"Fisheries accidents & casualty analysis"

Ingunn Marie Holmen M.sc
Research Scientist & Research Manager,
SINTEF Fisheries and Aquaculture, Trondheim

IUMI 2013 London

Fisheries accidents and causality analysis

Presented by Research Manager Ingunn Marie Holmen

Co-authors:

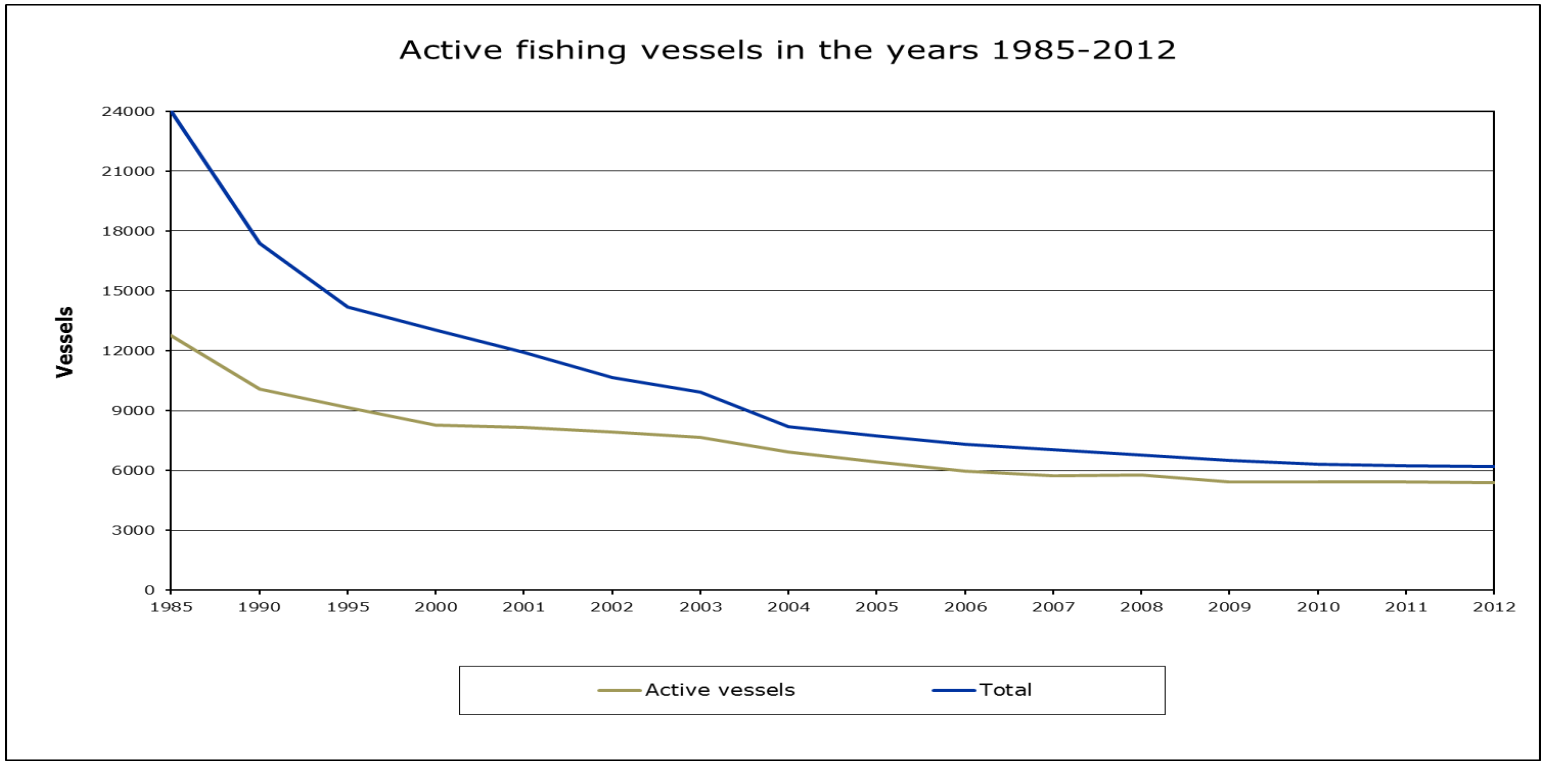
Halvard Aasjord, Trine Thorvaldsen, Signe Sønvisen, Edgar McGuinness

Contents

1. The Fishing Industry in Norway
   - Key figures for the fishing fleet
2. Occupational accidents in the Norwegian fisheries
   - Fatalities and injuries in the coastal vs the deep sea fleet
3. Causality analysis
4. Safe communication on board?
5. Safety measures - examples
6. Summary

Illustration from Fugelli & Aasjord (1992):
Fiskerens arbeidsmiljøbok.
(The fisherman's work environment handbook)

The Fishing Industry in Norway



Key figures for the Norwegian fishing fleet

- 5.401 active fishing vessels with registered income > 50.000 NOK (approx €6.200)

- Vessel length (meters):

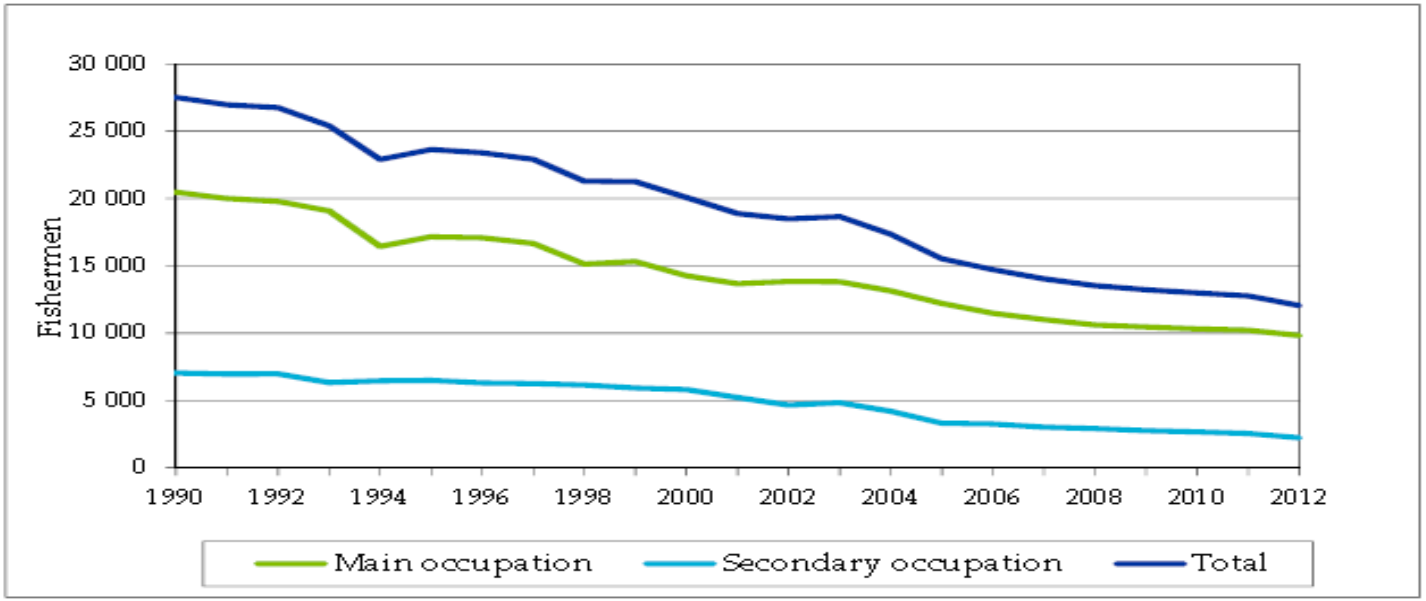
<10	*10-*	*11-*	*15-*	*21-*	*28-*	*Total*
1911	1269	685	155	135	249	5401

- Production of fish (tons):

	Fishing vessels	Aquaculture	Total
World	94.593.679	83.729.313	178.322.992
Norway	2.433.811	1.138.797	3.572.608

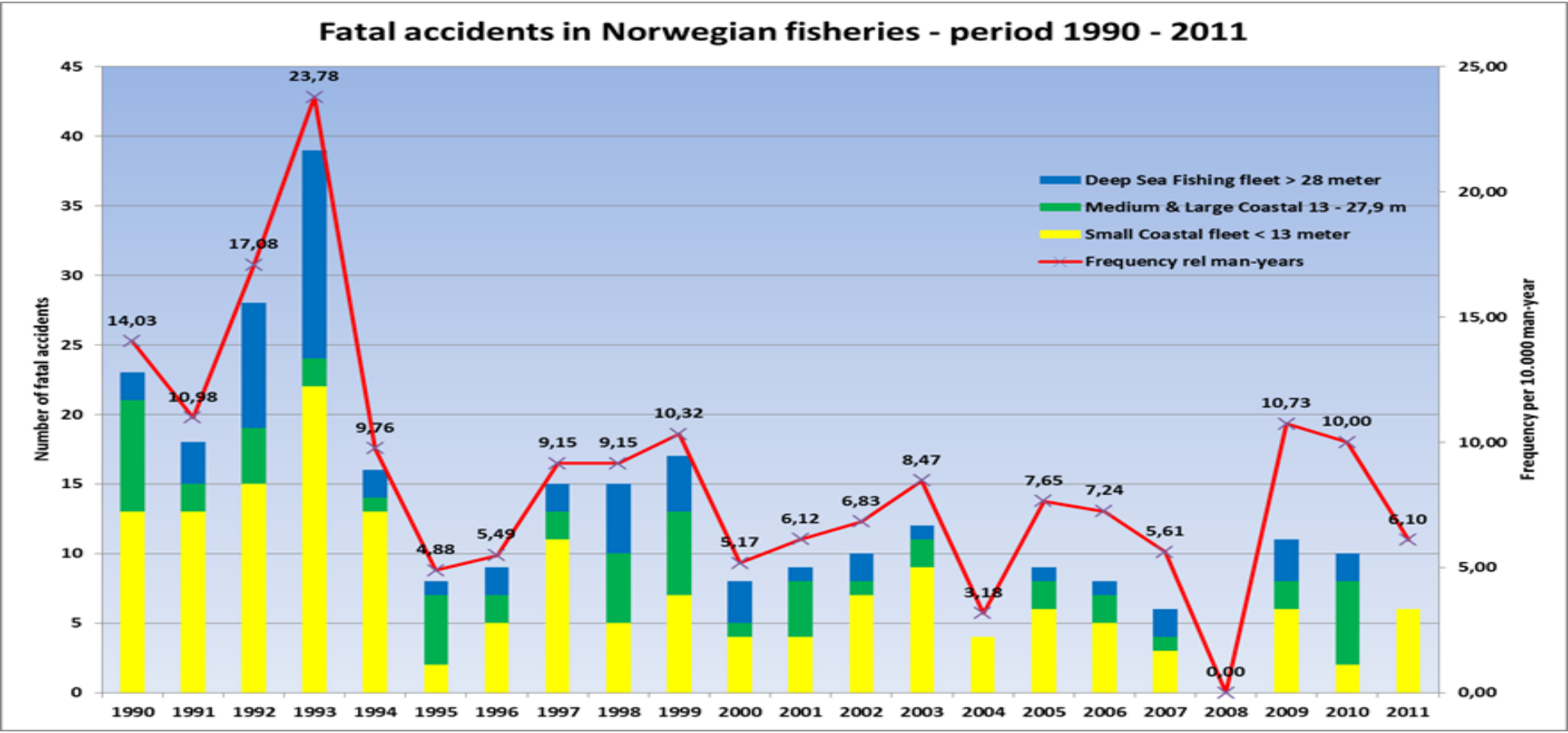
Source: The Norwegian Directorate of Fisheries

Norwegian Fishers

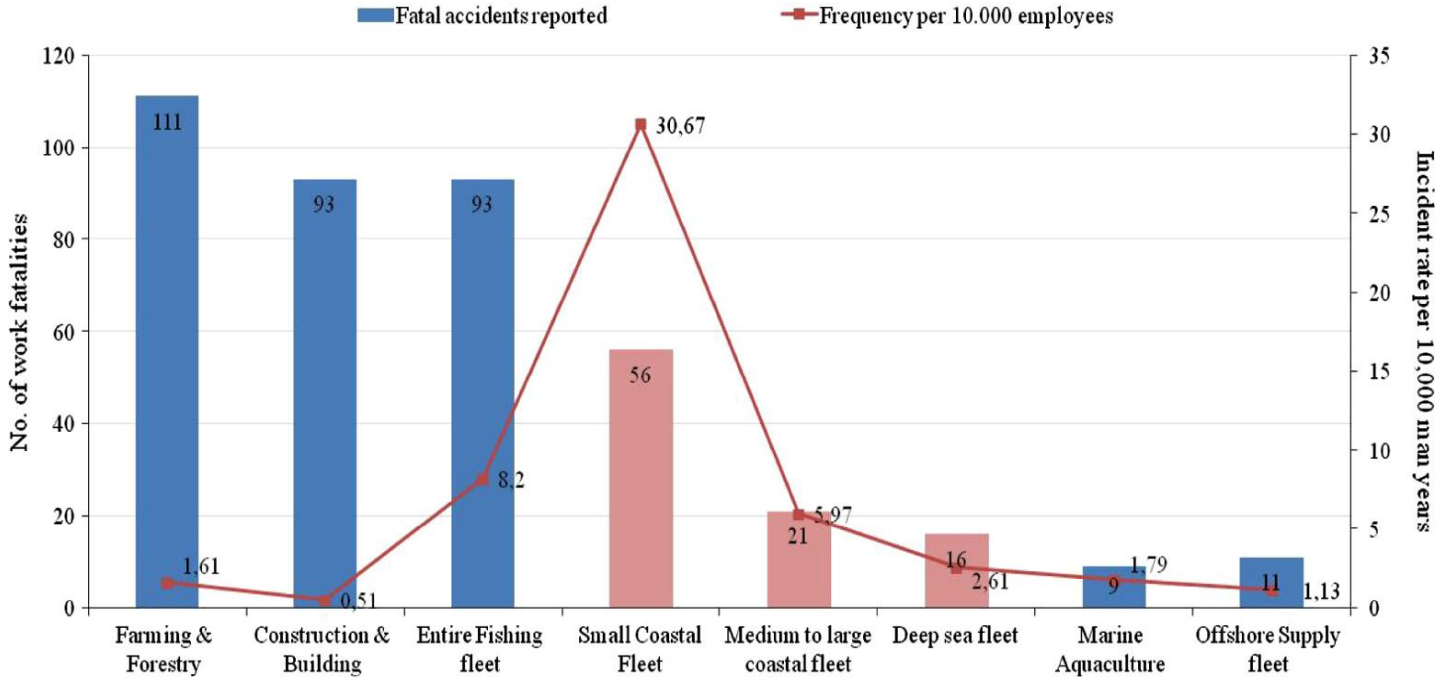


Source: The Norwegian Directorate of Fisheries

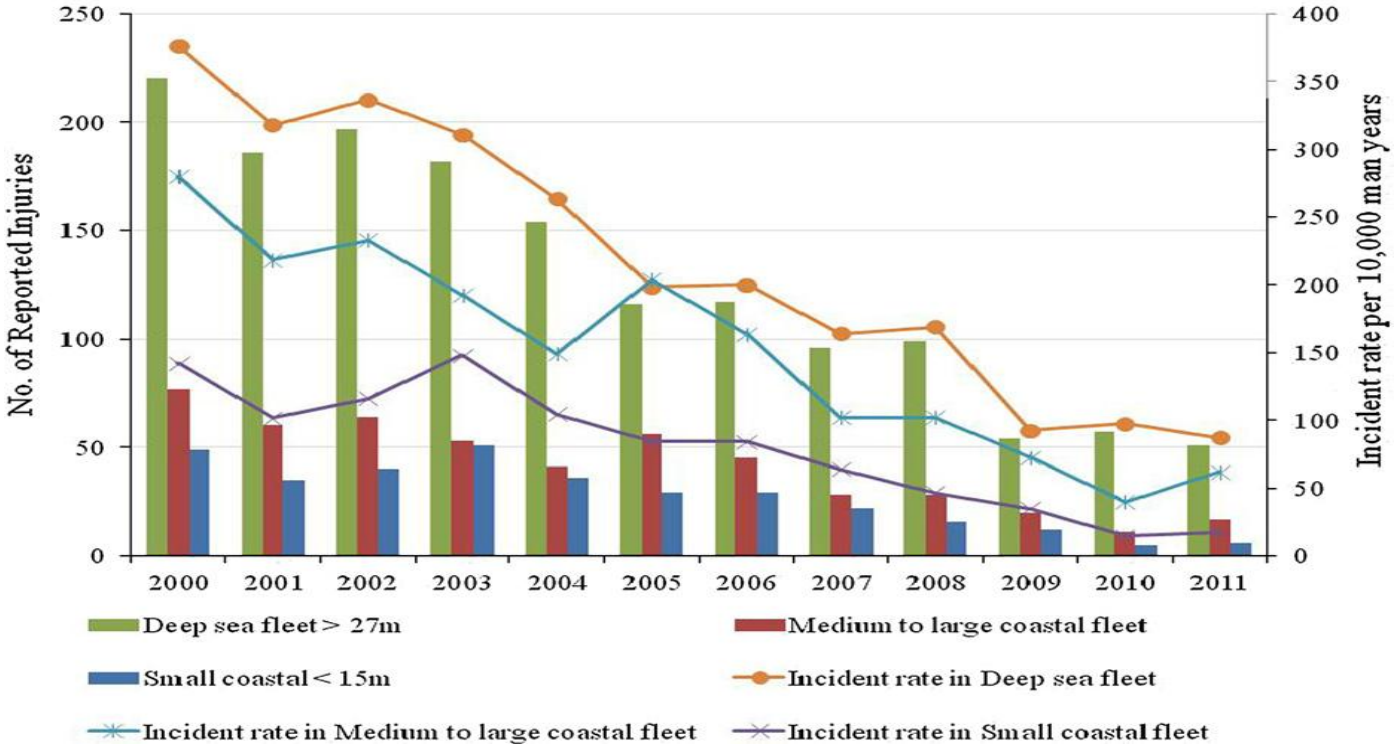
Occupational accidents in the Norwegian fisheries


Fatal accidents in Norwegian fisheries - period 1990 - 2011
Number of fatal accidents
Frequency per 10.000 man-year
Deep Sea Fishing fleet > 28 meter
Medium & Large Coastal 13 - 27,9 m
Small Coastal fleet < 13 meter
Frequency rel man-years
14,03
10,98
17,08
23,78
9,76
4,88
5,49
9,15
9,15
10,32
5,17
6,12
6,83
8,47
3,18
7,65
7,24
5,61
0,00
10,73
10,00
6,10
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011

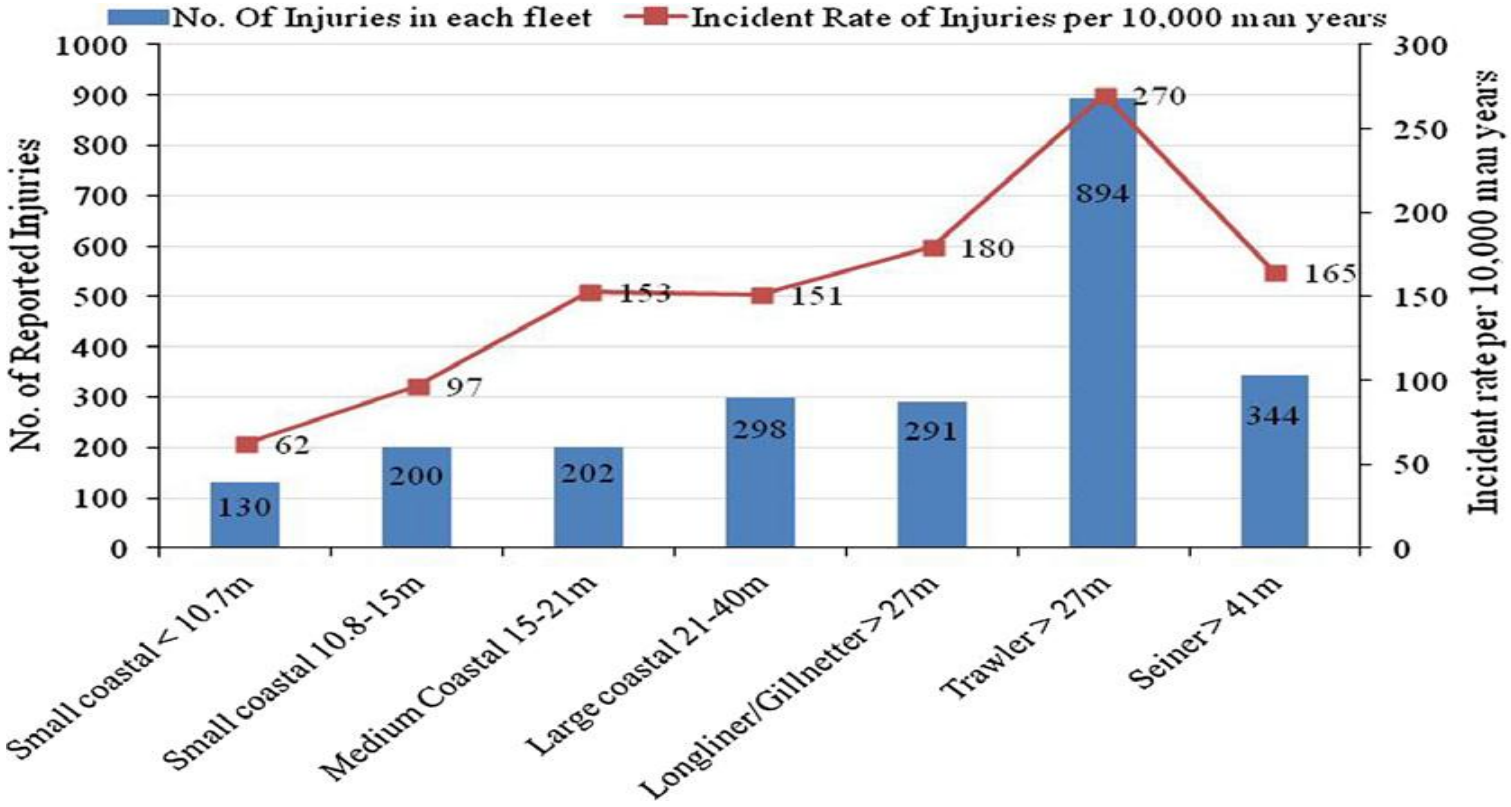
Fatal accidents in fisheries compared with other high risk industries 2000-2011



Injuries and incidents rates per 10,000 man years

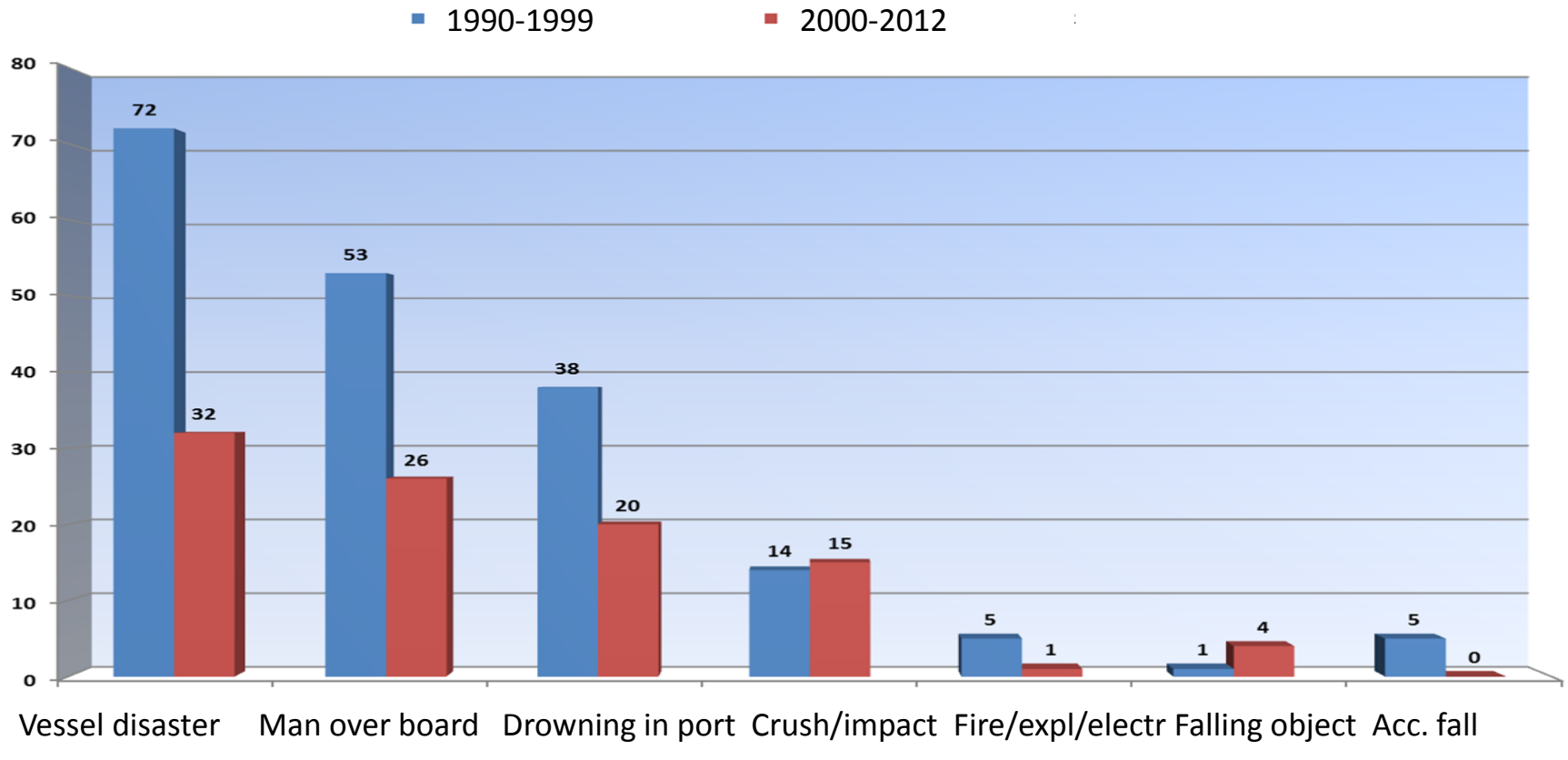


Injuries and incident rates per fleet subdivisions 2000-2011

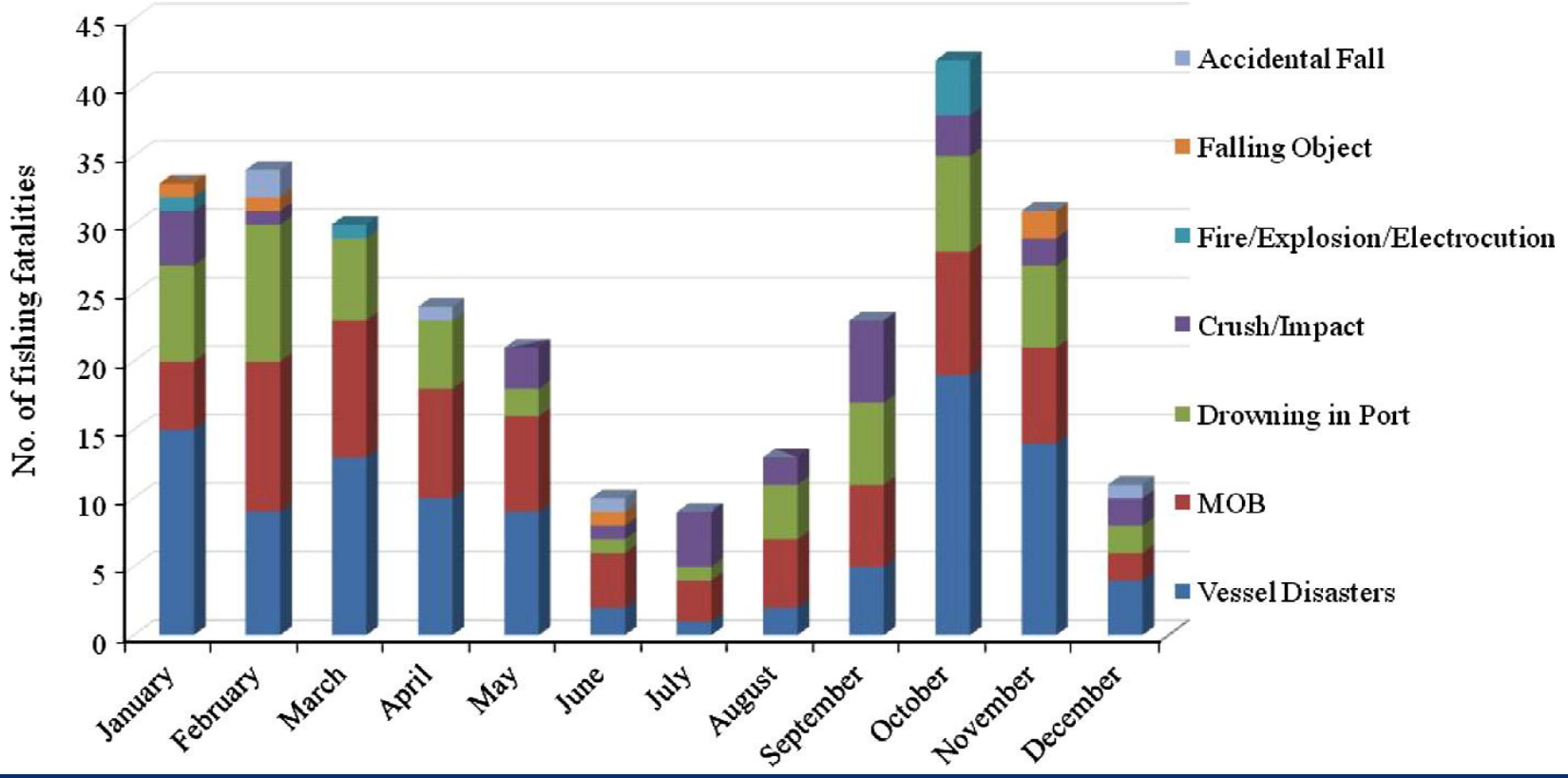


Causality analysis

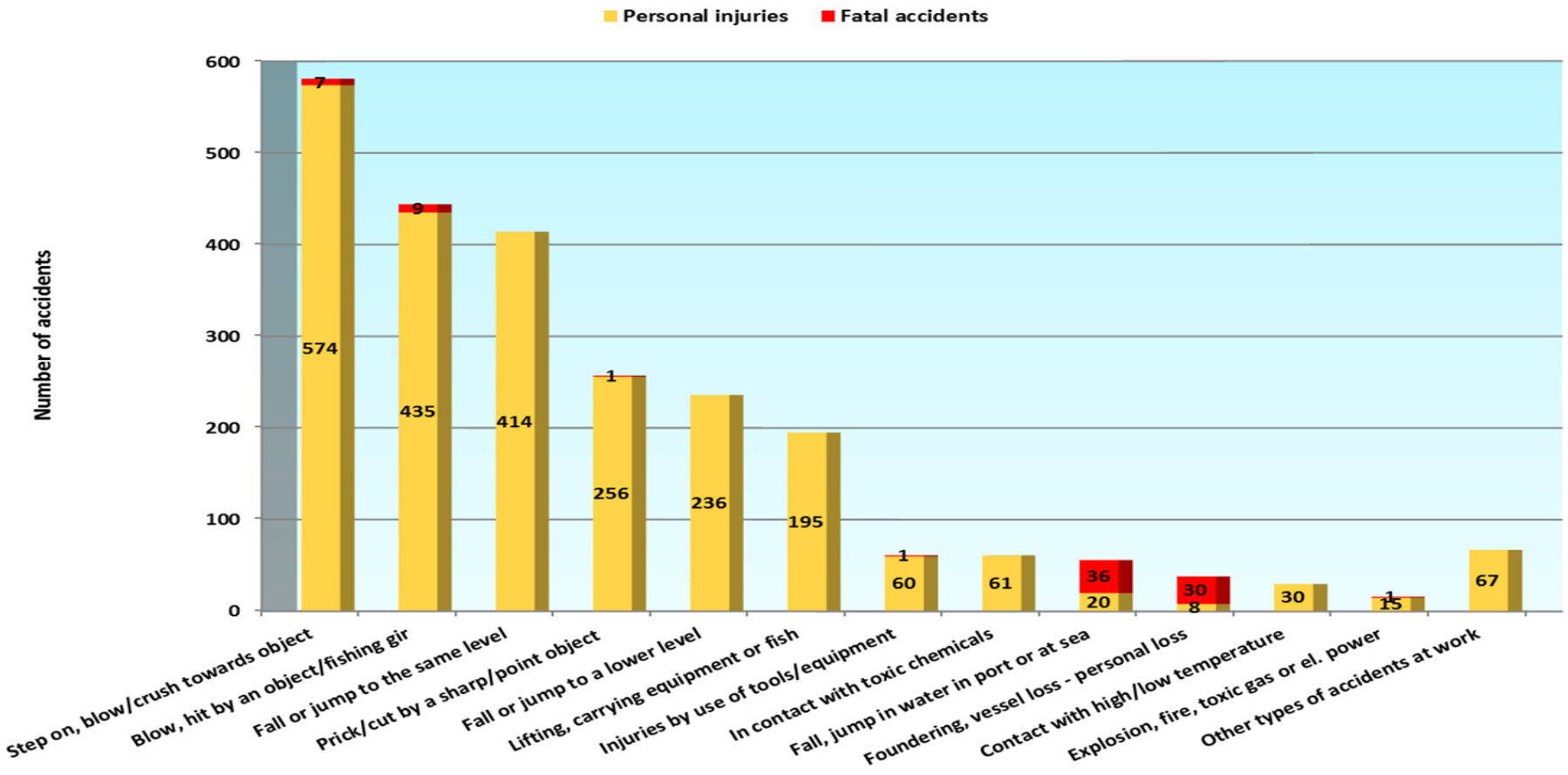
Fatalities grouped by type of accident



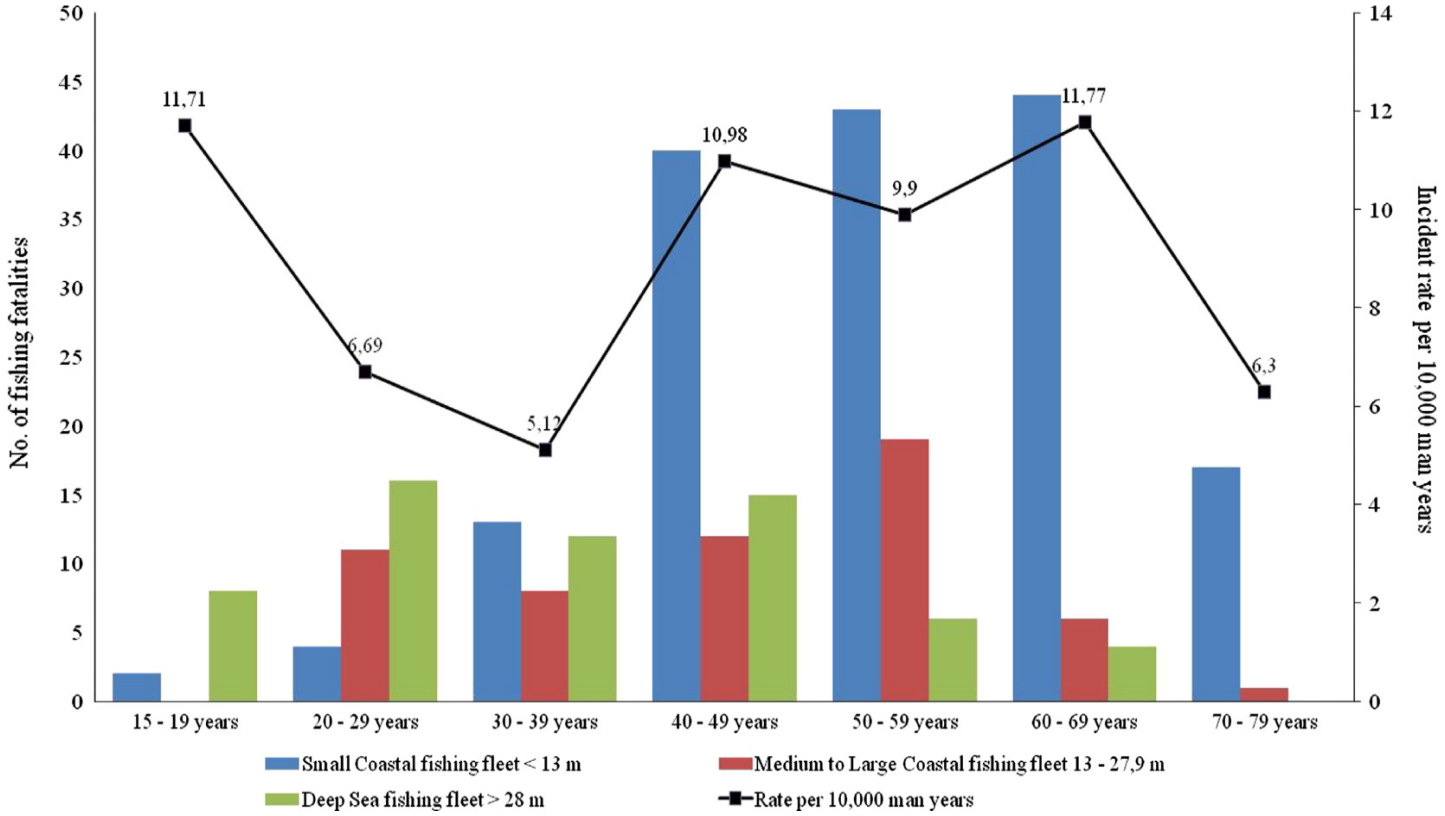
Fatalities per month 1990-2011



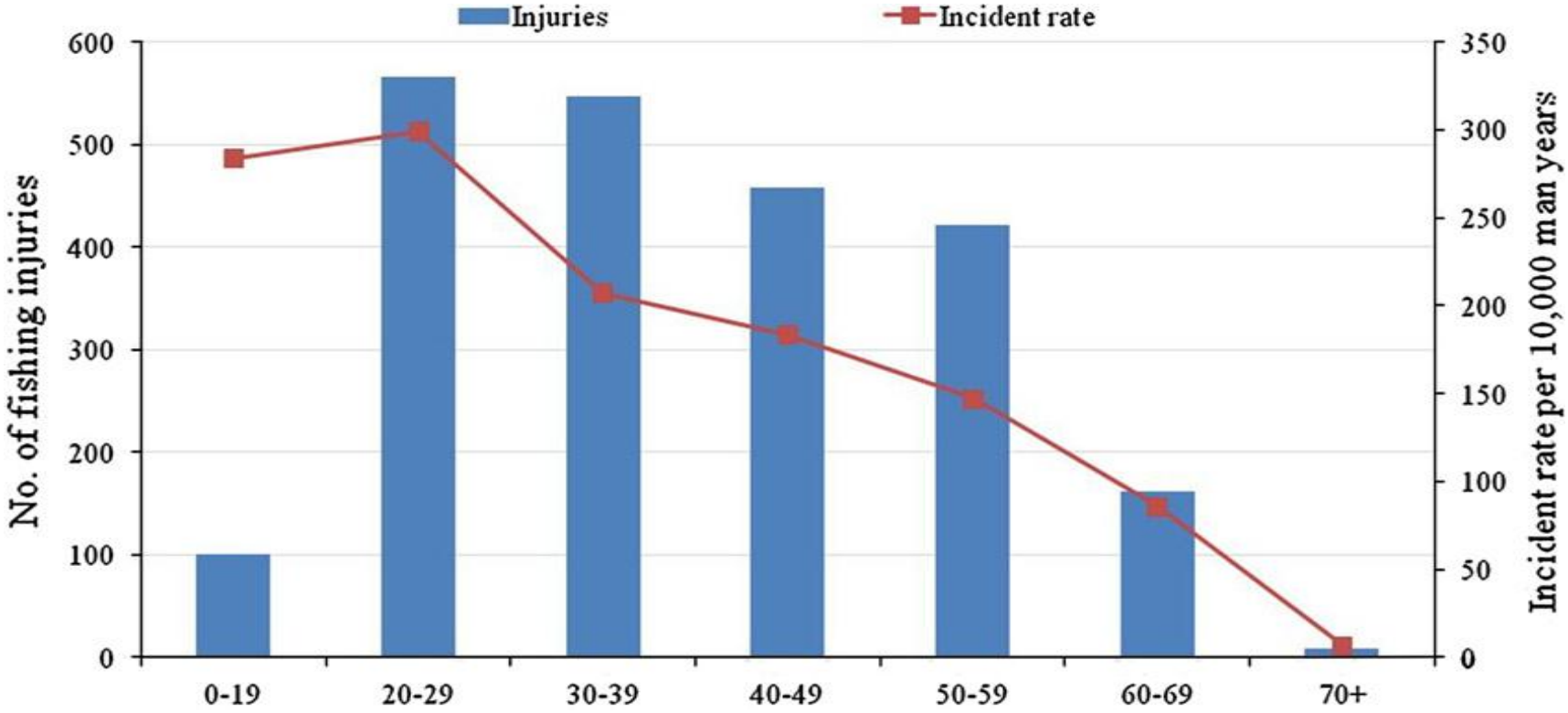
Personal accidents in Norwegian fishing fleet - 2000 - 2011



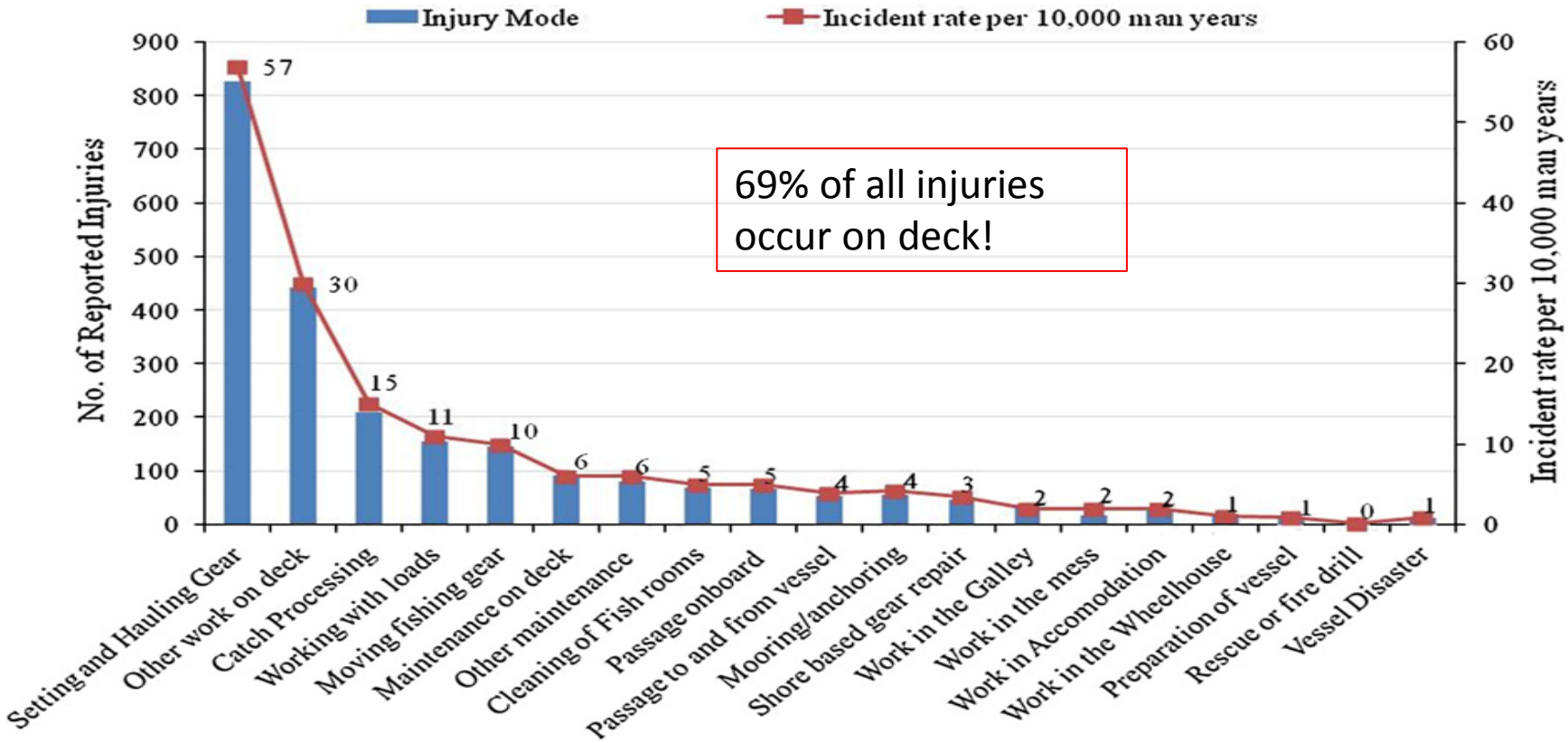
Fatalities per vessel group and fisher age 1990-2011



Injuries and incident rate per age group 2000-2011



No of injuries and incidents rates for work activities 2000-2011



69% of all injuries occur on deck!

Safe communication on board?

- 500-900 foreign fishermen are employed in the Norwegian fishing industry.
  - No mandatory registration
  - Regulations define requirements on safety training, on board training and a common working language on board
- Our study shows that active fishers do not see language and communication barriers as risk factors - neither in daily operations nor in emergency situations.
- Fishing experience is usually seen as a more important qualification than language proficiency.
- Language may have implications for safety in the event of something unexpected, when quick clarification or verbal responses are needed.

Safety measures: Mandatory safety training for fishermen

Safer work clothing for fishermen:

Regatta Fisherman

Northern Norway, June 2006

Photo: Redningsselskapet

Systematic safety management on board

- Mandatory to establish and maintain a safety management system on all fishing vessels
- Perform and document risk analyses
- Internal control
- Ensure employee participation
- Maritime authorities will perform inspections

Training manual on health, safety and work environment in the fishing fleet
(Norwegian Fishermen's Association)

Summary

- Working in fishing involves a greater risk of accidents than most other professions in Norway, as well as worldwide.
- The number of fatal accidents has decreased from an average of 18.8 per year in the 1990s to 7.7 fatalities per year in the 2000s. When taking into account the decline in the total number of fishermen, there has been a decrease in fatalities from 10.2 to 6.9 per year and 10.000 man-years.
- In the period 1990-2011, 281 fishing-related deaths occurred in the Norwegian fishing fleet. Most of these are related to the small coastal fleet where the fishing method of gillnetting and fishermen over 40 years of age show the highest fatality incident rates.
- Singular fatalities were significantly more common than multiple death incidents.
- Reported accidents involving personal injury are highest from the deep sea fishing fleet.
- Under-reporting of accidents is probably common in the fishing fleet in general.

Summary (2)

- Frequent causes for fatal accidents have been capsizing, man overboard accidents, drowning in the harbor as well as fatalities due to machinery entanglement. There have also been some fatalities due to hit by falling objects.
- Injuries commonly occur during fishing operations and work on deck. Fish processing and work in the hold is also related to a large proportion of injuries.
- The analysis shows that a single accident can be linked to several contributing or underlying factors, and causality must therefore be seen as complex.
- A fishing vessel at sea is a moving work platform that is affected by rapidly changing weather and waves. This contributes to the risks involved in fishing.
- Ship technical matters, as well as the impact of regulatory regimes, lacking rescue equipment, working alone, inadequate training and skills are also important aspects when it comes to safety.

Summary (3)

- Several important measures have helped improve safety at sea:
  - Safety training for fishermen
  - Increased use of personal protective equipment
  - Safety management systems, risk analyses
  - Increased focus on control regimes for fishing vessels by the authorities
  - Vessel design (e.g.stability)
  - Careful operation and loading of vessel at sea

References

The illustrations and results are from the publications:

Aasjord H, Holmen IM, Thorvaldsen T (2012). Fisheries accidents and causality analysis. (In Norwegian). SINTEF report A23369, Trondheim.

Thorvaldsen T, Sønvisen S, Holmen IM (2012). Safe communication on board. Foreign workers in the fishing fleet. (In Norwegian). SINTEF report A23270.

McGuinness E, Aasjord H, Utne IB, Holmen IM (2013). Fatalities in the Norwegian fishing fleet 1990-2011. Safety science 57:335-351.

McGuinness E, Aasjord H, Utne IB, Holmen IM (2013). Injuries in the commercial fishing fleet of Norway 2000-2011. Safety science 57:82-99.

Thorvaldsen T and Sønvisen S (2013). Multilingual crews on Norwegian fishing vessels: Implications for communication and safety on board. Marine Policy (in press).

Photos by SINTEF.

Thank you for your attention!

E-mail: ingunn.holmen@sintef.no

http://www.sintef.com/fish

This research has been funded by the Norwegian Seafood Research Fund.

"Fisheries accidents & casualty analysis"

Ingunn Marie Holmen M.sc
Research Scientist & Research Manager,
SINTEF Fisheries and Aquaculture, Trondheim

IUMI London 2013

September 15 - 18