



VESSEL CASUALTY TRENDS & THE FIRE CHALLENGE

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CONTENTS

- Nordic Marine Insurance statistics: Data & Team
- Hull casualty trends – Partial, major and total losses
 - The context: World fleet & Vessel values
 - Claims by type of casualty
 - Claims frequency trends
 - Claims cost trends
- Claims frequency versus vessel speed
- The geography of claims
- The fire challenge – Containers et al.

NORDIC MARINE INSURANCE STATISTICS – THE DATA



Reported by Nordic marine insurers into the NoMIS database:

Quarterly updates

All vessels covered under Hull & Machinery (H&M) insurance

- Lead and follower business
- Underwriting years from 1995 updated electronically
- Portfolio and claims data (vessel values, deductibles, paid+outstanding claims development)
- For comparability are other hull-related insurance types (LOH, increased interest etc.) excluded.



Additional data:

World fleet details (subscription data), linked to insurance data via IMO number.

Exchange rates, oil price, ship operating costs, steel price etc.



Data in this presentation represents

100% of each vessel (values, claims).

Claims trends by accident year (= calendar year in which claims occurred)

50% of world fleet > 10,000 gt (32% of total commercial world fleet)

Trends as of 31 December 2019.

NORDIC MARINE INSURANCE STATISTICS – THE TEAM

The Cefor Statistics Forum dream team 2020:

- Alandia – Jonas Svartström
- Codan – Roald Osland
- Gard – Jun Lin
- Gjensidige – Tobias Abrahamsen
- If – Oskar Tufvesson
- Norwegian Hull Club – Christian Irgens
- Skuld – Otto Rendedal
- The Swedish Club – Anders Hultman
- The Nordic Association of Marine Insurers (Cefor) – Astrid Seltmann



Combining the intellectual power of marine insurance analysts / actuaries / mathematicians / business intelligence director / insurance risk coordinator / underwriter.



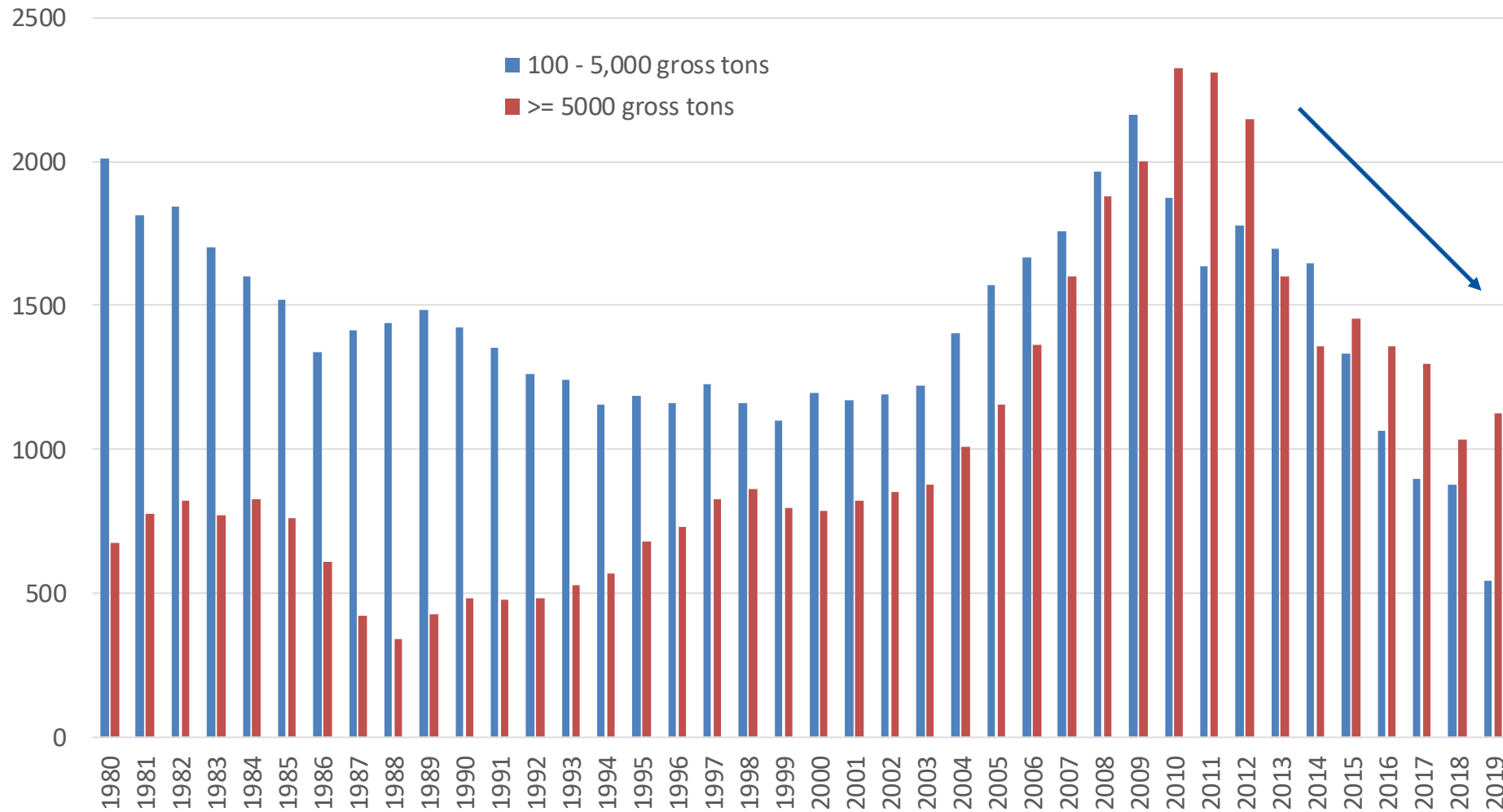
THE CONTEXT: WORLD FLEET & VESSEL VALUES



Foto: Astrid Seltmann

WORLD FLEET – LESS & LARGER NEWBUILDS

NUMBER OF NEWBUILDS PER YEAR LESS THAN AND ABOVE 5,000 GROSS TONS

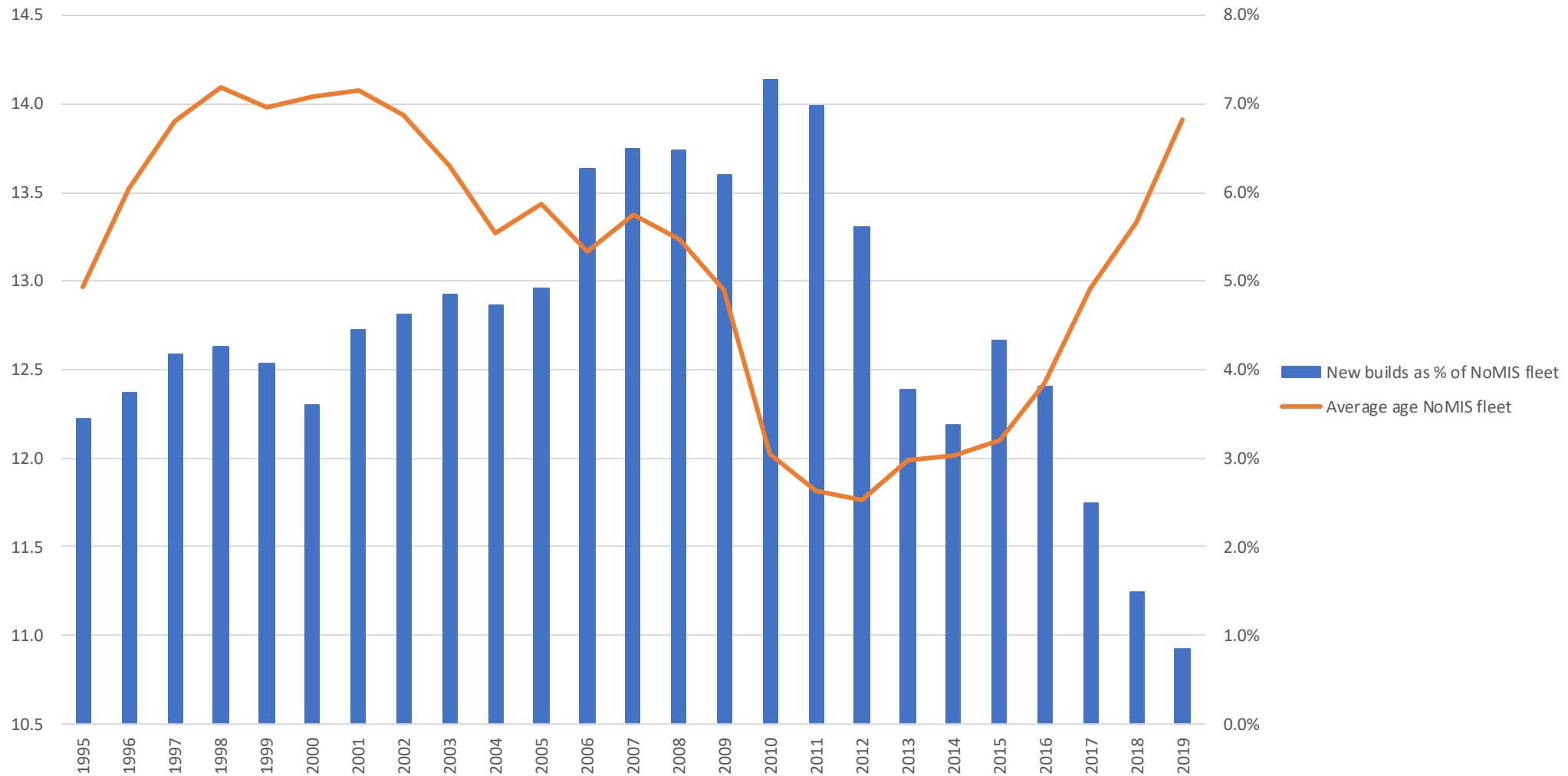


Source: Lloyds List Intelligence, World Fleet Update, as of January 2020; Graph: Cefor Annual Report 2019

NoMIS
Nordic Marine
Insurance Statistics

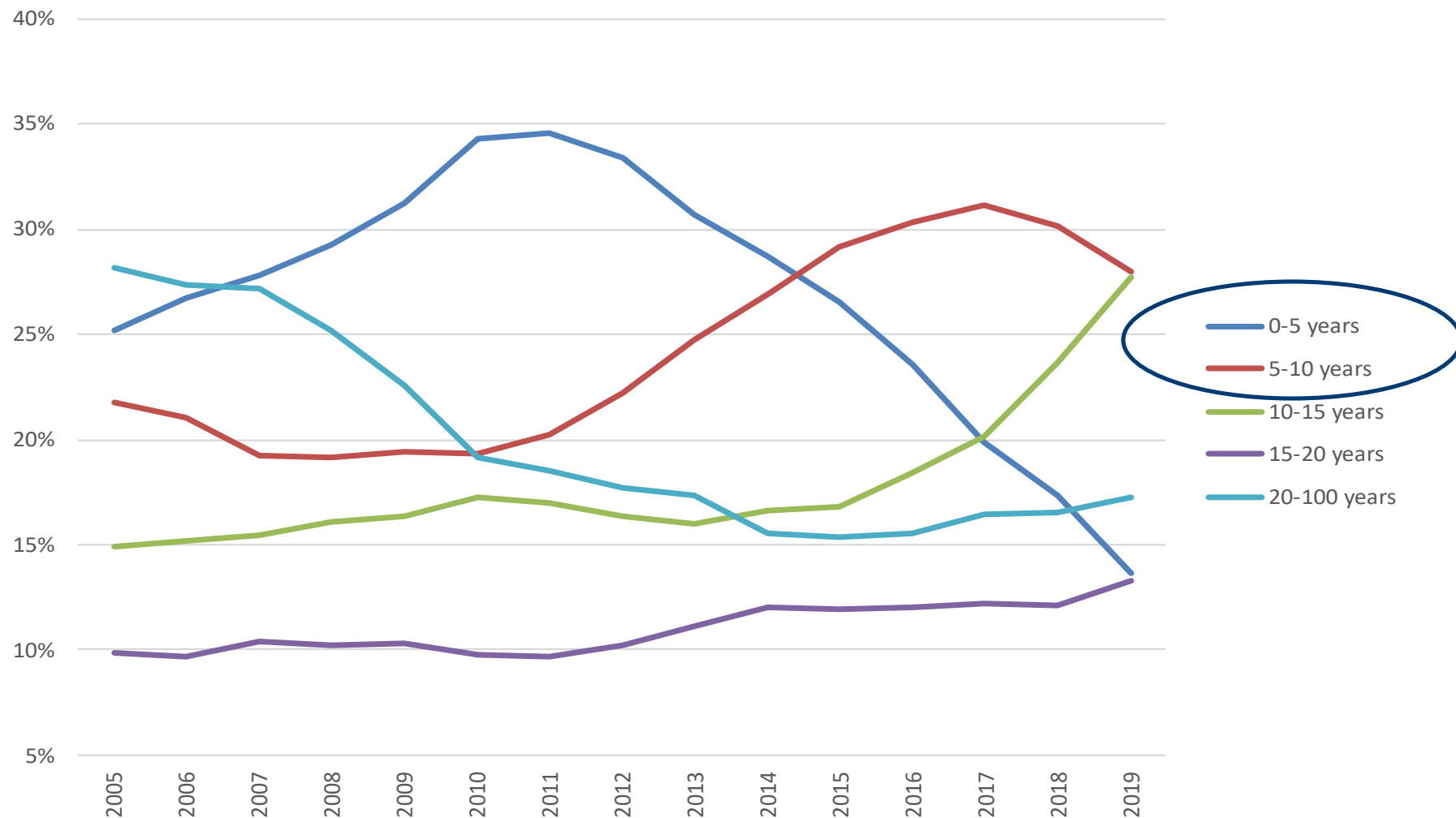


NOMIS FLEET – SHARE OF NEWBUILDS AS % OF FLEET DOWN & AVERAGE FLEET AGE INCREASES



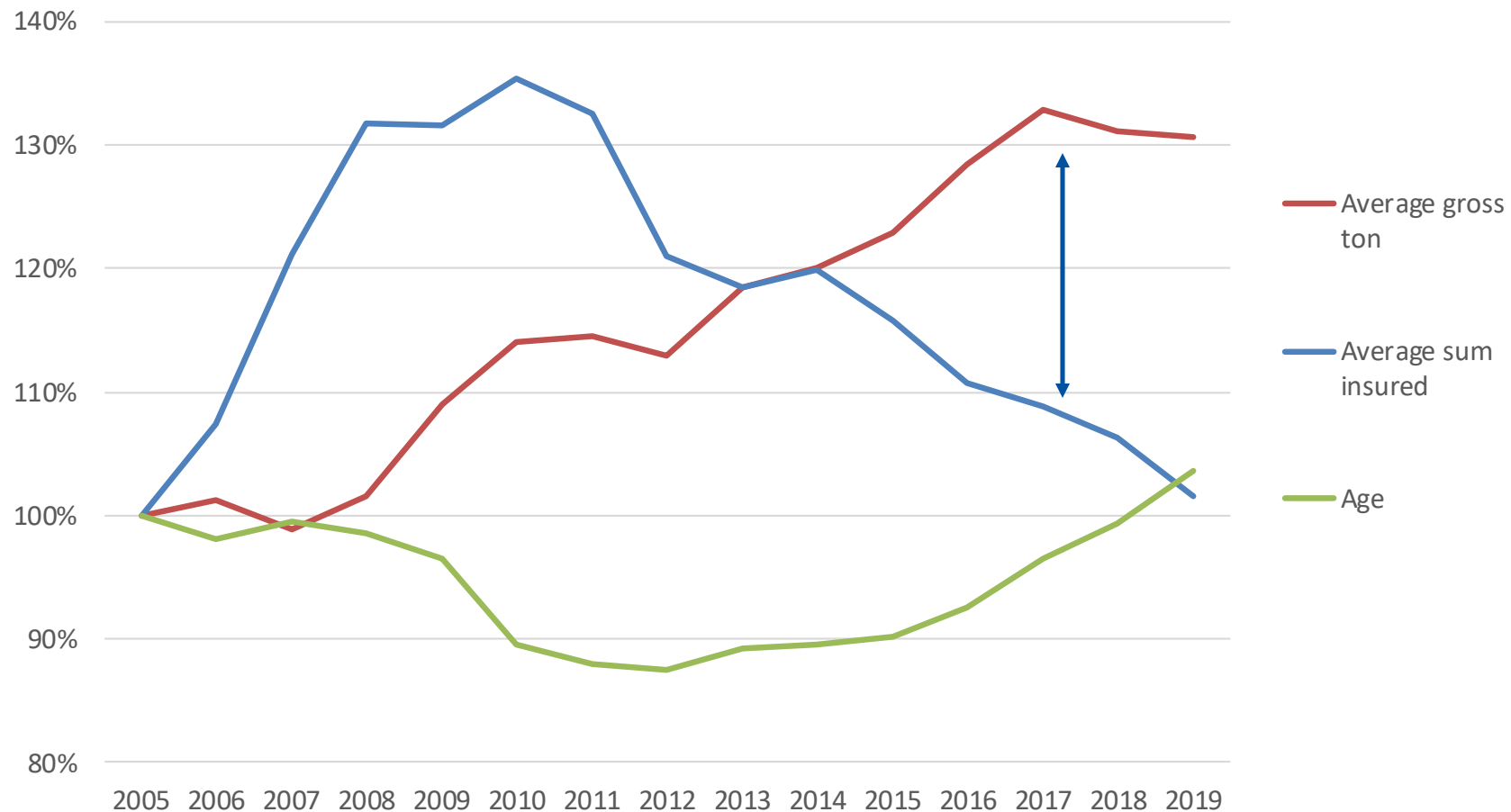
NOMIS FLEET – AGING IN LINE WITH THE WORLD FLEET

NUMBER OF VESSELS BY AGE GROUP AS % OF TOTAL FLEET



INCREASING GAP BETWEEN VESSEL SIZE & VALUE

INDEX OF AV. VESSEL VALUES, GROSS TONS & AGE, 2005 = 100%



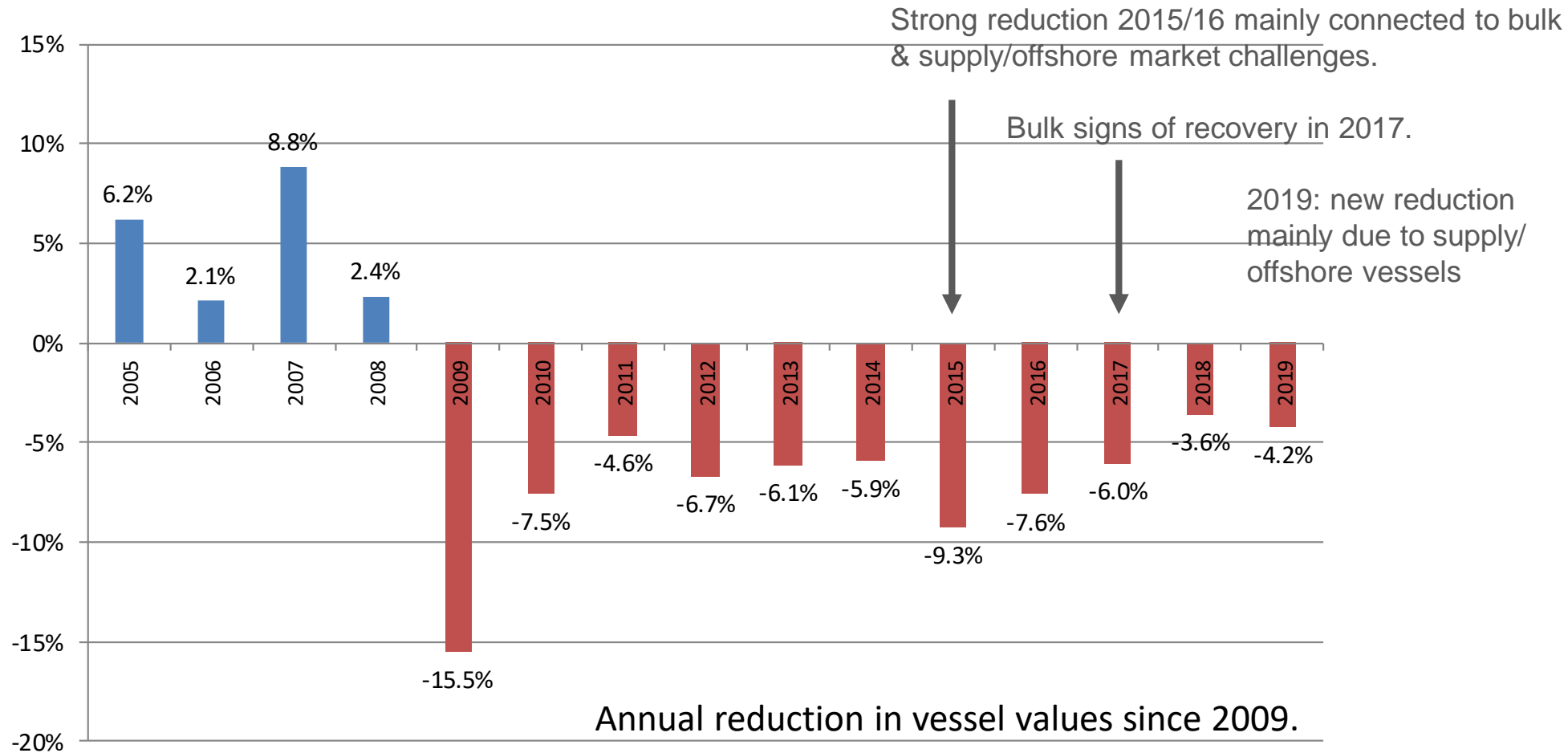
Average **vessels size** increasing since 2007.

Average **vessel value** decreasing since 2010.

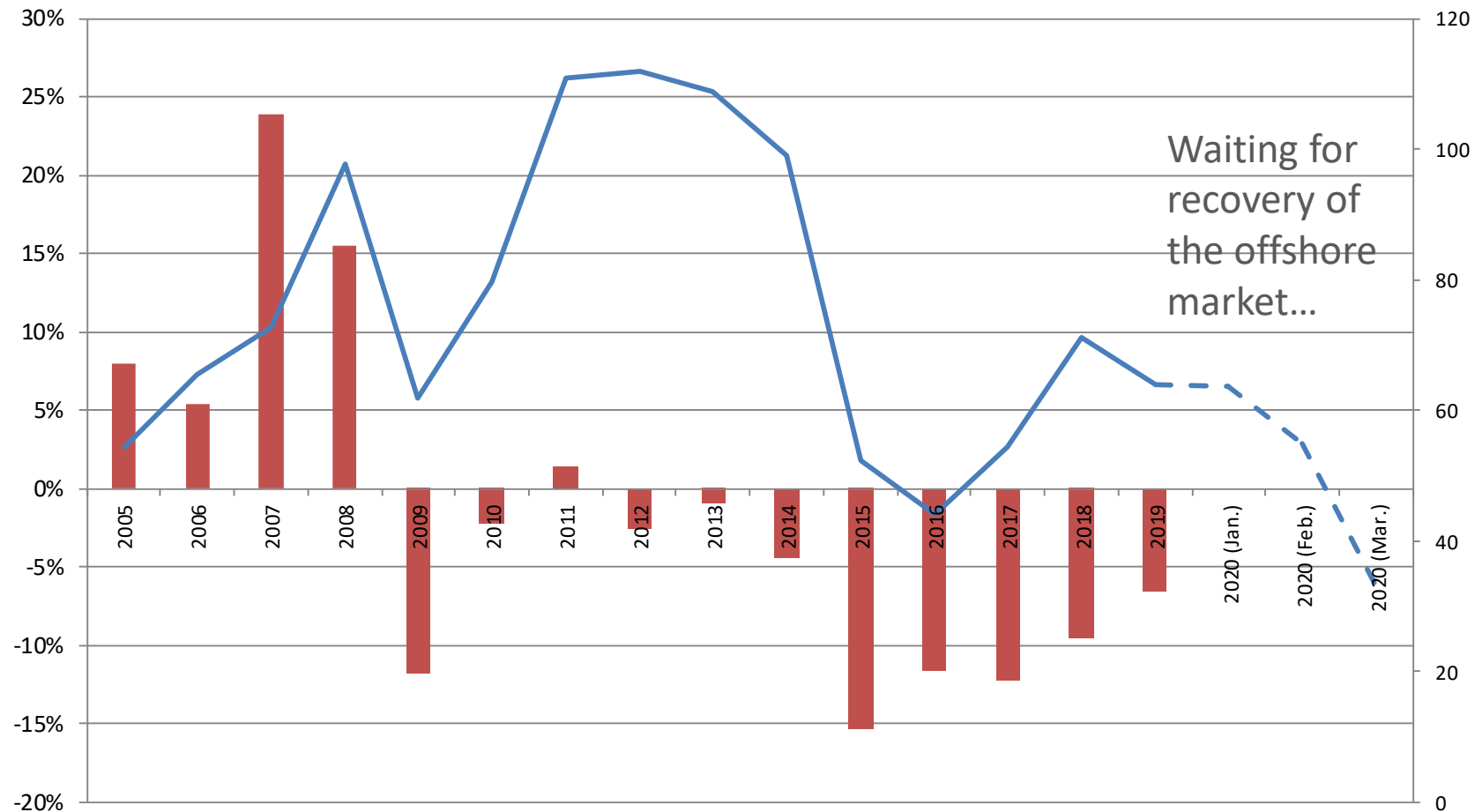
Instead of correlation, **adverse development** last ten years.

ANNUAL CHANGE IN VESSEL VALUES ON RENEWAL

COMPARING INS. VALUE OF SAME VESSELS IN TWO CONSECUTIVE YEARS



SUPPLY/OFFSHORE: ANNUAL CHANGE IN VESSEL VALUES VERSUS OIL PRICE



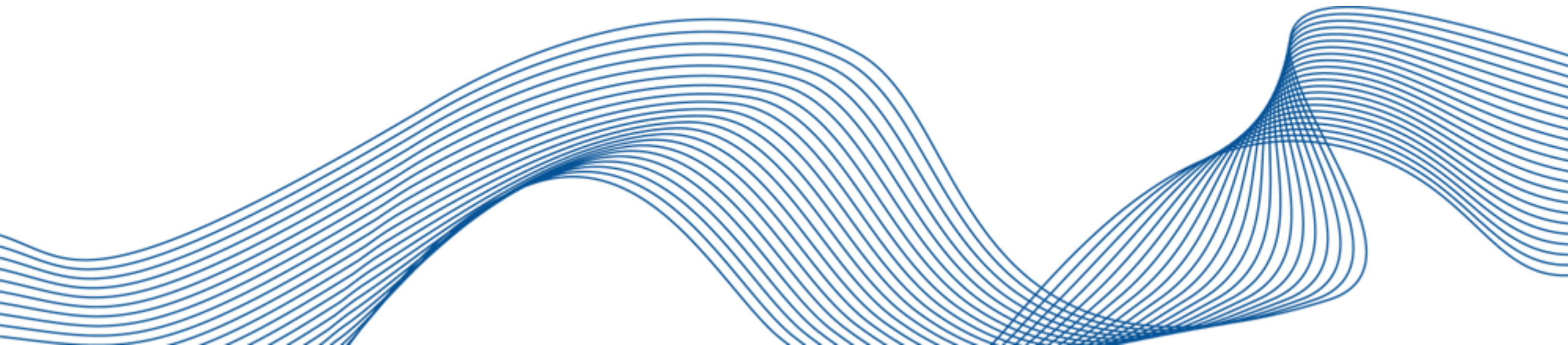
SUMMARY WORLD FLEET & VESSEL VALUES

- Less newbuilds
- Average age of world fleet is increasing
- Newbuilds have been increasing in size, but
- Vessel values have been decreasing since 2010

How does that impact casualty trends?

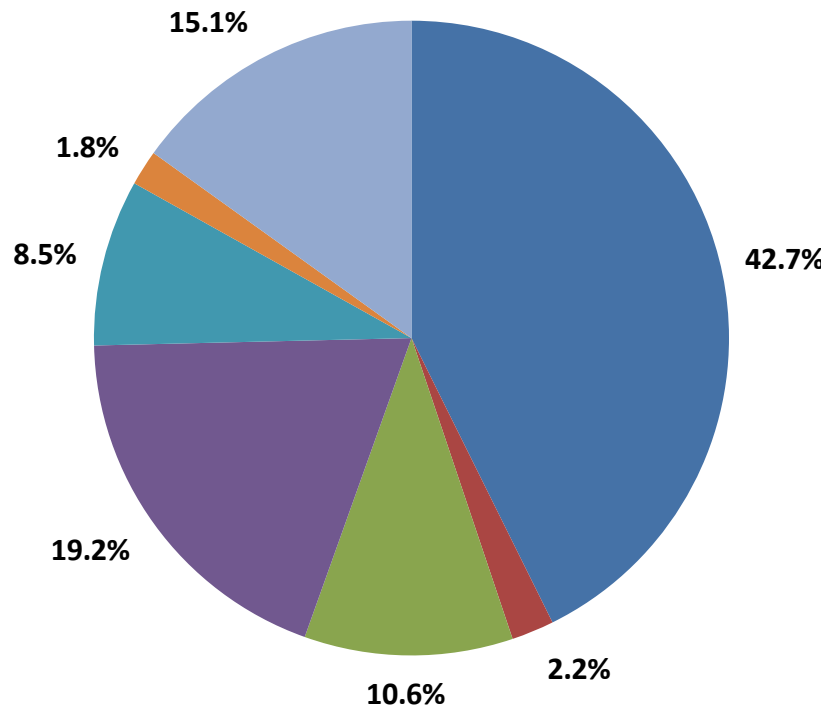
- Claims frequency and cost differ by vessel age.
- The cost of total losses is related to vessel values.
(reduced vessel values may reduce the maximum cost of a total loss, but increase the probability of incurring a total loss under insurance).
- Larger and more complex vessels increase the probability of new record costly claims (higher repair cost, not necessary total losses).
- Larger container vessels have a higher probability of severe damage by fires (p. 33ff)

CLAIMS BY TYPE OF CASUALTY



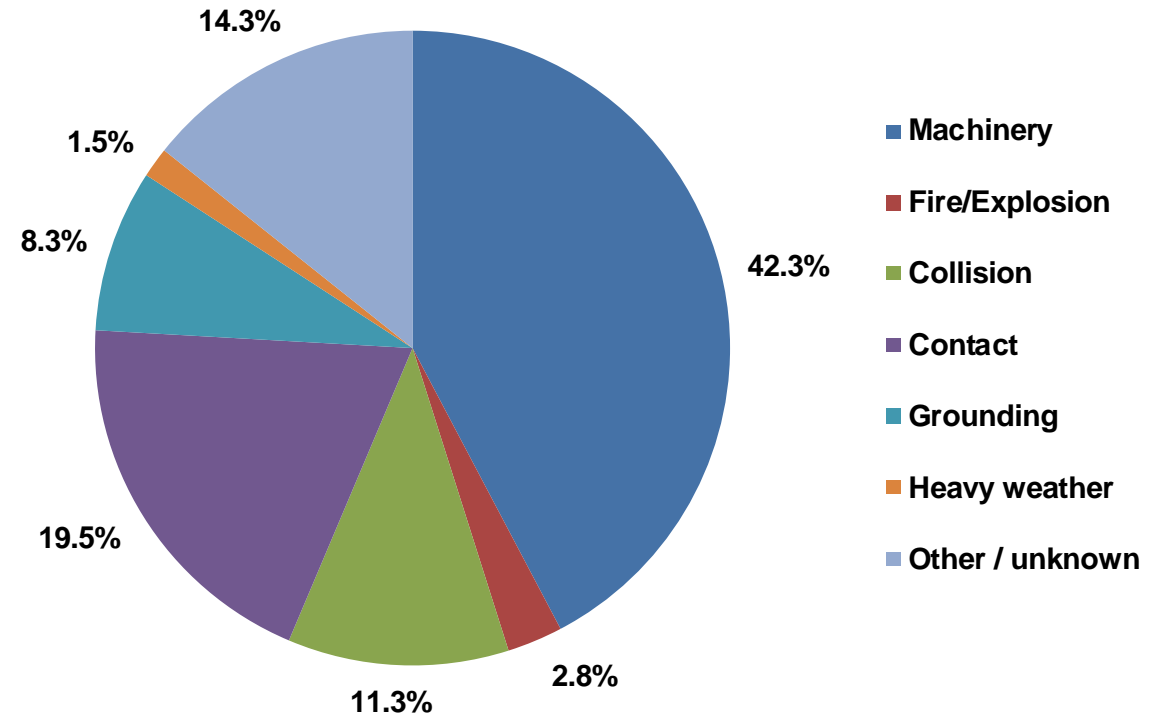
BREAKDOWN OF NUMBER OF CLAIMS BY TYPE OF CASUALTY

2014-2018



2014-2018: 17,507

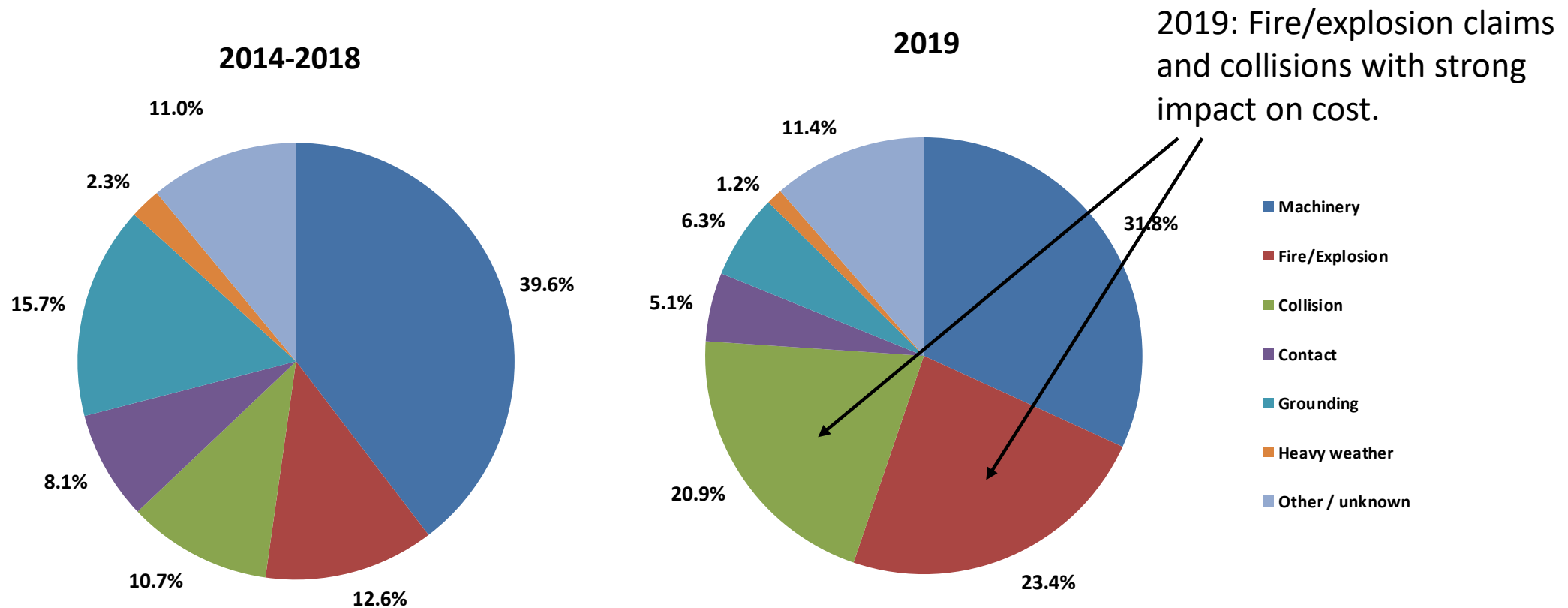
2019



2019: 3,323

Total number of claims:

BREAKDOWN OF CLAIMS COST BY TYPE OF CASUALTY

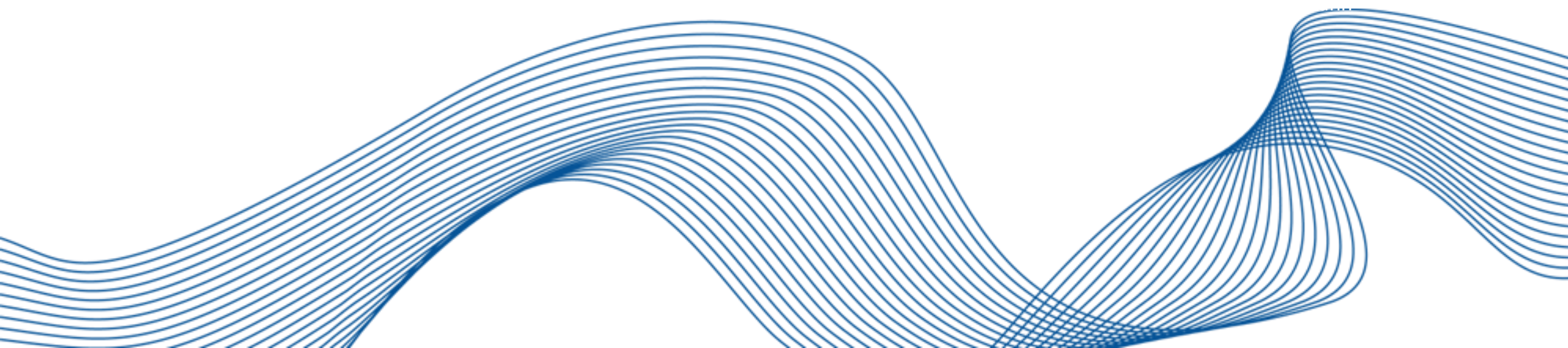


Total cost of claims in USD million:
 2014-2018: 4,489.0 2019: 1,037.9

CLAIMS FREQUENCY TRENDS

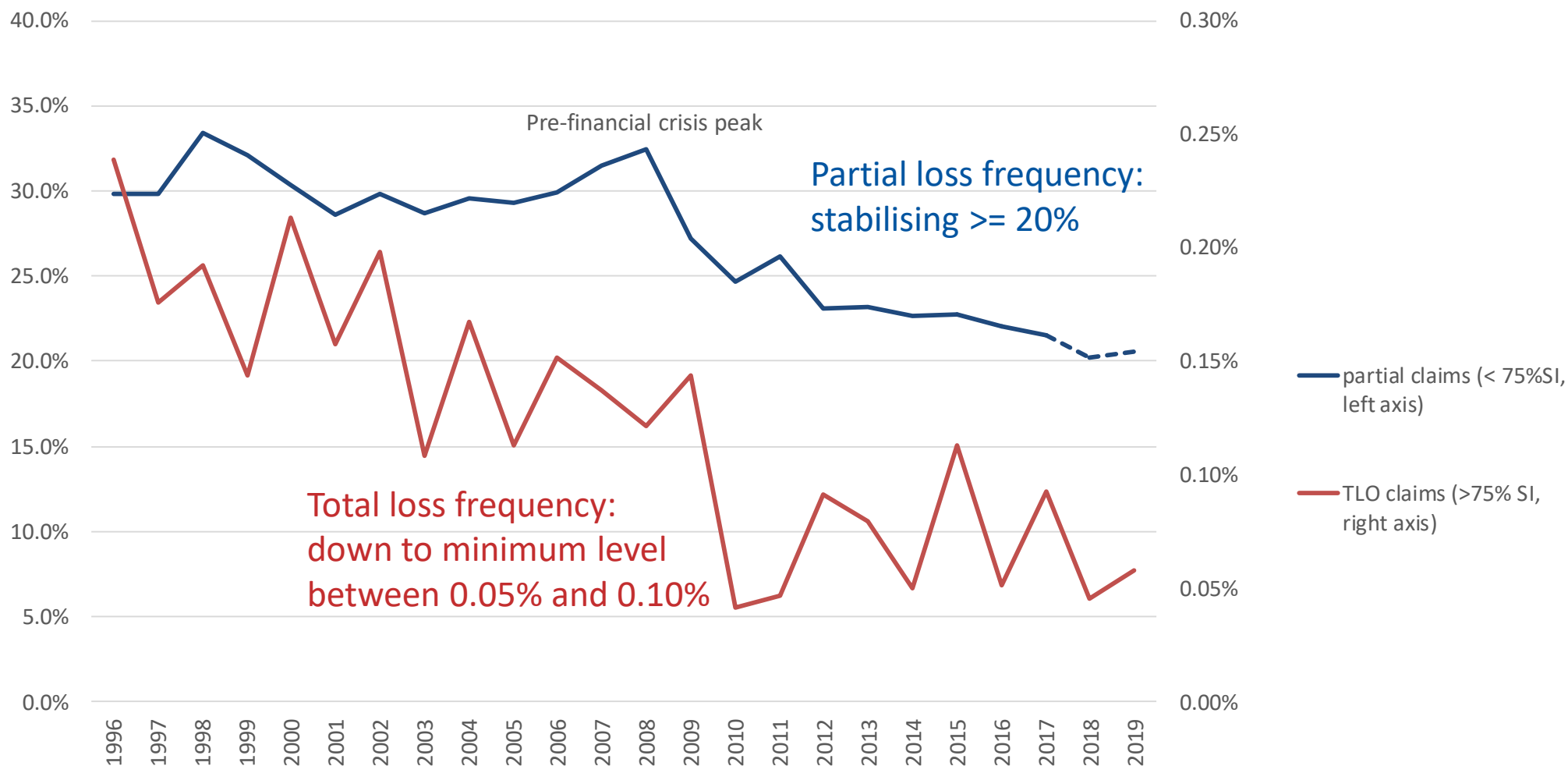


Foto: Cefor Annual Report 2019

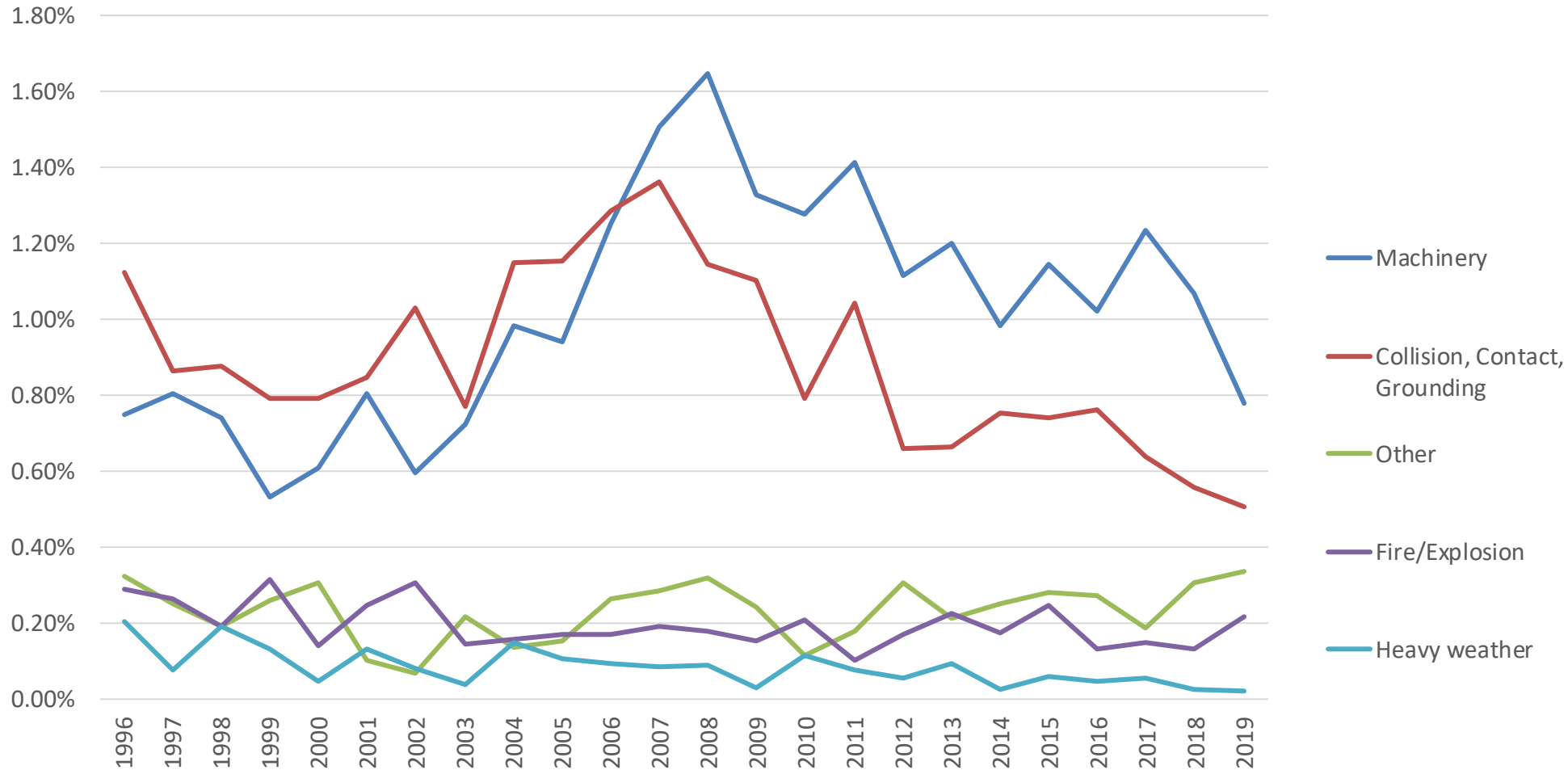


CLAIMS FREQUENCY* – LONG-TERM POSITIVE TREND

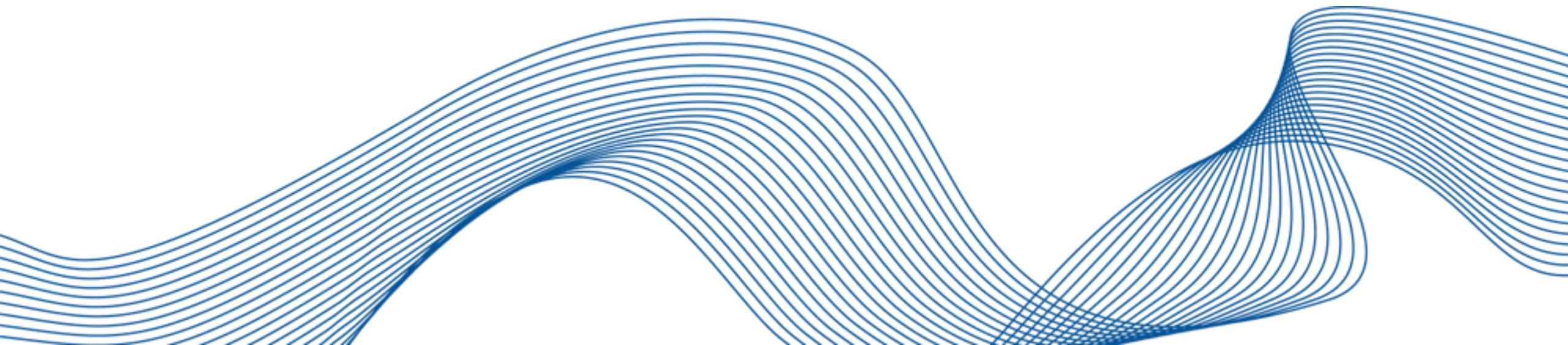
* = No. of claims divided by no. of insured vessels



CLAIMS > USD 500,000: MACHINERY & NAUTICAL-RELATED CLAIMS FREQUENCY BACK TO PRE-2008 LEVEL

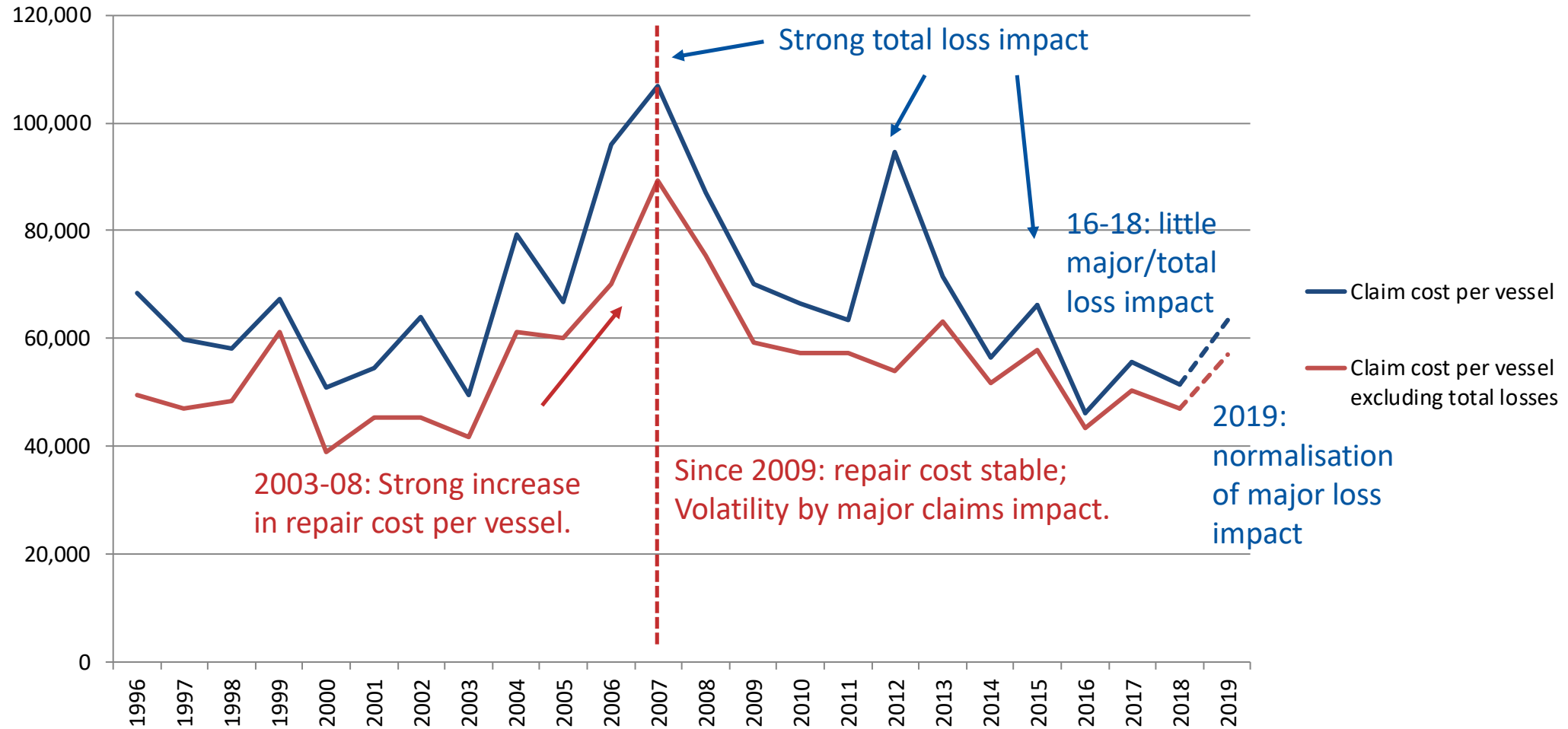


CLAIM COST TRENDS

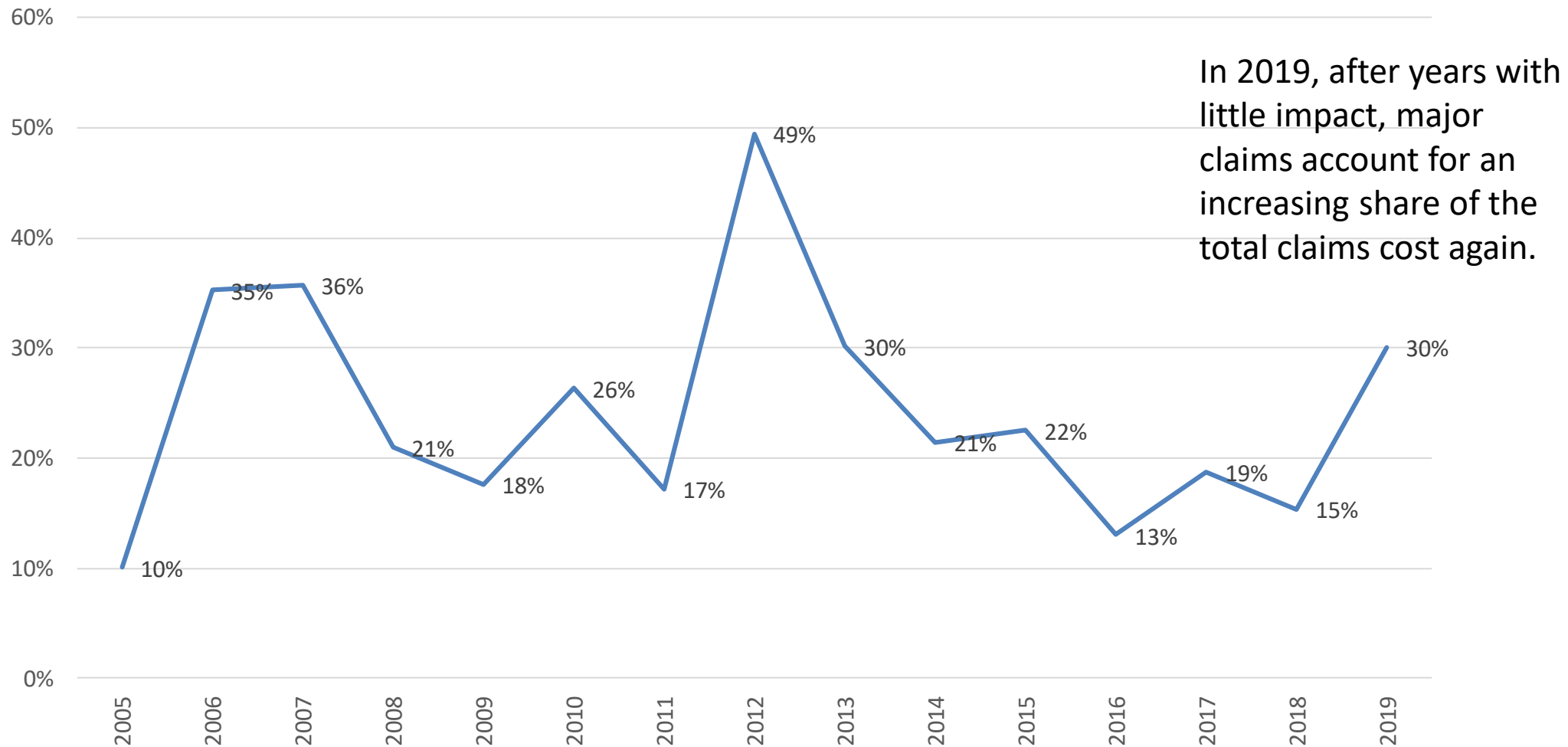


MAJOR LOSS IMPACT RETURNING TO NORMAL LEVEL AFTER THREE BENIGN YEARS

CLAIM COST PER VESSEL, INCLUDING/EXCLUDING TOTAL LOSSES

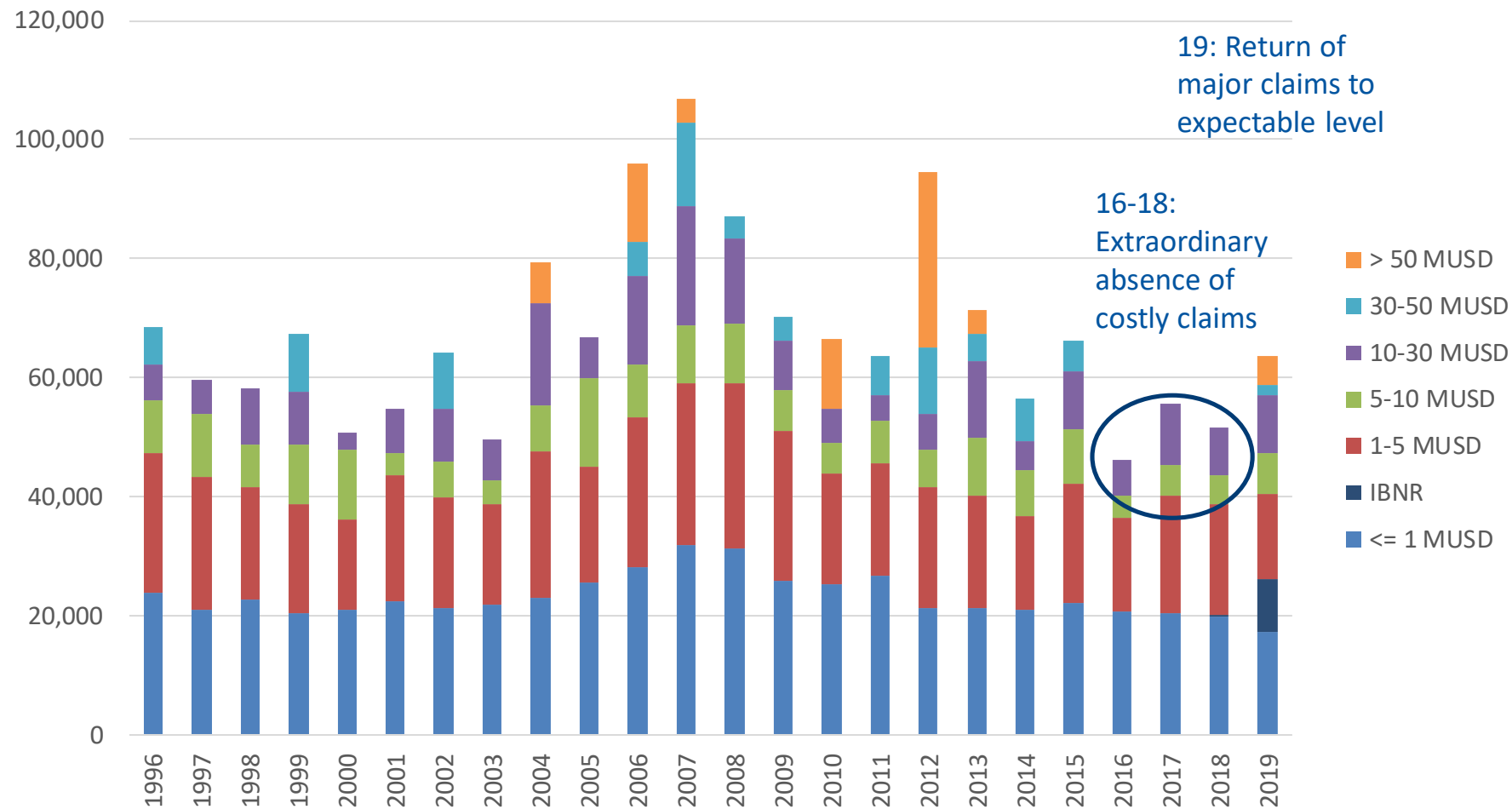


CLAIMS > USD 10 MILLION IN % OF TOTAL CLAIMS COST*



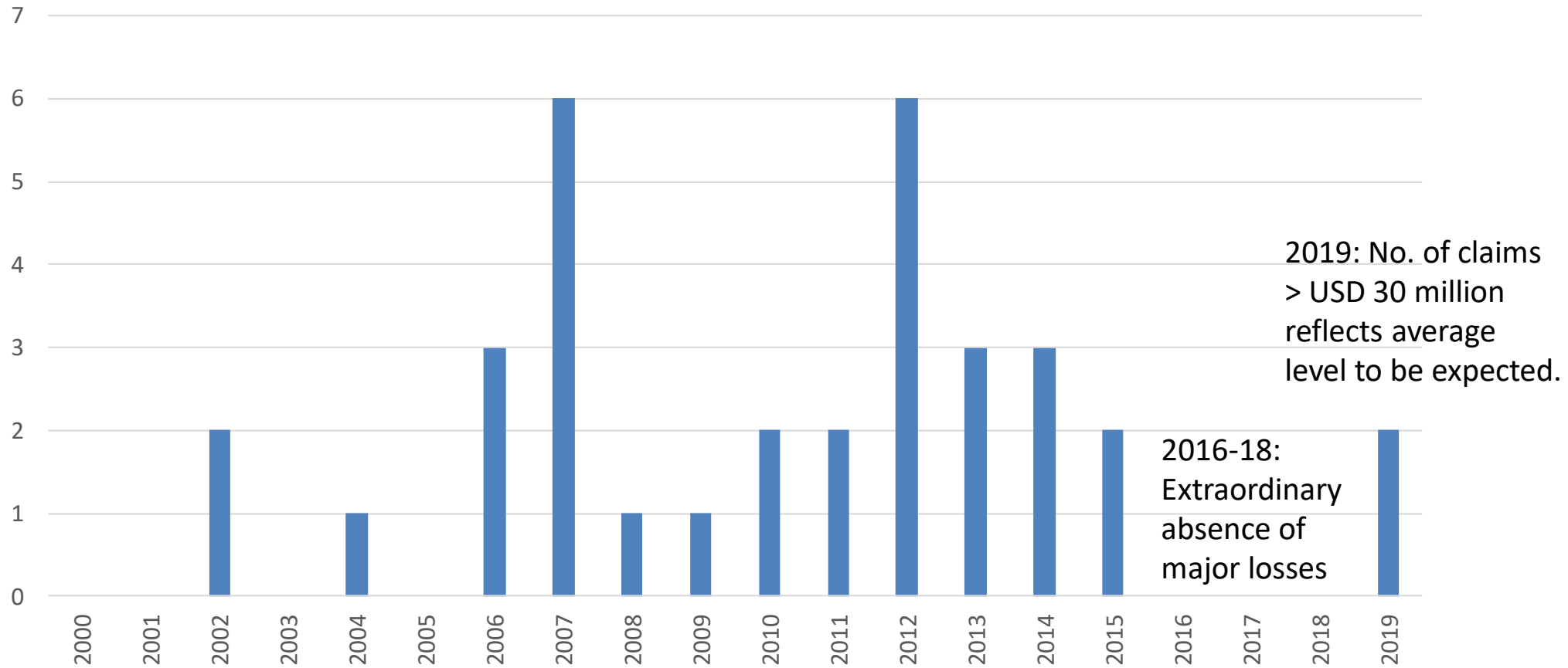
MAJOR LOSSES RETURN AFTER THREE YEARS WITHOUT CLAIMS > USD 30 MILLION

CLAIM COST PER VESSEL, INCLUDING/EXCLUDING TOTAL LOSSES



NUMBER OF CLAIMS > USD 30 MILLION

BY ACCIDENT YEAR



SUMMARY CASUALTY TRENDS – FREQUENCY

- **Total loss frequency**
 - Long-term positive trend
 - Stabilizing around the probably minimum achievable level.
 - Result of increased focus on safety measures?
- **Overall claims frequency**
 - Long-term positive trend. Low volatility since 2012, stabilizing around 23%.
- **Major loss frequency (costly casualties)**
 - In 2019 back to 'normal' level after three years with extraordinary few major losses
- **Influencing factors**
 - Vessel utilization (type of trade, overcapacity, maintenance, lay-ups, activity in ports /congested areas
 - Vessel age and size
 - Changes in underlying risk
 - Insurer deductibles (higher deductibles = less claims reported)
 - Cost of repairs and exchange rates (repairs often paid in other currencies than USD)

SUMMARY CASUALTY TRENDS – COST

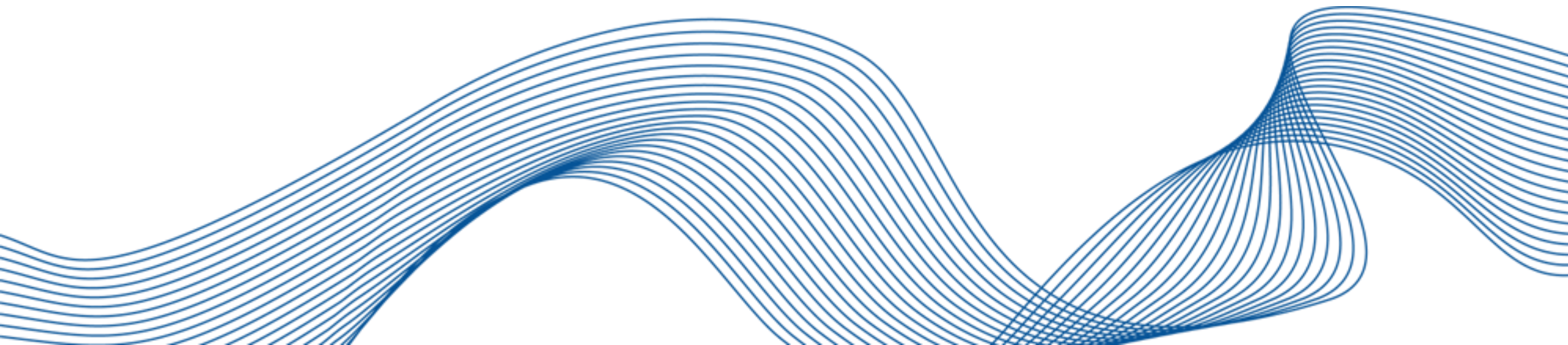
- **Major losses (= costly casualties)**
 - Impact in 2019 back to expected average level after three extraordinary benign years
 - Increasing volatility (random occurrence in any one year) and increasing cost of single casualties (increasing vessel sizes, more complex high-value objects)
 - Strong influence on the cost also in years with few major losses: The 1% most expensive claims account for minimum 30% of the claim cost in any year.
- **Claim cost per vessel / repair cost:**
 - Stabilization at modest level in recent years.
 - Some increase in 2019 compared to previous three years due to major loss impact
- **Cost drivers**
 - Steel price, USD exchange rate impacts statistics (repairs often paid in other currencies than USD), Labour cost, Maintenance routines, ...

Check all hull claims trends at cefor.no/statistics/nomis/2019/nomis-as-of-31-december-2019/

CLAIMS FREQUENCY VERSUS VESSEL SPEED

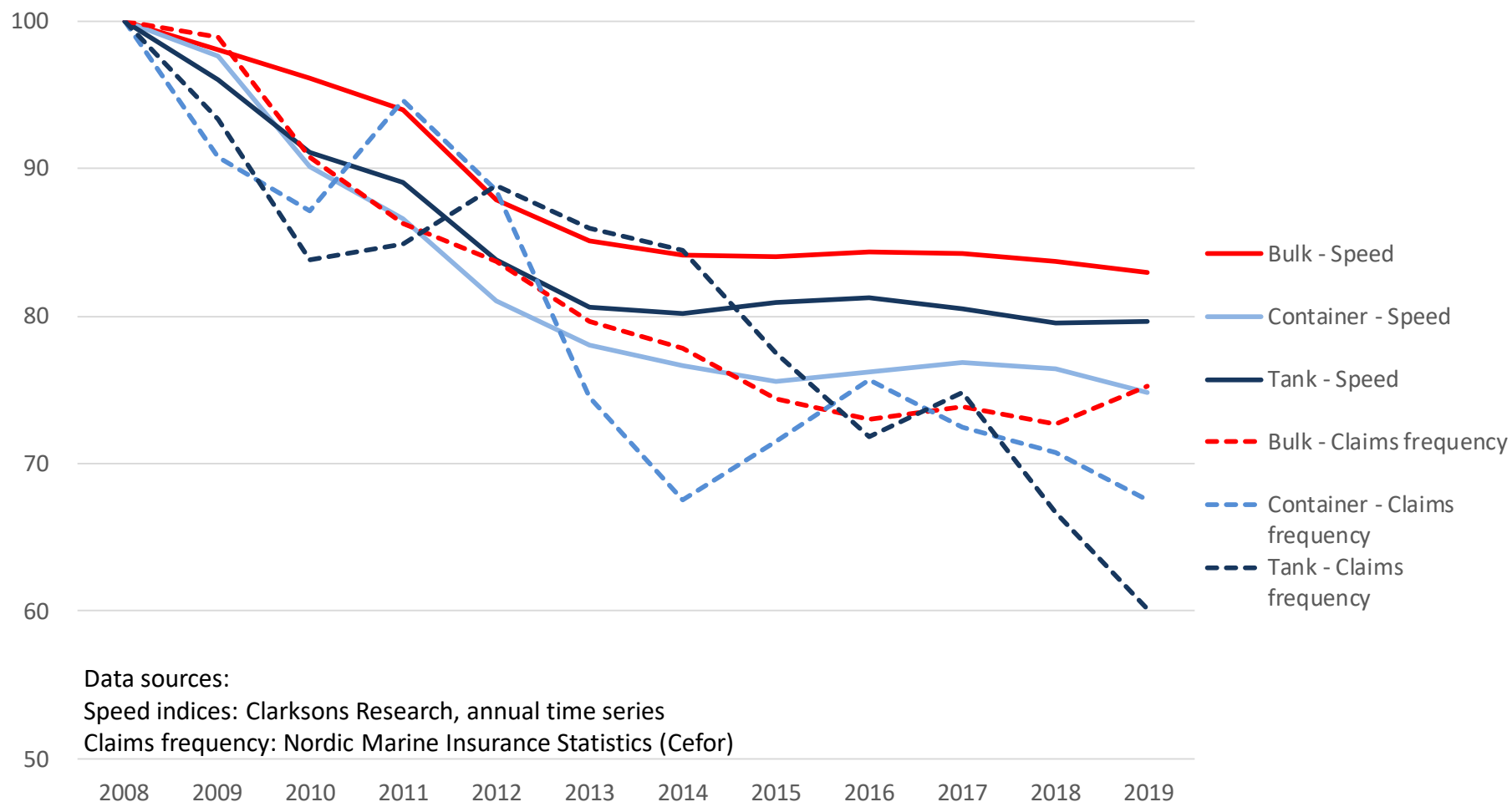


Foto: Cefor Annual Report 2019



CLAIMS FREQUENCY AND AVERAGE VESSEL SPEED SHOW PARALLEL DEVELOPMENT SINCE 2008

BULK, CONTAINER, TANK, INDEX 2008= 100%, CLAIMS FREQUENCY = 2-YEAR AVERAGE



The parallel development is no proof of a causal relation, but a strong indicator of a possible correlation between vessel speed and claims frequency.

Complete analysis at: cefor.no/globalassets/documents/statistics/nomis/2019/2020--claims-frequency-versus-vessel-speed.pdf

Data sources:

Speed indices: Clarksons Research, annual time series

Claims frequency: Nordic Marine Insurance Statistics (Cefor)

NoMIS

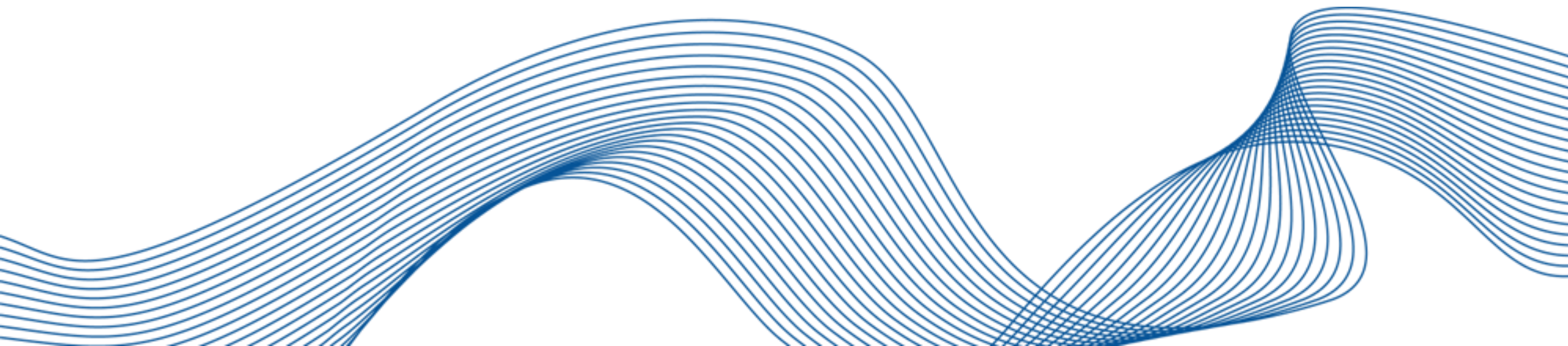
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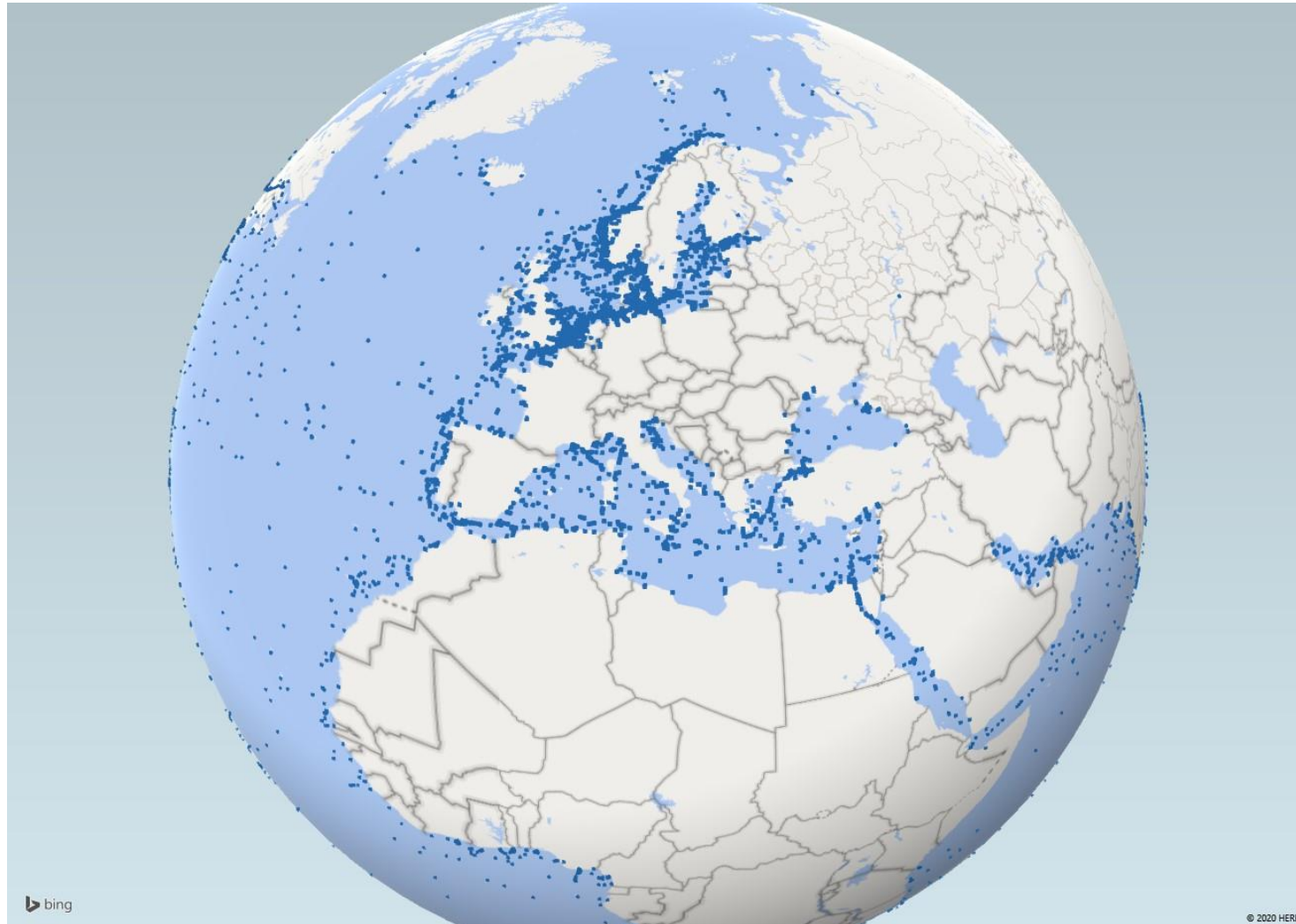
THE GEOGRAPHY OF CLAIMS



Foto:
Cefor Annual
Report 2019



MOST CASUALTIES HAPPEN WHERE YOU EXPECT THEM TO HAPPEN (SHORELINES, HIGH TRAFFIC AREAS)



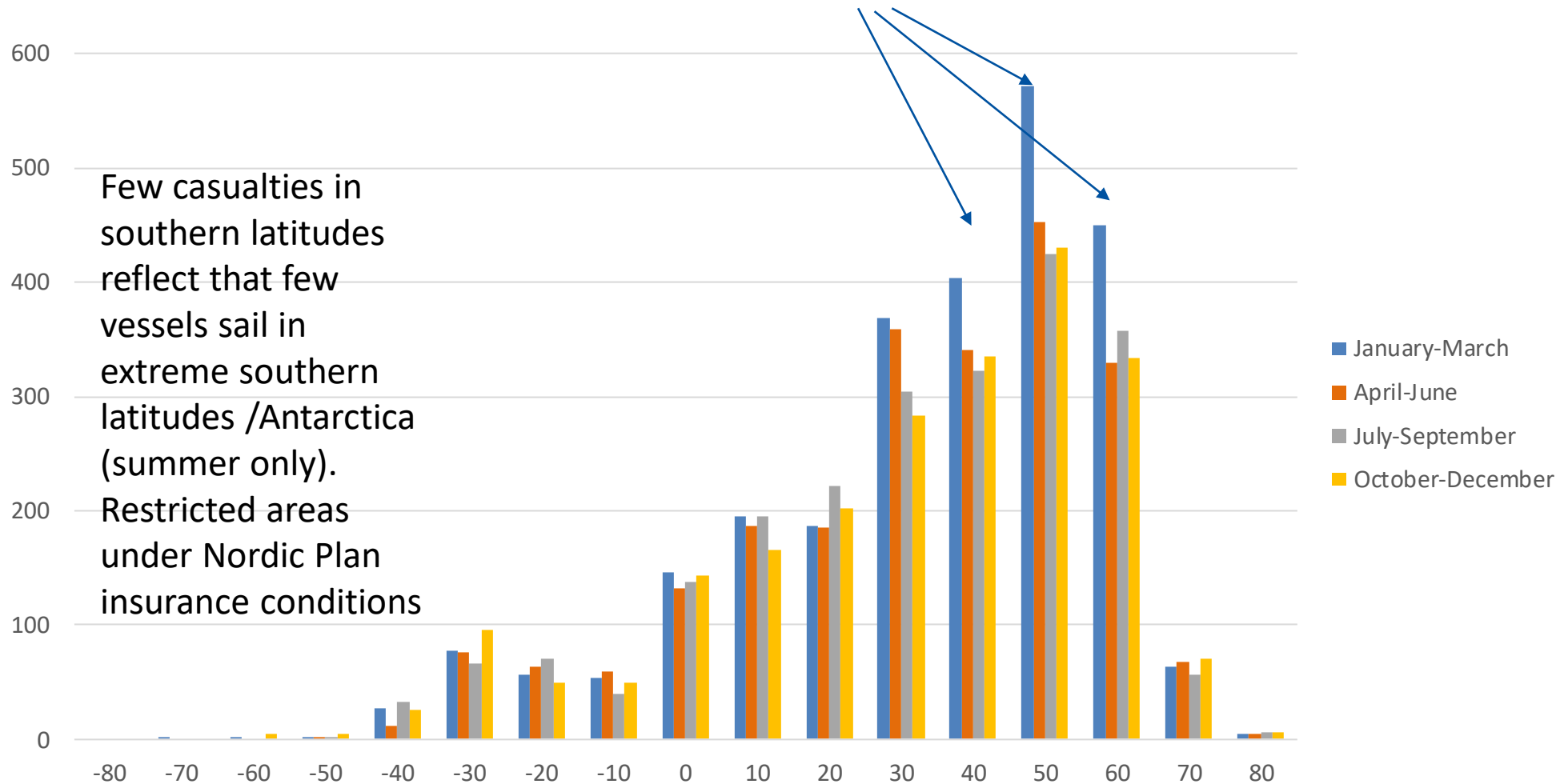
Data analysed:

Geographic coordinates
(longitude, latitude)
of casualties reported into
NoMIS database for the
years 2017 to 2019.

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SEASONALITY IMPACT: MORE CASUALTIES IN NORTHERN LATITUDES IN WINTER



Few casualties in southern latitudes reflect that few vessels sail in extreme southern latitudes /Antarctica (summer only).
Restricted areas under Nordic Plan insurance conditions

INCREASE IN CASUALTIES ON MISSISSIPPI AND PARANÁ RIVER BETWEEN 2017 AND 2019



Red columns: Increase
Green columns: Reduction
in number of casualties

New casualty on Mississippi
also in 1st quarter 2020.

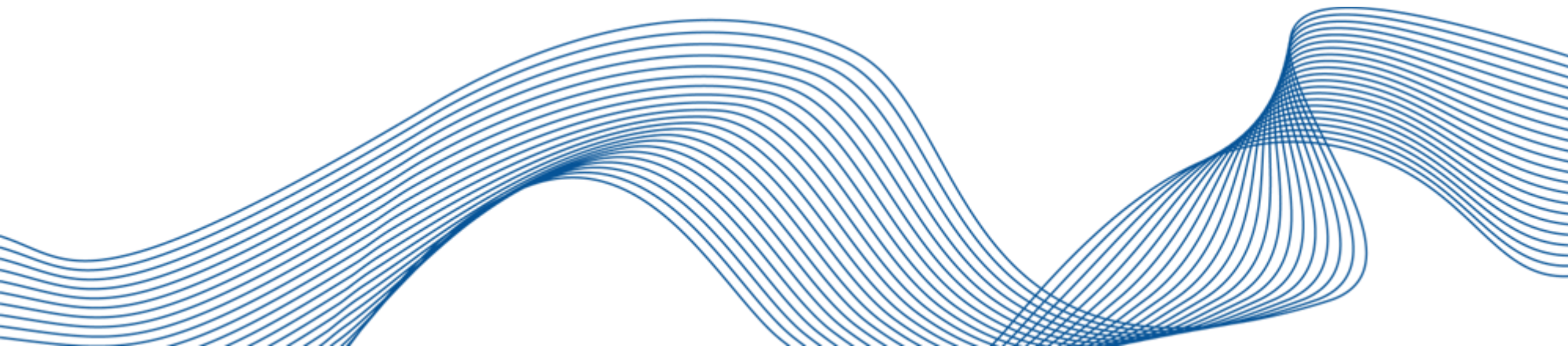
SUMMARY GEOGRAPHIC IMPACT ON CLAIMS

- Analysis of geographic coordinates (longitude, latitude) of claims reported into NoMIS database for years 2017 to 2019.
- Effect of seasonality verified:
More claims in winter months in northern latitudes, especially January to March.
- Increase in number of claims on Mississippi and Parana river in 2019.
 - Exceptional high water levels (flooding) in Mississippi.
 - Exceptional low water levels in Parana.
 - Also in 1st quarter 2020 new casualty on Mississippi river.

Check complete analysis at:

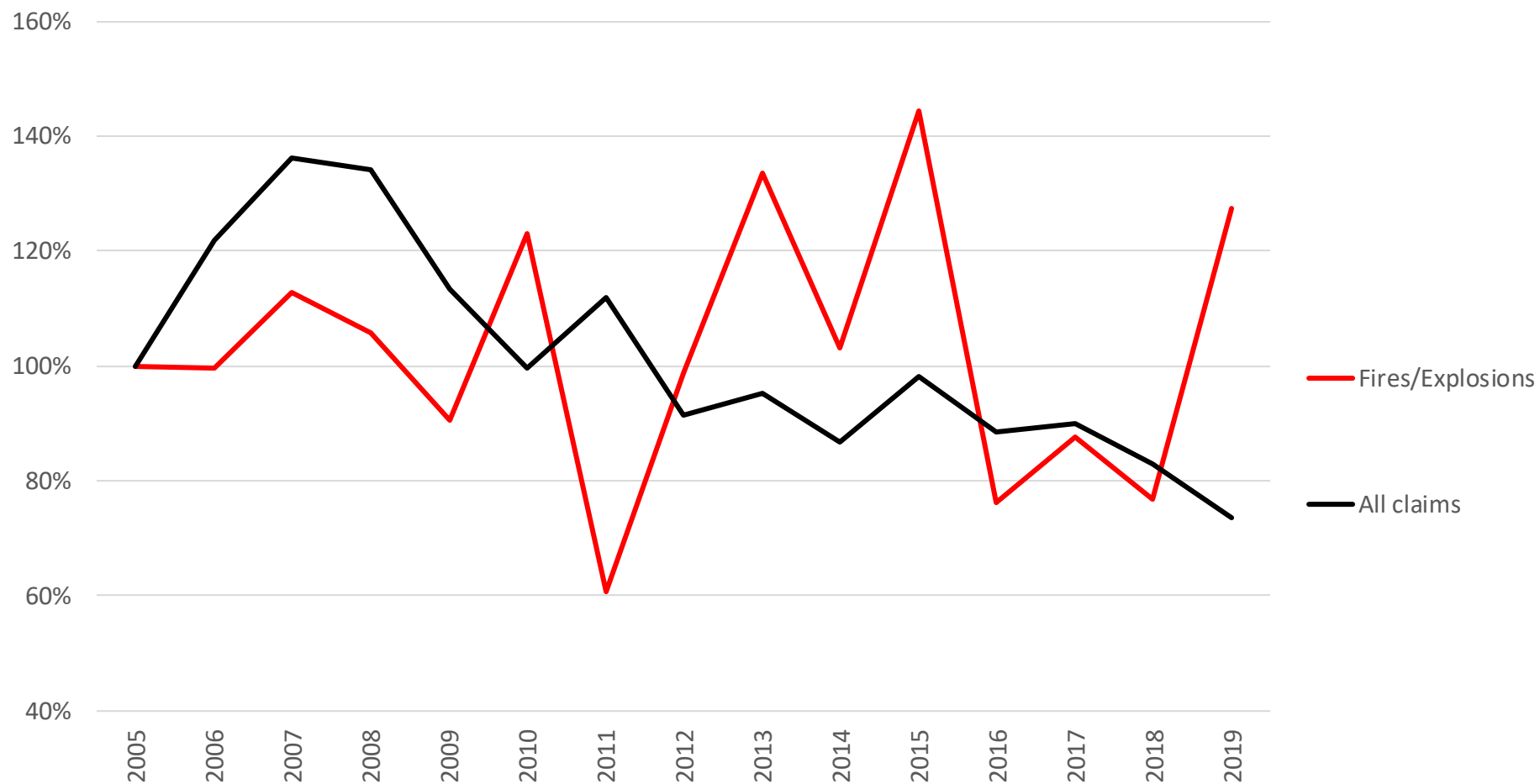
cefor.no/globalassets/documents/statistics/nomis/2019/2020---the-geography-of-claims.pdf

THE FIRE CHALLENGE – CONTAINERS ET AL.



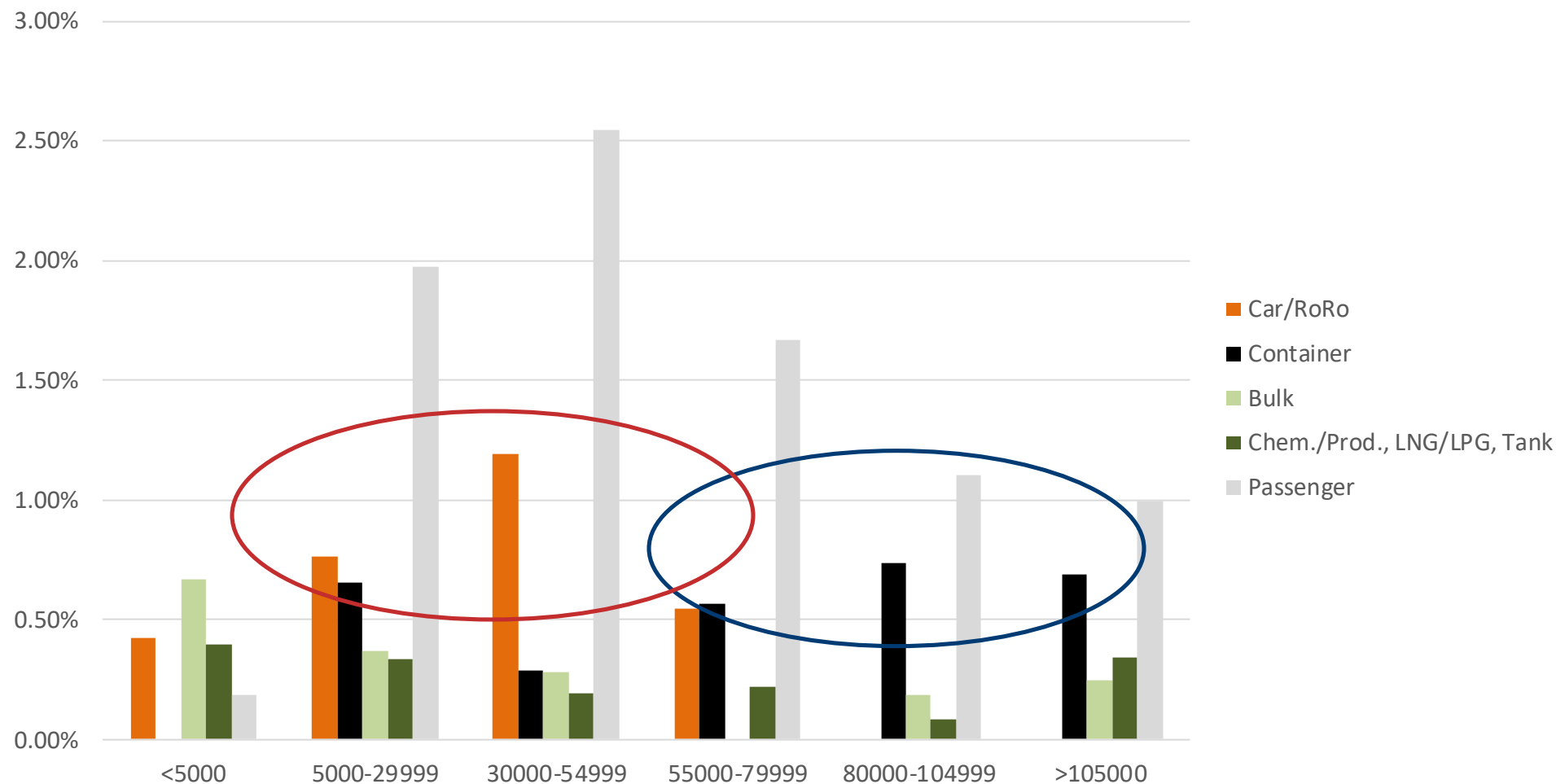
FIRE FREQUENCY (ALL VESSEL TYPES): NO DOWNWARD TREND AS FOR OTHER CASUALTY TYPES

CLAIMS FREQUENCY OF ALL CLAIMS VERSUS FIRES/EXPLOSIONS, CLAIMS > USD 500,000



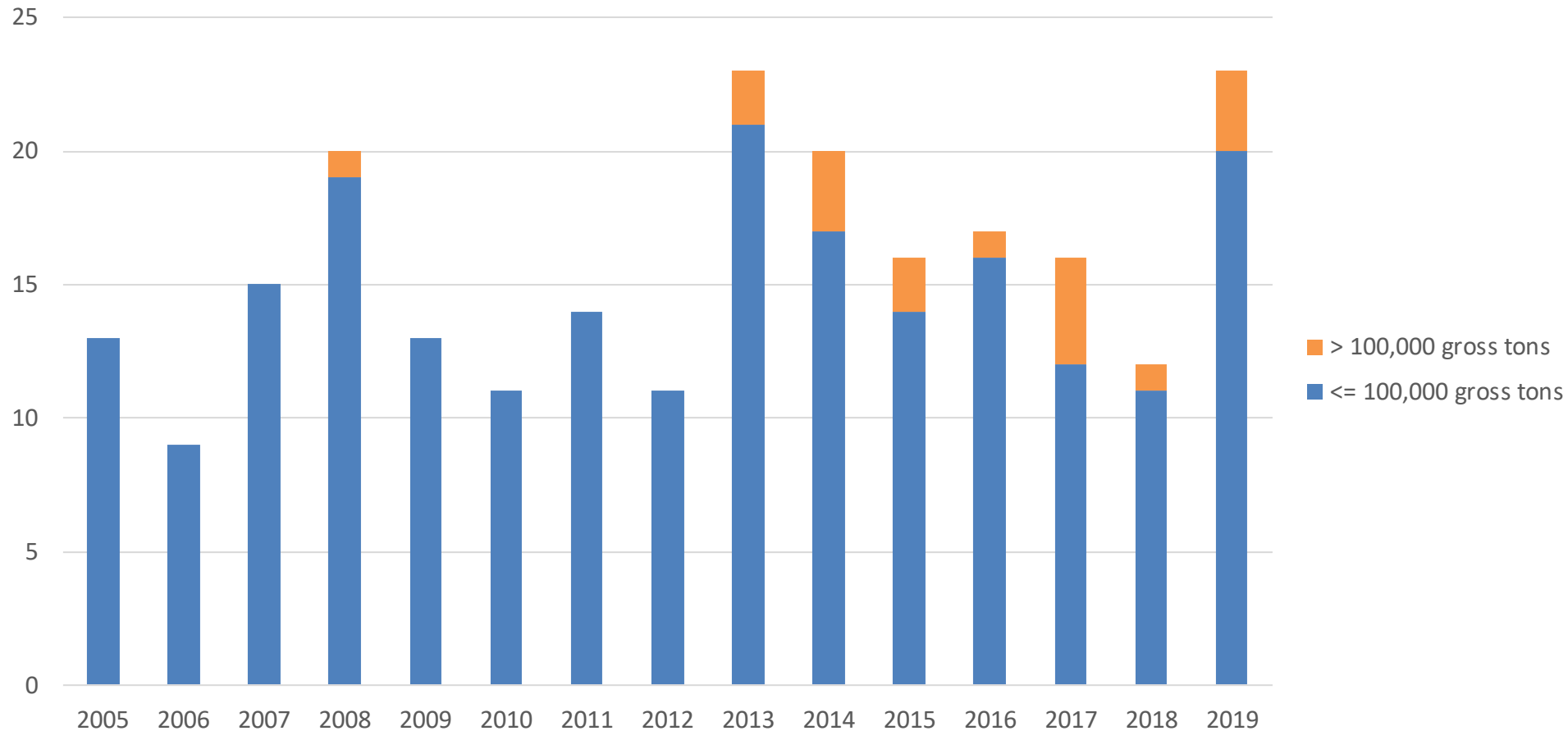
HIGHEST FIRE FREQUENCY (CARGO VESSELS): MEDIUM-SIZED CAR/RORO AND LARGE CONTAINER VESSELS

FIRE FREQUENCY BY VESSEL TYPE AND SIZE BANDS (GROSS TONS), 2010-2019

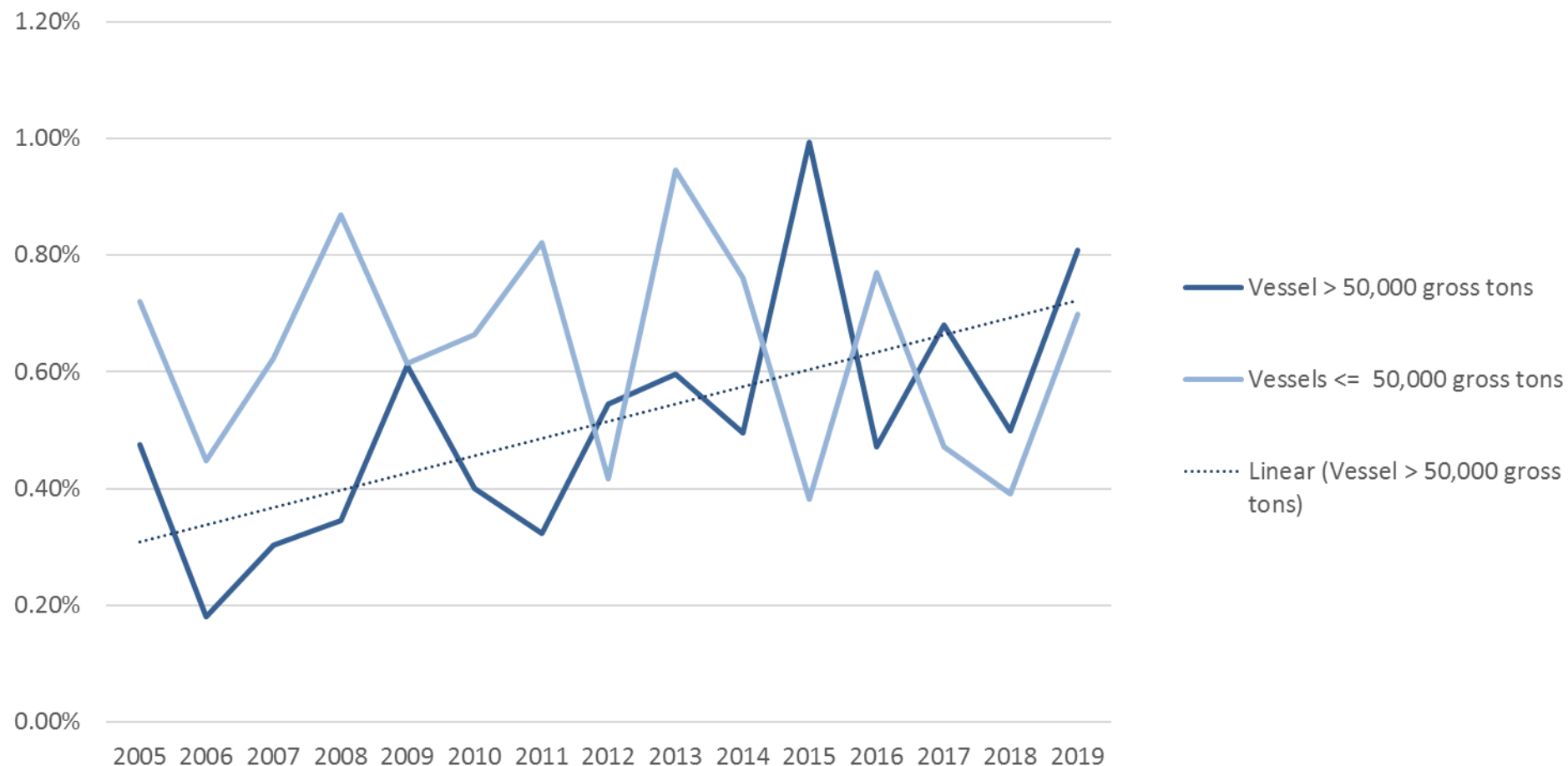


CONTAINER VESSELS: INCREASING NUMBER OF FIRES ON LARGE VESSELS

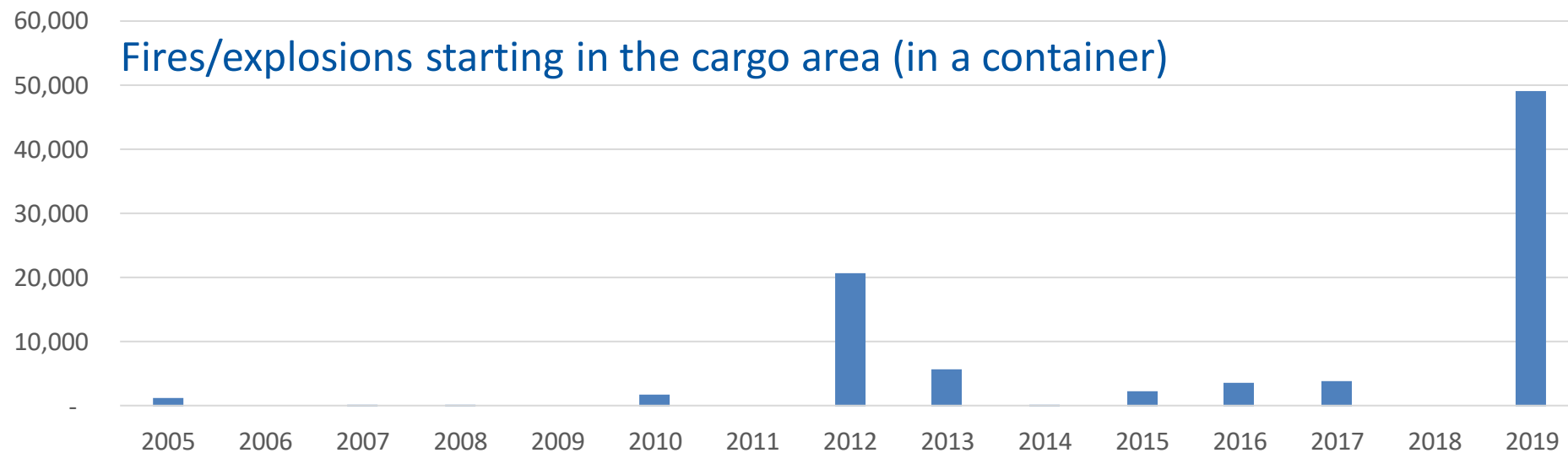
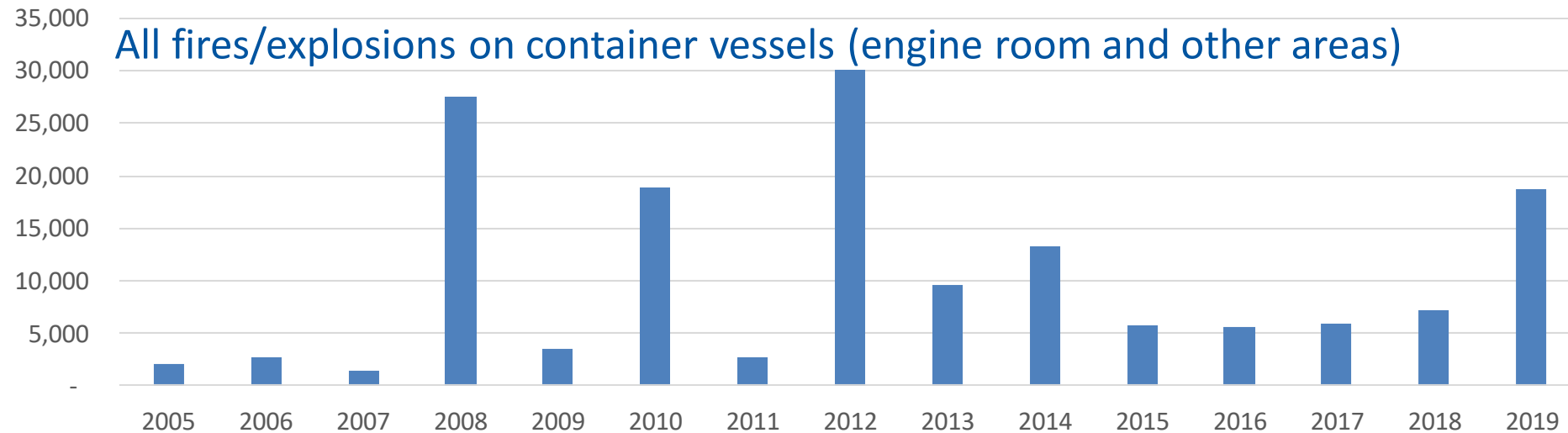
(NB: SOME RELATION TO INCREASING NUMBER OF LARGE CONTAINER VESSELS IN WORLD FLEET)



CONTAINER VESSELS: UPWARD TREND IN FIRE FREQUENCY ON LARGE VESSELS



FIRE CLAIM COST PER VESSEL (USD)



2019: Increased claim cost per vessel from fires starting in cargo area.

SUMMARY FIRES

- Fire frequency (all vessel types): No downward trend as for other types of casualties.
- Highest fire frequency on
 - Passenger vessels
 - Medium-sized Car carriers / RoRo vessels (NB: there are few large Car/RoRo vessels)
 - Large container vessels
- Container vessels:
 - Upward trend in fire frequency on large container vessels.
 - Increasing impact on claim cost by fires starting in cargo area (in a container).
 - The larger the container vessel, the higher the probability of a fire in the cargo area:
The more containers on board, the higher the probability that at least one container contains dangerous cargo that may self-ignite.
 - Misdeclaration of cargo a concern (containers with dangerous cargo stored in wrong area)
 - Fires in cargo area difficult to extinguish. Fire-fighting in cargo area more challenging than for engine room fires and poses a high risk to the crew.
 - New fire on container vessel reported 1st quarter 2020.

Complete Analysis at:

cefor.no/globalassets/documents/statistics/nomis/2019/2020-the-fire-challenge---containers-et-al..pdf

TRENDS PUBLISHED BY CEFOR IN THE FOLLOWING PUBLICATIONS:

Published 2 April 2020



NoMIS
Nordic Marine
Insurance Statistics



NOMIS HULL TRENDS @ CEFOR.NO/STATISTICS/NOMIS

NoMIS trends per Dec. 2019

The screenshot shows the Cefor website's 'NoMIS Stats per 31 December 2019' page. The header includes the Cefor logo and navigation links for 'About Cefor', 'Statistics', 'Clauses', 'Education', and 'Industry Policy'. A search bar and 'Log in' link are also present. The main content area is titled 'NoMIS Stats per 31 December 2019' and 'Major losses return - Fires a concern'. It features a list of bullet points: 'Major claims impact returned in 2019 to the average expected level.', 'Fires a concern, particularly on large container vessels', 'Overall claims frequency remained at a stable level around 23%', and 'Total loss frequency continues long-term positive trend.'. A 'Special focus analyses' section follows, stating 'Besides the standard ocean and coastal hull trends for claims frequency Cefor turned this year the spotlight on the following issues:' and listing 'The fire challenge - Containers et al.', 'Claims frequency versus vessel speed (bulk, container, tank)', and 'Impact of geography on claims - Examples seasonality and rivers'. A sidebar on the left contains a 'Statistics' menu with 'Nordic Marine Insurance Statistics (NoMIS)' selected, and a 'Special focus analyses' section.

Special focus analyses

The screenshot shows the 'Special focus analyses' page on the Cefor website. The header is identical to the previous screenshot. The main content area is titled 'Special focus analyses' and contains a detailed overview of the special focus analysis prepared by Cefor, explaining that it is derived from data in the Nordic Marine Insurance Statistics database and aims to identify claims trends in the context of portfolio and fleet characteristics. It lists three main focus areas: 'Fires', 'Claims frequency versus vessel speed', and 'The geography of claims'. Each area has a list of specific analyses, such as '2020 - The fire challenge - containers et al.', '2019 - Fires on container vessels', '2015 - FIREL (Car/RoRo vessels versus other types)', '2020 - Claims frequency versus vessel speed', '2020 - Analysing claims by geography - Seasonality and rivers', '2019 - Detentions - Indicators of casualties', and '2018 - Change of owner or flag'. A 'Layup - Impact on claims frequency' section lists '2017 - Container - in Layup 2009 versus active vessels'. A 'Spotlight on vessels built in Asia' section lists '2016 - Spotlight on vessels built in Asia'. A 'Terminology of claims/casualties for analysis' section lists '2018 - Partial and attritional versus major and total losses' and '2017 - Comparing serious, major and total losses'. A 'Print this page' link is at the bottom. The right sidebar contains contact information for Astrid Saltmann and a 'Market Overview' section with a magnifying glass icon.



THANK YOU

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