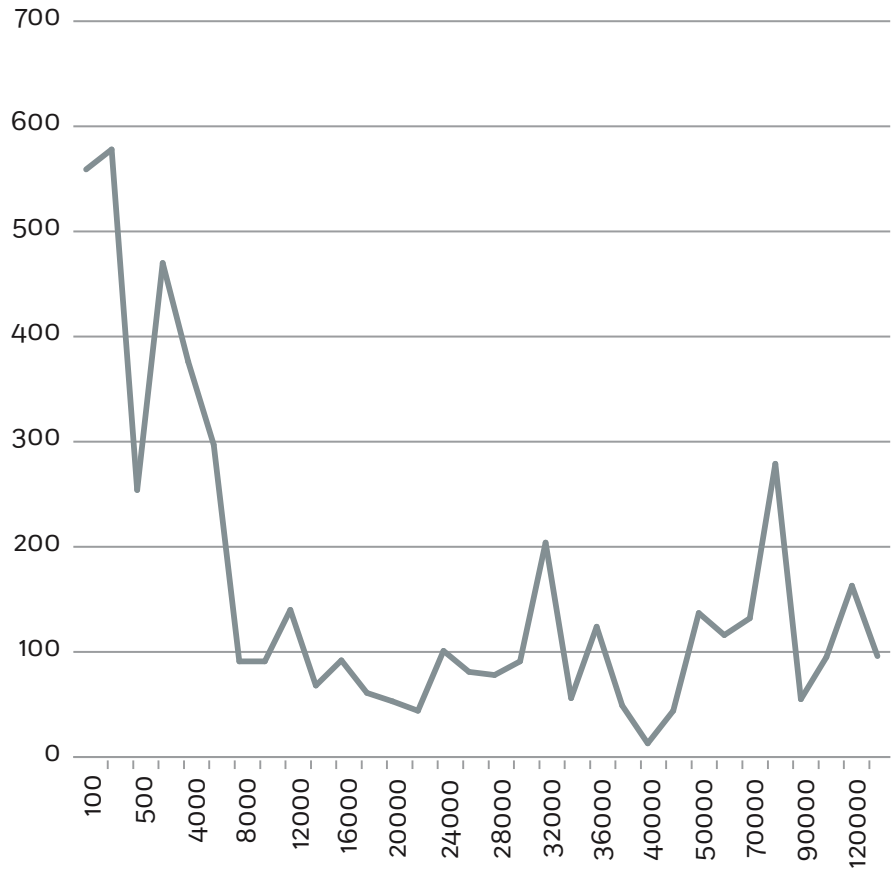
The average age of passenger ships involved in casualties and incidents was 22.5 years over the 2011-2017 period.

Figure 100: Average GT of passenger ships involved by main category for 2011-2017



Passenger ships operating in port or internal waters had the lowest GT average (500), while passenger ships carrying only passengers on international voyages represented the highest GT average (70 900).

Figure 101: GT distribution of passenger ships involved for 2011-2017

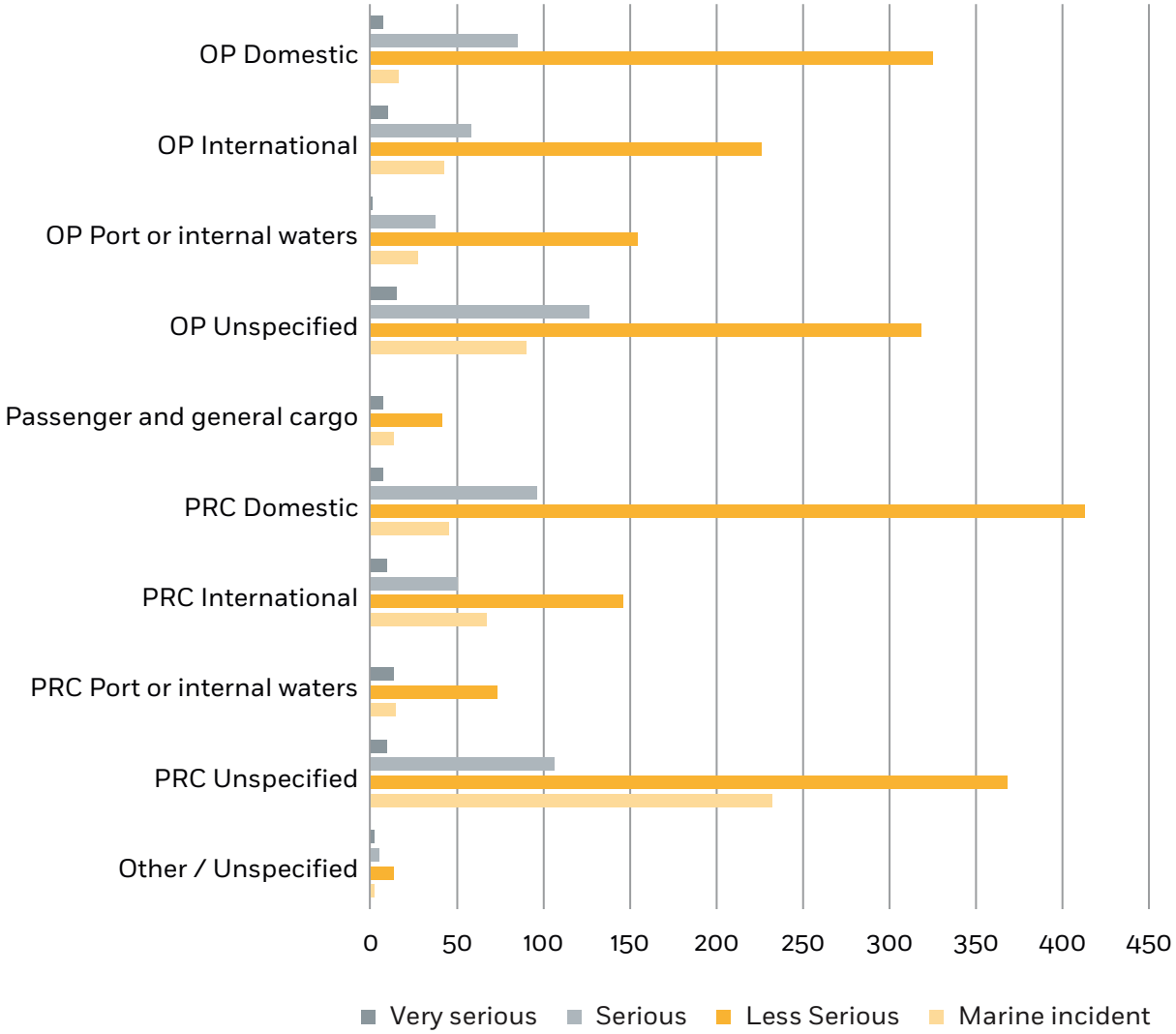


The average gross tonnage of passenger ships involved in marine casualties is 24 450. Various categories of passenger ships can be identified in the figure above: lowest GT for port operations, PRC International (ferries) around 32 000 and OP international around 80 000.

5.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

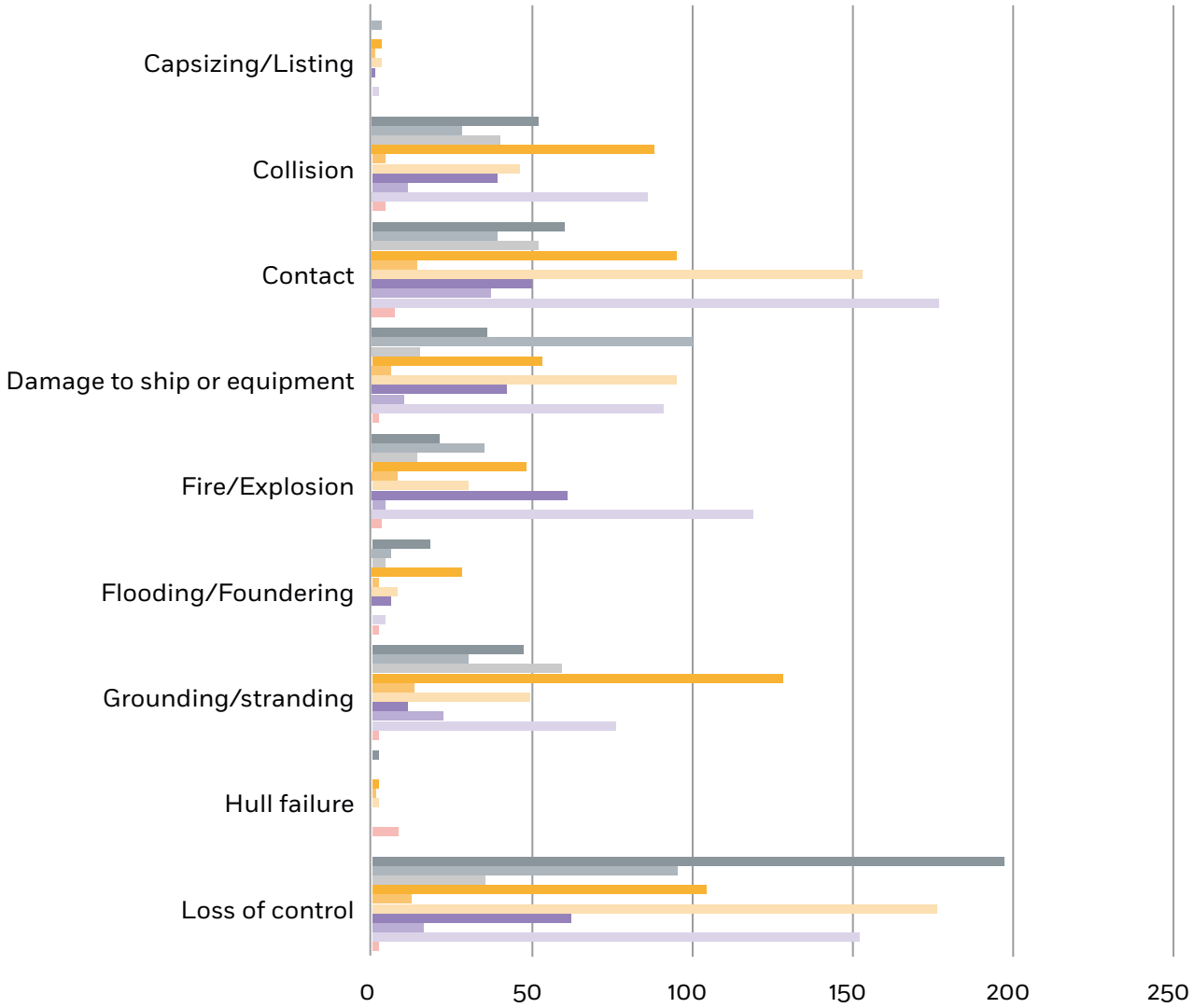
5.2.1 CASUALTY WITH A SHIP

Figure 102: Distribution of severities by passenger ship type for 2011-2017



The rate of passenger ships involved in a very serious casualty with a ship remained low (1.8%) in comparison with the general average for all ship types (3.8%).

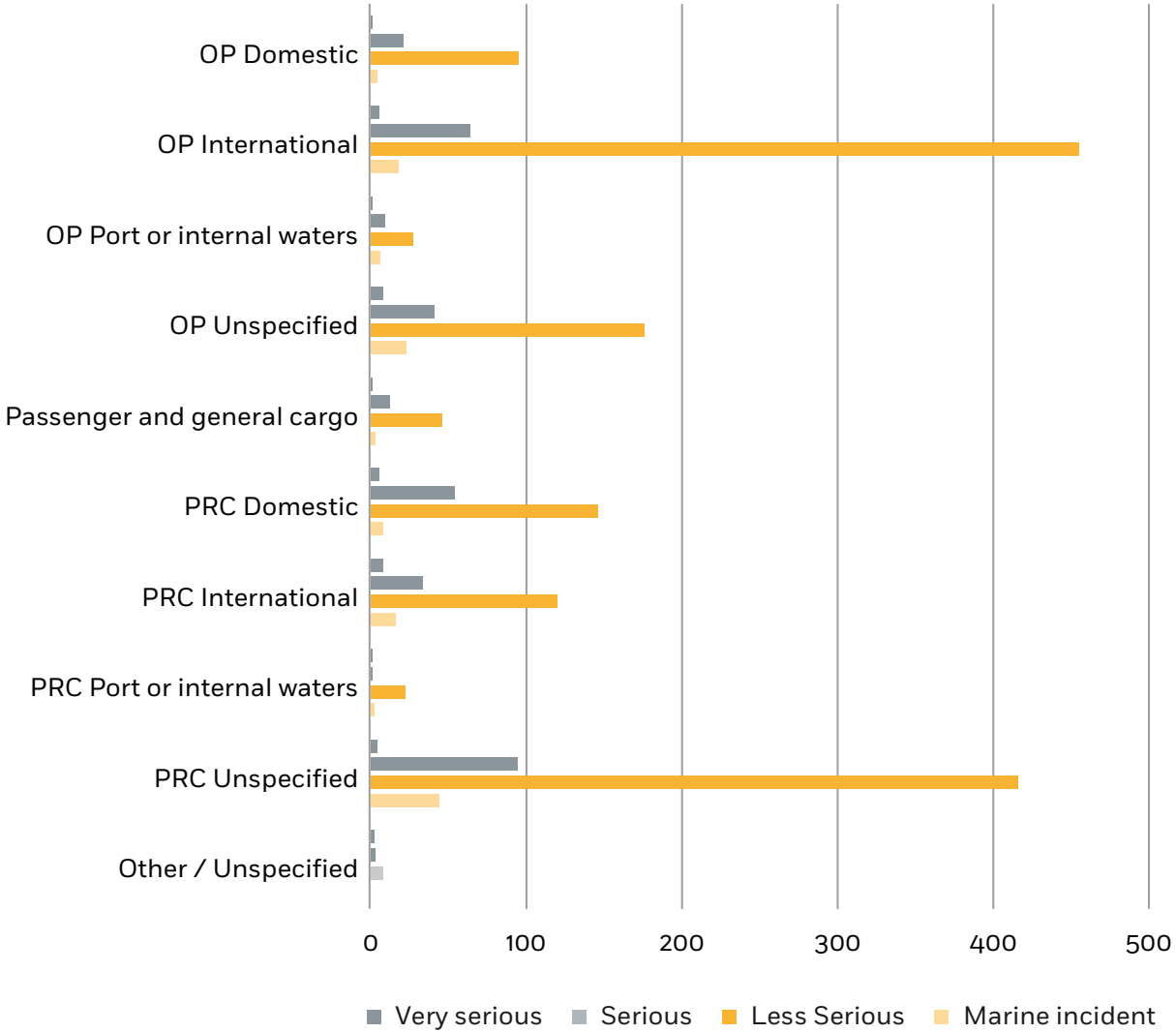
Figure 103: Distribution of casualty events per passenger ship type for 2011-2017



Navigational accidents (collision, contact and grounding) represented 46.5% of events that affected passenger vessels.

5.2.2 OCCUPATIONAL ACCIDENTS

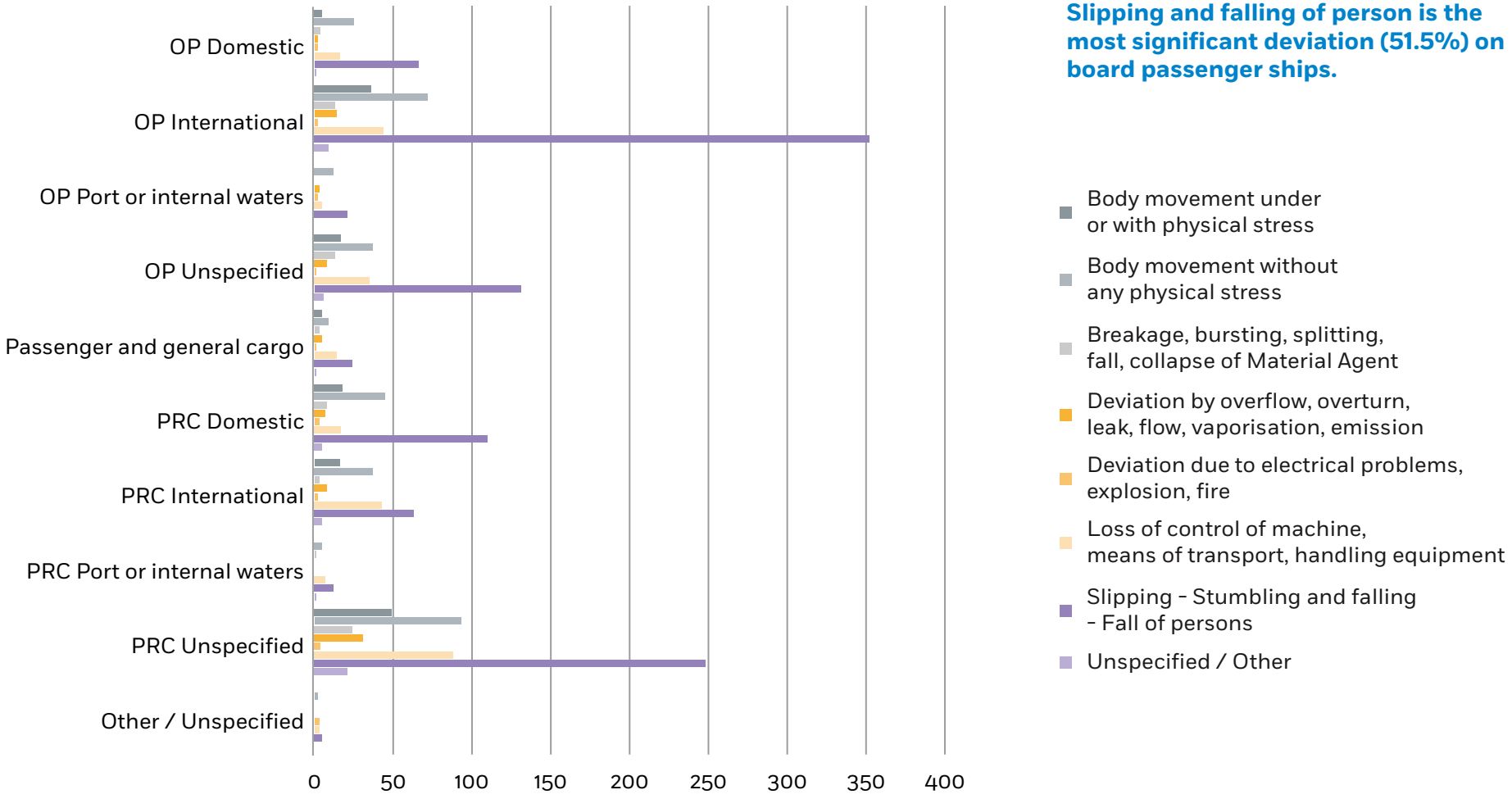
Figure 104: Severity of occupational accidents per passenger ship type 2011-2017



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 (1.8%) than the general average (4.5%).

Figure 105: Distribution of deviations per passenger ship type for 2011-2017



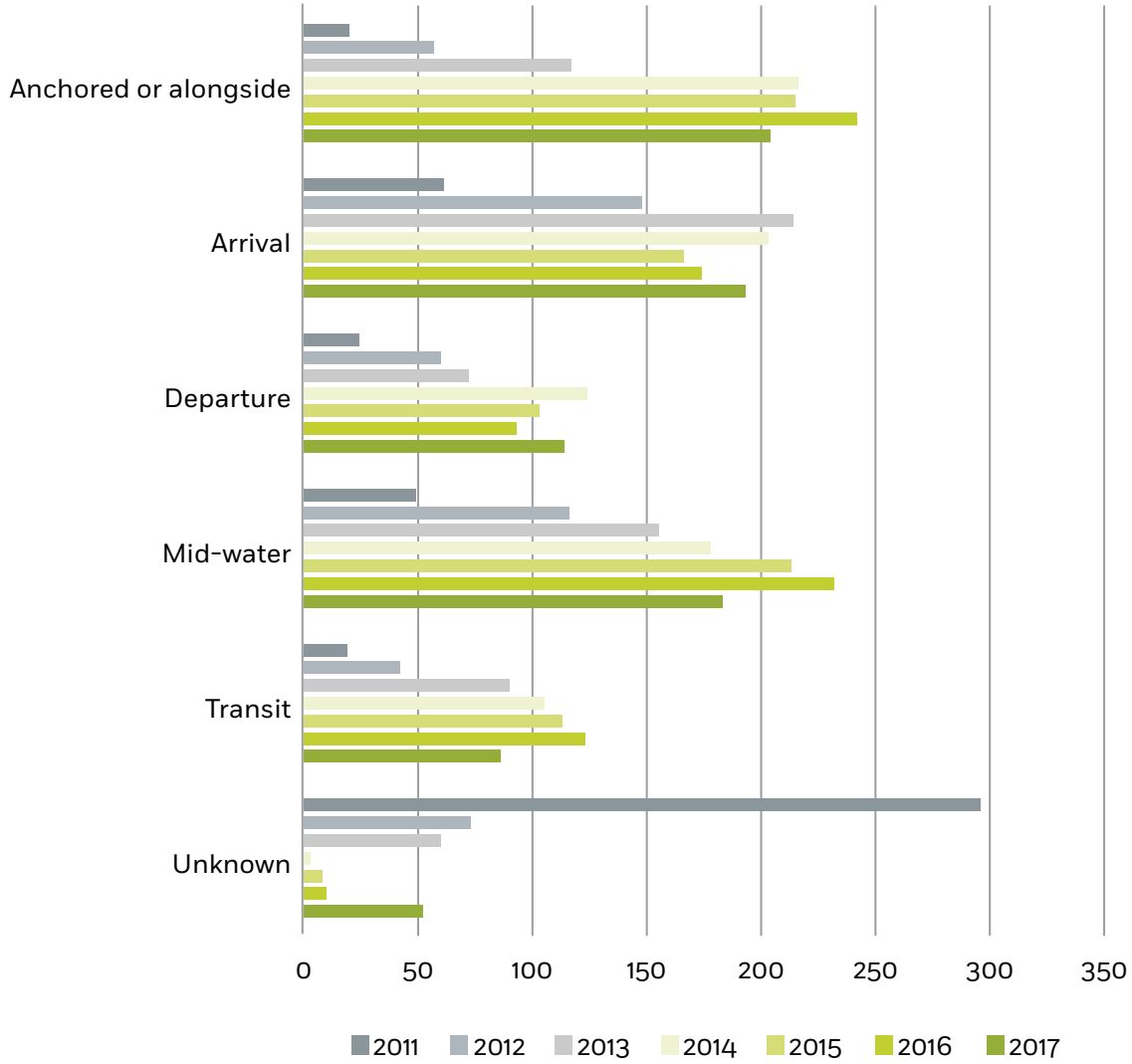
Slipping and falling of person is the most significant deviation (51.5%) on board passenger ships.

5.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

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

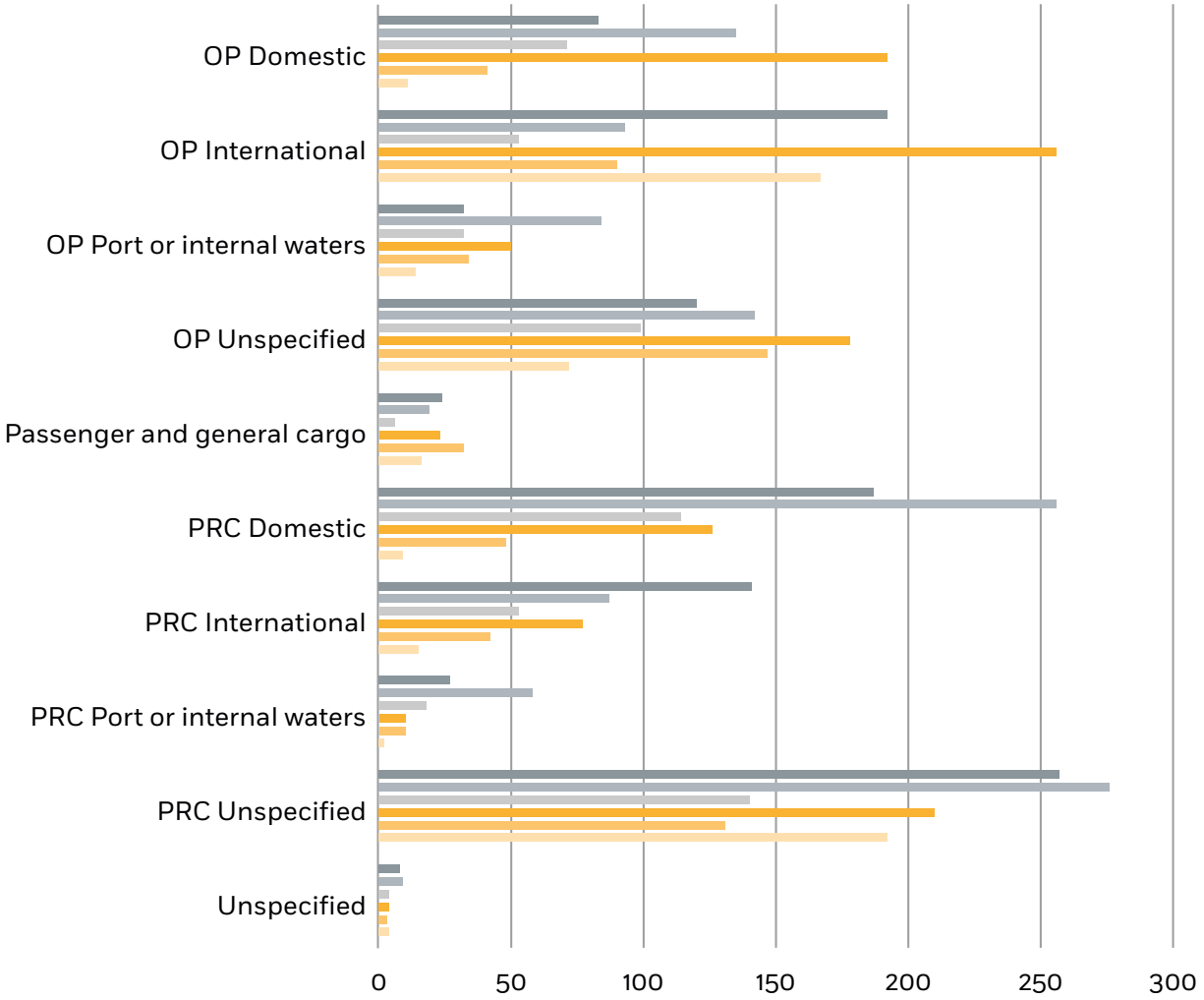
5.3.1 VOYAGE SEGMENTS

Figure 106: Distribution by voyage segment



The number of occupational accidents on board passenger ships has slightly decreased in 2017 (832 cases, against 874 in 2016). The arrival phase of a voyage has been in general the least safe one.

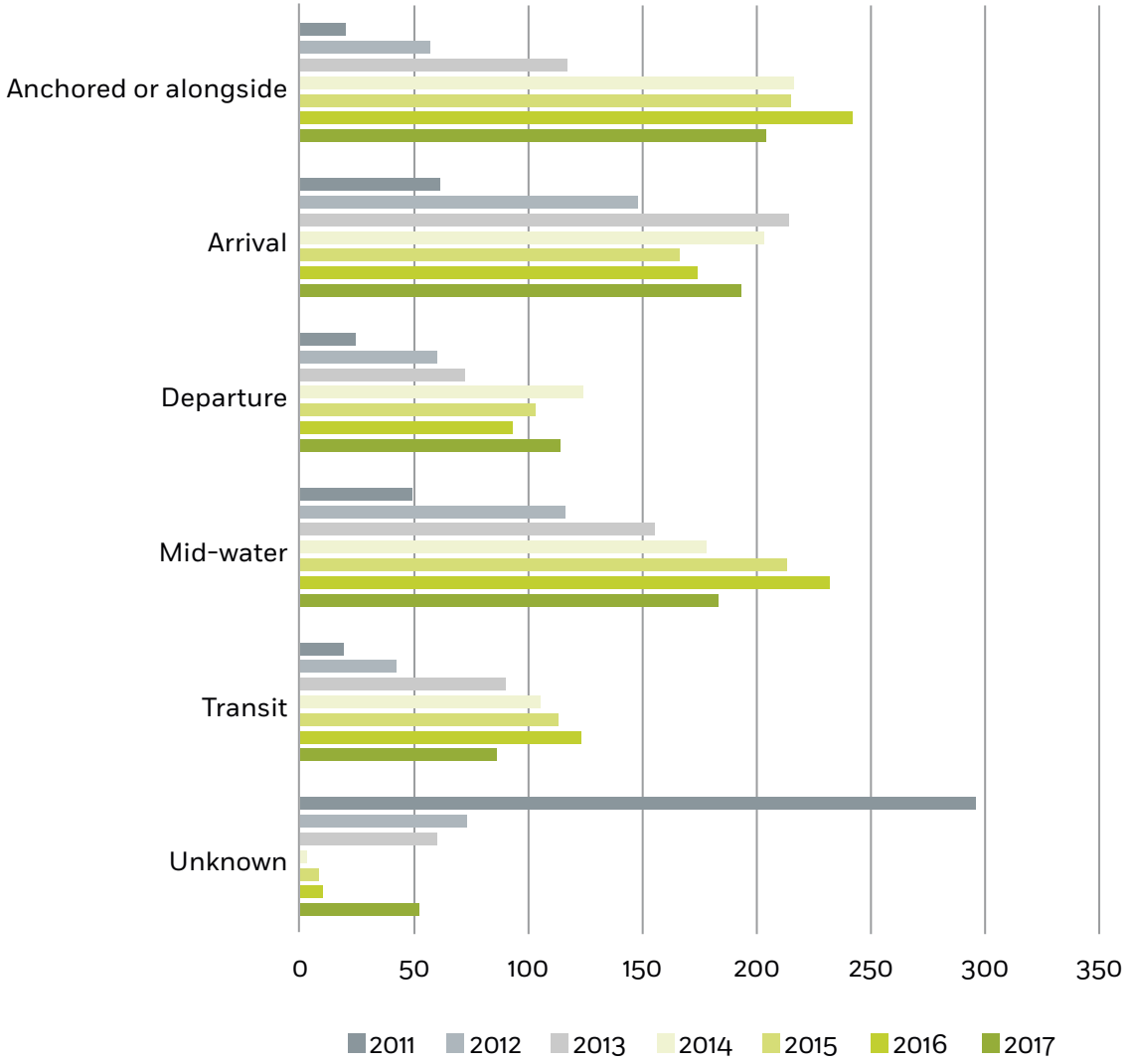
Figure 107: Distribution by voyage segment per passenger ship type for 2011-2017



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.

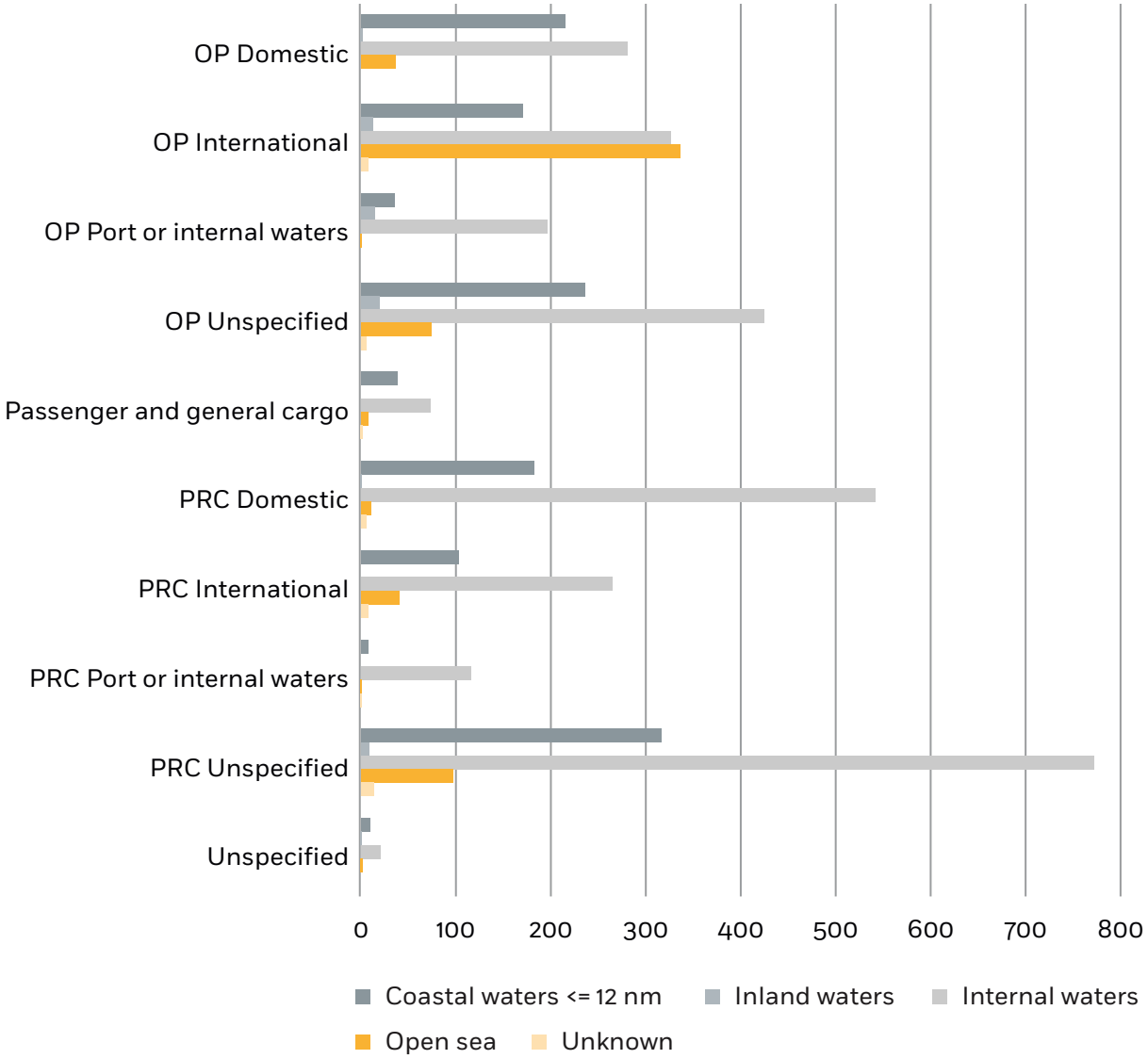
5.3.2 LOCATION

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



53.6% of the casualties took place in internal waters and port areas, followed by 26.1% in coastal waters.

Figure 109: Distribution by location per passenger ship type for 2011-2017



For all types of passenger ships, the majority of casualties took place in internal waters (60% of all cases).

5.3.3 REGIONAL DISTRIBUTION

Figure 110: Regional distribution of marine casualties and incidents for 2011-2017

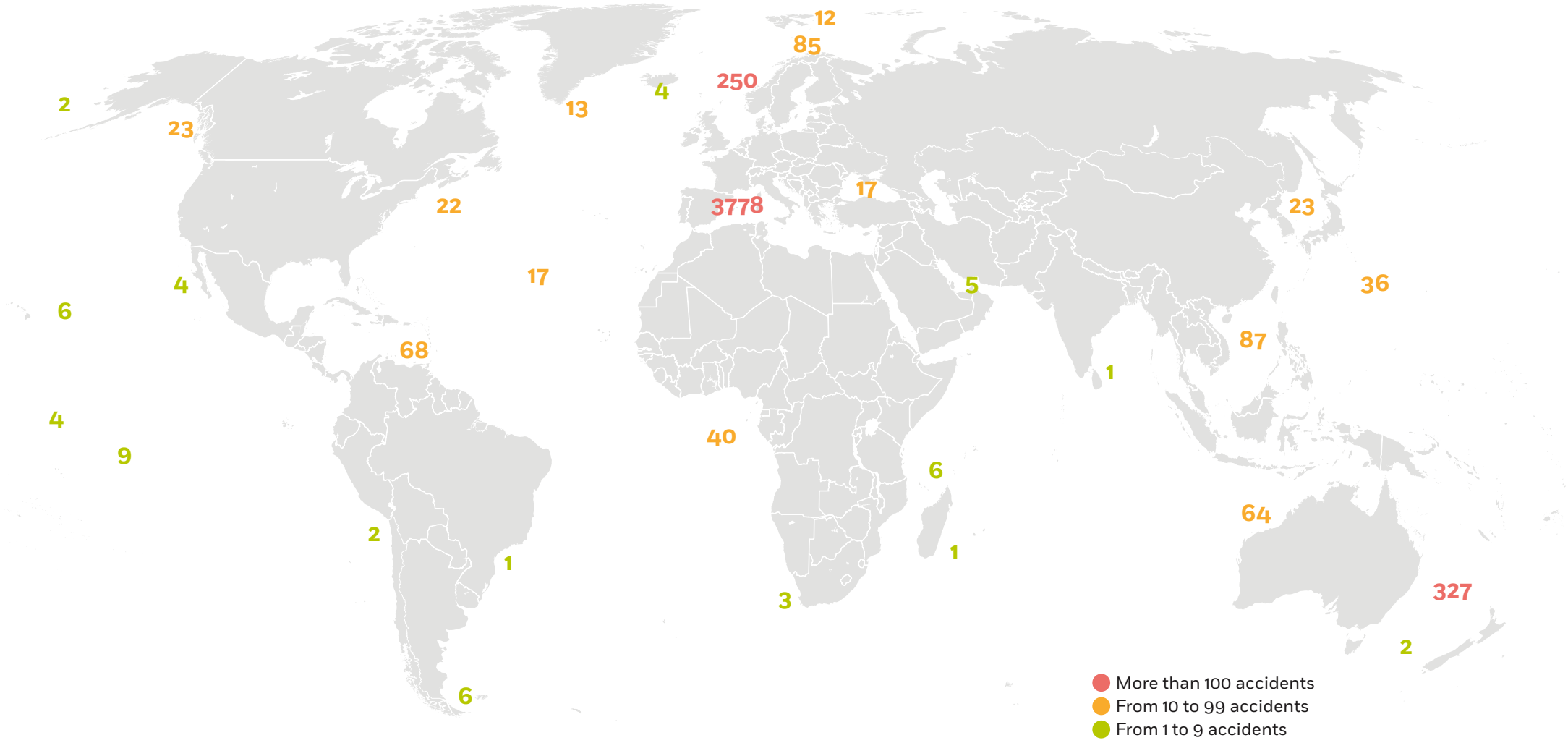
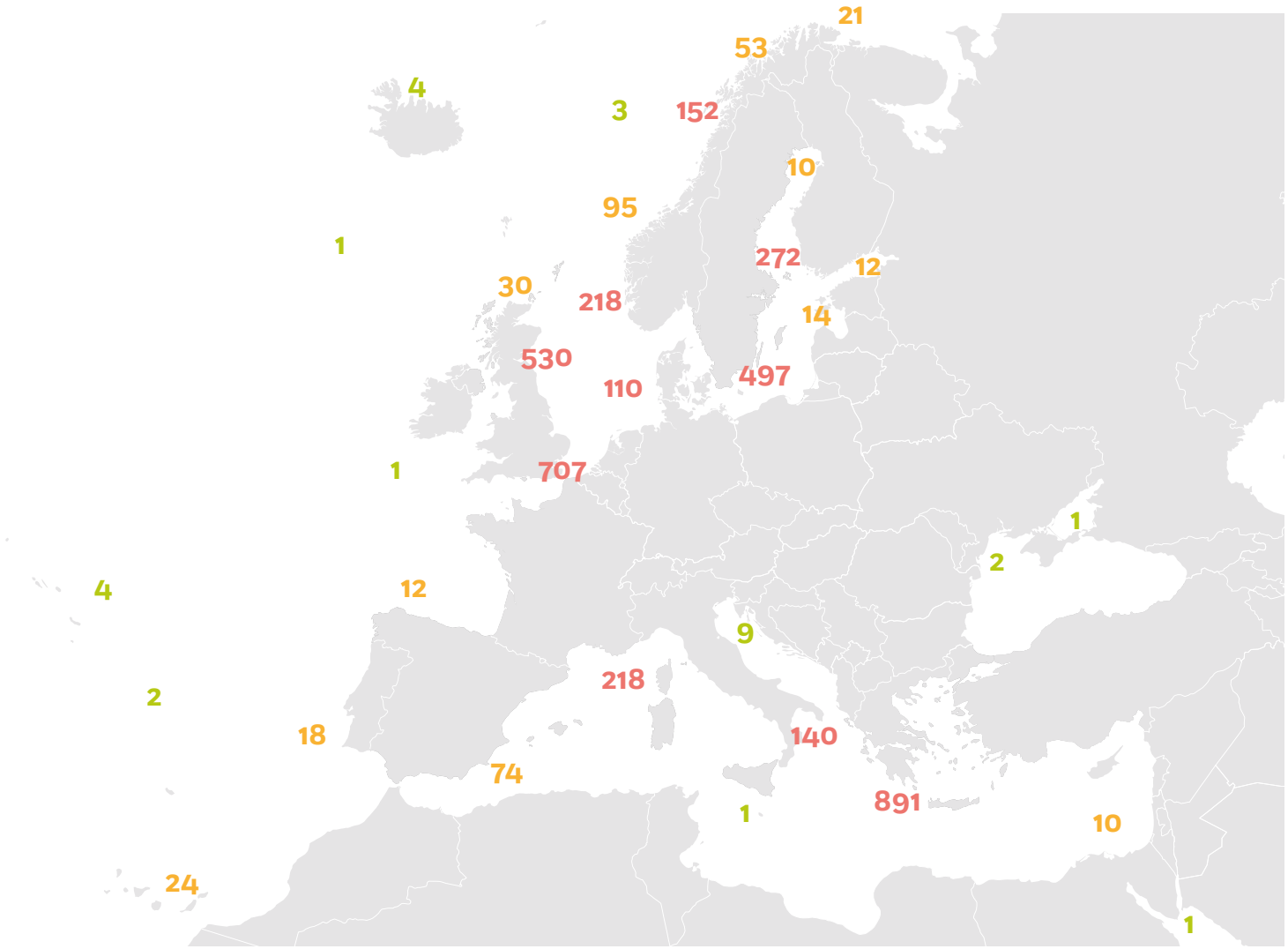
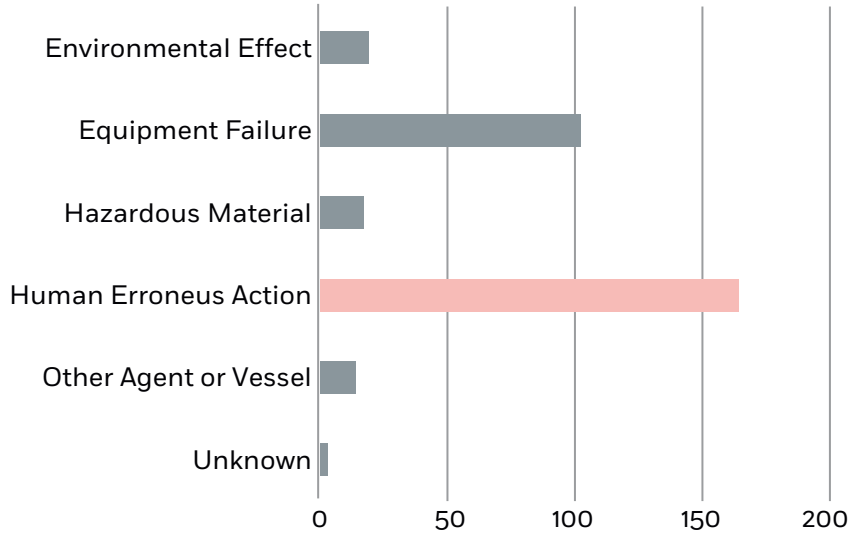


Figure 111: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU Member States for 2011-2017



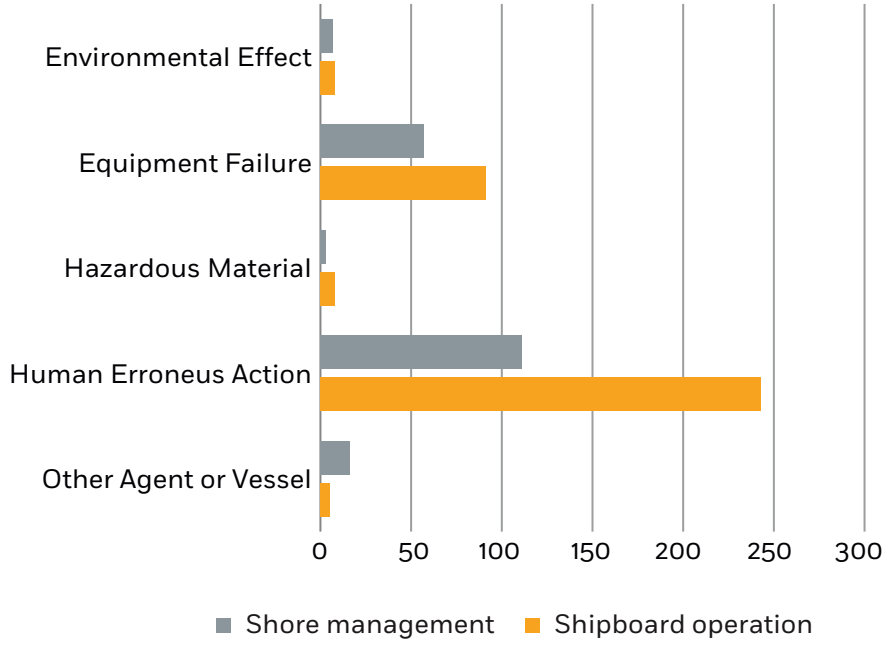
5.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 112: Accidental events for 2011-2017



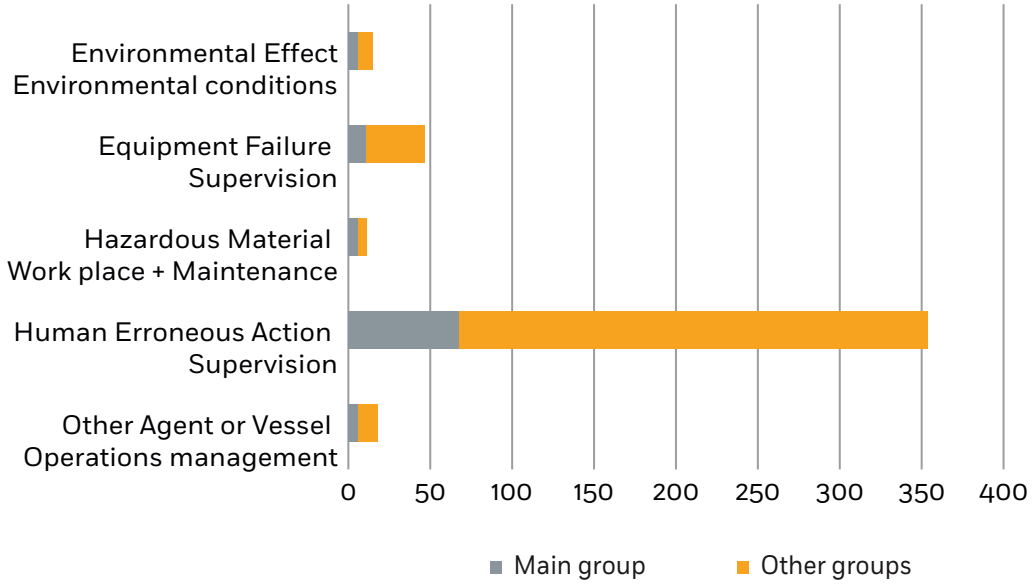
From a total of 319 accidental events analysed during the investigations 51.4% were attributed to a human erroneous action.

Figure 113: Relationship between accidental events and the main contributing factors 2011-2017



Shipboard operations represented the main contributing factor with 64.7% of the total.

Figure 114: Groups of Contributing Factors for 2011-2017

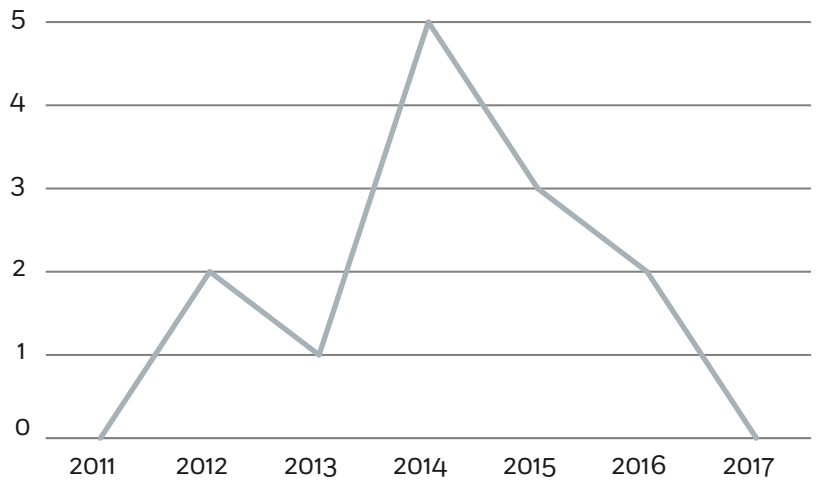


This figure provides the most quoted contributing factor per category of accidental event. For example, 'supervision' was quoted as the most significant contributing factor when the accidental event was 'human erroneous action' or 'equipment failure'.

5.5 CONSEQUENCES

5.5.1 CONSEQUENCES TO SHIPS

Figure 115: Passenger ships lost



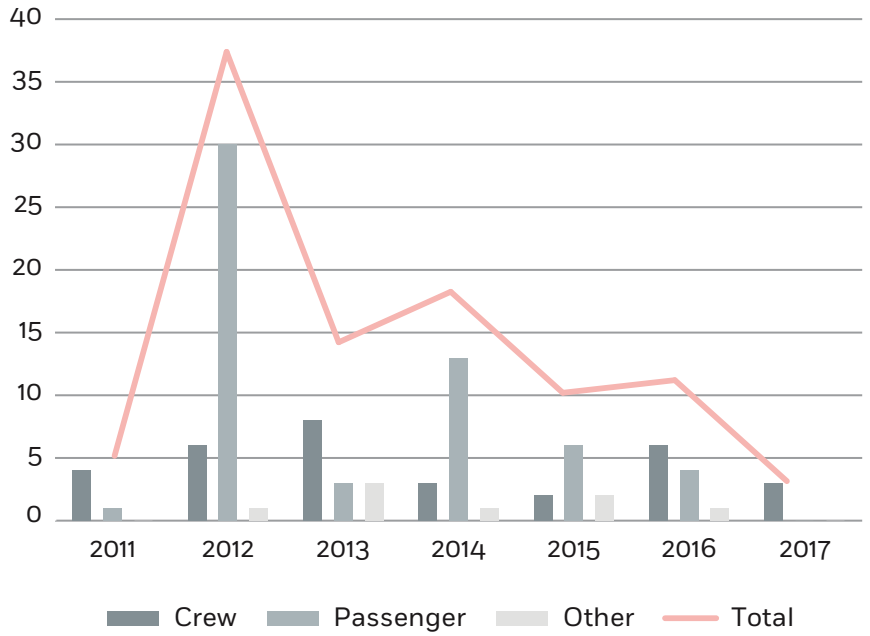
Among the 13 passenger ships that were lost, eight were passenger ships 'carrying only passengers'.

Since 2014, the number of passenger ships lost has been on the decrease and it was noted that no passenger ships were lost in 2017.

5.5.2 CONSEQUENCES TO PERSONS

5.5.2.1 FATALITIES

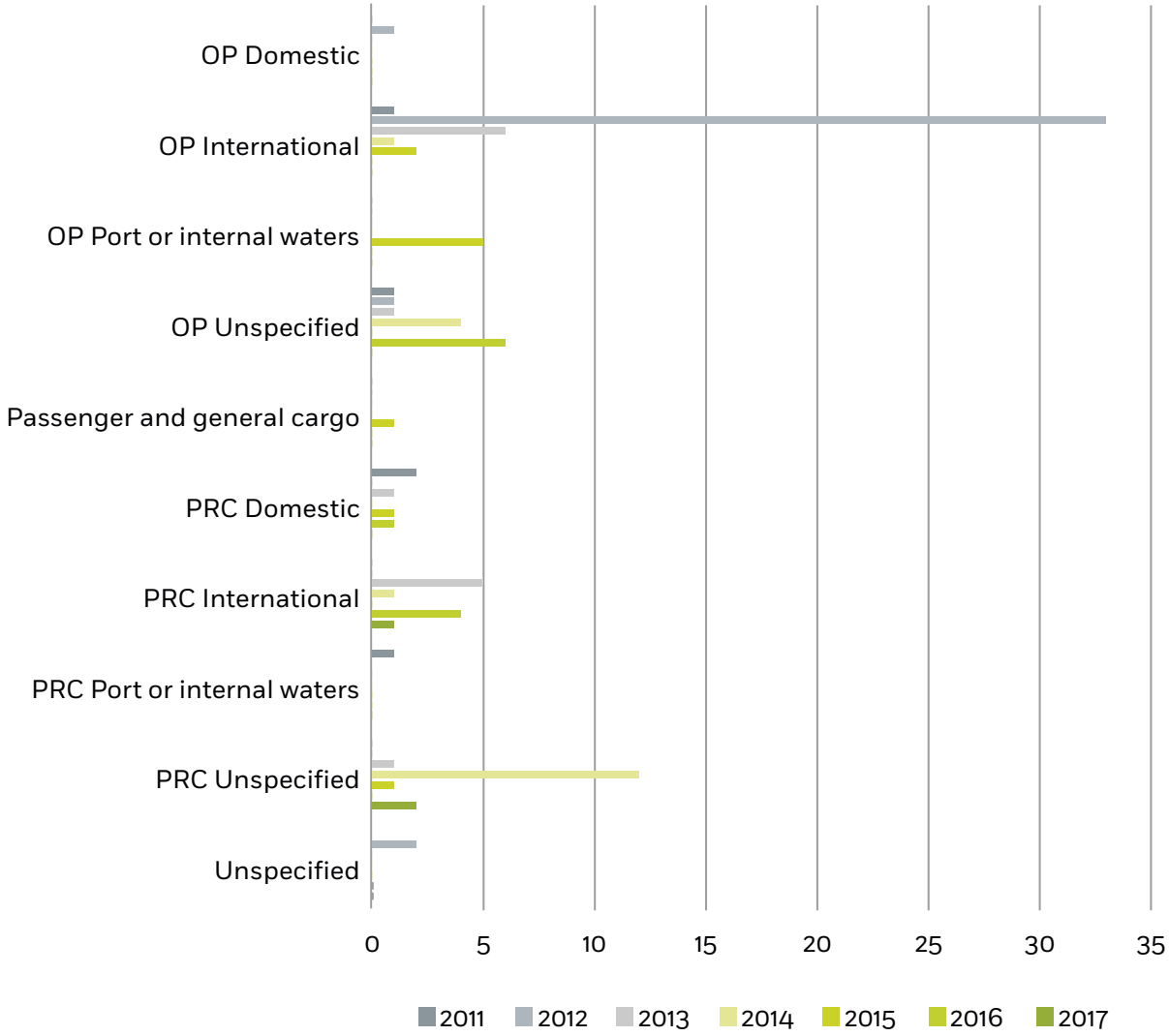
Figure 116: Number of fatalities



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

58% of the victims were passengers.

Figure 117: Distribution of fatalities per passenger ship type



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

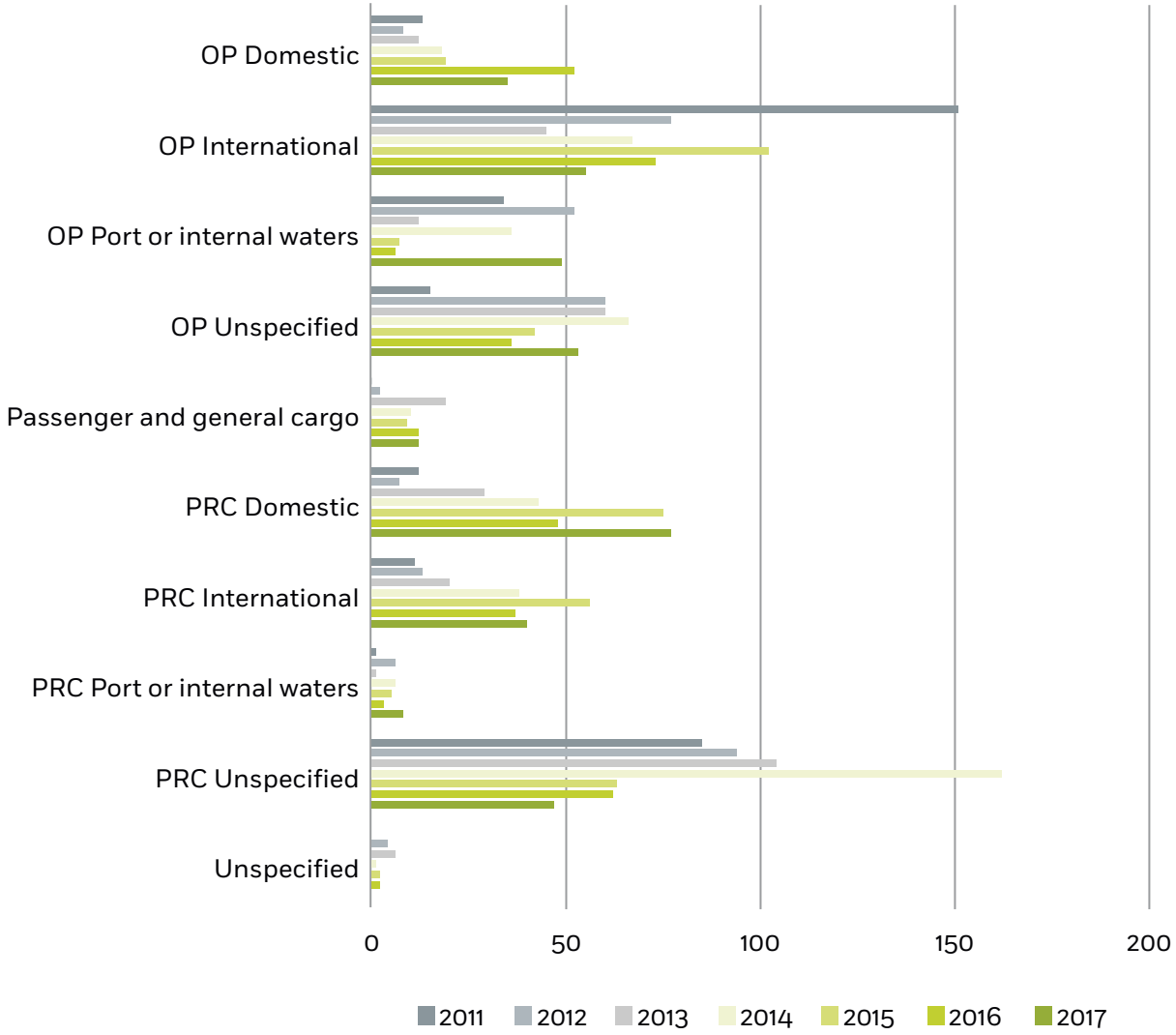
5.5.2.2 INJURIES

Figure 118: Number of injuries

After three years of continuous decrease of injuries, the number of victims increased in 2017 to 376.

Injuries happened mainly to seafarers (55.4%).

Figure 119: Distribution of injuries per passenger ship type

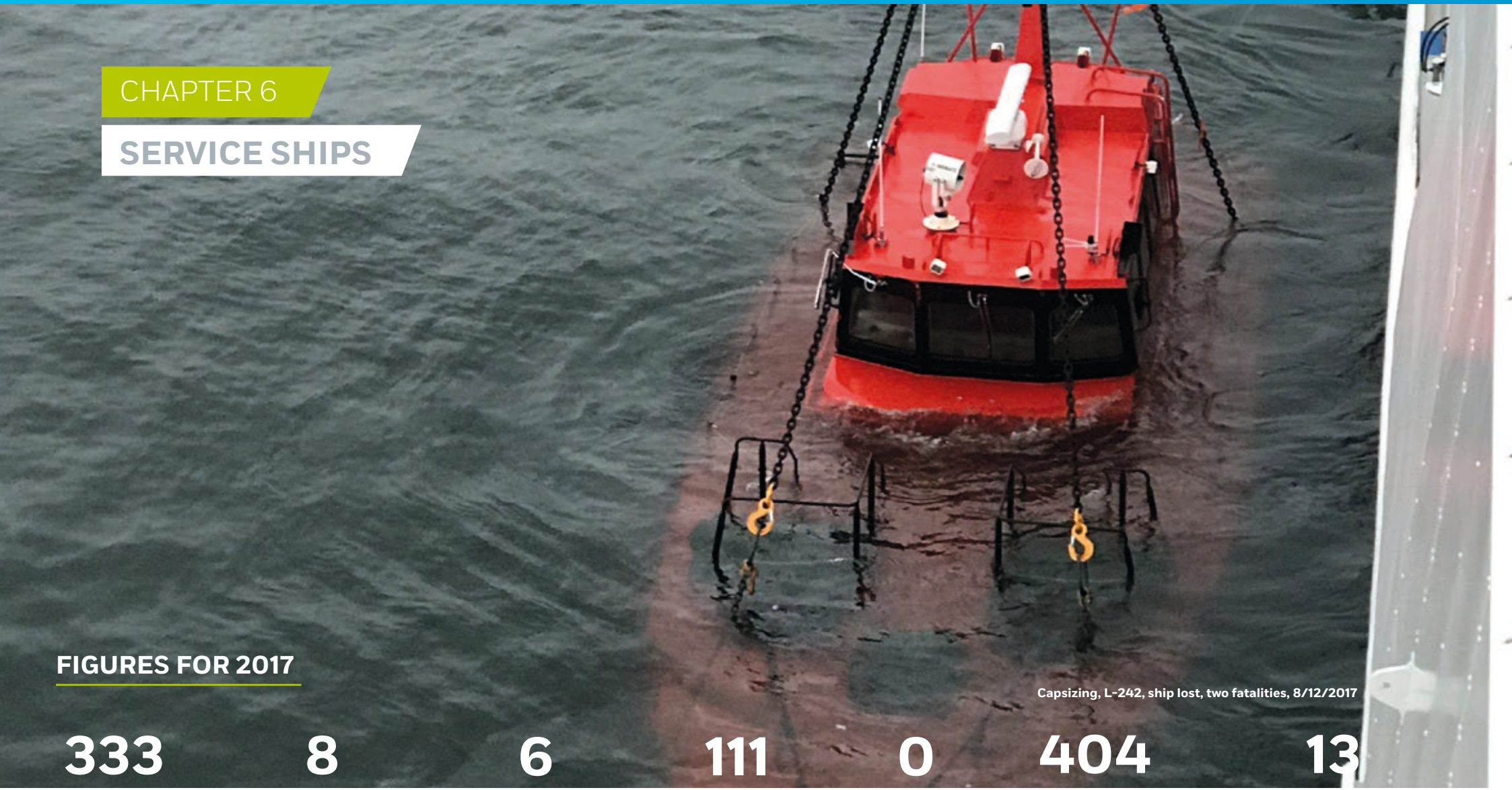


A similar number of the injuries took place on board passenger ships carrying only passengers and those transporting vehicles.

Grounding/stranding, SURPRISE, ship damaged, 15/05/2016

CHAPTER 6

SERVICE SHIPS



Capsizing, L-242, ship lost, two fatalities, 8/12/2017

FIGURES FOR 2017

333	8	6	111	0	404	13
CASUALTIES & INCIDENTS	VERY SERIOUS CASUALTIES	FATALITIES	PERSONS INJURED	SHIPS LOST	SHIPS INVOLVED	INVESTIGATIONS

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 tugs (24.1%), followed by dredgers (15.2%) and offshore supply ships (13.2%).

The number of service ships involved in 2017 was equal to the one in 2016 (405 ships).

Figure 120: Distribution of service ship types involved

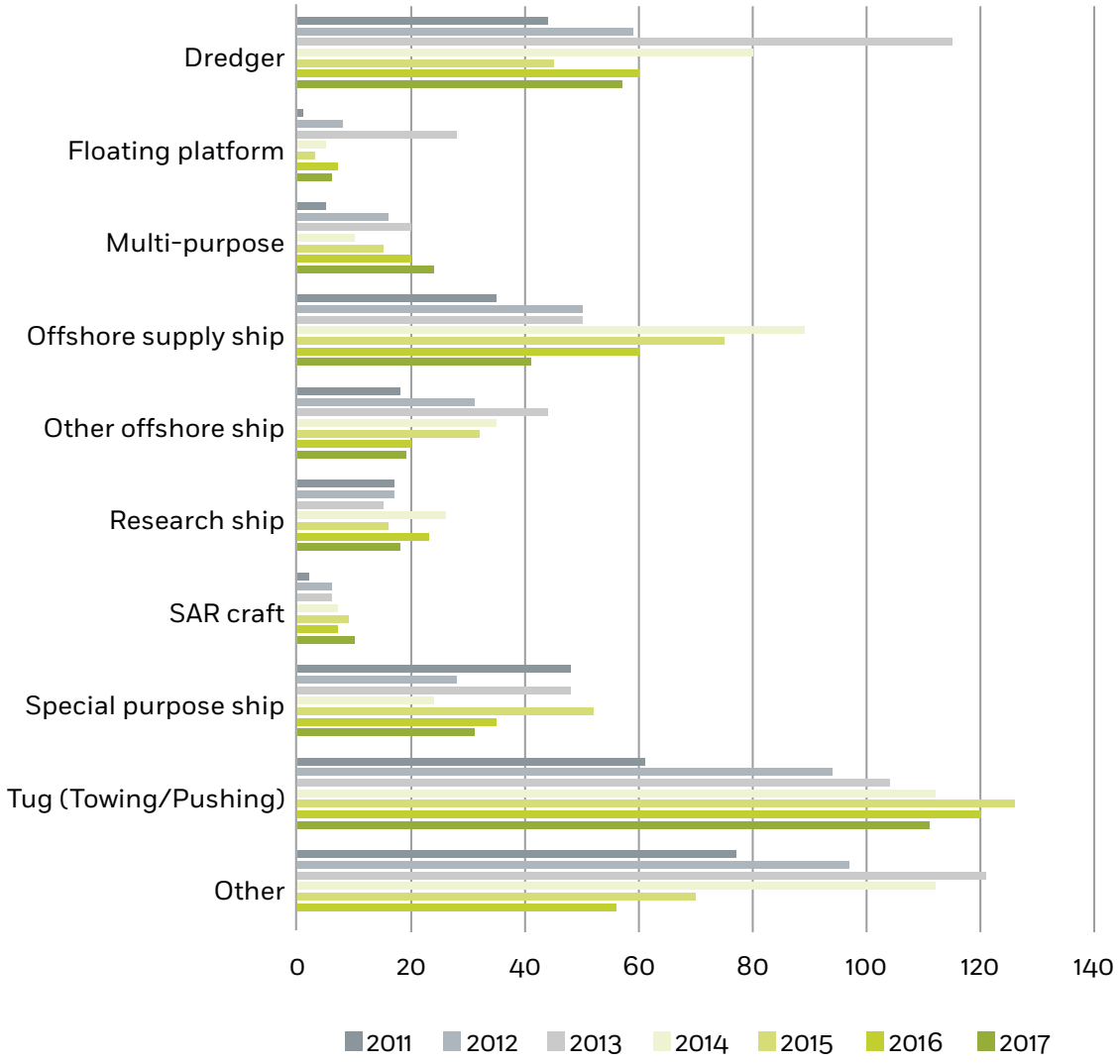
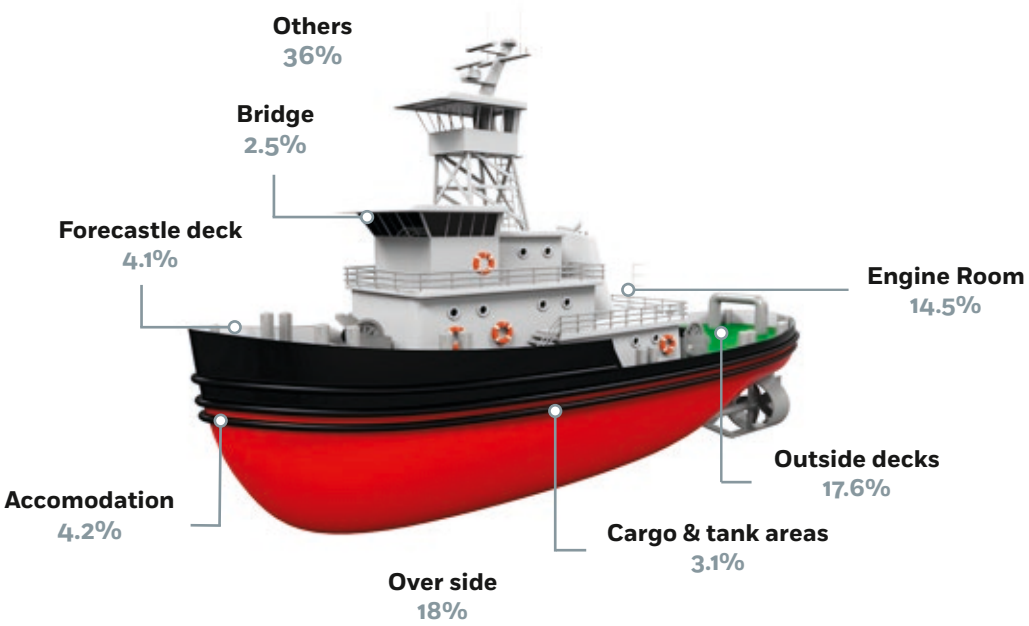
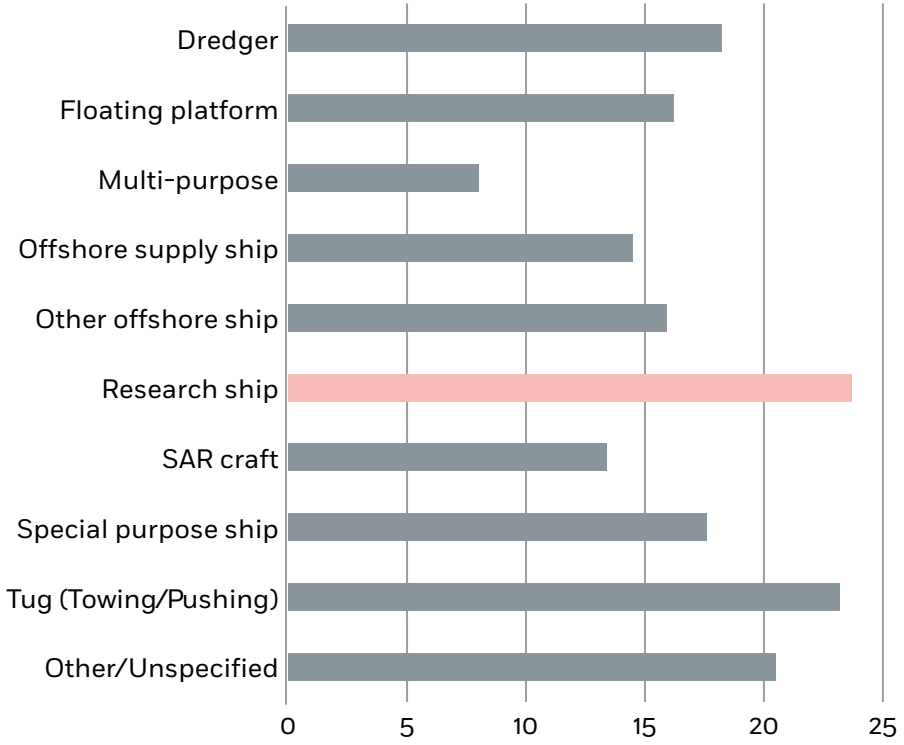


Figure 121: Main places of casualties involving service ships 2011-2017



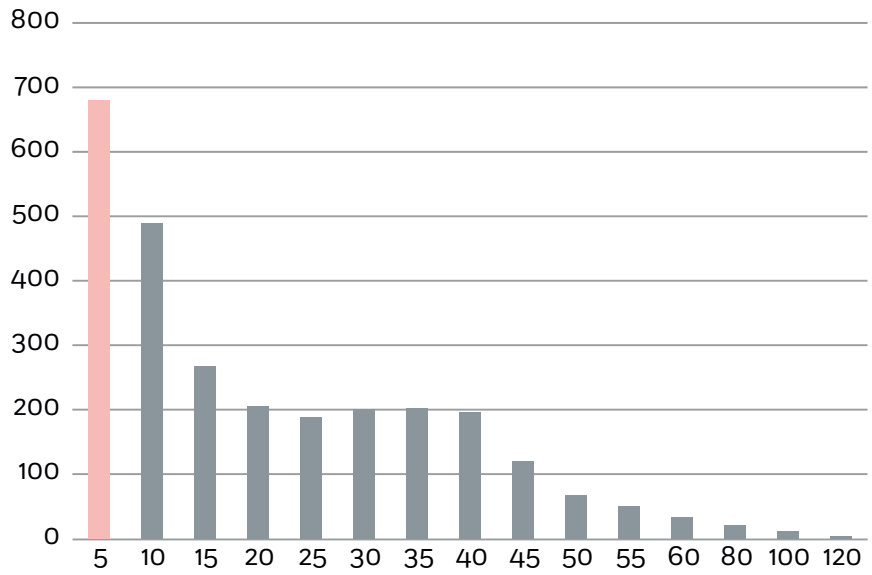
Places were specified in 3020 cases. The main location of casualties was over side (543 cases) followed by outside desks (532) and engine room (439 cases).

Figure 122: Average age by type of service ship involved for 2011-2017



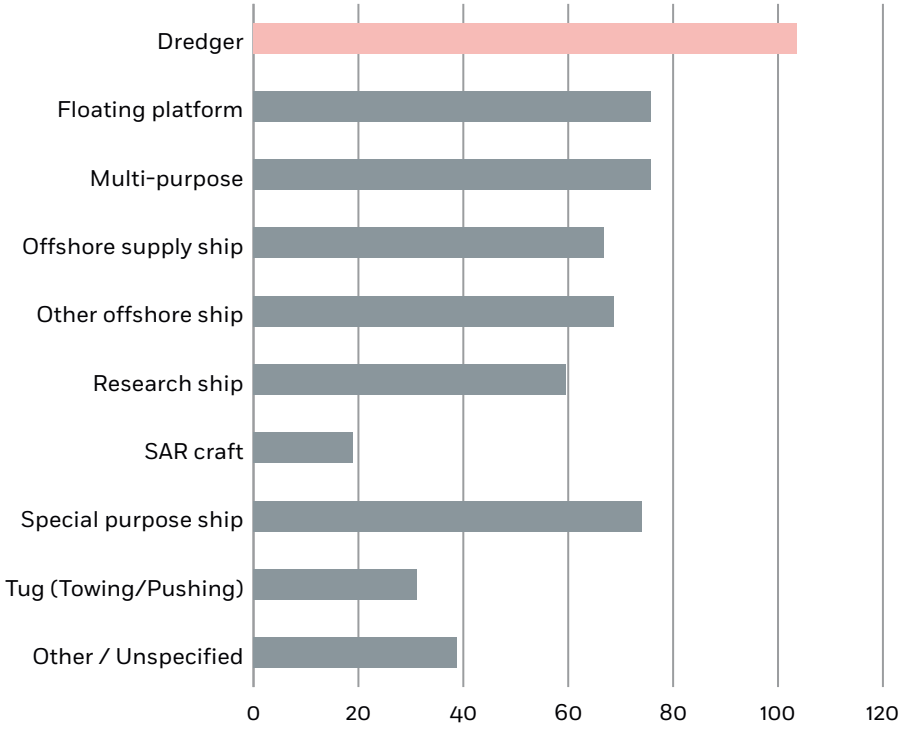
The youngest ship category is multi-purpose ship (8y) while the oldest is research ship (23.7y).

Figure 123: Age distribution of service ships involved for 2011-2017



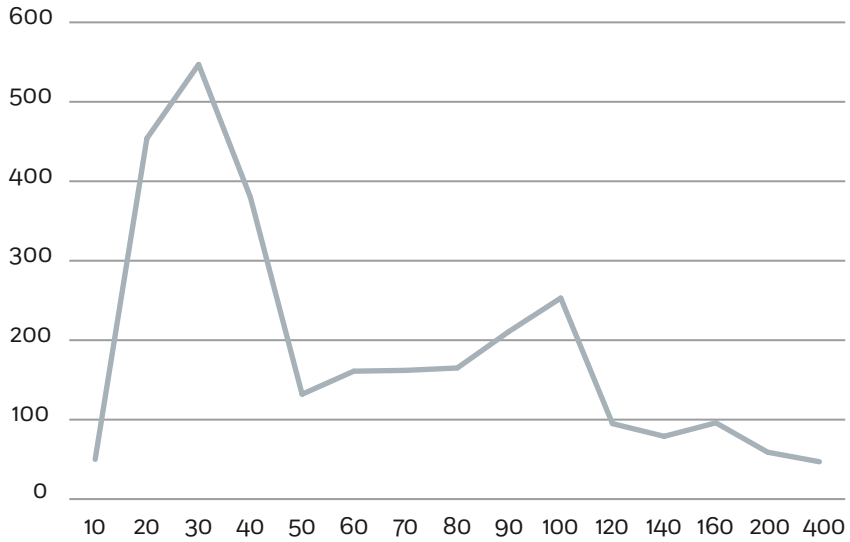
The average age of service ships involved in casualties and incidents was 18.4 years over the 2011-2017 period.

Figure 124: Average length of service ships involved by main category 2011-2017



The ships with the shortest length were search and rescue craft, and the longest were dredgers.

Figure 125: Length distribution of service ships involved for 2011-2017

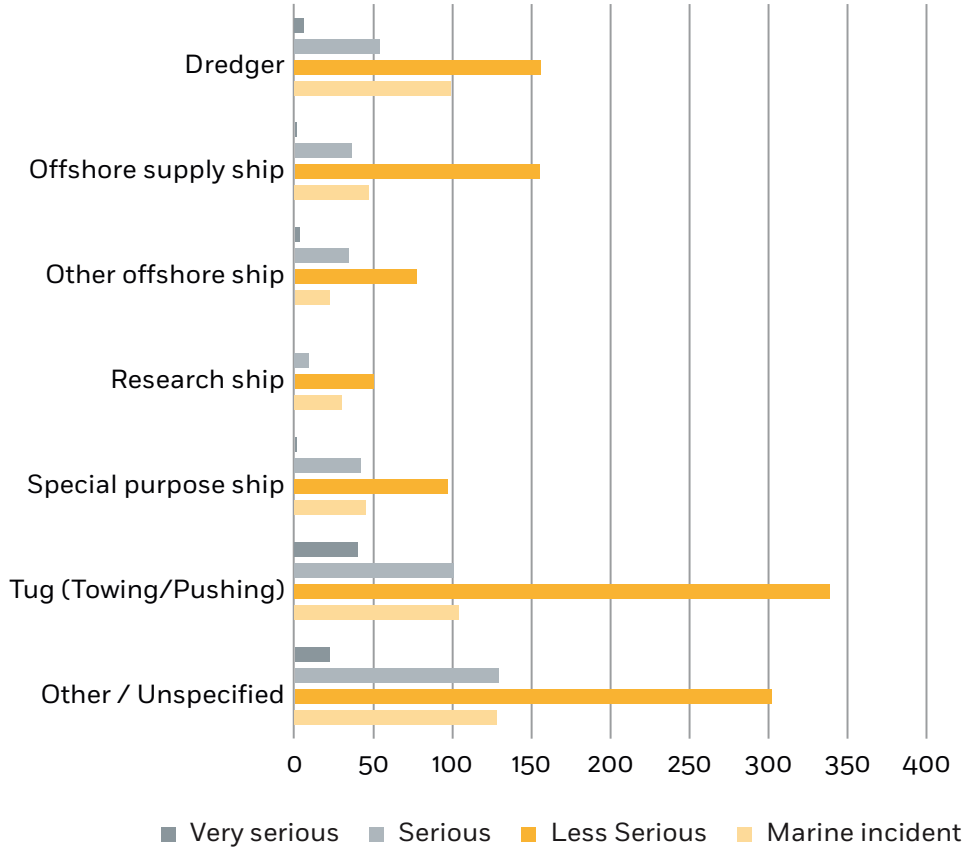


The average length of service ships involved was 58.6m. A peak of incidents involving ships with a length of between 20m and 40m was noted.

6.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

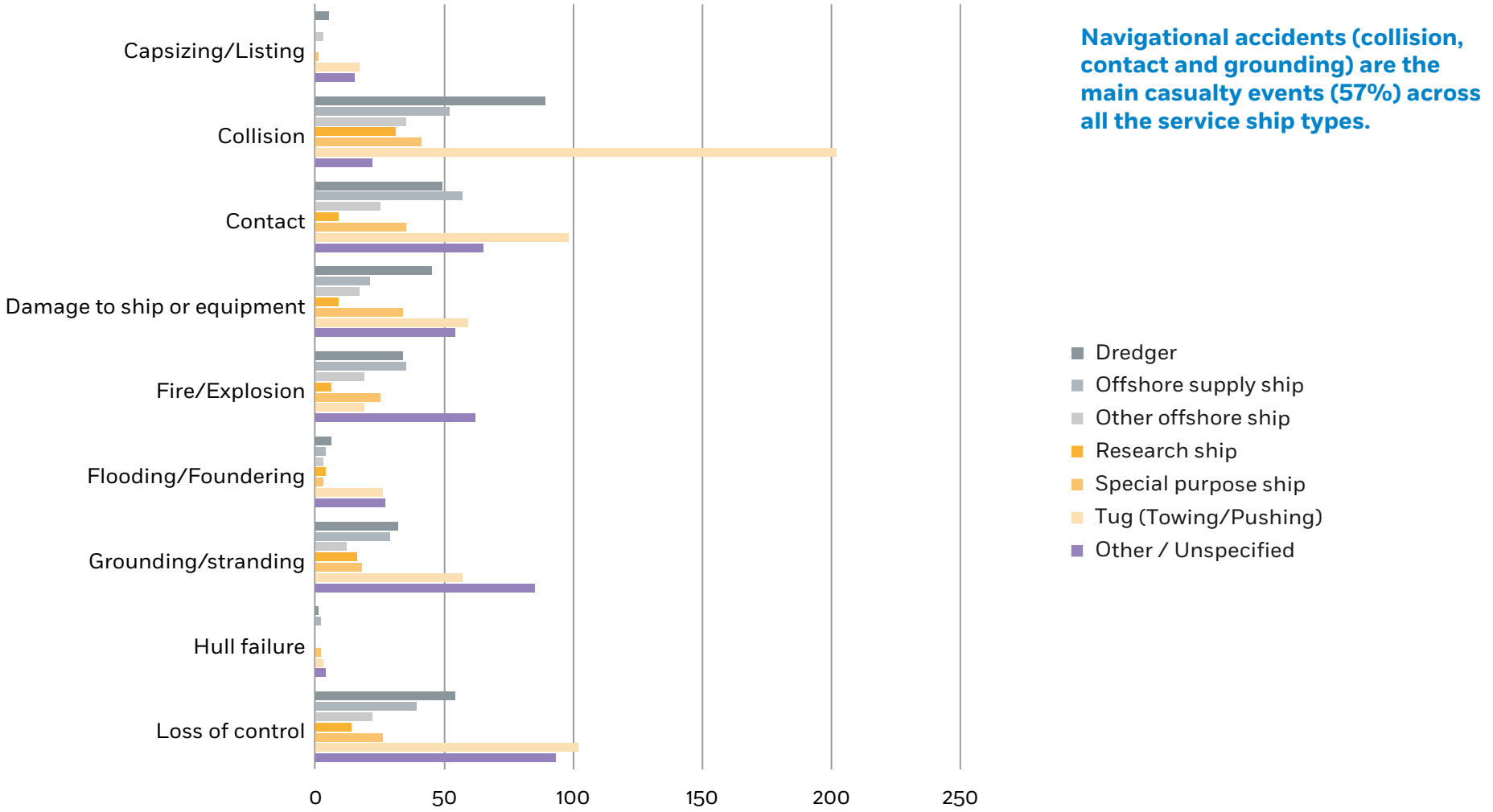
6.2.1 CASUALTY WITH A SHIP

Figure 126: Distribution of severity by service ship type for 2011-2017



The rate of very serious casualties with a ship is lower (3.4%) to the general average for all ship types (3.8%).

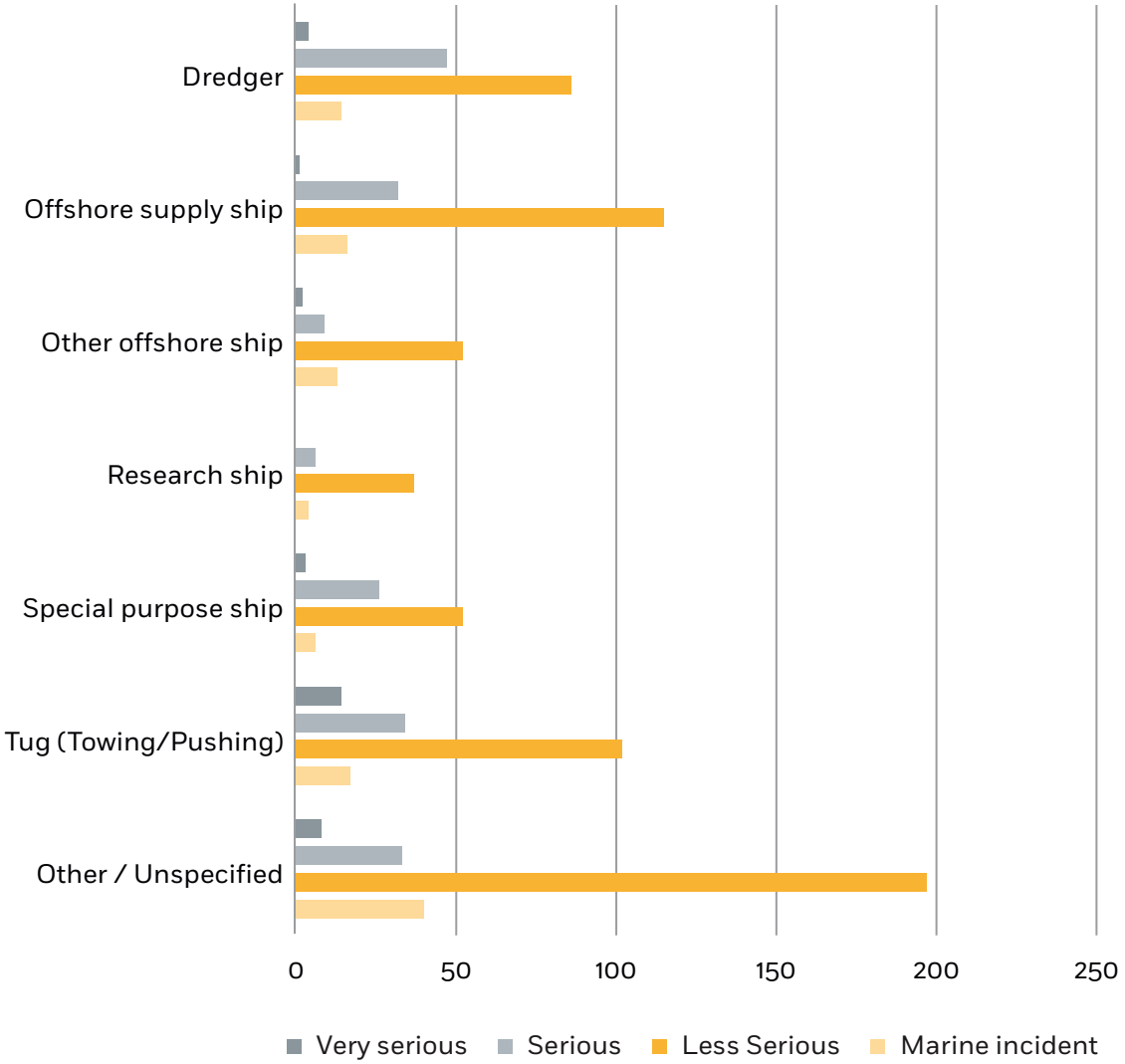
Figure 127: Distribution of casualty events per service ship type for 2011-2017



Navigational accidents (collision, contact and grounding) are the main casualty events (57%) across all the service ship types.

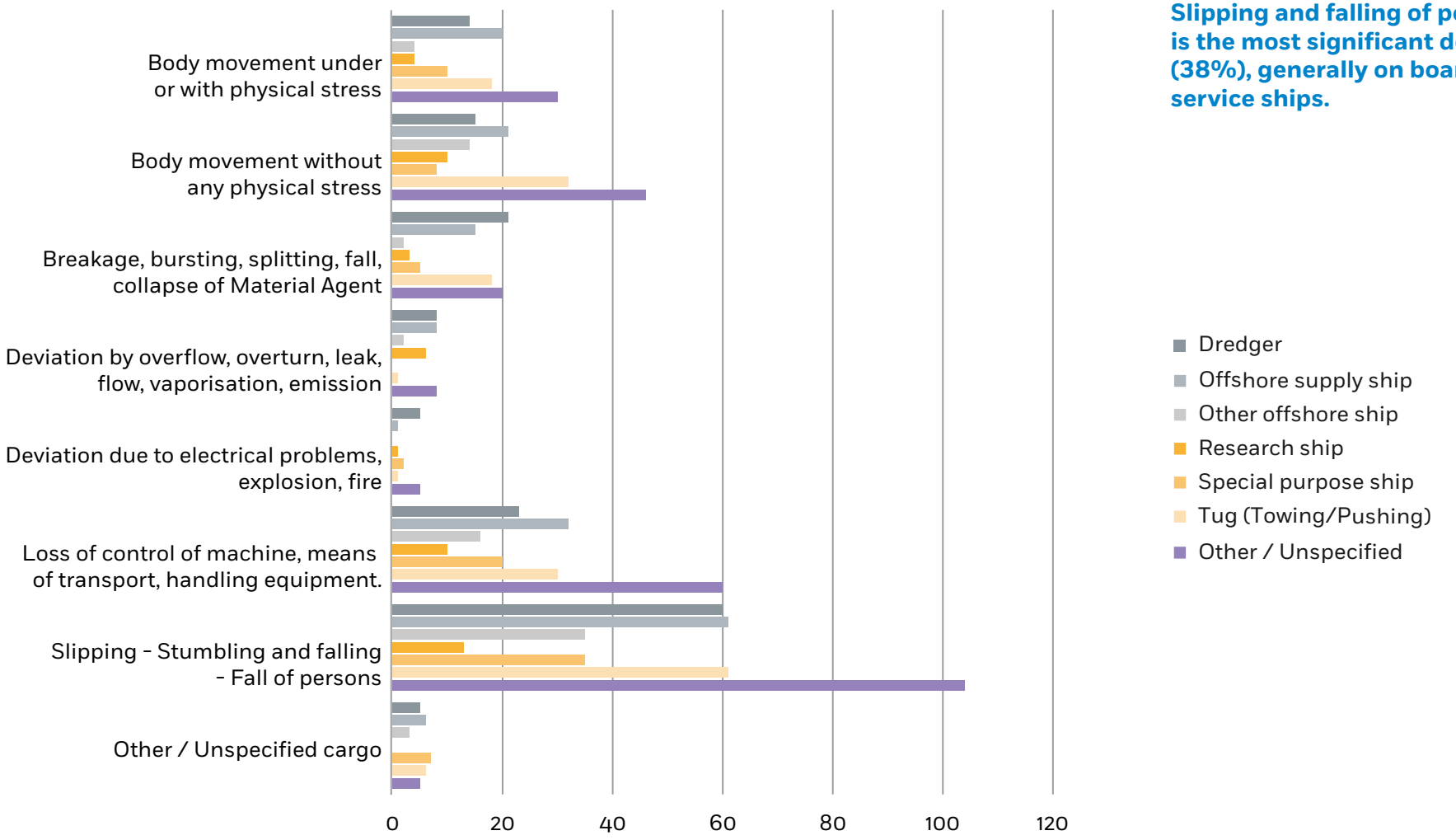
6.2.2 OCCUPATIONAL ACCIDENT

Figure 128: Severity of occupational accidents per service ship type 2011-2017



The number of very serious occupational accidents on board service ships is lower (3.3%) than the average for all ship types (4.5%).

Figure 129: Distribution of deviations per service ship type for 2011-2017



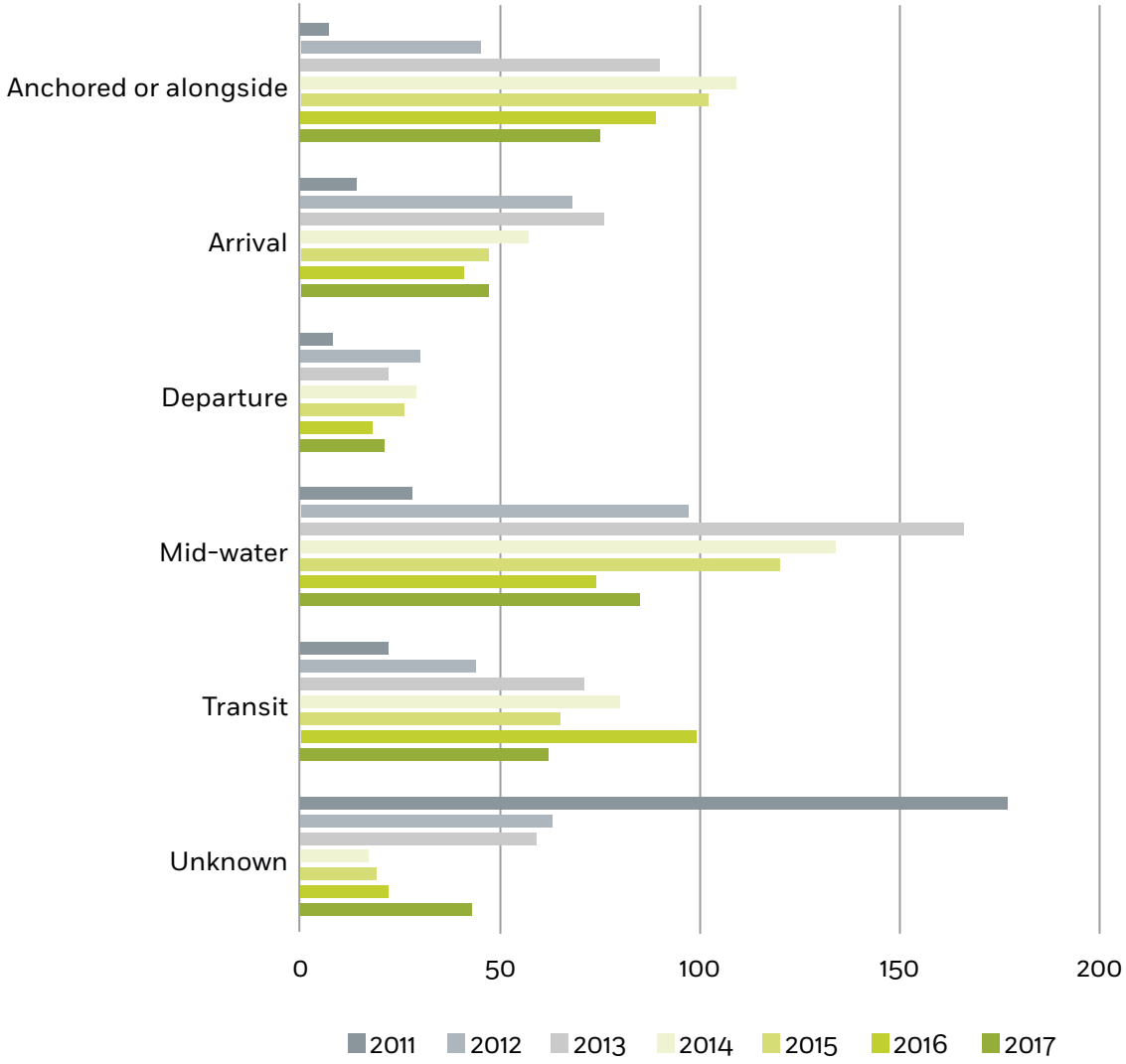
Slipping and falling of persons is the most significant deviation (38%), generally on board all service ships.

6.3 LOCATION OF MARINE CASUALTIES AND INCIDENTS

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

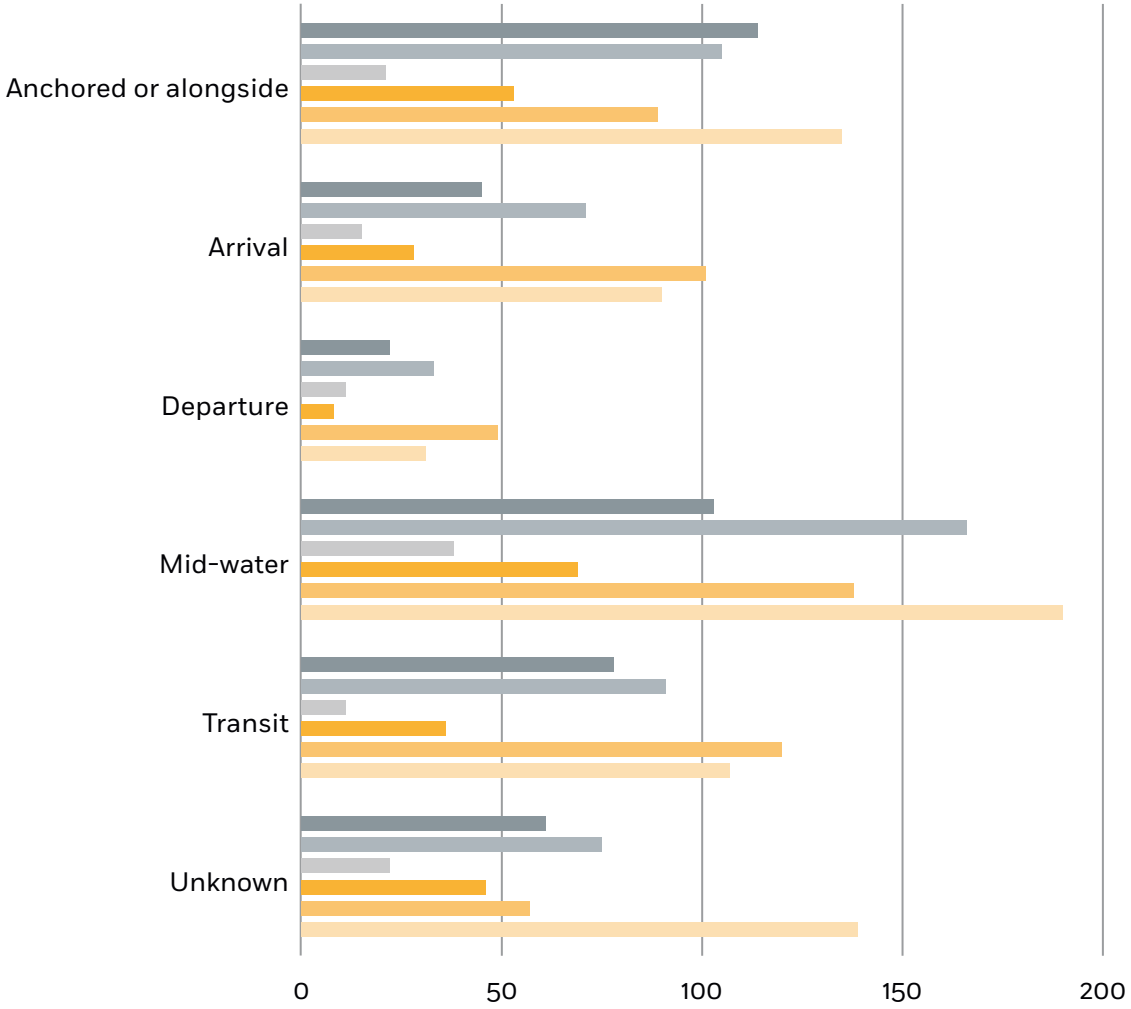
6.3.1 VOYAGE SEGMENTS

Figure 130: Distribution by voyage segment



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

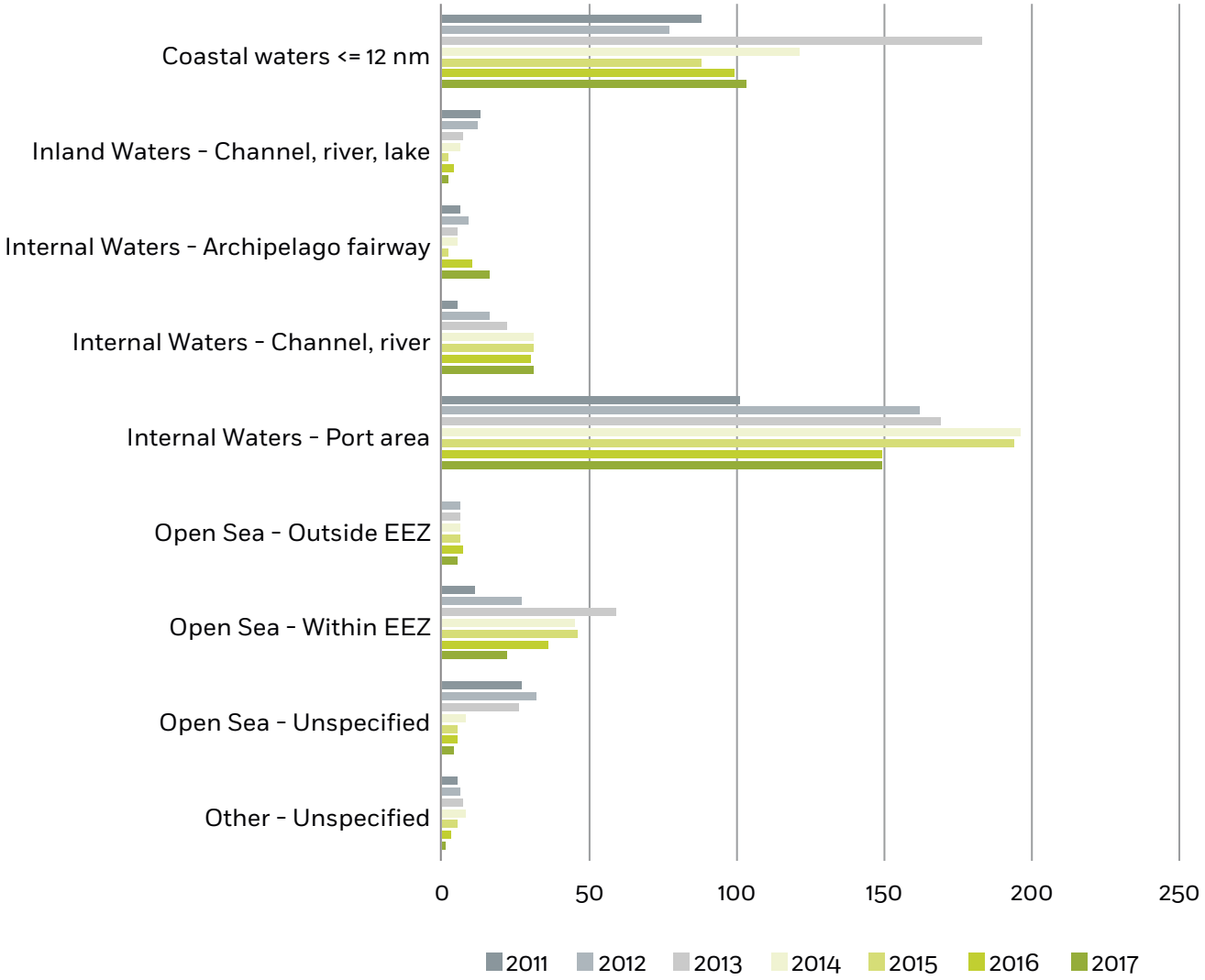
Figure 131: Distribution by voyage segment per service ship type for 2011-2017



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.

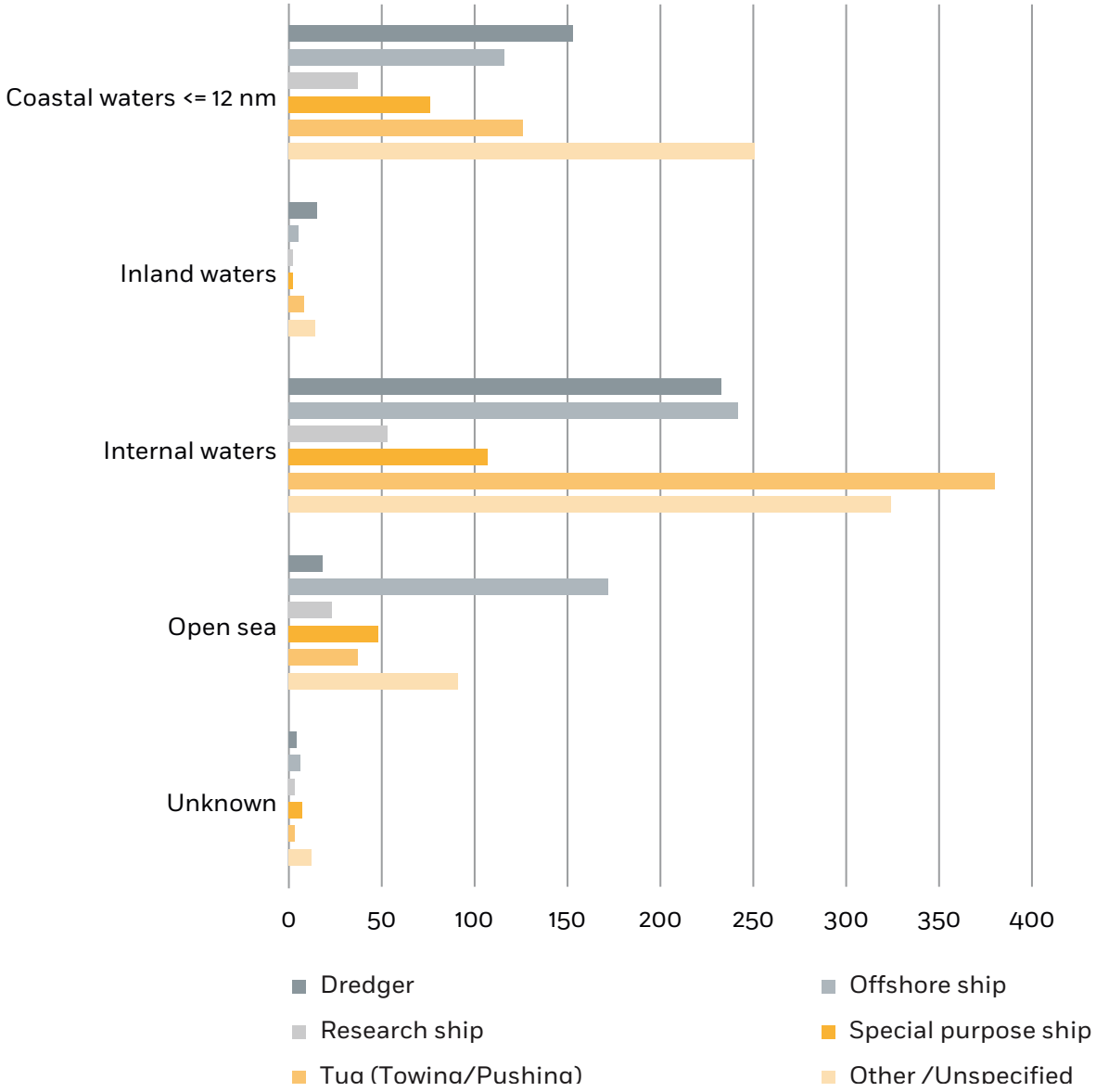
6 3.2 LOCATION

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



43.6% of casualties took place in internal waters and port areas, followed by 29.6% in coastal waters.

Figure 133: Distribution by location of the marine casualties and incidents per service ship type for 2011-2017



Internal waters and port areas were by far 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 for 2011-2017

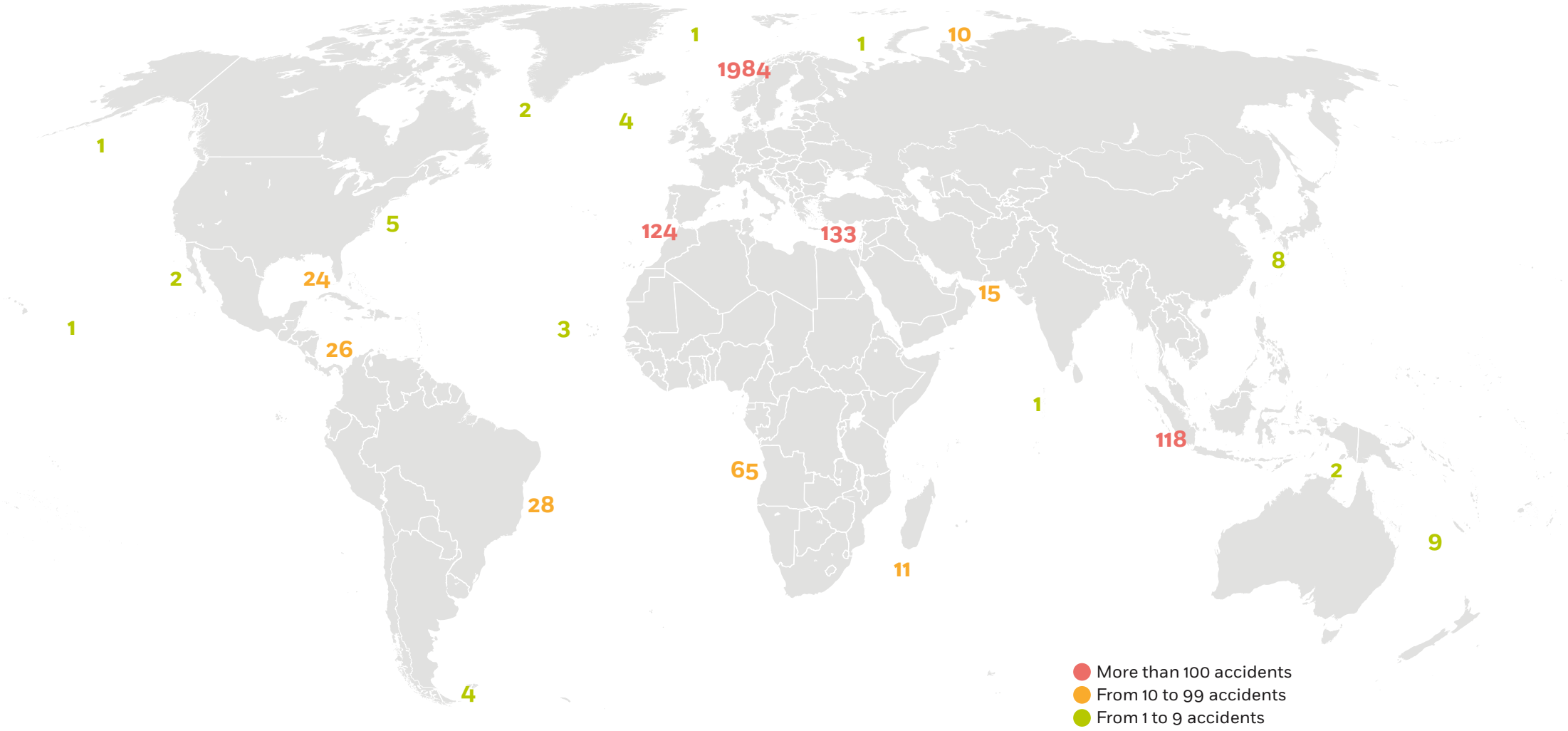
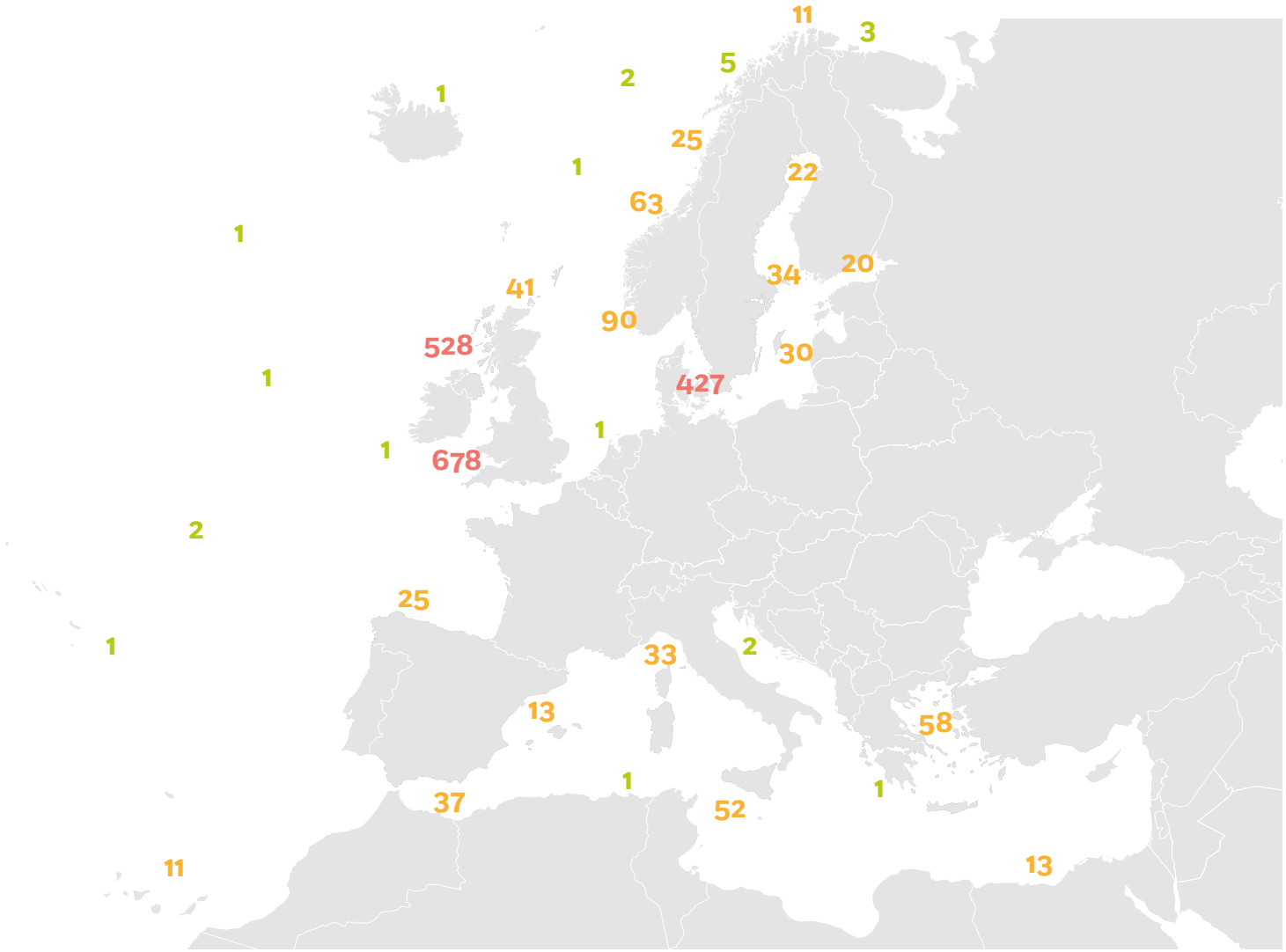
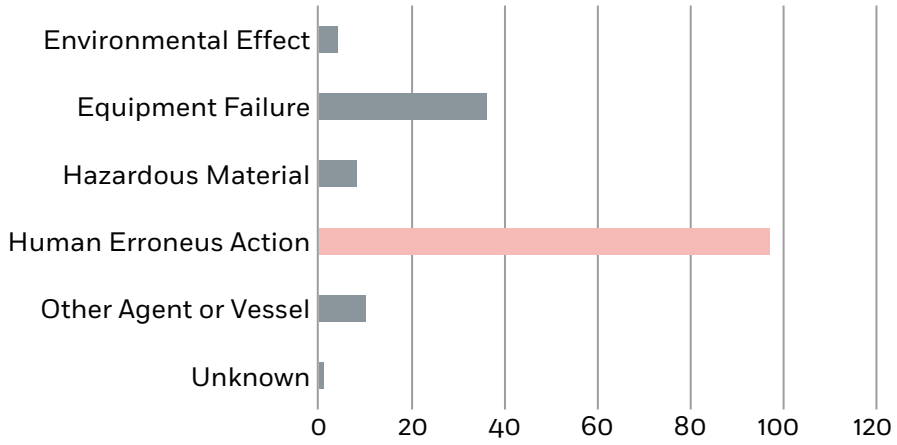


Figure 135: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU Member States for 2011-2017



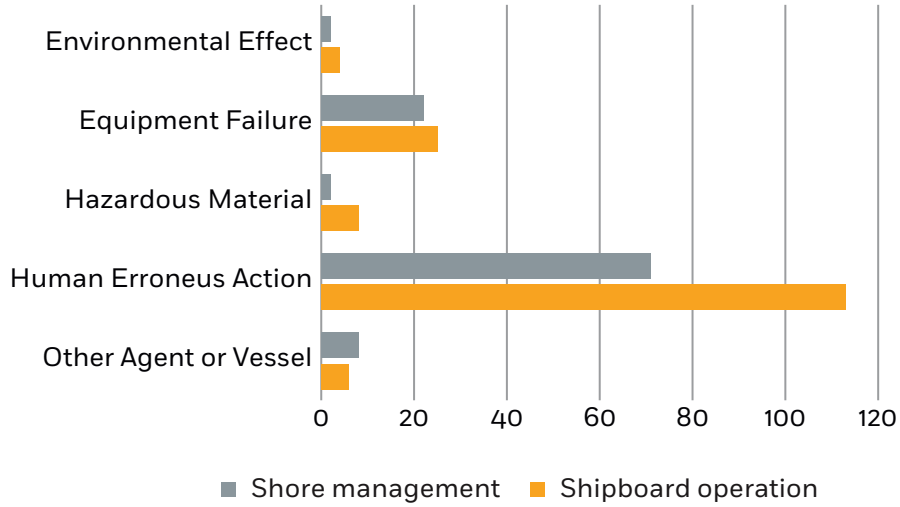
6.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

Figure 136: Accidental events for 2011-2017



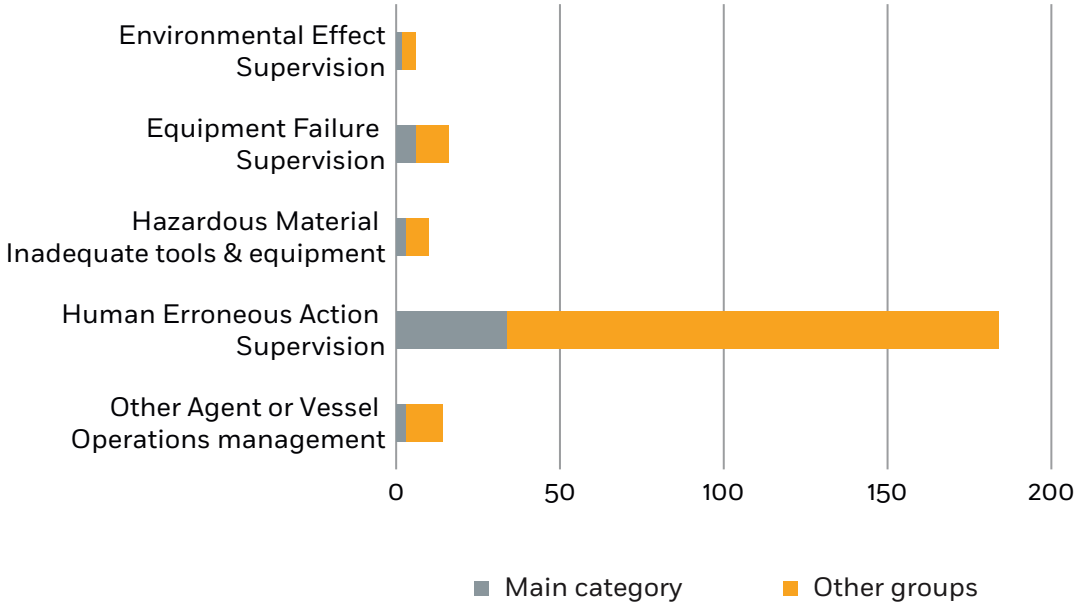
From a total of 156 accidental events analysed during the investigations 62.2% were attributed to a human erroneous action.

Figure 137: Relationship between accidental events and the main contributing factors for 2011-2017



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

Figure 138: Groups of contributing factors for 2011-2017



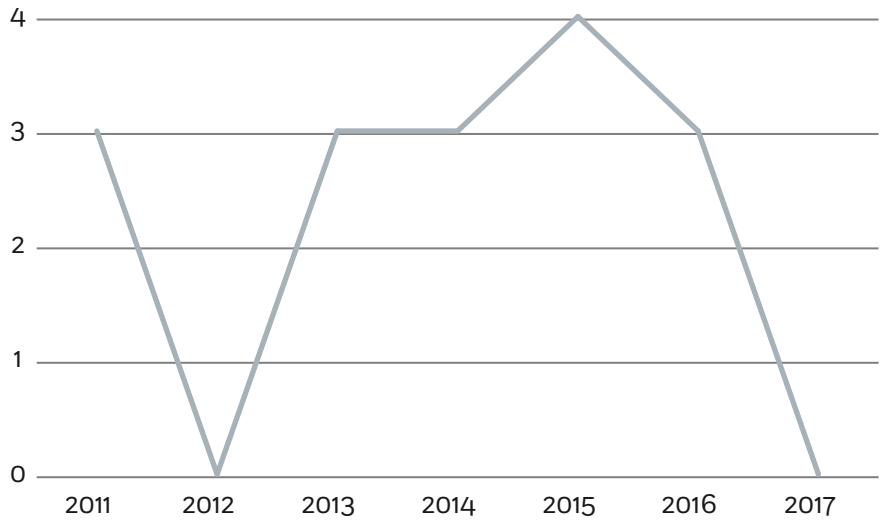
This figure provides the most quoted contributing factor per category of accidental event. For example, 'inadequate tools and equipment' was quoted as the most significant contributing factor when the accident event was 'hazardous material'.

Collision, BOA HEIMDAL and a recreational craft, ship damaged, one fatality, 18/07/2014

6.5 CONSEQUENCES

6.5.1 CONSEQUENCES TO SHIPS

Figure 139: Service ships lost



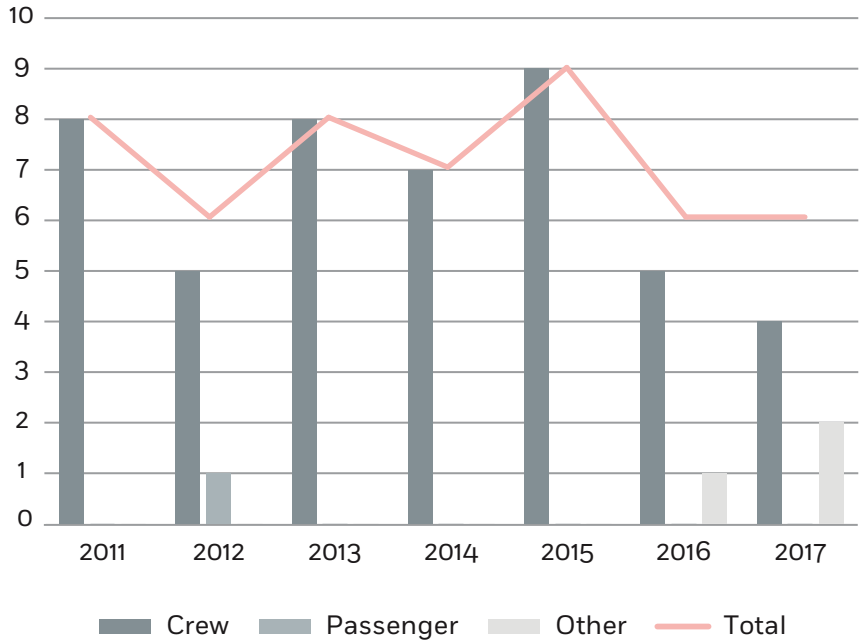
After continuously increasing between 2012 and 2015, the number of service ships lost decreased significantly in 2016 and zero loss was recorded in 2017.

Among the 16 ships sunk, seven were tugs.

6.5.2 CONSEQUENCES TO PERSONS

6.5.2.1 FATALITIES

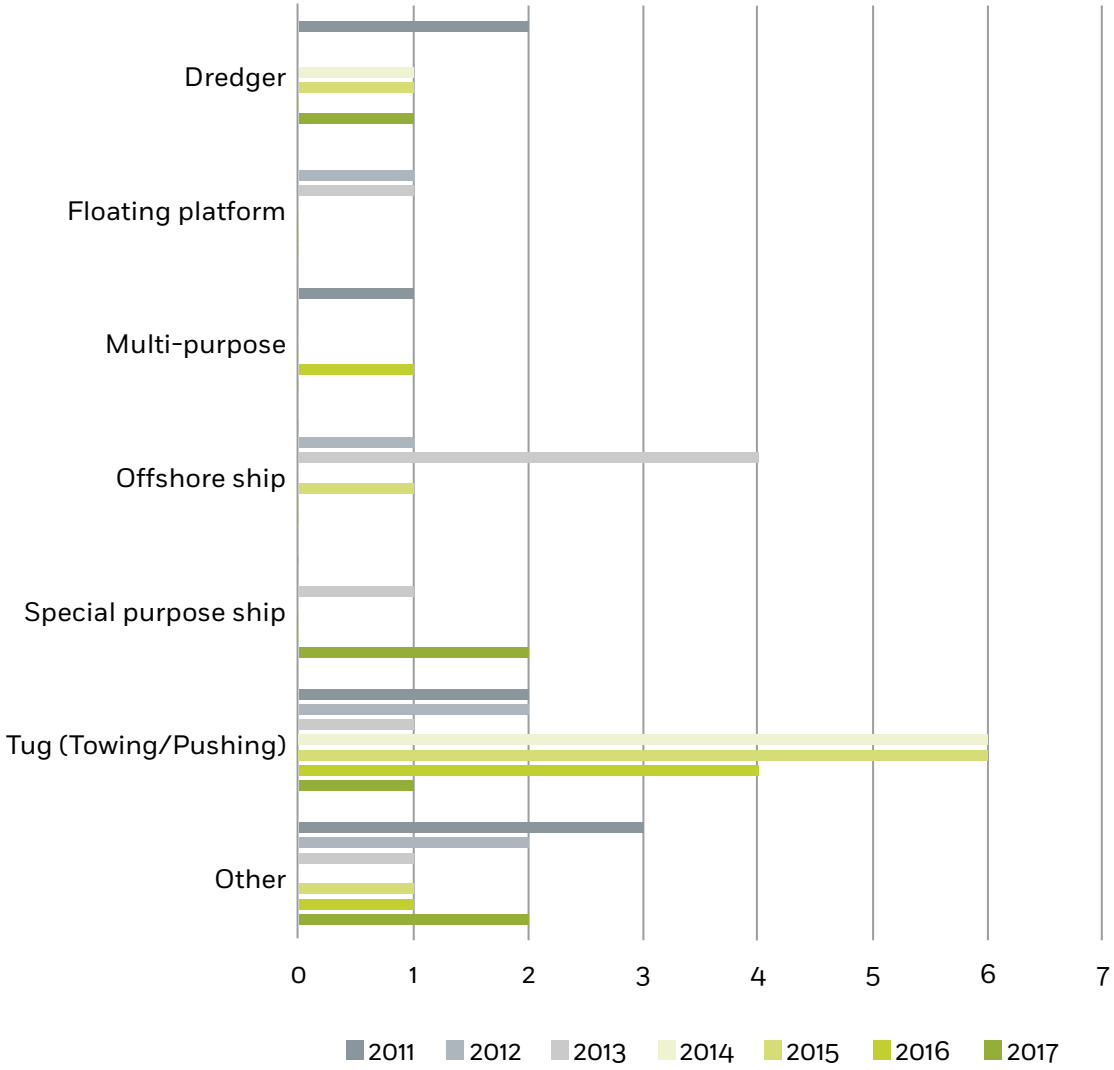
Figure 140: Number of fatalities



After an increase of fatalities from 2013 to 2015, the number of victims has since decreased.

Almost all victims were crew members.

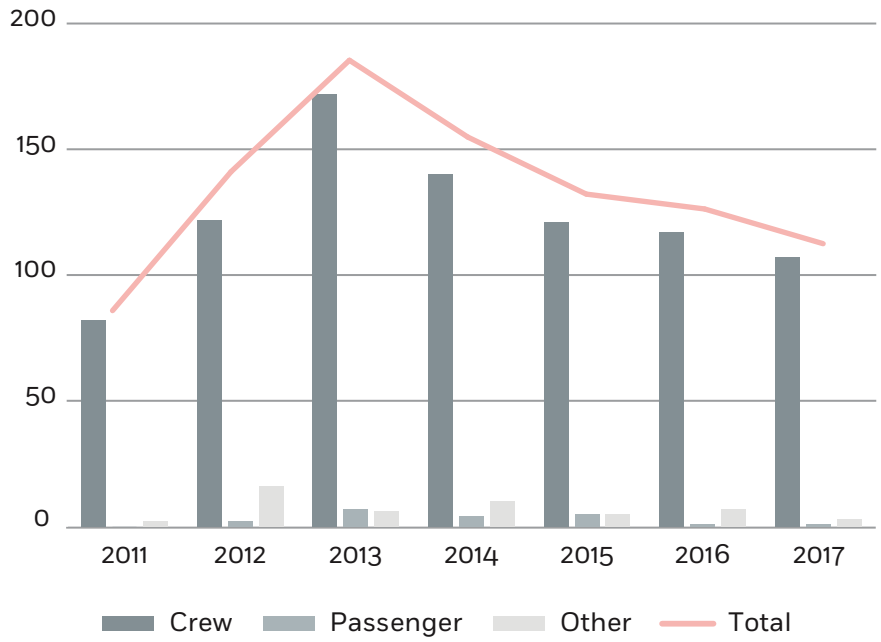
Figure 141: Distribution of fatalities per service ship type



44% of the fatalities occurred on board tugs.

6.5.2.2 INJURIES

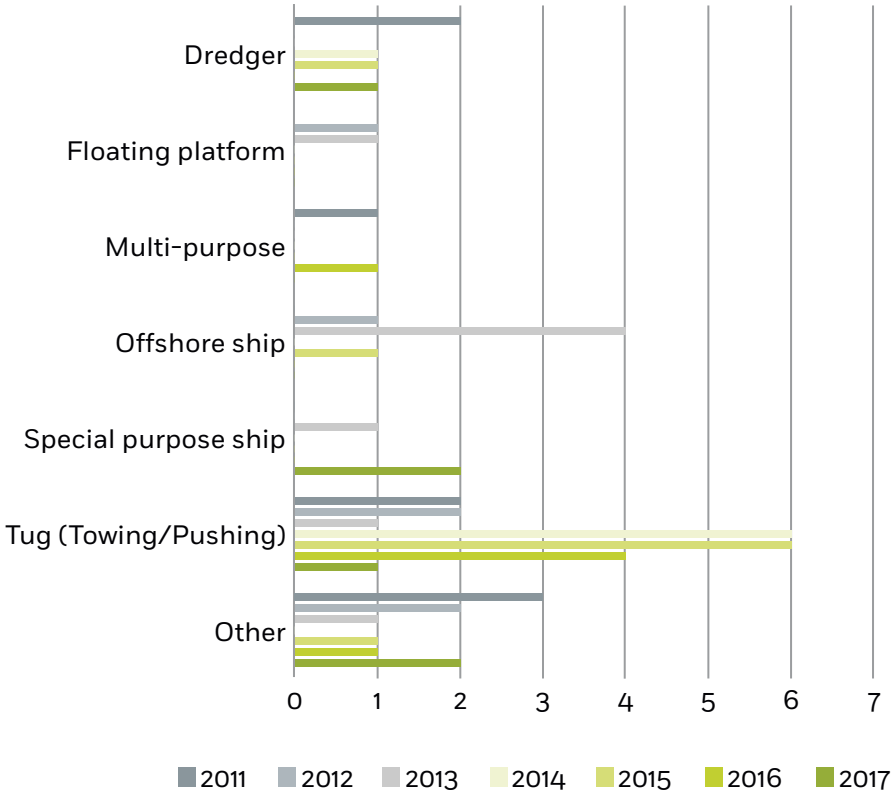
Figure 142: Number of injuries



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%).

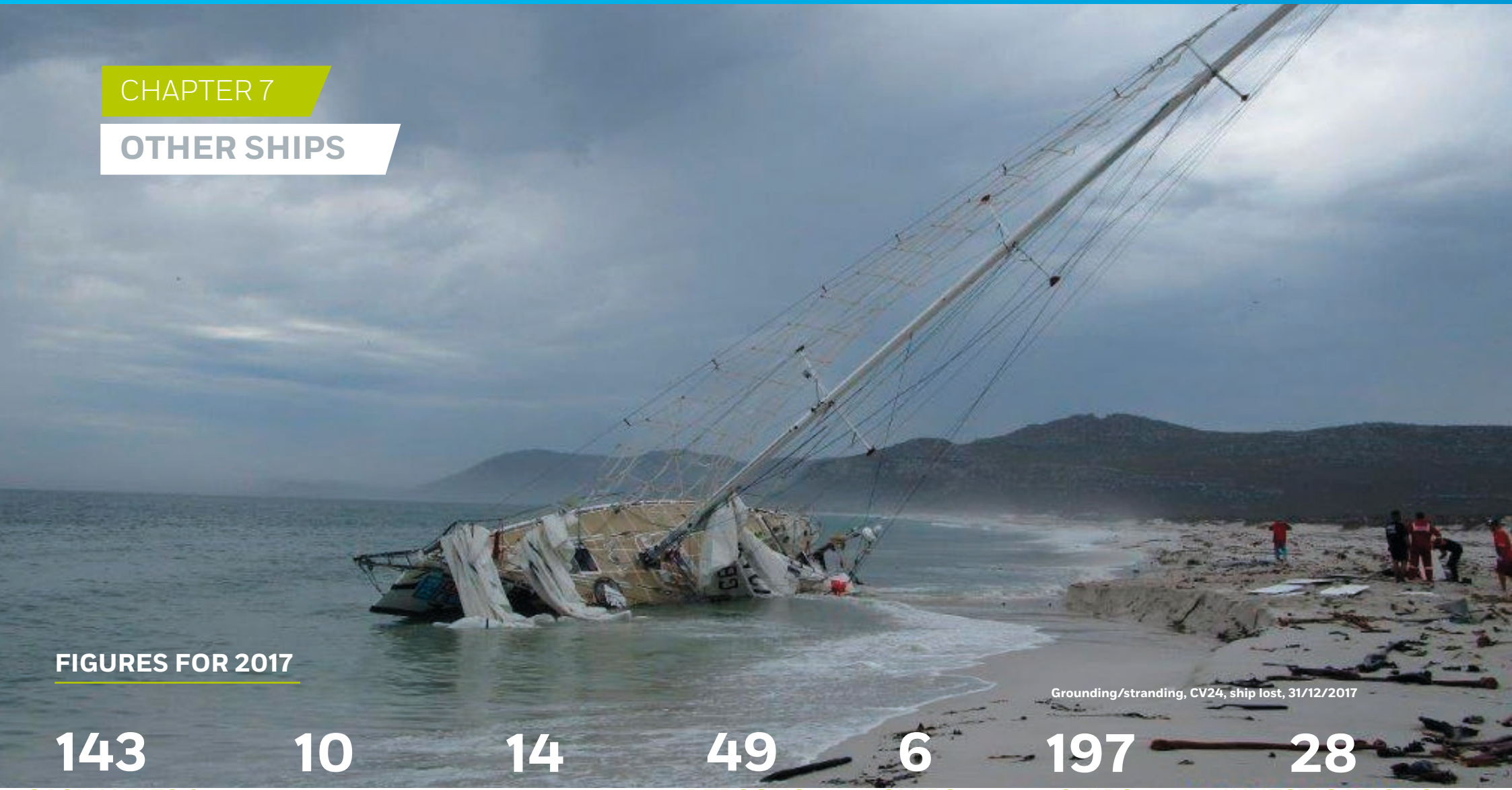
Figure 143: Distribution of injuries per service ship type



The marine casualties and incidents resulting in injuries were equally distributed among the service ship types.

CHAPTER 7

OTHER SHIPS



Grounding/stranding, CV24, ship lost, 31/12/2017

FIGURES FOR 2017

143	10	14	49	6	197	28
CASUALTIES & INCIDENTS	VERY SERIOUS CASUALTIES	FATALITIES	PERSONS INJURED	SHIPS LOST	SHIPS INVOLVED	INVESTIGATIONS

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

Among the other types of ship involved, the main subcategory was represented by recreational sailboats (aux. motor) (31.6%), followed by motorboat (15%) and recreational sailboats (sail only) (14.7%).

The number of casualties involving such ships has decreased in 2017 (197 cases) compared with 2016 (236 cases).

Figure 144: Distribution of other ships involved

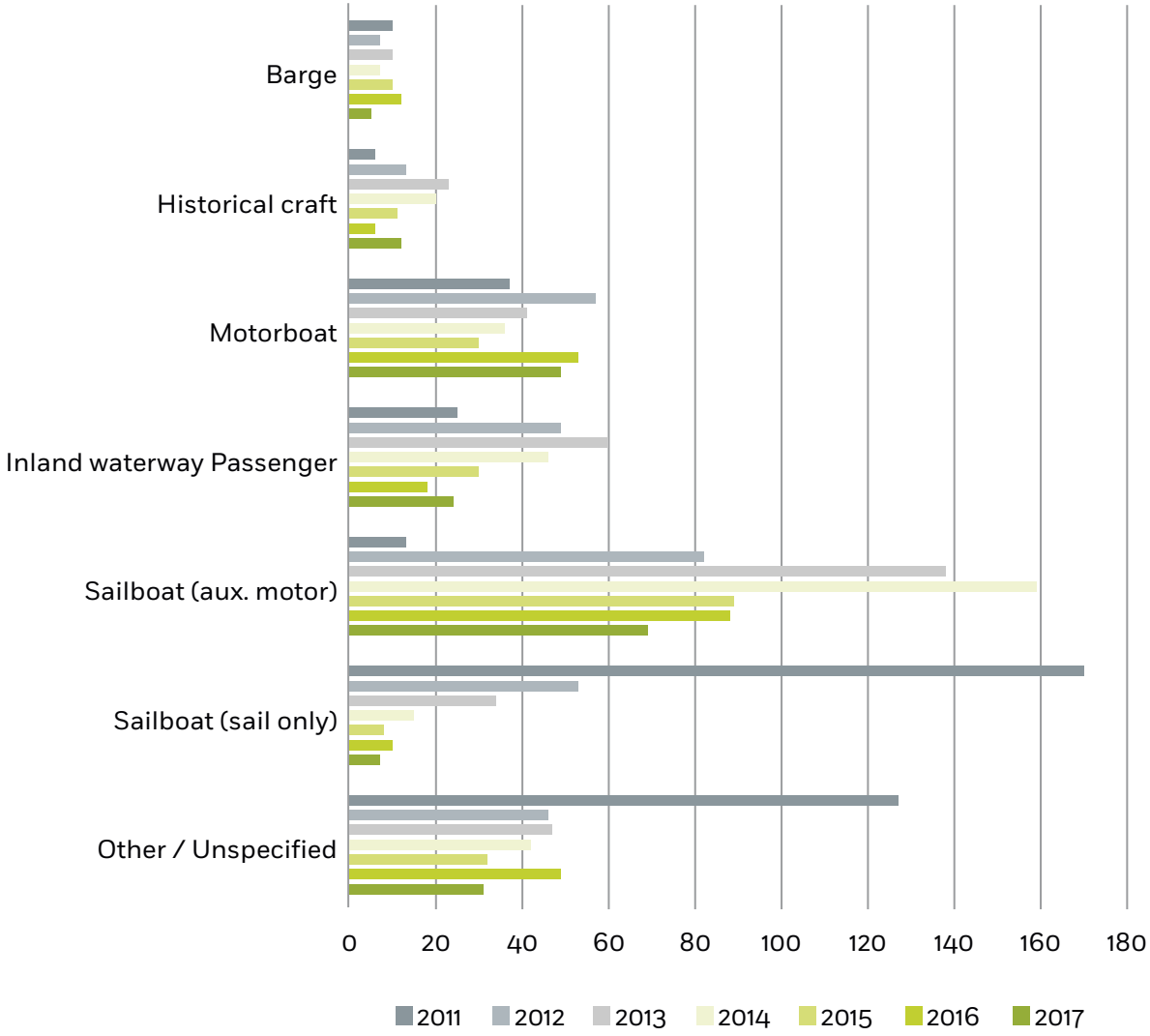
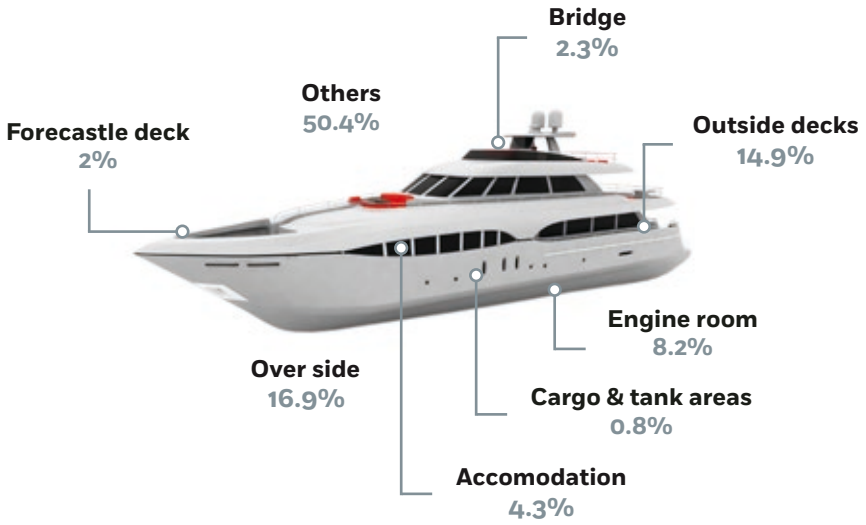
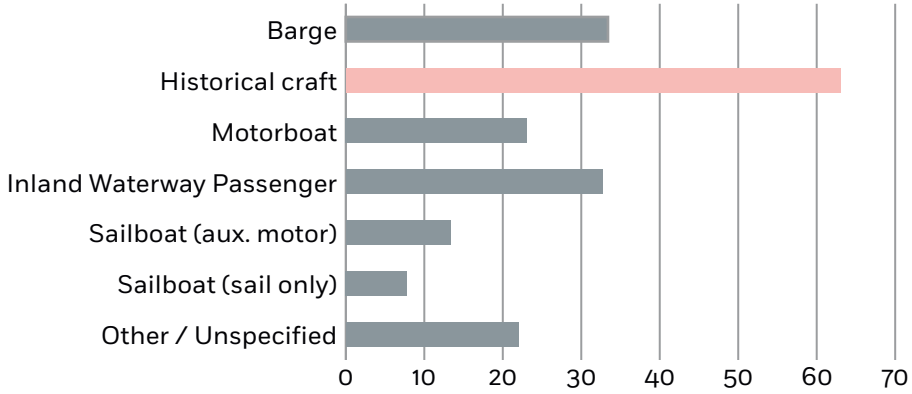


Figure 145: Main places of casualties involving other type ships for 2011-2017



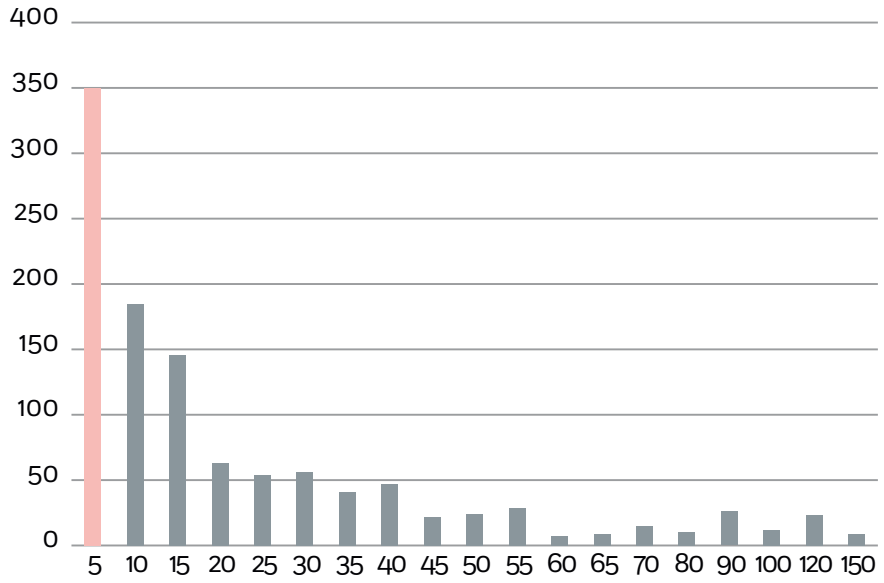
Places were specified in 2016 cases. The main location of accidents was over side (340 cases), followed by outside decks (300) and engine room (166).

Figure 146: Average age of other types of ship by category involved for 2011-2017



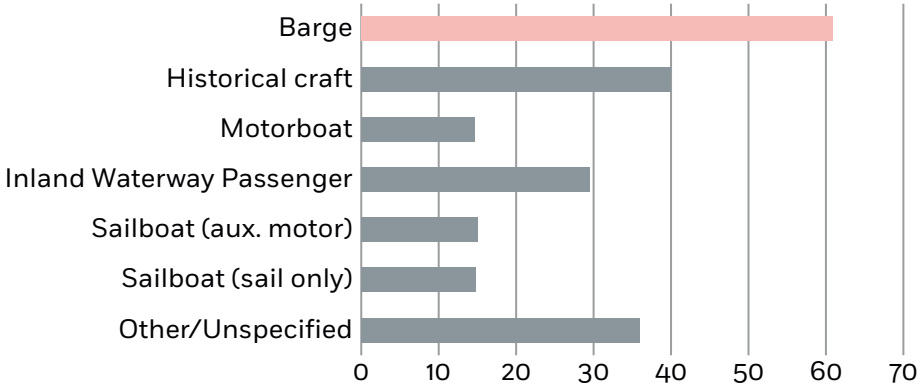
The youngest ship category is sailboat with sail only (7.8y) while the oldest is historical ships (63y).

Figure 147: Age distribution of other types of ship involved



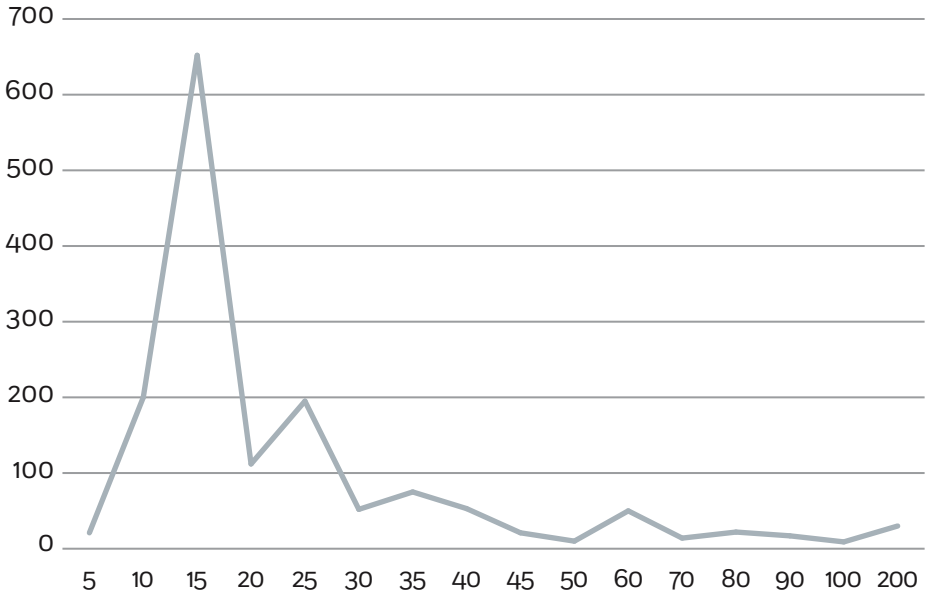
The average age of cargo ships involved in casualties and incidents was 21.1 years over the 2011-2017 period.

Figure 148: Average length of other types of ship involved by main category for 2011-2017



With an average length of 60.9m, 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 for 2011-2017

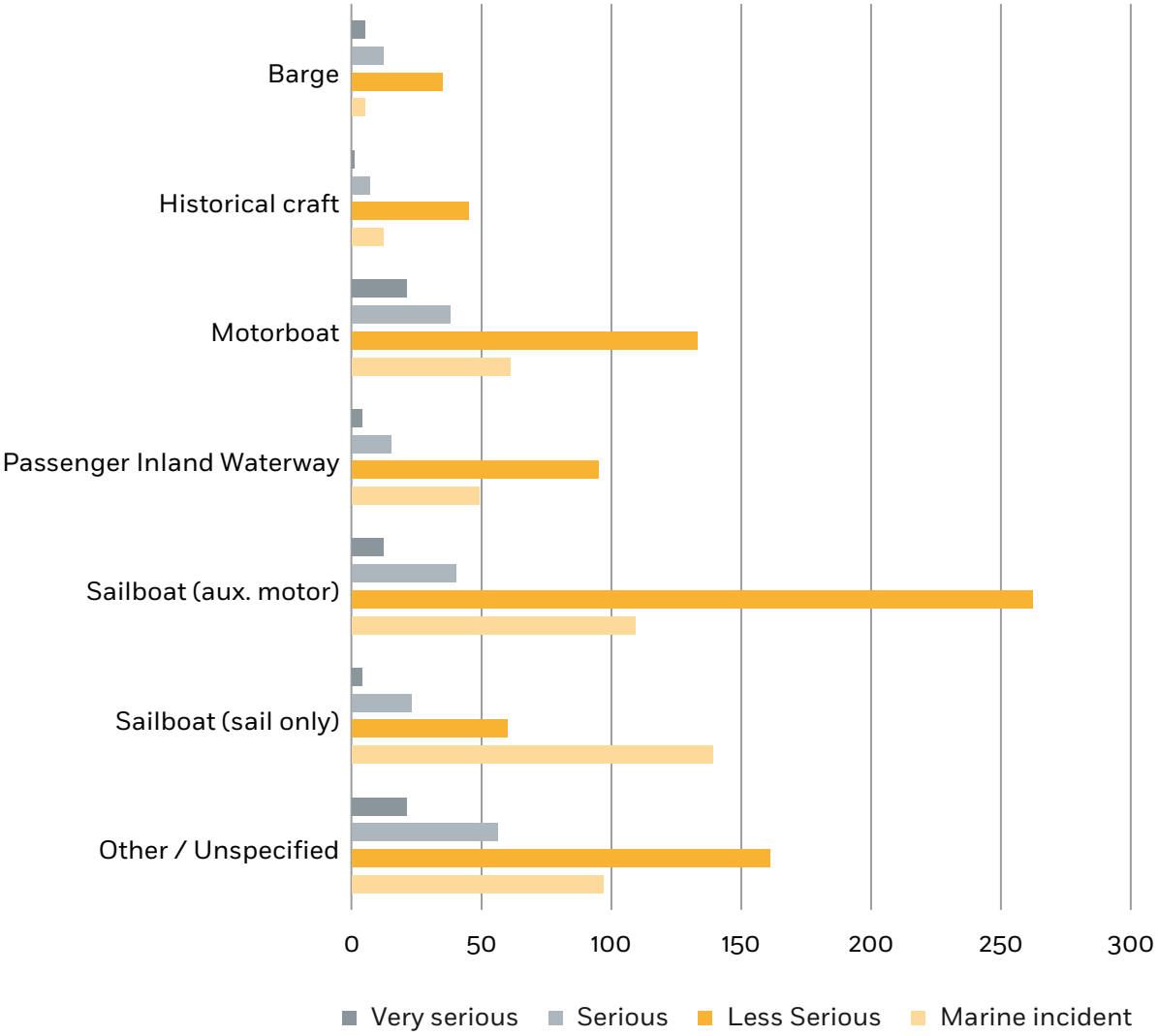


The average length of other types of ships involved was 22.7m. A peak is noted for ships with a length of around 15m, which is characteristic for the two main types of ships within this category: sailboats and motorboats.

7.2 NATURE OF MARINE CASUALTIES AND INCIDENTS

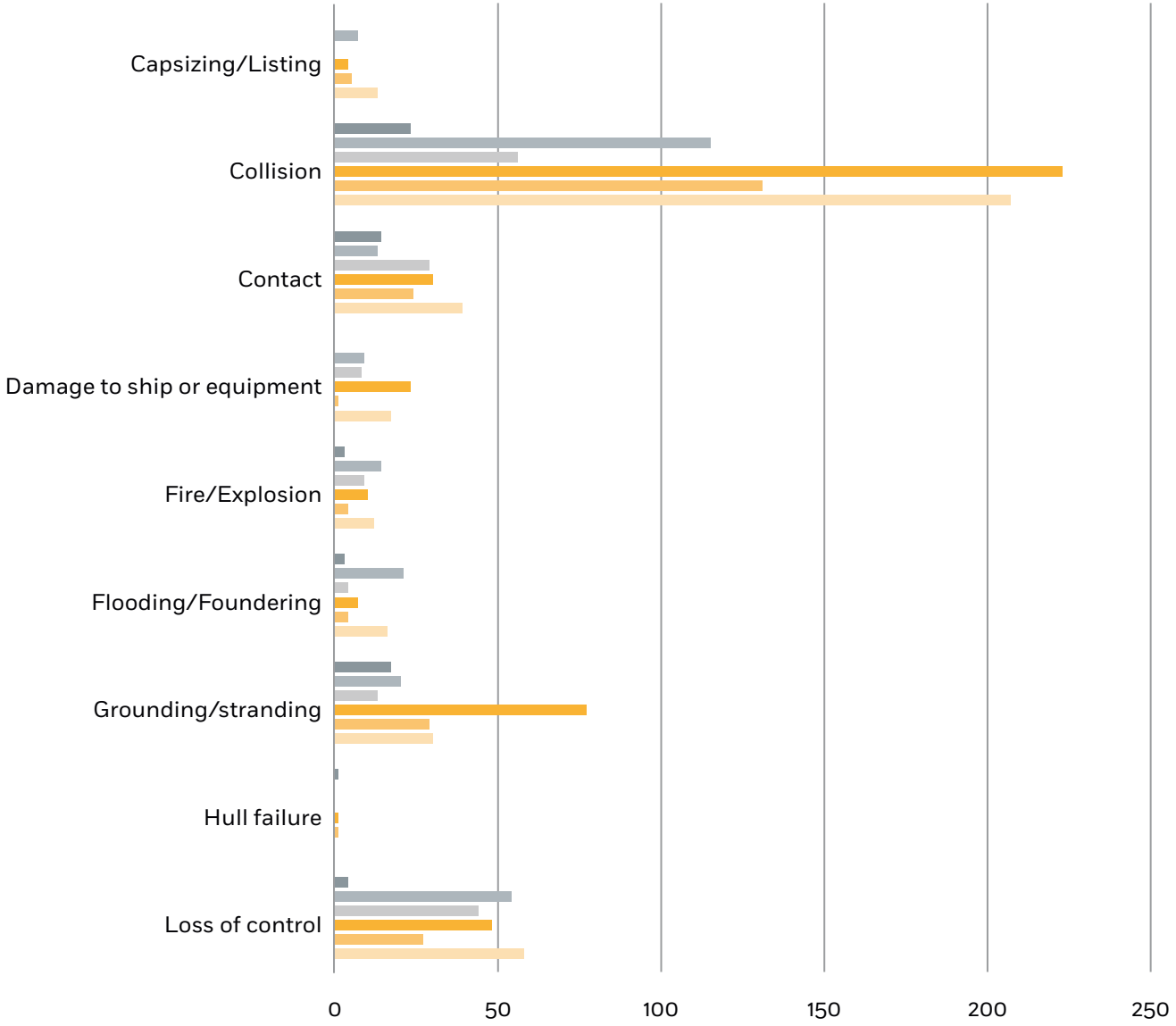
7.2.1 CASUALTY WITH A SHIP

Figure 150: Distribution of severity by other ship type for 2011-2017



The rate of very serious casualties with a ship is higher (4.5%) than the general average (3.8%).

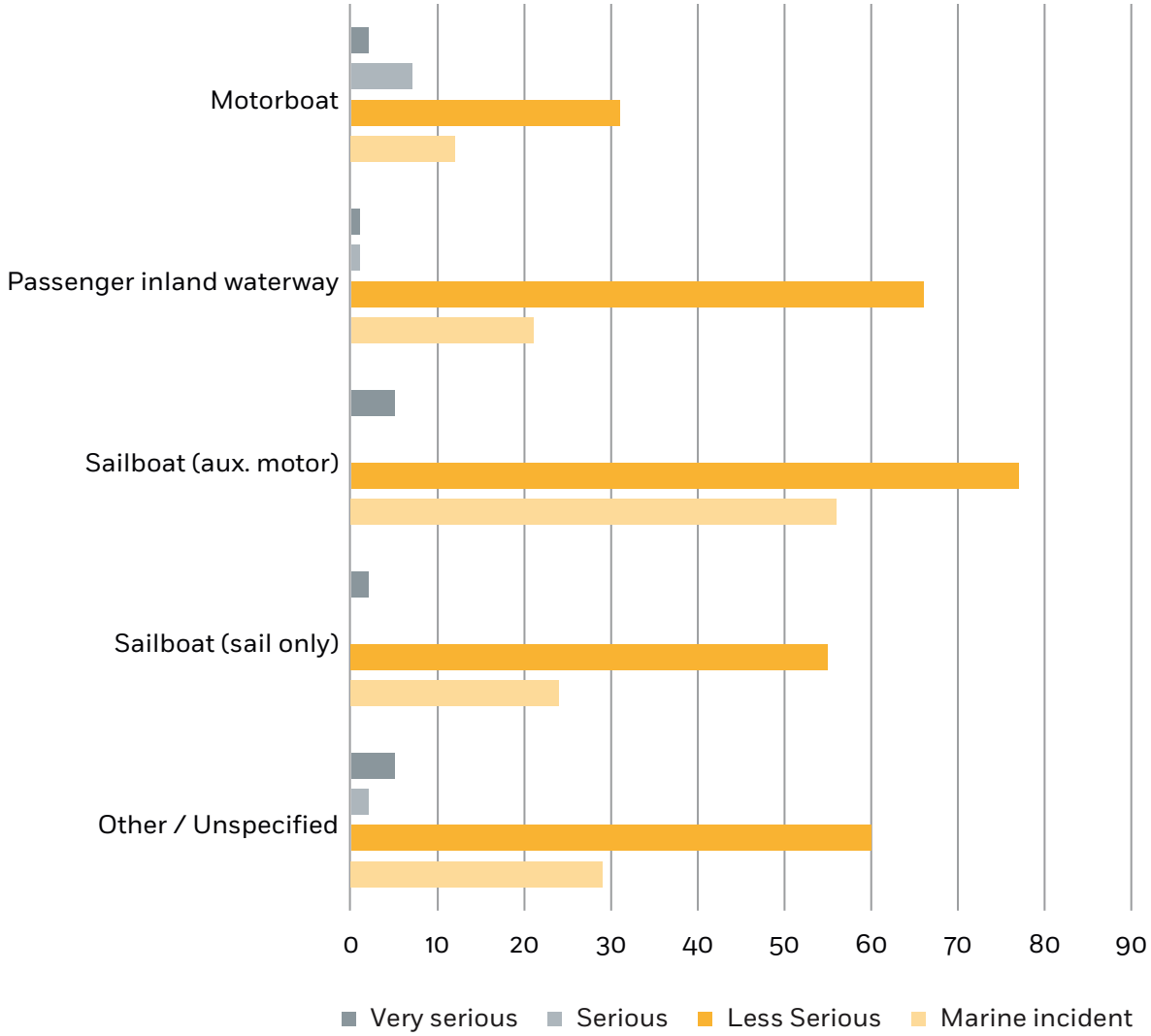
Figure 151: Distribution of casualty events per other ship type for 2011-2017



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 collisions as a casualty event.

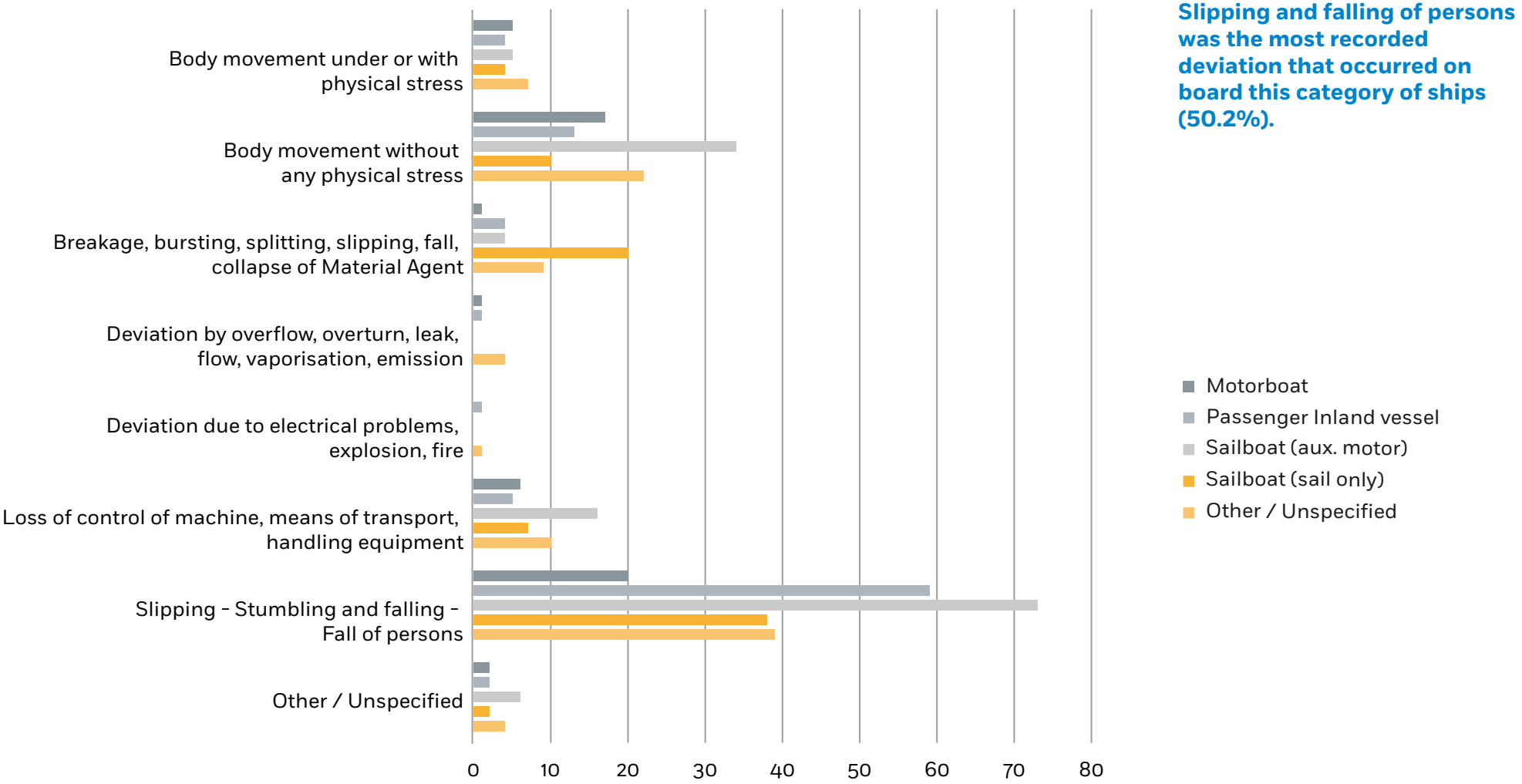
7.2.2 OCCUPATIONAL ACCIDENT

Figure 152: Severity of occupational accidents per other ship type for 2011-2017



The rate of very serious occupational accidents (3.3%) is lower than the general average for all ship types (4.5%).

Figure 153: Distribution of deviations per other ship type for 2011-2017



Slipping and falling of persons was the most recorded deviation that occurred on board this category of ships (50.2%).

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 number of casualties and incidents has decreased in 2017 in all phases of the voyage, apart from during departure.

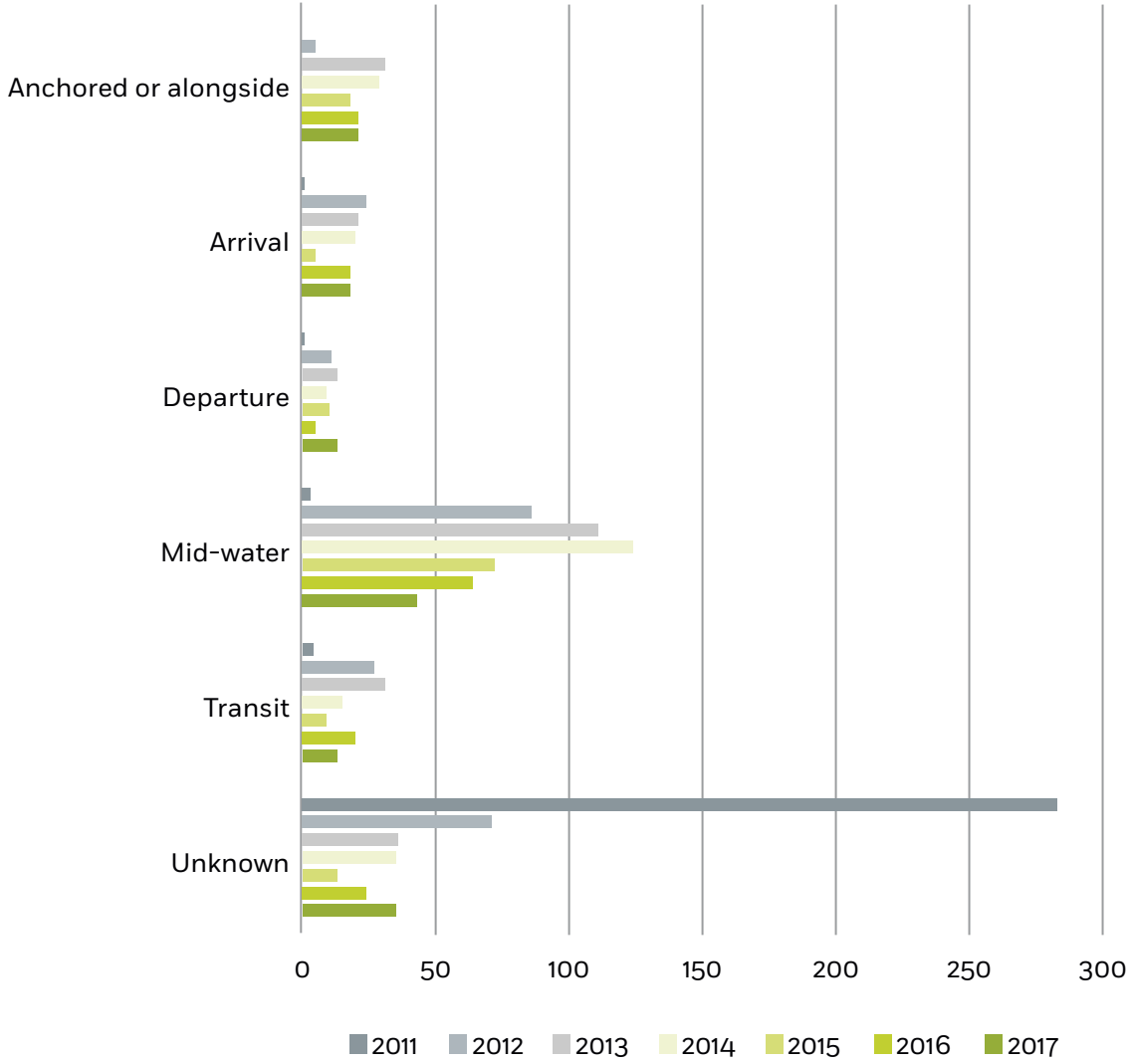
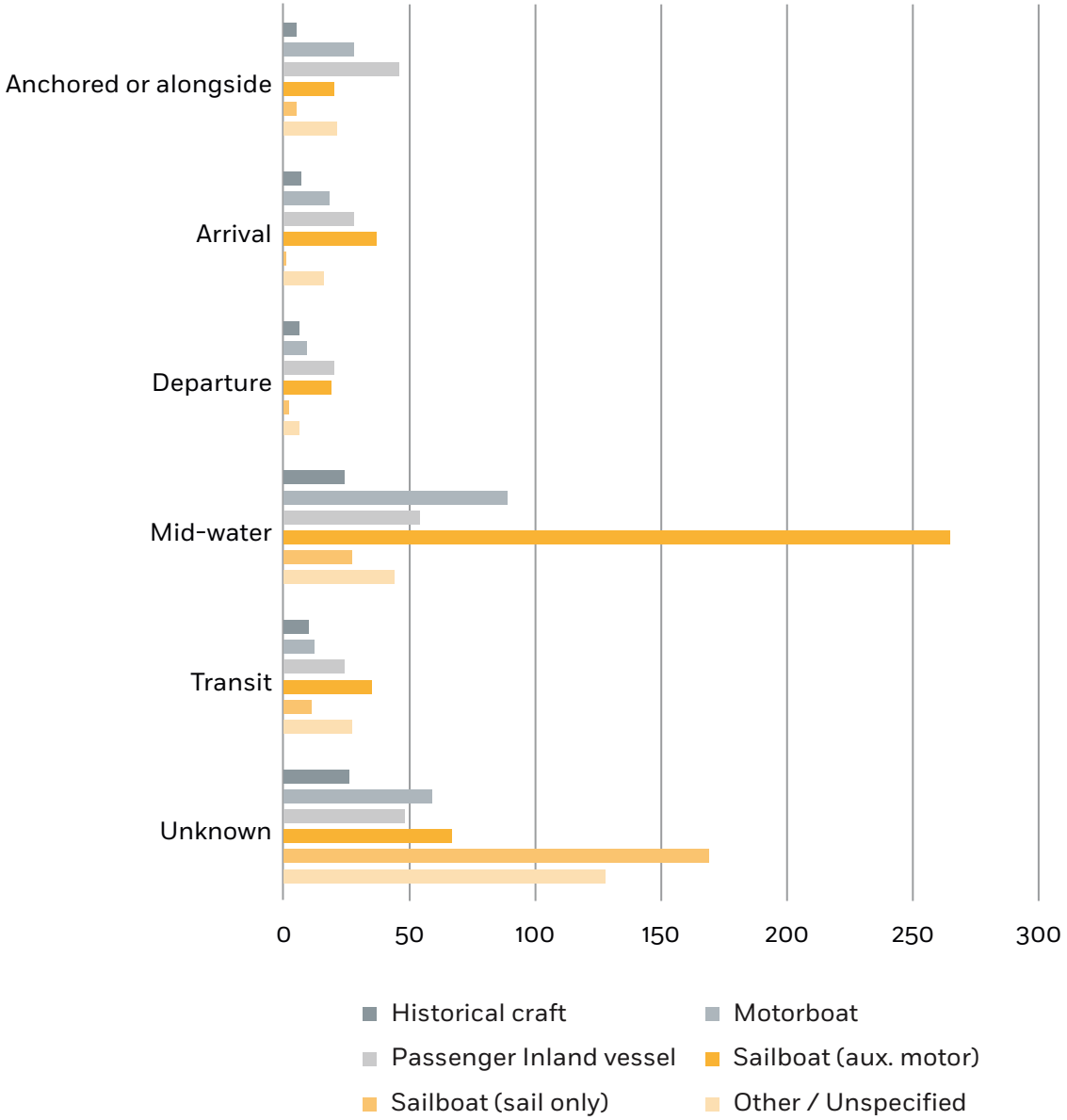


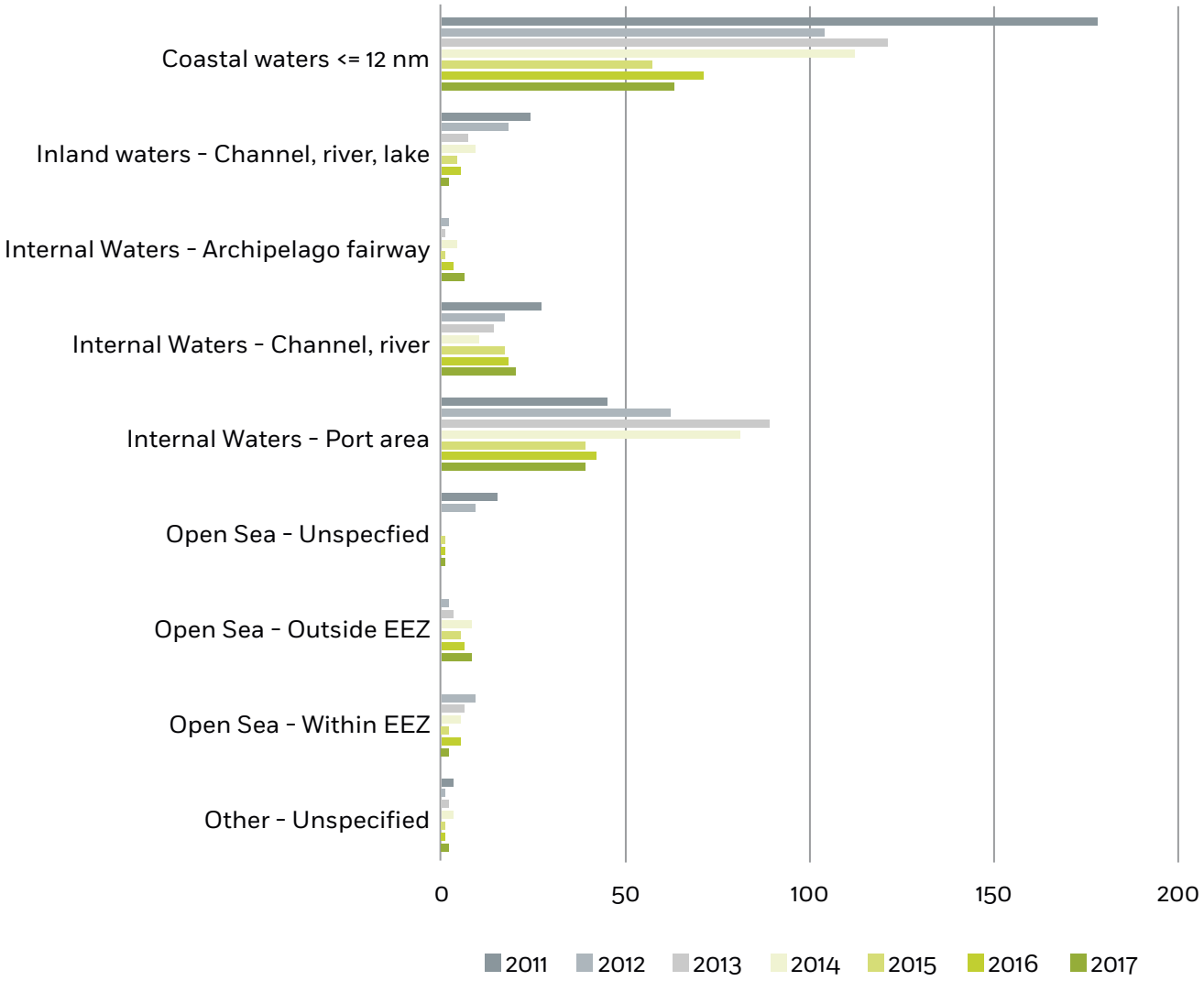
Figure 155: Distribution by voyage segment per other ship types for 2011-2017



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

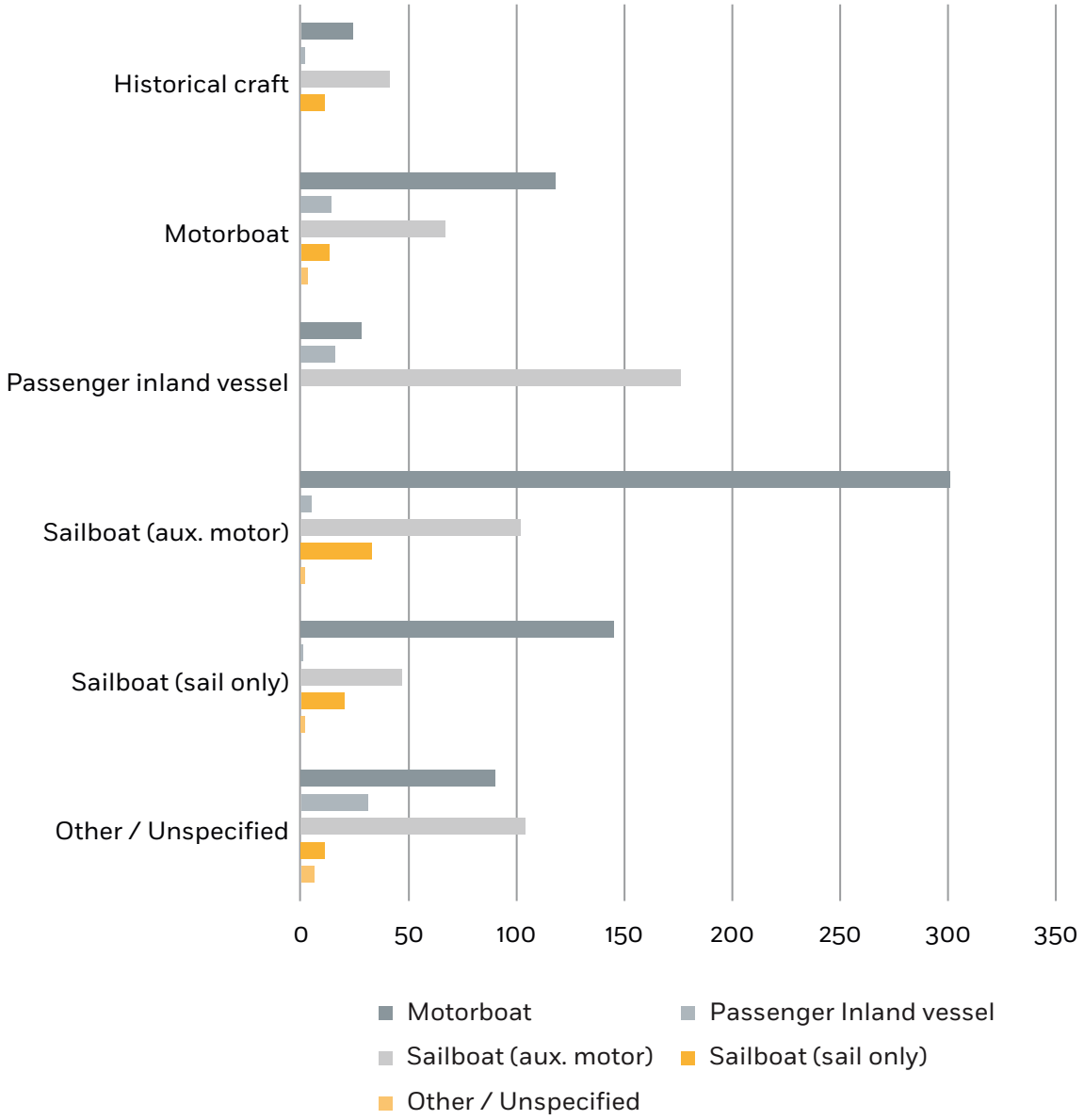
7.3.2 LOCATION

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



50% of the casualties took place in coastal waters, followed by 28.1% in port areas.

Figure 157: Distribution by location of marine casualties and incidents per other ship type for 2011-2017



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 for 2011-2017

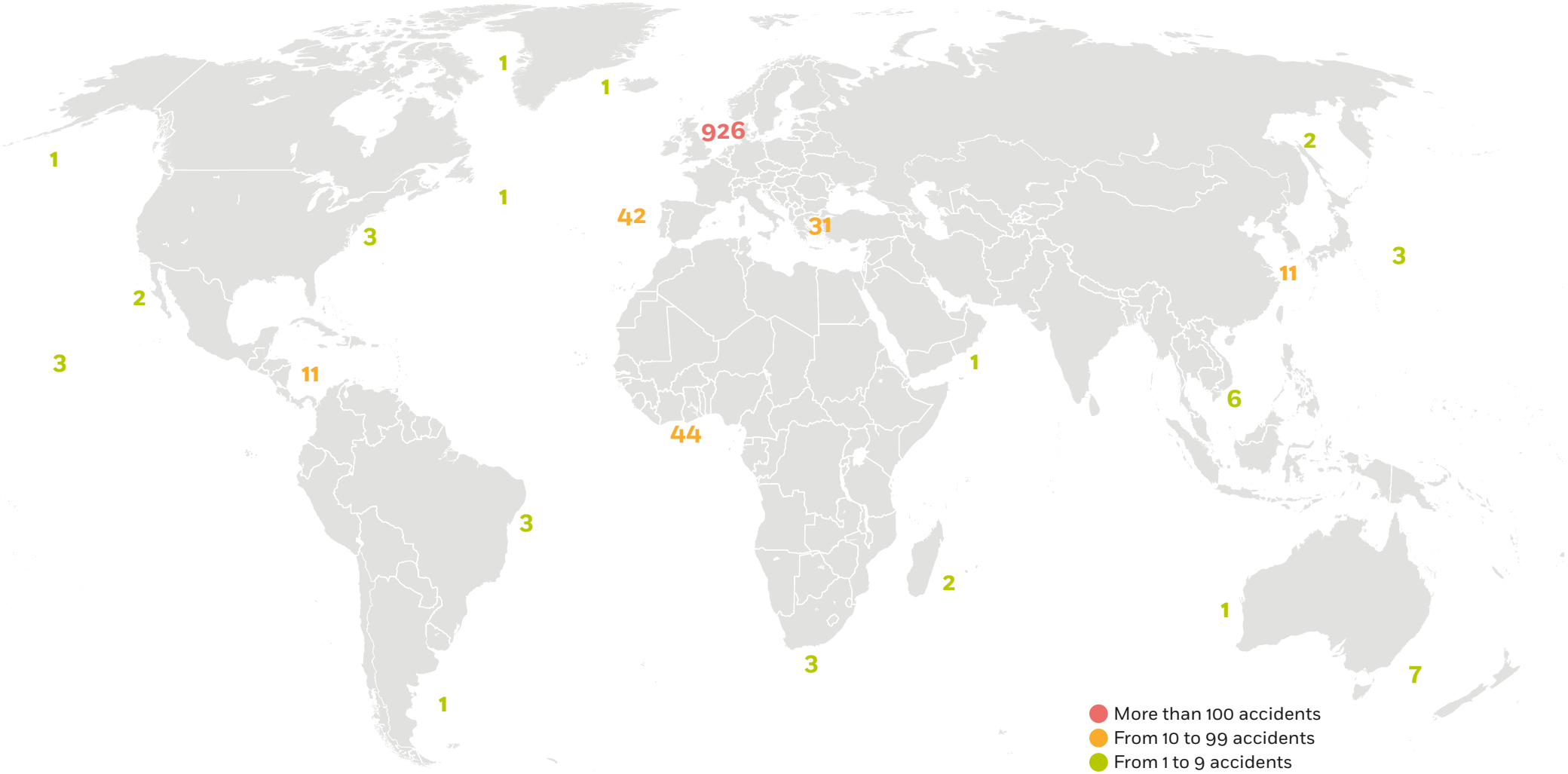
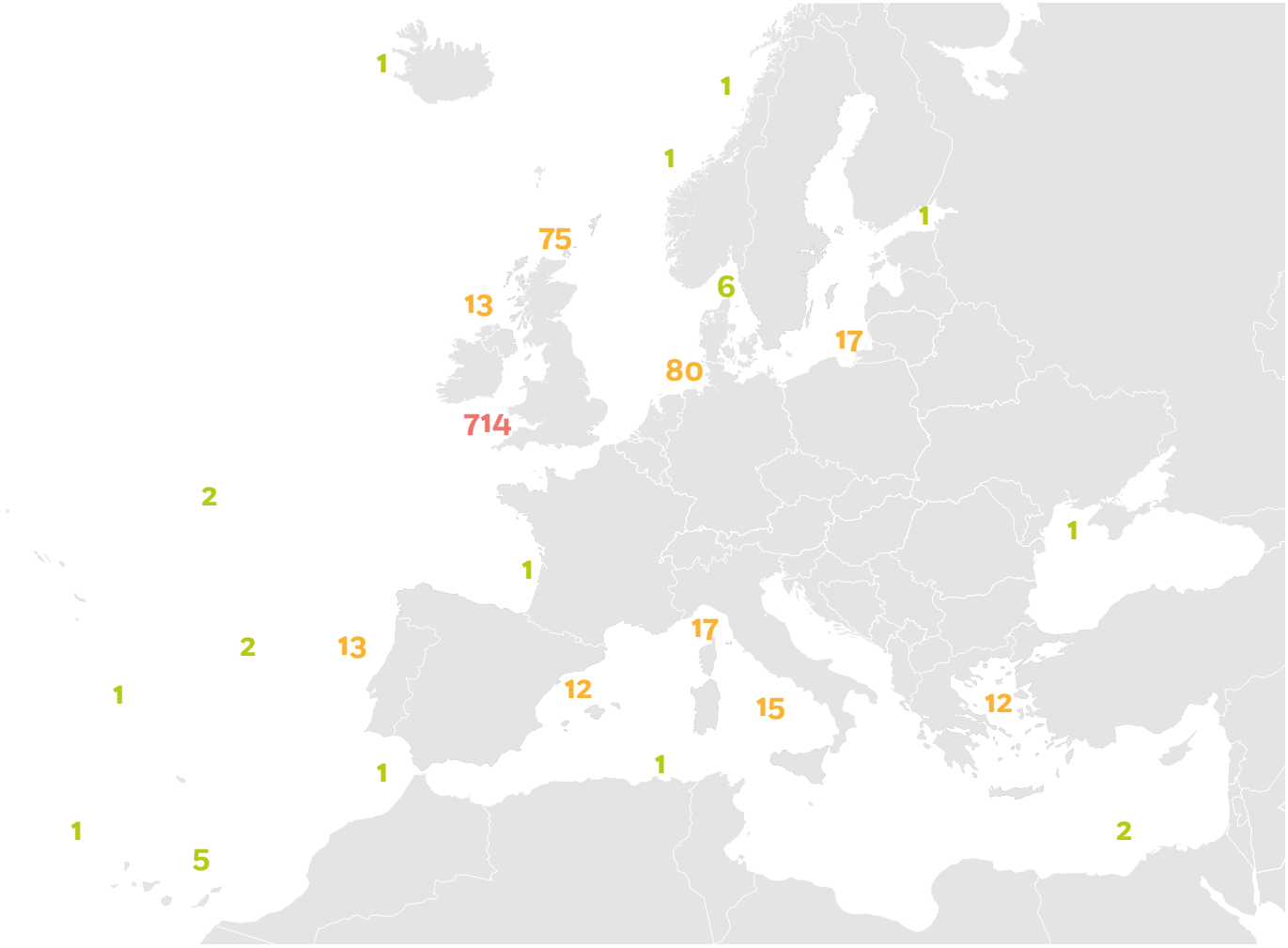


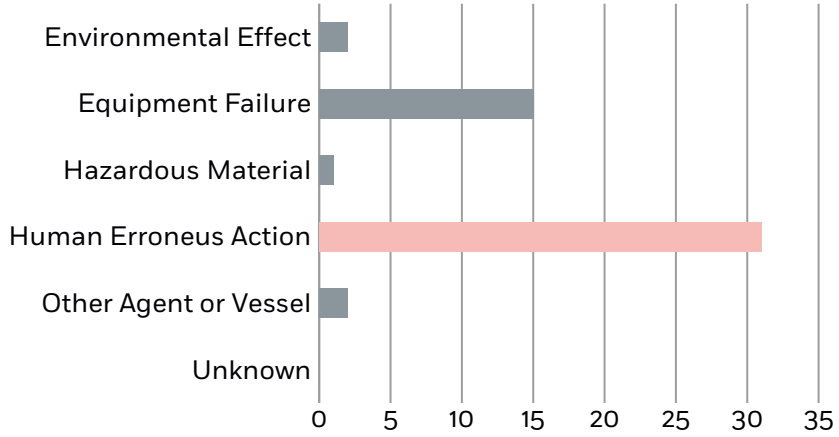
Figure 159: Distribution of marine casualties and incidents within the territorial sea and internal waters of EU Member States for 2011-2017



7.4 ACCIDENTAL EVENTS AND CONTRIBUTING FACTORS

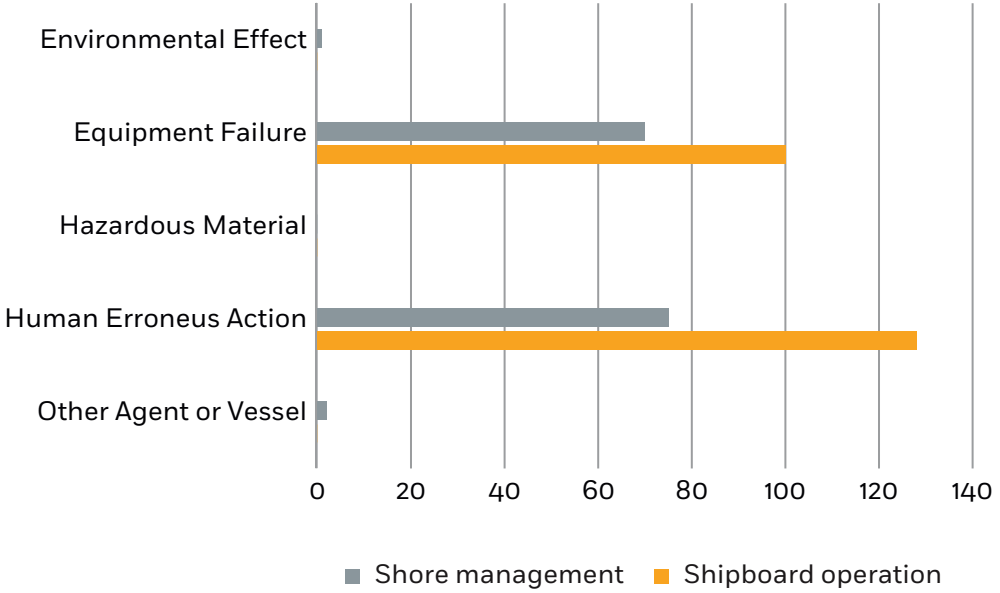
Due to the limited number of cases and therefore little information about accidental events in this ship type, the figures below should be considered as indicative rather than conclusive. However possible conclusions that can be made follow the conclusions made for the four other categories of ship.

Figure 160: Accidental events 2011-2017



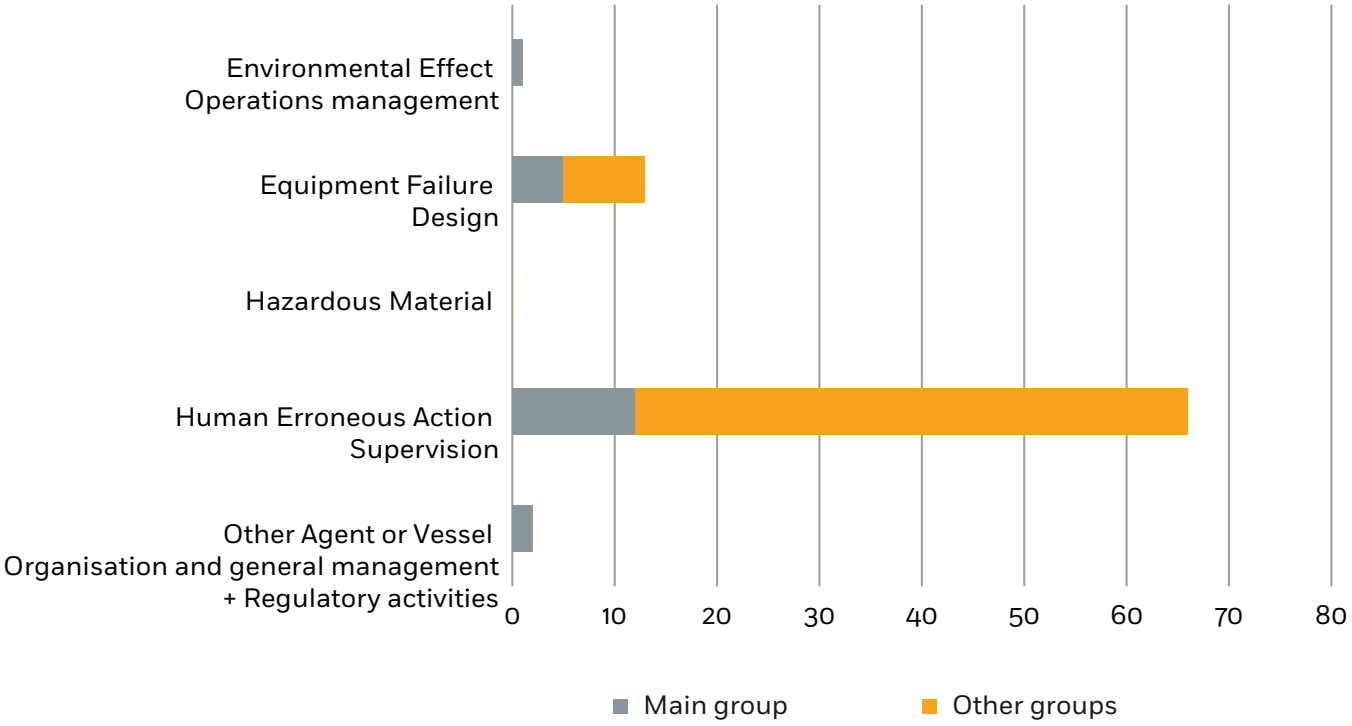
From a total of 51 accidental events analysed during the investigations, 60.8% were attributed to human erroneous action.

Figure 161: Relationship between accidental events and the main contributing factors 2011-2017



When reported, shipboard operations was most quoted as contributing factor with 60.6% of the total.

Figure 162: Groups of contributing factors for 2011-2017



This figure indicates the contributing factor that was most quoted per category of accidental event. For example 'supervision' was the most quoted when the accidental event was 'human erroneous action'.

7.5 CONSEQUENCES

7.5.1 CONSEQUENCES TO SHIPS

Figure 163: Other ships lost

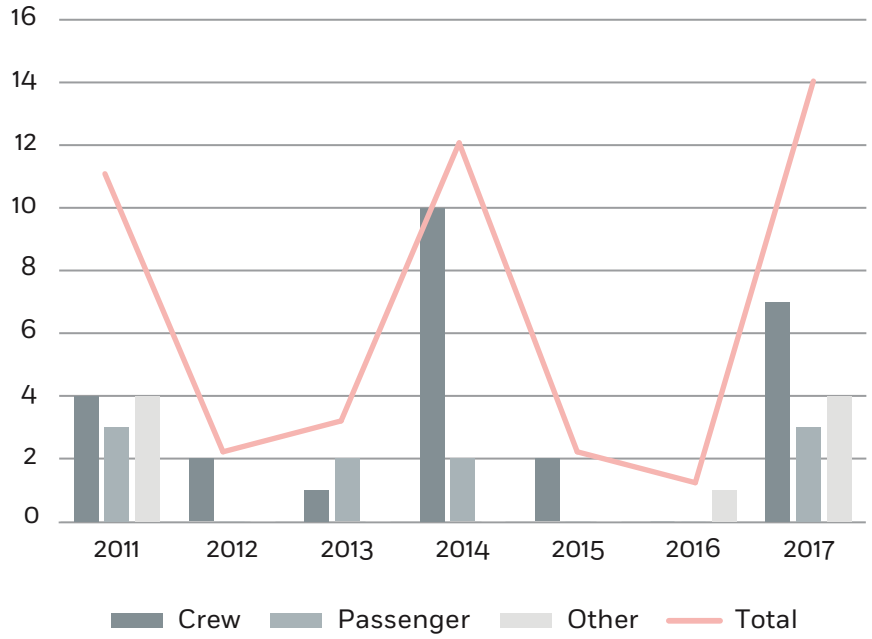
After no lost ships were recorded in this category in 2015, the figure has been rising since 2016.

Out of the 32 other type ships that were lost, the majority were recreational craft (62.5%).

7.5.2 CONSEQUENCES TO PERSONS

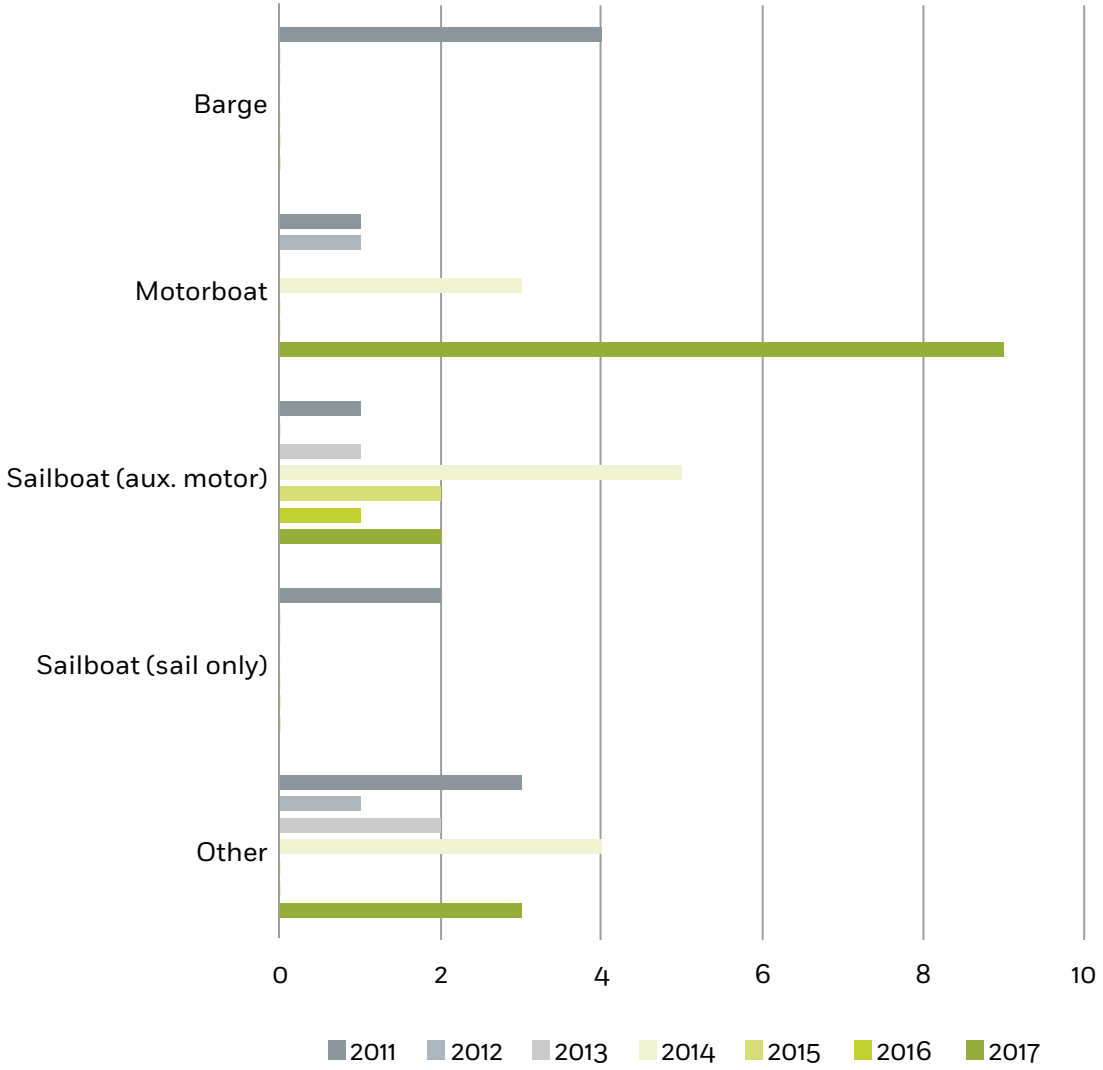
7.5.2.1 FATALITIES

Figure 164: Number of fatalities



After two consecutive years where the number of lives lost was low, it has significantly increased in 2017.

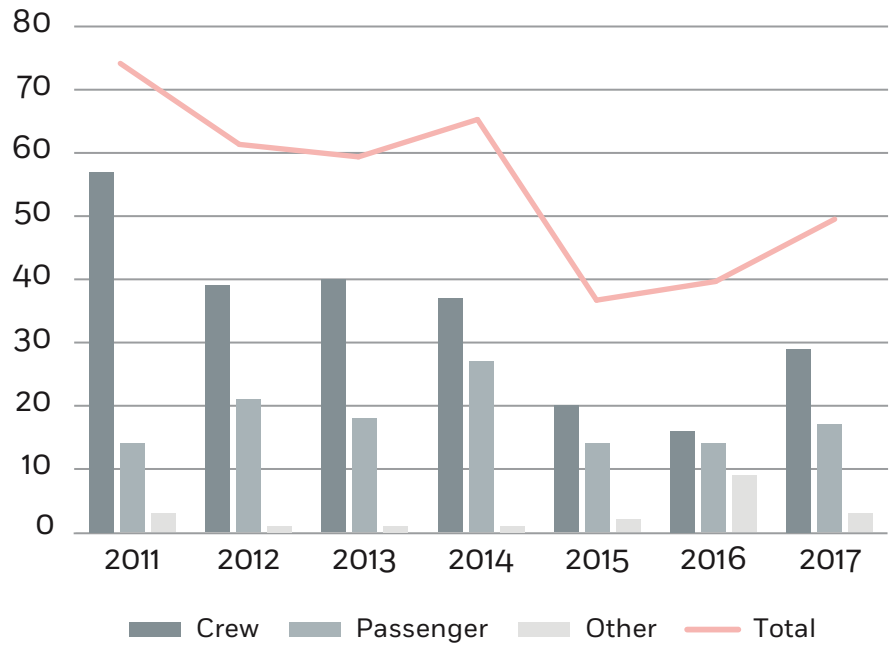
Figure 165: Distribution of fatalities per other ship type



Most fatalities occurred on board leisure craft (motorboat or sailboat) (62.2%).

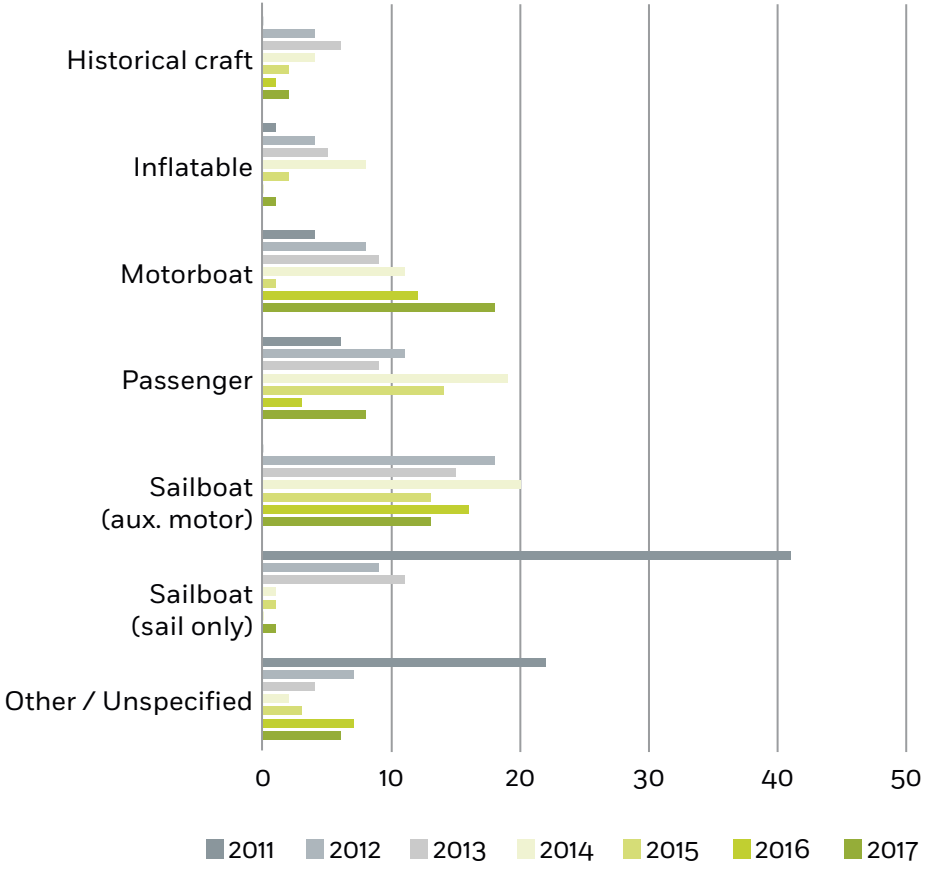
7.5.2.2 INJURIES

Figure 166: Number of injuries



The number of injuries has continued increasing since 2015, with in particular a higher number of crew members injured in 2017.

Figure 167: Distribution of injuries per other ship type

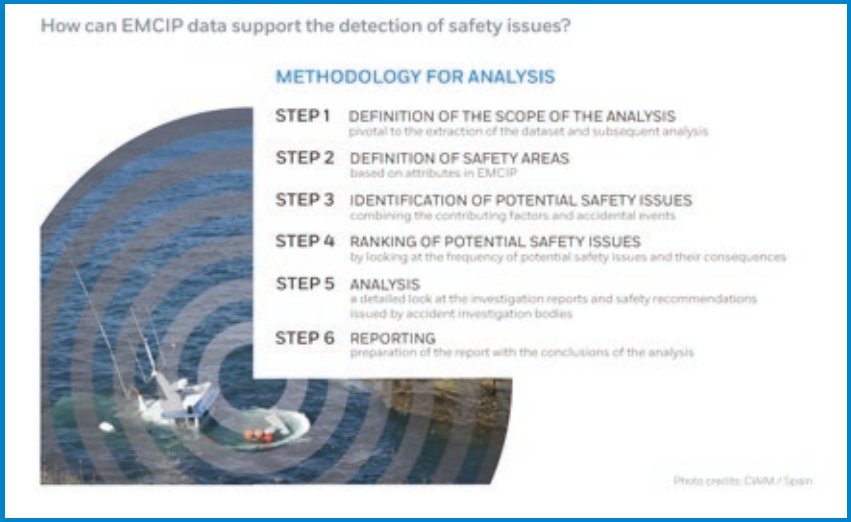


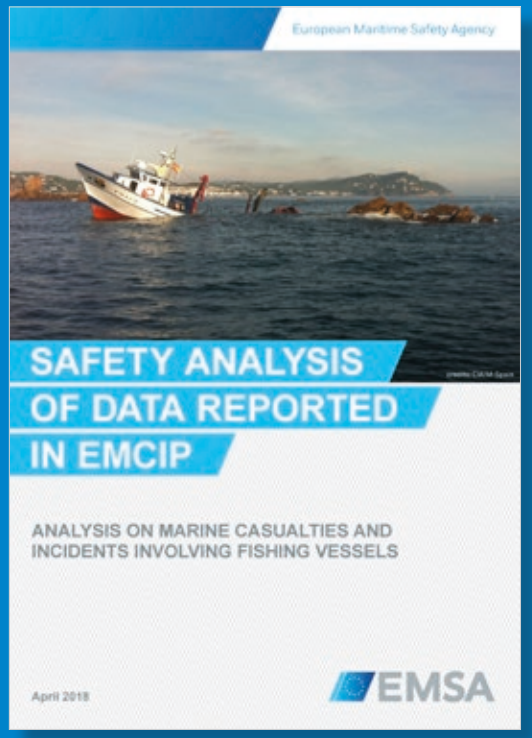
Most injuries occurred on leisure boats (63.4%) but a significant number also happened on passenger inland vessels (18.3%).

CHAPTER 8

ACTION TAKEN BY INVESTIGATION BODIES

Safety studies have been developed by EMSA to draw lessons from the conclusions of the investigation reports as prepared by the Accident Investigation bodies and entered into the European Marine Casualty Information Platform (EMCIP).

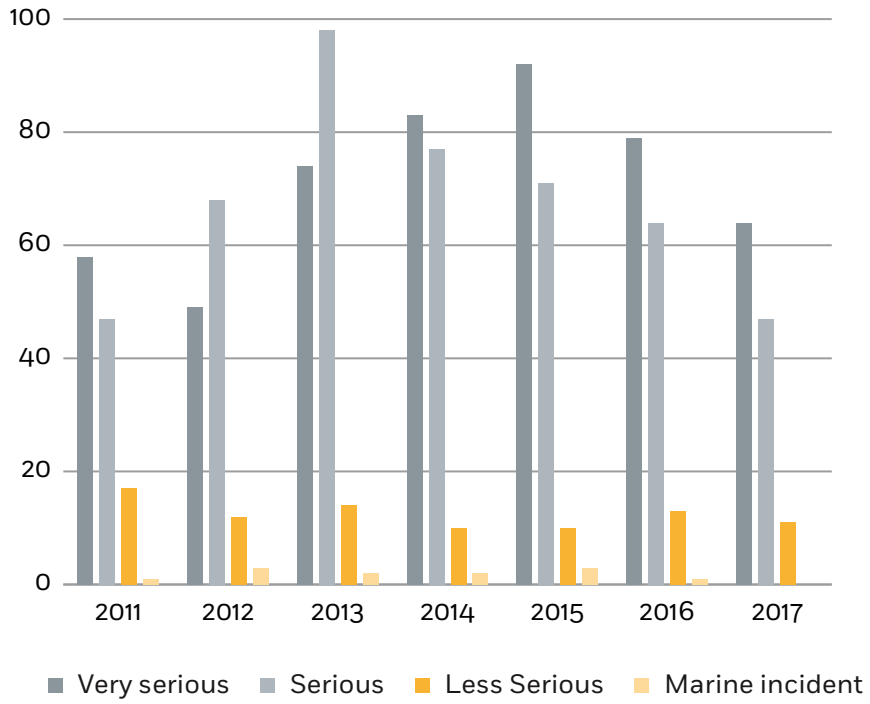




This chapter describes the activities undertaken by the investigation bodies of EU Member States regarding the investigations performed, reports published and safety recommendations issued.

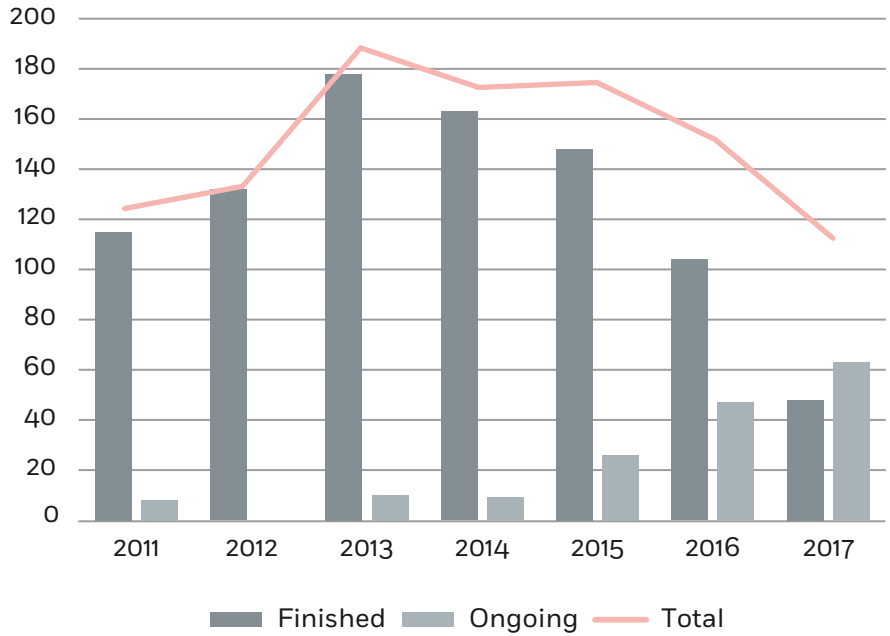
8.1 SAFETY INVESTIGATIONS

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



A total of 1070 investigations were launched during the five-year period, 46.6% of these being related to very serious casualties and 44.1% to serious casualties.

Figure 169: Status of investigations launched

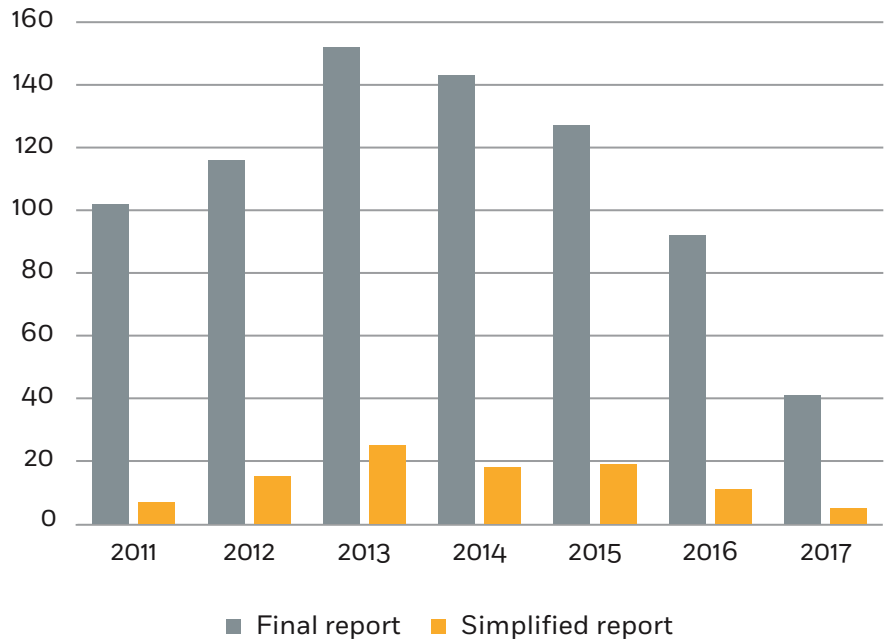


888 investigations were reported by the investigation bodies as being concluded.

When the data were extracted for this publication, 11 investigations had yet to be started.

8.2 INVESTIGATION REPORTS

Figure 170: Number of investigation reports published

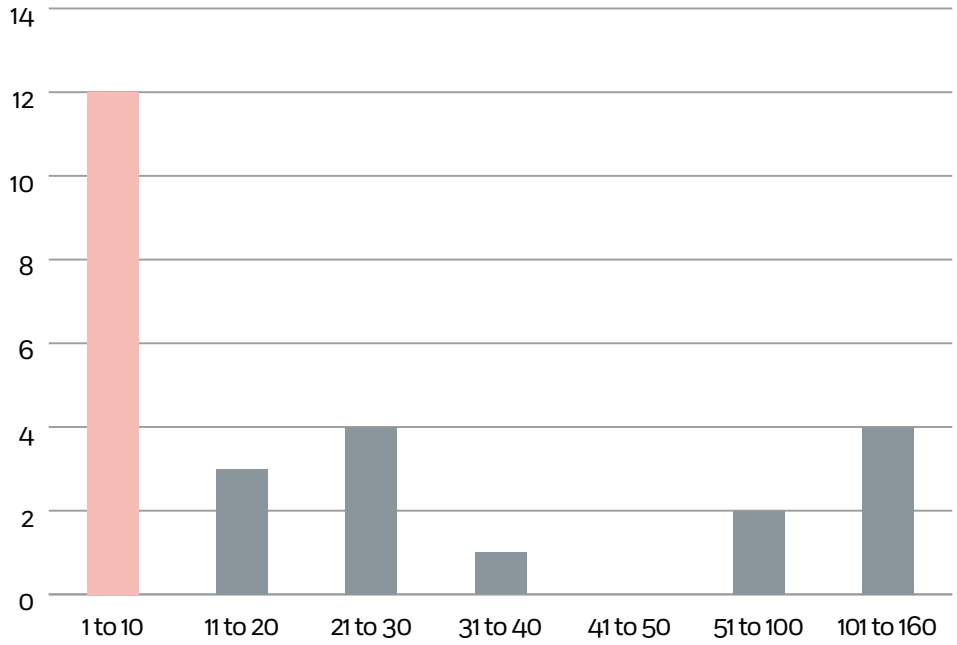


888 investigation reports were published during the six-year period. The type of report, whether final or simplified, is decided by the investigation body depending on the severity of the casualty and/or the potential to prevent future casualties.

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 2011-2017

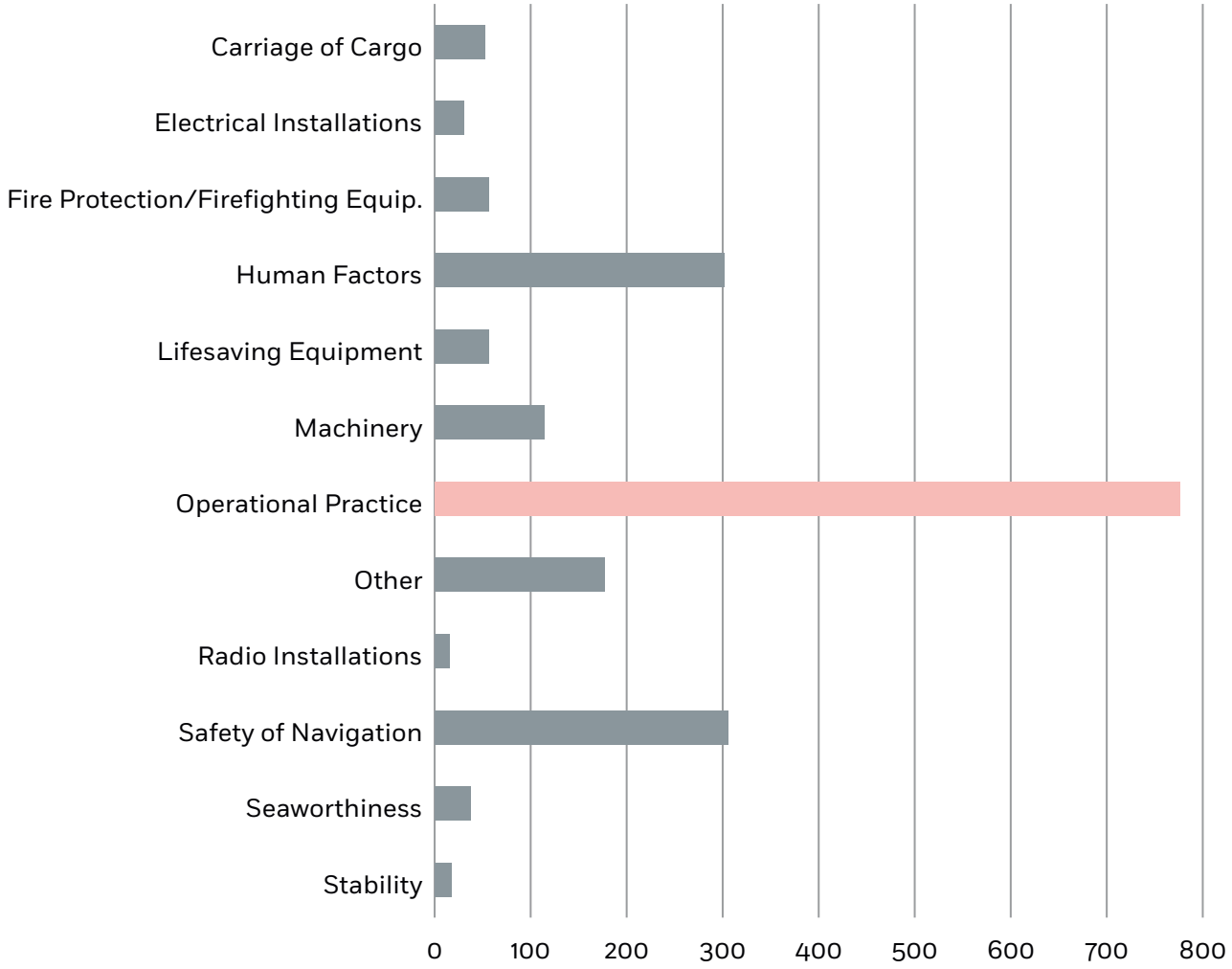


26 Member States have published at least one report. 59% of the reports were published by four Member States.

Among the 888 reports, 19 were published by the third countries that led an investigation with EU interests.

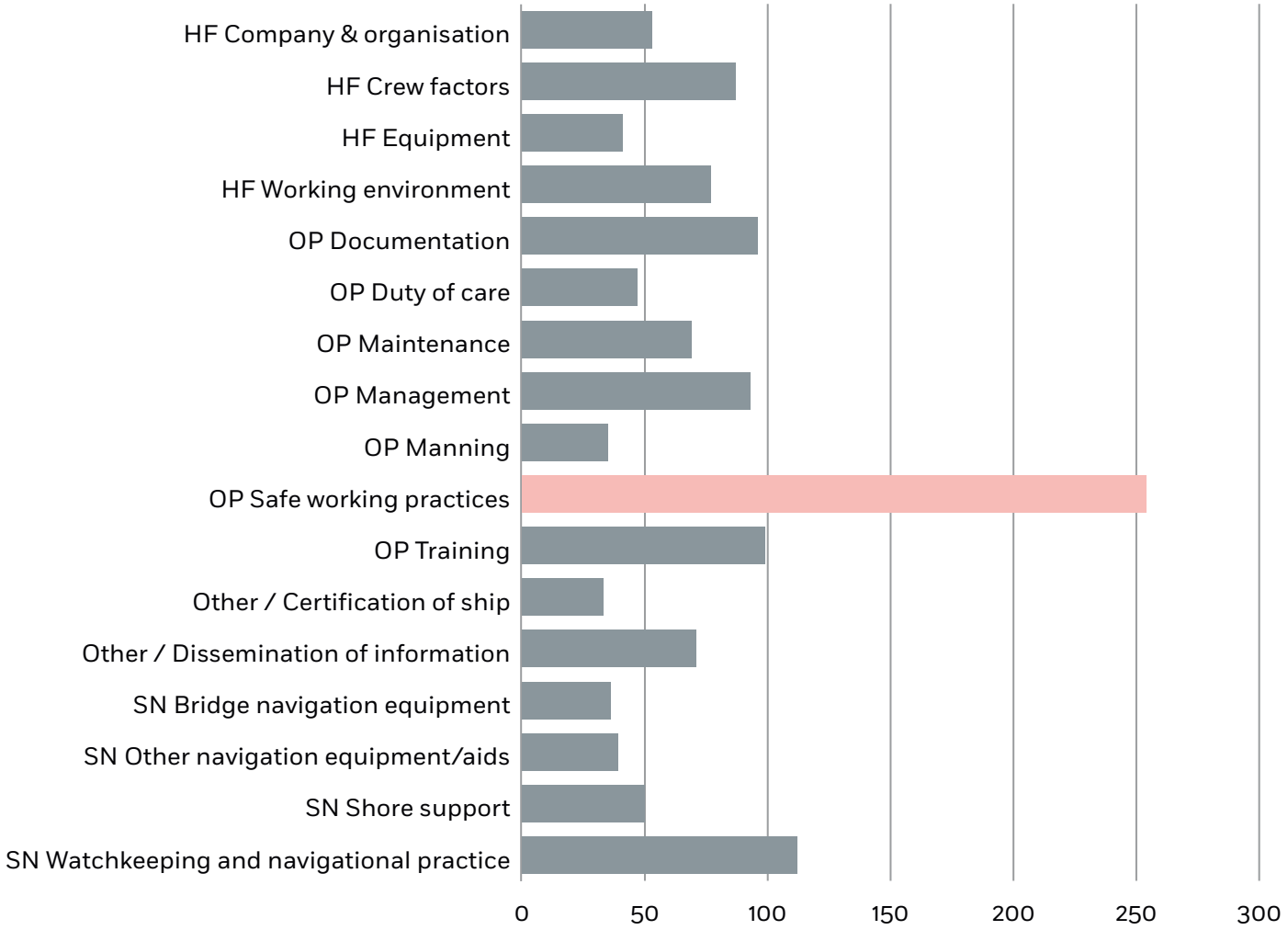
8.3 SAFETY RECOMMENDATIONS

Figure 172: Distribution of safety recommendations issued per focus area for 2011-2017



A total of 1949 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 (40%), followed by safety of navigation (15.8%) and human factors (15.6%).

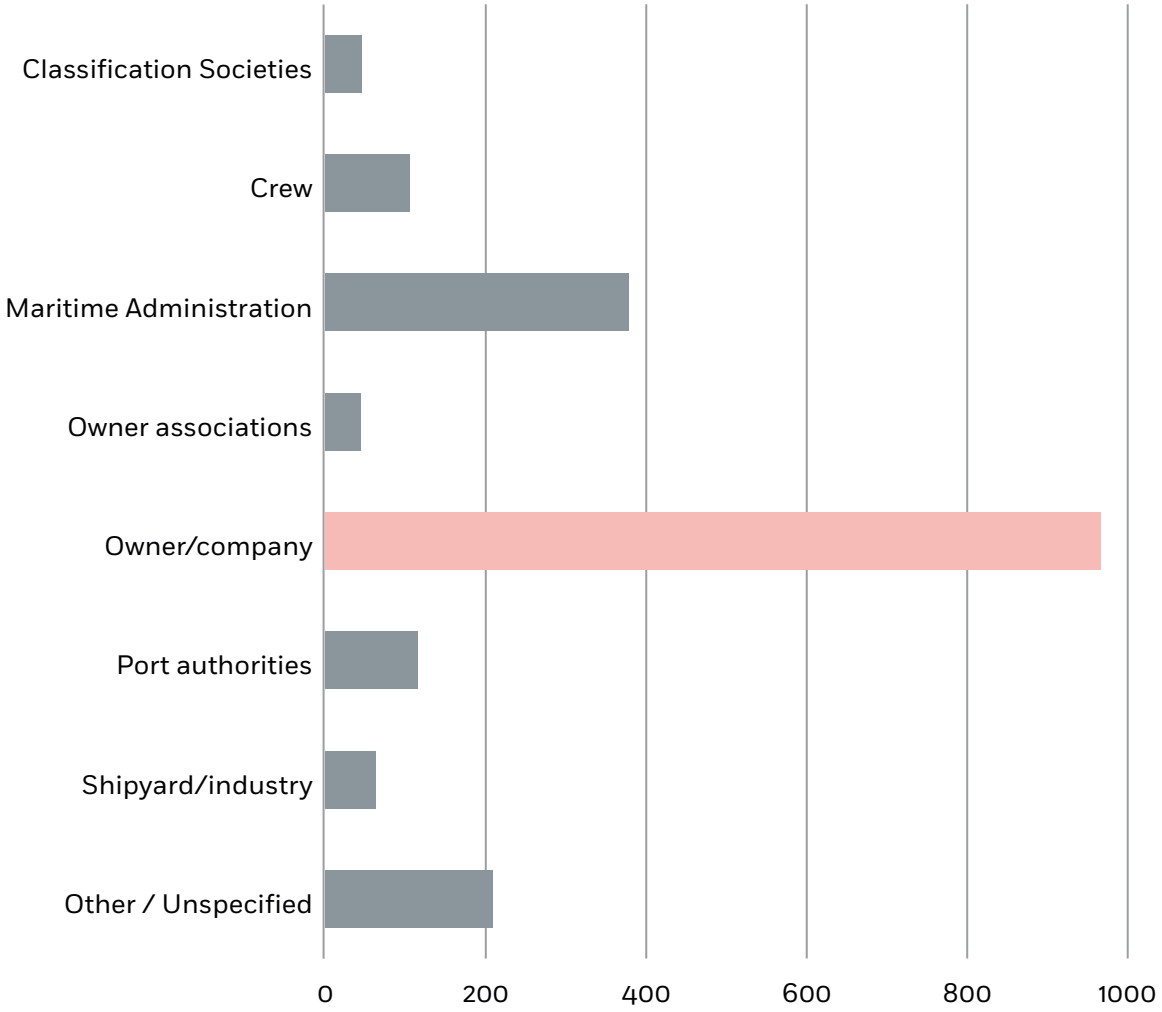
Figure 173: Distribution of main sub-focus area quoted more than 30 times for 2011-2017



Among 77 possible sub-focus areas to classify the safety recommendations, the ones quoted ones more than 30 times (from 2.6% to 8.7% each) apart from 'Operational practice – safe working practices' (20.7%).

SN: Safety of navigation
OP: Operational Practice
LE: Lifesaving Equipment
HF: Human factors

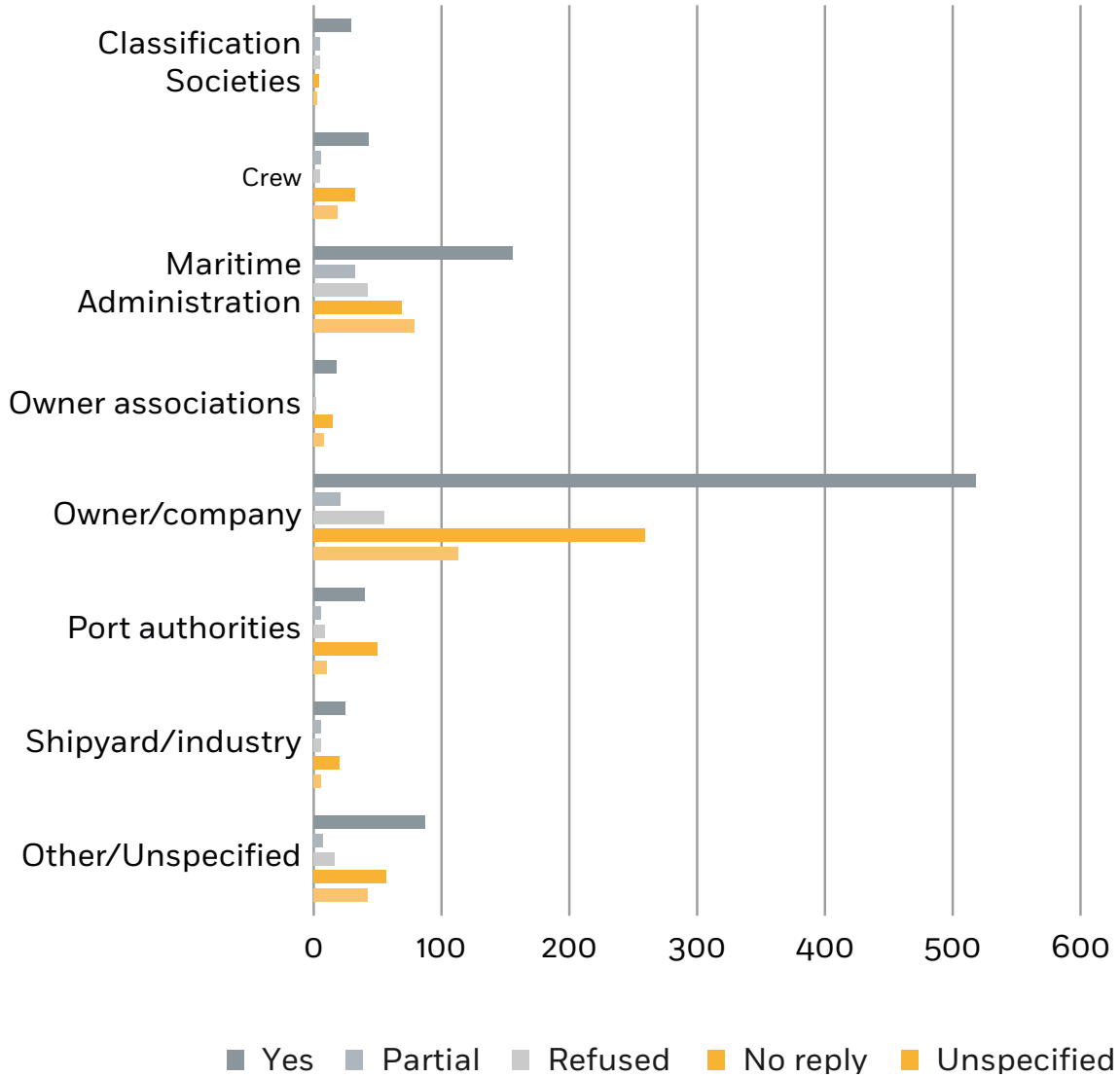
Figure 174: Addressees of safety recommendations for 2011-2017



From the total of 1949 addressees that received at least one safety recommendation, 50.1% were the owners or the companies of the ships involved in the accidents, and 19.6% were the maritime administrations.

Out of the 1949 addressees, a total of 931 individual addressees was counted, some of them having received more than one recommendation.

Figure 175: Responses to safety recommendations for 2011-2017



Out of the 1420 answers provided by the addressees, 52% of safety recommendations were considered positively (fully or partially), while 7.3% were refused.

506 recommendations were not replied by the addressee.

APPENDICES

Fire/explosion, LE BOREAL, ship damaged, 18/11/2015

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;
    8. 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,

6. human and organizational factors;
7. a discussion of the marine safety investigation's findings, including the identification of safety issues, and the marine safety investigation's conclusions; and
8. 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; or
- 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 organisation.
  - **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); or
- **Mid-water** (between transit phases).

APPENDIX 2

EMCIP Model

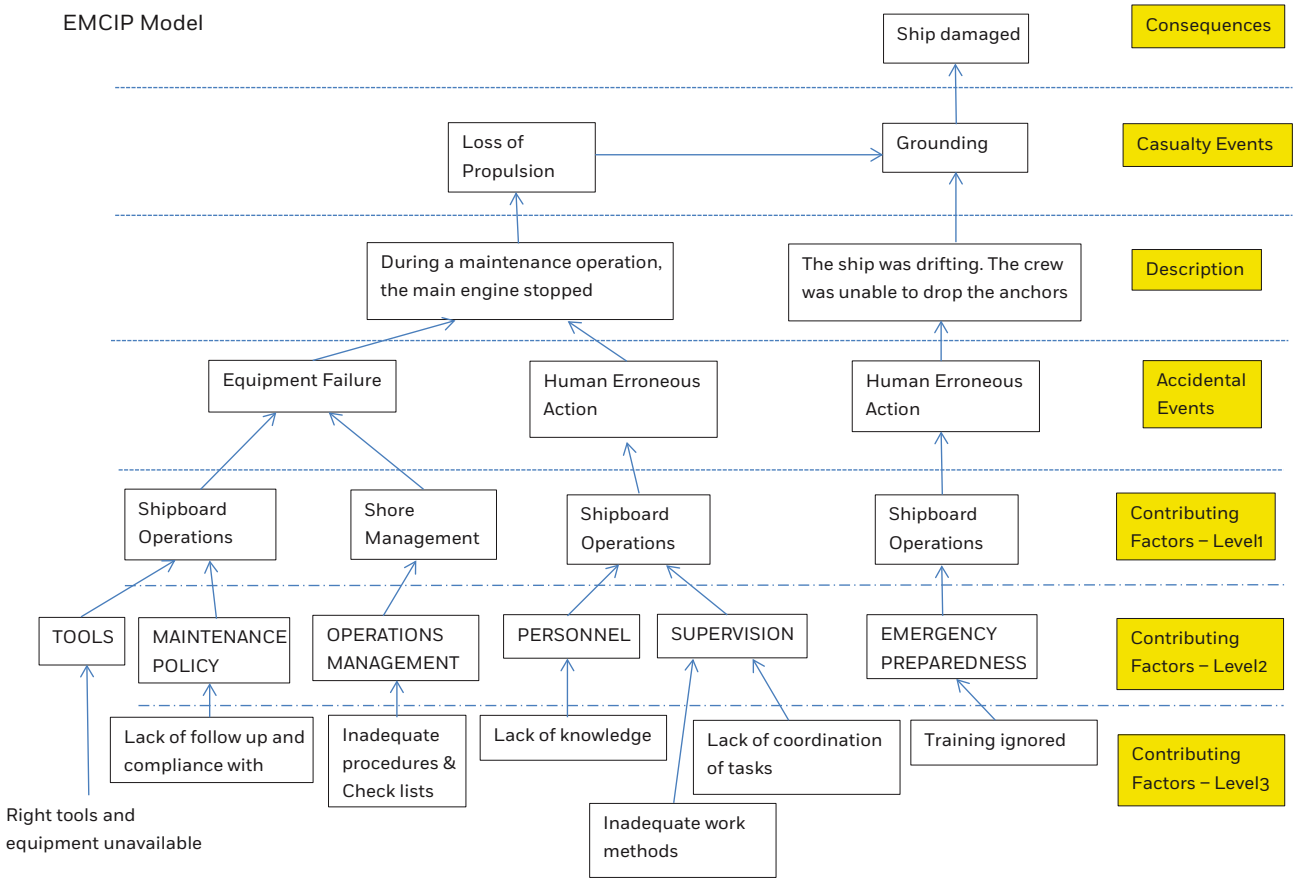


Figure 176: EMCIP Model

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.

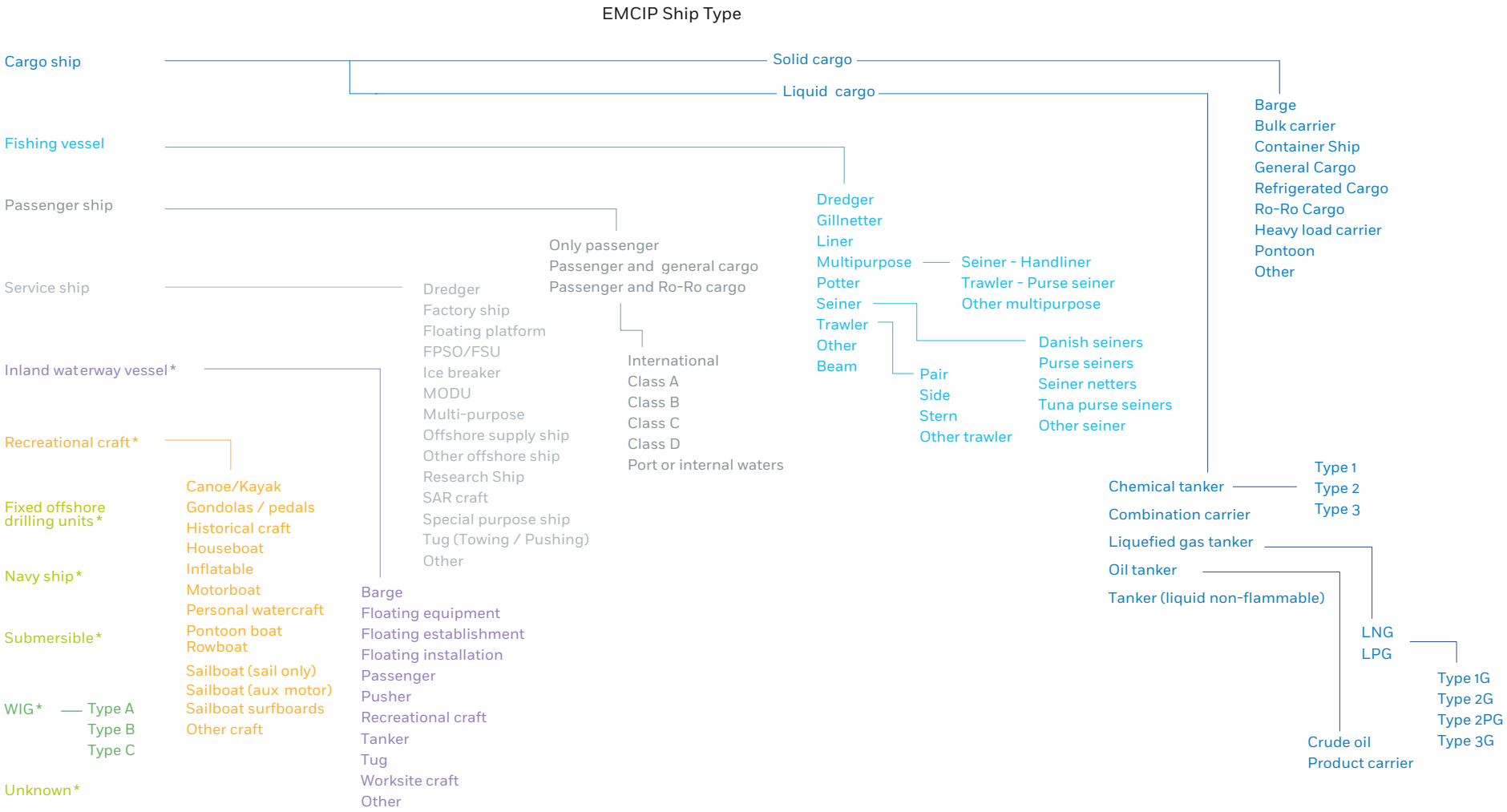
Such model is not only implemented at European level, but also at international level through the IMO resolution A.1075(28).

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 Investigatigation 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



*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 INVESTIGATION 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 Bureau for the Investigation of Maritime Accidents	FEBIMA	
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.maic.gov.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's mission is to ensure a high level 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 overall purpose is to promote a safe, clean and economically viable maritime sector in the EU.

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