



# Depressed at Sea

## A study into the mental health of seafarers **Research report**

Author: Bjorn Mast

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Education: Maritime officer year 4

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School: HZ University of Applied Sciences

Guiding teacher(s): First corrector Mr. M. Brederveld & Second corrector Mr. P.C. Boland

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## Preamble

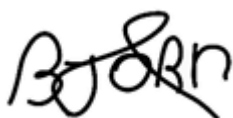
Writing a thesis on board of a vessel was quite challenging, since the limited access to a good internet connection and other resources. Once I had made my way to the point of data collection, by means of a personal survey. I was quite nervous, about the number of seafarers that would participate in the survey. Fortunately, with some help of the shipping company I was able to reach enough seafarers to participate.

When collecting the data, I have noticed that seafarers are very keen on privacy whenever they have to talk about what is on their mind. Therefore, it was a very good decision to make the survey completely anonymous, some very interesting data was collected. Opinions about the subject of the research were divided, a mixture of responses was received throughout the research from various seafarers. Opinions about the subject varied from: unnecessary/irrelevant to helpful and meaningful, a phrase which was often told to me is: *'It is not necessary for me, but I think it can be helpful for others.'* It may seem a bit demotivating, but I kept in mind: ***'It can be helpful for others.'*** So, for whoever may benefit from this research in any possible way, thank you for motivating me in completing this thesis.

Also, I want to thank all seafarers who participated in the survey. This research was about them, and by partaking they made it possible for me to successfully complete this research. The shipping company was also of great help, I want to thank them for giving me the opportunity to conduct this research on board of their fleet.

Not to forget; Mr. Brederveld, Mr. Boland, the crew of my vessel at the time of research and everyone else who helped me in any sort of way to complete this research.

Bjorn C.G. Mast



Baltic Sea, 28-6-2020

## Samenvatting

Recentelijk zijn er verschillende rapporten gepubliceerd over het mentale welzijn van zeevarenden, hieruit bleek dat het niet goed gaat en het mentale welzijn al jaren verslechtert. Eén van deze rapporten werd gepubliceerd door het Seafarers International Research Centre (SIRC) in oktober 2019, dit rapport werd zelfs opgepikt door de British Broadcasting Corporation en zo bleef het ook niet ongezien voor de onderzoeker. De onderzoeker vroeg zich af of deze situatie zich ook voordeed bij Nederlandse rederijen en wat er mogelijk aan gedaan zou kunnen worden. Hierop werd contact opgenomen met een rederij die inzag hoe belangrijk het mentale welzijn van zeevarenden is, in samenwerking met deze rederij werd een survey afgenomen over de gehele vloot. Hierbij werden er 119 surveys verzameld, deze konden worden gebruikt voor het doel: inzicht creëren in de mentale gesteldheid van zeevarenden binnen de deelnemende rederij en uitzoeken hoe dit kan worden verbeterd. Dit zodat de rederij gericht actie kan ondernemen, met als uitkomst het verbeteren van het mentale welzijn/ verminderen van depressies aan boord. Met behulp van de volgende hoofd- en deelvragen, kon het doel worden verwezenlijkt.

Met de volgende hoofdvraag:

**Wat kan er worden gedaan om het mentale welzijn aan boord te verbeteren?**

*What can be done to improve mental health on board of a vessel?*

En met als deelvragen:

1. Wat zijn de oorzaken van depressies aan boord van schepen?  
*What are the causes of a depression on board of a vessel?*
2. Wat zijn de gevolgen van een depressie aan boord van een schip?  
*What are the consequences of a depression on board of a vessel?*
3. Hoe wordt het mentale welzijn van zeevarende beschermt door de wet?  
*How does the law protect seafarers mentally?*
4. Wat is momenteel de staat van het algemene mentale welzijn van zeevarenden?  
*What is currently the general mental state of mind of seafarers?*

Met behulp van een survey, voorzien van verschillende statements rondom het mentale welzijn van de deelnemer, konden een aantal zaken worden achterhaald. Dit geldt voor de staat van het mentale welzijn, welke factoren dit kunnen verbeteren en welke juist het meest negatieve effect hebben. Nadat de survey was verwerkt met behulp van Google Forms en Excel, bleek dat de mentale staat van zeevarenden binnen het bedrijf een score had van 84,86 punten van de 115. Volgens de spelregels opgesteld in dit onderzoek, geldt dit als positief.

Het is van belang dat hierbij wordt vermeld dat de surveys zijn afgenomen voordat de gevolgen van COVID-19 merkbaar waren voor het personeel aan boord, dit zou naar alle waarschijnlijkheid effect hebben gehad op de resultaten. Dit is niet het enige wat mogelijk effect heeft gehad op de resultaten, één ander belangrijk punt is dat de survey berust op zelfdiagnose en mensen zijn hier niet altijd zo goed in (Diener, Oishi, & Lucas, 2009).

Ook uit de survey kon worden geconcludeerd dat, stress/druk de voornaamste veroorzaker is voor een verminderde mentale gezondheid van de zeevarenden binnen het bedrijf. Met verschillende onderzoeksmethoden werden de gevolgen van het probleem in kaart gebracht; hieruit blijkt dat de gevolgen op verschillende fronten merkbaar zijn. Niet alleen de mentale gezondheid wordt aangetast, maar ook de lichamelijke. De depressieve persoon gaat minder goed functioneren op het werk en de kans op ongelukken is verhoogd. De Maritime Labour Convention (2006) bevat regelgeving die het mentale welzijn van zeevarenden indirect beschermt. In dit onderzoek werd echter ontdekt, dat een aantal zaken ter interpretatie worden overgelaten.

Desondanks de positieve uitslag van de survey, waren er verschillende verbeterpunten voor het bedrijf. Zo luidt het advies: verbeter het internet (capaciteit, stabiliteit & snelheid), onderzoek de mogelijkheden voor het verminderen van druk/ stress aan boord en blijf investeren in het verbeteren van de voedselkwaliteit.

## Abstract

Recently, multiple studies have been published about the mental wellbeing of seafarers. It turned out that the mental wellbeing is not good, and it has been deteriorating for multiple years. One of these reports was published, by Seafarers International Research Centre (SIRC) in October 2019. This study was even picked up by the British Broadcasting Corporation, and therefore it did not remain unseen for the researcher as well. The researcher wondered if this situation was also occurring at Dutch shipping companies, and what possibly could be done to improve the situation. Hereon contact was established with a shipping company who saw the importance of mental wellbeing, in collaboration with this company a survey was conducted on board of their complete fleet. A total of 119 surveys were collected. These were used to achieve the goal of this study: creating insight in the mental state of mind of the seafarers within the company and find out how it can be improved. So that the shipping company can undertake more effective measurements, with as outcome the improvement of the mental wellbeing of seafarers / decreasing depressions on board. In combination with the following main- and sub questions, this goal was to be achieved.

With the following main question:

**What can be done to improve mental health on board of a vessel?**

And as sub questions:

1. What are the causes of a depression on board of a vessel?
2. What are the consequences of a depression on board of a vessel?
3. How does the law protect seafarers mentally?
4. What is currently the general mental state of mind of seafarers?

With the help of surveys, containing various statements about the mental state of the participants, a number of factors were figured out. This is applicable for: the mental state, factors which can improve it, and factors which have the most negative impact. After the surveys were processed with the help of Google Forms and Excel, it was shown that the mental wellbeing of seafarers within the company had a score of 84,86 points out of 115. According to the conditions earlier set in this research, a score of 84,86 points means that, the state of mind is positive.

It is of importance to mention that these surveys were conducted before the consequences of COVID-19 were noticeable, most likely this would have effect on the results. This is not the only thing which might have affected the results. The surveys were based on self-identification, while this is not a strong point of humans (Diener, Oishi, & Lucas, 2009).

Another thing which was concluded based on the collected survey is, that stress/pressure is the main cause of a decreased mental state of mind for seafarers within the company. With the help of various research methods, the consequences were tracked down: it turns out that the effect is noticeable in multiple fields. Not only the mental wellbeing is affected but the physical as well, depression causes the functioning of a person to be worse and the chances of incidents increase. In the Maritime Labour Convention (2006) multiple regulations are included, which protect the mental wellbeing of seafarers. Yet as found in this research, multiple statements leave room for own interpretation.

Even though the positive outcome of the survey, there were multiple points of improvement for the company, so the recommendation reads as followed: improve the internet (Data-capacity, stability and speed), research the possibilities to reduce pressure/stress on board of vessels and keep investing in improving the food quality.

## Table of contents

1. Introduction.....	1
1.1 Outline.....	5
1.1.2 Theoretical Framework .....	5
1.1.3 Method .....	5
1.1.4 Results.....	5
1.1.5 Discussion .....	6
1.1.6 Conclusion & recommendation .....	6
2. Theoretical Framework.....	7
Definitions.....	7
2.1 Causes of a depression .....	7
2.2 Consequences of a depression.....	10
2.3 Protection by law .....	13
2.4 Conceptual model .....	17
3. Method .....	18
3.1 Type of data collection.....	18
3.2 Population/Sample .....	19
3.3 Conditions applied to the collected surveys.....	21
3.4 Measurable values.....	22
3.5 Ethical aspect .....	23
3.6 Data processing .....	24
3.6.1 Construction of the grade system.....	24
3.6.2 Grade system.....	25
3.6.3 The specifications of this score system.....	26
3.6.4 Software used in this research.....	26
3.7 Evaluation of the survey .....	27
4. Results.....	28
4.1 Officers .....	29
4.2 Ratings .....	32
4.3 Tanker .....	35
4.4 Dry Cargo.....	38
4.5 Cement .....	41
4.6 Total .....	44
5. Discussion.....	48



5.1 Verification of the given information .....	48
5.2 Authentication of the hardcopies .....	48
5.3 Possible misinterpretation and company's alcohol policy .....	48
5.4 Exceptional situation due to the Coronavirus .....	49
5.5 Self-identification of what makes you happy.....	49
5.6 Controversy in an earlier conducted study.....	50
5.7 The presence of what makes seafarers happy or sad.....	51
6. Conclusion & recommendations.....	52
6.1 Causes .....	52
6.2 Consequences.....	54
6.3 Law .....	55
6.4 General state of mind.....	56
6.5 Recommendations.....	58
7. References.....	60
Appendix 1: Letter for Captain .....	63
Appendix 2: Mental Health Survey (Hard copy) .....	64
Appendix 3: Total population details of all ships .....	66
Appendix 4: Results of the survey .....	67

## 1. Introduction

Recently there has been an increased interest for seafarers' mental health, the number of reports released last years have been growing by a steady rate. This is of course for a reason; the average seafarers' mental health is not good.

In October 2019 a report was published by H. Sampson and N. Ellis of the Seafarers International Research Centre (SIRC). Statements in the report about the findings are distressing, an example of this is: *'There was evidence recent-onset psychological disorders were increasing among serving seafarers, but 55% of employers said they had not introduced any policies or practices to address mental health for a decade'* (Sampson & Ellis, 2019).

This gives the impression that employers do not prioritize the issue, even though multiple reports have been released way before 2019 describing the seriousness of the problem.

For example, the UK Chamber of Shipping published a post on their blog in 2017, concerning the suicide rates among seafarers. On the blog can be read that:

*'Suicide rates\* among seafarers have more than tripled since 2014, according to figures from the UK P&I Club [...] Today the rate of suicide for international seafarers is triple that of shore workers according to the International Maritime Organization [...] Due to machismo cultures, high levels of prejudice, and poor mental health education, crew are not always likely to seek counselling or professional support, and this often leads to serious consequences [...] Confidentiality is another factor that prevents seafarers from seeking help [...]'* (The UK Chamber of Shipping,, 2019)

Suicides can directly be linked to depressions according to a study performed by a hospital in Sweden. Unipolar depressed people were found to be associated with a 20 times higher rate of death by suicide than the general population (Osby, Brandt, Correia, Ekblom, & Sparen, 2001).

The depression rate among seafarers is just too high compared to the general average, which is already a problem by itself. However, the side-effects must not be forgotten as well, the consequences are of such size they cannot be ignored. In the worst case one of these consequences is the loss of a life.

This tragedy can directly (suicide) or indirectly (accidents) be linked to depression.

There are already 4.6 suicides reported each year in Gard's P&I mutual portfolio and this number does not include missing seafarers without direct evidence of suicide, therefore these are not counted as suicides. The actual suicide-number may be much higher. (Gard P.&I. Ltd., 2019). Work related incidents with deadly consequences are also not included in this number, even though there is a strong link between accidents and depression (Lefkowitz & Slade, 2019).

A research conducted by Lefkowitz & Slade (2009) of the Yale University Maritime Research Centre, links the consequences of a depression to the accidents which happen on board. Two key findings in this research are:

- ***‘Depression, anxiety, and suicidal ideation were associated with increased likelihood of injury and illness while working on board the vessel’.***
- ***‘Seafarers with depression had more than twice the likelihood of a work injury’.***

These statements reinforce once again that the consequences of a depression should not be underestimated, the indirect side-effects cause at least as much damage as the direct effects.

From all these studies it can be concluded that bad mental health on board of a vessel is a serious issue. To address this issue, the causes had to be examined in detail. With this detailed description of the possible causes, and general knowledge about psychological wellbeing, the aim was to improve the mental state of the crew in the shipping sector. This research was conducted within a company that was interested in the current mental state of their crew and saw the importance to improve it, if needed. With the help of this company, a survey was spread across 50 ships and the results of this survey gave insight in the general state of mind onboard of these ships. Overall, the research was centred around the main research question:

***‘What can be done to improve mental health on board of a vessel?’***

The answers to the sub questions eventually led to the answer of the main question, the sub question themselves were answered in combination with a literature study:

- 1. *What are the causes of a depression<sup>1</sup> on board of a vessel?*
- 2. *What are the consequences of a depression on board of a vessel?*
- 3. *How does the law protect seafarers mentally?*
- 4. *What is currently<sup>2</sup> the general mental state of mind of seafarers?*

Sub question one created the insight on the causes of a depression on board of a vessel. The survey supported this by showing what seafarers think is important when being on board. With this knowledge weaknesses of the mental support systems on board were pointed out and this helped in the end of this research to determine what had to be improved. Sub question two examined the consequences of having a bad mental health while on board of a vessel. Determining the consequences has shown what the impact is of psychological wellbeing in the working environment. For the research this was interesting knowledge, because this gave a better insight in why it is necessary to make sure that the mental state of the crew is positive. Sub question three investigated what is established in the law at this moment

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<sup>1</sup> Negative state of mind/bad mental health as defined in the [definitions](#).

<sup>2</sup> During the term of this research.

about the mental health of seafarers. This was of importance because seafarers often rely on law for protection of their mental wellbeing, since shore organizations (such as Port State Control) must operate within a legal framework to be able to undertake any actions. Therefore, a modification of the current law could improve mental health, by enlarging the legal rights of seafarers. Sub question four, the last sub question, assesses the current state of mind among seafarers. Knowledge about this helped to see on which points their mental wellbeing can be improved. To know what could be improved, it was necessary to know what the current state was and see if there was anything that could be improved. All these sub questions together provided an answer to the research question and thus provide scientific evidence on what can be done to improve mental health onboard of a vessel.

Table 1. displays which steps had to be taken during the research to achieve the set goal.

*Table 1. Steps taken throughout the research*

Step	Action
1	Establish contact with a shipping company, to conduct the research at.
2	Investigate how to monitor mental health and the possible causes of depression on board.
3	Create a survey usable for monitoring the mental state of mind and how it comes about.
4	Spread the survey around the fleet and create interest around the topic.
5	Collect and processes the received data of the survey.
6	Create a viable conclusion and recommendation based on the processed data.

Demarcations in this research were set as followed:

- The clinical definition of a depression is: *‘A constellation of experiences including not only mood, but also physical, mental, and behavioural experiences that define more prolonged, impairing, and severe conditions that may be clinically diagnosable as a syndrome of depression’*. (Hammen & Watkins, 2008)  
During this research depression, bad mental health, negative state of mind or other comparable terms were used, clinically speaking all may differ from one another but in this research, these are seen as a whole and handled as such. In this research the overarching definition for these terms is: *‘A negative/bad mental state of mind, depression, is seen as a series of sad/bad feelings experienced by a person for a period of about 2 weeks wherein affect, cognition, behaviour, and physical functioning are affected negative as experienced by themselves’*.
- During this research no individual cases were covered; seafarers can be depressed due to Biological-reasons or personal experiences which occurred at home. These cases were included in the general average, since no separation could be made due to privacy-guaranteeing.

- The method to improve the mental health of seafarers only covers the need of the general public, which means: Actions which are undertaken may not exclude anyone and should be available to all seafarers under the same company.
- The research was aimed at the actions which a shipping company can undertake for seafarers at sea, not for those at home.
- No cases of depression were determined during this research, since the researcher is not a certified psychologist or psychiatrist, and therefore not capable of doing so. Before a person can be declared clinically depressed, a prolonged examination must be conducted by certified personnel. In this research only the state of mind of seafarers was investigated.
- **The Survey was conducted at one shipping company: therefore, the research is not representative for the international fleet and cannot be generalized for all seafarers. The results, conclusions, and recommendations are only applicable for the shipping company, which the researcher collaborated with.**

## 1.1 Outline

### 1.1.2 Theoretical Framework

The conceptual model provides a visual structure for the research. It helped to visualize the problem and the research questions, and how the different aspects of the research are related to each other. In figure 1 the mental health of seafarers is divided in 2 sub-categories, depression & improving, with each of those again having 2 sub-categories.

Furthermore, in the theoretical framework definitions are stated and the theories which were used to eventually solve the practical problem are explained. The following topics are handled in the framework: causes of a depression on board, consequences of a depression on board, mental protection by law for those on board, the general state of mind on board, and improving mental health of those on board.

### 1.1.3 Method

After analysing the main question: *‘What can be done to improve mental health on board of a vessel?’*. A quantitative data collection method was chosen, mainly because of the number of samples that had been collected to generalize the findings for the company’s seafarer population.

A fully anonymous survey was used for collection of the data, whereof two version were available. Seafarers were able to participate using a digital- or hardcopy version. This survey was fully anonymous, to protect the privacy the participants. The survey was based around the four general domains of mind: ***affect, cognition, behaviour, and physical functioning***. Throughout the survey, participants were given statements which interface with one of the domains. A score system was built into the statements, this was to analyse the general state of mind.

The total population sums up +490 seafarers, as this is the active crew on board divided over 50 ships. The aim was to collect at least 10% of the population  $\approx 50$  participants, for a good representation of the full population. An estimation on the number of participants which were expected was made based on an earlier research conducted by the company, based on this  $\pm 88$  participants could have been expected. Eventually 119 seafarers participated in the surveys, whereof 66 were officers and 53 ratings.

### 1.1.4 Results

The collected data was visualized in multiple graphs and divided in multiple groups (tanker/cement/dry cargo & officer/rating), to enlarge the visibility of any problems within these specific groups. No special patterns were visibility between any of the groups, most trends were visible throughout all groups. The average score of all groups is 84,86, which means that 73,8% of the maximum score was earned.

### 1.1.5 Discussion

As conditions may change during a study, it is important to state these events which might had effect on the study, so that the given information can be correctly understood. The following conditions, are a part of those applicable:

- Even though a lot of effort was put into scientifically substantiating given information and survey, it has not been validated by a specialized party. Therefore, this study is only an indication of, the current situation and the possible ways to improve it.
- The survey was based on self-identification by the participants, humans are somewhat weak in self-identification, this can have effect on the validity of the data.
- During the term of this research a global pandemic broke out, a virus named COVID-19 causes restrictions for many seafarers. The survey was however conducted before any of these restrictions were noticeable, it is therefore expected that the effect on the data remained limited.

### 1.1.6 Conclusion & recommendation

The main and sub questions were answered, based on studies earlier mentioned in the theoretical framework and with the conducted survey. It turned out that the biggest cause of a decreased mental state of mind can be allocated to pressure/stress. Not having internet can make seafarers sadder, this issue is however not as present. As for the consequences of depression, psychical health can be seriously affected. The chances of incidents is almost doubled in some cases, and the working performance of depressive persons is highly decreased. Despite the importance of mental health, it is not directly mentioned in the MLC (2006). Indirectly the mental protection of seafarers is covered, since multiple conditions on which the mental state of mind is formed are included. Yet, room is left for interpretation for multiple topics which are quite important, such as food and entertainment.

The results of the survey show, that the average mental state of seafarers within the company is positive. Yet. there is still room for improvement. But the use of a collective improvement method, is discussable as the cost of resources may be high, while having little effect. However, participants, clearly indicated what would improve their mental wellbeing, and so the recommendation reads as followed: improve the internet (Data-capacity, stability and speed), research the possibilities to reduce pressure/stress on board of vessels and keep investing in improving the food quality.

## 2. Theoretical Framework

### Definitions

First some terms which were used throughout the report. The definition of a depression in this report is mentioned two times, one time in de demarcations and another time in this chapter, this is because of its importance for this research.

#### The definitions

- The clinical definition of a depression is: *‘A constellation of experiences including not only mood, but also physical, mental, and behavioural experiences that define more prolonged, impairing, and severe conditions that may be clinically diagnosable as a syndrome of depression’*. (Hammen & Watkins, 2008)

During this research, depression, bad mental health, negative state of mind or other comparable terms were used, clinically speaking all may differ from one another but in this research, these are seen as a whole and handled as such. In this research the overarching definition for these terms is: *‘A negative/bad mental state of mind, depression, is seen as a series of sad/bad feelings experienced by a person for a period of about 2 weeks wherein affect, cognition, behaviour, and physical functioning are affected negative as experienced by themselves’*

- **‘The company’** refers to the shipping company where the research takes place; the company’s name is not publicly available.
- The **‘Researcher’** refers to Bjorn Mast.

### 2.1 Causes of a depression

At first the causes of depressions/ bad mental health on board of ships, had to be known. Before it was possible to resolve this issue. Therefore, the first research question was aimed at addressing the causes, so that it was possible to define the problem more accurate. The following sub question was used for this purpose: *What are the causes of a depression on board of a vessel?*

A report by the IOSH (Sampson & Ellis, 2019), discusses mental health and wellbeing on board of ships. Multiple seafarers, employers, maritime charities, stakeholders and P&I clubs were interviewed about the topic. The research of the IOSH was used as a reference on how to find the causes of bad mental health of seafarers, the seafarers of that research were not fully representative for this research. The on board conditions vary a lot per company which affects the mental state of mind, and therefore the results. This is however not an issue, as only the collection method of the IOSH research was used as a reference.



The causes of depression can be distinguished in biological and genetic contributions or collection of events which happen over time. A lack of 'happy' moments or an excess of 'bad' moments does not directly result in a depression. Multiple events overtime are needed to cause a bad state of mental health (Lefkowitz & Slade, 2019).

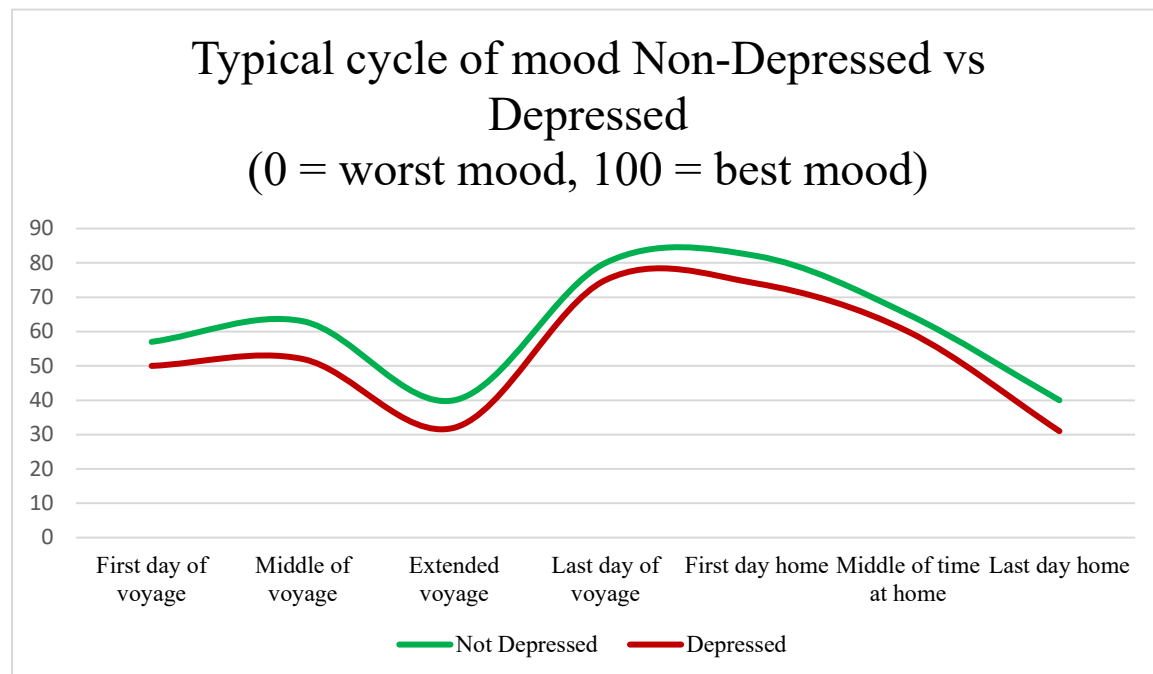


Figure 1. Typical cycle of mood (Lefkowitz & Slade, 2019)

Overtime the mood of the seafarer changes based on multiple conditions, such as: trouble sleeping, contract length, supervisor demands, food quality, money worries, shift work, amount of food, rough seas, working alone, bullying, cultural differences and so on. The impact of long lasting, small, negative experiences can be greater than larger, one-time, negative experiences. However, when the mood of a person is good, they can cope with much more negative events before being at risk of a depression. Multiple events overtime can decrease the mood of seafarers as visible in [Figure 1](#), once a constellation of negative experiences has broken down the mood of a person. It is much easier for them to fall prey to a bad mental state of mind (Lefkowitz & Slade, 2019).

The causes of a depression vary per individual, this also goes for the likelihood of someone falling into a depression. Some groups are more depression-prone than others, varying mostly on age and gender (Hammen & Watkins, 2008).

In the ITF SEAFARERS' TRUST & YALE UNIVERSITY study, the factors which contribute to seafarers feeling depressed are ranked based on how much they attribute to feeling depressed (Lefkowitz & Slade, 2019).

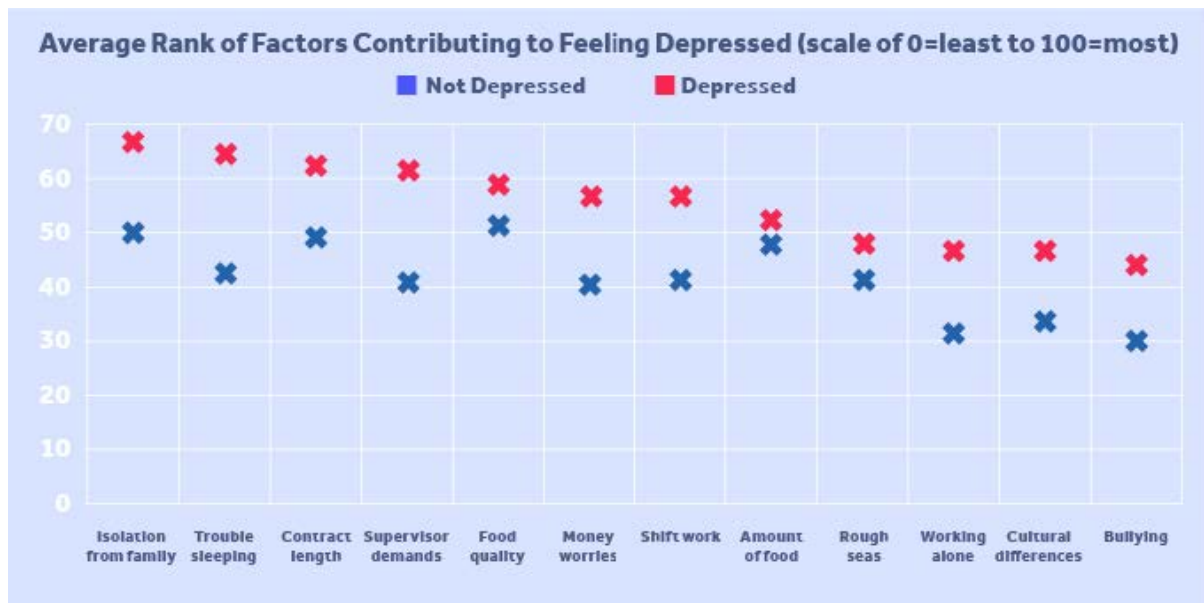


Figure 2. Factors that seafarers attributed to their mood, range of potential values of zero (least) to 100 (most attributable), by depressed status (Lefkowitz & Slade, 2019).

In [Figure 2](#). Is visible that those who are already depressed, are much more vulnerable to these 'negative' factors than non-depressed. It is also shown that those who are depressed hold different values to certain factors than those non-depressed, for the average group these are top five 5 contributing factors:

1. Isolation from family
2. Contract length
3. Food quality
4. Trouble sleeping
5. Supervisor demands

The possible factors which contribute to feeling depressed, may differ for the population of this research. Therefore, it was further investigated later in the research.

## 2.2 Consequences of a depression

To get better insight in the impact of psychological wellbeing of the crew, it was necessary to examine the consequences of a depression on board. Which is why the second sub question reads as followed:

*‘What are the consequences of a depression on board of a vessel?’*

The consequences can be separated into multiple divisions: the symptoms and their negative side effects (**affect**, **cognition**, **behaviour**, and **physical functioning**), medical problems and diseases, quality and productivity of work, accidents and suicide (Hammen & Watkins, 2008).

In 2003 a research named: ‘Cost of lost productive work time among US workers with depression’ was conducted. It discusses the reduction in the quality and productivity of work, even when being present at work due to depression. It was found that during a workweek depressed people lost 8,4 hours of productive time, compared to 1,5 hours for nondepressed. It was calculated that every year US\$ 18 billion is lost in the United States alone due to ‘lost productive time’ (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003). This is a lot of money, and therefore it is also at the companies’ interest to undertake actions and lower the expenses lost on productive time, even if this means making large investments.

These are mostly economic consequences, yet the personal consequences are just as important, and they are not less terrible: *‘Depression may be so severe as to be lethal, and, for many if not most suffers, it is a recurring or even chronic disorder. Moreover its effects may be devastating to the individual – not only in suffering, but also in terms of the demining effects on one’s work...’* (Hammen & Watkins, 2008).

The magnitude of the consequences for an individual, is very much dependent on the severity of the depression. Lack of motivation, reduced energy, low mood and pessimism are associated with moderate and severe depression, this causes interference with a person’s abilities. They often find it difficult to manage even minimal tasks, and because depression is a common, often recurring problem. Therefore, its consequences add up, however these effects may disappear entirely when the depression remits (Judd, et al., 2000). Yet even a relatively mild form of depression interferes with normal functioning, and since mild symptoms of depression are fairly common in the general population, they are accountable for a sizeable proportion of the negative effects from the consequences (Gotlib, Lewinsohn, & Seeley, 1995).

Of all other psychosocial disorders, depression is one of the few that can be fatal and of all the consequences, suicide is of course the worst one. Depressive disorders have been diagnosed in 40% to 60% of the committed suicides (Henriksson, et al., 1993). Fortunately, most depressions do not lead to

the situation wherein a person takes his/her own life. However, depression can be fatal in other ways as well, such as an increased reaction to many medical conditions. Multiple medical illnesses can especially be associated with depression; these can include diabetes, some neurological disorders such as stroke, certain cardiac diseases, obesity, Parkinson and Alzheimer (Evans, et al., 2006), (Katon, 2003) & (Katon, Lin, Russo, & Unutzer, 2003). This leads to the conclusion that depression is not only a burden for de mind, but for the soul as well.

These consequences are applicable to everyone, so what about the consequences only applicable for those in shipping? ITF Seafarers' Trust & Yale University conducted a study about seafarers' mental health, wherein the impact of mental health conditions on injury and illness are researched.

The following key findings can be found in the report:

- Seafarers with **depression** had more than twice the likelihood of a work **injury**
- Seafarers with **anxiety** had twice the likelihood of a work **injury**
- Seafarers with **suicidal ideation** had increased likelihood of a work **injury** but to a lesser degree than those with depression and or anxiety
- Seafarers with **depression** had twice the likelihood of an **illness** at work
- Seafarers with **anxiety** had more than twice the likelihood of an **illness** at work
- **Suicidal ideation** was not independently associated with increased likelihood of **illness**

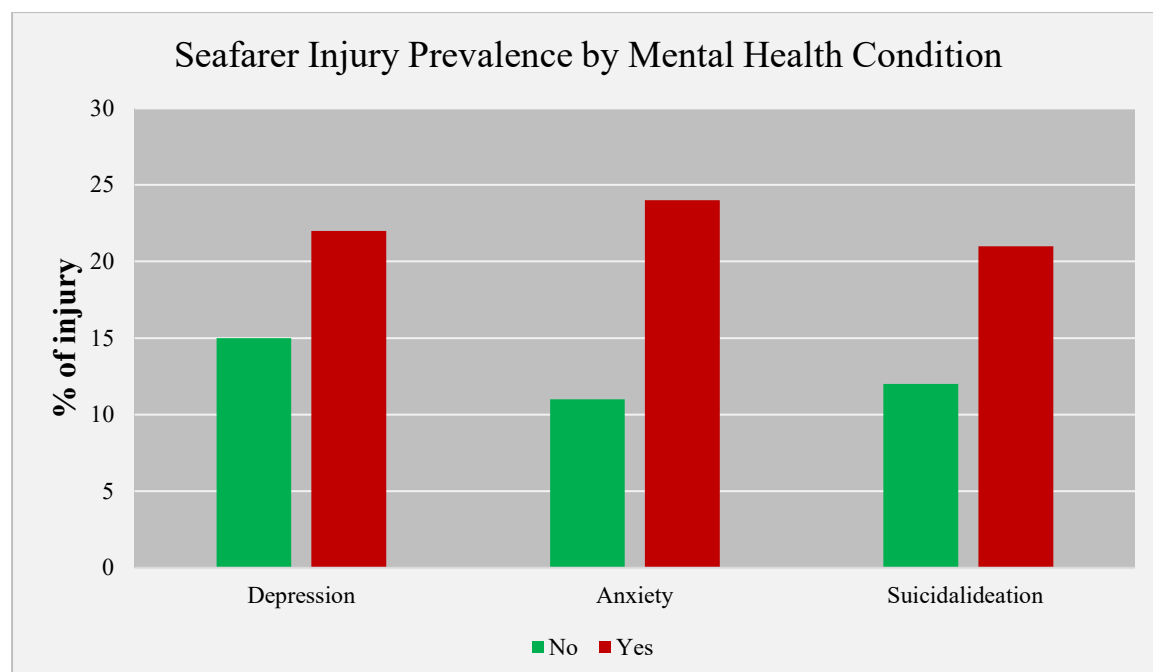


Figure 3. Prevalence of seafarer injury in the past year by depression, anxiety, or suicidal ideation status (Lefkowitz & Slade, 2019).

From the numbers in [Figure 3](#) can be concluded that, on average the chance of injury is increased by 79,9% for seafarers with a mental health condition compared to those without. This difference is of such size that working with a mental health condition, can be deemed as unsafe. As it does not only affect the mentally ill person, but also its colleagues. Since they have to operate in an environment, together with a person which has decreased concentration, alertness and reaction speed (*physical symptoms*, (Lustberg & Reynolds, 2000)).

The colleagues of the depressed will be affected in other ways as well, such as socially. A behaviour symptom of depression is the withdraw from social events (Perez & Riggio, 2002), this is especially a problem on board of ships with a small crew. In a situation where one of the crewmembers is avoiding contact with others, the colleagues experience reduced social behaviour as well. Due to shift work it is possible to meet only one person per day, so if this person does not wish to have contact, it will be lonely times.

## 2.3 Protection by law

Even when all signals are clear that intervention is required, action is usually only undertaken whenever it is enforced by an external party (Summers, 1997). In this case the implementation would be the responsibility of the IMO and their Member States, Port State Control is able to enforce the regulations necessary to improve the mental health of seafarers. Currently seafarers (working) conditions are protected by the law under the MLC. As quoted by Seafarers' Rights International (SRI):

*“The Maritime Labour Convention 2006 (MLC) is an international agreement of the International Labour Organisation (‘ILO’) which sets out seafarers’ rights to decent conditions of work. It is sometimes called the ‘Seafarers’ Bill of Rights’. It applies to all seafarers, including those with jobs in hotel and other passenger services on cruise ships and commercial yachts. More than 100 pages long, the MLC 2006 sets minimum requirements for nearly every aspect of working and living conditions for seafarers including recruitment and placement practices, conditions of employment, hours of work and rest, repatriation, annual leave, payment of wages, accommodation, recreational facilities, food and catering, health protection, occupational safety and health, medical care, onshore welfare services and social protection.” (Seafarers’ Rights International (SRI), 2020)*

Does all of this include the protection of their mental health? This raised the third question, ‘How does the law protect Seafarers mentally?’ To answer this question the MLC (2006) (The International Labour Organization, 2006) was used in combination with the GUIDELINES ON FATIGUE (The Maritime Safety Committee, 2019). After analysing these documents, it had to be clear how extensively seafarers are protected by law.

In [Figure 4](#), the table of content of the MLC (2006) convention is displayed. Herein is visible that seafarers are protected in many areas, a closer look was required to see how extensive these regulations are, and therefore how much protection they offer.

<b>Title 1. Minimum requirements for seafarers to work on a ship</b>	.....
Regulation 1.1 – Minimum age	.....
Regulation 1.2 – Medical certificate	.....
Regulation 1.3 – Training and qualifications	.....
Regulation 1.4 – Recruitment and placement	.....
<b>Title 2. Conditions of employment</b>	.....
Regulation 2.1 – Seafarers' employment agreements	.....
Regulation 2.2 – Wages	.....
Regulation 2.3 – Hours of work and hours of rest	.....
Regulation 2.4 – Entitlement to leave	.....
Regulation 2.5 – Repatriation	.....
Regulation 2.6 – Seafarer compensation for the ship's loss or foundering	.....
Regulation 2.7 – Manning levels	.....
Regulation 2.8 – Career and skill development and opportunities for seafarers' employment	.....
<b>Title 3. Accommodation, recreational facilities, food and catering</b>	.....
Regulation 3.1 – Accommodation and recreational facilities	.....
Regulation 3.2 – Food and catering	.....
<b>Title 4. Health protection, medical care, welfare and social security protection</b>	.....
Regulation 4.1 – Medical care on board ship and ashore	.....
Regulation 4.2 – Shipowners' liability	.....
Regulation 4.3 – Health and safety protection and accident prevention	.....
Regulation 4.4 – Access to shore-based welfare facilities	.....
Regulation 4.5 – Social security	.....

*Figure 4. Table of contents MLC 2006 (The International Labour Organization, 2006)*

Many of the regulations in MLC overlap with the conditions on which the mental state of mind is formed, such as working hours/rest hours, food and catering, recreation, etc. these are all important for a person's mood. The usability of the MLC for the average seafarers is however discussable, even though its availability in multiple languages, the legal terms remain cryptic to some. For this reason, the International Transport Workers' Federation (ITF) created a guide (The International Transport Workers' Federation) for seafarers on the MLC. A guide like this is way more workable than the original document.

A closer look, at a regulation which can found in the MLC.

**Example**, regulation A3.2 – Food and catering.

*'1. Each Member shall ensure that ships that fly its flag carry on board and serve food and drinking water of appropriate quality, nutritional value and quantity that adequately covers the requirements of the ship and takes into account the differing cultural and religious backgrounds.'* (The International Labour Organization, 2006)

**Appropriate, nutritional and adequate quantity** food, these three terms are used in Regulation A3.2 of MLC. The definition of these terms is however nowhere to be found in the document; therefore, it can be questioned what these terms mean. According to the document it is the responsibility of each member to define these terms, 174 members and 3 associate members, and all of them get to decide themselves. Because of this, a member state's regulation had to be brought in. Since the company flies multiple ships under the Dutch flag, a separate look was taken at this member's regulations. The Dutch's law which applicable for this topic is called the: 'Wet zeevarenden, Artikel 48a', this can be translated to: 'Seafarers' law, Article 48a'.

In the Dutch seafarers' law was found that the article concerning the accommodation, nourishment and other provisions for seafarers on board of a ship, is nearly a directly translation of what can be found in the MLC.

As found in Wet zeevarenden:

#### Artikel 48a

'De scheepsbeheerder voorziet de zeevarenden aan boord van een schip kosteloos van voeding en drinkwater van een voldoende hoeveelheid, kwaliteit, voedingswaarde en variëteit en rekening houdend met godsdienstige voorschriften en culturele gebruiken, in overeenstemming met de daaraan ministeriële regeling gestelde eisen.' (De Minister van Verkeer en Waterstaat & De Minister van Justitie, 1997)

Translated in English:

#### Article 48a

'The ship operator provides the seafarers on board of a ship of free nourishment and drinking water of a sufficient amount, quality, nutrient value and variety and keeping in mind the religion's regulations and cultural habits, in accordance with the ministerial arranged set requirements. '

A minor adjustment was made by the member state to the original compared to the version of the MLC, **"in accordance with the ministerial arranged set requirements"** an extra term but no definitions. What are these ministerial requirements? A lot of room is left for interpretation, this provides flexibility to the ship's operators, but this does not provide any clarity for a seafarer. This trend of unclarity continues to be seen throughout the document, this was just one example. On the other hand, some regulations are very well defined. An example of such is:

**Standard A3.1** – Accommodation and recreational facilities (The International Labour Organization, 2006)

*'9. When sleeping accommodation on board ships is required, the following requirements for sleeping rooms apply:*

*(a) in ships other than passenger ships, an individual sleeping room shall be provided for each seafarer; in the case of ships of less than 3,000 gross tonnage or special purpose ships, exemptions from this*



*requirement may be granted by the competent authority after consultation with the shipowners' and seafarers' organizations concerned;*

*(b) separate sleeping rooms shall be provided for men and for women;*

*(c) sleeping rooms shall be of adequate size and properly equipped so as to ensure reasonable comfort and to facilitate tidiness;*

*(d) a separate berth for each seafarer shall in all circumstances be provided;*

*(e) the minimum inside dimensions of a berth shall be at least 198 centimetres by 80 centimetres;*

*(f) in single berth seafarers' sleeping rooms the floor area shall not be less than:*

*(i) 4.5 square metres in ships of less than 3,000 gross tonnage;*

*(ii) 5.5 square metres in ships of 3,000 gross tonnage or over but less than 10,000 gross tonnage...'*

The difference between these two articles clearly visible, as one precisely describes the requirements in measurable, while in the other article no measurable factors are mentioned.

## 2.4 Conceptual model

Figure 5, displays the leitmotif of the research. The main topic can be split up into two sections, which is visible in the sub questions. Sub question 1 and 2 are focused on the causes and consequences depressions, while sub questions 3 and 4 are aimed at improving the mental health of seafarers.

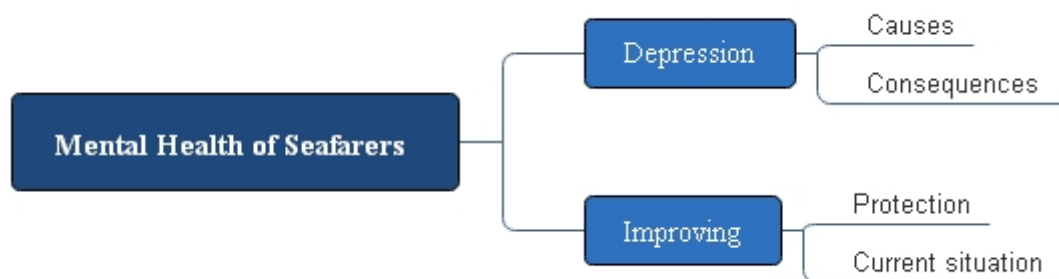


Figure 5. Conceptual model

### 3. Method

#### 3.1 Type of data collection

A quantitative data collection method was used, to represent the needs of the average seafarer in the closest way possible. A qualitative method would have provided more accurate data per individual, however it would not have been possible for the researcher to collect enough samples to generalize the findings for the company's seafarer population (Babbie, 2014).

A [survey](#) was created to collect the required data. Since the topic of this research is seen as quite personal, an anonymous survey was deemed as the best way of data collection. It is easier for persons to show their true emotions when they are able to remain anonymous, humans have a tendency to feel vulnerable when having to show their weaknesses (Potthoff & Eller, 2015). Having a depression is negative and is even seen as a weakness by some, even though everyone is vulnerable for falling into a depression. Due to the stigmatization based around depressions and machismo cultures prevailing onboard, other methods of data collection, such as interviews had lower chances of succeeding (Wilson & Sapsford, 2020) & (The UK Chamber of Shipping,, 2019). Another benefit over other methods is that a survey offers, in general, an advantage in the amount of data that could be collected, and therefore it increased the chances to sample a large population. However, using survey research also had some weaknesses according to Babbie (2014): *'it is somewhat artificial, potentially superficial, and relatively inflexible. Using surveys to gain a full sense of social processes in their natural settings is difficult. In general, survey research is comparatively weak on validity and strong on reliability.'* When weighting up these pros and cons, the substantiated decision was made to use a survey. A hardcopy version and a digital version was made, to collect as much data as possible. Internet availability is sometimes low, those were able to use the hardcopy version. For those who had a stable internet connection, the digital version was much quicker to fill-in.

The Human-resources department of the company was willing to help setting up the survey, small adjustments were made based on the given comments. Question number 26 was added on request, since the company recently set-up an SOS line for seafarers.

### 3.2 Population/Sample

The total population of the survey was  $\pm 490$  seafarers. Details about the population relevant for the research are found in: [Appendix 3: Population details](#). This was the total amount of seafarers, on board of the 50 ships managed by the company. Seafarers at home were excluded from this research, because the research was aimed at improving the mental state of mind of those on board, not those at home.

The aim was to collect at least 30 (6% of the population) samples and preferably 50 (>10% of the population) (Russell, 2001). The shipping company provided help in collecting these samples. They sent the surveys to all ships of their fleet; the ships sent the filled-in surveys back to the company and in turn back to the researcher. However, the success of the survey was still very dependent on the well-willingness of the seafarers to fill-in the document.

Before the survey was conducted an estimation on the number of participants which could have been expected, was made based on a survey the company conducted in 2019. It was aimed at 'Identifying Weak Signals', eventually  $\pm 180$  (18% of the population) employees participated in this survey. When applying this rate of 18% on the population of this survey,  $\pm 88$  participants could have been expected. The reach of this survey was nearly equivalent but there were a few differences, these are the most important ones:

- The survey executed by the office was not fully anonymous, the survey of this research was. Therefore, chances were increased of seafarers participating in the survey.
- Population size, seafarers at home did not participate in this research. Therefore, the total population came down at  $\pm 490$ .
- In this survey it was possible for participants to partake digitally.

Once the deadline had passed, a total of 119 surveys had been received. Which means 24,1% of the total population participated, 138,0% more than the 'estimated' amount of 10% of the population  $\approx$  50 participants and 35,2% more than calculated estimated amount of 88. Therefore, can be concluded that the response to the survey was very successful.

Table 2. Received surveys per method

Received surveys	
Digital	34
Hard copy	85
<b>Total</b>	<b>119</b>

Questions 1 and 2, which were asked in the survey made it possible to divide the participants in groups; per rank these are Ratings and Officers, and per vessel-type Tanker-, Dry Cargo- or Cement tanker ships.

The general details about the seafarers, which participated in the survey illustrated:

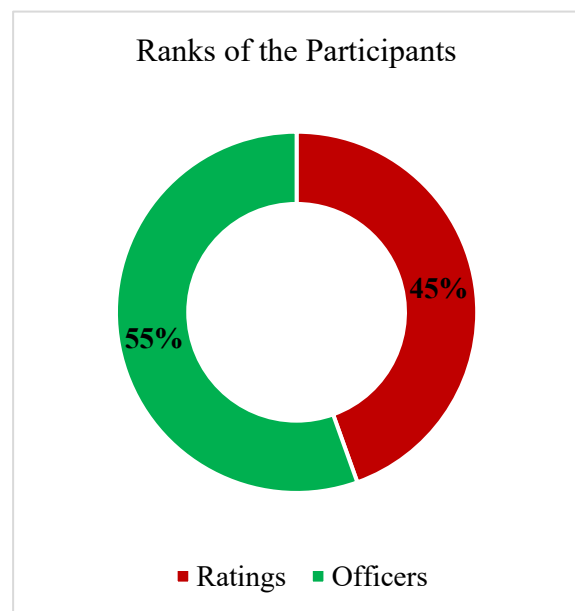
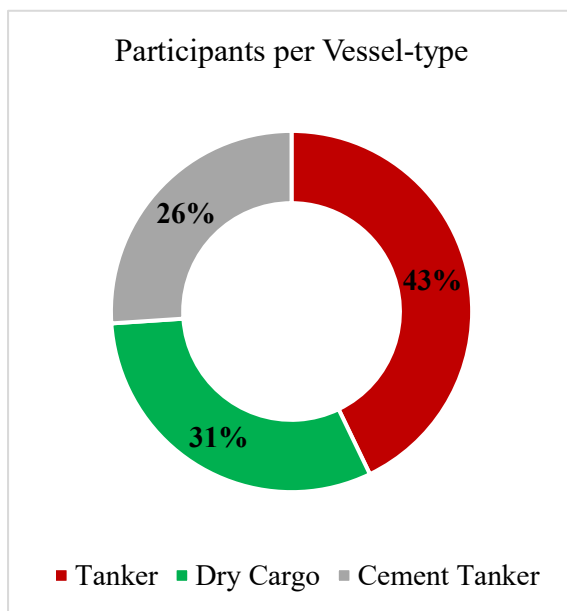


Figure 6. Participants per Vessel-type

Figure 7. Ranks of the Participants

Even though the main question and the sub question are focussed on the general seafarer, by splitting up the group of participants, solutions and problems are more visible and do not get lost in the bigger average group. As said earlier the group was separated in 5 sub-groups, 6 when including the main(average)group. Separating the group by the two question was not at cost of the anonymity, which was guaranteed, as was stated in the research proposal: 'No name, age or nationality must be put on the document'. Privacy is not at risk since nobody can be personally identified by the surveys.

Only 28.6% of the surveys were collected digitally from the seafarers themselves, which was relatively less than expected. The remaining 71.4% was collected on paper and then digitalized by the researcher to be able to visualize the results. All surveys were analysed digitally with the use of Microsoft Excel.

### 3.3 Conditions applied to the collected surveys

The surveys which were collected had to meet two conditions, before getting processed.

- A period of 2 weeks was set for collection of the data, in this case that period was between the 3<sup>rd</sup> of March and the 17<sup>th</sup> of March. Surveys which were received outside of this set time period were not processed.
- All surveys had to be fully filled-in, surveys which contained missing data were not processed. This only applies to the hardcopy version, because the digital survey could not be submitted when an answer was missing. When using Google Forms, the creator of a survey can make a pop-up message appear linking to the question with the missing reply. Only after all questions are provided of an answer, the participant can submit the survey.

### 3.4 Measurable values

The mental state of mind can be diagnosed using four general domains, these are: ***affect***, ***cognition***, ***behaviour***, and ***physical functioning***. Depressed people may differ from one another, some are affected by symptoms of all four domains but some show symptoms only of one domain (Hammen & Watkins, 2008). These symptoms can be explained by separating the domains into feelings which belong to the domains. The World Health Organization created diagnostic criteria for depressive disorders based on these domains.

Table 3. Diagnostic criteria WHO (1993)

Diagnostic criteria for depressive disorders: *International Classification of Disorders (ICD-10: World Health Organization, 1993)*

Note: general diagnostic criteria and clinical features are specified, but the following are the more precisely defined diagnostic criteria for research (for depressive episode and dysthymia).

*Depressive episode*

- A** Symptoms must be present for at least two weeks; the person did not meet criteria for mania or hypomania at any time.
- B**
- a) depressed mood most of the day and almost every day, uninfluenced by circumstances
  - b) loss of interest or pleasure in activities that are normally pleasurable
  - c) increased fatiguability or decreased energy
- C**
- a) loss of confidence or self-esteem
  - b) unreasonable feelings of self-reproach or excessive and inappropriate guilt
  - c) recurrent thoughts of death or suicide, or any suicidal behaviour
  - d) complaints or evidence of diminished ability to think or concentrate, such as indecisiveness or vacillation
  - e) change in psychomotor activity, with agitation or retardation (either subjective or objective)
  - f) sleep disturbance of any type
  - g) change in appetite (decrease or increase) with corresponding weight change

Note: Depressive episodes may be diagnosed as: *Mild* (at least 2 from B at least 2 from C, for a total of at least 4); *Moderate* (at least 2 from B plus 3 or 4 from C for a total of at least 6); *Severe* depressive episode without psychotic features (all 3 from B plus at least 4 from C, for a total of at least 9 – no hallucinations, delusions, or depressive stupor).

The four domains and the symptoms:

- ***Affective symptoms***, the manifestations of abnormal affect, or mood. Thus, depressed mood, sadness, feeling low, or empty. However not all depressed people have these emotions, some report the loss of interest or pleasure. Even when an important task is completed, there is hardly any satisfaction (Klinger, 1993) (Beck, 1983).
- ***Cognitive symptoms***, the negative effect on thinking. Depressed people have increased negative thoughts about themselves, they feel worthless and have a decreased self-esteem. On long term, individuals may change their view on life and start to think about it not only as pointless but also unattainable. This results in the rise of thoughts of wanting to die. (Crocker & Wolfe)
- ***Behavioural symptoms***, the withdraw from social events and reduced social behaviour. Individuals avoid contact with others because of loss of motivation and interest. (Perez & Riggio, 2002)
- ***Physical symptoms*** change in appetite, sleep and energy. A lack of physical stamina to undertake tasks. There is a close relation between the regulation of mood and regulation of sleep (Lustberg & Reynolds, 2000).

All statements used in the survey, are based of the symptoms mentioned above and the diagnostic criteria of the WHO (1993).

The ‘values’ which were monitored in the [survey](#) are the feelings/opinions of seafarers about various statements about their mental health. For example, question number 3. ‘*Being onboard makes me feel happy*’. Participants were to share their view on this statement by choosing one of the 5 options (see *Figure 8. Survey. for an explanation of these 5 options*). This question asks about the participants mood which is part of the affect-domain. The total of 23 questions in the survey covered all the four domains.

### 3.5 Ethical aspect

The privacy of the participants was guaranteed by keeping the survey completely anonymous, on each survey a privacy statement was included. No personal details were collected during this research, this ensured that none of the surveys could be backtracked to any of the participants. Participants were informed on the survey that no name, gender, age or nationality must be put on the document. Filled-in surveys had to be collected on a location where these can be put in all privacy. On the ship the researcher was able to conduct the survey himself, a sealed mailbox was used to collect the filled-in surveys. This mailbox was put in the TV-room, this room is 24/7 accessible by all crewmembers. This was a suitable location for collecting such a document, since the availability to hand in the document for all, at a for them convenient time.

An [instruction letter](#) was written for every Captain, informing them about the survey and how to handle the documents. Captains were asked to scan the documents and sent these to the company, the company collected all documents and sent these back to the researcher. The participants were informed by the Captain on how the documents were going to be collected. Since no personal details were put on any of the documents, not the company, captains nor the researcher knew who the participants were.

When the digital variant was used the in-between party (the office/company) was set aside, the data went directly from the participant to the researcher. This decreased the length of the chain which the data needed to travel and decreased the chance of data getting lost or handled improperly. Therefore, the digital variant was tacitly promoted, by increasing the ease of use by adding a QR-Code on the survey which is linked to the digital version. This QR-code could be scanned by Android- or iOS Devices with the camera-app, this was also mentioned on each survey.

Feedback to all crewmembers will be given, by giving them access to this final report wherein they can see the recommendations given to the company and the outcome of the surveys.

The hardcopies which were filled-in during the survey are not available, this is to protect any sensitive information which might violate the privacy of the shipping company.



### 3.6 Data processing

#### 3.6.1 Construction of the grade system

A grading method was built into the survey, it was of importance that this did not favour any of the possible outcomes. To make this possible a Linkert scale was used, as it is a good method to collect data which is difficult to quantify. This method allows to grade variables, which hold no value from themselves (Ankur, Saket, Satish, & Kumar Pal, 2015). Emotions/feelings which were measured during this research, hold no static value, therefore it was necessary to use such method. In this case, participants had the ability to use the following options to answer statements; strongly disagree, disagree, neutral, agree and strongly agree. The choice was made to use 5-scale lengths, as having more scales does not give a more useful distinction (Eekhof, Mol, & Pielage, 1992).

A numeric interval scale was connected to these options, and as statements 3 – 23 were all commensurate to one another, it was possible to add up the answers and calculate an average ‘grade’

Another method was used for statement number 27, a basic scale system ranging from 1 to 10 was used. Wherein 1 is the lowest/worst, and 10 is the highest/best. This also means that, a doubled amount of points could be given to this statement. The decision for a 10-scale and not a 5-scale (in line with the rest of the statements) was made, to compensate for any statements which the survey might have lacked in terms of uncovering a participants’ mental state of mind.

All given answers were relative to the participants’ perception, on the surveys they were informed to choose the answer which matches their thoughts the most. Therefore, even if they do not fully agree with one of the possible options. It does resemble their thoughts, in the closest way possible.

The outcome of the survey is numeric, as this made it possible to divide it over several areas. A ratio-based answer was also calculated and is displayed in the results.

### 3.6.2 Grade system

The survey consisted of 28 questions; due to the way the survey was constructed a score could be given to 22 of these questions. This score is applicable for questions 3-23 and 27, 3-23 up to 5 points per question. These points were given based on the answers of the participants, an explanation on how the points are divided is shown in Figure 8.

For question number 27, the score was based on the rating given by the participant which ranges from 1 to 10. Wherein a 1 was the lowest overall score a participant could give to its experience on board, while a 10 was the best score.

<b>Explanation</b>	2 points = Disagree	4 points = Agree
1 point = Strongly disagree	3 point = Neutral	5 points = Strongly agree

Figure 8. *Survey division per opinion*

In total 115 points could be collected, to calculate the result a separation had to be made per total points collected. To calculate this; the base/minimum score of 22 was subtracted from the total of 115, this prevents a 'negative' reply contributing to a 'positive' outcome. With 93 points remaining, these were divided over five areas: bad, negative, neutral, positive and good. Figure 9. Displays, what scores belong to each area.

<b>Mental state of mind</b>	Bad	Negative	Neutral	Positive	Good
Scores	22 – < 40,6	40,6 – < 59,2	59,2 – < 77,8	77,8 – < 96,4	96,4 - 115

Figure 9. *Mental state of mind table - divided per score*

### 3.6.3 The specifications of this score system

- When less than 35,30% of the total points were given, it was considered as terrible.
- When a score was given which was between 35,30% and below 51,47% of the total points, it was considered as bad.
- When a score was given which was between 51,47% and below 67,64% of the total points, it was considered as neutral.
- When a score was given which was between 67,64% and below 83,81% of the total points, it was considered as positive.
- When a score was given which was between 83,31% up to 100% of the total points, it was considered as good.
- The distribution key which was applied to the divided areas:

Area	Bad	Negative	Neutral	Positive	Good	Total
<b>Percentages</b>	35,3%	16,17%	16,17%	16,17%	16,17%	100,00%
<b>Points</b>	$\frac{22}{100} + 18,6 = 40,6$	18,6	18,6	18,6	18,6	115

### 3.6.4 Software used in this research

For this research the following software programs were used:

- **Microsoft Word**, for text processing and overall design of the documents, surveys and letters being used in this research.
- **Microsoft Excel**, for processing of the data which will be collected from the surveys, the overall score of the surveys will be calculated in this program as well.
- **Microsoft PowerPoint**, for the presentation once the research has been completed.
- **Google Forms**, for the creation of the digital survey and the collection of the online data.

### 3.7 Evaluation of the survey

No negative comments were put on the survey concerning the usability of the survey itself, some positive ones were left. One of these comments which was left on the survey; *“Easy to answer all questions, direct to the point.”*, indicated that the survey’s usability and understandability was good. A multilingual crew had to partake in the survey, therefore clear and understandable English was a must.

## 4. Results

The most important data collected in the research is displayed in this chapter, the full results of the survey are displayed in [Appendix 4: Results of the survey](#).

**The graphs are displayed on the next pages**

## 4.1 Officers

The first group, 66 officers of (cement) tankers and dry cargo: their answers split up in multiple graphs. Each graph contains the times an answer was chosen per statement. The horizontal-axis displays the questions, the vertical-axis the amount of times an answer was chosen per given statement.

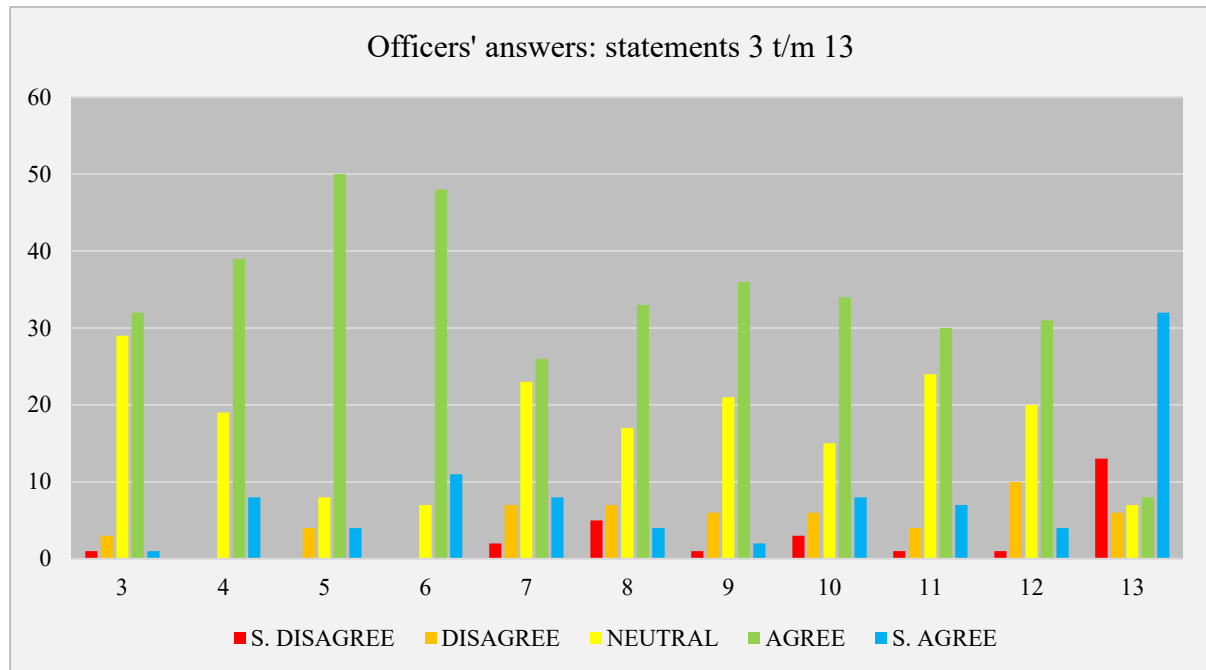


Figure 10. Officers' answers: statements 3 t/m 13

The attached statements per number (3 t/m 13)	
3. Being on board makes me feel happy.	8. I get at least 7 hours of sleep per day.
4. I feel appreciated by my colleagues.	9. During the day I feel energized.
5. The company I work for appreciates me and my well-being.	10. In the morning I have no trouble getting out of bed.
6. I see myself as a valuable member of the crew.	11. The food being served on board is tasty and nutritious.
7. When I am on board, I feel as confident as at home.	12. My bodyweight doesn't change a lot when I'm on board.
	13. I consume less than 2 alcoholic drinks per day.

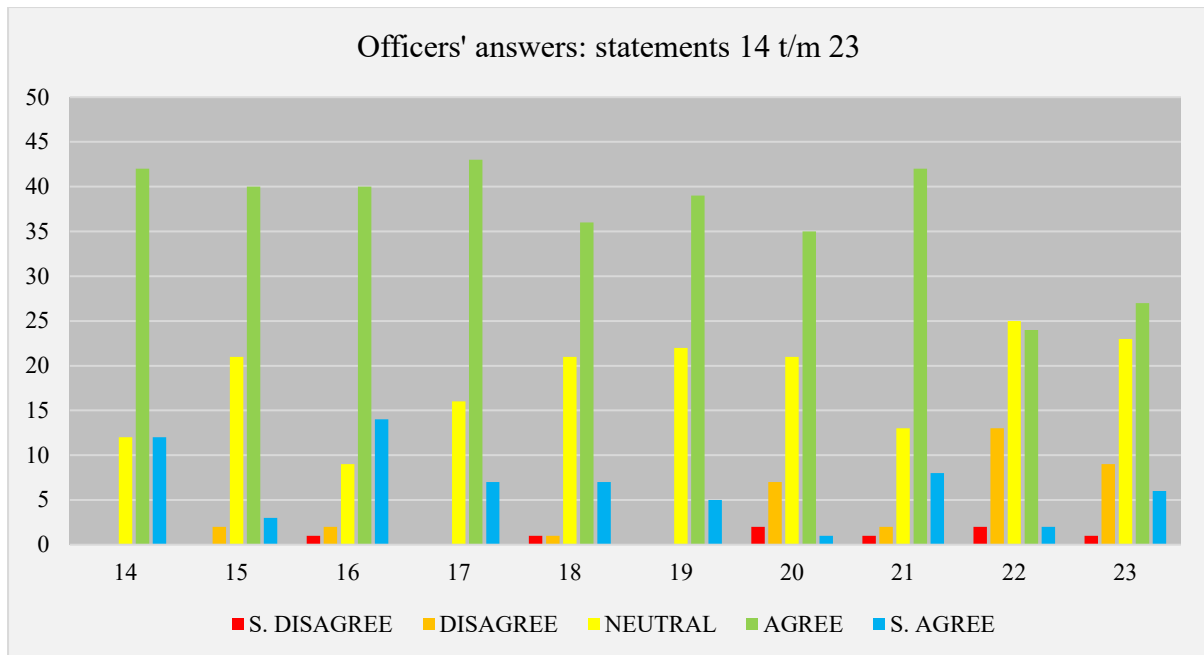


Figure 11. Officers' answers: statements 14 t/m 23

The attached statements per number (14 t/m 24)	
14. I get satisfaction out of my job.	19. My feelings and emotions are respected by other crewmembers.
15. The work I do every day, makes me happy.	20. I notice the effects of the company's Health and Safety campaign during standard workdays.
16. I have enough contact with my family.	21. I feel safe when I'm on board.
17. I like having interaction with other crewmembers outside working-hours.	22. I experience little stress when I am on board.
18. I'm able to share what's on my mind with other crewmembers.	23. Depressions on board are uncommon to me.

As becomes visible from Figure 5 and 6, most often officers agree with the statements given in the survey. The next most chosen answer on the statements is 'Neutral', this trend almost continues throughout all questions/statements. Except for number 13, during this question answers on the outer end of the spectrum are favored by the participants. 33 times an officer **strongly agreed** with; *'I consume less than 2 alcoholic drinks per day.'* this is also the question where strongly agree was selected the most.

**Strongly disagree** was chosen the most times as well, compared to other questions. 13 officers strongly disagreed with the statement; *'I consume less than 2 alcoholic drinks per day.'*

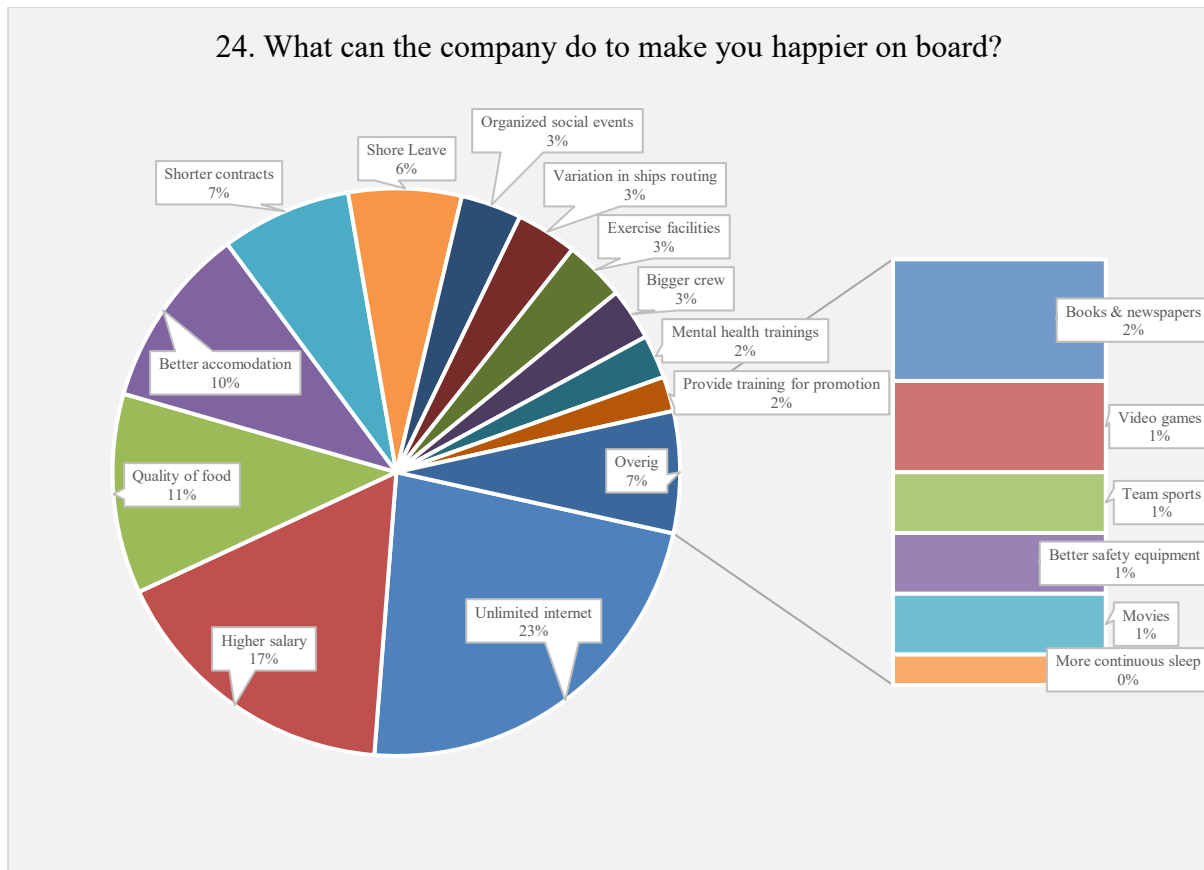


Figure 12. Officers' replies on Q24.

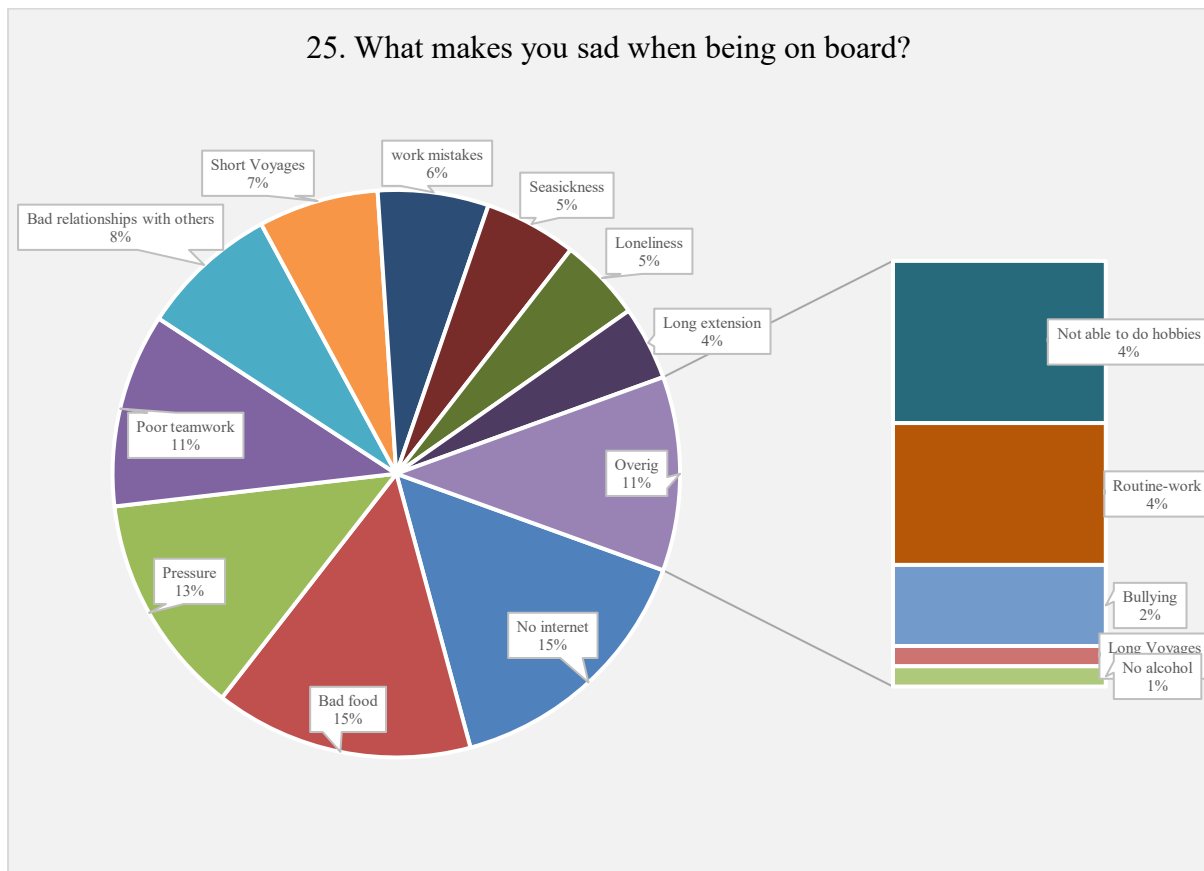


Figure 13. Officers' replies on Q25.



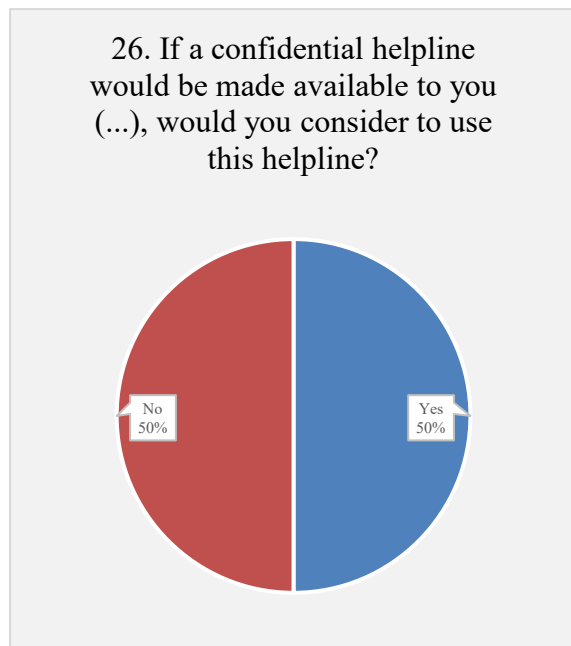


Figure 14. Officers' replies on Q24.

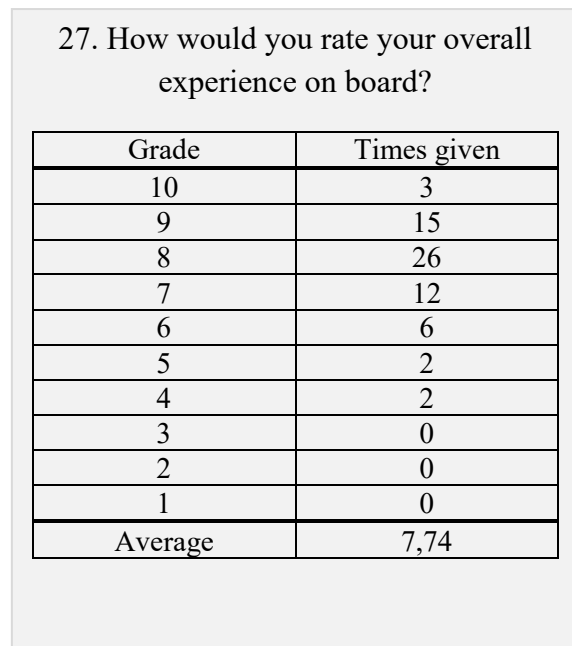


Figure 15. Officers' replies on Q25.

## 4.2 Ratings

The second group, 53 ratings: the results are displayed in the same way as those of the officers.

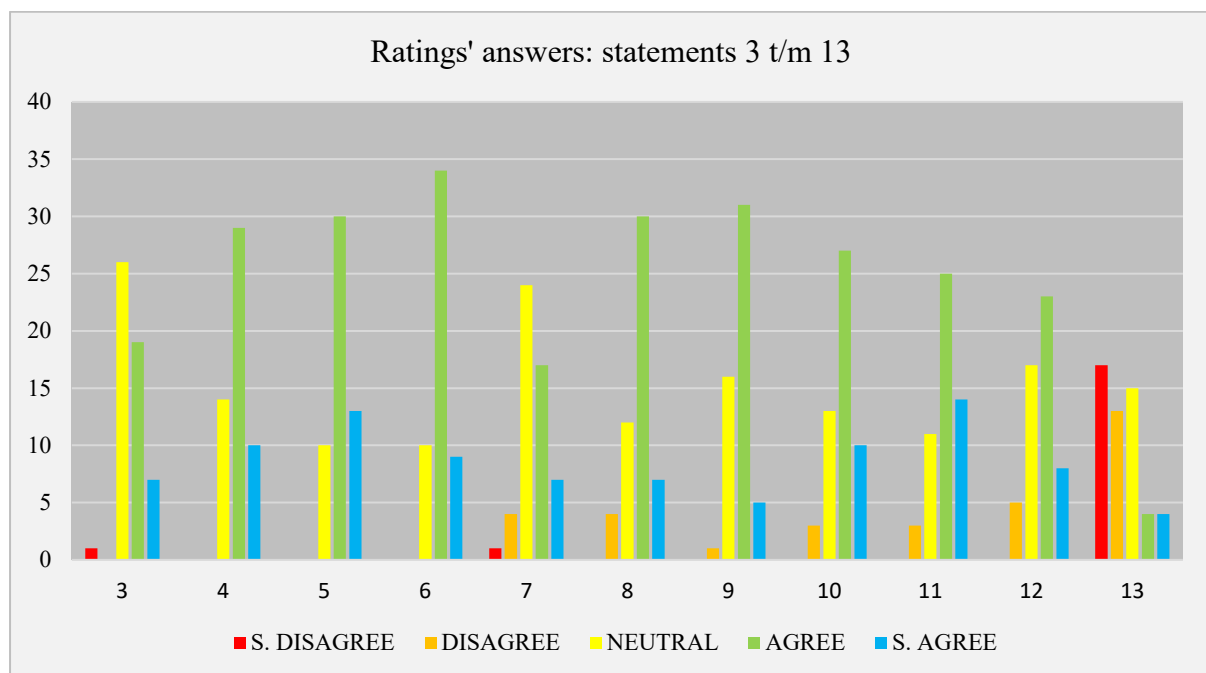


Figure 16. Ratings' answers: statements 3 t/m 13

The attached statements per number (3 t/m 13)	
3. Being on board makes me feel happy.	8. I get at least 7 hours of sleep per day.
4. I feel appreciated by my colleagues.	9. During the day I feel energized.
5. The company I work for appreciates me and my well-being.	10. In the morning I have no trouble getting out of bed.
6. I see myself as a valuable member of the crew.	11. The food being served on board is tasty and nutritious.
7. When I am on board, I feel as confident as at home.	12. My bodyweight doesn't change a lot when I'm on board.
	13. I consume less than 2 alcoholic drinks per day.

As can be observed in Figure 16. Ratings' answers: statements 3 t/m 13 and Figure 17. Ratings' answers: statements 14 t/m 23. The pattern which was visible in the graphs of the officers' answers is also present here, since they 'Agree' with most of the statements, followed up by them being 'Neutral' about the statements. This pattern is visible throughout all groups, for most statements.

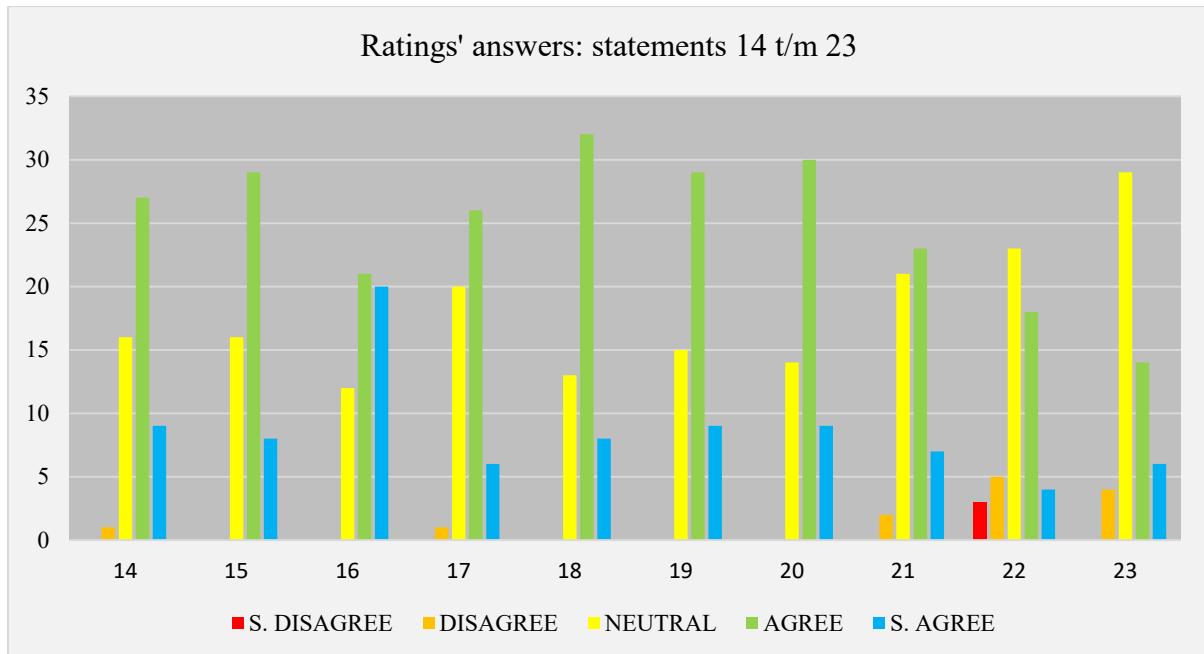


Figure 17. Ratings' answers: statements 14 t/m 23

The attached statements per number (14 t/m 24)	
14. I get satisfaction out of my job.	19. My feelings and emotions are respected by other crewmembers.
15. The work I do every day, makes me happy.	20. I notice the effects of the company's Health and Safety campaign during standard workdays.
16. I have enough contact with my family.	21. I feel safe when I'm on board.
17. I like having interaction with other crewmembers outside working-hours.	22. I experience little stress when I am on board.
18. I'm able to share what's on my mind with other crewmembers.	23. Depressions on board are uncommon to me.

## 24. What can the company do to make you happier on board?

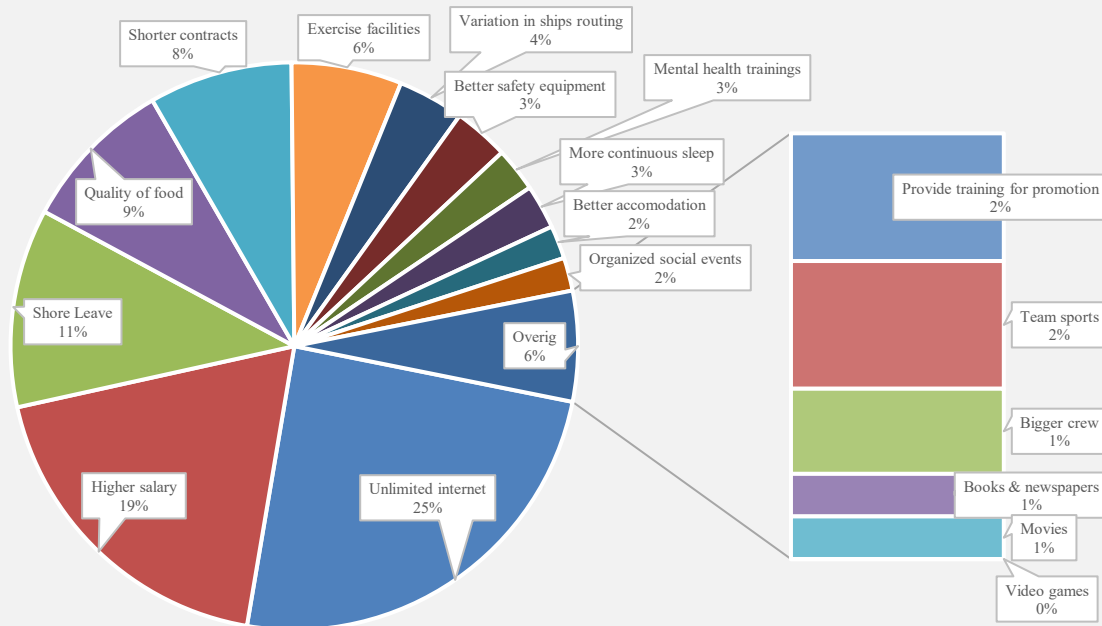


Figure 18. Ratings' replies on Q24.

## 25. What makes you sad when being on board?

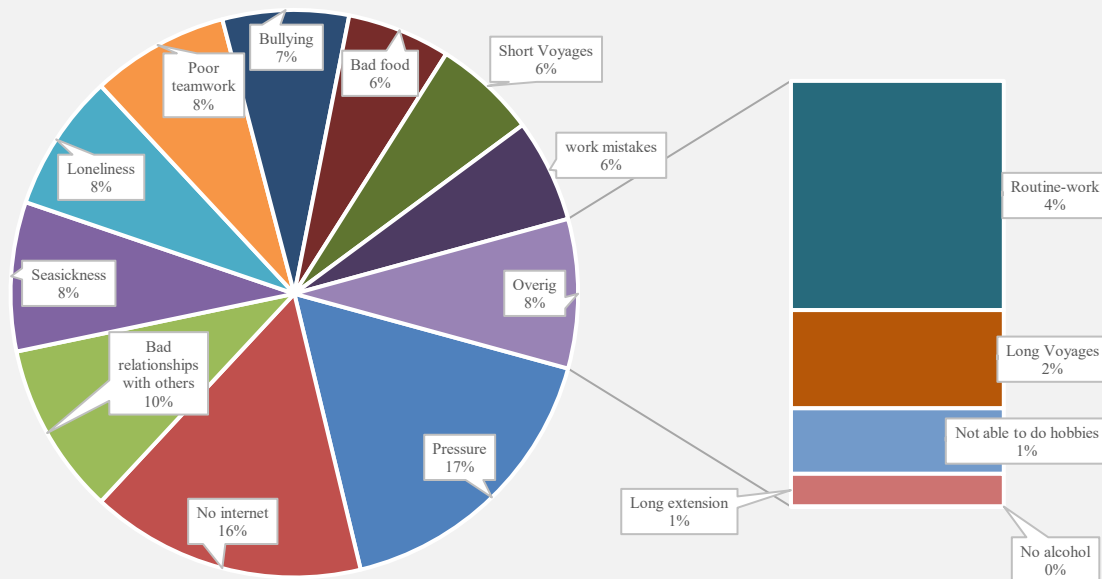


Figure 19. Ratings' replies on Q25.

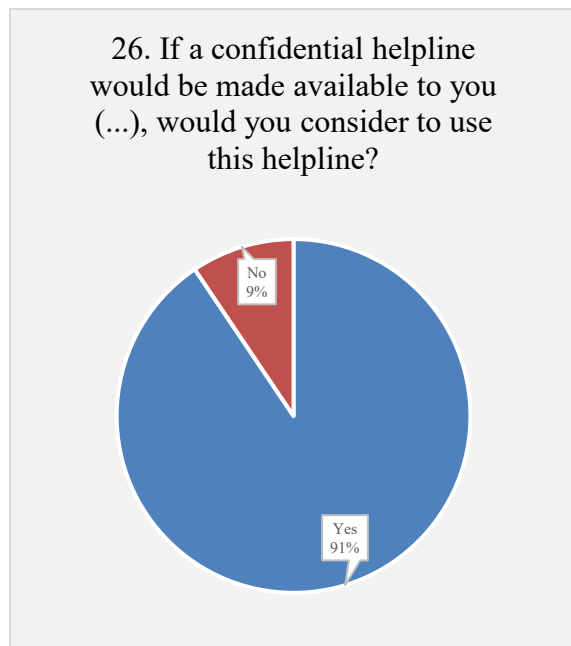


Figure 20. Ratings' replies on Q24.

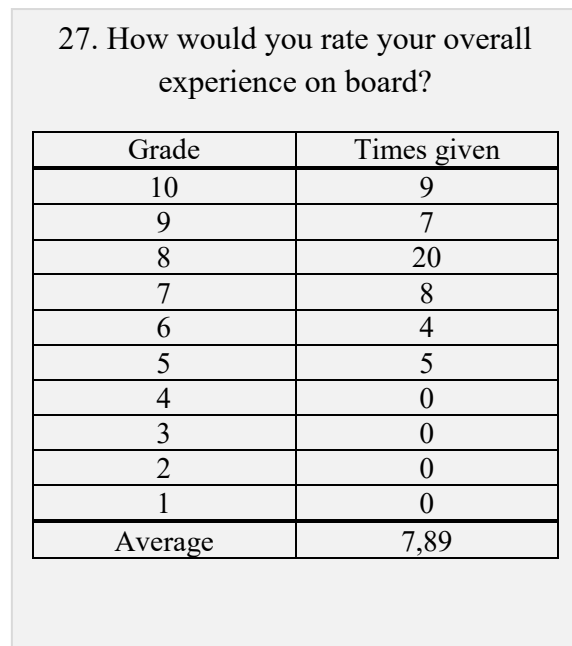


Figure 21. Ratings' replies on Q25.

### 4.3 Tanker

The answers of the tanker crew which participated in the research, a group of 51 participants.

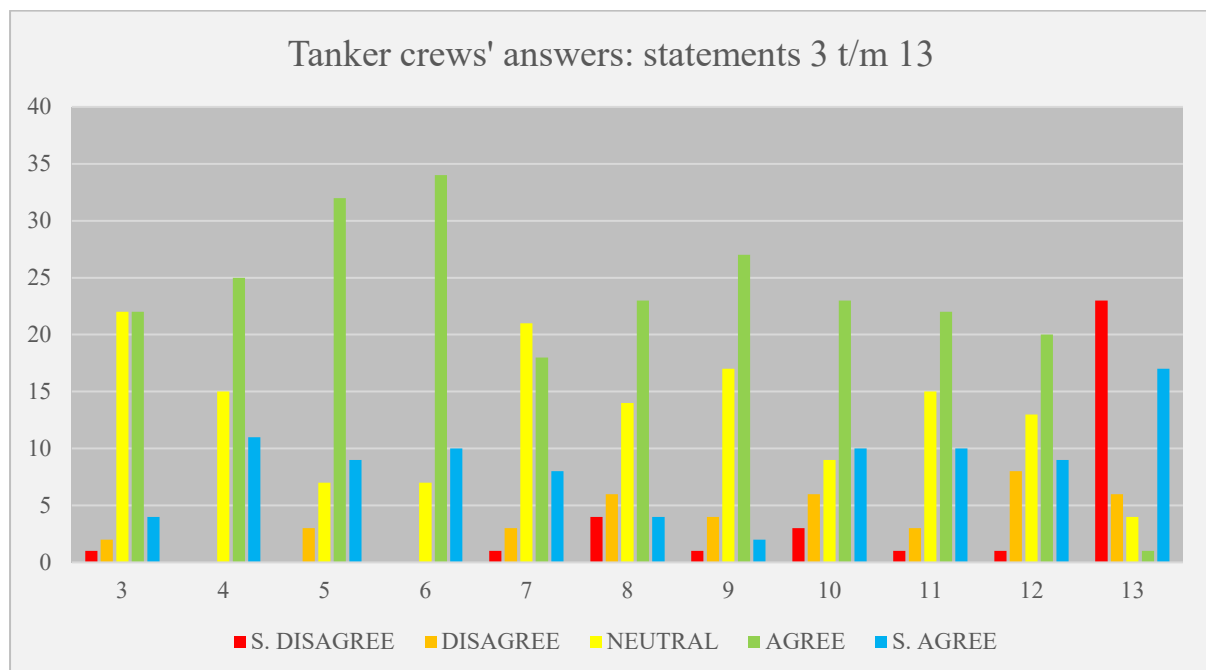
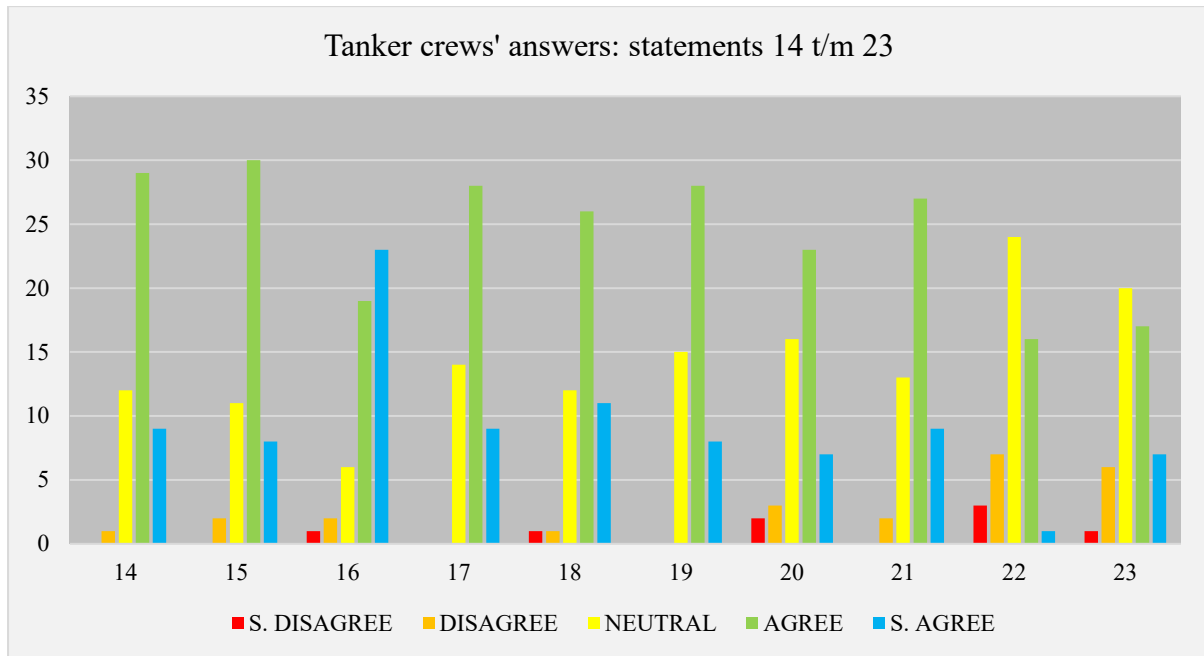


Figure 22. Tanker crews' answers: statements 3 t/m 13

The attached statements per number (3 t/m 13)	
3. Being on board makes me feel happy.	8. I get at least 7 hours of sleep per day.
4. I feel appreciated by my colleagues.	9. During the day I feel energized.
5. The company I work for appreciates me and my well-being.	10. In the morning I have no trouble getting out of bed.
6. I see myself as a valuable member of the crew.	11. The food being served on board is tasty and nutritious.
7. When I am on board, I feel as confident as at home.	12. My bodyweight doesn't change a lot when I'm on board.
	13. I consume less than 2 alcoholic drinks per day.

At question number 16 (*Figure 23. Tanker crews' answers: statements 14 t/m 23*), **Strongly agree** was selected the most times. 23 times an officer strongly agreed with the statement, this is 45% of the total tanker population and when comparing it to dry cargo and cement, it is also the biggest percentage of a group which strongly agrees with question 16.



*Figure 23. Tanker crews' answers: statements 14 t/m 23*

The attached statements per number (14 t/m 24)	
14. I get satisfaction out of my job.	19. My feelings and emotions are respected by other crewmembers.
15. The work I do every day, makes me happy.	20. I notice the effects of the company's Health and Safety campaign during standard workdays.
16. I have enough contact with my family.	21. I feel safe when I'm on board.
17. I like having interaction with other crewmembers outside working-hours.	22. I experience little stress when I am on board.
18. I'm able to share what's on my mind with other crewmembers.	23. Depressions on board are uncommon to me.

## 24. What can the company do to make you happier on board?

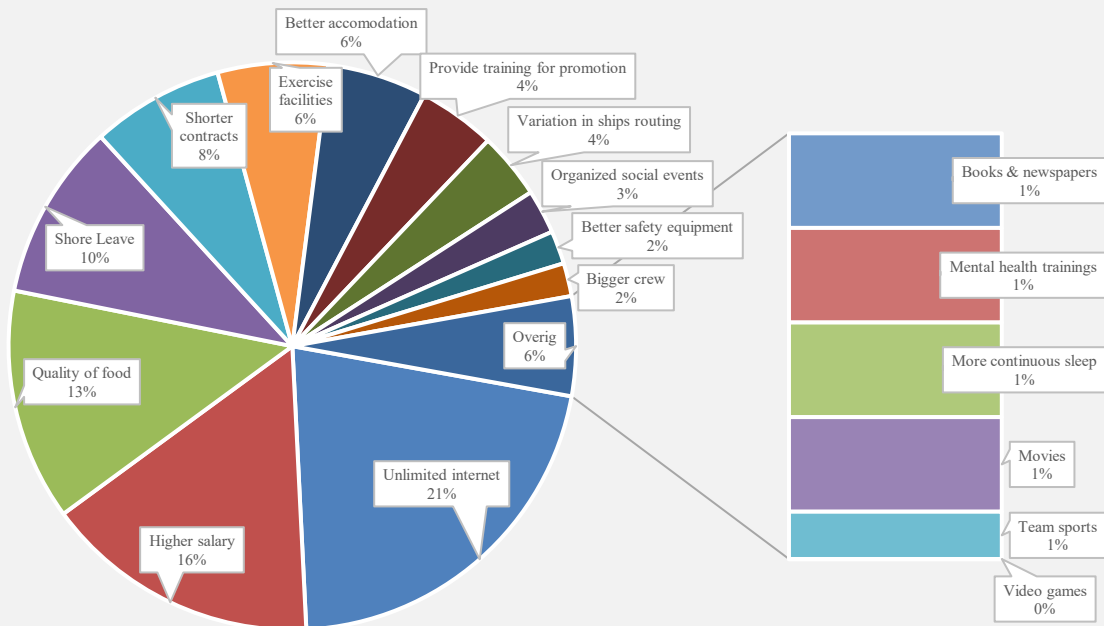


Figure 24. Tanker crews' replies on Q24.

## 25. What makes you sad when being on board?

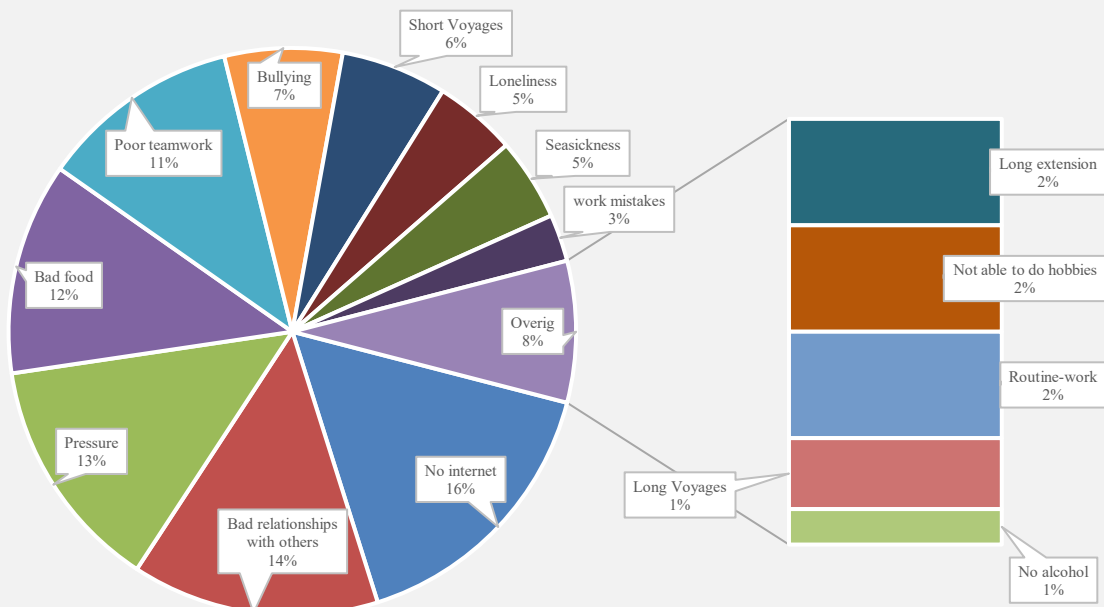


Figure 25. Tanker crews' replies on Q25.

26. If a confidential helpline would be made available to you (...), would you consider to use this helpline?

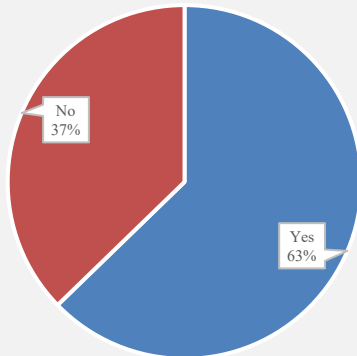


Figure 26. Tanker crews' replies on Q24.

27. How would you rate your overall experience on board?

Grade	Times given
10	5
9	10
8	22
7	7
6	4
5	1
4	2
3	0
2	0
1	0
Average	7,88

Figure 27. Tanker crews' replies on Q25.

#### 4.4 Dry Cargo

The answers of the dry cargo crew which participated in the research, a group of 37 participants.

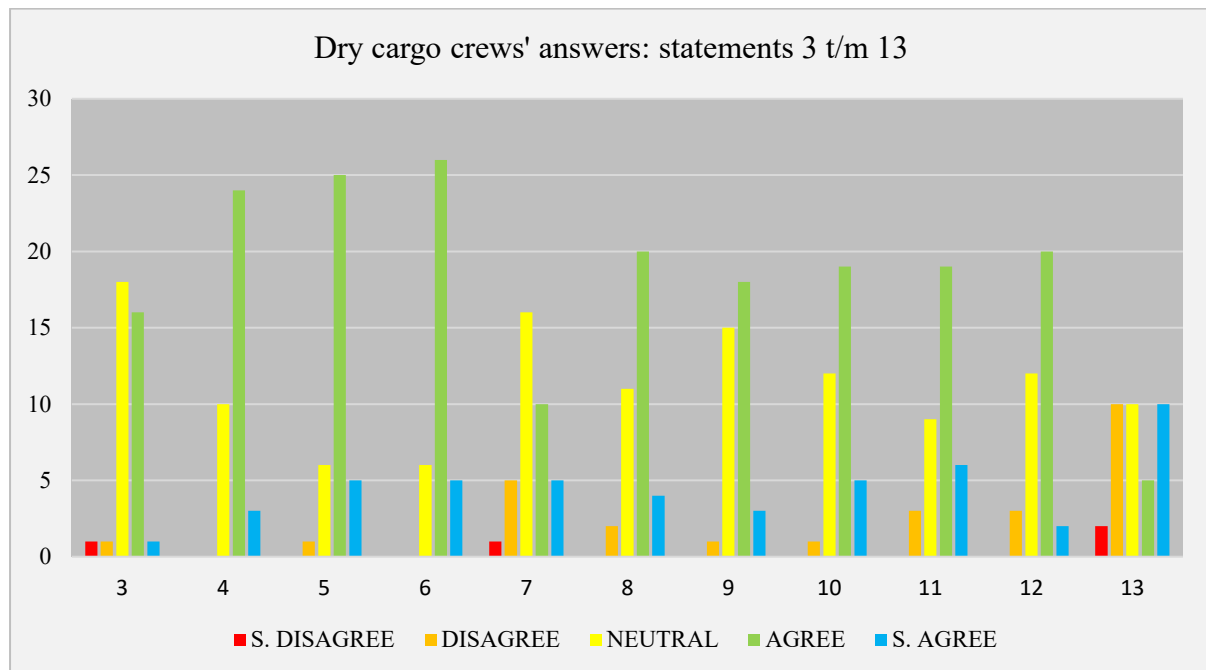


Figure 28. Dry cargo crews' answers: statements 3 t/m 13

The attached statements per number (3 t/m 13)	
3. Being on board makes me feel happy.	8. I get at least 7 hours of sleep per day.
4. I feel appreciated by my colleagues.	9. During the day I feel energized.
5. The company I work for appreciates me and my well-being.	10. In the morning I have no trouble getting out of bed.
6. I see myself as a valuable member of the crew.	11. The food being served on board is tasty and nutritious.
7. When I am on board, I feel as confident as at home.	12. My bodyweight doesn't change a lot when I'm on board.
	13. I consume less than 2 alcoholic drinks per day.

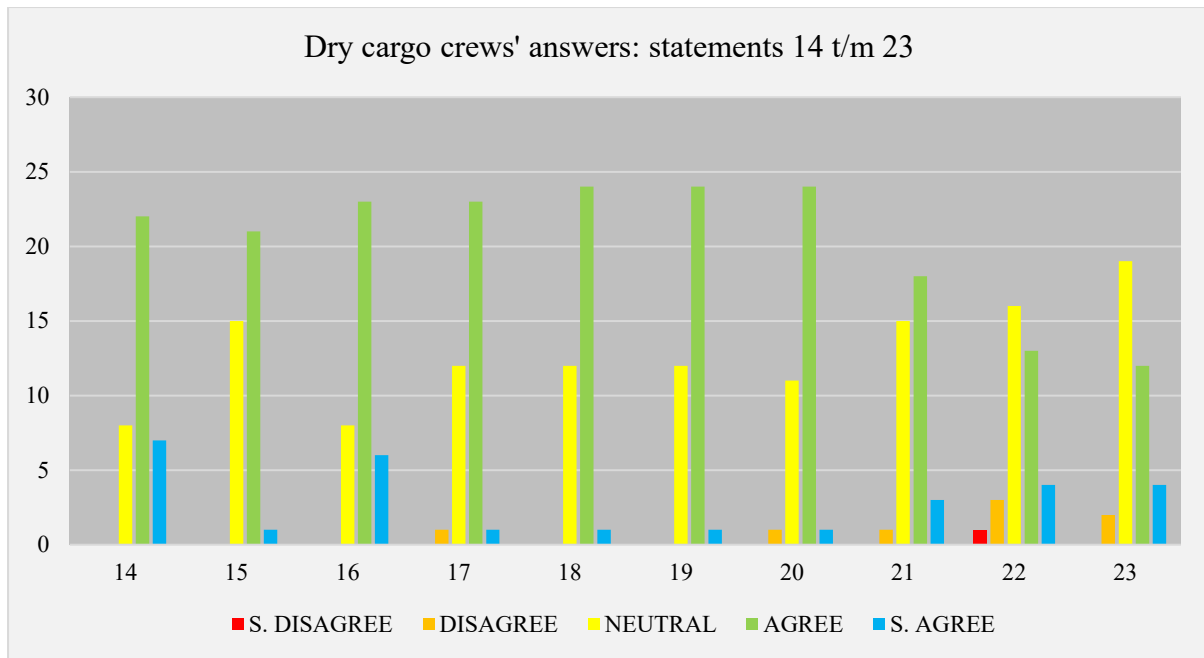


Figure 29. Dry cargo crews' answers: statements 14 t/m 23

The attached statements per number (14 t/m 24)	
14. I get satisfaction out of my job.	19. My feelings and emotions are respected by other crewmembers.
15. The work I do every day, makes me happy.	20. I notice the effects of the company's Health and Safety campaign during standard workdays.
16. I have enough contact with my family.	21. I feel safe when I'm on board.
17. I like having interaction with other crewmembers outside working-hours.	22. I experience little stress when I am on board.
18. I'm able to share what's on my mind with other crewmembers.	23. Depressions on board are uncommon to me.



## 24. What can the company do to make you happier on board?

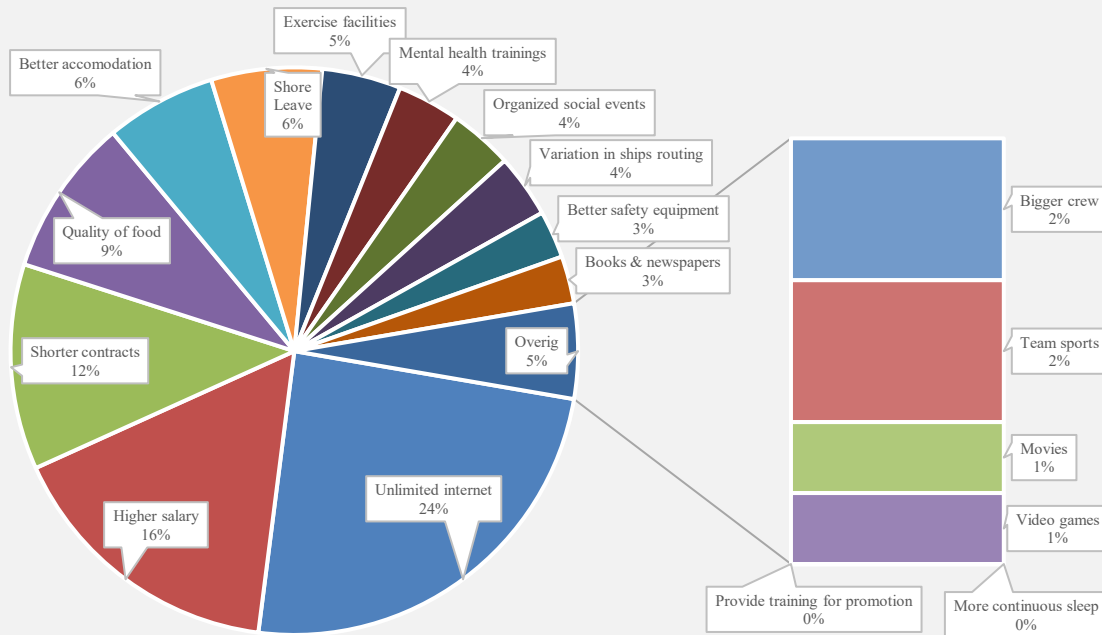


Figure 30. Dry cargo crews' replies on Q24.

## 25. What makes you sad when being on board?

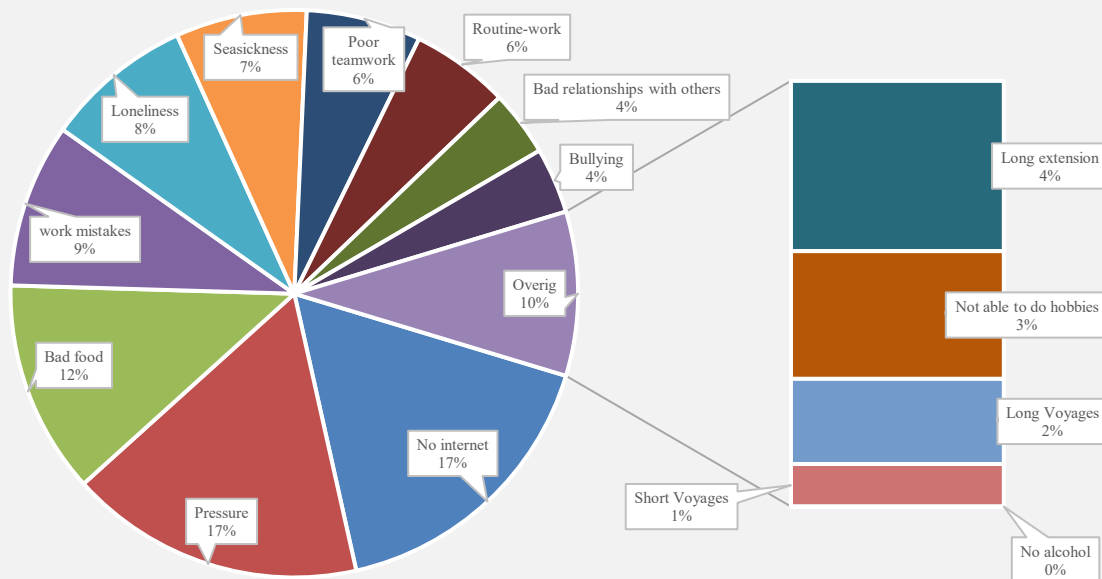


Figure 31. Dry cargo crews' replies on Q25.

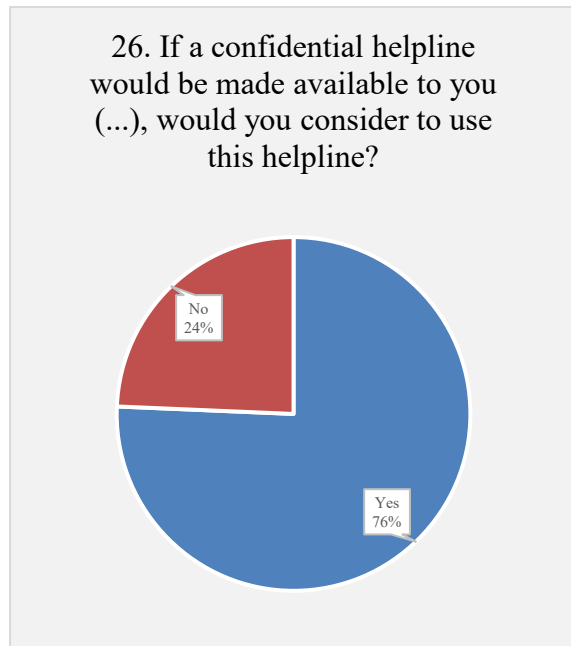


Figure 32. Dry cargo crews' replies on Q24.

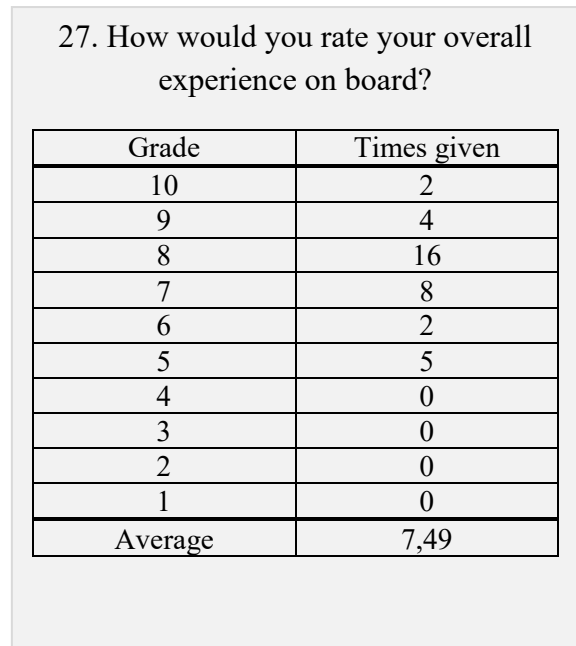


Figure 33. Dry cargo crews' replies on Q25.

## 4.5 Cement

The answers of the cement tanker crew which participated in the research, a group of 31 participants.

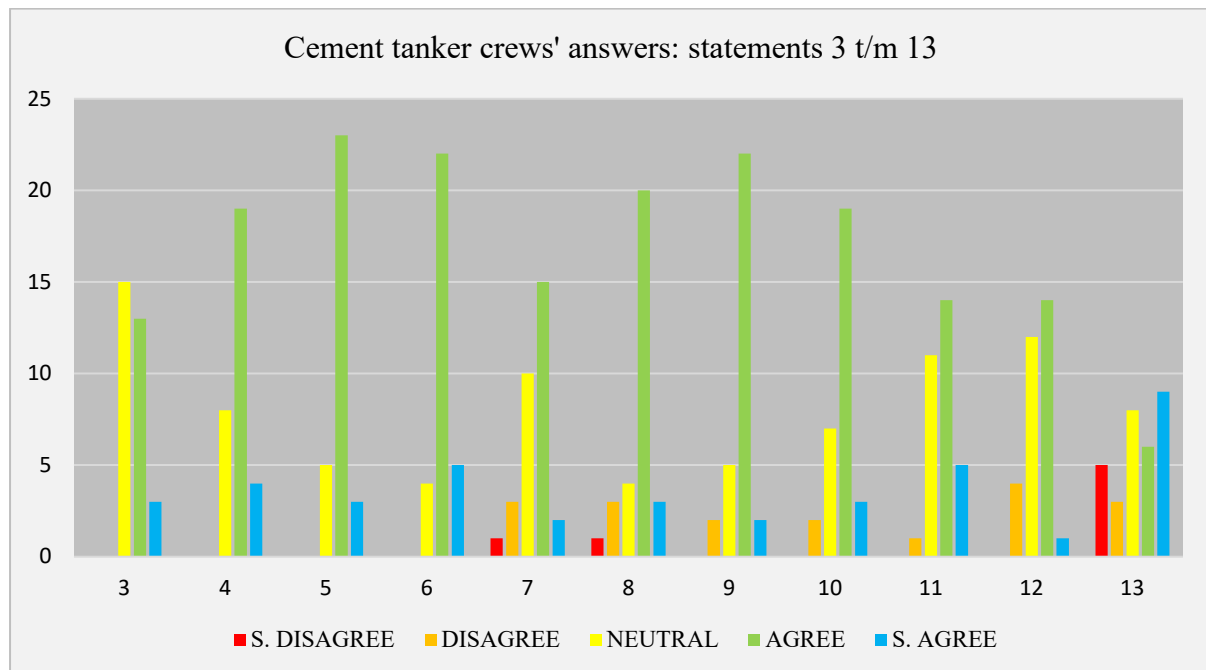


Figure 34. Cement tanker crews' answers: statements 3 t/m 13

The attached statements per number (3 t/m 13)	
3. Being on board makes me feel happy.	8. I get at least 7 hours of sleep per day.
4. I feel appreciated by my colleagues.	9. During the day I feel energized.
5. The company I work for appreciates me and my well-being.	10. In the morning I have no trouble getting out of bed.
6. I see myself as a valuable member of the crew.	11. The food being served on board is tasty and nutritious.
7. When I am on board, I feel as confident as at home.	12. My bodyweight doesn't change a lot when I'm on board.
	13. I consume less than 2 alcoholic drinks per day.

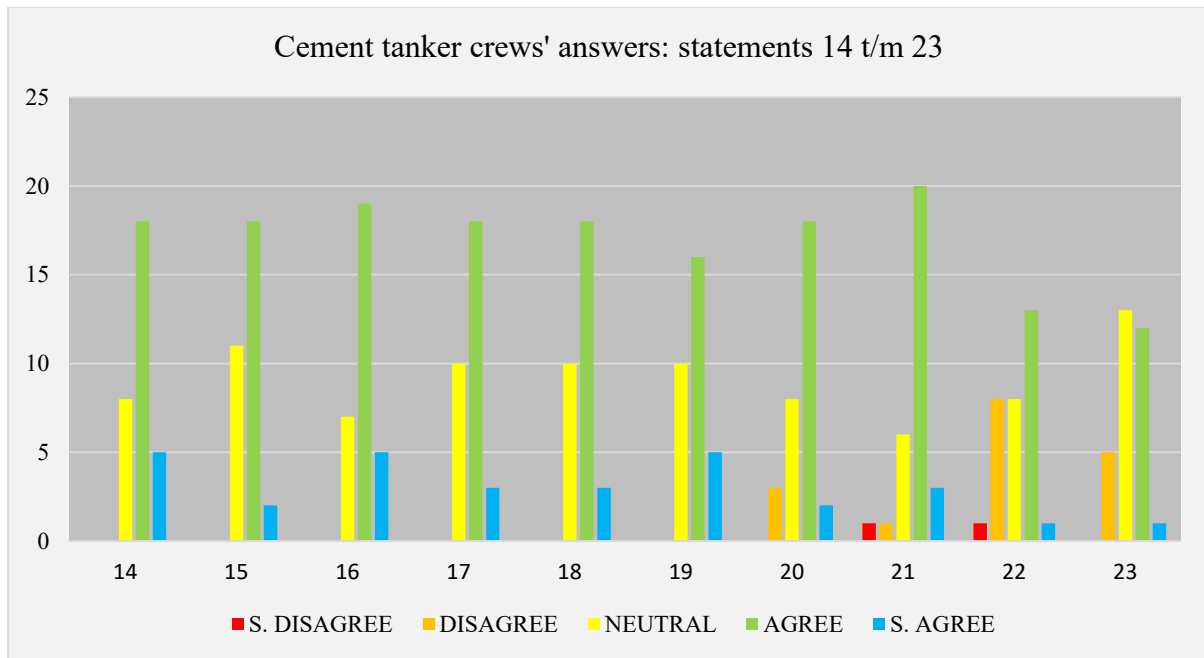


Figure 35. Cement tanker crews' answers: statements 14 t/m 23

The attached statements per number (14 t/m 24)	
14. I get satisfaction out of my job.	19. My feelings and emotions are respected by other crewmembers.
15. The work I do every day, makes me happy.	20. I notice the effects of the company's Health and Safety campaign during standard workdays.
16. I have enough contact with my family.	21. I feel safe when I'm on board.
17. I like having interaction with other crewmembers outside working-hours.	22. I experience little stress when I am on board.
18. I'm able to share what's on my mind with other crewmembers.	23. Depressions on board are uncommon to me.

## 24. What can the company do to make you happier on board?

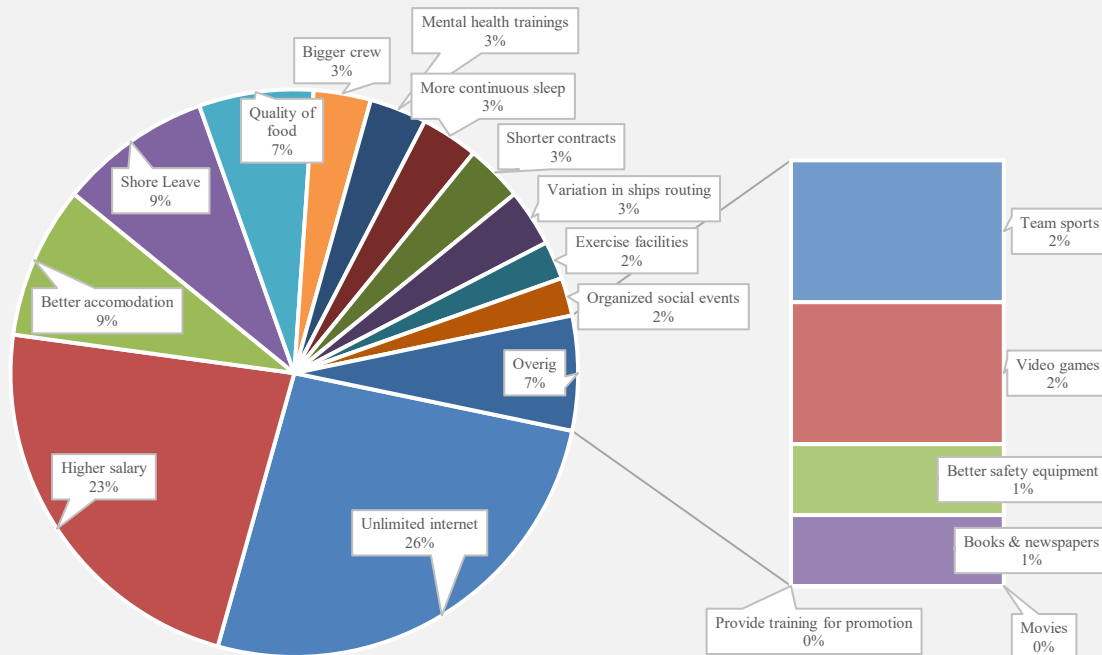


Figure 36. Cement tanker crews' replies on Q24.

## 25. What makes you sad when being on board?

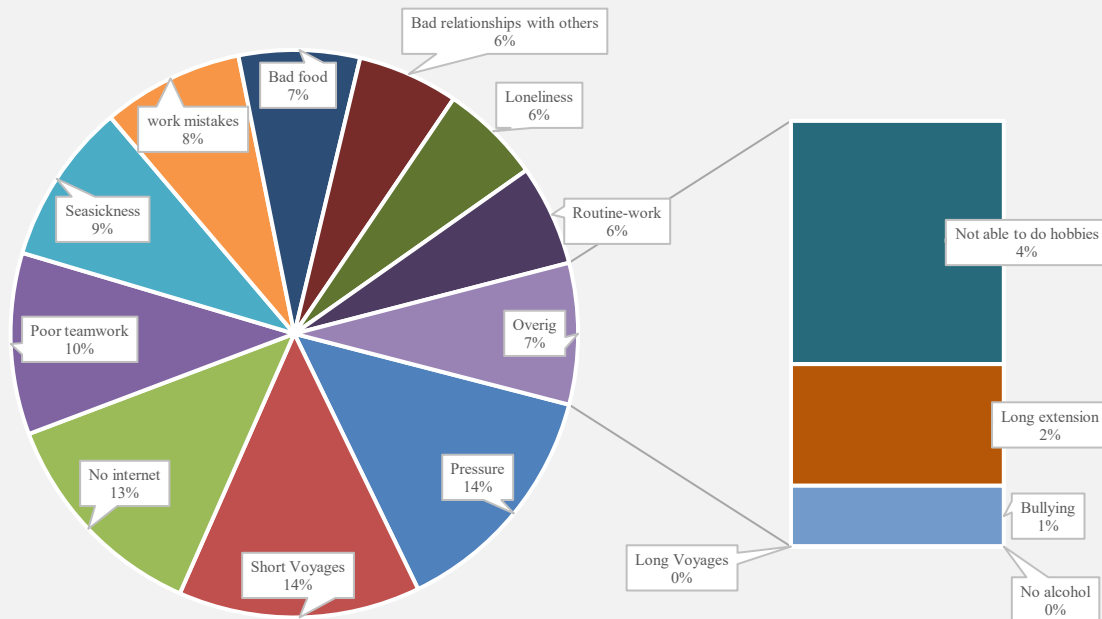


Figure 37. Cement tanker crews' replies on Q25.

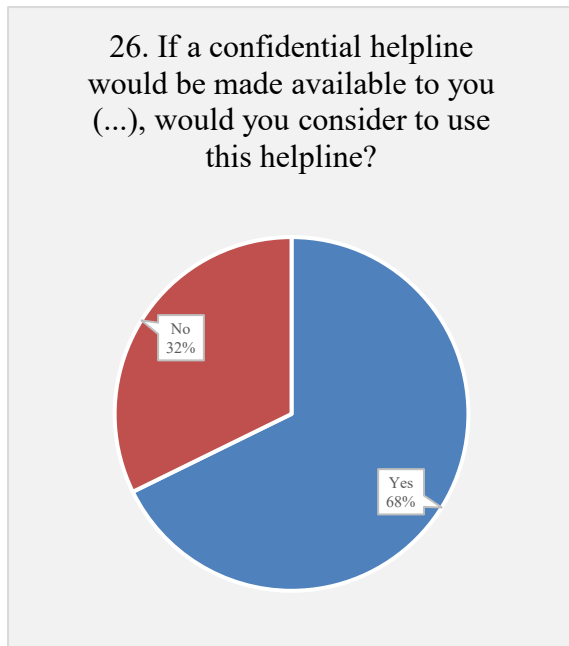


Figure 38. Cement tanker crews' replies on Q24.

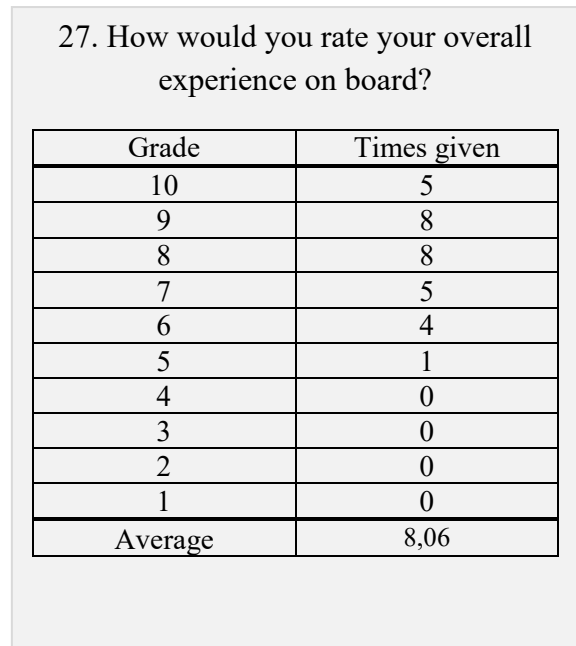


Figure 39. Cement tanker crews' replies on Q25.

#### 4.6 Total

The following graphs contains the data of all 119 participants, it is possible to determine the average mental state of mind with this data.

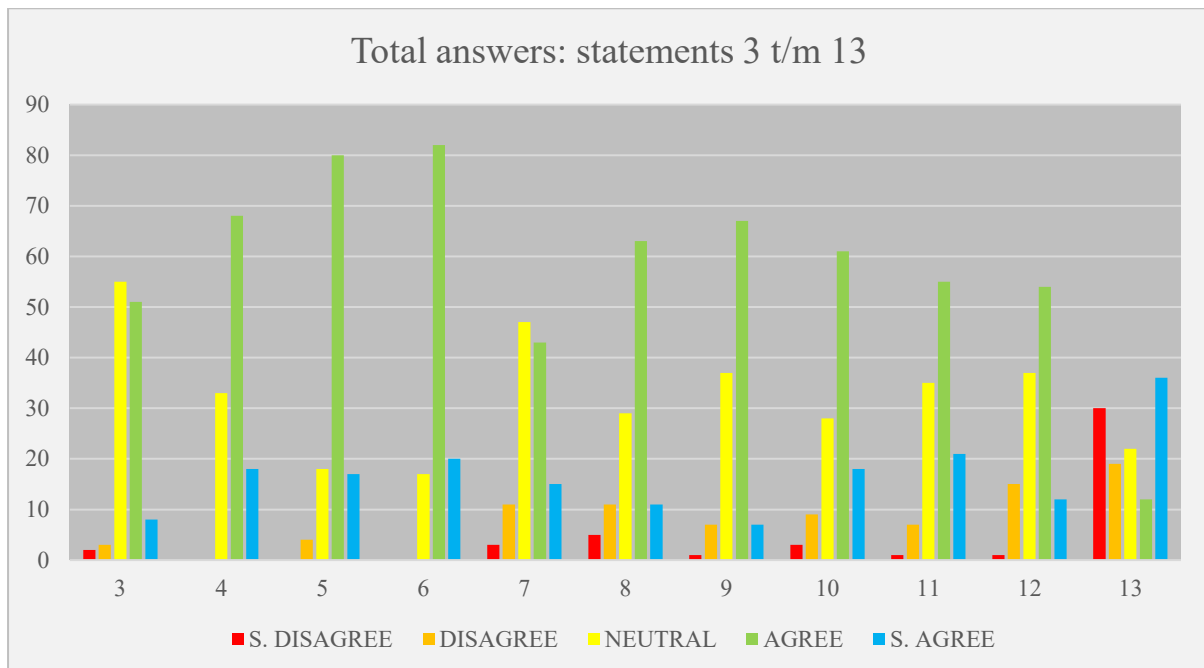


Figure 40. Total answers: statements 3 t/m 13

The attached statements per number (3 t/m 13)	
3. Being on board makes me feel happy.	8. I get at least 7 hours of sleep per day.
4. I feel appreciated by my colleagues.	9. During the day I feel energized.
5. The company I work for appreciates me and my well-being.	10. In the morning I have no trouble getting out of bed.
6. I see myself as a valuable member of the crew.	11. The food being served on board is tasty and nutritious.
7. When I am on board, I feel as confident as at home.	12. My bodyweight doesn't change a lot when I'm on board.
	13. I consume less than 2 alcoholic drinks per day.

The in [Figure 40](#) displayed data, shows that some seafarers like to drink alcohol. However, there is not a strong relation with a bad mental state of mind, as most other statements were answered mostly positive.

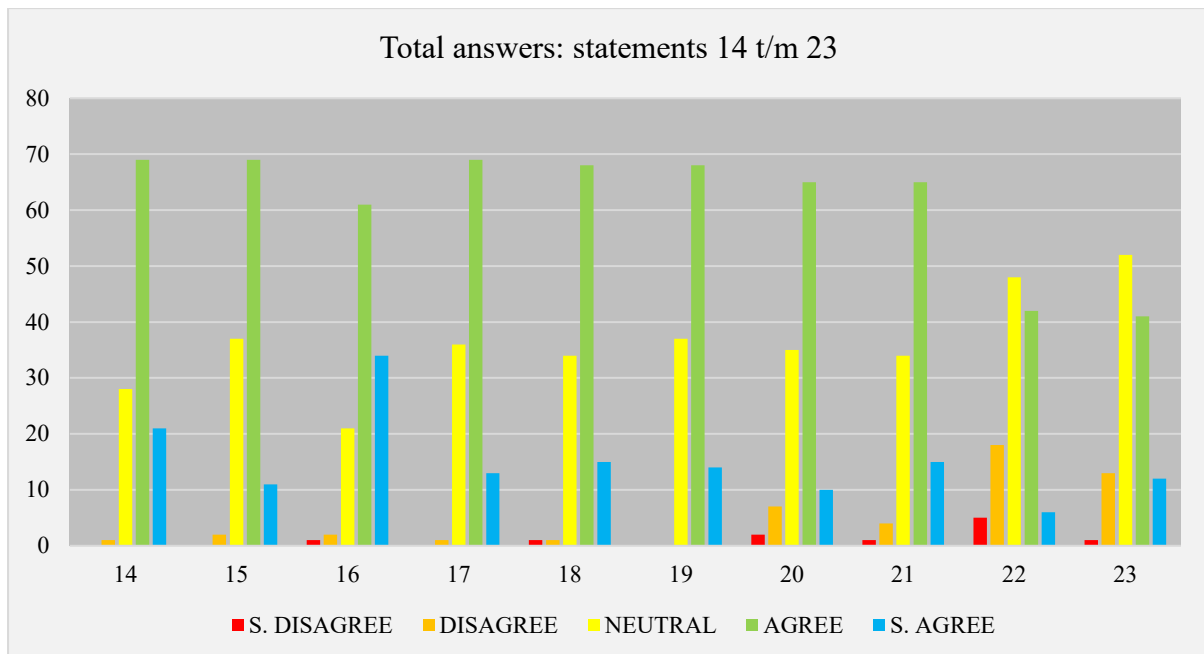


Figure 41. Total answers: statements 14 t/m 23

The attached statements per number (14 t/m 24)	
14. I get satisfaction out of my job.	19. My feelings and emotions are respected by other crewmembers.
15. The work I do every day, makes me happy.	20. I notice the effects of the company's Health and Safety campaign during standard workdays.
16. I have enough contact with my family.	21. I feel safe when I'm on board.
17. I like having interaction with other crewmembers outside working-hours.	22. I experience little stress when I am on board.
18. I'm able to share what's on my mind with other crewmembers.	23. Depressions on board are uncommon to me.

## 24. What can the company do to make you happier on board?

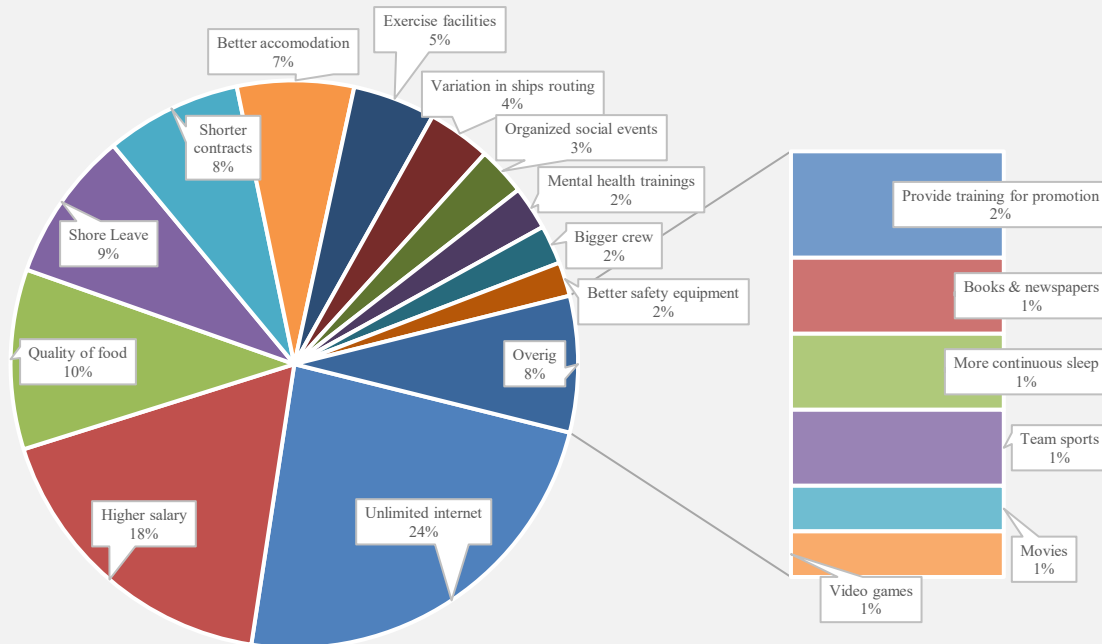


Figure 42. Total replies on Q24.

## 25. What makes you sad when being on board?

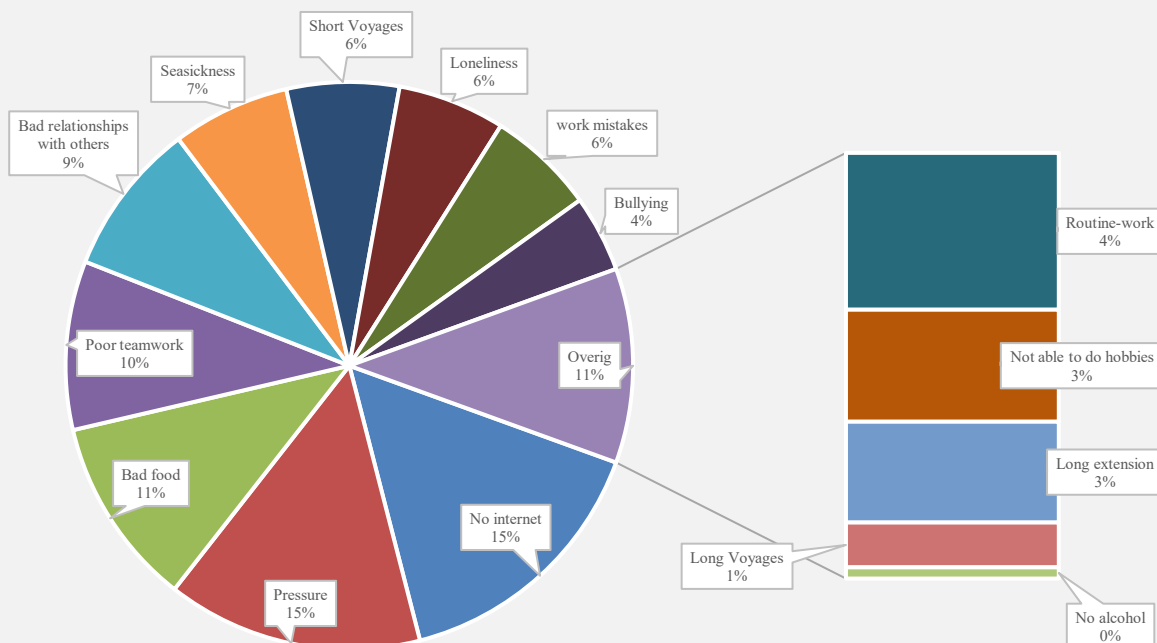


Figure 43. Total replies on Q25.

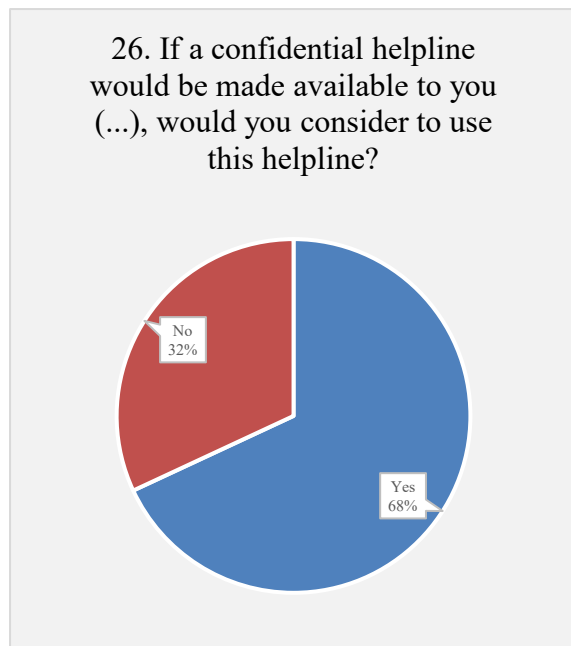


Figure 44. Total replies on Q26.

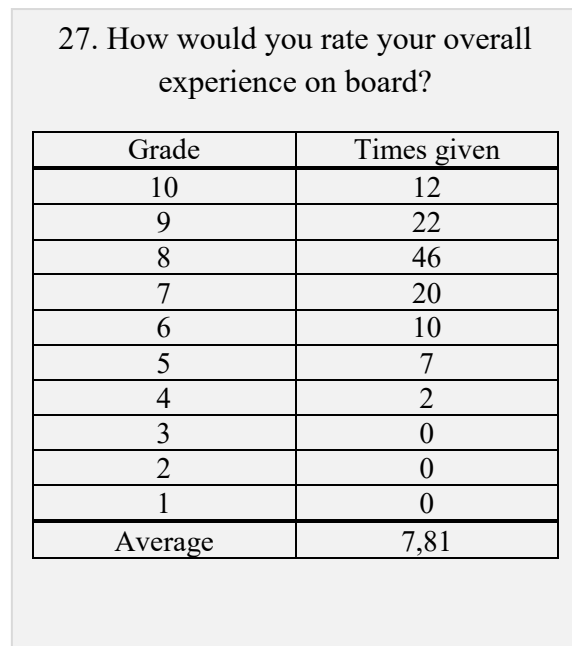


Figure 45. Total replies on Q27.

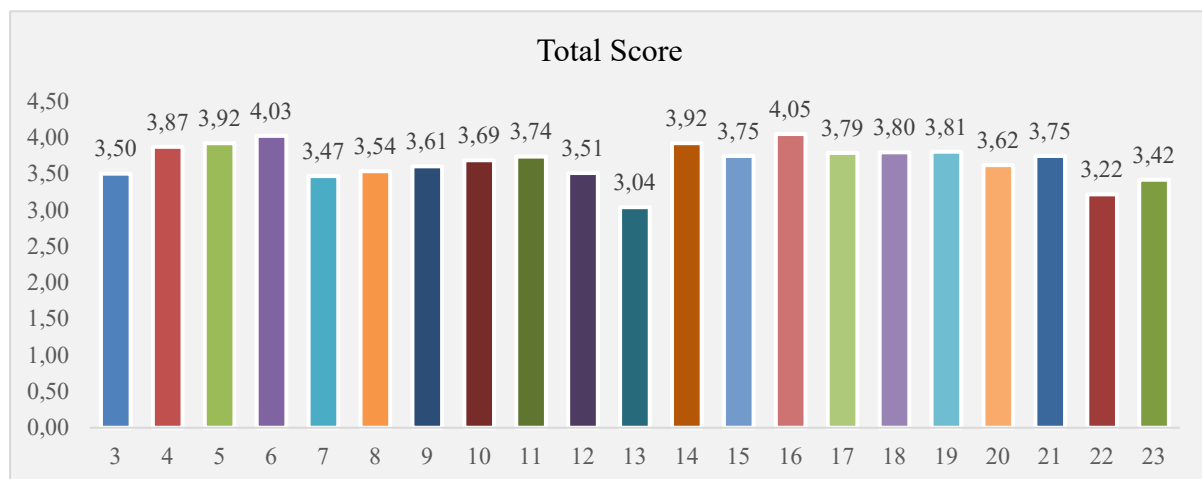


Figure 46. Total Score of all participants per Question.

A total score was calculated based on Figure 8. *Survey division per opinion*, the total score per group is not displayed because there was little difference between the scores (<1,1% of the total) and is therefore insignificant.

The total score for mental state of mind	
84,86	POSITIVE

The total score, which was obtained via calculation, is compared to the average grade which was given by all seafarers (Figure 43. Total replies on Q27.).  $\frac{84,86}{115} \times 100 = 73,8\%$  of the maximum points is earned, while the overall rating is 7,81 which is 78,1% of the total, therefore there is a 4,3% difference of total between the two.



## 5. Discussion

When perusing this research, extra clarification may be necessary to have a clear picture on the conditions under which this research was completed. This extra clarification was also added, to prevent misinterpretation of the displayed results from the survey

The paragraphs bellow gives additional information per points of attention.

### 5.1 Verification of the given information

A lot of effort was put into scientifically substantiating the information given in this research, this also counts for the survey which was spread among the seafarers participating in this research. Even though statements used in the survey are validated with the use of the ICD-10 Diagnostic criteria (World Health Organization, 1993) and more, they have not been validated by a specialized party such as a psychologist. Therefore, the information given in this research can only be seen as an **indication** of the average mental state of mind of seafarers.

### 5.2 Authentication of the hardcopies

Full authentication of the collected **hardcopy** surveys is not possible, these have been collected via the captains of the ships. Theoretically speaking it was possible for captains to not send in any ‘negative’ surveys, which will make their ship appear happier than it is in reality. It is very unlikely that such event has happened, since there is no benefit of falsifying the data for captains, but the opportunity was there.

### 5.3 Possible misinterpretation and company’s alcohol policy

The [results](#) of question number 13 of the [survey](#), require extra clarification. Throughout the survey all statements clearly indicate that it was aimed at the situation on board, however at this statement there is no such indication. This made it possible for participants to misinterpret the given statement and fill in their at **home** situation. There is yet another thing which must be kept in mind, the company’s policy on use of alcohol. On board of tanker vessels, possession and consumption of alcohol is strictly forbidden. However, on cement-tankers and dry cargo vessels, it is allowed to consume sensible amounts of alcohol (*max. 0,20 permille breath alcohol content, source not publicly available*) outside working hours.

#### 5.4 Exceptional situation due to the Coronavirus

During the conduction of this research, the virus COVID-19 disturbed the global common state of affairs. The shipping industry did not remain untouched by the consequences either, therefore daily life on board was also affected.

To protect the health of the seafarer's multiple counter measurements were taken, such as:

- Restriction of embarkation/disembarkation of seafarers in all ports. Which often translates into no crew changes depending on the home country of the off/on-signer and the port of entry.
- Restriction of ship visits by outsiders.

It means that due to these restrictions contracts of seafarers are sometimes extended with months, without sight on a possible date of return to home and without possibility to go ashore to clear the head. Another point of attention is religion, this is often a source of strength for religious seafarers while being supported by a clergyman which also functions as counsellor. But since visits were restricted, this was not possible.

All and all this can greatly impact the mental wellbeing of seafarers and therefore possibly influenced the collected results of the survey. A situation such as this falls under ascendancy for the shipping company, the health of the crew has the highest priority in this case.

However, at the time the survey was taken (03-3-2020→17-3-2020), the situation around the virus had not yet developed in such degree that serious measurements were already noticeable. Flight restrictions were not yet present, and it was still allowed to embark/disembark the ship. Therefore, it is expected that the effect by the COVID-19 virus on the collected data remains limited, this statement can however not be validated with any other data but the dates wherein collection had taken place.

#### 5.5 Self-identification of what makes you happy

In the survey seafarers were asked to self-identify what makes them happy, but it happens to be the case that humans are not good at identify the things that actually make them happy (Diener, Oishi, & Lucas, 2009). For instance, when given the choice they are very likely to be materialistic rather than improving the actual working conditions. While only a small increase in happiness will be visible when rewarding employees with more salary for instance, this created happiness will also degrade down over time.

Research shows that to increase employees' happiness over a longer period, different kind of methods are far more effective. Such as: increasing the sense of unity, fairness and interesting work. This puts the outcomes of question number 24. ([Figure 42. Total replies on Q24.](#)) in perspective.

### 5.6 Controversy in an earlier conducted study

At the beginning of this research, a similar study was consulted for the collection of the data. A study of the Seafarers International Research Centre (Sampson & Ellis, 2019) was of great help, it functioned as a guideline for the data collection method. When analysing the results of the survey, dissimilar answers are given. The things that make seafarers most happy or sad, are hardly selected as the possible options to reduce depression and anxiety for seafarers while they are on board.

### The ‘interesting’ results of the survey

Table 4. Results of the Seafarers International Research Centre

Top 5	‘What do you think companies could do to reduce depression and anxiety for seafarers while they are on board?’	Times selected	% of votes	‘What things make you saddest on board?’	Times selected	% of votes	‘What activities make you happiest on board?’	Times selected	% of votes
1	Internet/communication facilities with families	854	24,92	Missing family/home	292	14,24	Parties/social get together	386	14,46
2	Better salary/overtime/bonuses	270	7,88	Trouble with others on board/bad relationships	176	8,58	Team games/sports	271	10,15
3	Quality/quantity of food	236	6,89	Bad officers/problems with officers	158	7,70	BBQ parties	174	6,52
4	Shorter contracts/longer leave	216	6,30	Poor sleep/fatigue/lack of rest	121	5,90	Enjoy the work/job/lifestyle	151	5,66
5	Recreation equipment/facilities (generally)	158	4,61	Busy schedule/too much work/paperwork/lack of crew	115	5,61	Films/movies/TV	136	5,09
Other		1693	49,40	Other	1189	57,97	Other	1552	58,13
Total		3427	100%	Total	2051	100%	Total	2670	100%

#### Highlights:

- On the question: ‘What do you think companies could do to reduce depression and anxiety for seafarers while they are on board?’. The option **internet/communication facilities with families** was selected, by far the most times. However, on the question: ‘What things make you saddest on board?’. **No internet** if found at position number 14, as it was selected 65 times which is only 3,17% of the total.

This pattern is visible in other results as well:

**Poor salary/no advance/late payment/no overtime** is found at the 24<sup>th</sup> place, selected 20 times / 0,98% of the total. On the question: ‘What things make you saddest on board?’, but it was selected 270 times on the question ‘What do you think companies could do to reduce depression and anxiety for seafarers while they are on board?’, giving it a 2<sup>nd</sup> place of most selected answers.

This means that the number 1 and 2 replies on the question whatever the companies can do to reduce depression according to the crew, ended up at the 14<sup>th</sup> and 24<sup>th</sup> place of the question of what makes the crew sad. This is at least remarkable; a similar pattern is present on the question: ‘What activities make you happiest on board?’.

**Parties/BBQ parties/social get togethers** was selected 386 times, giving it a first place as an activity that make seafarers happy on board. But on the question: ‘What do you think companies could do to reduce depression and anxiety for seafarers while they are on board?’. It was selected only 56 times / 1,63% of the votes.

It is however not clear why seafarers selected options of improvement of which they add little value to, the existence of this pattern is not mentioned in the report of the SIRC. The mental health survey, which was used in this study, did not highlight this topic to the same extend. Therefore, it is not possible to make a similar comparison, but correlation is present with: *Self-identification of what makes you happy* (the previous topic of discussion).

## 5.7 The presence of what makes seafarers happy or sad

In the survey, questions 24 & 25 was aimed at identifying:

- The things that can make seafarers happier, while being on board.
- The things which make seafarers sad, while being on board.

The answers on questions like this, are affected by the presence or absence/shortage of a condition on beforehand. This can be best explained by the use of an example, **bullying** was put on a 10<sup>th</sup> place ([Figure 43. Total replies on Q25.](#)) by the participants on what makes them sad. This does not directly indicate that bullying is not affecting seafarers’ mood, not because they hold no value to being bullied. But mostly that bullying is not so common, therefore the effect on mood remains limited and it is identified as a smaller issue.

This also applies to the things which can make seafarers happier, positive conditions which were already available/present for a while. Were likely to be seen as normal and therefore received fewer attention, but a decrease or absence can cause (high) distress.

## 6. Conclusion & recommendations

### 6.1 Causes

It is not possible to directly point-out the single cause of depression on board, as quoted by the National Health Service: *‘There are no single causes of depression. It can occur for a variety of reasons and it has many different triggers.’* (National Health Service, 2020). As became clear earlier in the research ([2.1 Causes of a depression](#)), multiple events and conditions are deceive for one’s mood. Some of these events have a great effect on the mental state in a short period, such as work injuries. While other events and conditions require prolonged presence before the effect is noticeable.

An example of this is; whenever a crew must make overtime due to an issue which has occurred or unplanned event, it has little to no effect on the mental state. However, if a crew must make unreasonable overtime for a prolonged period without being decently compensated with rest time, fatigue will occur, and the effect is much larger.

In the surveys, seafarers were asked the question: *‘What makes you sad when being on board?’*. The top 10 most selected factors are displayed in Table 5. these are accountable for >88,9% of the total answers. The outcome of this question functioned as the most important measured figure for determining the causes of depression.

Table 5. On board conditions which make seafarers sad (referring to: [Figure 43](#))

Nr.	Factors	% of total	Times selected
1	No internet	15,5	53
2	Pressure	14,6	50
3	Bad food	10,8	37
4	Poor teamwork	9,6	33
5	Bad relationships with others	8,8	30
6	Seasickness	6,7	23
7	Short Voyages	6,4	22
8	Loneliness	6,1	21
9	Work mistakes	6,1	21
10	Bullying	4,4	15
		88,9	305

There is a connection between the data ([Figure 2](#)) of the ITF Seafarers’ Trust & Yale University study, and the answers given on the surveys of this research. The top 3 answers of this research are displayed with the corresponding answer of the ITF’s study (including de number of ranking).

### **1. No internet – 1. Isolation from family**

The biggest drawback of sailing is being away from your family and loved ones, because you are months away from home. Internet is nowadays the most convenient way to have contact with home, it creates the possibility to have live contact with family across the globe without delay. Therefore, it can greatly decrease the sense of feeling far away from home. Access to internet, means for seafarers that: the local news (of the home country) can be read daily, possibility to video call with friends/family, access to e-mail & other internet services and a source of entertainment (Lefkowitz & Slade, 2019) & (Sampson & Ellis, 2019).

### **2. Pressure/stress – 5. Supervisor demands**

All persons on board are subjected to pressure, from ordinary seaman to Captain, the rank does not matter. Ships are continuously moving; operations continue day and night. Every moment when the ship is not carrying out work, it costs big sums of money. A range of jobs must be completed to keep the ship running; therefore, everyone has goals they have to meet, often within limited time which causes stress (Lefkowitz & Slade, 2019) & (Carotenuto, Molino, Fasanaro, & Amenta, 2012).

Statement 22 of the survey gives more information on the presents of this factor, at this statement 60% of the participants gave a rating which was equal to or worse than 'Neutral'. This shows that 60% of the seafarers experience a moderate (or higher) amount of stress when on board, whereof 32% of this group experiences high or very high levels of stress when on board.

### **3. Bad food – 3. Food quality**

As visible in Table 5, food is a highly contributing factor to sadness. As it is accountable for 10,8% of the chosen answers, it ends up on a third place. This shows that food is not only important for the physical nutrition, but also for the mental wellbeing.

Therefore, as answer on sub question 1: **'What are the causes of a depression on board of a vessel?'**

No internet, pressure/stress & bad food, these are the three factors which contribute the most (40,8% of the total) to a bad mental state of mind on board of the company's vessels.

*Pressure/stress* is the main cause contributing to depressions on board, even though it is not the factor which makes seafarers the saddest (Table 5), it is more present than other factors. This can be concluded from the statements used in the surveys, overall seafarers declare to have sufficient contact with family and the food on board is good ([Figure 40](#) & [Figure 41](#)), while their answers indicate that stress is notably present.

## 6.2 Consequences

The consequences of a depression are very depended on multiple factors, such factors are: severity of the depression, size of the crew, rank of the seafarer, help of others, age of the seafarers, etc (Sampson & Ellis, 2019). Due to these variables, it is impossible to predict the exact outcome of what happens when one is sailing with a depression. However, they can be of major size; suicides, increased illness, increased amount of accidents, reduced work productivity and so on (Lefkowitz & Slade, 2019).

A sum up of consequences, caused by depression:

- Every year US\$ 18 billion is lost in the United States alone due to ‘lost productive time’ (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003).
- 4.6 suicides reported each year in Gard’s P&I mutual portfolio (Gard P.&I. Ltd., 2019).

Consequences stated in the seafarers’ mental health report (Lefkowitz & Slade, 2019):

- Seafarers with **depression** had more than twice the likelihood of a work **injury**
- Seafarers with **anxiety** had twice the likelihood of a work **injury**
- Seafarers with **suicidal ideation** had increased likelihood of a work **injury** but to a lesser degree than those with depression and or anxiety
- Seafarers with **depression** had twice the likelihood of an **illness** at work
- Seafarers with **anxiety** had more than twice the likelihood of an **illness** at work
- **Suicidal ideation** was not independently associated with increased likelihood of **illness**

### 6.3 Law

As agreed on earlier ([2.3 Protection by law](#)), the Maritime Labour Convention (MLC) 2006 is the main pillar of protection on maritime working and living conditions (Seafarers' Rights International (SRI), 2020). Even though 'mental health' protection is not explicitly mentioned in the MLC, it does cover it. It was decided to omit the Guidelines On Fatigue (The Maritime Safety Committee, 2019) from this study, because as the name already says, it are only guidelines and these cannot be enforced by an external party. Therefore, they offer little to no protection for seafarers and hold little value for this study, it is however always good practice to follow these guidelines as they are based on scientific evidence.

The researcher had the ability to speak to a few Captains of the company, who started sailing before the implementation of MLC. According to these Captains, the MLC was a leap forward compared to earlier legislation. As it provided more defined and applicable to all, regulations. The ILO states that the MLC was created because of: *'The desire to create a single, coherent instrument embodying as far as possible all up-to-date standards of existing international maritime labour Conventions and Recommendations.'* Therefore, the few Captains which was spoken to, confirm that this goal was achieved, however more research is required on the effectiveness of the MLC to support this.

#### **So, how does the law protect Seafarers mentally?**

Seafarers are mentally protected under the Maritime Labour Convention (2006); this special protection was required as seafarers can be exempted from national labour laws. After theoretical examination of the MLC (2006), it was concluded that: the MLC provides clear and defined regulations for measurable factors. However, the MLC (2006) lacks in providing clarity for lesser-measurable factors. Room for interpretation is left for multiple factors which are important for the mental state of mind, such as: food, entertainment, prevention of noise and vibration, etc.



## 6.4 General state of mind

As per the collected surveys during the research, an average score of the mental state of mind was calculated based on these received surveys. This was to answer the sub question: **What is currently the general mental state of mind on board of vessels?** To know if improvement was needed, it was necessary to know what the current state was. As statements were given in various fields of the mental state of mind, it was made possible to monitor the presents or absence of multiple positive/negative factors. Such as job satisfaction, happiness, self-confidence and social conditions.

The average points earned per survey is: **84,86**. Therefore, when following the [grading system](#) earlier constructed in the research, the general mental state of mind on board of the company's vessels is **Positive** ([Appendix 4: Results of the survey](#) displays how the final score was calculated). It falls 11,54 points short of falling within the 'Good' sector. Overall the most positive replies were received on statements 16, 6 & 14, with scores of 4,05, 4,03 & 3,92. These numbers indicate that the participants are having enough contact with family, see themselves as valuable members of the crew and get satisfaction out of their job.

The result is far from negative, as 73,8% of the total points was earned, yet it is missing 26,2% / 30,14 points short for a 'perfect' score (100%). However, the sensibility for a collective improvement method, is debatable. To give a theoretical **indication**, a calculation was done. Wherein a cost-effective analysis (World Health Organization, 2003) is used, with the most basic exponential formula ( $x^2$ ). As wherein the cost is displayed as resources and the effectiveness as mental health score, this mental health score represents the percentage of points earned on the survey.

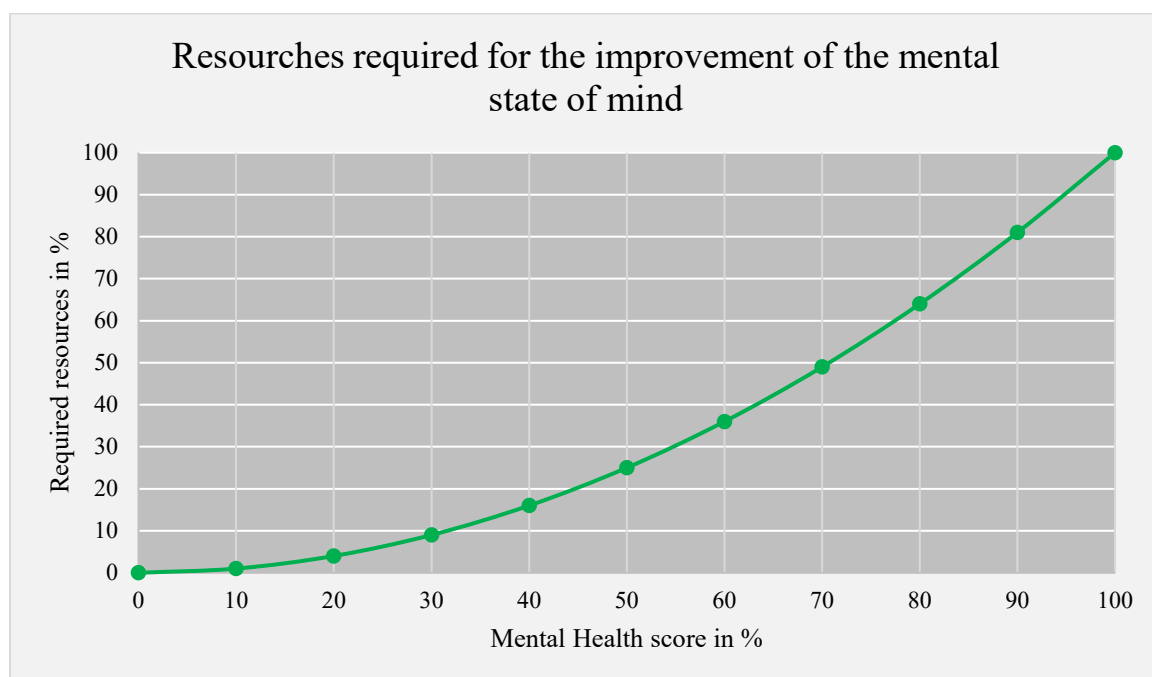


Figure 47. Increasing costs of resources vs Mental Health score

As visible in the [Figure 47](#), to achieve 50% of the mental health score an investment of 25% of the total resources is required. While the required investment of resources is doubled when opting for 70% of the mental health score, so with the measured score of 73,8% an investment of 54,46% is applicable. Therefore, if the company wants to increase the mental state of mind to good (96,4 points / 83,8%), an investment of 70,2% in resources is required. Which means that the cost of resources is increased by 22,4% to increase the Mental Health from 84,86 points to 96,4 points, an increase of 13,6% in score.

## 6.5 Recommendations

The mental health of seafarers on board of the company's ships was '[positive](#)' at the time the survey was conducted, this means that during that time no urgent intervention was required. The situation on board saw rapid changes after the survey was conducted, as COVID-19 restricted many seafarers to be signed off for sometimes months. The researcher does not have sight on the possible effects on mental health of seafarers, caused by the pandemic. Therefore, the general state of mind, which was calculated, may be very different during these highly unusual times. As recommendation was constructed based on information gathered during 'normal' times, the validity may be different during these times.

But if the situation had remained unchanged; **What can be done to improve mental health on board of a vessel?**

The top 3, actions which the company can undertake to improve overall mental health:

1. Equip (if not already) all ships with a fast & stable internet connection, with sufficient data capacity so crewmembers are able to: read local news, (video)call family, send e-mails, access other internet services and use it as a source of entertainment. It is suggested to define the terms of fast, stable, and sufficient internet. In a collaboration between, the provider of the satellite internet and the crew on board. The answers to questions 24 and 25 of the questionnaire, show that seafarers attach a lot of value to internet, therefore this answer has come out on top.
2. Reduce pressure/stress, the availability of time is herein a very important factor. When a tight schedule must be followed, it can feel like fighting against the clock. Since pressure/stress ended up on top, as the main cause of decreased mental health. The company is advised to further investigate this topic; what is the cause of this pressure/stress, how is this issue experienced on board and what is the possible solution.
3. Improve food quality, in the [results](#) it was clear that food is very important for the mental wellbeing of the crew. Two other studies emphasize the importance of having good quality food (Lefkowitz & Slade, 2019) & (Sampson & Ellis, 2019). The following recommendation to shipping companies, was made in the seafarers' mental health and wellbeing study: '*Varied, good-quality food should be provided on board and a feeding rate of at least US\$11.00 per person should be allocated to each vessel.*' (Sampson & Ellis, 2019).

Most seafarers indicated that they were satisfied with food being served on board, but as visible in [Figure 40](#) there is still room for improvement since it such an important factor.

Therefore, the company is advised to continuously invest resources in improving food quality, this can be achieved by giving trainings to current chefs, hiring better chefs and enlarging the food budget.

At last, the question added on request of the participating shipping company: *'If a confidential helpline would be made available to you (where you can speak about your mental state of mind in your own language), would you consider to use this helpline?'*. 68% of the participants state that, they would consider making use of this helpline when the situation calls for it. A helpline can therefore be considered as good option for those who are struggling with their mental health, it however does not prevent depression, but possibly limits the consequences.

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## Appendix 1: Letter for Captain

### Mental Health Survey 2020

1 March 2020

Dear Captain,

I'm a student at HZ University of Applied Sciences, currently I'm doing my last internship on board of the [REDACTED]. Before I can graduate as a Maritime officer, I must complete a Thesis. Recently multiple scientific reports were published about the mental health of seafarers, a key finding stated in one of the reports is: *'25% of seafarers completing a patient health questionnaire had scores suggesting depression'* (Sampson & Ellis, 2019).

I found it quite shocking that ¼ seafarers seems to be depressed. Therefore I chose to do my Thesis about the Mental Health of Seafarers, in specific aimed at ways to improve mental health on board of a vessel.

I will be collecting data via surveys and I need at least 30 participants (preferably 50) to justify my findings from the surveys. This is also the reason why I'm writing you this letter, since I'm depending on the Captain for spreading my survey among the crew.

Some information about the surveys:

- Surveys are completely anonymous, no personal details are required.
- The survey takes about 10 minutes to complete, questions are mainly centred around personal wellbeing.
- A digital variant is available as well, details about this can be found on the survey document. The digital variant can be filled in via computer or smartphone, creates less paperwork and all surveys come directly to me.
- If the paper variant is being used, I hope a small spot can be made available were crew members can put the document in all privacy. The paper variant is collected by the Captain and then send to the office, via the office the document comes to me. Please handle the documents with great care.

I'm hoping you are willing to help me with my research, it is greatly appreciated.

Yours sincerely,



Bjorn Mast



## Appendix 2: Mental Health Survey (Hard copy)

Mental Health Survey 2020

Version 1.5 02-03-2020

Introduction
<p>Dear seafarer, my name is Bjorn Mast and currently I'm doing my second internship on board of the [REDACTED]. To graduate as an Maritime Officer a Thesis must be made, for this Thesis I am researching ways to improve mental health on board of a vessel. You are able to help me with my research.</p> <p>Life on board can be tough. Recent reports show that not all seafarers are happy on board, on the long term it may result in a depression or worse.</p> <p>Of course it's very important that everyone can do their job in a positive and safe environment, that's why I am doing this survey. By answering the statements, I will be able to identify the general state of mental health on board and what can be done to improve this.</p> <p>The survey consists of 28 statements/questions and takes about 10 minutes, please answer in all honesty.</p> <p>A digital variant is available as well, for computer or smartphone. <u>Easier</u> and more <u>quick</u> to fill-in, go in your browser to: <a href="https://forms.gle/[REDACTED]">https://forms.gle/[REDACTED]</a> or scan the QR-Code on the bottom of the next page with the camera of your phone.</p>

Privacy statement <b>Please read!</b>
<ul style="list-style-type: none"> <li>- The survey is completely anonymous, do <b>not</b> put your name, gender, age or nationality on the document. This is to guarantee total privacy.</li> <li>- The collected data will be used for educational purposes only.</li> <li>- The end result of all surveys will be shared with the Nautical Institute I am studying at.</li> <li>- By filling in the survey, you agree to the privacy statement.</li> </ul>

For answering the statement, fill the box below the number which matches your thoughts the most. See the chart below for an explanation of each number.

Explanation	2 = Disagree	4 = Agree
1 = Strongly disagree	3 = Neutral	5 = Strongly agree

Number	Question	Answer				
1	What type of vessel are you currently working on? <i>Fill the box for the answer which applies to you.</i>	Tanker				
		Cement tanker				
		Dry cargo				
2	What is your position on board? <i>Fill the box for the answer which applies to you.</i>	Rating		Officer		
3	Being on board makes me feel happy.	1	2	3	4	5
4	I feel appreciated by my colleagues.	1	2	3	4	5
5	The company I work for appreciates me and my well-being.	1	2	3	4	5
6	I see myself as a valuable member of the crew.	1	2	3	4	5
7	When I am on board, I feel as confident as at home.	1	2	3	4	5
8	I get at least 7 hours of sleep per day.	1	2	3	4	5
9	During the day I feel energized.	1	2	3	4	5
10	In the morning I have no trouble getting out of bed.	1	2	3	4	5

1/2

Mental Health Survey 2020

Version 1.5 02-03-2020

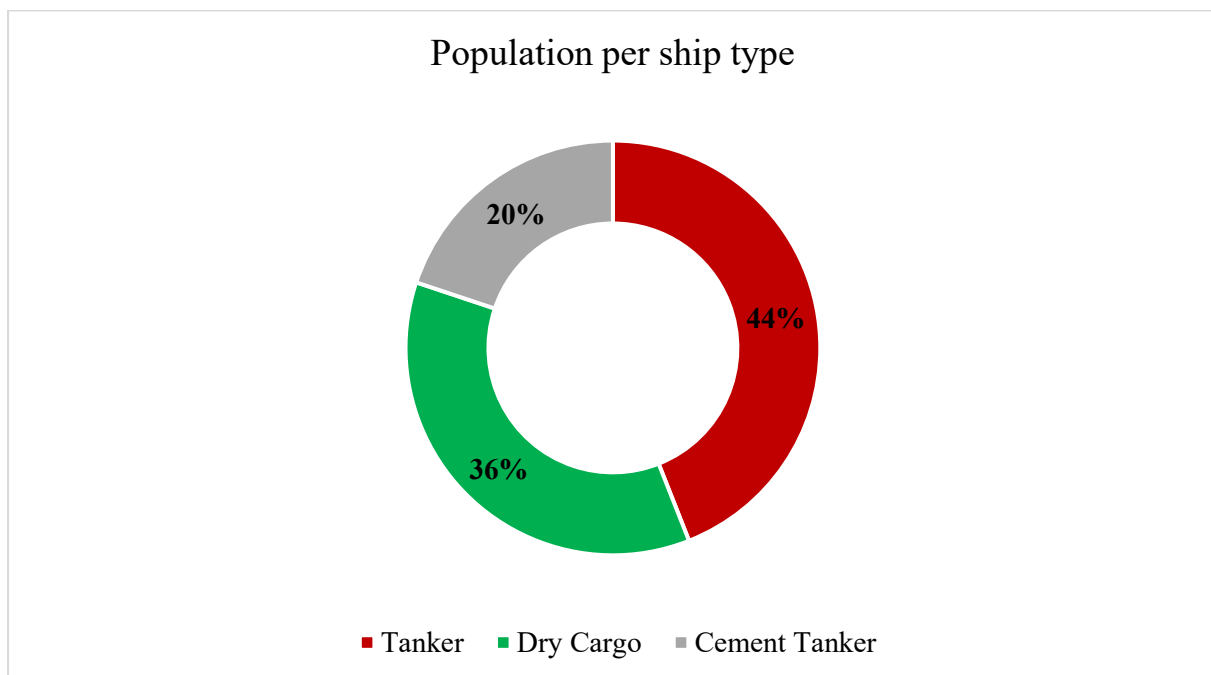
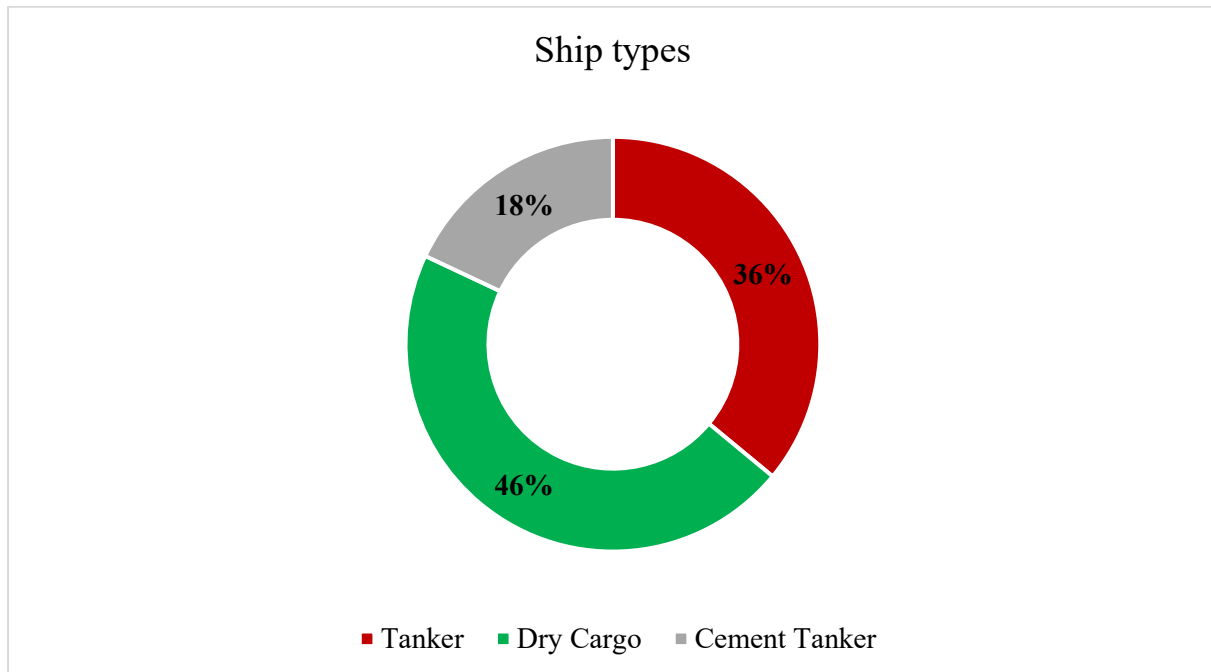
11	The food being served on board is tasty and nutritious.		1	2	3	4	5
12	My bodyweight doesn't change a lot when I'm on board.		1	2	3	4	5
13	I consume less than 2 alcoholic drinks per day.		1	2	3	4	5
14	I get satisfaction out of my job.		1	2	3	4	5
15	The work I do every day, makes me happy.		1	2	3	4	5
16	I have enough contact with my family.		1	2	3	4	5
17	I like having interaction with other crewmembers outside working-hours.		1	2	3	4	5
18	I'm able to share what's on my mind with other crewmembers.		1	2	3	4	5
19	My feelings and emotions are respected by other crewmembers.		1	2	3	4	5
20	I notice the effects of the company's Health and Safety campaign during standard workdays.		1	2	3	4	5
21	I feel safe when I'm on board.		1	2	3	4	5
22	I experience little stress when I am on board.		1	2	3	4	5
23	Depressions on board are uncommon to me.		1	2	3	4	5
24	What can the company do to make you happier on board? (Choose 3 and circle them)	Unlimited internet / organized social events / shore leave / mental health trainings / quality of food / bigger crew / more continuous sleep / video games / shorter contracts / team sports / higher salary / variation in ships routing / provide training for promotion / better safety equipment / better accommodation / movies / exercise facilities / books & newspapers					
25	What makes you sad when being on board? (Choose 3 and circle them)	Bullying / bad food / routine-work / pressure / loneliness / seasickness / poor teamwork / long extension / No internet / not able to do hobbies / long voyages / short voyages / no alcohol / work mistakes / bad relationships with others					
26	If a confidential helpline would be made available to you (where you can speak about your mental state of mind in your own language), would you consider to use this helpline?		Yes		No		
27	How would you rate your overall experience on board?		Give a grade from 1 to 10				
28	Room for a suggestion or comment about this topic.	<div></div> <div></div> <div></div>					



Thank you for participating in this survey and always take care of you and your shipmates mental health. Do not hesitate to start a discussion about feelings, it's not a shame to feel down.

QR-Code to the digital survey.

### Appendix 3: Total population details of all ships



Source not publicly accessible due to privacy restrictions.

## Appendix 4: Results of the survey

S. DISAGREE DISAGREE NEUTRAL AGREE S. AGREE	1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	2	0	0	0	0	3	5	7	8	9	11	9	0	2	0	0	1	0	2	4	18	13	0	0	0	0
	3	0	4	0	0	11	11	7	7	9	15	10	1	2	1	1	0	7	35	48	42	42	0	0	0	0
	4	55	33	18	17	47	29	37	28	35	37	22	28	37	21	36	34	0	37	34	48	52	0	0	0	0
	5	51	68	80	82	43	63	67	61	55	54	12	69	69	61	89	68	68	65	65	42	42	0	0	0	0
TOTAL		8	18	17	20	15	11	7	18	21	12	36	21	11	34	13	15	14	10	15	6	12	0	0	0	0

S. DISAGREE DISAGREE NEUTRAL AGREE S. AGREE	1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	2	6	0	8	0	22	22	14	18	14	30	38	2	4	4	2	2	0	14	8	36	26	0	0	0	0
	3	165	99	54	51	141	87	111	84	105	111	66	54	111	63	108	102	111	105	102	144	156	0	0	0	0
	4	204	272	320	328	172	252	288	244	220	216	48	276	276	244	276	272	272	280	280	168	164	0	0	0	0
	5	40	90	85	100	75	55	35	80	105	80	180	105	55	170	65	75	70	50	75	30	60	0	0	0	0
TOTAL		350	387	392	403	347	354	361	389	374	351	304	392	375	405	379	380	381	382	375	322	342	0.00	0.00	0.00	7.81

ENDSCORE	84.86	POSITIVE
119 CREW		