



THE NORDIC MARINE INSURANCE STATISTICS (NOMIS) 2019



THE FIRE CHALLENGE - CONTAINERS ET AL.

The fire challenge - containers et al.

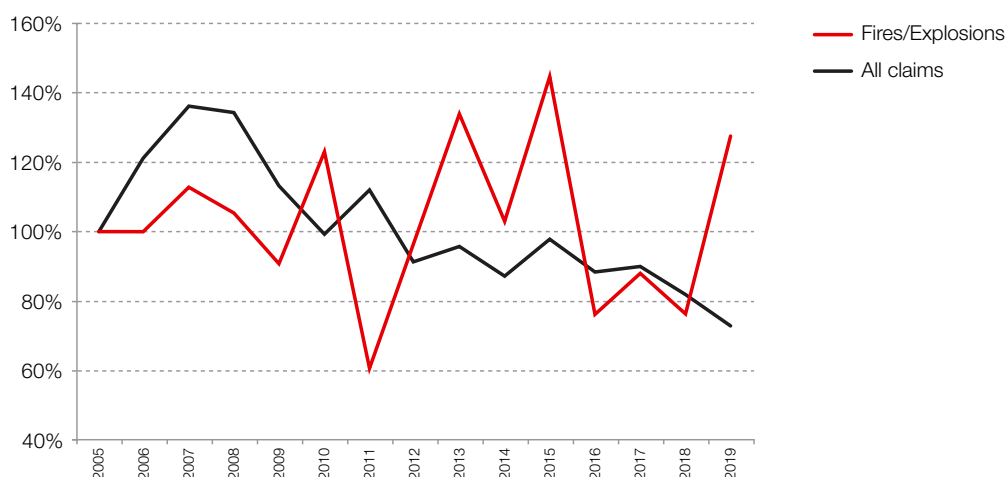
2019 was a real eye-opener in relation to the risk of fires on container vessels, especially those starting in containers on board. Unlike fires in the engine room, fires starting in the cargo area of a container vessel have proven challenging to detect and extinguish. The location of the fire may be difficult to reach, and fire-fighting capabilities both on and below deck are restricted and often insufficient to prevent the fire from spreading. This poses a serious threat to the crew and a risk of more severe damage to the cargo and the vessel itself.

The context: positive trend for all claim types except fires

As graph I illustrates, the claims frequency for all types of claim in excess of USD 500,000 has dropped by about 40% since the peak in 2007/2008, while there is no clear trend in the frequency of fire/explosion claims of this size. One characteristic is that the frequency of fire/explosion claims is more volatile, but graph I reveals at the same time a different trend from the other types of claim. Another aspect is that, although the fire/explosion frequency is comparably low in percentage terms – hardly impacting the overall claims frequency – single fire/explosion claims are costly when they occur and have a far larger impact on the overall claim cost than most other types of claim (see also ocean hull trends, article page 29).

This opposite trend also holds true when we include all claims but is particularly well reflected in the frequency of fire/explosion and other claims exceeding USD 500,000.

I: Claims frequency, claims > USD 500,000, all claims versus fire/explosions. Index 2005 = 100%



Highest fire risk on large container vessels and medium-size car carriers

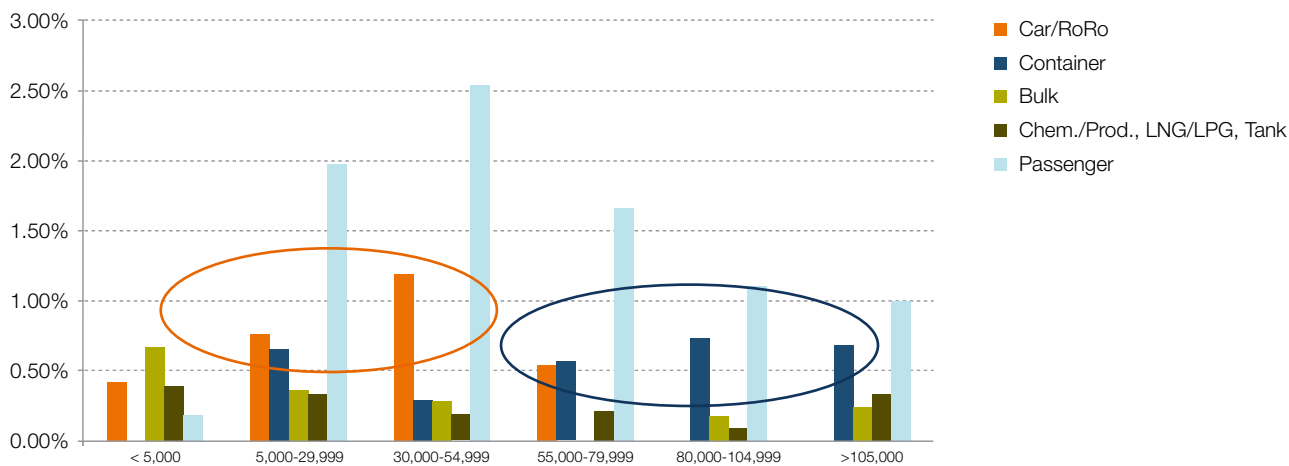
An analysis of the frequency of fires by vessel type and size band (graph 2) reveals that the highest fire frequency among all vessel types can be observed on medium-sized passenger vessels.

This article focuses on cargo-carrying vessels. For container vessels, a high frequency of fires over the period 2010 to 2019 can be observed especially for the largest vessels (over 50,000 gross tons).

The Car/RoRo category, which in graph 2 includes RoRo vessels with container-carrying capacity as well as pure car carriers and RoRo vessels, also shows a high fire frequency. The highest fire frequencies can be observed for vessel sizes between 5,000 and 80,000 gross tons, as there are almost no vessels in the size bands above 80,000 gross tons.

The fact that the fire frequency in the container and RoRo segment increases with vessel size may be explained by the cargo. If there is a certain probability of a fire starting in one container, the probability of a fire starting in at least one of the containers will grow in almost direct proportion to the number of containers. This means that if you stack enough containers with 'random' content on one site such as a ship or port, at least one of the containers is likely to contain something that self-ignites and causes a fire. The same phenomenon can also be explained in a different statistical setting. If you know that one out of a million containers to be transported from site A to site B contains something that is going to explode, the risk – i.e. the probability - of getting this container on your vessel is higher the bigger the vessel is. Moreover, the larger the vessel, the more severe the consequences of the worst-case fire scenario on this vessel will be. In short, the larger the vessel, the higher the risk of a fire and the more severe the probable consequences of such a fire.

2: Fire/explosion claims frequency by vessel type and size bands (gross tons), 2010-2019¹



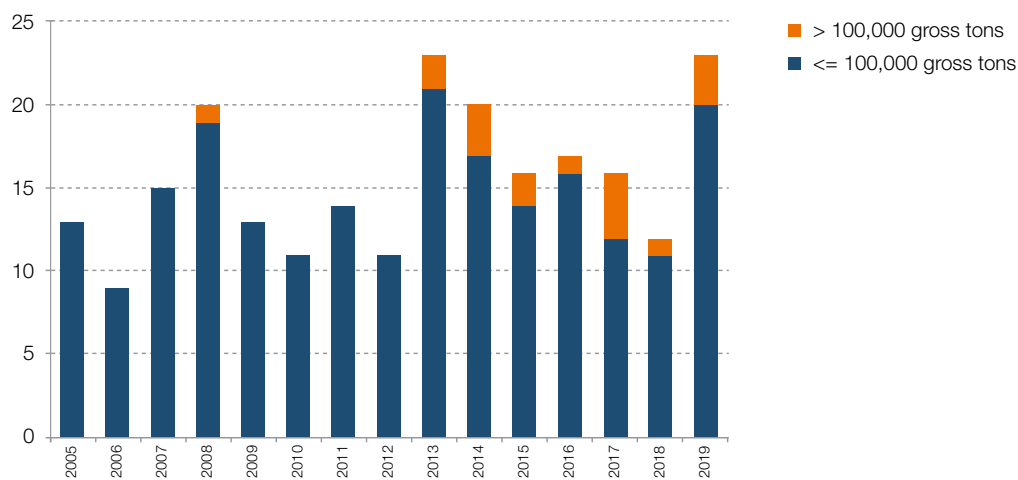
¹ 'Car/RoRo' includes car carriers, RoRo vessels as well as RoRo vessels with container carrying capacity.
'Container' includes here only fully cellular container vessels (non-refrigerated and refrigerated).

Fires on container vessels – statistics support the hypothesis about the cargo impact

All of the following graphs include in addition to fully cellular container vessels also combination carriers, i.e. RoRo vessels with container-carrying capacity. The intention is to capture the full extent of all fires that have occurred in recent years on any type of container-carrying vessel, and especially those which started in a container on board.

In the first quarter of 2019, an unusually large number of such fires was recorded. Of particular concern is the increasing number of these fires on vessels over 100,000 gross tons (graph 3), where the potential for damage to cargo and injury to crew members is even greater if the fire cannot be extinguished before spreading to other areas. The increase in the absolute number of fires on large container vessels is partly due to the growth in the number of these vessels in the world fleet and hence in the NoMIS portfolio.

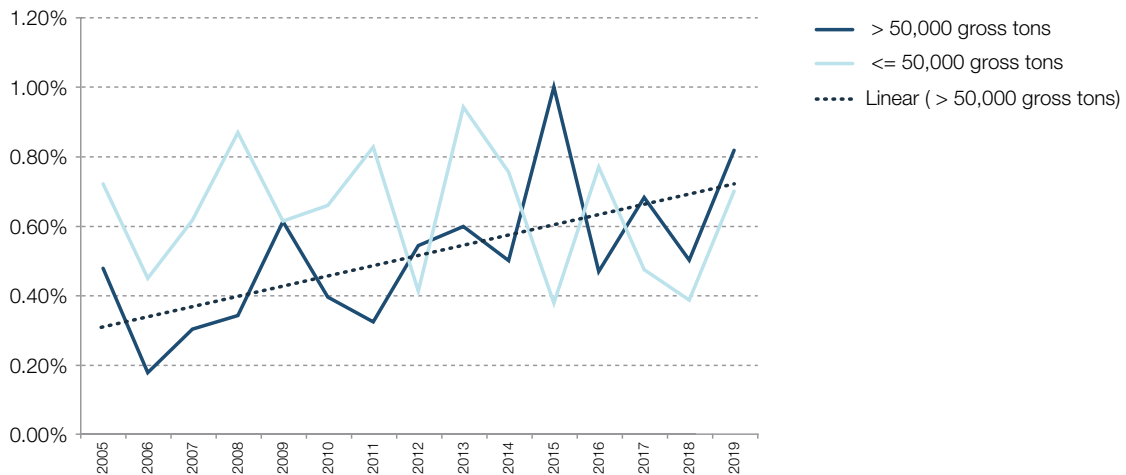
3: Fires on container vessels – number of occurrences by vessel size



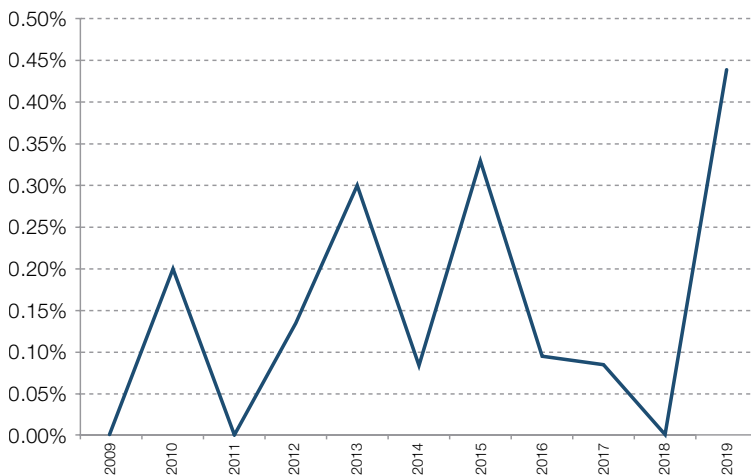
Graph 4 compares the frequency of all fires/explosions on container vessels above 50,000 gross tons with vessels of less than 50,000 gross tons. For the larger vessels, there is a clear trend towards more fires over the last fifteen years.

Looking specifically at fires starting in the cargo area, graph 5 shows that the frequency of such fires, particularly on larger vessels, increased substantially in 2019 compared to the preceding years. Especially in the first quarter of 2019 there was a concentration of severe fires on container vessels.

4: Claims frequency - all fires/explosions on container vessels by vessel size

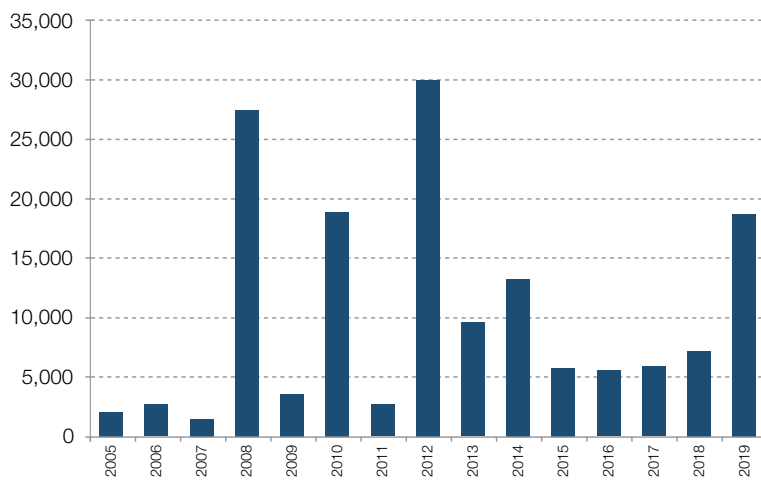


5: Claims frequency – fires starting in cargo, container vessels > 50,000 gross tons



Fires starting in the cargo area of a container vessel often represent a high cost to shipowners and hence to their insurers. Graph 7 shows the claim cost per vessel for such fires, which represents the cost under the standard hull and machinery policies as entered into the NoMIS database. Additional costs, especially for damage to the cargo on board and business disruption, may be high and affect many parties. A comparison between graphs 6 and 7 shows that the lion's share of the cost of fire/explosion claims on container vessels since 2012 originates from fires starting in the cargo area. A serious concern is the misdeclaration of goods, as this may lead to e.g. containers which should not be exposed to heat being stored in unsuitable places. A recent fire casualty of that type, not captured in the statistics presented here, occurred on 4 January 2020. According to the shipowner, the fire was caused by spontaneous combustion of misreported lithium batteries in a container.

6: Claim cost per vessel (USD) - all fires/explosions on container vessels



7: Claim cost per vessel (USD) – fires starting in cargo area on a container vessel

