

Engine / Machinery Claims Report

Nordic Marine Insurance Statistics

as of 30 June 2010

Statistics based on:

- Vessels with a registered IMO-nr
- Claims in excess of standard deductible
(Engine claims stats: engine claims in xs of 10,000 USD)

The term "Engine" is in this report used for all types of machinery-related damage, if not indicated otherwise.



The NOMIS (Nordic Marine Insurance Statistics) database

Portfolio as of June 2010:

153,256 vessel years

9,000 vessels uw year 2009

Maximum:

13,000 vessels per uw year

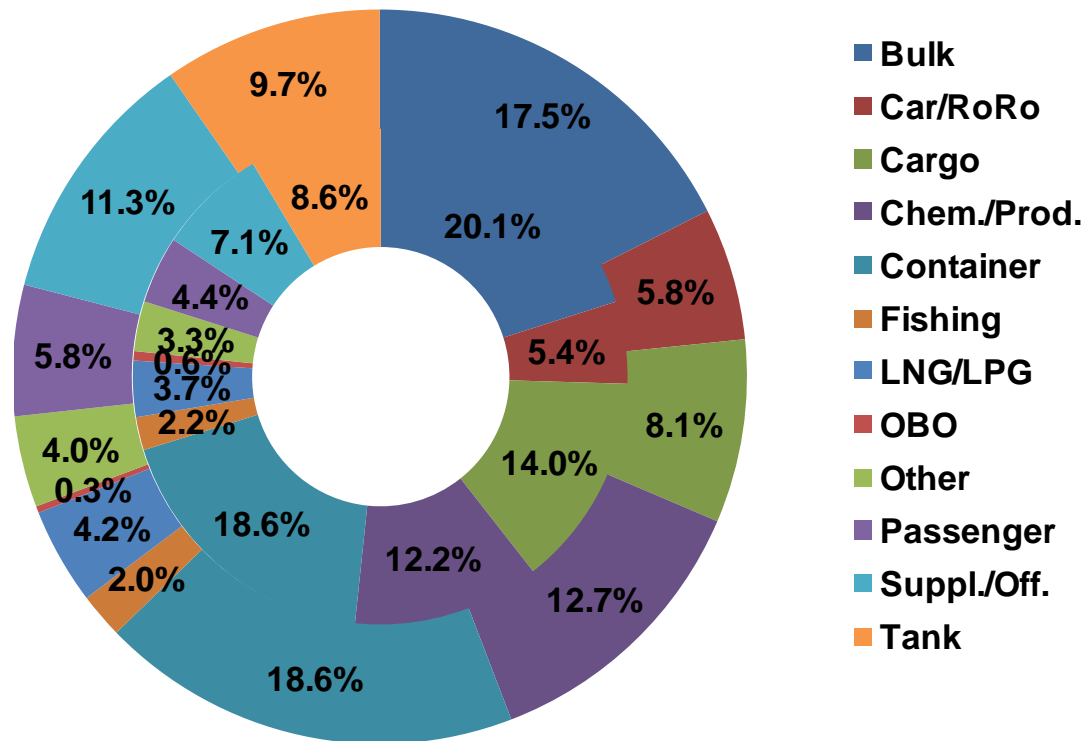
NoMIS fleet in % of world merchant fleet (xs 300 GT):

<= 25% (number of vessels)

<=50% (gross ton)

Inner ring: 2004-2008

Outer ring: 2009



Distribution of vessels by Vessel type

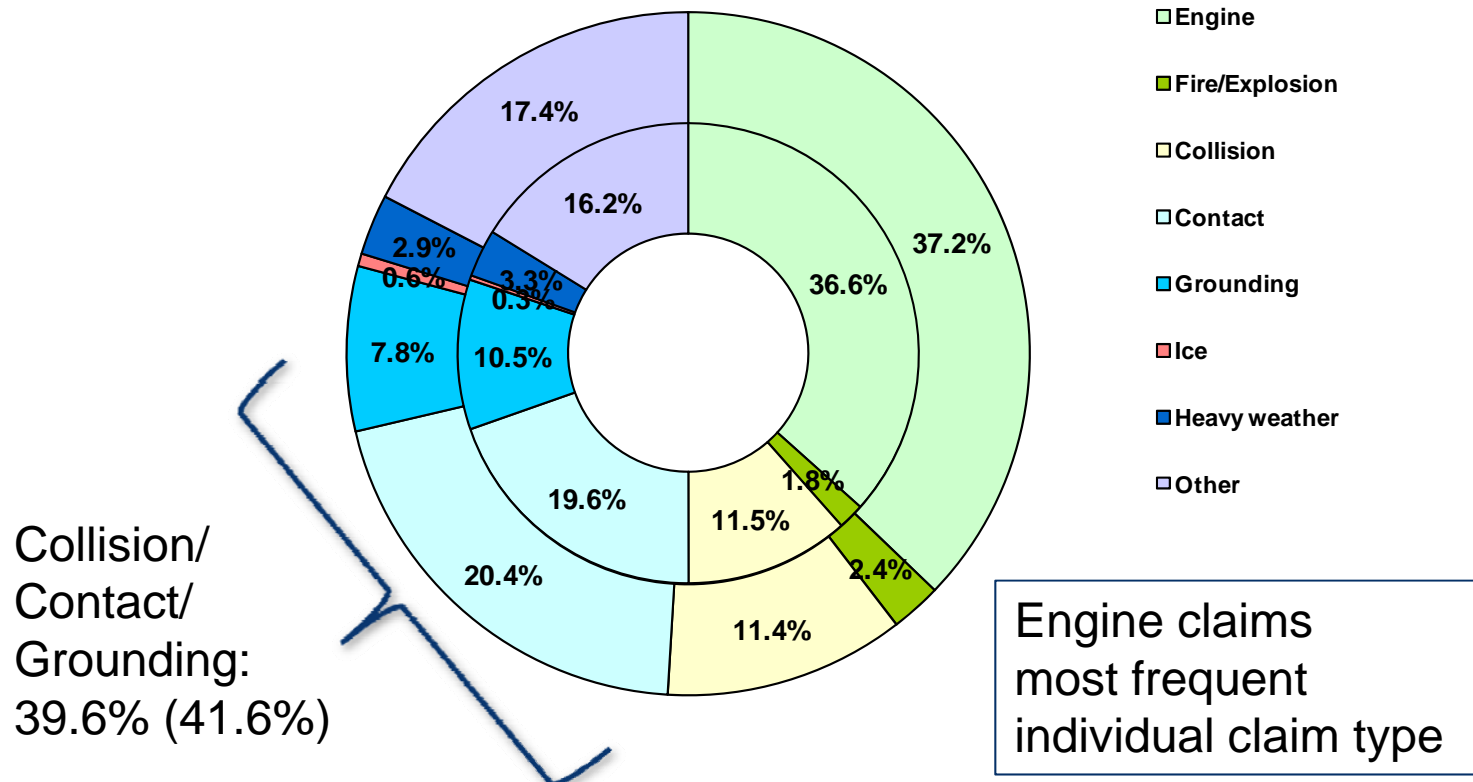
Contents

- Distribution by claim type – numbers, cost
- Average claim cost by claim type
- Maximum claim per year
- Engine claims
 - in bands by size of claim
 - by type of casualty
 - by cause
 - by vessel type
 - electronical versus mechanical engines
 - by age group and bore group

Distribution of **number of claims** by type

Number of claims

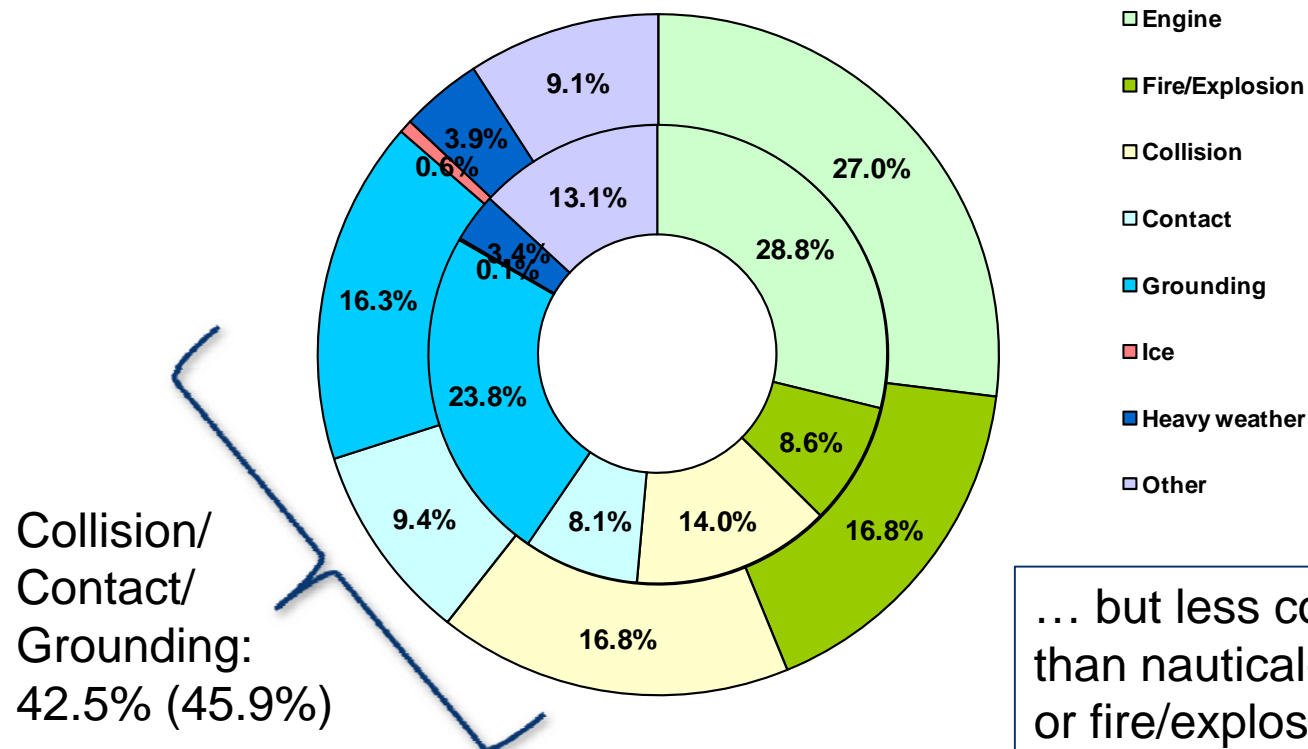
Inner ring: 2004-2008
Outer ring: 2009



Distribution of **claims cost** by type

Cost of claims

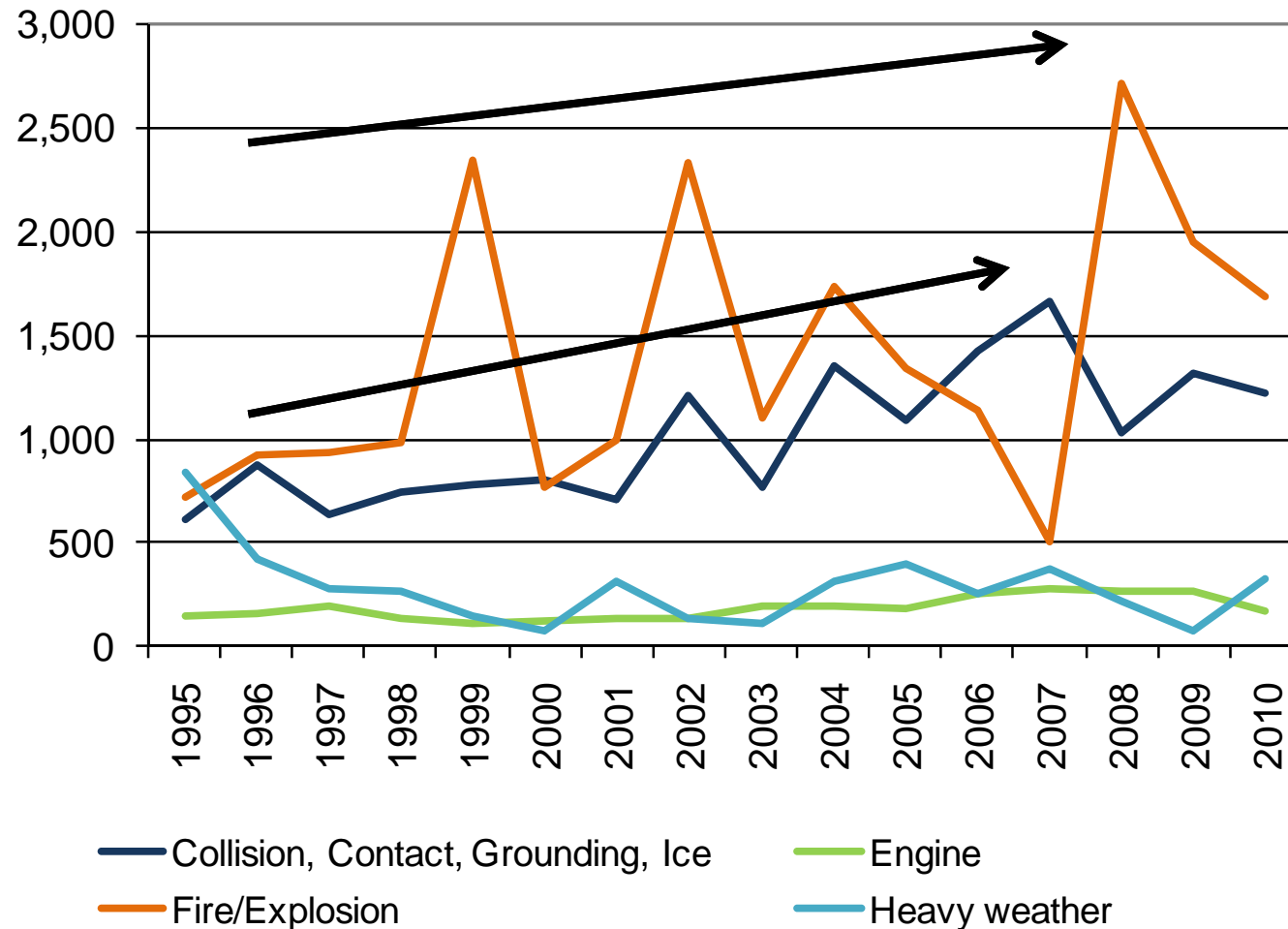
Inner ring: 2004-2008
Outer ring: 2009





Average individual claim cost – by claim type (USD 1,000)

Increase in average cost of nautical-related and Fire/explosions claims.

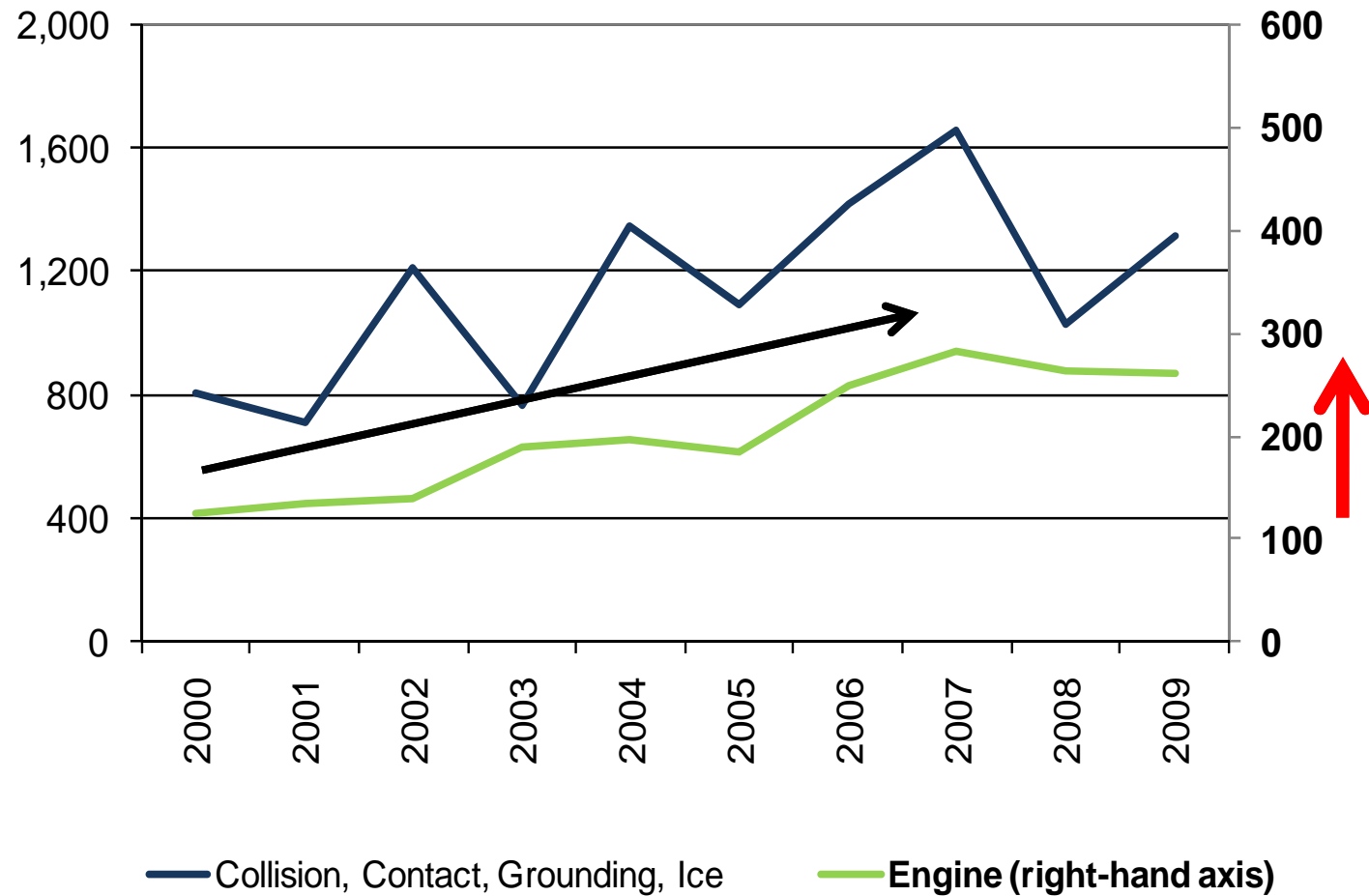


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Average individual claim cost – **engine and nautical-related claims** (USD 1,000)

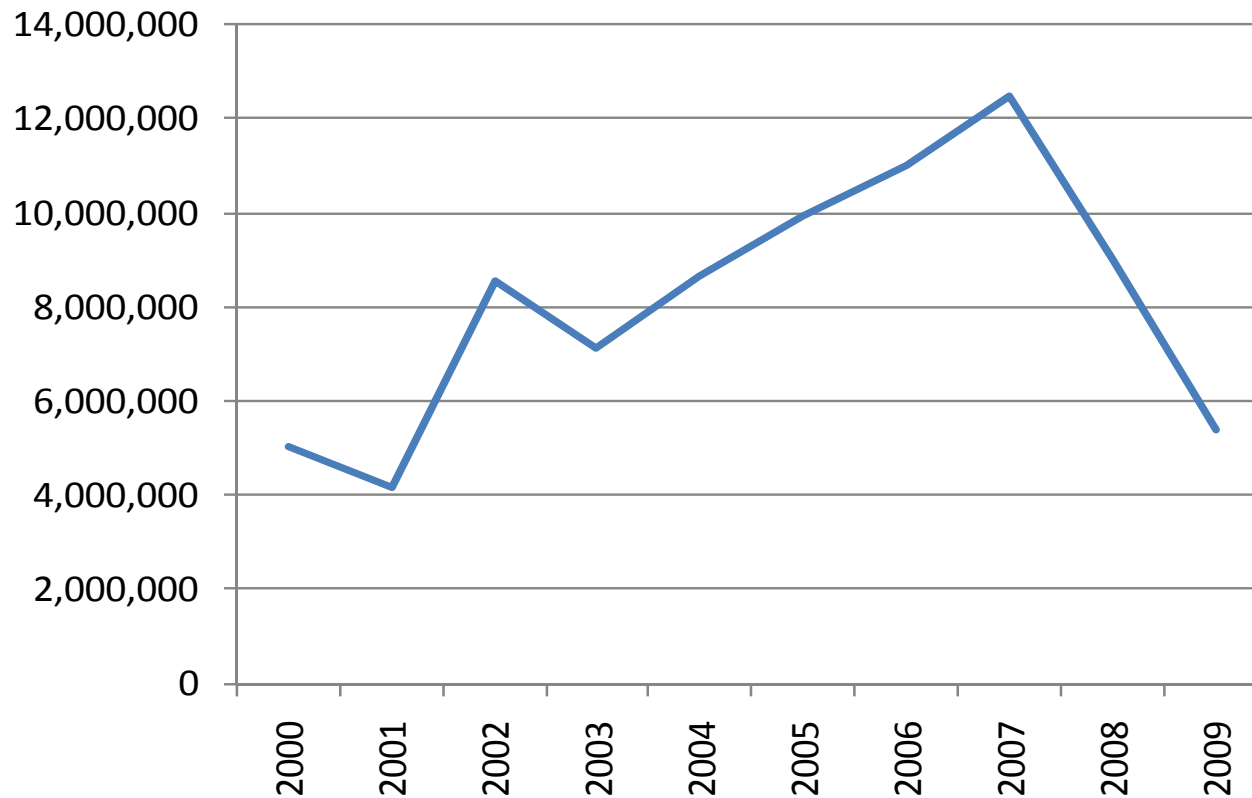
But also
average
engine
claim cost
nearly
doubled
since 2000!



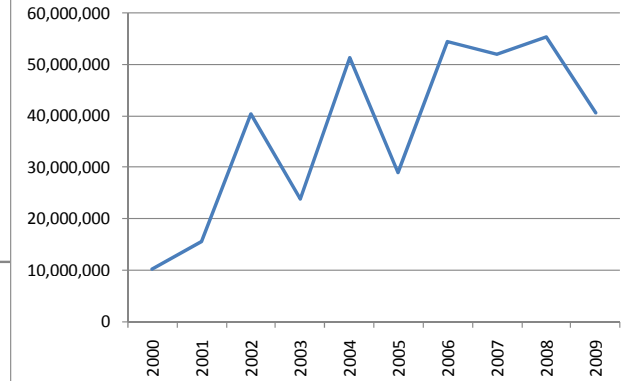


Maximum individual claim per year

Maximum individual **engine** claim (USD) by date of loss



Maximum individual claim (USD) by date of loss

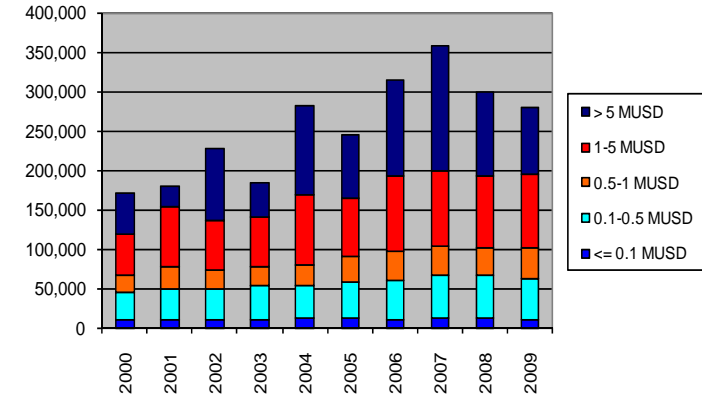


**2009 =
"Lucky year"
when it
comes to
major
claims?**

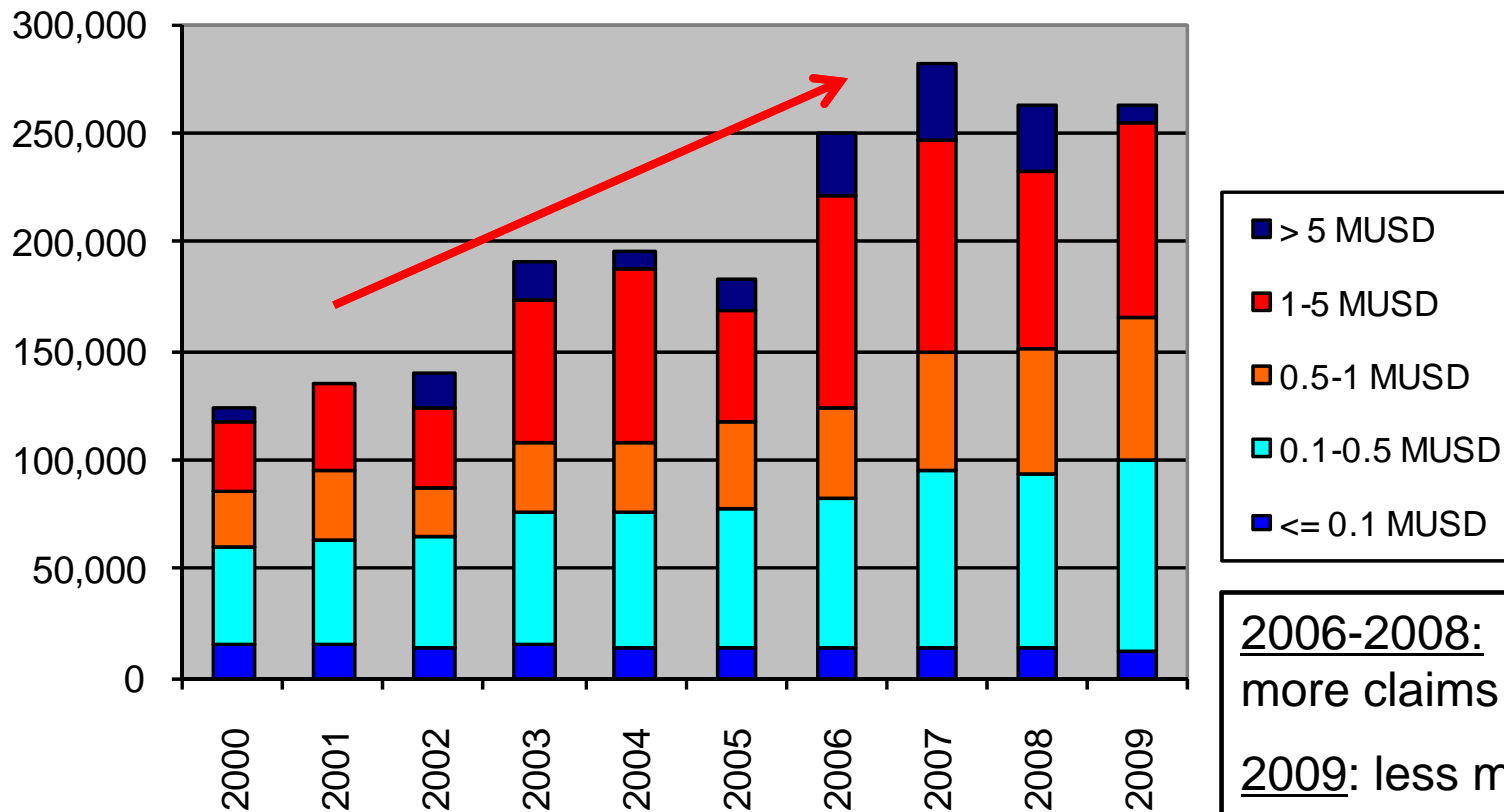


Average engine claim cost in bands of claim size

All claims types



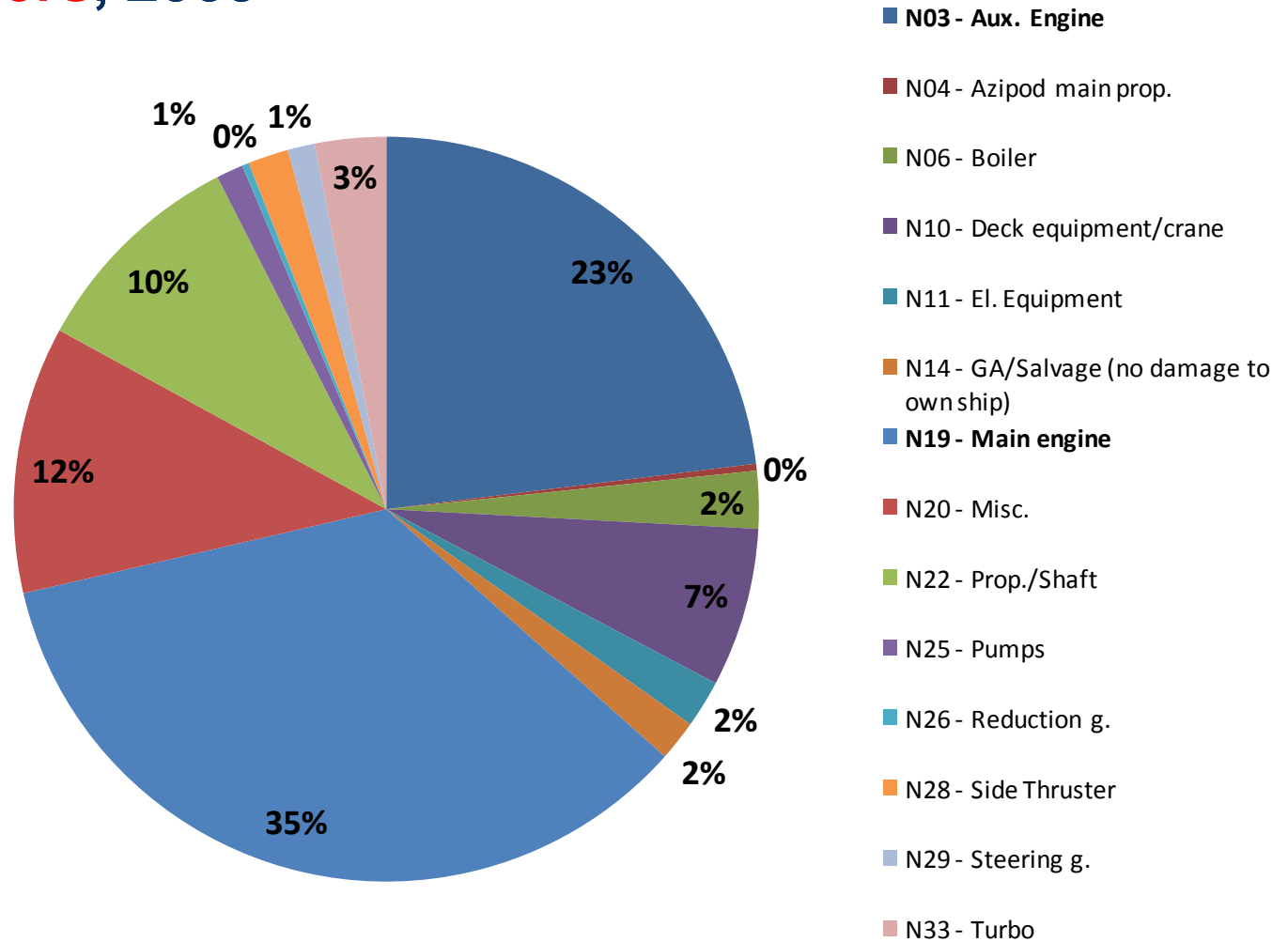
Average individual engine claim cost



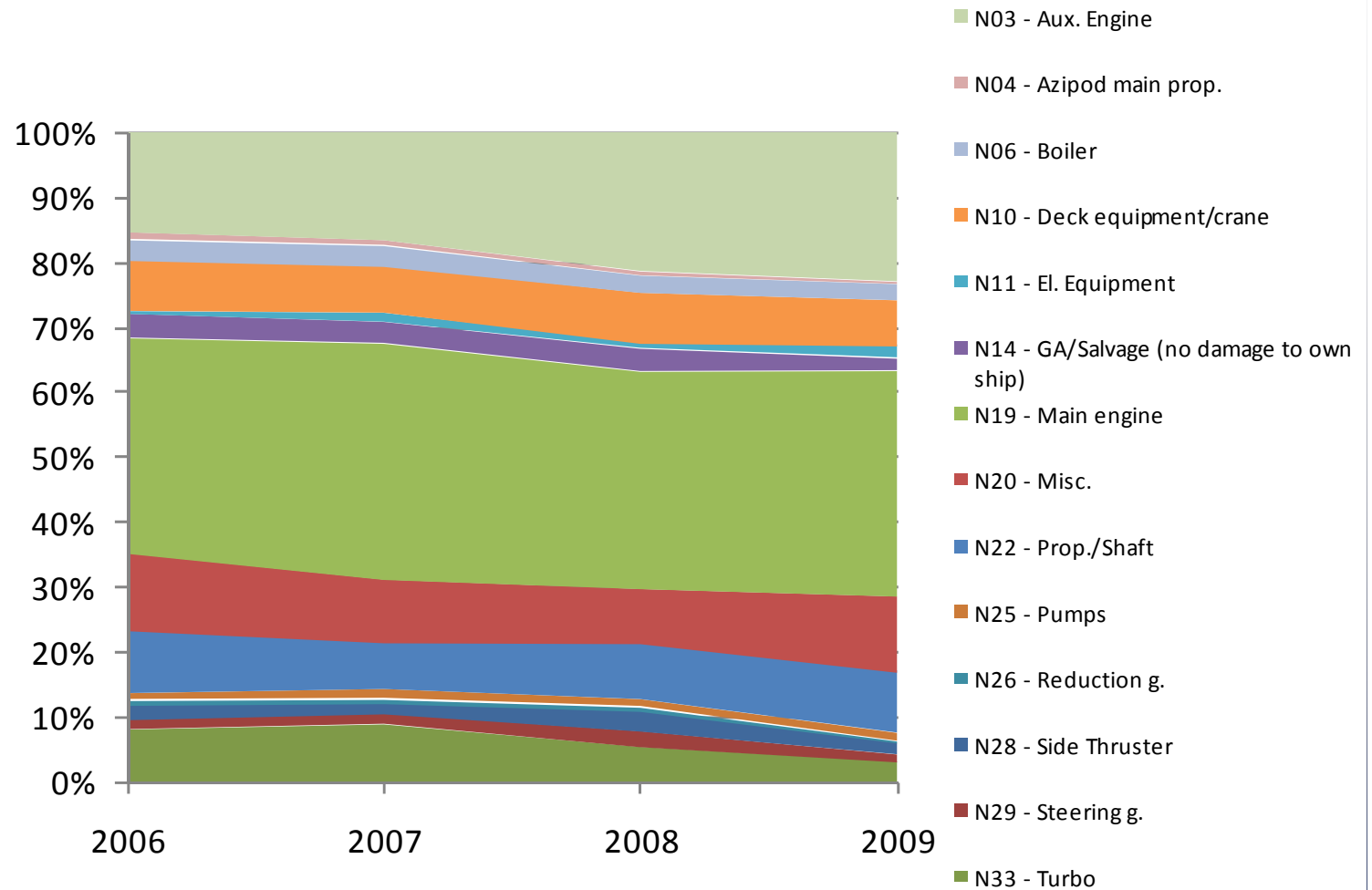
2006-2008:
more claims xs 5 MUSD

2009: less major claims,
but continued increase in
cost of claims < 1MUSD

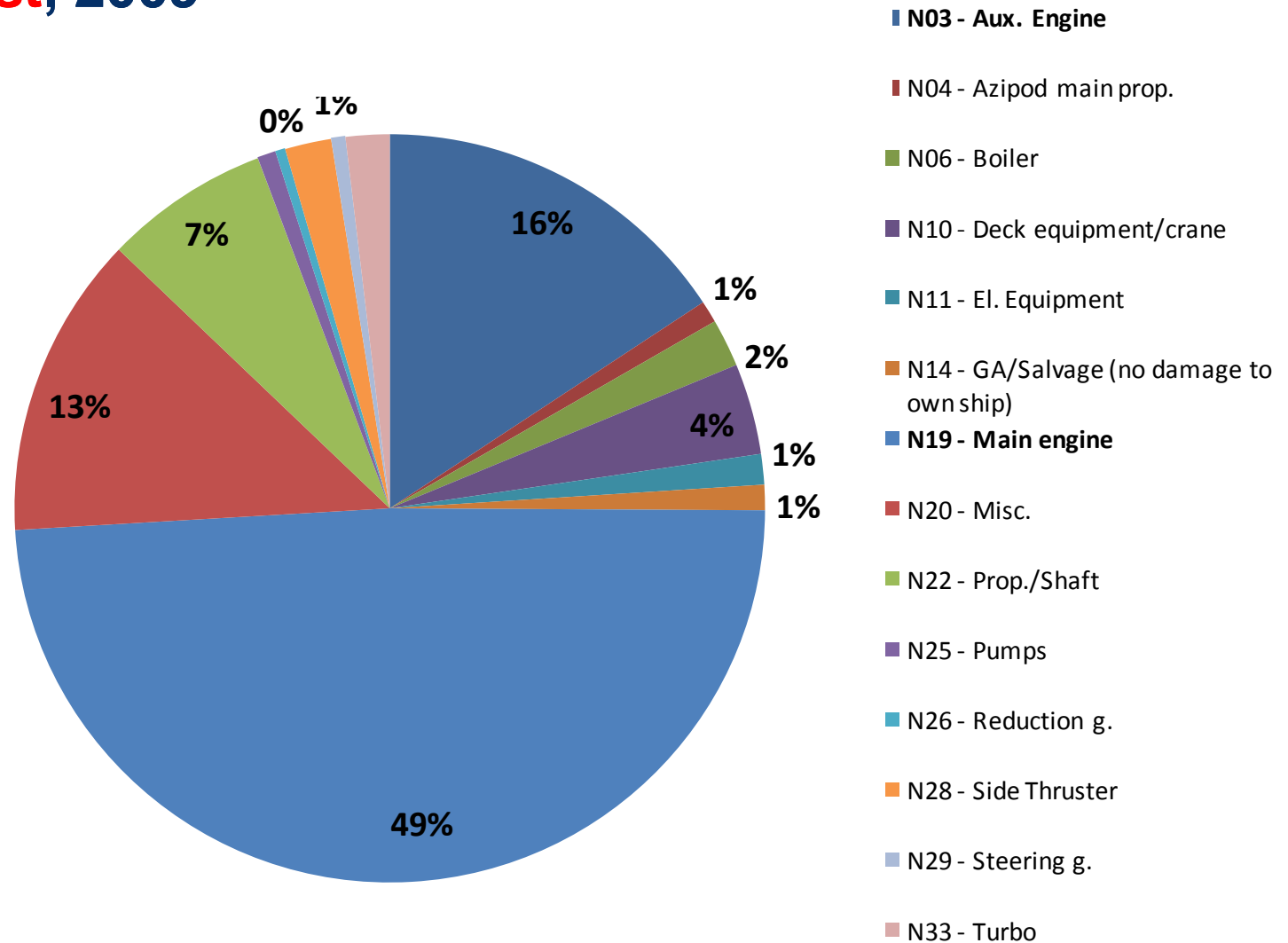
Engine claims by **type of casualty** – **Numbers, 2009**



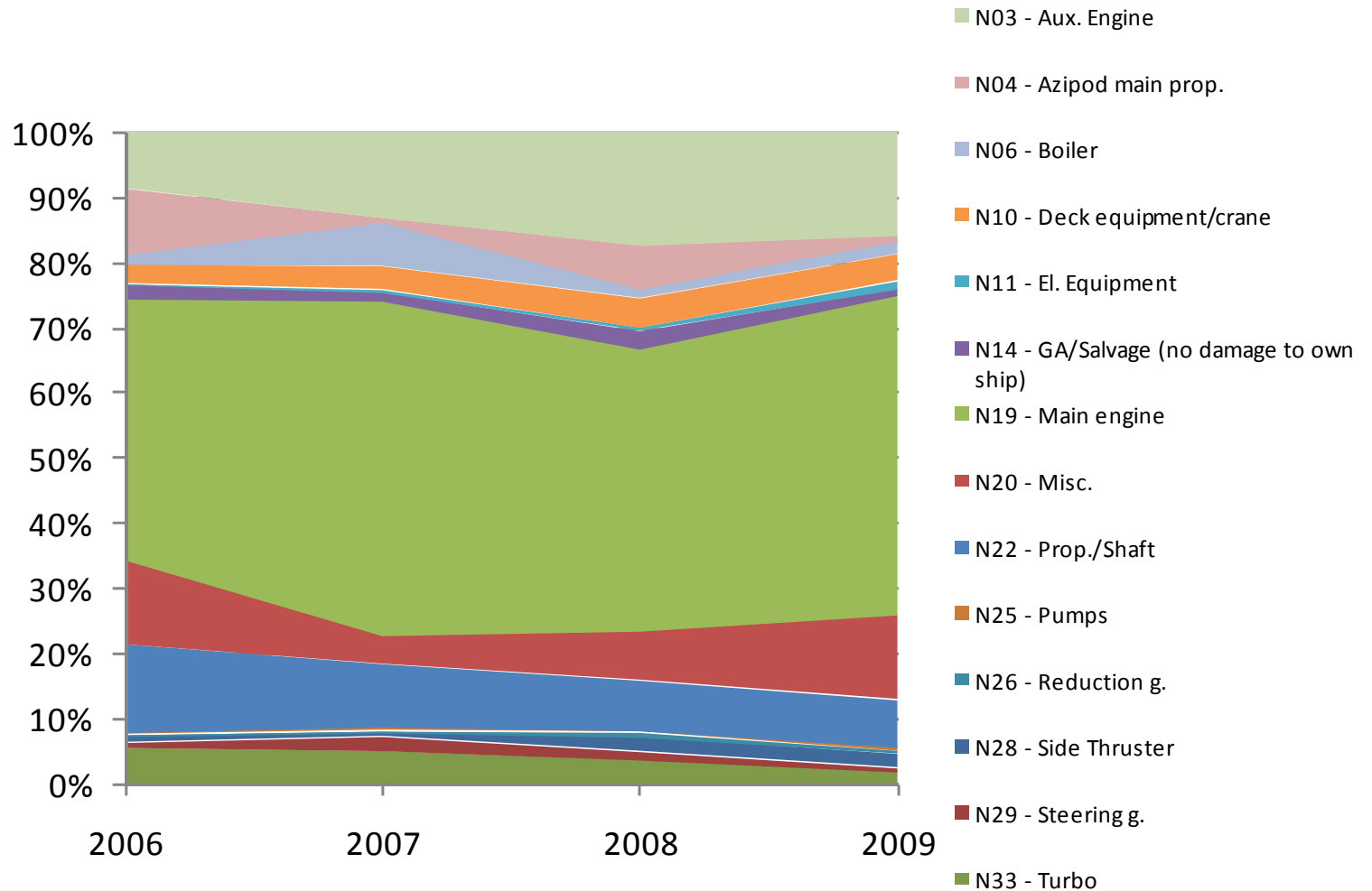
Engine claims by type of casualty – Numbers, 2006-2009



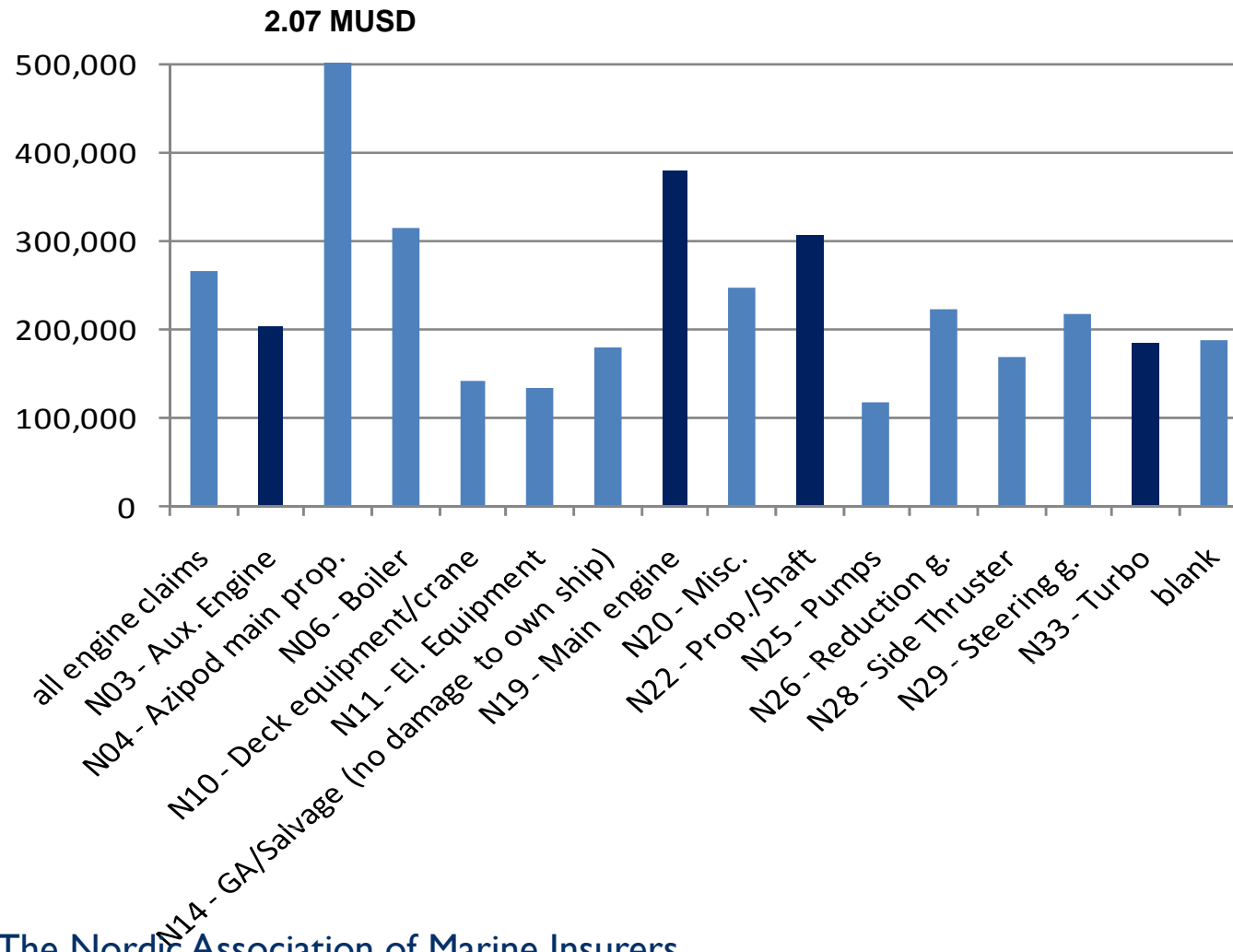
Engine claims by **type of casualty** – **Cost, 2009**



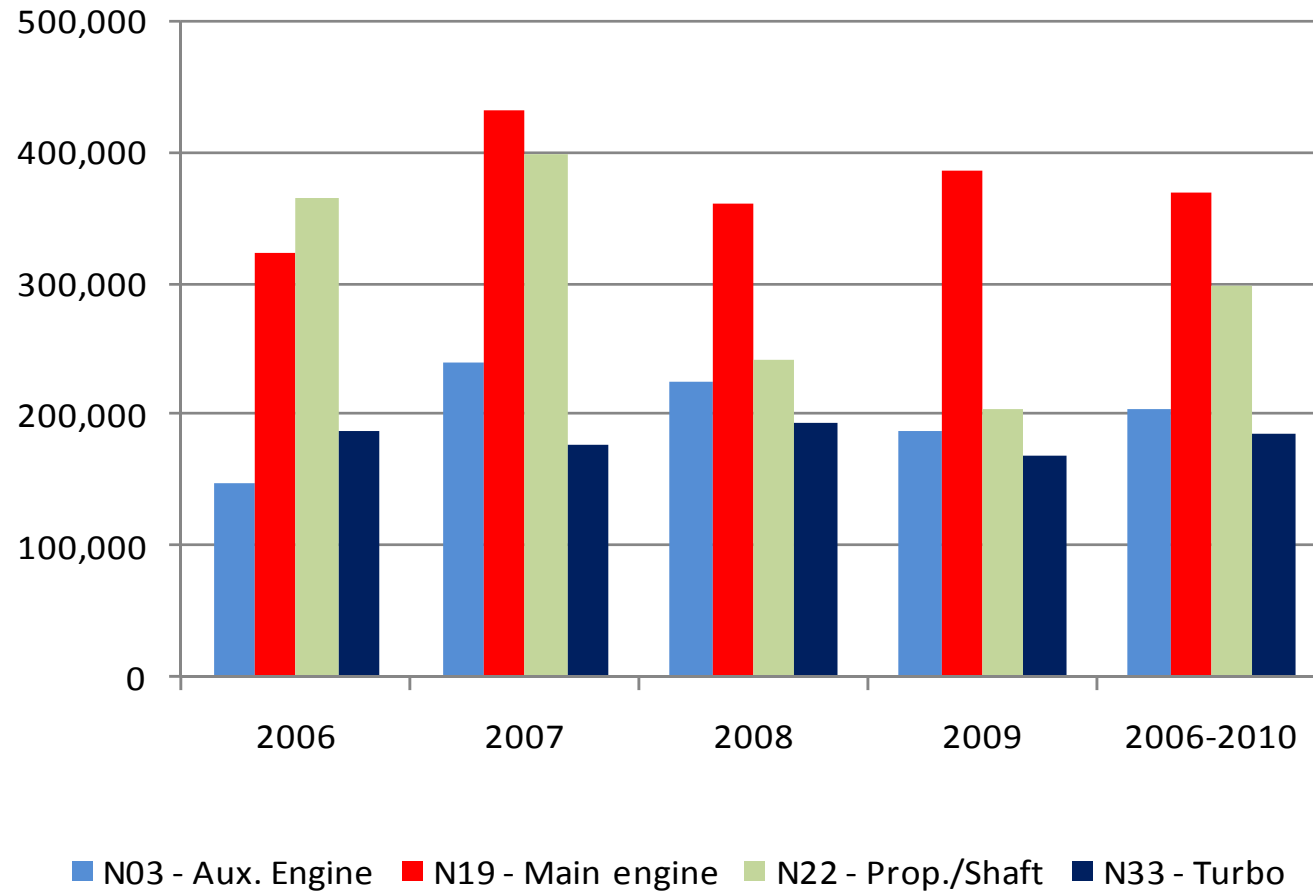
Engine claims by **type of casualty** – Cost



Average individual engine claim cost by engine casualty, 2006-2009



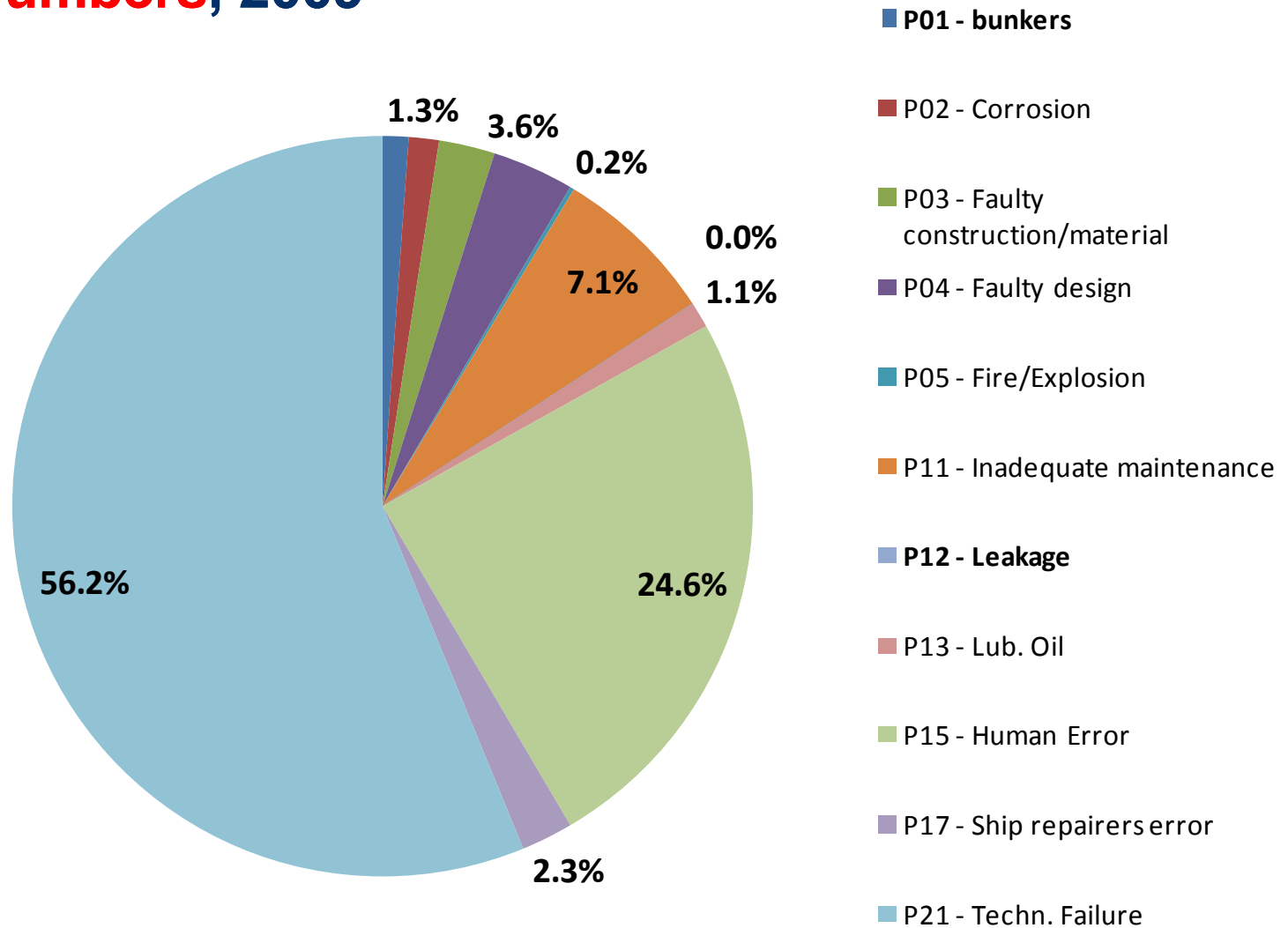
Average individual engine claim cost – most frequent casualty types, 2006-2009



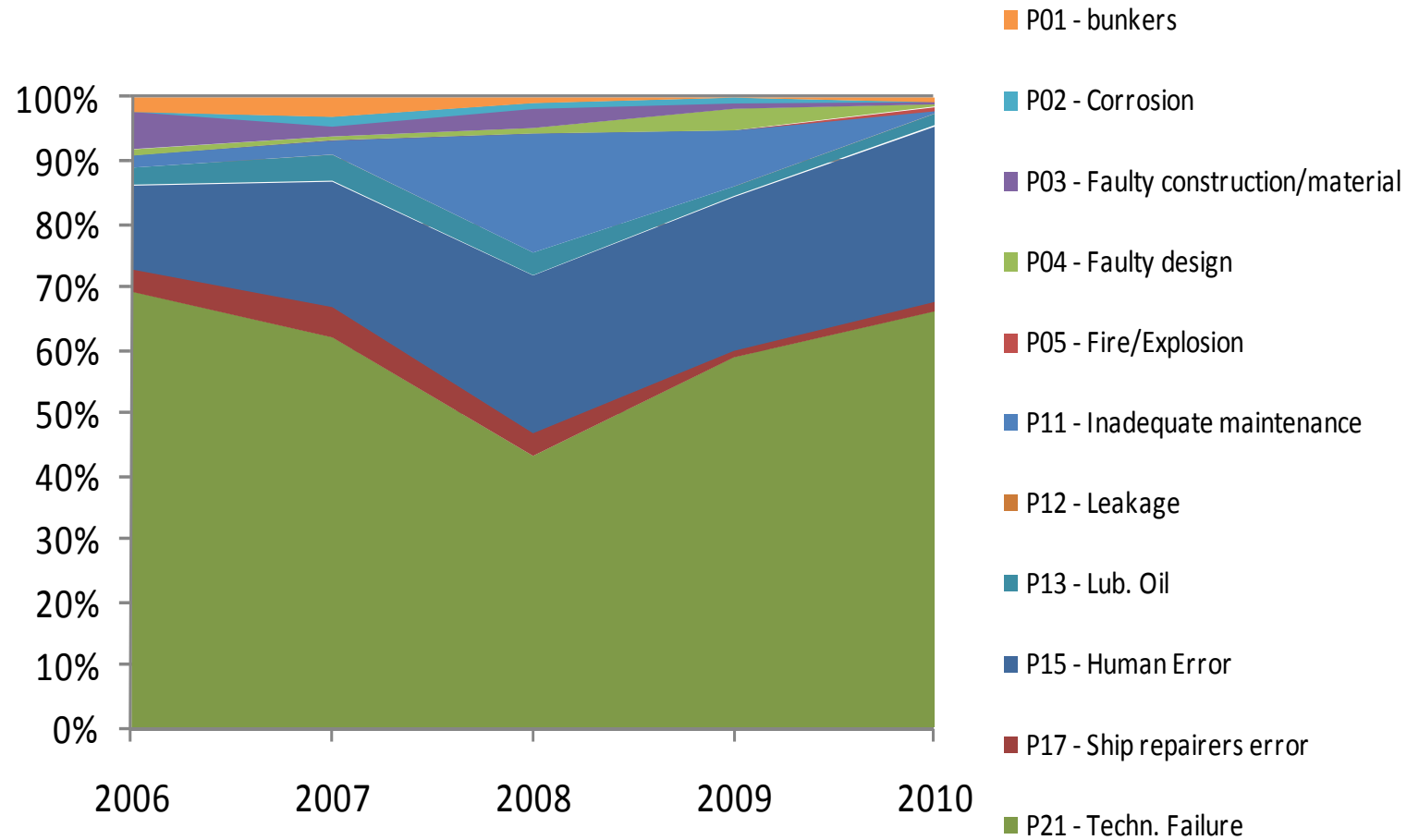
Summing up main casualty engine types

- 35% of numbers and 50% of engine claim cost related to main engine –
but also other claims types may be due to main engine failures! (Fire/Explosion, Grounding...)
- 23% of numbers and 16% of cost related to auxiliary engine
- Few, but expensive claims: Azipod main prop. (because only on few ships with high values?)

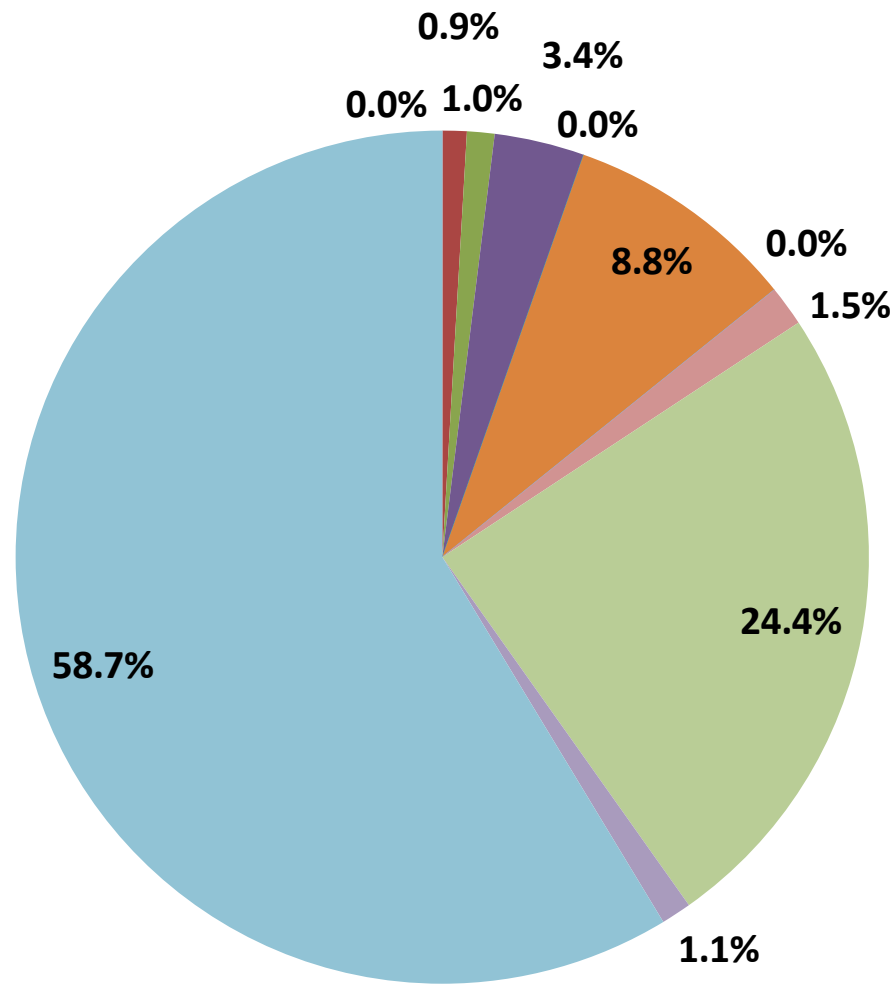
Engine claims by **cause** – **Numbers, 2009**



Engine claims by cause – Numbers

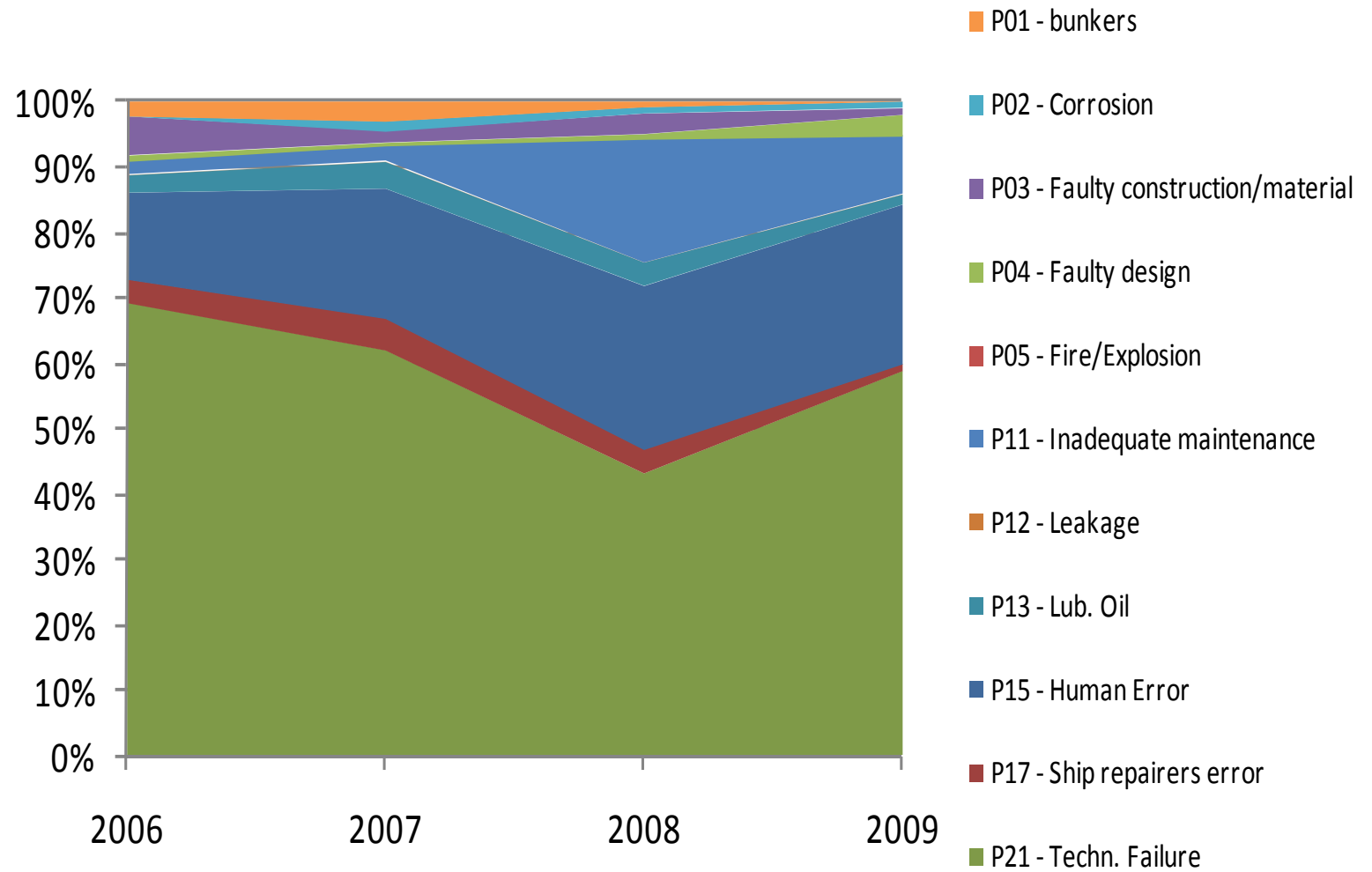


Engine claims by **cause** – **Cost, 2009**



- P01 - bunkers
- P02 - Corrosion
- P03 - Faulty construction/material
- P04 - Faulty design
- P05 - Fire/Explosion
- P11 - Inadequate maintenance
- P12 - Leakage
- P13 - Lub. Oil
- P15 - Human Error
- P17 - Ship repairers error
- P21 - Techn. Failure

Engine claims by **cause** – **Cost**



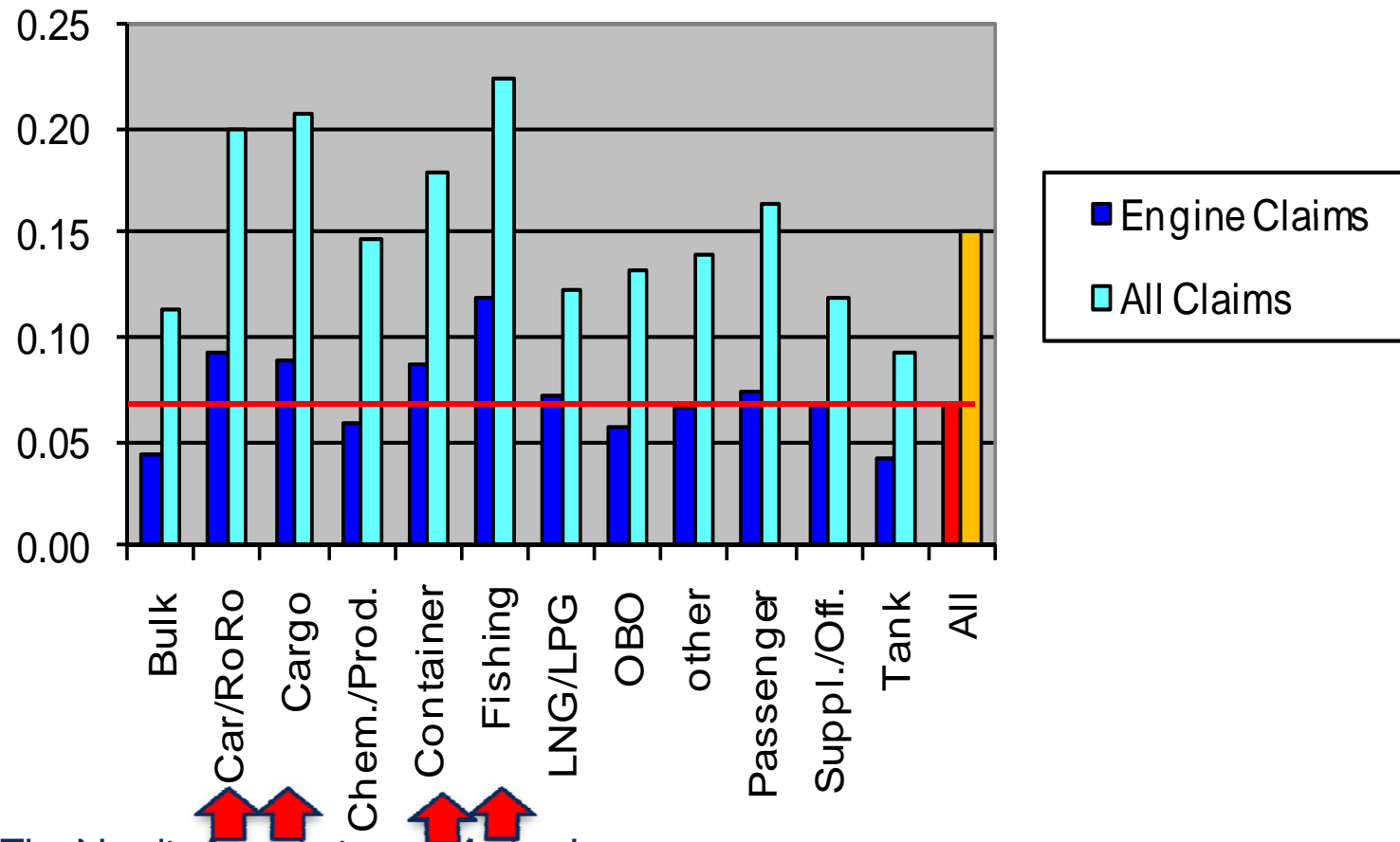
Summing up main cause of engine claims

- Close to 60% of all engine claims (numbers and cost) are due to technical failure.
- But another 25% of all engine claims are due to human error,
and 8% due to inadequate maintenance.

=> Room for improvement?

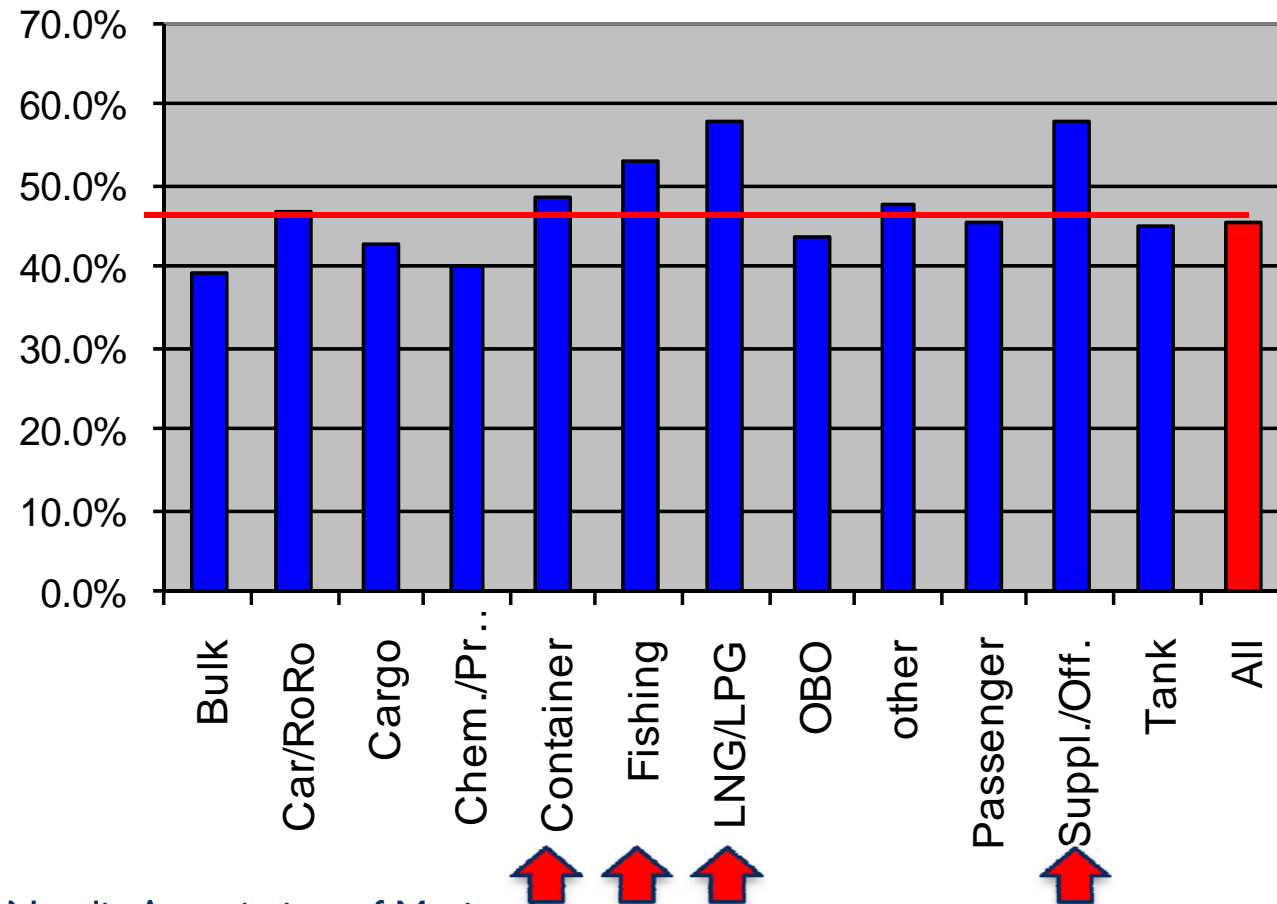
Claim frequency by vessel type, 2005-2009

Claims xs 10,000 USD



Number of Engine claims in % of all claims by vessel type, 2005-2009

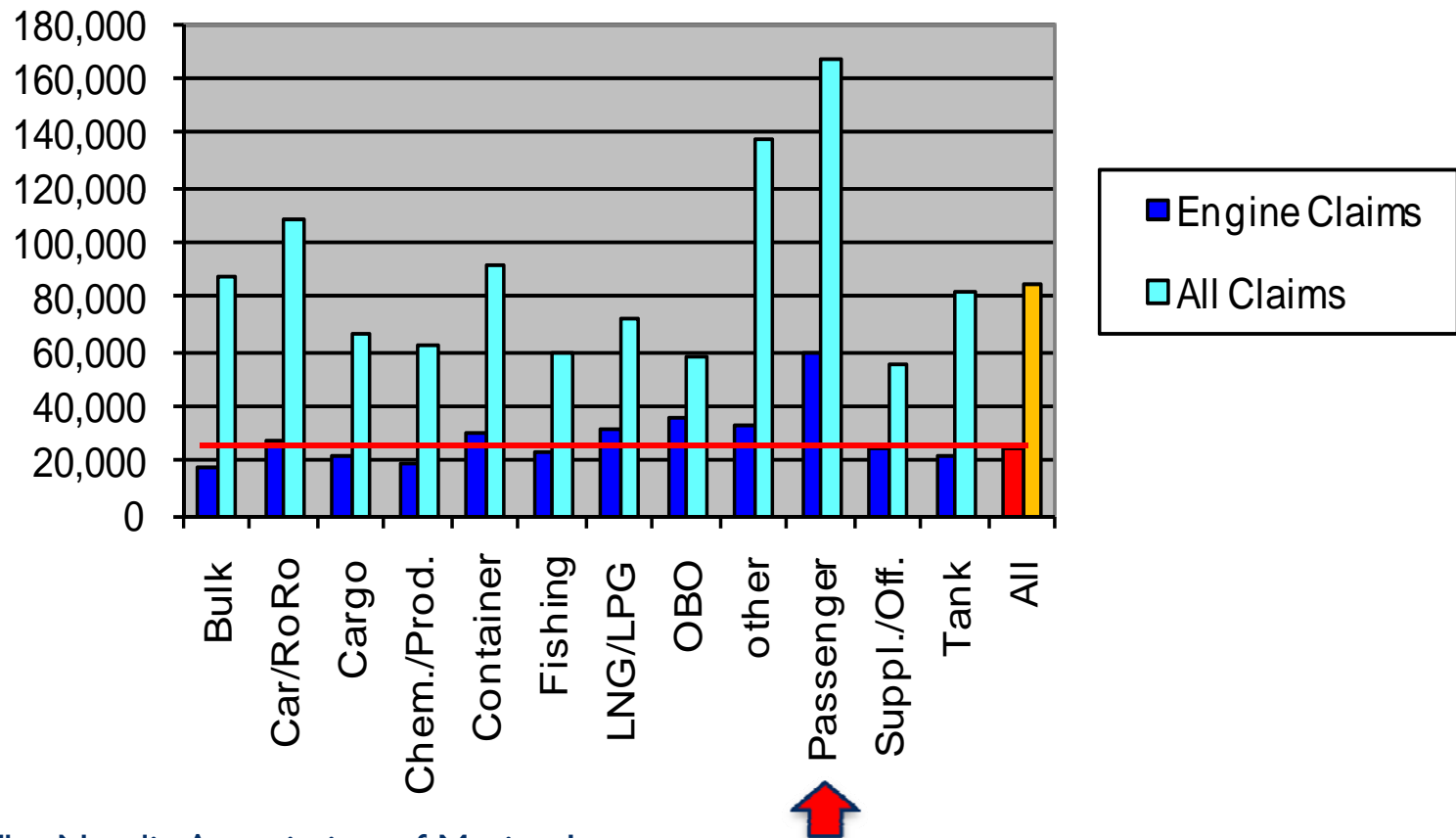
Claims xs 10,000 USD



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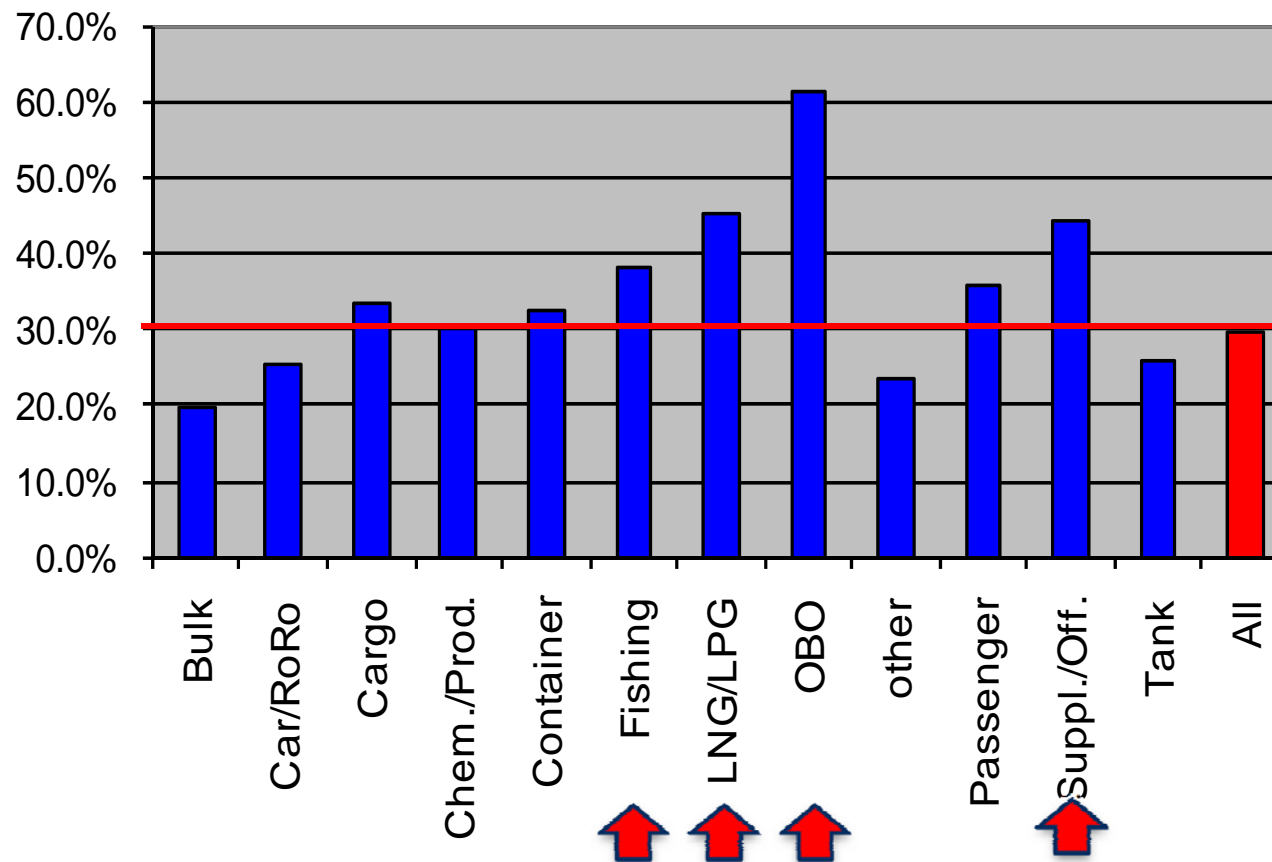
Average claim cost per vessel by vessel type, 2005-2009

Claims xs 10,000 USD



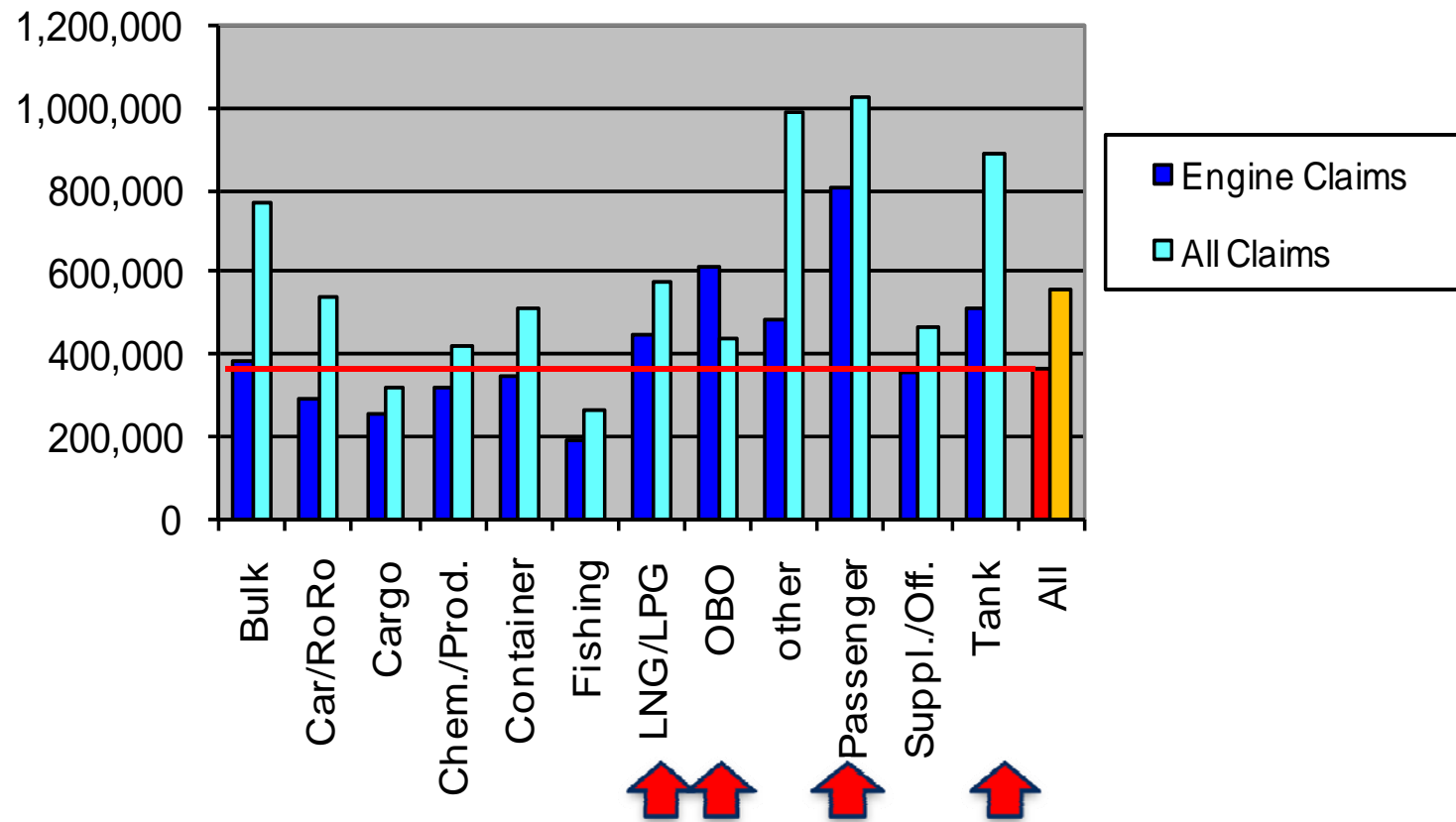
Cost of Engine claims in % of all claims by vessel type, 2005-2009

Claims xs 10,000 USD



Average individual claim cost by vessel type, 2005-2009

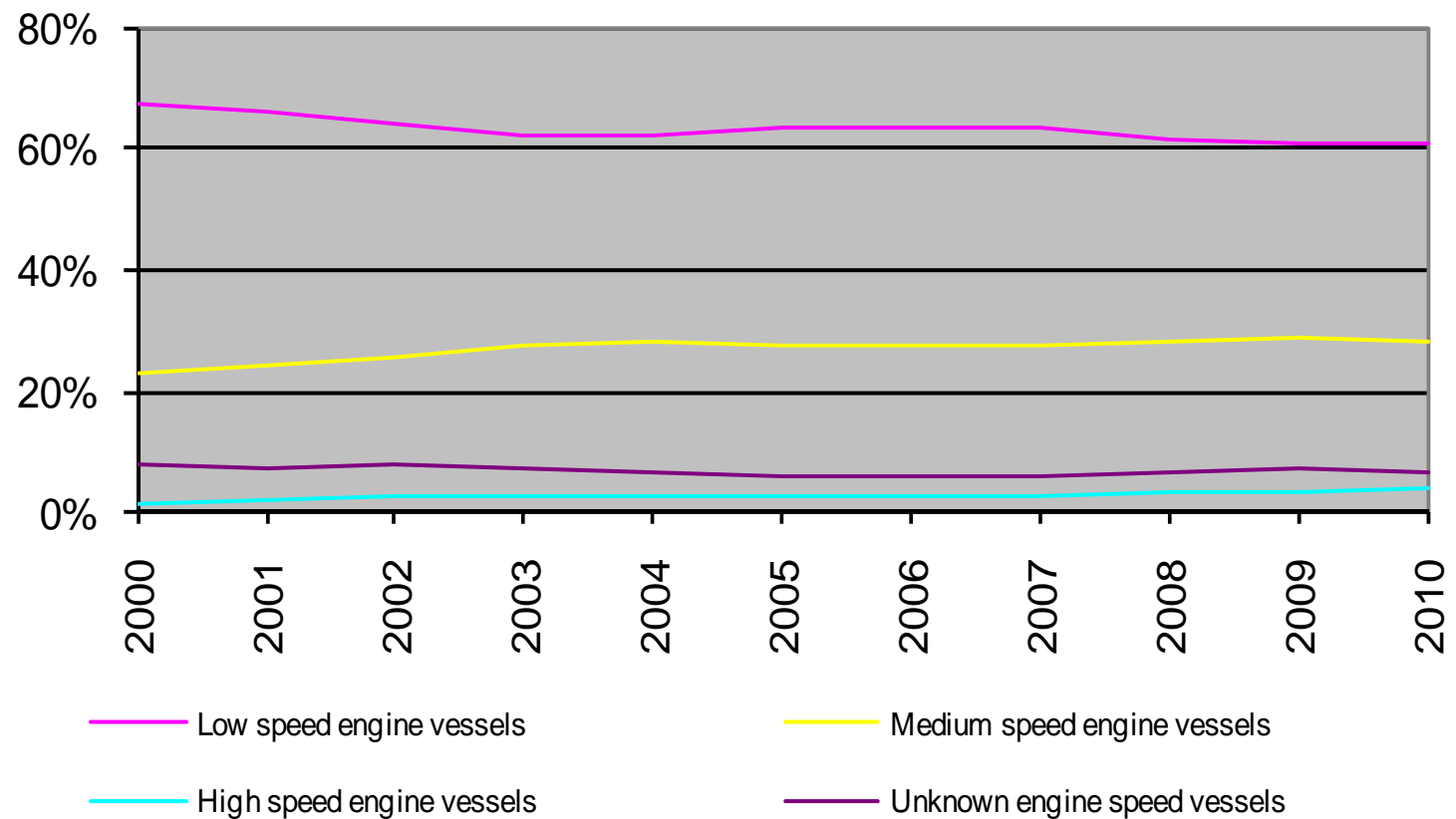
Claims xs 10,000 USD



Summing up engine claims by vessel type

- Highest engine claims frequency:
Car/Roro, Cargo, Container and Fishing vessels
- Engine claims represent > 50% of all claims for Fishing, LNG/LPG and Suppl./Offshore vessels –
or reversed: these vessel types are less exposed to other claim types.
- Engine claim frequency and cost depend on the vessel type and trade (and overrepresentation of certain engine types on certain vessel types).

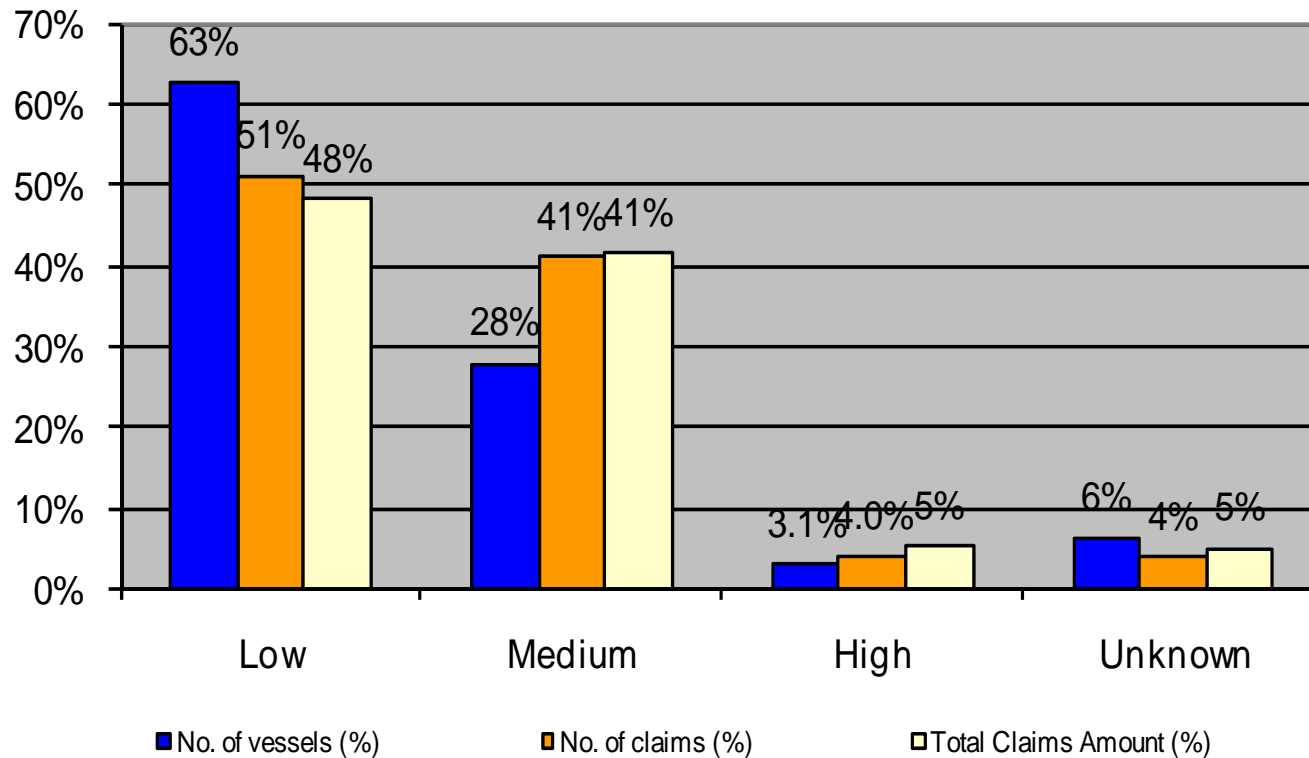
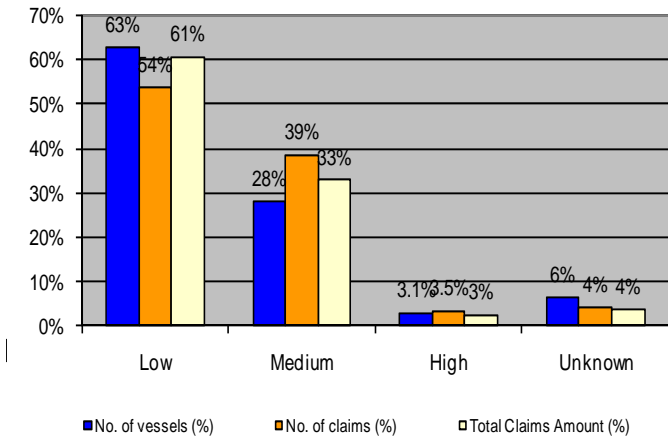
Distribution of engines by type – Low, medium, high speed (in % of all)





**Engine Claims (xs 10,000 USD)
by engine type –
Low, medium, high speed
(in % of all)
Years 2005-2009**

All claims





Engine claim frequency and Av. basic deductible

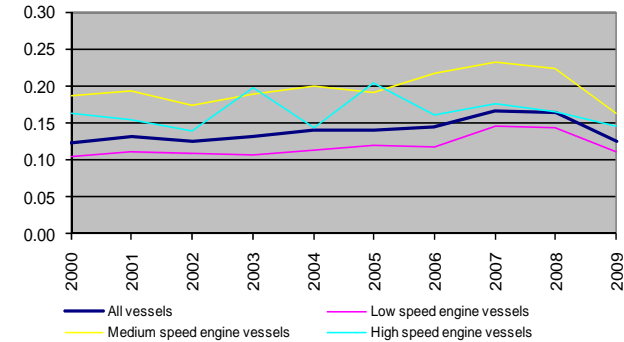
Low, medium, high speed engines

Engine claim frequency highest for medium speed engine vessels.

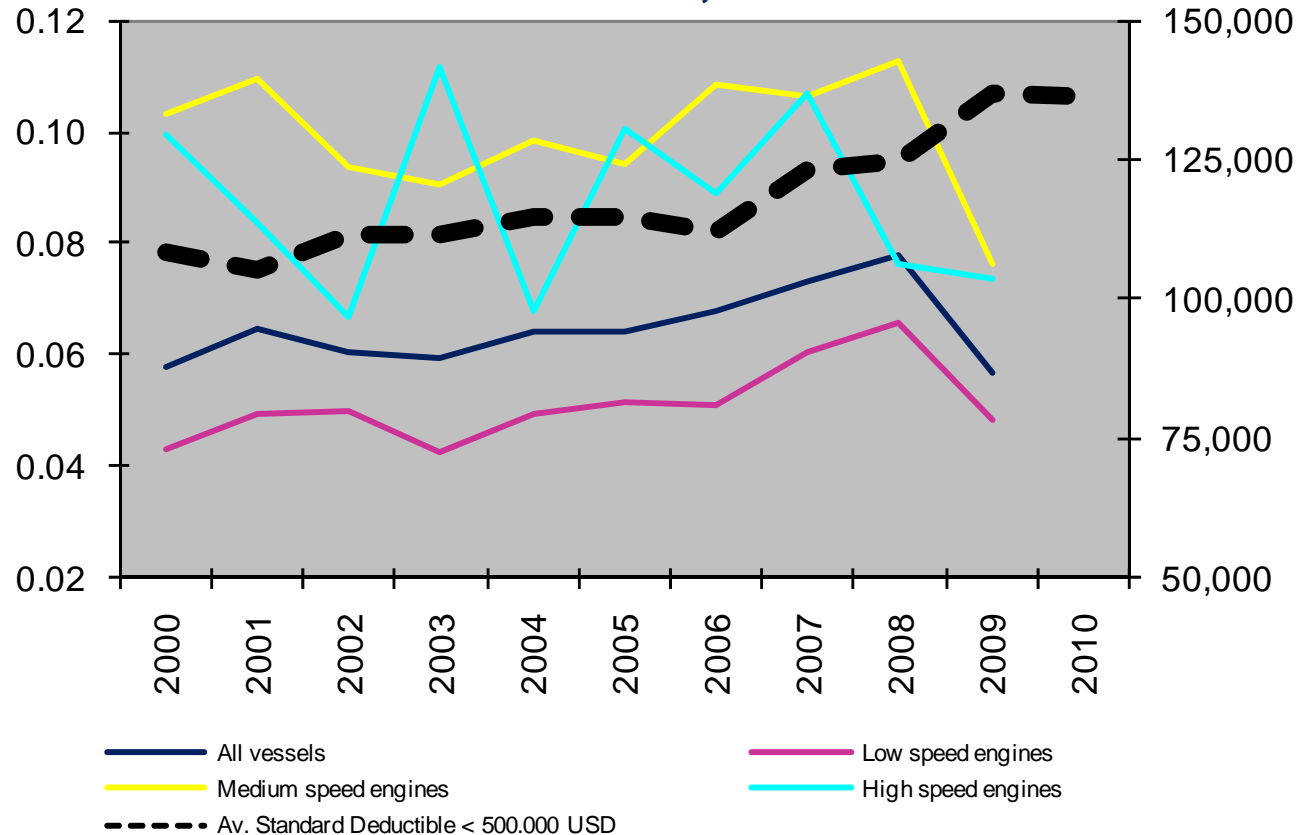
Below average for low speed engines.



All claims



Claims vs 10,000 USD





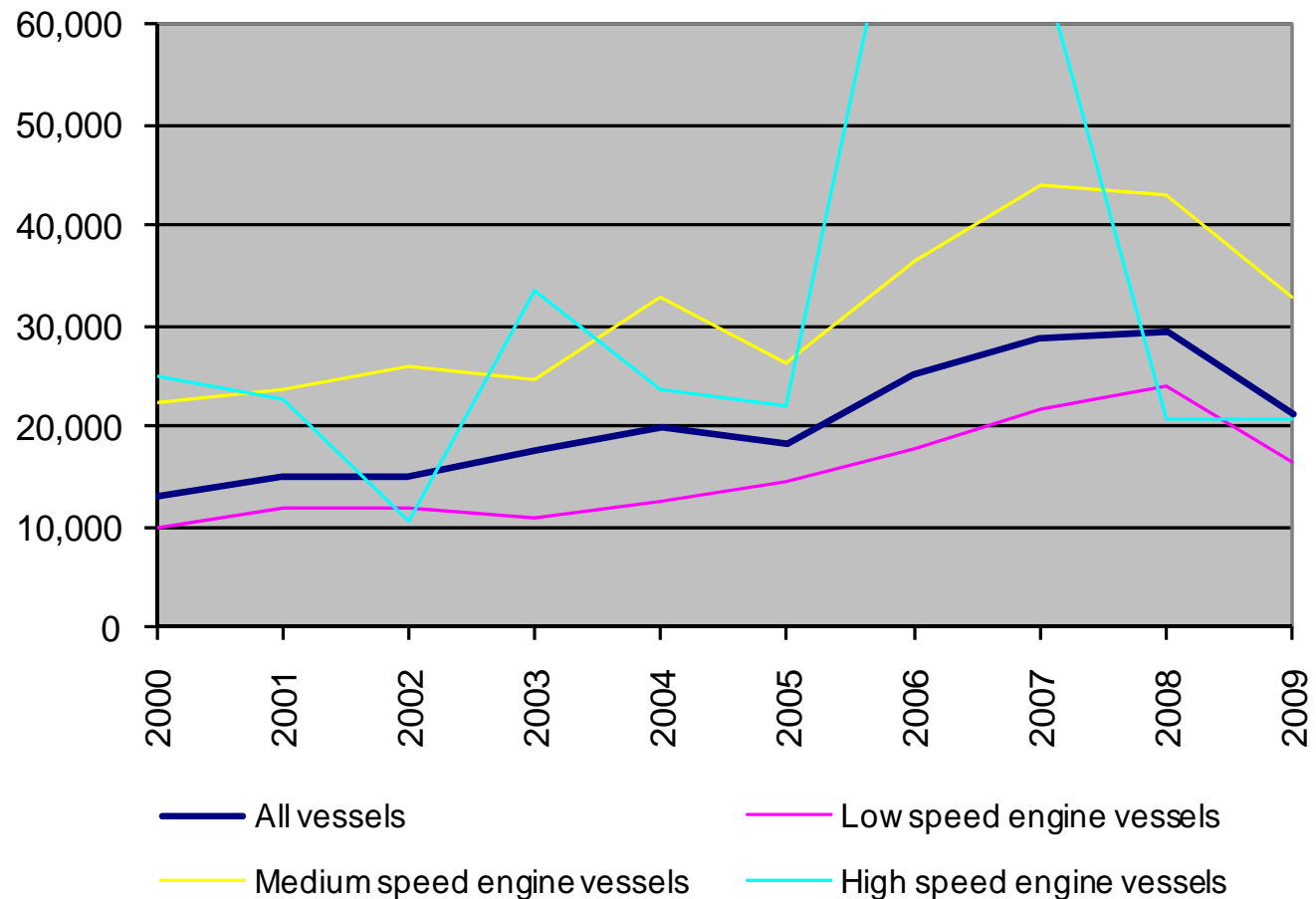
Engine claim cost per vessel

Low, medium, high speed engines

Highest cost per vessel for medium speed.

Lowest cost per vessel for low speed.

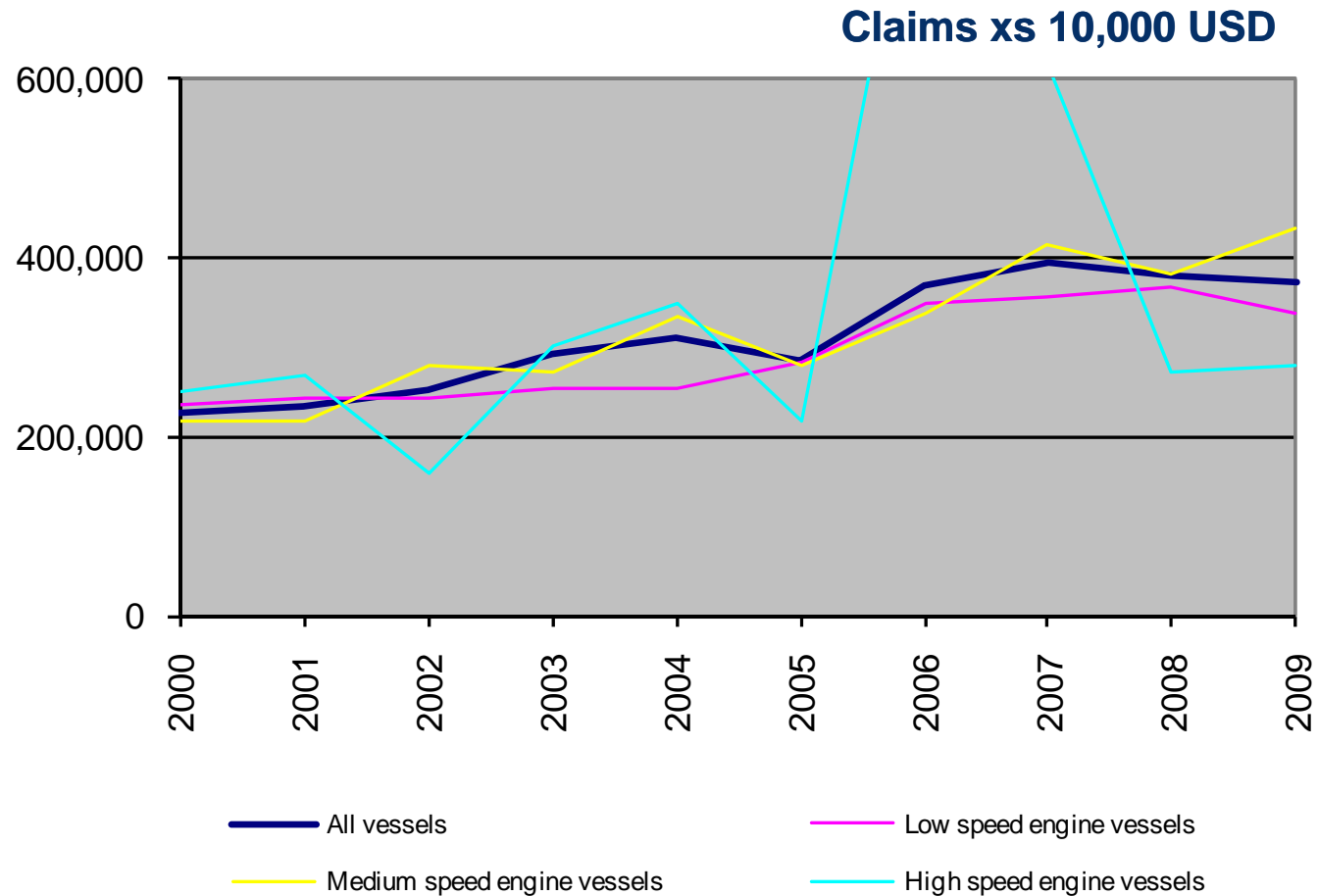
Claims xs 10,000 USD





Average individual engine claim cost Low, medium, high speed engines

Average Claim has **increased in size**, but no significant difference between low, medium, high speed.

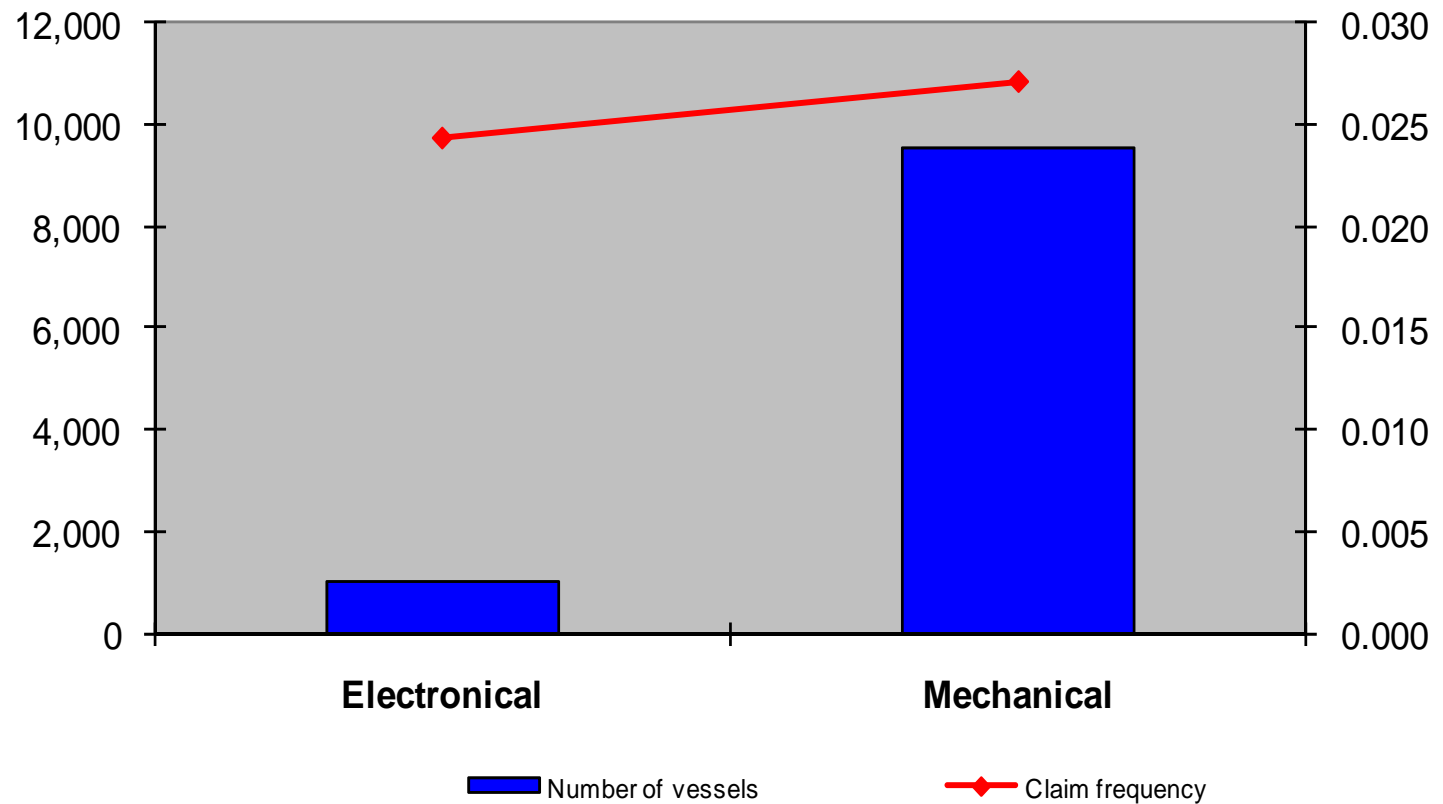


Summing up engine claims by low, medium, high speed engines

- Medium speed engines account for a higher share of all engine claims in terms of frequency and cost, compared to their share of the fleet.
- However, no significant difference in single claim cost between low and medium speed engines.
- Results for low and medium speed engines rather stable over time, more volatile for high speed engines.
- Engine type not independent of vessel type and trade.

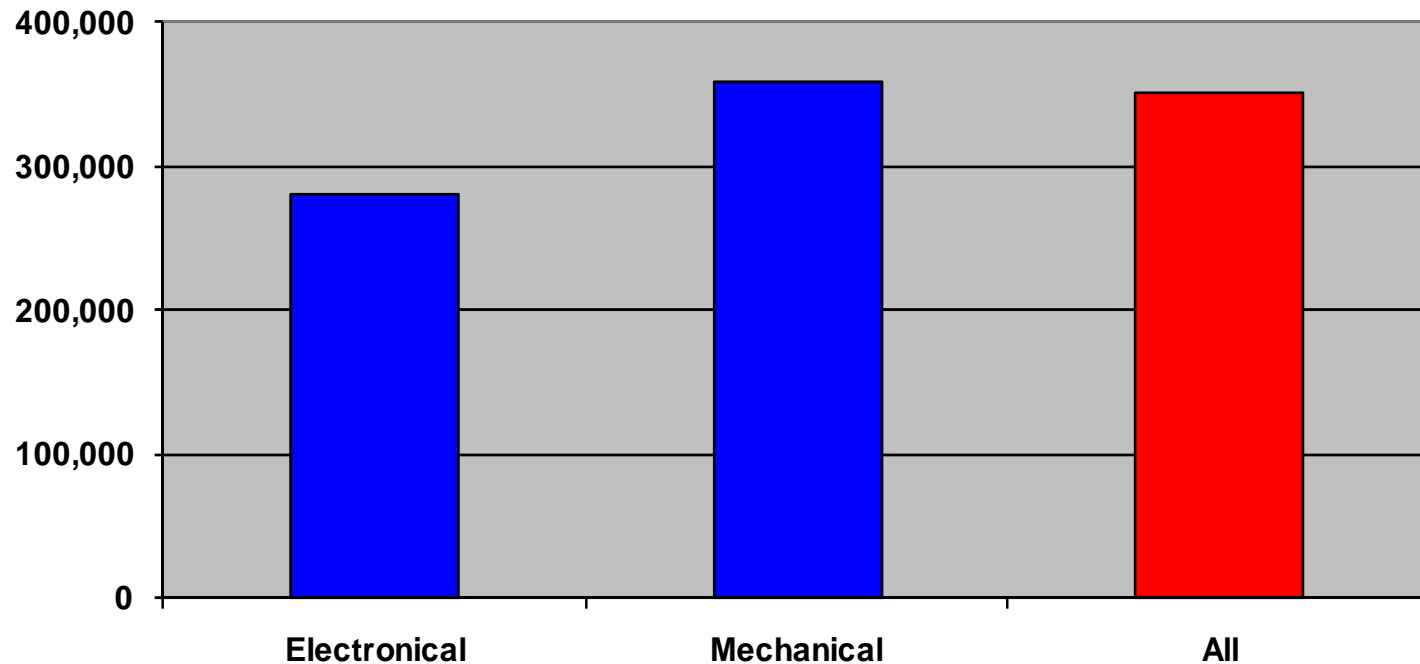
Electronical versus mechanical engines – Claim Frequency 2005-2009, Vessels \leq 5 years, low speed

Claims xs 10,000 USD



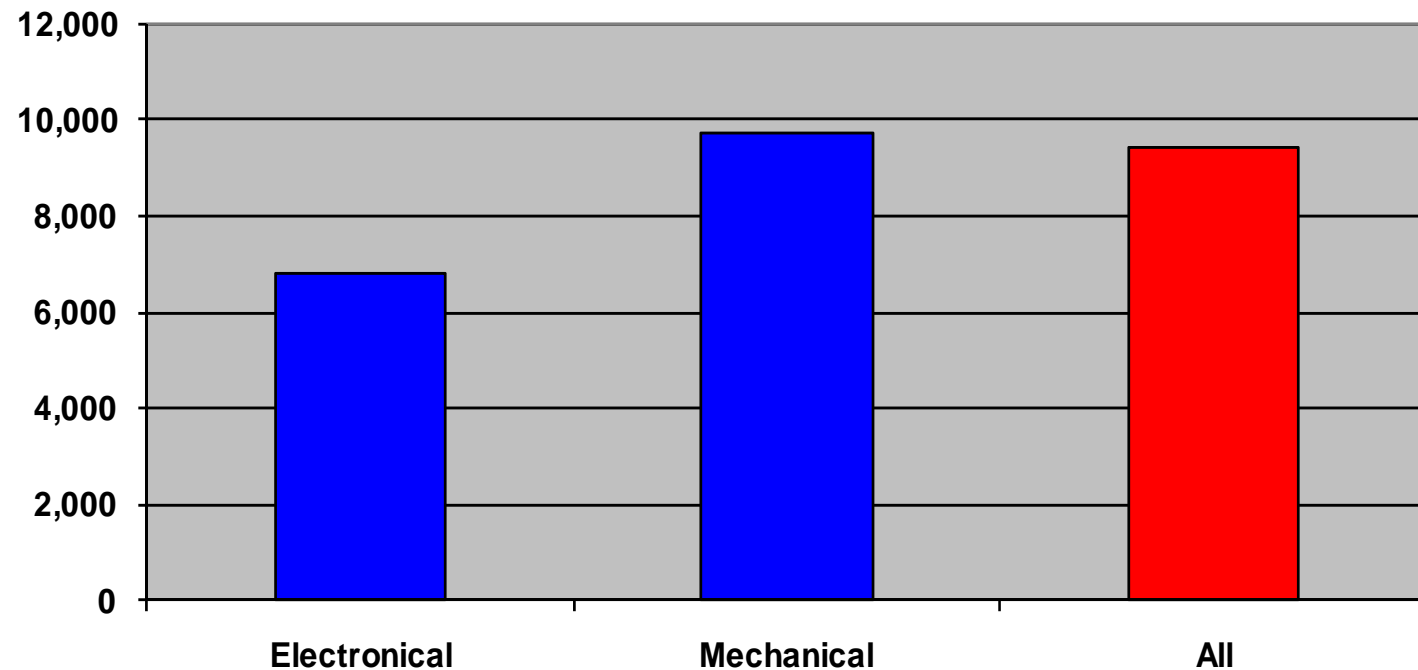
Electronical versus mechanical engines – Average individual claim cost 2005-2009, Vessels <= 5 years, low speed

Claims xs 10,000 USD



Electronical versus mechanical engines – Claim per vessel, 2005-2009, Vessels \leq 5 years, low speed

Claims xs 10,000 USD

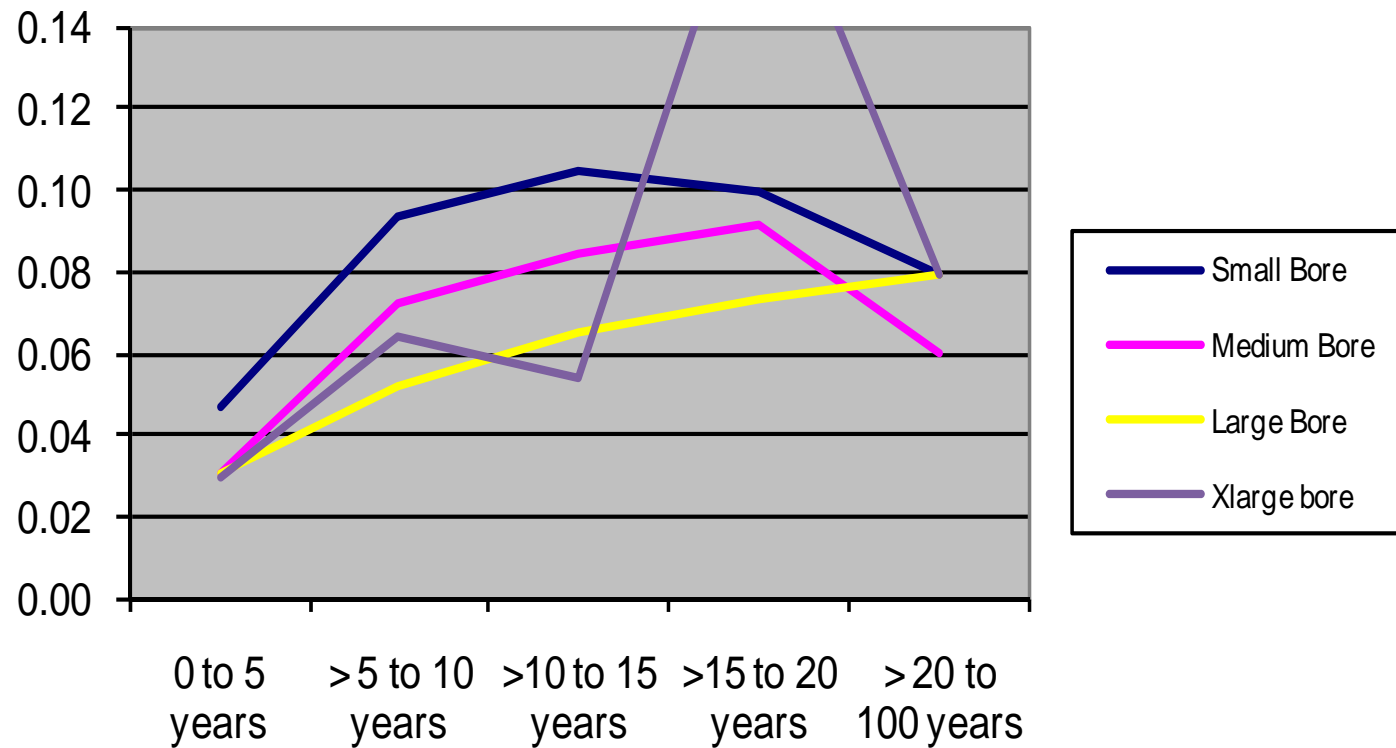


Summing up **electrical versus mechanical driven engines**

- Electrical driven engines score better with respect to both claim frequency and cost.
- But:
 - Ships with electronically driven engines represent a young segment, with little experience as to how this will develop further.
 - Are the statistics representative?
Statistics for electronically driven engines are derived from relatively few vessels compared to vessels with mechanically driven engines.

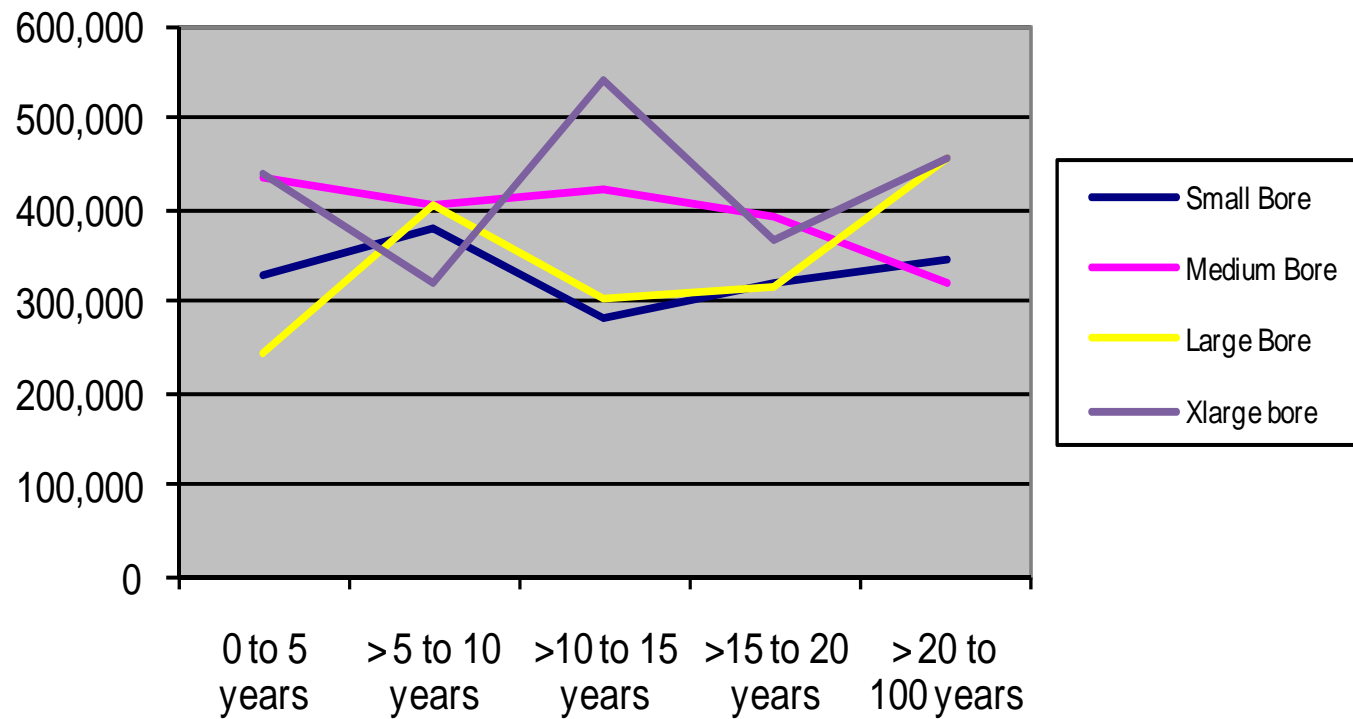
Claim frequency – by **age group** by **bore group** 2005-2009

Claims xs 10,000 USD



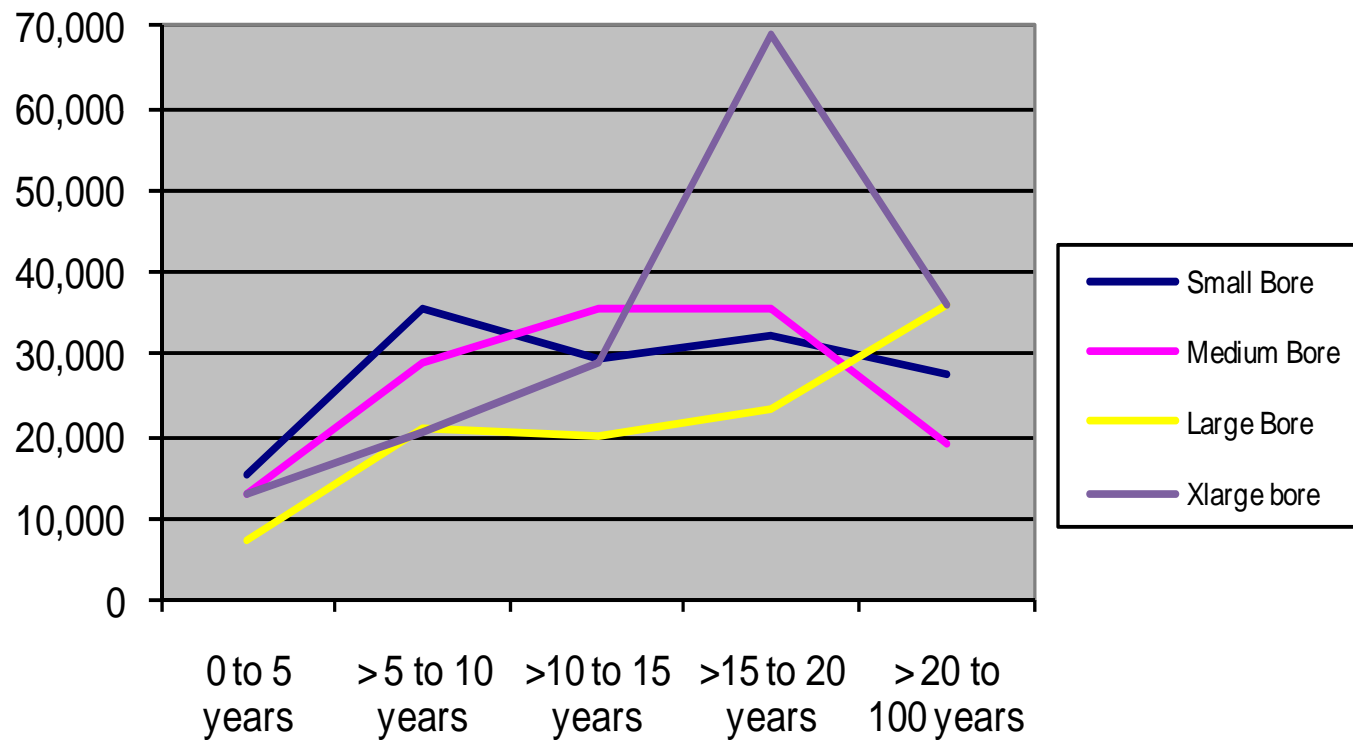
Average individual claim cost – by **age group** by **bore group** 2005-2009

Claims xs 10,000 USD



Claim cost per vessel – by **age group** by **bore group** 2005-2009

Claims xs 10,000 USD



Pitfalls in interpreting claims statistics:

- Engine claims trends depend on the **type of vessel** and its **trade** as well as on **engine type**.

When certain engine types are overrepresented in trades prone to engine claims, a bad claims record may rather be due to the type of trade than the quality of the engine

- Ship particulars state only the **main engine type**, not auxiliary engines.

Ca. 50% of all engine claims are not related to the main engine. To derive statements about certain engine types, need to reduce statistics to main engine claims.

- Engine claims are due to technical/ design problems as well as human error/ maintenance.



Nordic Marine Insurance Statistics

Cefor marine insurance statistics publications at <http://www.cefor.no>:

- Cefor Annual Report 2009
- The 2009 Cefor NoMIS Report & The 2009 Cefor NoMIS COASTAL Report
- Half-yearly Claims Update Fact Sheet
- All Cefor statistics, including previously published reports, are available for download from the statistics section of the Cefor website: <http://www.cefor.no/statistics/statistics.htm>

Other marine insurance statistics:

- IUMI (International Union of Marine Insurance):
Statistics issued by IUMI's Facts & Figures Committee:
<http://www.iumi.com/index.cfm?id=7165>

General information

- Claims numbers/ amounts xs deductibles
-> claims experience must be seen in connection with change in deductibles over time
- Bore Group:

Small bore	260<550 mm cylinder diameter
Medium bore	550<780 mm cylinder diameter
Large bore	780<900 mm cylinder diameter
Extra large bore	>=900
- Speed:

Low Speed	<= 250 RPM
Medium Speed	251<=1.000 RPM
High Speed	> 1.000 RPM