

Safety in the Danish fishing industry



**SISSE GRØN^{1,2}, HANNA B. RASMUSSEN² OG THOMAS RØDGAARD POULSEN²
FLEMMING NYGAARD CHRISTENSEN³**

¹TeamArbejdsliv,

²Centre for Maritime Health and Safety, SDU

³The Danish Fishermen's Occupational Health Services

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FOREWORD

By Flemming Nygaard Christensen, Director, The Danish Fishermen's Occupational Health Services (DFOHS),

The project's focus is safety culture; in other words, culture and behaviour that could be found in the fishing industry with regard to safety and accidents. The aim is to prevent accidents by improving the safety culture in the industry.

In this project, we explore where we are today, how we got here and how safety culture has developed over the past 15 years. In addition to this road map, the project report includes an intervention and assessment of the effect of the intervention.

The Danish Fishermen's Occupational Health Services (DFOHS), since its establishment in 1993, has regularly completed campaigns and projects that have contributed to the strengthening of the safety, health and working environment in all types of vessels in the industry.

When DFOHS was newly established, we were often met with the question: "What shall you check next?" The fisherman's experience was that the requests that came "down" mostly involved some kind of supervision. Over time, fishermen found out that this is not the case but rather that DFOHS is a partner, which creates the opportunity to receive advice and guidance on all issues related to safety, health and the working environment.

The attitude toward a good and safe working environment has changed significantly since the establishment of DFOHS and the establishment of safety organizations of fishermen in safety committees. DFOHS has learned that the industry has become increasingly aware of the importance of a good and safe working environment, and we see more and more investments in new technologies that create good working conditions for vessels' crews.

Currently, in the construction of new vessels or refurbishment of old ones, there is a strong focus on good working conditions for the crew, high comfort and low level of risk on board. In the larger vessels, there is a focus on the possibility of having a fitness room for the crew.

DFOHS is involved in almost all refurbishments or new vessel construction projects. For example, we perform noise measurements in newly built vessels or before and after remodelling of the motor and motor replacements. In connection with working on the deck and handling the catch, there is a focus on occupational health and safety. The deck is skidproof to ensure that the process of catching fish is conducted under good working conditions, and the various systems that have been developed together with the DFOHS to reduce heavy lifting, both on the deck and in the cargo bay, are established on board.

Fishermen are very active in cooperating with us to create a good and safe working environment, and they often have good ideas for solutions but may lack the guidance and advice to realize them.

Although DFOHS is located in Esbjerg, work is conducted all over the country, and the majority of consulting work is carried out on fishing vessels. Whether the problems on the vessels are large or small, they will always be taken seriously by DFOHS.

Accident statistics show that things are going in the right direction, and the reason for this is that industry players have made great efforts to get better and safer working conditions on board.

Fishermen take responsibility for their health and safety, and there is now a safety culture at sea, where the tasks are discussed by the skipper and crew who jointly draw up procedures and instructions for the tasks on board. The workplace assessment (WPA) has become a widely used tool in this process. The dialogue that occurs in the drafting of the WPA can help to achieve a common position on how the tasks are best performed in a safe and healthy manner.

Whether it is testing or developing new tools or safety equipment, DFOHS has been met with great willingness and interest from the fishermen as to participating in various projects and campaigns for the benefit of their colleagues in the industry.

DFOHS knows from experience that tasks have changed over the years to a great extent from an orientation towards finding the solution to problems to an orientation towards prevention. This also reflects the positive development of a safety culture.

Fisheries training programs have a strong focus on safety and occupational health, and the next generation of fishermen is aware of the importance of prevention through safety work and safety culture in the industry.

Together with the industry and fishermen's safety representatives in the safety committees, DFOHS still has work to do in relation to the reduction of accidents, which unfortunately still happen. Without question, one accident is one too many, and even though we have come far, together we can make things even better.

The aim of DFOHS is to maintain the positive direction for an even better, safer and healthier working environment for fishermen, and it must be done through close cooperation with the industry, authorities, educational institutions and other players within the fishing industry.

1 Background and aim of the project

Alongside the rapid development of Danish fishing industry the past 15 years, there has also been rapid development in terms of safety on board vessels. The project 'Proactive safety in the fishing industry - what does it take?' is a research project with two aims: to describe the progress with respect to safety that has been made in the fishing vessels in the last 15 years and to adjust and test some of the effective instruments that were developed in the seafaring profession based on the results obtained in the international research on safety culture. This report meets this first objective by describing the developments that have taken place in the safety work of Danish fishing vessels. The first part is based on interviews and gives some suggestions as to why the change has occurred; the second part is based on injury reports and shows the changes quantitatively and through graphs. The project is supported by The Danish AgriFish Agency.

2 Methods

2.1 Quantitative methods

2.1.1 Data collection

This study is based on data from the DFOHS database on injuries in Danish fishing vessels and includes all the injuries reported to a safety committee (see Figure 1) or reported on injury report forms to the Danish Maritime Authority (see Annex 2). The database contains information on approximately 2219 accidents from January 1995 to February 2013. The current analysis uses only data from 1998 to 2012 because the data from 1995 to 1997 is limited (n = 79). The reason for the minimum basic data in these years is that DFOHS first began a systematic establishment of the database in 1998. During the period 1998-2012, a total of 2140 injuries are registered. However, information on the accidents' severity is missing in 127 cases, and therefore those cases are not included in the analysis. Out of the 2,013 cases, 13.5% (n = 272) represent injuries that result in absence from work of less than 1 day. Those cases are also excluded from the analysis because they are not subject to the notification requirement, and therefore there is uncertainty regarding their representativeness. In total, this report covers 1,741 injuries, but it should be noted that the total number of accidents in some tables varies because of missing information.

The information on population size, which is used to calculate incidence rates (number of injuries per 1,000 fishermen), comes from the Danish Maritime Authority and contains both full-time and part-time fishermen.

2.1.2 Injury reporting

According to the statutes on safety at sea from the Danish Maritime Authority chapter X, paragraph A, shipmasters have to report injury and poisoning to the Danish Maritime Authority if:

- In the case of death.
- The accident has resulted in incapacity for 1 day or more beyond the date when the damage occurred (lost time accident - LTA).
- The accident has resulted in a person being unable to discharge his usual duties for 1 day or more beyond the date when the injury occurred (restricted work accident - RWA) (partly disabled).

Incapacity for work does not necessarily need to be directly related to the day of the accident. There may be types of accidents in which the manifestation of the damage is delayed, such as poisoning and lifting injuries.

If a person has been unable to perform his usual duties (RWA), measures taken can include:

- Performing one's normal duties but in less time than planned
- Performing a limited part of one's normal duties but throughout the whole time on duty.
- Being moved to another job.

2.2 Qualitative methods

2.2.1 Broadness

The material that forms the basis for this report is a short fieldwork, eight interviews with one or two people and a focus group interview. Interviews were conducted by Sisse Grøn and Tina Geest during a short fieldwork of five days' duration in Thyborøn, Hanstholm, Thorsminde and Hvide Sande. Most interviews were tape-recorded and then transcribed; others entailed written notes while the interview was taking place.

We asked the informants about their background and experience in fishing, their attitudes toward safety, if their attitudes toward safety have changed, which safety practices they implement and how they learn new knowledge. The interview guide is attached as an appendix.

We attempt to achieve broadness in the choice of informants, which means that there are interviews with owners, employees, good representation in relation to the types of vessels and the different kinds of catches and also in terms of age and experience. The range is presented on the list in Annex 1. In the quotes, the broadness is not the same; it is mostly experienced fishermen who are quoted because they best describe the development.

Unfortunately, it was not practicable to ensure geographic broadness, and therefore all interviews were conducted on the West coast. We received support to contact fishermen from DFOHS, but we also chose to contact some fishermen without help from DFOHS to ensure that it was not a small group of selected fishermen whom we spoke with.

The use of qualitative methods does not provide objective knowledge; those who are willing to talk to researchers are efficient, and, moreover, one cannot generalize from data based on 13 people. Ensuring the usefulness of the information on the topic could be accomplished by speaking with people of different approaches and different positions. Therefore, we also interviewed the women who handle the fishermen's accounts, a group of students in a fishing school and the chairman of the fishermen's trade union in one of the cities on the West coast.

In addition to actual interviews, we spoke with everyone we met at the ports and on the vessels we visited and took notes as we watched a fish auction to learn as much as possible while we were there. The informants' formulations are reproduced verbatim. That means it is spoken language, but it is preferable to editing their opinions.

3 SAFETY IN THE DANISH FISHING INDUSTRY – AN OVERVIEW OF THE DEVELOPMENT

3.1.1 Trends in reported accidents to DFOSH in the period 1998-2012.

Table 1 shows the distribution of fatal injuries and work accidents among fishermen in the period 1998-2012. Throughout the period, there were recorded 46 (2.6%) fatalities among Danish fishermen and 1,695 other working injuries.

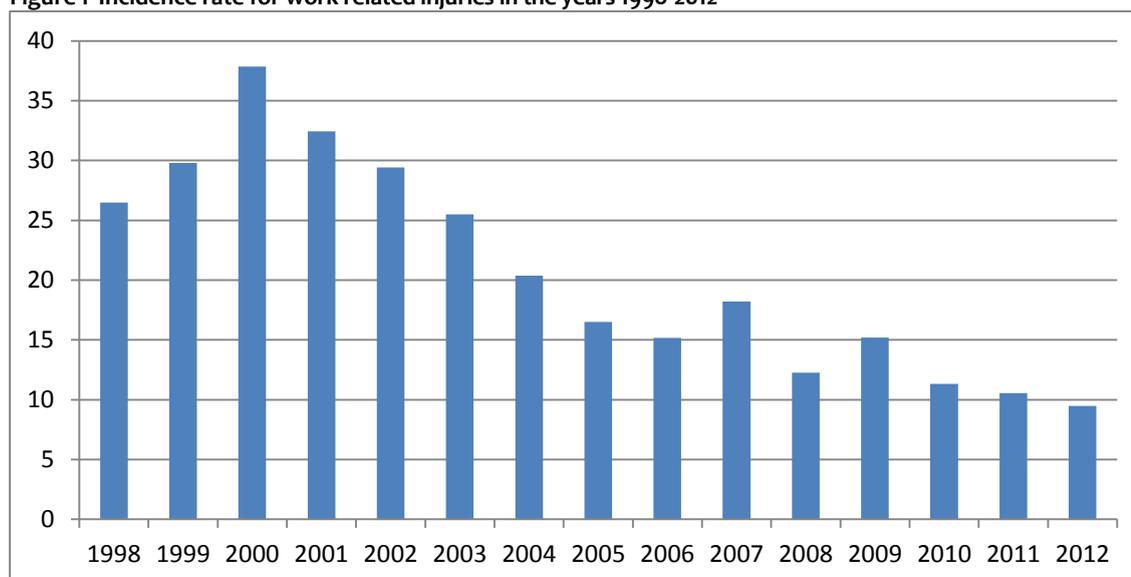
Table 1 Work-related injuries and fatalities among Danish fishermen from 1998-2012

	Percent (n)
Work-related injuries and fatalities	97.4 % (1695)
Death	2.6 % (46)
Total	100 % (1741)

3.1.2 Trends in reported accidents to DFOHS in the period 1998-2012.

Figure 1 shows the trend in the incidence rate (injuries per 1,000 fishermen) for work-related injuries in the years 1998-2012. The figure shows that there has been a significant decrease in the incidence rate in the study period.

Figure 1 Incidence rate for work related injuries in the years 1998-2012



There has been a decrease from 26 accidents per 1,000 fishermen in 1998 to 9 accidents per 1,000 fishermen in 2012. Although the number of accidents per 1,000 fishermen decreases in the study period, the figure shows some minor deviations. Because of the low number of accidents, even minor changes in the numbers from year to year result in variations in incidence rate.

Figure 2 Incidence rate for death injuries in the years 1998-2012

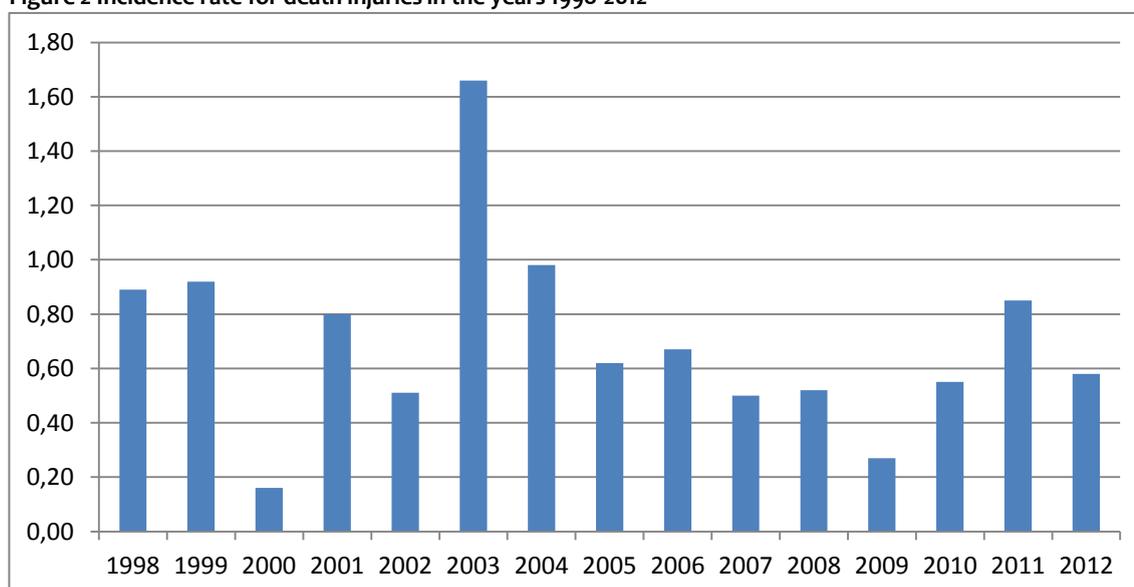


Figure 2 shows the number of fatalities caused by accidents per 1,000 fishermen in the period 1998-2012. The incidence rate of fatal accidents varies highly due to the low number but is approximately one fatal accident per 1,000 fishermen per year. The stable number of fatal accidents per 1,000 fishermen may indicate that preventing fatal accidents is more difficult than preventing other types of accidents.

We investigated whether there is a difference between the number of accidents on one-man operated vessels and multi-man operated fishing vessels using chi-squared test. The results of the test indicate that more accidents happen on multi-man-operated vessels than on the one-man operated vessels ($p < 0.001$). By contrast, the fatalities occur to a higher degree on one-man-operated vessels.

Overall, the results indicate that the desired development in terms of occupational accidents in fishery has taken place. This may suggest that there is an increased focus on safety in the Danish fishing vessels and that it has resulted in improved safety and more effective prevention of accidents.

We will now describe the qualitative results in order to find explanations for this trend.

4 SAFETY IN THE DANISH FISHING INDUSTRY- IN WORDS

The following section explains the qualitative results that represent our view of how fishermen and the people in the fishing environment whom we spoke with see safety in the fishing industry.

As stated in the interview guide, we did not specifically ask what safety is, before the informants themselves spoke in their own words about safety. So, we improvised and asked about the items they brought to court. The frame of the following description is safety culture in the sense that it concerns the ideas a person has about what safety is and the practices she/he implements, but it is based only on what we were told by the fishermen. The following categories are an offshoot of the issues that our informants brought up, but thematisation follows the prevailing understandings of what safety covers very well: the organizational framework for the work, the equipment used in the work and how to communicate about safety.

4.1 Technology and equipment



The technological improvements constitute one of the most tangible and powerful measures for the prevention of accidents because they allow for dangerous equipment to be replaced with less dangerous equipment (Dyreborg et al. 2013). There have been positive developments in the equipment used in Danish fishing vessels. Progress depends of course on the development of technological solutions, but the fishermen have also changed their opinion on what equipment is needed.

The purchase of new equipment was made possible by partially rebuilt or replaced vessels in the wake of the reorganization of the quota system in 2007

because larger vessels allow for investment in equipment. The effect is that many fishermen are no longer exposed to the same ergonomic loads and general risks as before. As informant 1 described the results of technological progress when we asked him what he was thinking on safety in the industry:

'It's not much they have to touch these days.' (I1)

Here you have to bear in mind that the informant is the skipper of a trawler in the fishing industry. The informants, who fish by themselves from small netters or other similar vessels, still must conduct most of the work by themselves. This applies to informant 13, who described how he had more focus on work conditions and, for example, had found small practical solutions that provided better working conditions. The new equipment, therefore, reflects an attitude that it is not only navigation but also the workload and positions that must be optimized using equipment, as informants 1 and 13 describe it:

'Particularly with deck equipment there has been a development.' (I1)

'Safety is not taboo anymore, most people know one or more who got injured or have lost their lives. Before, we focused on having the latest equipment inside the wheelhouse, but now we also focus on the deck.' (I13)

Fishermen invest in the equipment especially in the refurbishment of vessels or if something becomes legally required, but investment in equipment can also take place upfront:

'... But, we voluntarily chose to install AIS (Automatic Identification System) on board before it was required by law, because there was actually a thing that we had heard about, which we could use. I had heard about it through the media and a Fishery Journal. It was not a major investment, think it cost about 80,000. I thought that I could actually also use it in my fishing - I could see where the boats are and what they do.' (I1)

Overall, there has been development in the equipment used, and it has facilitated the ergonomic loads and improved occupational health and safety. These improvements are the result of a new attitude towards equipment and a new concern for ergonomic strains.

4.2 General conditions in the industry

The conditions that determine which practices fishermen implement as part of their profession obviously have a great indirect impact on safety. There has been rapid development in fishery regulations, and the individually transferable quotas, introduced in 2007, have especially had a profound impact on the structures of the fishing industry. This report cannot explain or examine quota policy, but we refer to a newly published PhD dissertation on the subject (Høst 2012) and pass the informants' views on the structural changes in the profession.

Another factor that has affected the profession is the banks' reluctance to lend out money, which affects what it takes to be fisherman today. In other words, the selection into the profession has become harder.

4.2.1 Selection

Several informants said that it is much harder for a young fisherman to buy his own boat today:

'At that time, banks were also a little more into fishing than they are today. At that time, a young man could get started with fishing. It's a lot harder today.' (I2)

'It's not easy for young people to enter the fishing industry today. Although you have 200,000, it is not gonna happen, there is no one to lend you money, so if they cannot get someone who can see a future in him and let him buy ten or twenty percent, then it is not possible.' (I13)

While it has become more difficult to start up, there are also some who sold off and found another profession when the quota system was changed:

'Those who sold got a good price, so there were many who went out of the fishing industry by the time and then they took work at Vestas, and uh that was so nice, they could have a secure income, but I would rather continue to fish.' (I13)

'We were in crises due to the fuel prices, it did not correspond to the price we could get for our fish, then they made the ITQ - individual transferable quotas – which were given to fishermen based on their respective history in fishing industry - out from five base years, I think they decided - then there were suddenly many who had to make a decision: buy or sell. People could see a way out of the fishing industry without debt, and others wanted to continue fishing - such as us, so we invested in more vessels, to get enough quotas to continue our fishing. So the price rose again and quota price became too expensive, so there are actually several out there who sold out the last few years and got some money out of it, so we are fewer fishermen today. Indeed, we are not many. Last year, there were several who purchased vessels and then chose to fish on the leasing basis. We do not do it, we have our own quota.' (I1)

It also seems that those who have not managed to adapt have been excluded:

'I have also seen one who would not change, they couldn't keep up any longer and found another hire, but it is typically those who during their time have been on 20 vessels who are not willing to adapt to new times. You see that there are some people who come to the city to look for hire but they do not stay in the trade; the jobs are limited - it's like with other jobs in the country. Those I want, I pick them from the school so we can train them ourselves.' (I2)

It has become much more difficult to get established in the industry compared to before the quotas were individualized and capitalized; in result some went out of business. This development may mean that what is left is a smaller proportion of the previous group of fishermen. The industry requires a more focused and commercial approach today. This indicates that there has been a professionalization of the trade.

It may even be the case now that that the entry has become so difficult that there is no longer room for people with disabilities:

'We have one on board who struggles a lot with diabetes, and if he does not take his insulin, we can see it. He has fished all his life and has many more years if he take his insulin, and we need to look after him, but it will probably not be possible to go on like this, because if he is not as good at work as we are, then he should also get a smaller part of the catch, so it's a little difficult. In principle, we have equal pay for everybody ... ' (I2)

4.2.2 Young people

Several noted that, because young people have the opportunity and obligation to go to maritime college, young people have a better and more educated approach to safety, as opposed to on the job training only at the workplace; also it provides different attitude to the profession:

'Back then it was like if you were too stupid for anything else you could always become a fisherman. Today it requires training to be a fisherman.' (I13)

The youngsters' attitudes also benefit their elder crew mates:

'In general I think the fishermen here are good at involving young people. It gives a good working climate to have them on board and they ask other questions than the elder crew members do.' (I 2)

Our impression was confirmed when we talked to the students at a maritime college and as one of the students clearly expressed that he was not prepared to be in a workplace where safety was not a top priority:

'The injuries could make him consider abandoning the profession.' (I6)

'He will not set foot on board a vessel where the safety is not up to standard.' (I6)

It is typical for young people to have strong opinions, and this young aspiring fisherman may well change his attitude when he becomes a member of the crew on a fishing vessel. However, he is an interesting informant because he represents a new type in Danish fishing industry. He does not have a fishing background but wished to enter the maritime college because he had tried fishing in a sports academy. It is likely that he lacks some of the skills that young people with fishing background may have, but perhaps he will ask questions about certain issues that others in the industry take for granted.

4.2.3 Quota

Many of the informants highlighted the quota system as the reason that they take fewer risk today compared to the past. Informant 2 explains it very precisely:

'We will not sail out if the wind is 25 m / s because we have to make a profit every time, we go out. Because we do not catch many fish in this kind of weather, we are just there and use a lot of fuel, unless we know that in 12 hours it will calm down, in that case we will be the first ones to arrive when the weather will be OK. It costs approx. DKK 22,000 a day for us to sail, so it should be considered.' (I2)

'We also have what is called sea days, where we have a certain amount of hours to spend - our quotas are given based on the hours we are out sailing, but we had a limited amount of hours we are allowed to be out at sea, and we violated it, then you could get a fine, we only had so many hours to catch our fish, it is an EU regulation. So: we had a certain amount of fish, but too few days to catch them. For example, 100 days, so when we sailed off, we worked all the time and no matter what, otherwise we would not be able to catch the allotted fish. Then, there was no time, for example, to conduct drills or chat about things and say, 'Now we have very bad weather, what do we do?' No, we would just fish; we had to catch our quotas. Now, there are fewer, so now there is enough fishing days for the rest of us.' (I2)

Clearly, it requires something else to fish today compared to before 2007, when quotas became commercial goods. The fishermen we talked to saw it as a positive development, because it gives them better control and more flexibility. Here one must bear in mind that the people we spoke with represent the group that took up the challenge posed by the conversion of quotas. Others chose to sell.

A parallel issue is the different climate of negotiation: the shift from conflict to dialogue. I9 describes how the fishermen's trade union seeks to achieve stability and flexibility for fishermen instead of getting quotes as high as possible, but at the same time with the understanding that flexibility should not be so high that some will earn money from speculating in shares.

'When I negotiate on quotas, it is not necessarily to get quotas as high as possible; it's more about getting some stability. It is more important to me, but it's hard, too much flexibility and someone speculates in it.' (I9)

Almost all of our informants told about the possibility of hiring quotas from a 'pool', they said it made it easier for them to fish because, if they want to fish a special species for which they themselves did not have a quota, then they could hire from the pool. Informant 9 explained that the pools proved to be a good tool for fishermen, which also helps them to obey the law. However, it has taken time to shift from conflict and distrust to constructive cooperation.

'It is quite amazing that it works. Everybody is happy about it. Administratively, it is also a good idea instead of everybody going and trading with each other.'

And that is the reason that the pools came about, we said 'if we pool things...' ... say if I have two species I do not use I put them into the pool and then there is one up there that says that he would like those and then ... It's just a regular exchange centre. That's what it started with and it has successfully developed all the way. And we also get more and more rights to do some things in the pools than we had in the first place. There is no doubt that everyone in the Fishery Directorate thought that this was how we could start the biggest swindle that could be done within fishing. They made all the barriers and all the obstructions they could possibly get away with so that we would not be able to get the pool to work. But we continued to fight; we would have the flexibility this provides.' (I9)

Overall, the present picture of the fishing industry is less conflict-oriented and has more stability and flexibility for the fishermen who have managed to adapt to the new market conditions.

4.3 Organisation

In the section on the technical equipment, one of the conclusions was that the equipment is significantly improved and one of the reasons for this improvement is that the fishermen's attitude concerning which equipment is required has changed. One of the factors that has pushed this development is the organisation of safety at sea and the institutions that support and promote this. In particular, DFOHS (Danish Fishermen's Occupational Health Service) is often mentioned by informants, for example here in connection with the mandatory workplace assessment:

'It is still difficult with the drills, I must admit. And it is probably because you are thinking: It cannot happen to us, but we are very focused on the WPA (Work Place Assessment), we discuss it and if we have a new man on board, he will be able to read it. We did the WPA with Flemming (meaning DFOHS) and his people.' (I1)

It seems that the role of DFOHS is to act as an intermediary between fishermen and the Danish Maritime Authority when new regulations are established:

'Do you check the newsletter from DFOHS? No, we will get information if something is coming. If there is anything we have to do, we'll know about it. When they get information on something new they communicate it to us, then we will buy the needed equipment.' (I1)

Our informants clearly described that they perceived DFOHS as their people to whom they can turn for everything:

'I think mostly it is DFOHS - there have been so many people who have been good to talk to about it. I am so impressed with the people down there, there's nothing they cannot find out.'

They find a solution no matter what question you ask them. It is a huge support. You do not need to be afraid to ask a stupid question, they'll figure it out if they can.' (I3)

However, we still should bear in mind that we have talked with a sample of the fishermen who adapted to the transition. There will undoubtedly be some who do not recognize themselves in these informants' points of view.

The changing climate of cooperation in relation to the legal requirements is expressed by Informant 13 here:

'Most of the time what DFOHS come up with is voluntary to begin with, but you know that it will be a legal requirement of the DMA after a few years; then it's more fun when it is voluntary and you can decide for yourself. So it is an advantage to be ahead and they can see that.' (I13)

This statement from Informant 13 is essential to understand the changes in the industry. Many self-employed prefer not to be bothered by interventions and regulations from outside, but this is particularly true within the fishing industry.

The three geographically-based safety committees are an essential part of the safety system. They exist side by side with the safety committees that can be found on the small number of vessels that are big enough to be obliged to have their own safety committee. Safety committees ensure that, although most vessels are so small that they do not need to have their own safety committees, injuries will still be reported and the fishermen will receive information about new initiatives. In addition, the members of the three safety committees have an important role as pioneers as Informant 13 describes:

'I got into safety work because there was not anyone who wanted to do it and they said to me that I go to port every day, so I might as well. Back then it was something like 'yes, yes, it's just because you want to go there and have some coffee,' but now they listen effectively and are also asking questions themselves.' (I13)

Informant 3, who is a safety representative and fishes alone, described how having an organization at his back enabled him, along with others, to put a stop to other people's risky behaviour:

'We had some cases when some thought that they could sail around drunk, but it is no good. Imagine if they hacked a family in a yacht. So we stopped it. Alone I would not have been able to do anything about it.' (I3)

It is a fine example of the difference it makes to have a safety committee in an industry with an exceptionally high number of small businesses.

4.4 Dialogue

The main explanation for the change in attitude to safety could be described as 'dialogue' even if it was not a word any of the informants used. In line with the general development of workplace regulation in Denmark, the regulation of the fishing industry has also moved toward more dialogue and self-regulation from the Authority's side. It is reflected in the statement above that it is more fun when it is voluntary.

However, more important is the informants' repeated use of the phrase 'we talk about it' with respect to the way they work with safety in the crew. At the same time, they emphasized that it

has not always been this way. In the light of safety culture, it is a very positive change because communication is a key factor and all contributions matter.

4.4.1 Talk among the crew

Informant 2 describes how, before, his crew almost avoided talking about things they were not entirely comfortable with:

'... The thing we did...once we had to have a man out in the water in a survival suit to grab the wire, it could have gone really wrong. It was not something we talked about, it just had to be done and it was not discussed afterwards either, or maybe we said 'Well, it went well again', and then there was no more talk about it. You would not see that today. Today I would certainly do it differently if there was an event; we would have a chat about it ... ' (I2)

The informant is reflecting on passed events, but nonetheless it is interesting because it reflects some of the results of studies of fishermen's understanding of risks. A Norwegian article from 2007 finds, for example, that the investigated fishermen tended to underestimate their risks to cope with real work dangers (Bye & Lamvik 2007). Two Swedish articles also indicate an unwillingness to recognize risks (Törner et al.2000; Eklöf & Törner 2002). Also, a Danish article from 2010 discusses the acceptance of risks in this line of work (Knudsen & Grøn 2010). The results of the current project indicate that this trend is reversing. A Canadian study has described how the owner of a small business saw himself as equal to his employees and therefore found it difficult to reprimand them when they behaved recklessly (Eakin 1992). We asked the informants who were masters if they ever rebuked their colleagues. They replied that they talked about it:

'... if we get newcomers on board, the others work alongside them , and will tell me 'he does not do it right', if he don't, so I'll talk to him and they will also talk to him, we try to smooth it out. I typically raise the issue at sea when we have some free time on board, then I say: 'We need to do it differently because it is a very unsafe situation and provides a risk that you could get hurt and it goes beyond your and my safety.' (I2)

'They do not do that anymore, it's all in the past. It is a different standard now. I cannot say what we've done to get here. It is just the way it is. If you are a newcomer, the others will tell you: 'Hey, it is no good, we do it this way.' I rarely have to tell them myself.' (I1)

It appears that people are more equal than in a large hierarchical organization, which is natural. However, if we are to believe the skippers we interviewed, this equality does not mean that safety is neglected but rather that there are more people to talk about it with.

The role of management is critical to the safety culture, not least to get input from the other crew members if someone is about to make a bad decision:

'It is important that they are able to think independently. I have to have feedback, I can decide some things or say some things where they say, 'Well, it won't work', and they do that, everyone. It is crucial in our everyday lives.' (I2)

4.4.2 Talking in networks

Safety work in small businesses is also a challenge in land-based occupations. It has recently been suggested that, for small businesses, a network can be a good platform for projects to promote health and safety for small businesses (Limborg et al. 2013). Therefore, it is interesting to note the experience of the one-man fishermen in Thyborøn who have an informal network where they talk about everything under the sun, including safety:

'We are a special bunch of 10-12 guys here in Thyborøn, we know each other up and down and we're often having a coffee talking about what we have been up to. We are at some level a large family who help each other; we are not just one-man fishermen who work alone in a vessel. We keep real close.' (I3)

These self-created networks could be supported as a platform for systematic work environment development in the one-man vessels, which present a particular challenge in the prevention of accidents in the industry.

4.4.3 Talk with professionals

Two informants also commented on the subject of the psychological work environment as a new area they have begun to take more seriously. One told a story about an uncle who saw two serious accidents in his life to illustrate the developments that have occurred:

'Previously, if there was an accident at sea, it was not something people talked about. Now I have an uncle who broke his spine out at sea in February, we got him up and everything, but I called DFOHS because it seemed like a good idea to get a psychologist. We could feel that it was not just as it should be with him. The first time he fell overboard years ago, we would do no such thing, they could go to the inn if they wanted to talk, but now he is feeling much better than he was at that time. What a development!' (I13)



His story illustrates a parallel shift, which is that we can and should make an effort to get better and to do better. Thus, we have moved to the core issue of safety culture, namely, the attitudes fishermen hold to safety.

4.5 Attitudes

'Back then it was more a calculated risk, it was just what could happen. It was dangerous to fish and you knew it. And the perception was that if you were too stupid to do something else you could always become a fisherman. Today it requires training to be a fisherman. People find it easier nowadays to get the survival suits on when sailing, before they would just be lying there stashed away, because it is a hassle to put them on and you look

stupid and things like that.' (I13)

Informant 13 here tells us that, in the past, the acceptance of risk was different than it is today. He also describes how the risks are defined socially as social anthropologists Douglas and Wildavsky have noted (Douglas & Wildavsky 1983). The idea is that there are so many dangers in the world that you just cannot be aware of them all. You make a choice. The choice of the hazards they are aware of is social and cultural; the individual adapts to the others and their understanding of the risks.

Therefore, there has been a shift from safety being something you practiced but did not talk about to safety being something to work toward and the risks are something one anticipates and

addresses. Informant 3 describes what it was like to be a pioneer as a member of the safety organisation:

'Yes, I remember when we first talked about it, and my reaction was like, 'We are never getting anyone into this, you must be mad. And in the first years, when we started out, the attitude was also this 'Oh, who am I to think I can change it all'. They judged us completely because they did not believe in it. But I had experienced the importance of it myself; I could just see that it was important. So we kept going, and we could see that it went ahead. And every time we meet, we reassure each other that it's damn well what we do, we must continue because it is the right thing to do. (I3)

So, there has been a change in attitude, at least in the circles where this informant came from. Informant 1 formulated in one sentence what the attitude toward safety is:

'We do not take chances; there is no need to.' (I1)

4.6 Summary

In general the fishermen we spoke with described the results of the last 15 years of development in safety work as something given and self-evident. You do not take chances. You talk about it. You will be kept informed and try to stay ahead. This development is supported by general changes in the industry but especially by the way safety work has been organized by DFOHS and the three safety committees that act as an intermediary between authority and fishermen.

4.7 Areas that needs further attention

Despite the positive trend, some issues emerged during our fieldwork, which point to challenges for the safety culture in the Danish fishing industry.

4.7.1 The triviality limit

The first area where we reach the triviality limit is the definition of a serious accident? Here, fishermen are apparently tougher than other occupations, at least some, as Informant 2 demonstrates:

'I must say, we have never had major accidents on board, just a broken arm or leg or a lost finger, it's obviously serious enough, but that can happen in all professions, and I've never experienced death or very serious injury.' (I2)

4.7.2 Psycho-social work environment

There is a tendency towards enhanced interest in psycho-social work environment, but it is most likely just the tip of the iceberg. The physical and psychosocial work environment becomes increasingly assimilated according to the authorities' perspective on land-based industries, and the same trend is likely going to be true for the maritime industry in the future. Safety, fatigue and stress are especially pressing issues, and there are indications that they will be even more pressing as a result of the new structure of the profession:

'Within our business it is a lot- it's not just physical safety, there is also the psychological; there are very heavy working conditions, and it can both go beyond the body but also the head where you experience stress or fatigue, where you cannot take it anymore. I experienced it with my previous crew, but maybe not right now, but we worked too hard because we had to catch a lot of fish, and it would have an impact on safety, where there is some heavy work on board, there is with most craft today - I know that we are becoming fewer and fewer vessels -

actually we have a debate in the fishermen's union if we can cope with it being even fewer because we are now at the point where we cannot catch the quotas we are awarded.' (I2)

It is possible that the structural and attitude changes this report has described have resulted in more safety awareness but, at the same time, have also created some new psychosocial impacts. Another possibility is that there is a 'spillover effect', which means that, when you address safety, you become more aware of the psychosocial work environment. For example, Informant 13 illustrates the development of safety and mentions an episode with an uncle who fell into the water and then received help from a psychologist. Informant 2 also connects the psychological work to safety in the quote above.

4.7.3 Systematisation

Several of the informants indicated that they most likely had operational procedures on board, but that it is something they have in their heads, not written down, because some fishermen have difficulties with reading. The fishermen are talking about WPA and hazards and risk situations that can occur, which is essential for safety work, but it is not always sufficient. There needs to be a way to systematize the safety work that does not require academic knowledge, in part to ensure that all of it reaches everyone and people do not just come across recent procedures and also to facilitate the commissioning of new procedures. Informant 13 precisely says:

'The greatest danger is oneself - if you do not use your head. The best tool is the head.' (I13)

Fortunately, there are tools to assist the head, but they must assist in a way that makes sense to a fisherman's work. DFOHS's web-based risk assessment system is a good example of a tool that can help to structure and develop safety measures on board. During the preparation of WPA, fishermen discuss all the different working tasks on board, and several of our informants pointed to the WPA as something they benefited from.

Part of the project is a test of an instrument directed toward safety culture. The results of this will be described in a separate report. This report continues to describe in more detail the quantitative development that was presented in section 3

5 SAFETY IN THE DANISH FISHING INDUSTRY – IN NUMBERS

5.1 Characteristics of the reported occupational injuries

The following section of the report describes the characteristics of occupational injuries, for example, who are injured and when, in order to provide a more detailed picture of the occupational injuries in the Danish fishing vessels.

5.1.1 Where do injuries happen and to whom?

Most of the reported occupational injuries (76.7%) occurred while the vessel was out sailing. This trend is repeated when examining each year of the study period.

Table 2 Occupation on board

	Percent (n)
Fisherman	81.8 % (1,407)
Skipper	13.8 % (238)
Apprentice	3.9 % (67)
Other	0.5 % (8)
Total	100 (1,741)

Table 2 shows injuries over the different job titles on board fishing vessels. More than 80% of all occupational injuries happened to fishermen, while 13.8% happened to skippers. A previous study has compared the treatments in emergency departments in Denmark with reviews of injuries at the Maritime Authority and showed that skippers reported their own accidents to a lower degree (Jensen 1996) than others. However, since we have not been able to provide valid estimates of the number of fishermen in the various job titles in the Danish fishing fleet, it is only possible to calculate the results respectively in absolute numbers and as a percentage of the total number of accidents. It would have been desirable to compare the distribution of this study population with the overall population because this could provide a clearer picture of whether some positions on board fishing vessel are associated with an increased risk of accidents. When we do not know how many skippers there are in relation to share-fishermen, we cannot assess whether there is underreporting from the skippers' side.

Table 3 provides an overview of the type of vessel where occupational injuries have taken place.

Table 3 Distribution of injuries on different types of vessels in period 1998-2012

	Percent (n)
Beam trawler	6.5 % (111)
Gillnetters	1.2 % (21)
Net fishing vessels	11.7 % (199)
Longline fishing	0.5 % (9)
Dredgers	0.3 % (5)
Sein Cutters	0.8 % (13)
Danish seiner	.,3 % (124)
Trawler	71.5 % (1,213)
Unknown	0.1 % (2)
Total	1,697

The majority of the identified work-related accidents (71.5%) has been on trawlers. Based on figures from the Danish Ministry of Food, Agriculture and Fisheries, trawlers are estimated to represent approximately 20% of the Danish fishing fleet (Statistics Denmark, 2013). Statements from the Danish AgriFish Agency about employees on Danish fishing vessels show that trawlers employ approximately 28% of the fishermen.

5.1.2 Time for injuries (night/morning/afternoon/evening)

Figure 3 Distribution of work related accidents throughout the day in the period 1998-2012

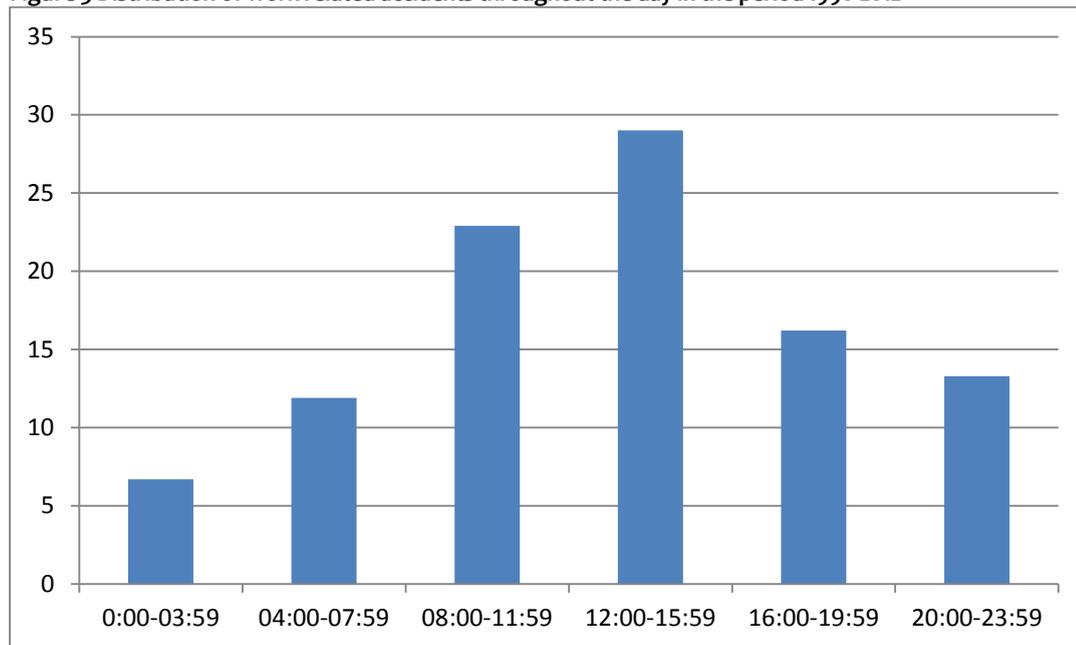


Figure 3 shows that most accidents (29%) take place between 12:00 and 16:00, and the second most happen between 8:00 to 12:00 (22.9%). In the period from 16:00 to 20:00, 16.2% of the registered injuries happen, while the fewest accidents occur between 00:00 and 03:59. The reason for those results may be that the majority of the work is done during the day.

Figure 4 Crew size and time of the occupational accidents in period 1998-2012

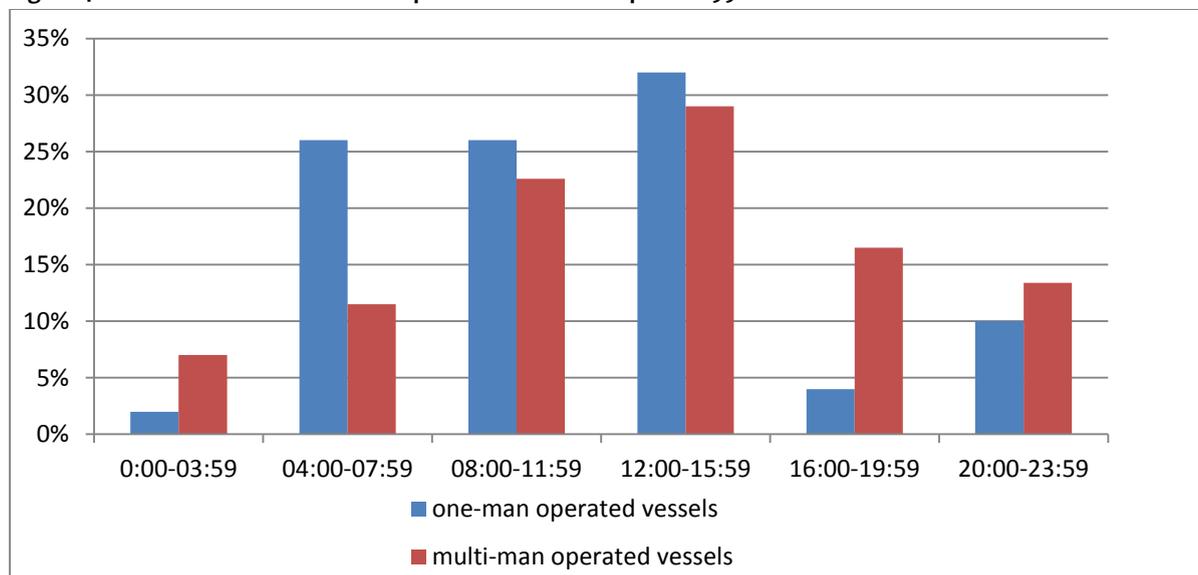


Figure 4 compares the percentage of accidents at different times of the day between one-man operated vessels and multi-man operated vessels. The results show that the time when fishermen were injured varies according to the size of the crew. In multi-man operated vessels, there is a greater percentage of work-related injuries that occur between the hours 16-04, while the one-man operated vessels have a greater proportion of accidents that occur between the hours 04-16. This distribution corresponds well to the time the vessels sail. The one-man operated vessels typically sail early in the morning, while the larger vessels to some extent work at night.

Table 4 Location for accident

Location on vessel	Percent (n)
Deck	73.1 % (1,243)
Cargo hold	7.9 % (134)
Galley	1.1 % (18)
Common room	1.4 % (24)
Engine room	2.2 % (38)
Wheelhouse	0.1 % (2)
Gangway	1.3 % (22)
Outboard	1.1 % (18)
Ashore	5.4 % (92)
Other	6.4 % (109)
Total	100 % (1741)

Table 4 shows the proportion of the total number of accidents that have occurred at different locations on the vessel. The vast majority of accidents happened on deck (73.1%) and in the cargo hold (7.9%).

Figure 5 Length of employment on the fishing vessel at the time of occupational injury

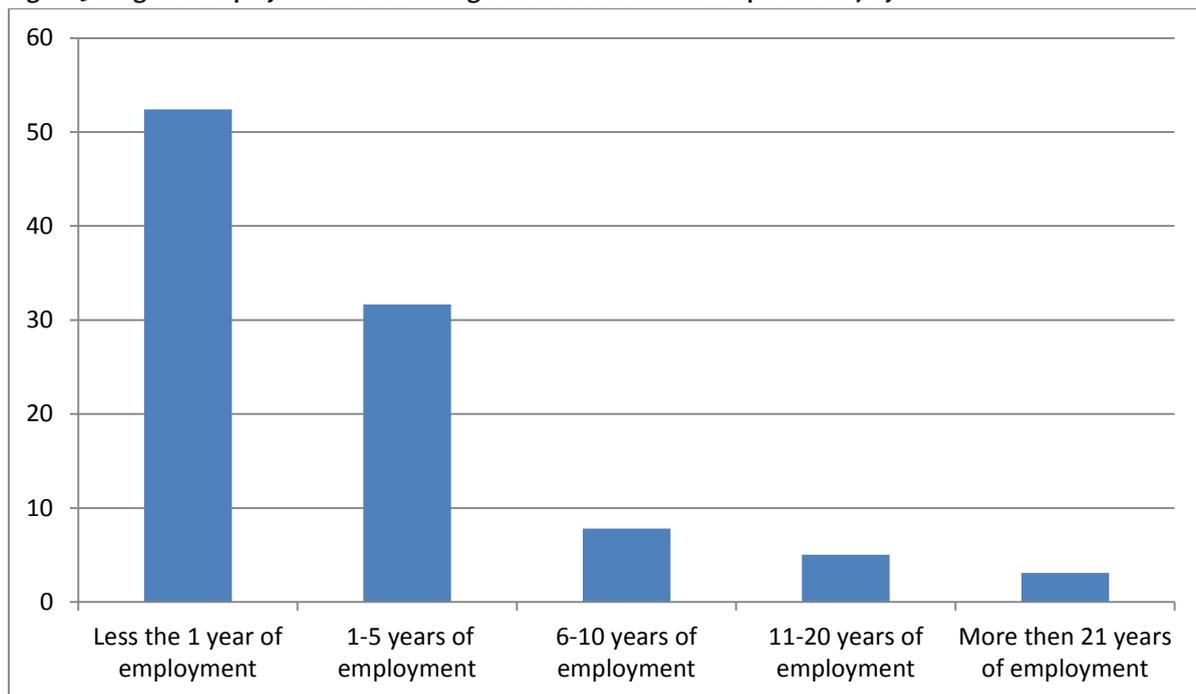


Figure 5 shows that the proportion of occupational injuries depends on how long the fisherman was employed on this particular vessel. Over 52.4 % of reported injuries involved fishermen with less than one year of employment on the vessel, and 31.7 % of reported injuries involved fishermen with between 1 and 5 years of employment. The results indicate that risk of work-related injuries decreases as a person has more experience at the particular workplace.

Figure 6 Work-related injuries divided by length of employment for the single years of the study period

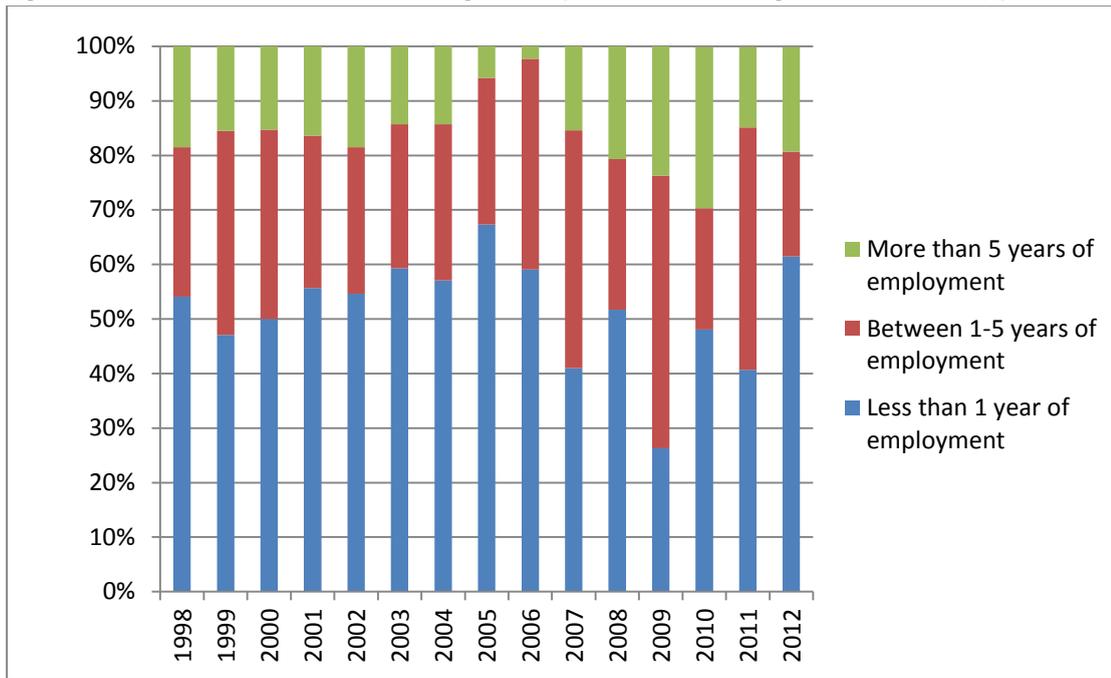


Figure 6 also shows the percentage of accidents depending on length of employment on the vessel but according to the years in study period.

Figure 6 shows that the first year at work is still risky and that there apparently has been no change in the study period. In the years 2007, 2009 and 2011, the percentage of accidents is highest for fishermen with between 1 and 5 years of employment, but otherwise it seems that especially the first year is associated with the risk of injuries. The results show that most fishermen are injured in their first 5 years of employment. These results demonstrate the importance of special initiatives for new crew members.

Figure 7 Number of injuries in different age groups (time period 1998-2012)

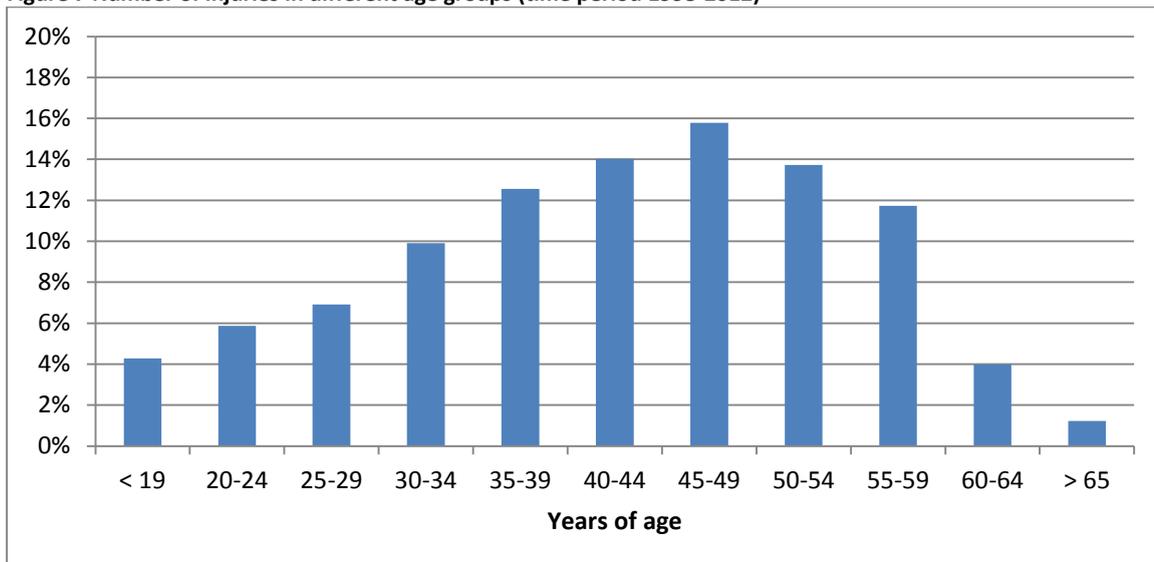


Figure 7 shows the percentage of accidents in different age groups in the period 1998-2012. Most accidents (approximately 67%) occur between 35 and 59 years of age.

Figure 8 Incident rates divided into age groups (year 2012)

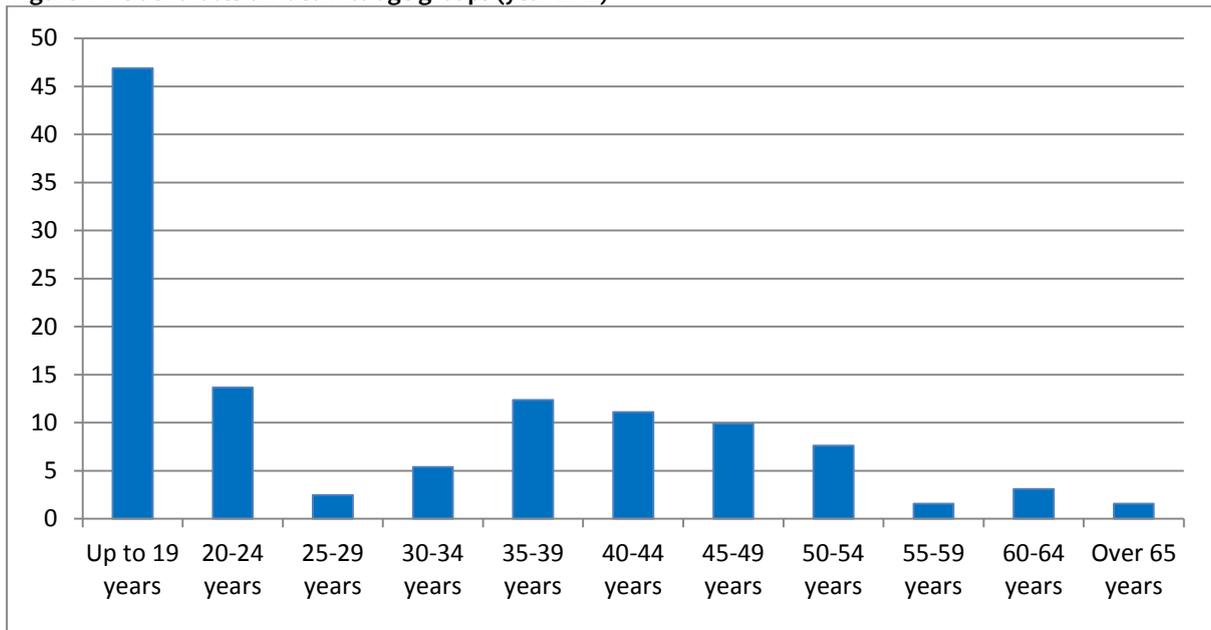


Figure 8 shows the incidence rate of work related injuries in 2012 by age group. The result should be interpreted with caution because the information about age groups, which were used for the state’s figures, comes from the Danish AgriFish Agency and does not correspond to the figures for the number of fishermen that are used to calculate the incidence rate generally in the rest of the report.

In the absence of valid statements of the age distribution in the study population, we cannot definitively consider these calculations correct. The results of Figure 9 can be considered an estimate if eventually some age groups have an increased risk of accidents, but they cannot be used directly to draw any conclusions about the extent of injuries in different age groups. The results indicate that fishermen up to 24 are injured to a greater extent than their older colleagues. Fishermen from 25 to 34 and over 55 are injured less than their colleagues in the 35-54 age group. As shown in Figures 5 and 6, the risk of accidents increased during the first year of employment on a fishing vessel, which agrees well with the trends shown in Figure 9.

Table 5 Injured body part

Body part	Percent (n)
Neck/head	5.9 % (101)
Teeth	0.3 % (5)
Lower leg/knee	7.7 % (131)
Eye(s)	1.6 % (28)
Shoulder, upper arm, elbow	8.7 % (149)
Wrist/forearm	12.6 % (214)
Finger(s)	21.9 % (373)
Thorax	4.0 % (69)
Back	12.1 % (207)
Hips/thigh	2.8 % (47)
Foot/ankle	8.4 % (143)
Abdomen	0.4 % (6)
Other body part	14.8 % (232)
Total	100 % (1,705)

Table 5 shows which parts of the body are typically damaged by accidents in the Danish fishing industry. Generally all parts of the body are represented, but, as shown in the table, damage to the fingers represents more than one-fifth of injuries (21.9%). The next largest group of injuries (13.6%) is categorized as "other". This category includes various injuries that could not be categorized in one of the existing groups and a number of injuries with missing description of which body part was injured. Of the other frequently injured body parts, the wrist accounts for 12.6%, shoulders 8.7% and ankle 8.4%.

Table 6 Type of injury

Type of injury	Percent (n)
Sprain/strain	33.2 % (544)
Fracture (closed)	19.2 % (314)
Fracture (open)	4.6 % (76)
Amputation	3.1 % (51)
Cut/wound	12.1 % (199)
Suffocation	0.3 % (5)
Poisoning	0.9 % (14)
Burn/frost-bite	0.9 % (14)
Other	25.8 % (423)
Total	100 % (1,641)

The majority of reported occupational accidents are sprains (33.2%), and fractures (open and closed) are 23.8% and wound 12.1%. A quarter (25.8%) of the accidents is included in the category other damage that could not be categorized in one of the existing groups in the reporting form. For example, this can be due to accidents that involved injuries to several body parts, which the notification form does not provide an opportunity to report.

5.1.3 Expected absence due to the accident

Table 7 illustrates the consequences of accidents at work in terms of the expected length of absence as a result of the accident (see entry form Annex 2). In the majority of cases (39.9%), there was expected absence longer than 14 days but less than 5 weeks. A total of 28.4% of those who were involved in an accident were expected to be absent for more than 5 weeks. In only 2.1% of work accidents were there expected absences of less than three days. Apparently, these results indicate that accidents in the Danish fishing industry cause long periods of absence. It should be noted that 13.7% of the reported accidents in database were excluded from the analysis because the expected period of absence was less than a day and was therefore not reportable. The results of this analysis do not give the correct picture of the severity of accidents in the Danish fishing industry.

Table 7 Expected absence as a consequence of work accidents (1998-2012)

	Percent (n)
1-3 days of absence	2.1 % (36)
4-14 days of absence	26.4 % (460)
> 14 days of absence	39.9 % (694)
> 5 weeks of absence	28.4 % (495)
Permanent disablement	0.6 % (10)
Dead	2.6 % (46)
Total	100 % (1,741)

Although the incidence rate of accidents at work falls within the study period, there are still many work-related accidents that are expected to cause extensive absence. To investigate this further, we have calculated the absence in relation to the nature of damage and the exposed age.

Figure 9 Expected absence in relation to the nature of damage

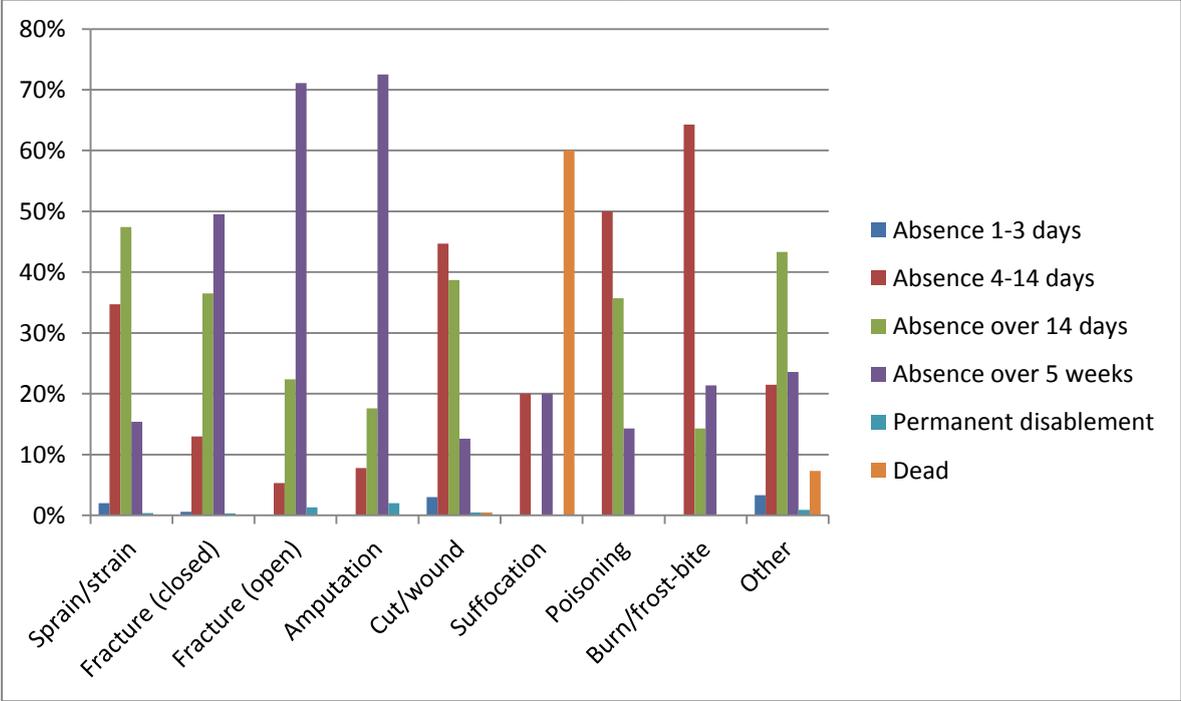


Figure 9 shows a slightly more detailed view of the expected length of absence by the nature of damage. Table 7 showed that there were few injuries with a short expected absence. The explanation for this trend could be that fishermen had long absences from work, even in the case of minor injuries, due to the demands of the physical work. The figure above shows that fishermen who have suffered bone fractures (open and closed) and amputations typically are expected to be unable to work for a period of 5 weeks. These three categories of damage combined account for 23.8% of injuries, according to Table 6. Sprains provide the majority of expected absence cases between 4 days and up to 5 weeks. The majority of wounds are expected to create absences between 4 days and 5 weeks. The results of Figure 9 also show that expected long-term absences are caused by serious accidents.

A possible reason for longer periods of time may, according to a report from the Danish Working Environment Authority, be the age of the person being injured. According to the report, older employees who are injured have a longer period of absence and are more seriously injured than younger workers (Arbejdstilsynet 2013).

Figur 10 Absence from work due to injury (divided into age groups)

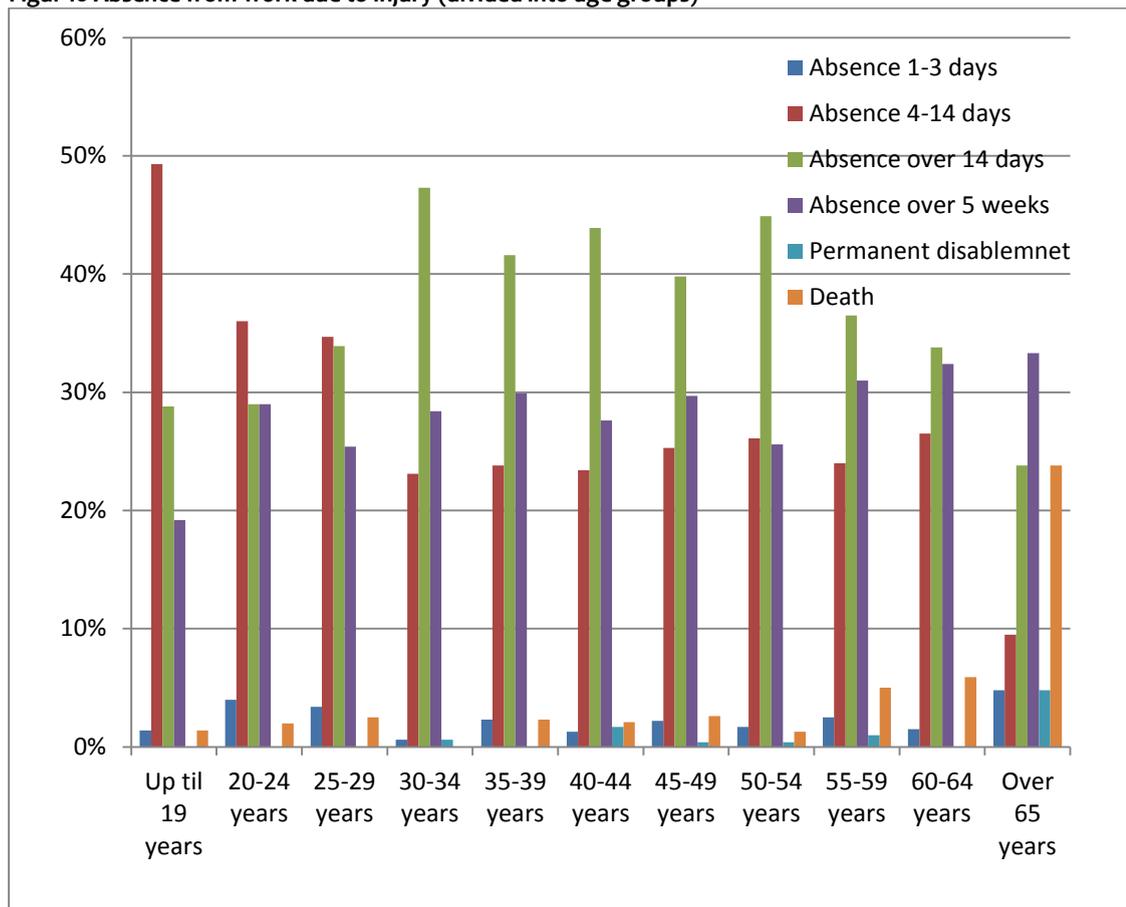


Figure 10 shows the differences between age groups and their expected absence due to injury from the workplace. Young fishermen up to 29 years old to a greater extent have expected absences between 4 and 14 days, while fishermen in the 30-54 age group to a greater extent have expected absences over 14 days but less than 5 weeks. For fishermen over 55, the share of injuries that resulted in expected absence exceeding 14 days but less than 5 weeks is quite high, and they have expected absences over 5 weeks to a higher degree than the younger fishermen. These results could indicate that the tendency in terms of longer absences because of age also applies to fishermen.

5.1.4 Lift, slip/fall and crushing injuries

The database provides information on whether the injuries are caused by lifting, slip/fall or crushing. It appears that lifting injuries account for 6% (99) of the reported occupational injuries, while crush injuries amount to 27.5% (474) and slip/fall injuries represent 28.6% (494).

Figur 11 incidence rate for three types of injuries (1998-2012)

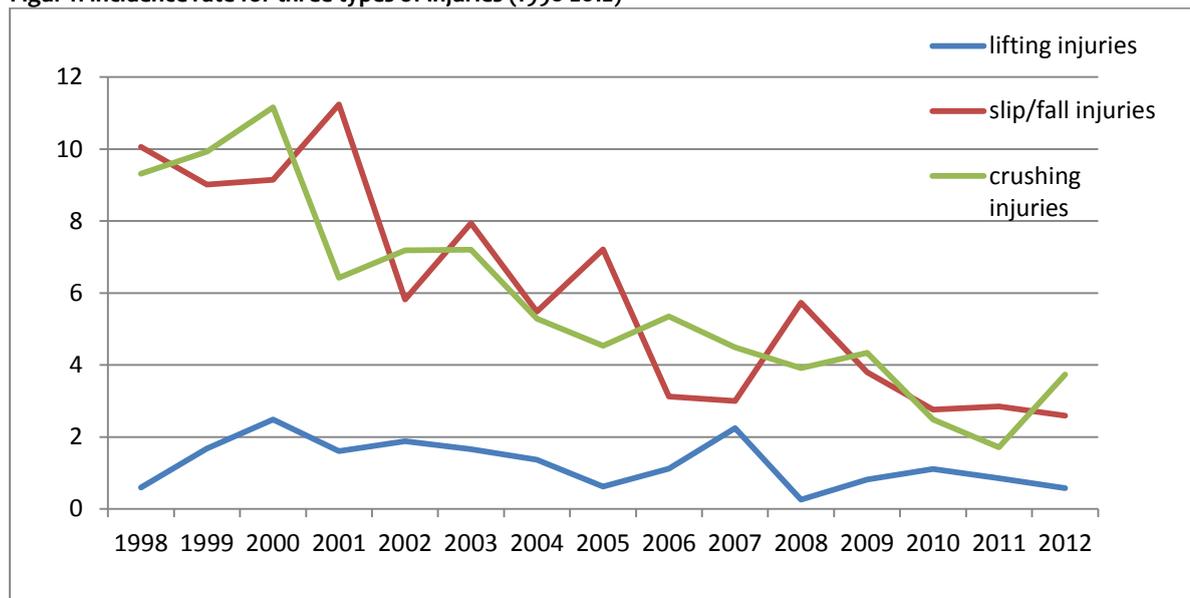


Figure 11 shows the incidence rate for the different types of injuries in the total study period. The results show that the incidence rate for lifting injuries is fairly stable and relatively low throughout the period. By contrast, over the years there has been a reduction in the number of accidents caused by slip/fall or crushing. The number of accidents with slip/fall injuries has decreased from 10.06 per 1,000 fishermen in 1998 to 2.59 in 2012. The incidence rate of injuries caused by crushing also decreases, from 9.32 accidents per 1,000 fishermen in 1998 to 3.74 in 2012. This positive development for slip/falls and crushing injuries most likely reflects the massive effort in the form of campaigns and better equipment. There has been an effort to spread the use of non-slip boots and slip-resistant surfaces both from DFOHS side and in an intervention project (Jensen et al 2008). It is possible that these efforts can explain this positive development.

6 DISCUSSION

The fieldwork was carried out in Thyborøn, Hanstholm, Thorsminde and Hvide Sande, especially in the first-mentioned city. Thyborøn is a fishing community with a very varied fishery. Nevertheless, it is conceivable that the picture we have drawn is different from what it would have been if we, for example, had been doing fieldwork somewhere else, and the relatively small number of informants also means that we cannot generalize. The qualitative study does not provide the only true picture of how fishermen look at development over the last 15 years. There will be some who cannot see themselves in the mirror of the informants' story.

The biggest challenge in the quantitative data presented in this report is the lack of information on population of fishermen as a whole. In this report we have used data on the size of the population from the Danish Maritime Authority, although these figures are not in line with the Ministry of Food, Agriculture and Fisheries of Denmark (The Danish AgriFish Agency). The data used in this report have approx. 2,000 fewer fishermen than in The Danish AgriFish Agency and our data, as mentioned, is based on the Danish Maritime Authority estimates for full-time and part-time fishermen. To get a reasonable overview of the current situation and to be able to follow the development with respect to injuries to prevent them even better, it might be desirable to have a register containing all the relevant information on the fishermen, such as their age, experience, etc. Such a register would help to monitor trends in accidents and provide a more nuanced and accurate picture of safety in fishing industry than that reported and would thus contribute to more effective prevention of accidents in the Danish fishing industry.

There are also a few results that should be discussed. Even taking into account that accidents with an expected absence of less than a day were excluded from the analysis, there are few of the less serious accidents compared to the more serious ones. The question is, whether this is due to underreporting of less serious accidents, or is the occupational accidents that occur in the Danish fishing industry so serious that they result in a prolonged absence, or is it something else? DFOHS noted the possibility that fishermen take sick leave longer than 1-3 days more often even when dealing with minor injuries because the doctor takes into account that the person will be far from medical care out at sea. We called the medical clinic in Hvide Sande to ask a general practitioner what his practice is. Doctor Flemming Street responded affirmatively:

'Yes, of course I make my assessment with the knowledge that they will be far from medical treatment out at sea, they get more sick leave than if they worked on land, it applies, of course, the same even with those who work on wind turbines.'

Figure 10 deepened the results by showing that the two types of damage that together constitute more than half of the damage, namely closed fractures and sprains, both expected to lead to long absences. Figure 11 showed a tendency for older fishermen to have a prolonged absence due to injury. Therefore, if the population of fishermen increasingly contains older people, this partly explains the results.

However, the most obvious cause is underreporting of the less serious occupational accidents. It would not be strange or unusual if this was the case; underreporting for land-based businesses is on the level of 15-76 percent, depending on the calculation method (Arbejdstilsynet 2013). It is difficult to estimate underreporting, which the large margin indicates. In relation to underreporting, it is important to note that there are no incentives for underreporting in the profession such that one is rewarded for getting few reported accidents. Incentives do not occur in the Danish fishing industry, but it is still worth keeping an eye on the pattern in the future.

Another challenge in several of the analyses is that the category "other" accounts for a large share of the responses. This could indicate a need to create a more flexible reporting system in which several categories can be ticked off. Today it is only possible to mark a single category by injury type and injured body part or to describe the damage in detail. With the EASY system (an electronic notification system which has been applied ashore), there is even less information available, and, unless it is changed, in the future it will not be possible to generate the statistics we have presented. It is possible to review the various descriptions of injury and injured body parts, but this will only result in error categorization.

7 CONCLUSION

The qualitative study shows that there has been a development from safety being something you practiced but did not talk about to being something you work continuously at with risks being something one anticipates and addresses. It can be seen that there is an increased focus on the equipment on deck to facilitate the ergonomic loads, and the fishermen we spoke with try to stay ahead, especially when they know that there will be requirements. However, the development is particularly evident in the way the informants described the collaboration on board: We do not take chances. You talk about it. The main explanation for the change in attitude to safety is that at all levels there is a dialogue. In line with the general trend in the regulation of the working environment in Denmark, control of the fishery has also moved toward more dialogue and self-regulation from the Authority's side. This development is supported by a general restructuring of the fishing industry. However, it is especially important that safety work has been organised so

that the DFOHS and the three safety committees have come to act as an intermediary between the regulatory authority (DMA) and the fishermen.

The results of the quantitative section of this report shows that there has been a positive change in the incidence rate of accidents over the period 1998-2012 that most likely can be explained based on improvements and the prevention-based approach to safety in the Danish fishing industry. The results also show that accidents involving slip/fall or crushing have decreased significantly during the study period. The risk of occupational injuries in the Danish fishing industry seems to be highest in the first 5 years of employment, and this is unfortunately applicable throughout the period. Thus there have been changes in the Danish fishing industry, and the interventions, campaigns and legislative changes introduced seem to have had a positive effect on the development of occupational accidents in the Danish fishing industry.

This report indicates that dialogue, volunteerism and self-regulation are reasonable measures to improve safety in Danish fishing industry. There is a need to think in terms of platforms that can support safety work on the one-man operated vessels. Here the informal networks may be brought more into play. There is also a challenge in terms of new crew members, and there most likely needs to be more support in training and instruction.

Based on the findings of this report we will identify the need for methods to support fishermen to work systematically and continuously with safety. WPA has proven to be a good tool for the physical work environment, but future efforts should be directed toward the psychosocial aspects of the work environment, that is, cooperation and leadership on board, as a supplement.

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Appendix 1: Overview of respondents

Tabel 8

	Vessels	Age	Position	Area	Other
I1	Trawler Trash fish	35 – 40 ⁶ years	Skipper and shipowner	Thyborøn	
I2	Trawler Edible fish	40 – 45 years	Skipper and shipowner	Thyborøn	
I3	One man operated net fishing vessel	45 – 49 years	Skipper and shipowner	Thyborøn	Safety representative
I4	Net fishing vessel	30 – 35 years	Parttime fishermen	Lolland	Aspirant at Fishery school
I5		30 – 35 years	Employee	Bornholm	Aspirant at Fishery school
I6		15 – 20 years	Aspirant		Aspirant at Fishery school
I7		20 – 25 years	Accounts clerk for fishermen	Thyborøn	Woman
I8		30 – 35 years	Bookkeeper for fishermen	Thyborøn	Woman
I9		60 – 65 years	Chairman for fishermen union	Thyborøn	
I10	Trawler Trash fish	35 – 40 years	Fishermen	Hanstholm	
I11	Trawler Edible fish	35 – 40 years	Fishermen	Hvide Sande	
I12	Trawler Edible fish	40 – 45 years	Skipper and part owner	Hvide Sande	
I13	Little net fishing vessel Edible fish and crabs	45 – 49 years	Skipper and shipowner	Thorsminde	Safety representative

⁶ Age for I1, I4, I5, I7 and I8 is our guess, we forgot to ask.

Appendix 2: Interview guide

Main theme: **Development of safety culture**

Interview of:

Company:

Date:

Conducted by:

Referent:

Special conditions:

Introduction

1. Aim of study
2. Your background
3. Experience with fishing
4. The first vessel
5. Background information

Theme 1: Attitudes

1. If we say safety on board, what do you think?
2. Do you remember the first time you were aware of safety?
3. Have you ever experienced that one of your colleagues took a chance you did not like?
4. Do you have as skipper a special responsibility? Does skipper have a special responsibility?
5. How do you show it? Does he come out to expectations?
6. What does your colleagues'/employees'/leaders' attitude to safety mean for you?
7. Have colleagues a responsibility to one another in relation to attention to safety?
8. Which advantages could be with breaking the safety rules?
9. Special situation?
10. What can be disadvantages?
11. What can influence/change your attitude to safety?

Theme 2: Changes

1. Have your attitude to safety changed?
2. If yes, in which way?
3. What prompted you to change your attitude?
4. Do you have an experience that is a different safety culture today in the profession (industry)?
5. How would you describe the development over the last 15 years?
6. What do you think about this development?
7. What is your explanation for the reason why it went this way?

TEMA 3: Practice

1. Do you comply with your attitudes to safety in practice?
2. What makes it difficult to comply with safety requirements?
3. Can you describe the first thing you do when you start your job?
4. Do you have any permanent safety routines?
5. What can make you scared (afraid)?
6. Have you ever experienced a situation where you were scared (afraid)?
7. Do you have an example of a situation where you ignored safety and where it had consequences?

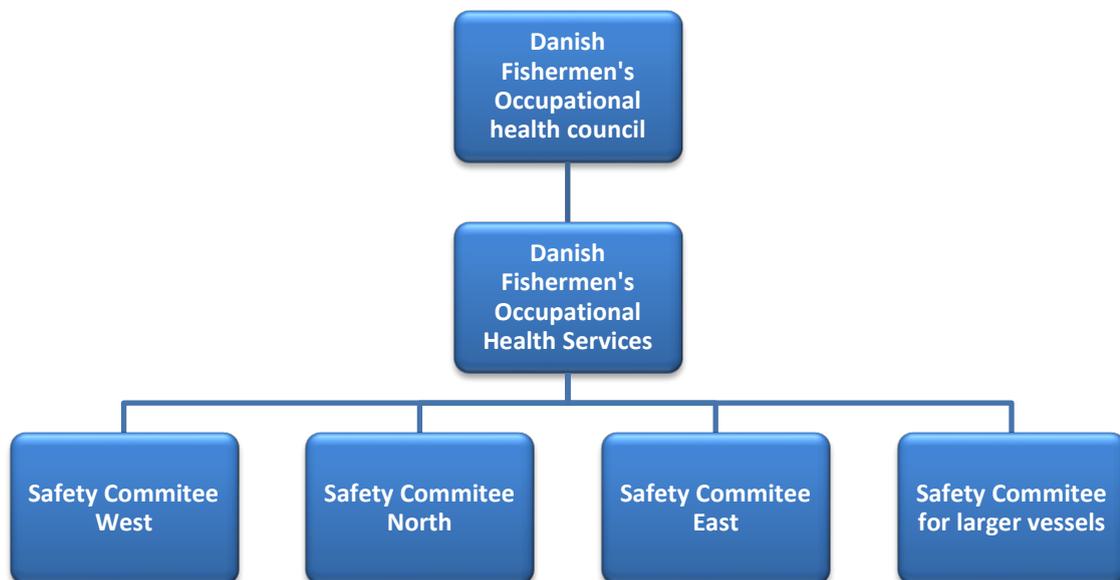
Theme 4: New knowlegde

1. Do you remember having learned something new about safety somewhere?
2. If you need to learn more/something new about safety what does it take to have the most impact on you?

Appendix 3: Safety organisation in Danish fisheries

Safety committees consist of both share-fishermen and owners/skippers and among Committee's primary duties are the investigations of accidents and the implementation of preventive actions to prevent a similar accident from happening again. Figure 1 presents an organization diagram for Safety Organisation in the Danish Fishery. The Danish Fishermen's Occupational Health Council constitutes The Danish Fishermen's Occupational Health Services, which is a private foundation that supports fishermen and safety committees in their safety work. The Danish fishery is divided into four safety committees: Safety Committee West, Safety Committee North, Safety Committee East and Safety Committee HSU for Sein Cutters and large fishing vessels with their own safety organization. Reported accidents are reviewed at safety meetings in the affected HSU for the purpose of prevention.

Figure 1



Notification of accident at work concerning seafarers and fishermen

A – Injured person

Name:	Maritime <input type="checkbox"/> Fishing <input type="checkbox"/>	Personal identification (CPR) no./date of birth -
Address:	Postal code:	Municipality of residence:
Time of accident: Day Month Year Hour	Nationality:	

B – Injured person's employer at the time the accident occurred

Name of shipping company/shipping business:	CVR-number:	Phone number:
Address:	Postal code:	Injured person's date of employment:
Ship's name and signal letters/port registration number:	SE-no.:	Does the injured receive DIS income? Yes <input type="checkbox"/> No <input type="checkbox"/>
Employer's insurance company (to be filled in where employer notifies the accident):	Policy no.:	The injured person's approx. annual income at the time of accident:
Regarding fishing vessels – state type of fishing at the time of the accident: Trawling <input type="checkbox"/> Net fishing <input type="checkbox"/> Seining <input type="checkbox"/> Other <input type="checkbox"/>		

C – Type of job

Job title held at the time of the accident:

D – Sequence of events

Describe:							
The act the injured person was carrying out when the accident happened as well as the tool or machine used,							
The event that led to the injury and the tool, machine, or burden that was involved,							
Place where the injury happened:	Deck: <input type="checkbox"/>	Accommodation: <input type="checkbox"/>	Galley: <input type="checkbox"/>	Rig/mast/crane: <input type="checkbox"/>	On shore: <input type="checkbox"/>	Other: <input type="checkbox"/>	Where was the ship?
	Cargo hold: <input type="checkbox"/>	Engine room: <input type="checkbox"/>	Tank: <input type="checkbox"/>	Access routes: <input type="checkbox"/>	Out board: <input type="checkbox"/>		At sea: <input type="checkbox"/> Anchored: <input type="checkbox"/> In port: <input type="checkbox"/>

E – Information on the injury and its consequences

Type of injury (mark with only ONE x): 01 <input type="checkbox"/> Soft tissue injury (blows, bruises) 09 <input type="checkbox"/> Imminent asphyxiation, drowning 02 <input type="checkbox"/> Cerebral concussion/ internal 10 <input type="checkbox"/> Poisoning 03 <input type="checkbox"/> Wound injury 11 <input type="checkbox"/> Heat or cold injury 04 <input type="checkbox"/> Lost part of body 12 <input type="checkbox"/> Caustic burn 05 <input type="checkbox"/> Compound fracture 13 <input type="checkbox"/> Radiation 06 <input type="checkbox"/> Closed fracture 14 <input type="checkbox"/> Electric shock 07 <input type="checkbox"/> Joint dislocation 15 <input type="checkbox"/> Injury not established 08 <input type="checkbox"/> Sprain, distortion, overstraining 16 <input type="checkbox"/> Other (describe below)	Type of injury (mark with only ONE x): 01 <input type="checkbox"/> Head, except eyes 09 <input type="checkbox"/> Hand, carpus 02 <input type="checkbox"/> Eyes 10 <input type="checkbox"/> Fingers, one or more 03 <input type="checkbox"/> Neck 11 <input type="checkbox"/> Hip joint, thigh, knee cap 04 <input type="checkbox"/> Back, spine 12 <input type="checkbox"/> Knee joint, lower leg, bunions 05 <input type="checkbox"/> Chest, chest organs 13 <input type="checkbox"/> Foot, ankle 06 <input type="checkbox"/> Abdomen, abdominal organs 14 <input type="checkbox"/> Toes, one or more 07 <input type="checkbox"/> Shoulder, upp. arm, elbow joint 15 <input type="checkbox"/> Extensive parts on body 08 <input type="checkbox"/> Forearm, wrist 16 <input type="checkbox"/> Other (describe below)
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Give a more detailed description of the injury and state injured part of body	
-------------------------------------------------------------------------------	--

Accident requiring notification to the company's insurance company, according to the Act on Insurance Against the Consequences of Industrial Injuries , where the company has acquired the Insurance Against the Consequences of Industrial Injuries required by law.	Yes <input type="checkbox"/> No <input type="checkbox"/>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------

Accident requiring notification to the company's insurance company, according to the Act of Safety at Sea:	
1. <input type="checkbox"/> The accident has led to incapacity to work for 1 day or more in excess of the date of injury	Expected incapacitation: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 - 3 days over 3 days over 5 weeks Deceased
2. <input type="checkbox"/> The accident has led to the injured person not being able to carry out his normal job for 1 day or more in excess of the date of injury	
Accident not requiring notification:	
3. <input type="checkbox"/> Wishing to report another accident, which is not covered in point 1 or 2.	

F – Information on the notifying person

The notifying person is:	Stamp, phone number and contact person
<input type="checkbox"/> Employer/shipping co. <input type="checkbox"/> Master <input type="checkbox"/> Doctor/dentist <input type="checkbox"/> Injured person	

Form to be used for the safety group's and port safety committee's investigation of the accident (or poisoning)

Specify the scene of the accident (make a sketch, for example). Talk to the injured person and all witnesses as soon as possible and get their immediate description of the accident and the circumstances that led to the accident.

Describe the course of events by means of statements made by the injured person and witnesses::

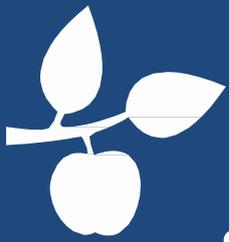
Was the accident influenced by any of the following factors:

- technical matters: Maintenance, operating difficulties, safety measures and machinery protection etc. If this is the case, which factors and how?
- work environment conditions: Light , noise, dust, smoke, gases and fumes, strong heat or cold, untidiness etc. If this is the case, which factors and how?
- the work situation: Work processes and methods, untidiness, machinery failure, maintenance and personal protective equipment etc. If this is the case, which factors and when?

The investigation furthermore showed the following factors that may be presumed to have contributed to the accident (for instance human acts, influence by other working processes or deficient instructions):

The safety group's suggestions for preventive measures:

The safety committee's/port safety committee's suggestions for preventive measures:	
The following measures have been taken:	
Date:	The safety group:
Date:	The safety committee:
Date:	The port safety committee:



Safety in the Danish fishing industry

Ministeriet for Fødevarer,
Landbrug og Fiskeri



Den Europæiske
Fiskerifond

The European Fishery Fond: Denmark and EU invest in sustainable fishery and aquaculture

The project is supported by the European Fishery Fond



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