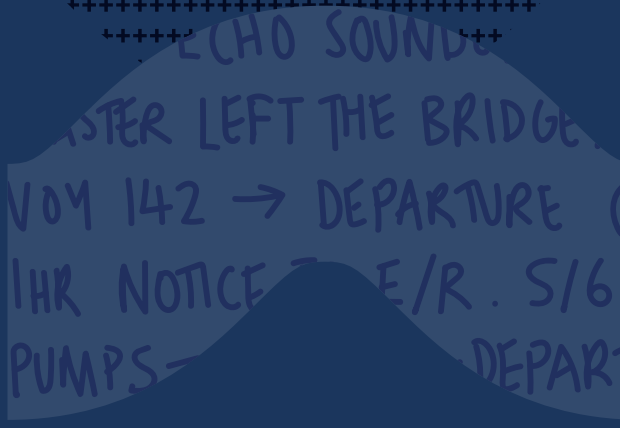
In Search of a Sea-Life Balance in an Adverse Environment

Understanding Seafarers' Life, Work and Turnover





WMU WORLD MARITIME UNIVERSITY

About the authors

Capt./Dr. Bikram S. Bhatia, Prof./Capt. Raphael Baumler, and Dr. Maria Carrera-Arce of the World Maritime University join their social science expertise with their seafaring background to participate in research to enhance occupational safety and health and safety at sea.

DOI: http://dx.doi.org/10.21677/251125
ISBN: 978-91-990758-5-3 (online)

The Officers' Union of International Seamen OUIS is a Swiss-based association founded in 1994 to further the interests of deck and engineering officers working on board US beneficially owned vessels. It is recognised by, and works closely with, the ITF and is an active member of the Nautilus Federation, which joins together unions of maritime professionals.

OFFICERS UNION OF INTERNATIONAL SEAMEN
Recognized by the ITF
NAUTILUS FEDERATION Member
c/o Kaeferholzstrasse 40 - 4058 Basel, Switzerland
E: ouis.bsl@bluewin.ch T: +41 (0) 78 753 70 10

Table of Contents

List of Tables 4

List of Figures 4

Abbreviations and Acronyms 5

Acknowledgements 6

Disclaimer 7

Recommended citation for the full report 7

Executive Summary 8

1. Background 12

2. Methods 14

3. Results 16

3.1 Seafarers' socio-demographic and work-related characteristics 17

3.2 Report structure 18

3.3 Work pattern (Onboard and home periods) 20

3.4 Working hours from weeks to years 30

3.5 Work-related stress 41

3.6 Safety Management System 46

3.7 Shore leave 59

3.8 Screening mental well-being 64

3.9 Career intention 67

4. Synthesis 72

5. U.S. seafarers: A conclusion 75

References 77

List of Tables

Table 1	Survey data screening steps	17
Table 2	Respondents' socio-demographic and work-related characteristics	19

List of Figures

Figure 1	Actual onboard period of seafarers: (a) Average contract length (onboard period); (b) Percentage distribution	21-22
Figure 2	Preferred onboard period of seafarers	24
Figure 3	Home period of seafarers	26
Figure 4	Actual - Annual working period of seafarers	28
Figure 5	Preferred - Annual working period of seafarers	29
Figure 6	Weekly work hours of seafarers: (a) Average weekly work hours; (b) Distribution of weekly work hours	31
Figure 7	Annual working hours of seafarers	33
Figure 8	Weekly day off for seafarers	34
Figure 9	Seafarers working beyond eight hours daily	36
Figure 10	Working hours' impact on rest and recovery among seafarers	37
Figure 11	Adjustment of work/rest hours record among seafarers	38
Figure 12	Workplace stress score of seafarers	42
Figure 13	Heat map showing the ranking of stress-related activities among seafarers	44
Figure 14	Estimated number of SMS pages among seafarers	47
Figure 15	Perception of SMS's size among seafarers	48
Figure 16	Relationship between the number of SMS pages and its perceived size among seafarers	49
Figure 17	Seafarers' responses to the statement "The SMS procedures are generic and not ship-specific"	52
Figure 18	Seafarers' responses to the statement "The SMS procedures always reflect the ship's realities"	53
Figure 19	Seafarers' responses to the statement "The SMS-related paperwork is simple and does not require too much time"	54
Figure 20	Proportion of seafarers who submitted a request to change SMS quality	56
Figure 21	Perceived company responsiveness to ship requests among seafarers	57
Figure 22	Frequency of shore leave during the recent contract among seafarers	59
Figure 23	Heat map showing barriers to shore leave among seafarers	61
Figure 24	WHO-5 well-being scale scores among seafarers	65
Figure 25	Career intention among seafarers	68

Abbreviations and Acronyms

AMOSUP	Associated Marine Officers' and Seamen's Union of the Philippines
BIMCO	Baltic and International Maritime Council
CFR	Code of Federal Regulations
CON-RO	Container-Roll-on roll-off
HIMT	Hindustan Institute of Maritime Training
IFSMA	International Federation of Shipmasters' Associations
ILO	International Labour Organization
IMO	International Maritime Organization
IMarEST	Institute of Marine Engineering, Science and Technology
ISM	International Safety Management
ITF	International Transport Workers' Federation
JSA	Job Safety Analysis
MAAP	Maritime Academy of Asia and the Pacific
MTWTU	Marine Transport Workers' Trade Union of Ukraine
MLC	Maritime Labour Convention
MPV	Multi-Purpose Vessel
NI	The Nautical Institute
NTSB	National Transportation Safety Board
OECD	Organisation for Economic Co-operation and Development
OUIS	Officers' Union of International Seamen
PCC	Pure Car Carrier
RAA	Response Assurance Anonymity
REC	Research Ethics Committee
Ro-Ro	Roll-on roll-off
SHIPCONREP	Shipping Industry Confidential Reporting
SIRC	Seafarers International Research Centre
SMS	Safety Management System
SPSS	Statistical Package for the Social Sciences
U.S.	United States
WHO	World Health Organization
WHO-5	WHO-5 Well-Being Index
WHEAB	Work & Health Balance at Sea
WMU	World Maritime University

Acknowledgements

World Maritime University (WMU) expresses its gratitude to the Officers' Union of International Seamen (OUIS) for funding this research.

The researchers express their sincere gratitude to seafarers, especially the 4,372 individuals who shared valuable insights on work-life balance at sea.

Sincere thanks go to the organisations who unwaveringly supported the promotion of the survey: Alumni Society of Maritime Academy of Asia and the Pacific (MAAP), Associated Marine Officers' and Seamen's Union of the Philippines (AMOSUP), Baltic and International Maritime Council (BIMCO), Hindustan Institute of Maritime Training (HIMT), Institute of Marine Engineering, Science and Technology (IMarEST), International Federation of Shipmasters' Associations (IFSMA), International Organization of Masters, Mates & Pilots (IOMMP), International Transport Workers' Federation (ITF) Seafarers' Trust, Marine Engineers' Beneficial Association (MEBA), Marine Transport Workers' Trade Union of Ukraine (MTWTU), Nautilus International, Norwegian Union of Marine Engineers, The Nautical Institute (NI), and Shipping Industry Confidential Reporting (SHIPCONREP).

The researchers express their gratitude to individuals from maritime administrations, universities, classification societies, shipping companies, and unions, among others, who promoted the survey through their networks.

Finally, the research team extends gratitude to maritime news outlets, gCaptain and Marine Insight, for publicising the survey.

Disclaimer

The findings, their interpretations, and conclusions expressed in this report are entirely those of the authors. The designation employed and the presentation of the material in all parts of this report do not imply the expressions of any opinion whatsoever on the part of the World Maritime University, nor of the Officers' Union of International Seamen.

This report, as well as any data and/or any map included herein, is without prejudice to the status of or sovereignty of any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city, or area. Any reference to firms or commercial products does not imply their endorsement by the World Maritime University.

No representation or warranty is provided as to the accuracy or completeness of the information and data contained in this report. Such information and data are considered current as of the date of this report. There is no obligation or intention to update the information and data at any time after the date of this report. The report contains information or data obtained from third parties. While it is believed that any third-party information is accurate and given in good faith, all such third-party information or data has not necessarily been independently verified.

Nothing herein shall constitute or be considered to be a limitation upon or waiver of the privileges and immunities of the World Maritime University, in accordance with its Charter and as provided for in the Convention of Privileges and Immunities of the Specialised Agencies of 21 November 1947, including Annex XII, as amended.

This report is copyrighted under the Universal Copyright Convention.

Information and short excerpts from this report may be reproduced without consent, except for images whose copyright is identified, on the condition that the complete reference of the publication is given.

An application should be made to World Maritime University, PO Box 500, SE 201 24 Malmö, Sweden, or by email: info@wmu.se, for additional rights.

Recommended citation for the full report

Bhatia, B.S., Baumler, R., Carrera-Arce, M. (2025). In search of a sea-life balance in an adverse environment: Understanding seafarers' life, work and turnover. World Maritime University. http://dx.doi.org/10.21677/251125

Executive Summary



The Officers' Union of International Seamen (OUIS) commissioned the World Maritime University (WMU) to conduct the Work & Health Balance at Sea (WHEAB) project to examine some dimensions of seafarers' working lives.

Building on exploratory interviews, a survey was designed and administered. The current report presents findings on work pattern (onboard and home periods), working hours, work-related stress, safety management system, shore leave, mental well-being, and career intention.

The survey gathered responses from 4,372 seafarers, mainly from India (n=1,098; 25.1%), the Philippines (n=690; 15.8%), the United States (U.S.) (n=501; 11.5%), and other worldwide regions (n=2,083; 47.6%). The overrepresentation of U.S. seafarers, especially at higher ranks, was intentional, as this group was the primary target.

Key findings for U.S. seafarers compared to the total sample are summarised below:

Work pattern

U.S. seafarers averaged **3.7 months** per contract and expressed a preference for shorter onboard periods (**2.8 months**). For comparison, the global average was **5.7 months** onboard period, with a preferred period of **4.5 months**.

On average, U.S. seafarers spent about **6.5 months** at sea per year, but would appreciate a **13% reduction** in their annual sea time. On the other hand, the world average was reported at **7.3 months** at sea per year.

Working hours

U.S. seafarers reported the longest weekly hours (**79 hours** per week), with **94.8%** having no weekly day off. The global average was **71.3 hours** per week, with **86.2%** of seafarers having no day off per week.

About half of U.S. seafarers (**52.9%**) admitted adjusting work/rest records to cover the violation. In the overall sample, **64.0%** of seafarers reported adjusting their records, demonstrating a stark stability over the last two decades.

On a yearly basis, seafarers reported working more or far more than their shore counterparts. U.S. seafarers reported working an average of **2,225 hours** per year, which is similar to global seafarers (**2,275 hours**) but **26.1%** higher than the average U.S. shore workers (**1,765 hours** per year).

Work-related stress

U.S. seafarers reported marginally higher stress levels than other groups. Worryingly, one-third of U.S. seafarers exhibited stress levels considered severe and potentially dangerous (**33.9%**), close to the global average of **32.8%**.

U.S. seafarers identified ship inspections as the primary stressor, followed by onboard administrative duties, company communication, and port-related activities. This order of stressors was quasi-similar for all seafarers.

Safety Management System (SMS)

U.S. seafarers reported the most negative experiences across all measured SMS dimensions compared to other groups.

79.0% of U.S. respondents declared their SMS as too long, compared to **66.0%** of the total sample.

Two-thirds (**66.3%**) of U.S. seafarers found SMS procedures generic and not ship-specific; similarly, **60.6%** of global seafarers confirmed this.

71.0% of U.S. seafarers reported that their SMS did not reflect shipboard realities, considerably higher than the global average (**45.1%**).

Furthermore, **68.6%** of U.S. seafarers considered SMS difficult and paperwork excessively time-consuming, compared to **59.3%** globally.

About half (**51.6%**) of U.S. seafarers had submitted feedback to improve SMS; among them, **64.9%** reported that their input was not taken seriously. Globally, **48.2%** reported that their input was not considered.

Shore leave

While shore leave access seemed comparatively better for U.S. seafarers than for seafarers overall, it remained severely restricted in both groups, with **68.5%** vs. **76.9%** reporting that they never or rarely go ashore.

Workload and insufficient port time remained the top barriers across the U.S. and other groups.

Mental well-being

The WHO-5 questionnaire revealed that nearly half (**48.2%**) of U.S. seafarers reported poor mental well-being, well above the average (**37.2%**) and the general population.

Career intention

Worryingly, nearly half of the whole sample expressed the intention to quit seafaring within the next five years by exhibiting various stages of preparation.

Less than half of U.S. seafarers (**40.2%**) intended to stay in a sea career over the next five years, slightly lower than the overall sample (**45.2%**).

Notably, poor mental health was commonly reported by U.S. seafarers planning to quit (**65.3%**) compared to those intending to stay (**34.9%**).

While U.S. seafarers benefit from shorter contracts, this advantage is hampered by excessive workloads, demanding administrative burdens, extended work hours, high work stress, and severely limited shore leave. The combined effects of inspection pressure, administrative burden, and challenging communication with companies dangerously elevate unsustainable stress levels among seafarers, particularly U.S. seafarers. The impacts of such high stress are confirmed by widespread reports of poor mental well-being, potentially leading to mental health troubles.

Work-related factors and dissatisfaction with well-being trigger an alarming response among seafarers, with nearly half intending to exit the industry in the near future.

Addressing job stress and pressure is critical to safeguarding seafarers' health and well-being and to ensuring the sustainability of the maritime workforce.

Without serious, immediate consideration for seafarers' welfare, the shipping industry as a whole, and the U.S. maritime sector in particular, may face a recruitment crisis and the loss of vital operational know-how.

01

Background



This report presents survey findings from Phase Two of the Work & Health Balance at Sea (WHEAB) project and builds on the interview results from Phase One[1].

Together, these two phases report the findings of the one-year project funded by the Officers' Union of International Seamen (OUIS) and undertaken by the World Maritime University (WMU).

The study focused on several interrelated areas that were explored during Phase One and quantified in Phase Two.

1 Full details of the interview process and findings are available on the 'Phase One' report: https://commons.wmu.se/lib_reports/94



02

Methods

WMU developed an online survey based on the Phase One interview findings.

While areas such as work pattern (onboard and home periods), hours of work and rest, Safety Management System (SMS), shore leave, and career intention were retained and assessed through ad-hoc survey questions, two changes were introduced:

- First, time pressure was replaced with a broader, validated workplace stress scale [1]. This scale comprises eight questions on a five-point Likert scale. Scores ranging from 1 to 20 indicate low stress, while scores from 21 to 40 indicate moderate to potentially dangerous levels of stress.
- Second, mental well-being was assessed using the validated World Health Organization-five well-being (WHO-5) index [2]. It includes five questions rated on a six-point Likert scale (0–5). Raw scores, ranging from 0 (worst possible mental well-being) to 25 (best), are converted to a percentage by multiplying by four. "A percentage score below 50 (or a raw score below 13) has been suggested as a cut-off for poor mental well-being and as an indication for further assessment for the possible presence of a mental health condition."

Finally, the survey covered the following domains, presented in Section 3 below in sequence:

- work pattern (onboard and home periods);
- working hours;
- work-related stress;
- SMS;
- shore leave;
- mental well-being; and
- career intention.

These areas were primarily queried using closed-ended questions, with open-ended items capturing qualitative insights at the end of each section. All questions were voluntary, except those related to socio-demographic and work characteristics.

Two maritime experts reviewed the survey, and OUIS agreed on the proposed content prior to dissemination.

Ethical approval was obtained from the WMU Research Ethics Committee (REC) [Approval No. REC-25-132(R)]. Participation required informed consent, and anonymity was safeguarded by omitting personal identifiers and using the Response Assurance Anonymity (RAA) feature in the survey tool 'QuestionPro.'

Eligibility was restricted to seafarers who had sailed in 2013 or later or were currently working at sea.

The survey was promoted through social media channels and with the support of many organisations.

The survey was made available in English and Chinese[2] and remained open from February to July 2025.

2 The Chinese version was added later to encourage responses from Chinese seafarers.

03

Results



In total, 6,307 surveys were initiated and systematically screened in SPSS (version 29.0.0.0 - 241). A thorough screening identified valid responses (See Table 1). For each question, valid responses are reported as 'n,' as some participants skipped items due to the survey's voluntary nature.

Table 1: Survey data screening steps

No.	Steps	Excluded responses	Remaining responses
0	Number of surveys initiated	–	6,307
1	Only clicked on the survey link	1,267	5,040
2	Declined to respond	53	4,897
3	Answered only questions on socio-demographics and work characteristics	526	4,461
4	Gave unusual response/ Straight-lined through all Likert responses	89	4,372

Finally, the analysis was based on 4,372 responses, representing 11.5 times the recommended sample size for the seafaring population, thereby strengthening the validity of the study's findings [3]—[5].

3.1 Seafarers' socio-demographic and work-related characteristics

Respondents represented 99 nationalities, with 84.4% from the top 15. The three largest groups were from India (25.1%), the Philippines (15.8%), and the United States (U.S.) (11.5%) (see Table 2). This high number of U.S. seafarers was the result of a targeted effort, as the commissioning organisation expected a specific focus on this group.

As this study focuses on U.S. seafarers, comparisons are presented with the two most represented nations—India and the Philippines, both of which are among the world's largest seafaring nations—as well as the overall/whole sample [6], [7].

Female participation was highest among U.S. respondents (11.8%), followed by 1.6% in the Philippines, and 0.5% in India.

Age patterns also diverged: U.S. seafarers were generally older, with more than one-fifth above 60 years old, while over 70% of Indian and Filipino seafarers were under 40 years old.

Experience levels reflected these age differences. A quarter (25.1%) of U.S. respondents had more than 30 years at sea, compared with only 6-7% in India and the Philippines. At the other end, over 40% of Indian and Filipino respondents had less than 10 years of experience, compared with about one-third of the U.S. sample.

Rank distribution also varied. U.S. respondents had a higher proportion of captains (20.2%) and chief engineers (16.2%), while Indian and Filipino respondents were more often engineers, deck officers, or ratings.

Employment status showed further contrasts. A large majority of Filipino respondents (82.3%) were currently on board, compared with 42.3% of Americans and about one-third of Indians. The U.S. group had the highest share of respondents out of contract or unemployed (18.0%), and the highest proportion working ashore (11.2%).

Finally, vessel type differed across countries. Cargo ships were the most common among U.S. respondents (60.3%), whereas tankers accounted for nearly two-thirds of responses from Indians and Filipinos. Passenger, offshore, and service vessels were smaller segments but more common among U.S. seafarers.

3.2 Report structure

Considering that the research project collected both quantitative and qualitative data, each section integrates this diversity of data sources and follows the sequence outlined below:

a. Key findings.
b. Quantitative data provides numerical results. To identify similarities and differences, U.S. seafarers' responses (the primary focus of this report) are compared with those of the two largest respondent groups (India and the Philippines) and with the overall/whole sample.
c. Qualitative data is included in boxed sections presenting supplementary insights from Phase One interviews and open-ended survey comments, where available.
d. Related literature: When relevant, findings are contextualised through comparison with existing research.
e. Remarks: Whenever deemed necessary, additional remarks were included.

Table 2: Respondents' socio-demographic and work-related characteristics

	United States (n=501, 11.5%)	**India** (n=1,098, 25.1%)	**Philippines** (n=690, 15.8%)	**Others** (n=2,083, 47.6%)	**Total** (n=4,372, 100%)
Characteristics	(%)	(%)	(%)	(%)	(%)
Age group (years)					
18 or younger	-	-	-	0.1	Less than 0.1
More than 18 to 30	21.6	27.1	27.7	20.4	23.4
More than 30 to 40	22.8	44.3	36.7	37.8	37.5
More than 40 to 50	17.8	18.8	22.9	21.9	20.8
More than 50 to 60	16.8	7.1	9.6	13.0	11.4
More than 60	21.2	2.7	3.2	6.8	6.9
Gender					
Female	11.8	0.5	1.6	5.6	4.4
Male	87.4	99.1	96.5	93.8	94.8
Prefer not to say	0.8	0.5	1.9	0.6	0.8
Seafaring experience (years)					
10 or less	32.1	42.4	43.8	36.3	38.5
More than 10 to 20	24.8	36.7	34.5	35.8	34.5
More than 20 to 30	18.0	14.6	15.4	15.8	15.7
More than 30	25.1	6.3	6.4	12.2	11.3
Rank					
Captain	20.2	13.2	9.0	25.2	19.0
Deck officer	37.5	35.1	32.3	35.4	35.0
Deck rating	4.8	15.8	24.6	4.3	10.5
Chief engineer	16.2	5.9	4.1	11.4	9.4
Engineer	20.0	22.1	14.5	19.6	19.5
Engine rating	0.2	4.7	7.8	1.8	3.3
Catering	0.4	2.7	7.1	1.0	2.3
Others	0.8	0.4	0.6	1.3	0.9
Work status					
On board	42.3	33.7	82.3	53.9	52.0
On leave	28.5	57.1	9.6	24.0	30.5
Out of contract/ Unemployed	18.0	4.8	6.1	12.1	10.0
Working ashore	11.2	4.4	2.0	10.1	7.5
Ship type					
Cargo ship	60.3	33.2	31.4	35.2	37.0
Tanker	18.0	64.4	66.1	36.4	46.0
Passenger	4.4	0.8	1.6	7.7	4.6
Offshore	5.4	1.2	0.4	9.0	5.3
Service & auxiliary	4.4	0.2	0.4	9.1	5.0
Others	7.6	0.2	-	2.6	2.2

3.3 Work pattern (Onboard and home periods)

Studying seafarers' work patterns is a necessity to:

- Identify the current situation and trends;
- Prevent fatigue and related safety and operational risks;
- Avoid accidents disrupting global supply chains;
- Preserve well-being and welfare of seafarers;
- Protect their bodies and minds from excessive periods at sea; and
- Attract and retain seafarers.

Ultimately, it is about recognising that occupational health and safety, and the well-being of seafarers, are inextricably connected to their work patterns.

Highlights about the work pattern

For the whole sample, the onboard period was 5.7 months on average. All seafarers expressed a preference for a reduction in their periods onboard. National variations were noticeable for both the current period on board and the proposed time reductions. In this respect, the expected reduction ranged from 15 to 25%.

- U.S. seafarers had the shortest actual contracts (3.7 months) and preferred 2.8-month contracts, a 24.8% reduction.
- Indian seafarers had actual contracts averaging 6.1 months and preferred 4.8-month contracts, a 22.3% reduction.
- Filipino seafarers had the longest actual contracts (7.2 months) and preferred 6.1-month contracts, a 15.1% reduction.

Work-life balance was most even among U.S. seafarers, with an onboard-to-home ratio of 1.13 (3.7:3.2), and the least balanced among Filipino seafarers, with a ratio of 1.70 (7.2:4.2).

All seafarers preferred a 10-13% reduction in their current annual working months at sea.

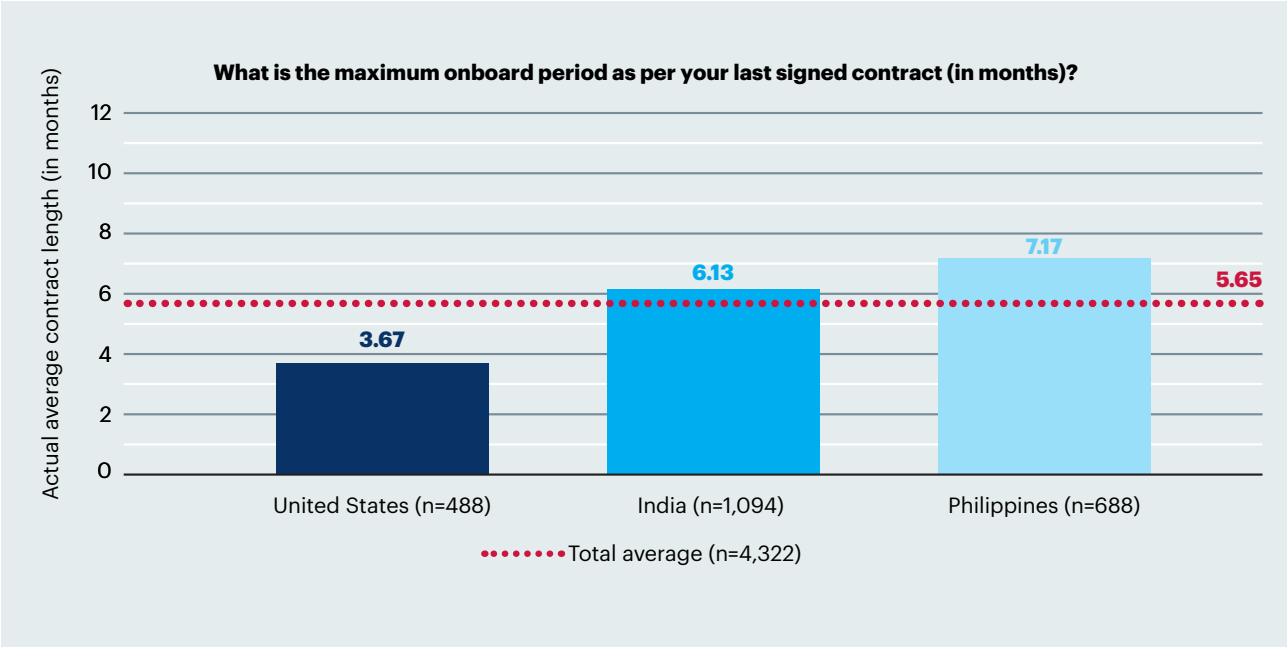
3.3.1 Onboard and home periods

Actual onboard period

Figure 1a and 1b show single onboard periods[3]:

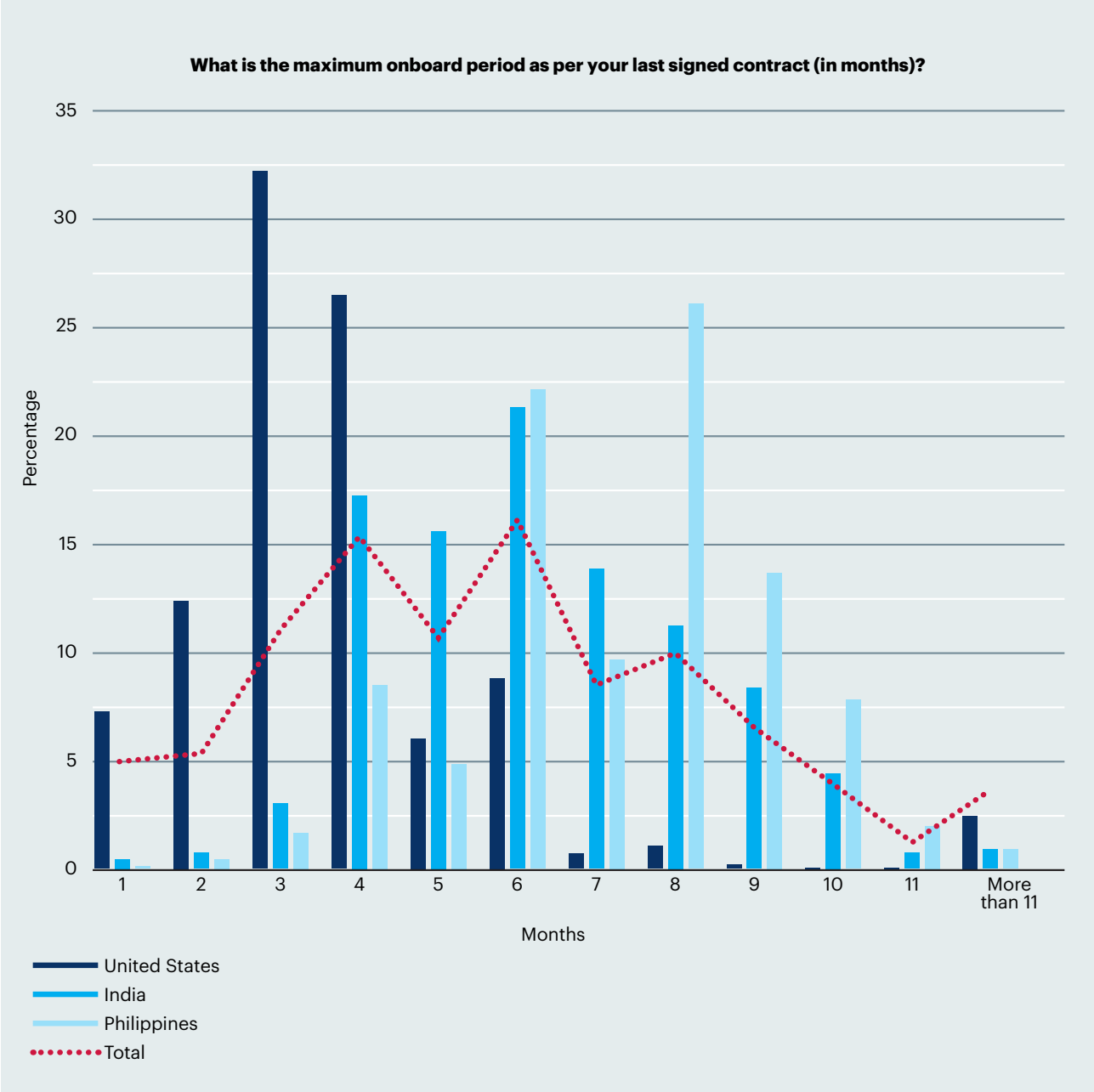
- Globally, the average onboard period was 5.7 months (5.65);
- U.S. seafarers reported the shortest onboard contract periods (3.7 months on average) and 79.1% served for 1-4 months;
- Indian seafarers averaged 6.1 months onboard periods, with a significant portion (80.0%) of contracts lasting between 4 and 8 months on board; and
- Filipino seafarers' average onboard period was 7.2 months. A significant portion (80.3%) of onboard periods lasted 6-10 months, with the most common duration being 8 months (26.3%).

Figure 1a. Actual onboard period of seafarers: Average contract length (onboard period)



3 This refers to the duration of a single consecutive onboard period; not cumulative or annual time spent at sea.

Figure 1b: Actual onboard period of seafarers: Percentage distribution



In the literature

Past studies have reported that seafarers' contracts regularly exceeded 12 months onboard. For example, the 2006 International Labour Organization (ILO) and Seafarers International Research Centre (SIRC) reported 1990 study[4] findings indicating that "[...] more than 50 per cent of cases, the longest contract period worked [...] was over one year in duration" [8]. By contrast, contracts longer than 11 months were rarely observed in the present study and in 2024 [9], which may reflect the impact of the Maritime Labour Convention (MLC) 2006 requirements and changes in industry practices.

According to the 1996 survey report[5], as cited in the ILO and SIRC 2004 report [8], contracts of 6 to 12 months were the most common. Another 2004 study reported an average contract duration of 7.7 months [10], while a more recent 2024 study found that most (nearly 45%) of seafarers served 9-month contracts [9]. In the current study, the average contract duration was 5.7 months, with national differences: U.S. seafarers most often served 1 to 4 months, Indians 4 to 8 months, and Filipinos 6 to 10 months.

Caution is therefore required when interpreting results, as contract duration is reported to vary by flag, nationality, ship type, and rank [10]—[12]. For example, the 2004 study reported notable national differences: the average contract length was 11.2 months for Filipino seafarers (vs. 7.2 in this study) but only 3.5 months for Danish and U.K. seafarers [10]. Similarly, officers generally serve shorter terms than non-officers [11], with senior officers averaging 5 months, junior officers 7 months, and petty officers and ratings around 9 months [12].

Taken together, these findings highlight the considerable variability in contract length across studies. Survey date, sample size, national focus (or not), and variability in rank representativeness affect overall averages.

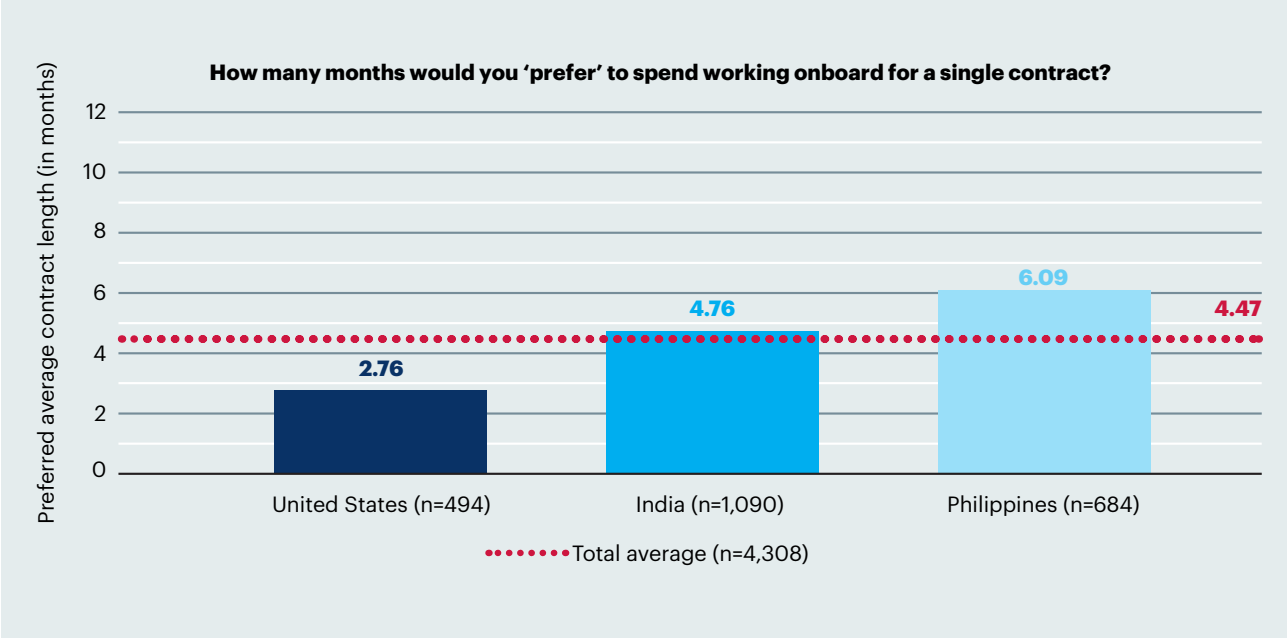
4 The original study report was not available.
5 The original study report was not available.

Preferred onboard period

Figure 2 shows preferred onboard periods:

- The calculated average for all seafarers indicated a preference of 4.5 months onboard period;
- U.S. seafarers reported the shortest preference at 2.8 months;
- Indian seafarers preferred 4.8 months, close to the average; and
- Filipinos indicated the longest preferred time at 6.1 months, more than twice that of U.S. seafarers.

Figure 2: Preferred onboard period of seafarers



Actual vs. preferred onboard period

In short, seafarers (i.e. global, U.S., Indian, and Filipino) wish to shorten their onboard period by 15-25%.

Qualitative findings

During the interviews, most U.S. seafarers expressed a preference for onboard periods of two/three months. This aligns closely with the survey average of 2.8 actual months (about 83 days).

In the survey's open answers, seafarers emphasised that exceeding this benchmark affects their mental and physical conditions to conduct their work:

> "Contracts should be 75-90 days long. Anything past 90 days, the officer is fatigued mentally and physically." (26, U.S., Second officer, Ro-Ro[6])

> "I think any hitch that is longer than 75 days is too long. It causes fatigue and burnout working every single day for longer than that." (27, U.S., Third officer, Container ship)

> "75 to 90 days is a perfect average time frame. Beyond 90 days, as a top 4 officer, fatigue and complacency set in and performance begins to lack." (33, U.S., Chief officer, Roll-on roll-off (Ro-Ro))

> "I think 60-day rotations are more manageable. Having sailed 30-day, 60-day, 90-day, and slightly over 120-day contracts, I find that 60's are the right balance of being on board without becoming mentally fried/exhausted." (26, U.S., Third assistant engineer, Other [Training ship])

In the literature

One study found that a shorter onboard period (around 2 months) was associated with higher job and life satisfaction [13]. At the same time, another reported that psycho-emotional stress tends to emerge after about 2.7 months at sea [14].

Remark

Variability in reduction period preference is associated with better work-life balance, as well as with the need to generate sufficient income for potential extended families and to compensate for the impacts of work instability. Many seafarers are only paid while on board and do not benefit from long-term employment commitments, and may prefer to secure income by extending their time on ships. For many seafarers, the choice between work-life balance and secure income is complex and varies by nationality.

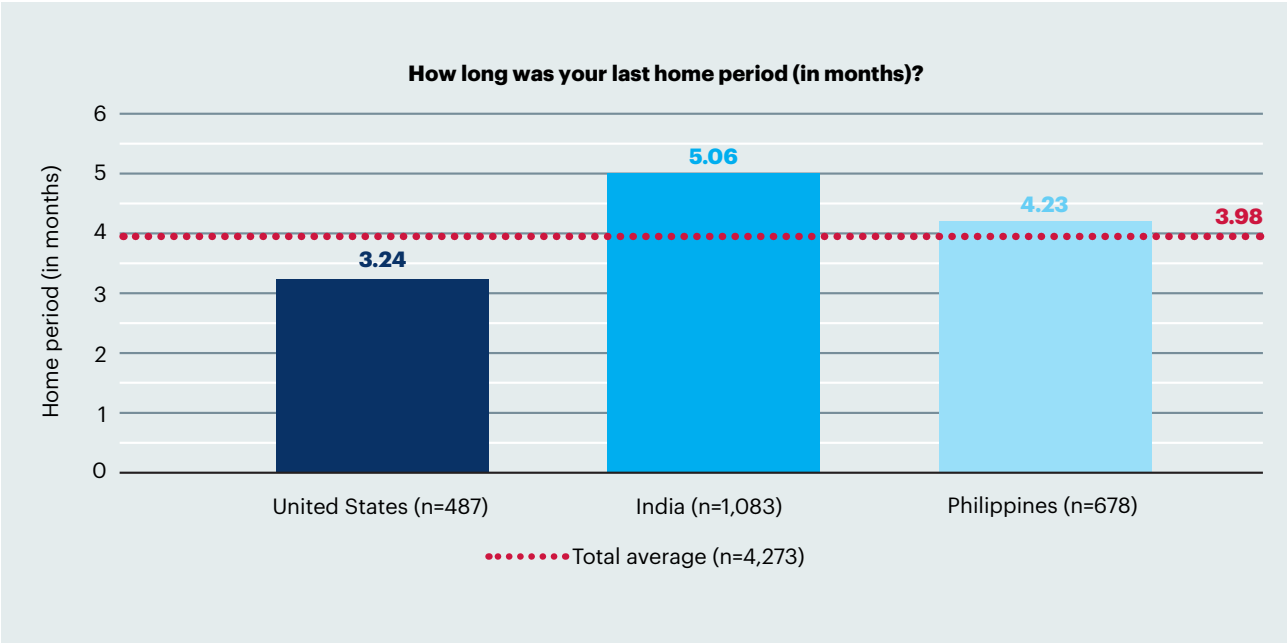
6 These are respondents' age, nationality, rank, and ship type.

Home period

Figure 3 shows single leave periods[7]:

- The overall sample average home period was 3.98 (i.e. 4.0) months;
- U.S. seafarers had the shortest at 3.2 months (as their contracts are shorter);
- Filipinos averaged 4.2 months, slightly above average; and
- Indians had the longest at 5.1 months.

Figure 3: Home period of seafarers



Ratio between onboard period and home period

- For an average contract onboard reported of 5.65 month, seafarers reported staying 3.98 months at home. The average ratio reported reached 1.42. It means that for any month on the ship, a seafarer spends on average 21 days at home;
- U.S. seafarers reported a balanced cycle (1.13), spending slightly more time at sea than at home (for any month on the ship, U.S. seafarers reported staying ashore for about 26.5 days);
- Indian seafarers followed with the ratio of 1.21; and
- Filipino seafarers had the least balanced pattern (1.70), spending 7.2 months at sea for every 4.2 months at home.

7 This refers to a single consecutive home or leave period following one onboard assignment, not cumulative or annual leave time.

Qualitative findings

Survey findings aligned with interviews, highlighting balanced onboard and home periods for U.S. seafarers. Seafarers' survey comments also illustrated this:

> "The 50/50 balance seems to work well." (>60, U.S., Captain, Ro-Ro)

> "There should be an equivalent time between home and ship, where at the end of the year it's 50/50." (50, U.S., Bosun, Product tanker)

> "I definitely prefer an even time (1 day worked earns 1 day home) and month on/month off schedule, will do up to 3 months on/3 months off. Not staying longer on board than 3.5 months!" (>60, U.S., Dynamic position officer, Multi-purpose vessel [MPV])

A near-equal division between onboard and home periods indicates that contract extensions are compensated by longer leave. Notably, U.S. seafarers frequently mentioned such extensions during interviews, often describing them as part of an established rotation system. For those on permanent contracts—typically senior U.S. ranks who rotate on the same vessel—this arrangement tends to function effectively.

In the literature

Long-term separation from family is identified as one of the most significant stressors in seafaring [15]. Prolonged contracts not only extend time away from home but also reduce rest periods on shore, thereby intensifying this stress [16]. Studies provide evidence that longer vacation periods reduce fatigue [17] and contribute significantly to the well-being of seafarers [18].

Remark

The 1:1 ratio seems common among seafarers from developed countries. Such a ratio appears to better accommodate work-life balance, as long as the time spent on board remains reasonable and is completed with satisfactory income.

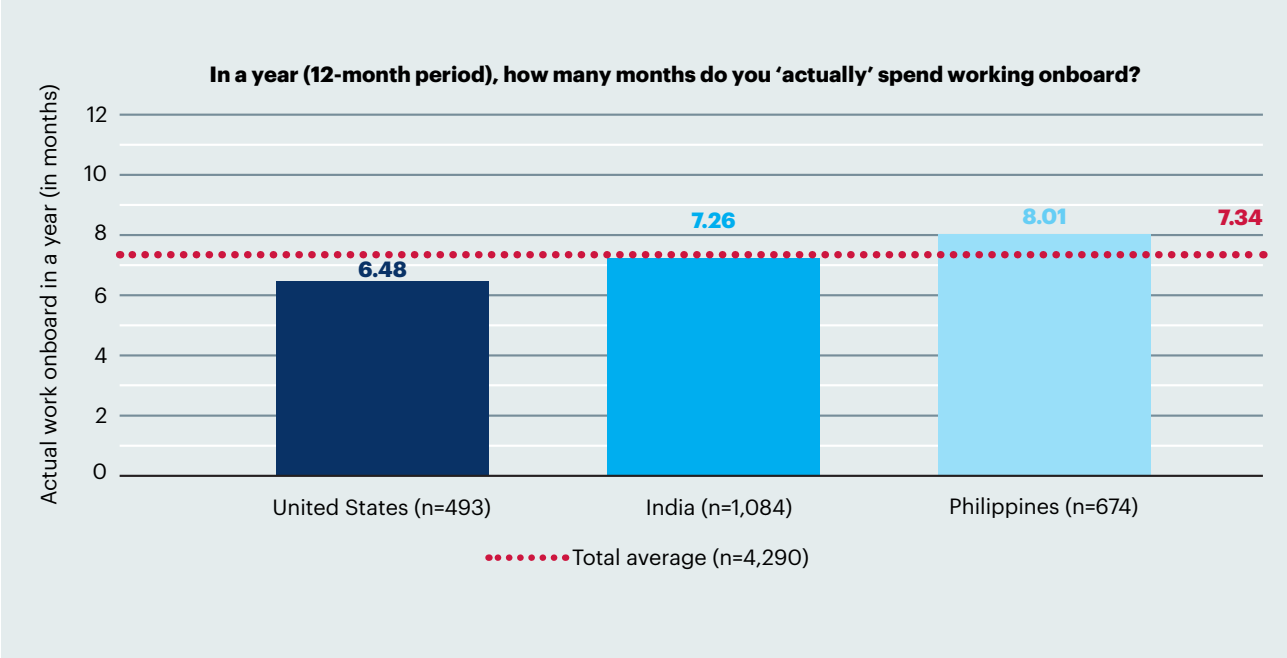
3.3.2 Annual work period at sea

Actual

Figure 4 shows the actual annual working period:

- The whole sample average was 7.3 months at sea per year;
- U.S. seafarers reported working an average of 6.5 months per year. This is the shortest annual duration among the groups studied;
- Indian seafarers averaged 7.3 months; and
- Filipino seafarers reported working around 8.0 months per year.

Figure 4: Actual – Annual working period of seafarers



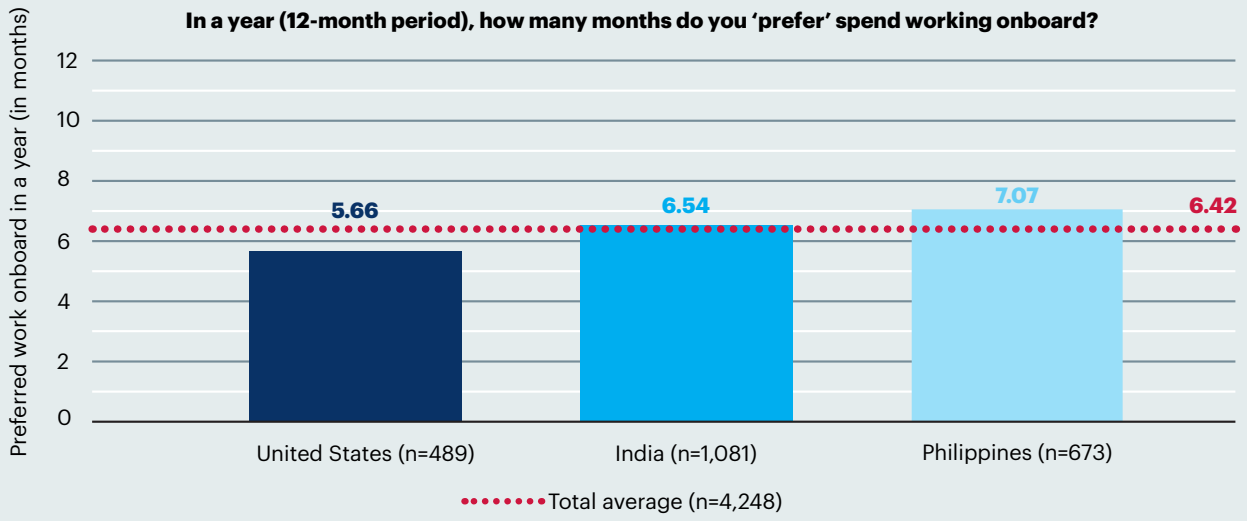
Preferred

Figure 5 shows the preferred annual working period:

- The whole sample average was 6.4 months;
- U.S. seafarers preferred an annual working period of 5.7 months;
- Indian seafarers preferred 6.5 months; and
- Filipino seafarers had the highest time preference, at 7.1 months.

Again, such a preference may also be associated with income and job stability.

Figure 5. Preferred – Annual working period of seafarers



Actual vs. Preferred

On average, all seafarers would appreciate a reduction of between 10% and 13% of the current working periods at sea.

Qualitative findings

Although the interviews did not specifically address the annual work period, seafarers' comments in the survey did:

> "I only worked 6 months a year because my vacation pay is for 6 months also (day-for-day vacation)." (More than 60, U.S., Chief engineer, Container ship)

> "Average year of sailing is 160-183 days aboard; I would MUCH prefer to work no more than 165-170 days per year. Life is too short to spend more time than that away from home!" (57, U.S., Captain, Bulk carrier)

For U.S. seafarers, preferred annual working periods are below six months, whereas Indian seafarers tend to prefer periods exceeding six months, primarily due to income tax incentives. Indians who spend fewer than 183 days (i.e. six months) in India during a financial year are classified as Non-Resident Indians (NRI) and are exempt from paying income tax on foreign earnings. While financially advantageous, this provision incentivises Indian seafarers to remain at sea for extended periods. Several survey comments illustrate the dilemma faced by Indian seafarers, balancing time at home with maintaining NRI status:

> "I would like to spend more time at home with family, but am restricted due to NRI status requirement." (47, India, Chief officer, Chemical tanker)

> "We complete 6 months in a financial year to get NRI status to save tax. Otherwise, sailing for 4 months in a year is a good balance." (48, India, Chief engineer, LNG tanker)

> "The tax laws in India make it difficult to spend less than 6 months at sea for NRI status. So, there is no choice but to sail more than 6 months in any financial year." (37, India, Captain, Chemical tanker)

In the literature

A 2004 study noted that even under favourable employment conditions, seafarers typically spend at least six months per year at sea [8]. However, another study in 2009 found that European seafarers averaged 4.9 months annually, compared with non-Europeans, who averaged 9.9 months [11].

The current study shows that non-European (Indian and Filipino) seafarers' average annual work is close to 7 months, suggesting a reduction in time spent at sea compared with earlier findings in 2009 [11]. U.S. seafarers reported lower annual work periods than Indian and Filipino seafarers, but still higher than their European counterparts by 24.6%.

Remark

Many countries around the world offer tax exemptions for stays abroad of more than 6 months. The fiscal system creates the unintended consequence of incentivising longer contracts, which explains why many seafarers would not accept working onboard fewer than 183 days a year. This point again illustrates the strong link between the onboard period and revenues.

3.4 Working hours from weeks to years

Hours of work are a central factor in seafarers' safety, health, and well-being. Excessive or poorly managed working hours increase fatigue, reduce alertness, and elevate the risk of accidents. Additionally, long and very long working hours have detrimental impacts on physical and mental health.

Highlights about working time

U.S. seafarers reported the longest weekly working hours at 79 hours. Additionally, 94.8% reported having no days off per week.

Annual working hours were broadly consistent across all groups studied, ranging from 2,225 to 2,300 hours, indicating that U.S. seafarers work a similar number of annual hours as their counterparts while spending fewer days at sea in a calendar year. Compared with average U.S. workers, seafarers work significantly more hours per year.

About half of U.S. seafarers indicated that their working hours do not allow sufficient time for rest and recovery.

Despite lower levels of work/rest hours records adjustments than overall average (64.0%), more than half of U.S. seafarers (52.9%) confessed to adjusting.

3.4.1 Weekly working hours[8]

Figure 6a and 6b show weekly work hours:

- Globally, seafarers reported working an average of 71.3 hours per week;
- U.S. seafarers indicated an average of 79.0 hours per week. 69.9% of U.S. seafarers reported exceeding 72-hour workweeks, and 9.5% working beyond 91 hours;
- Indian seafarers averaged 72.9 hours, just above the mean, with 46.7% exceeding 72 hours; and
- Filipino seafarers reported working an average of 65.1 hours per week, with 24.9% exceeding 72 hours.

Figure 6a: Weekly work hours of seafarers: Average weekly work hours

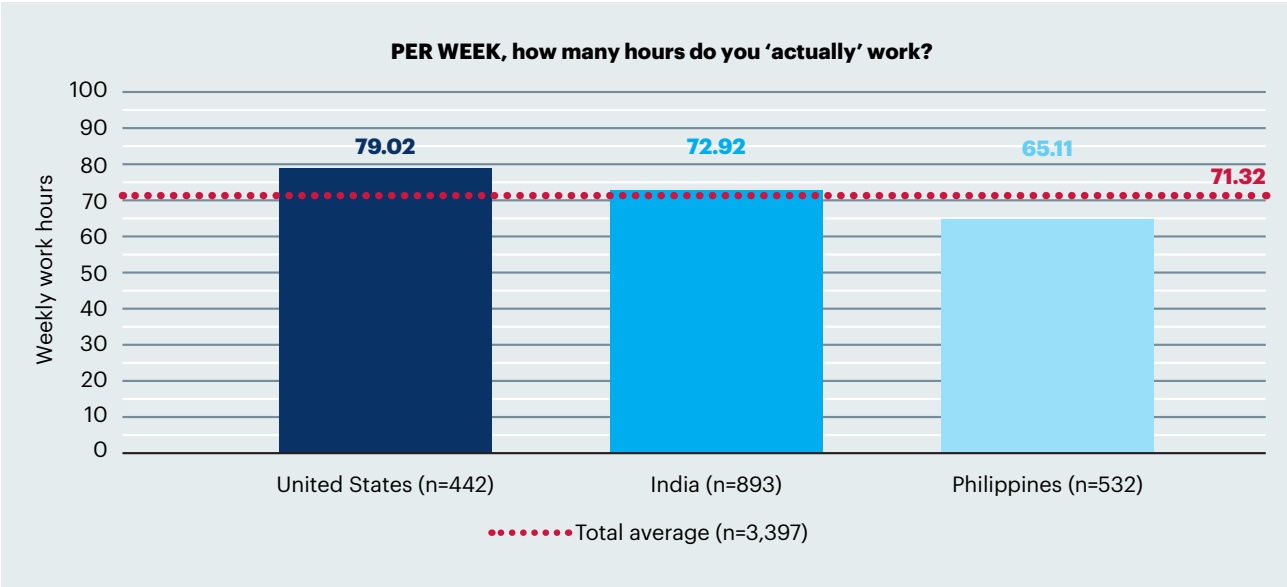
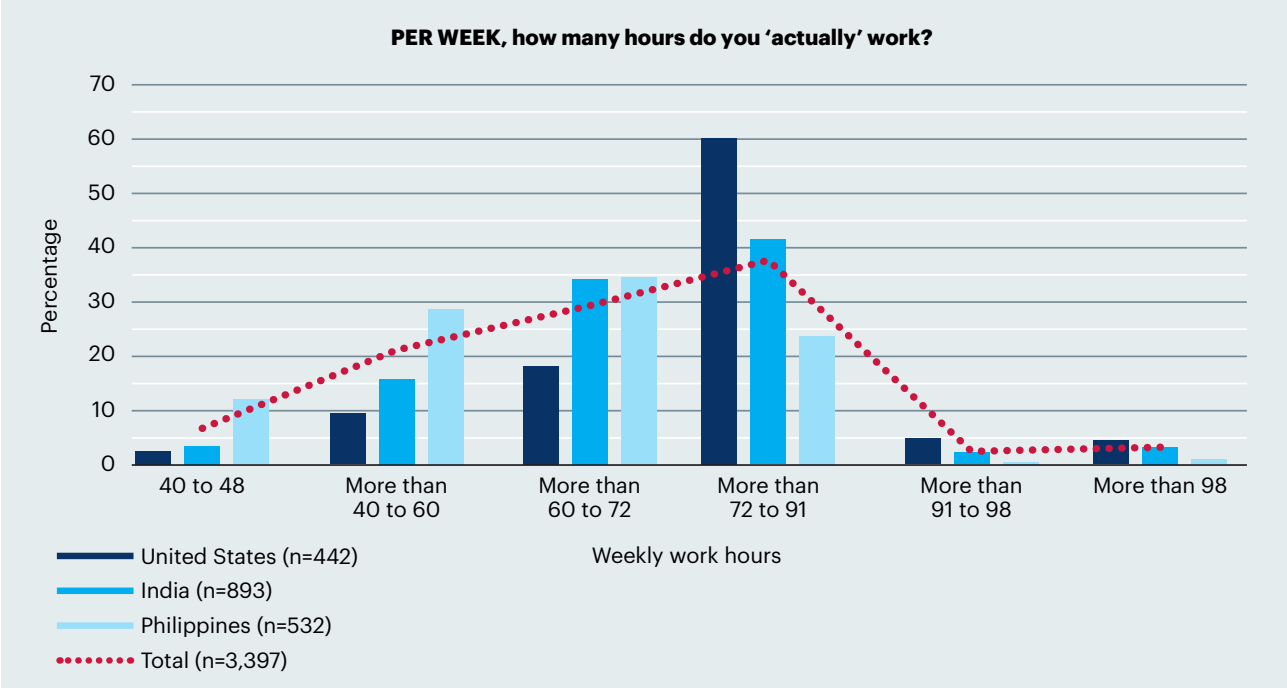


Figure 6b: Weekly work hours of seafarers: Distribution of weekly work hours



8 Responses from seafarers who reported working fewer than 40 or more than 120 weekly hours were excluded from the analysis.

Qualitative findings

Although weekly working hours were not discussed during the interviews, this aspect was reflected in the survey comments, as shown below:

> "Many union contracts require 12-hour days, every day [i.e. 84 hours per week], for 3+ months, and that schedule is not sustainable. There is no incentive for the company to provide any shore leave or day off; there are almost never days off or shore leave." (40, U.S., Third engineer, Container ship)

> "I work 12-hour days - 7 days a week when onboard." [which equals 84 hours per week] (59, U.S., Captain, Ice class)

> "Number of hours worked per week ranges from 85 to 95 hours." (29, India, Third officer, Pure car carrier (PCC))

> "Normally, weekly working hours are between 75 and 85. It depends on the trade and activities." (42, Bulgaria, Chief officer, Container ship)

In the literature

The overall average of 71.3 weekly work hours in this study aligns with a 2024 report estimating a global seafarer average of 74.9 hours [19].

Long working hours have been consistently documented over the past two decades [20]—[26], but little was known about U.S. seafarers specifically.

Our findings suggest that U.S. seafarers work the longest hours (79 per week) compared with Indian (73) and Filipino (65) seafarers, and above the overall mean.

The National Transportation Safety Board's (NTSB) investigation of the El Faro reported average workloads of 12.5–13 hours per day in the two weeks before the accident, or roughly 87-91 hours per week [27].

Compared with their national non-maritime labour markets, seafarers work substantially more [19], but the U.S. gap is wide. U.S. seafarers work more than twice as many hours per week as the average U.S. worker, whose weekly hours have ranged from 34 to 39, according to various national and international studies [28]—[32]. In contrast, Indian and Filipino workers average 45.7 and 40.0 hours per week, respectively, giving a seafarer-to-domestic ratio of 1.6 in both cases, much narrower than the U.S. ratio. This indicates that U.S. seafarers are the most detached from domestic labour conditions.

Remark

Current contractual agreement incentives excessive working time[9]. Since the ILO has demonstrated that excessive overtime is associated with insufficient basic wage [33], it is imperative to associate working time and wages. As visible in shipping, satisfactory income requires seafarers to multiply overtime, leading to excessive working time without restorative periods while onboard. New research combining annual wages and annual working hours would complete such an analysis for the maritime sector.

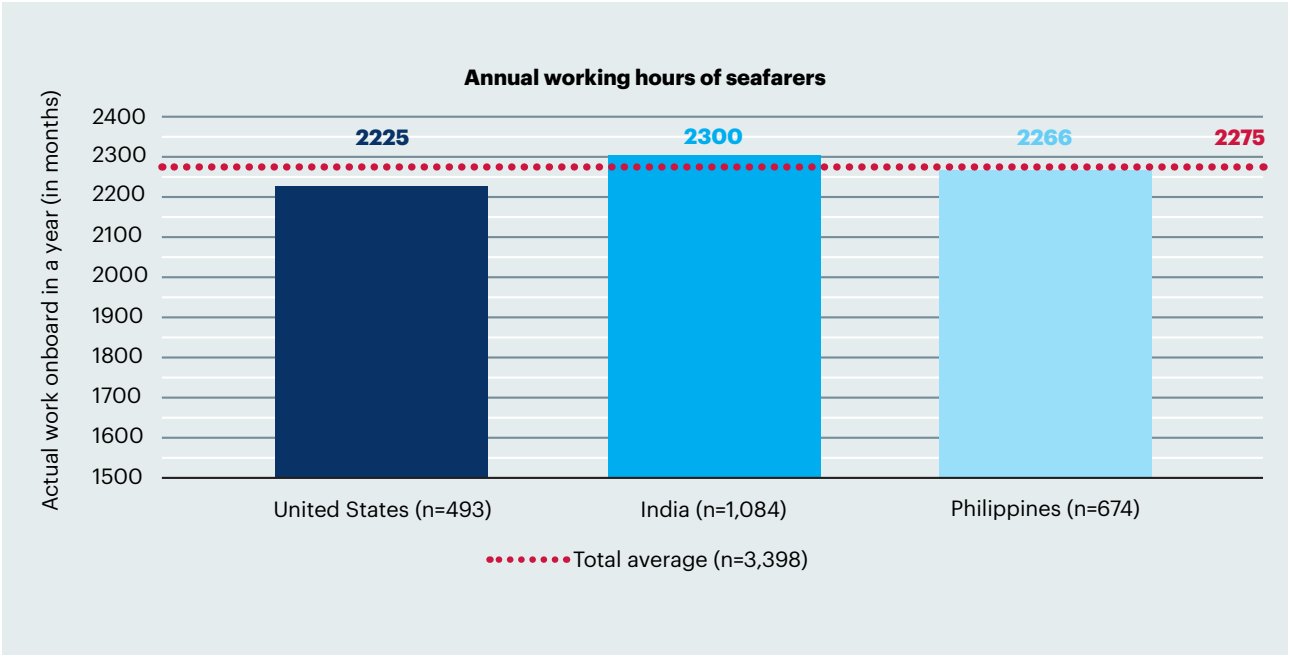
9 The ILO considers excessive working time when workers work long hours (above 48 hours per week) and very long hours (more than 60 hours per week).

3.4.2 Annual working hours

By computing the weekly work hours and annual periods at sea (section 3.3.2), it is possible to estimate total annual working hours for seafarers[10] (Figure 7):

- According to the overall sample, the average seafarer reported working 2,275 hours per year;
- U.S. seafarers had the lowest at 2,225 hours;
- Filipinos worked 2,266 hours; and
- Indians logged the highest at 2,300 hours.

Figure 7: Annual working hours of seafarers



In the literature

Annual working hours have received little attention in maritime research, but they are particularly relevant for comparing working time across sectors. This study provides novel evidence that total yearly hours are broadly consistent across groups, despite differences in weekly work hours, contract lengths, time at sea, and leave periods. The variation in annual working time between the U.S. and Indian seafarers represents only 3.3%.

U.S. seafarers in the study work 2,225 hours annually. It represents 26.1% more than their national average of 1,765 hours [34]. Other data sources, such as the Organisation for Economic Co-operation and Development (OECD), show that the U.S. national average was 1,823 hours in 2019 and 1,805 hours in 2023, making

10 The annual working period was converted from months to days and then to weeks. For example, U.S. seafarers averaged 6.48 months, equal to 197.1 days or 28.16 weeks. Considering their average workweek represents 79.02 hours, the yearly amount is 2,225 hours (rounded).

seafarers' working time about 22.1% and 23.3% higher, respectively [32]. By contrast, the gap between seafarers and non-seafarers is much smaller in India and the Philippines. Indian seafarers work 2,300 hours annually versus 2,123 hours for other workers (+8.3%), while Filipino seafarers work 2,266 hours compared with 2,168 (+4.5%). Again, this finding substantiates that U.S. seafarers are far more detached from domestic labour patterns than their Indian and Filipino counterparts.

Remark

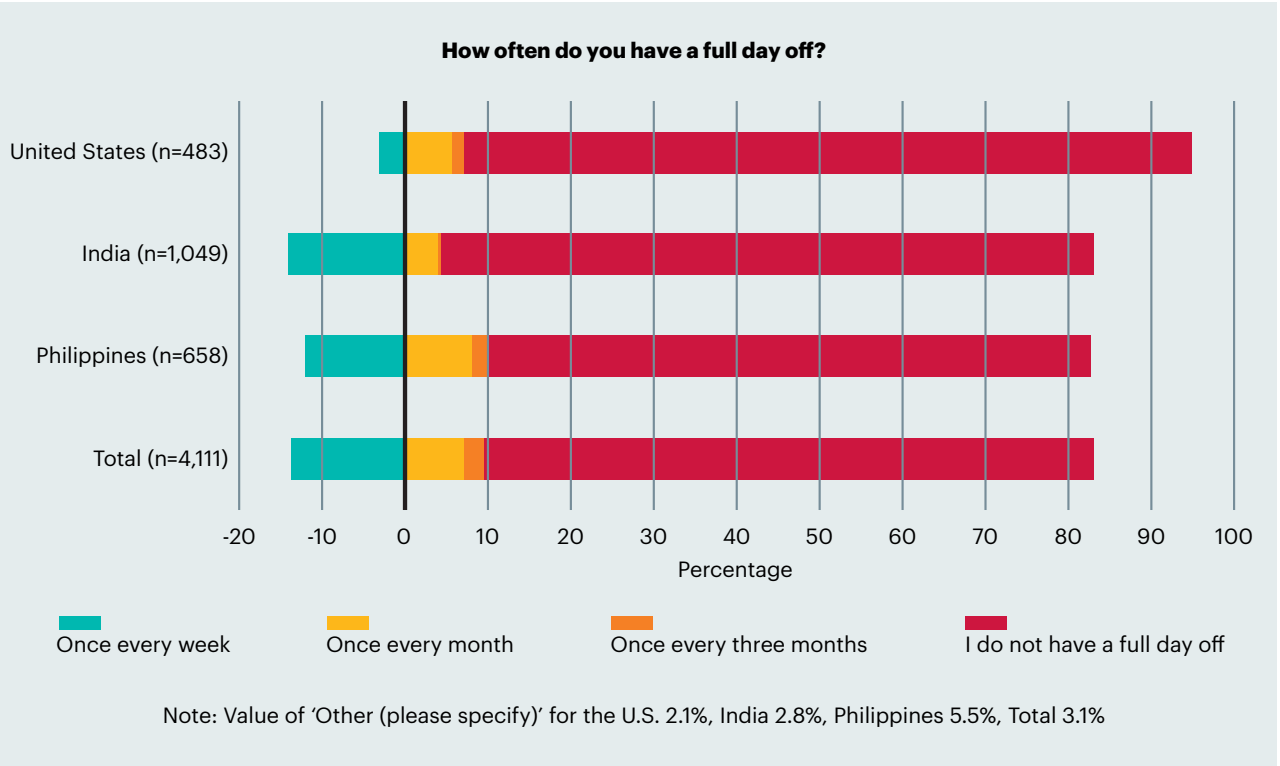
The comparison with other workers underscores that seafarers work more than shore workers annually, which may, in addition to health, well-being and retention impacts, trigger a sense of being downgraded.

3.4.3 Weekly day off[11]

As shown in Figure 8:

- According to the whole sample, 86.2% of seafarers did not enjoy one day off per week, and 73.5% of them did not enjoy a single day off during their entire period on board;
- The majority of U.S. seafarers (94.8%) reported not having a weekly day off, and 87.6% of them stated they had no full day off during their entire contract period;
- 83.1% of Indian seafarers reported no weekly day off, aligning with the overall average, while 78.6% had no full day off throughout their contract; and
- Similarly, 82.6% of Filipino seafarers had no weekly day off, and 72.5% went without a full day off during their contract.

Figure 8: Weekly day off for seafarers



Note: Value of 'Other (please specify)' for the U.S. 2.1%, India 2.8%, Philippines 5.5%, Total 3.1%

11 'Weekly day off' means 'a continuous 24 hours rest period without any work-related interruption', in accordance with general principles on which the weekly day off is based [28].

Weekly days off per Rank

When crossing the data for weekly days off and rank:

- Globally, ratings reported having weekly days off more frequently than officers (25.1% vs. 11.7%); and
- Among ratings, 34.3% of Indian seafarers reported a weekly day off, followed by 19.2% of Filipino ratings[12].

Qualitative findings

Seafarers highlighted perceived benefits of a day off, as illustrated below:

> "Having a paid day off, or half day, while operations are slow, would allow for needed rehabilitation and increased productivity by mitigating fatigue." (33, U.S., Chief officer, Roll-on roll-off (Ro-Ro))

Even when a day off is promised, it is rarely possible in practice:

> "Contractually, I am supposed to receive one day off per voyage. However, there is no possible way for me to use this day. There is simply not enough time in the day to cover all maintenance and repair items, and we are being spread extremely thin." (32, U.S., Second engineer, Container ship)

One survey respondent described how even the idea of a day off carried stigma:

> "When I wanted to! On Sunday only! But you sometimes made to feel you shouldn't." (40, U.S., Able Seafarer, Research vessel)

Others noted that the absence of regular days off intensifies fatigue and risk, and creates unsustainable conditions:

> "Working on board a cruise ship nowadays is highly stressful, considering also there's no day off, working Monday to Monday, in average 10 hours is kind of insane. I have been working on board cruise ships for several years as a deck officer and I have seen officers and crew with fatigue, burnout and having accidents because of that reason. This is something should be addressed and changed in the Cruise Industry." (54, Argentina, Deck officer, Cruise ship)

> "Many union contracts require 12-hour days every day for 3+ months, and that schedule is not sustainable. There is no incentive for the company to provide any shore leave or day off; there are almost never days off or shore leave." (40, U.S., Third engineer, Container ship)

In the literature

The finding on the absence of a weekly day off is consistent with earlier research. A 1996 study of Australian seafarers reported continuous work for seven to eight weeks [35]. Similar patterns were observed more recently among Italian seafarers in 2019 and 2023, and in a 2024 global survey [19], [36], [37].

12 U.S. ratings were excluded due to a small sample size.

Remark

Seafarers work for extensive periods without a day off, which may affect recovery from cumulative fatigue. In the U.S. offshore sector, work/home rotations such as 14/14 (or, less frequently, 7/7 or 21/21) provide regular recovery periods with a relatively short timeframe. In other transportation sectors, regulators require more frequent restorative rest periods to mitigate cumulative fatigue. For example, under the U.S. 49 Code of Federal Regulations (CFR) Part 395 (Hours of service for drivers), an off-duty period of 34 hours or more is required after a maximum of 8 consecutive days on duty. The 34-hour period allows for two consecutive sleep opportunities of ten hours each [38].

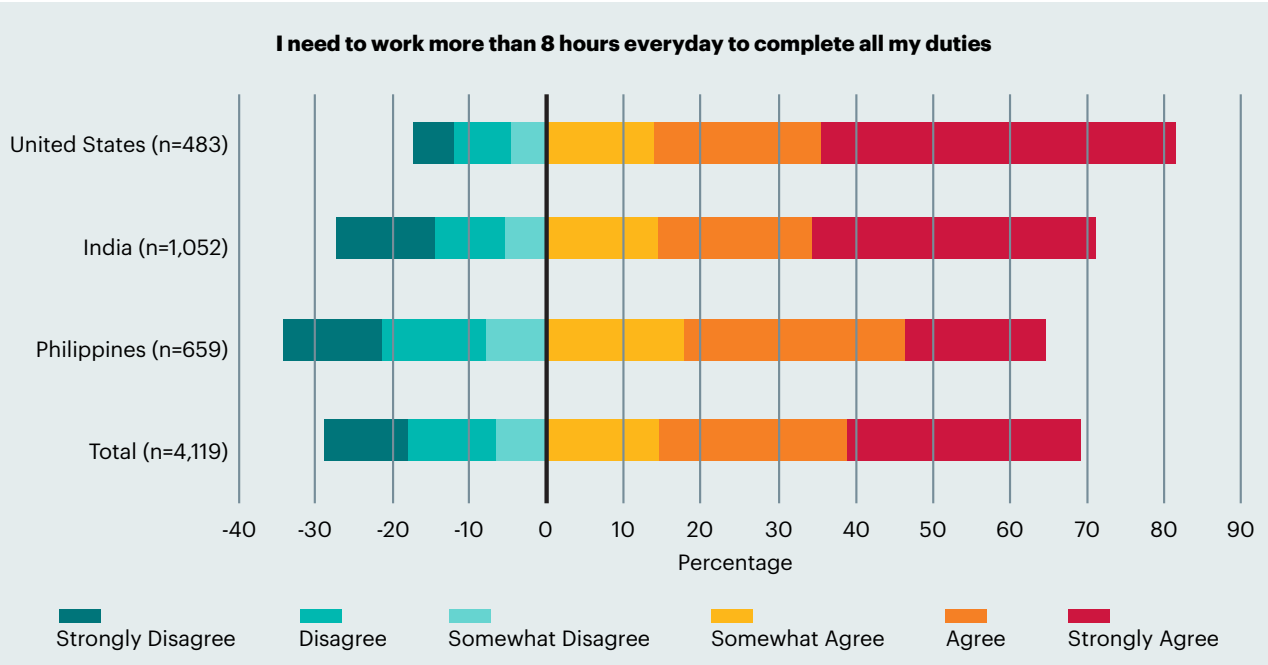
3.4.4 Working more than 8 hours every day

Working more than eight hours per day to complete all required tasks is very common (Figure 9):

- The overall sample indicated that 70.4% of seafarers worked beyond 8 hours to complete their duties;
- U.S. seafarers were most likely to agree, with 81.6% affirming and 46.0% strongly agreeing; and
- Indian (71.2%) and Filipino (64.7%) seafarers also reported high rates.

These figures confirmed a chronic high workload, resulting in excessive working hours on ships.

Figure 9: Seafarers working beyond eight hours daily



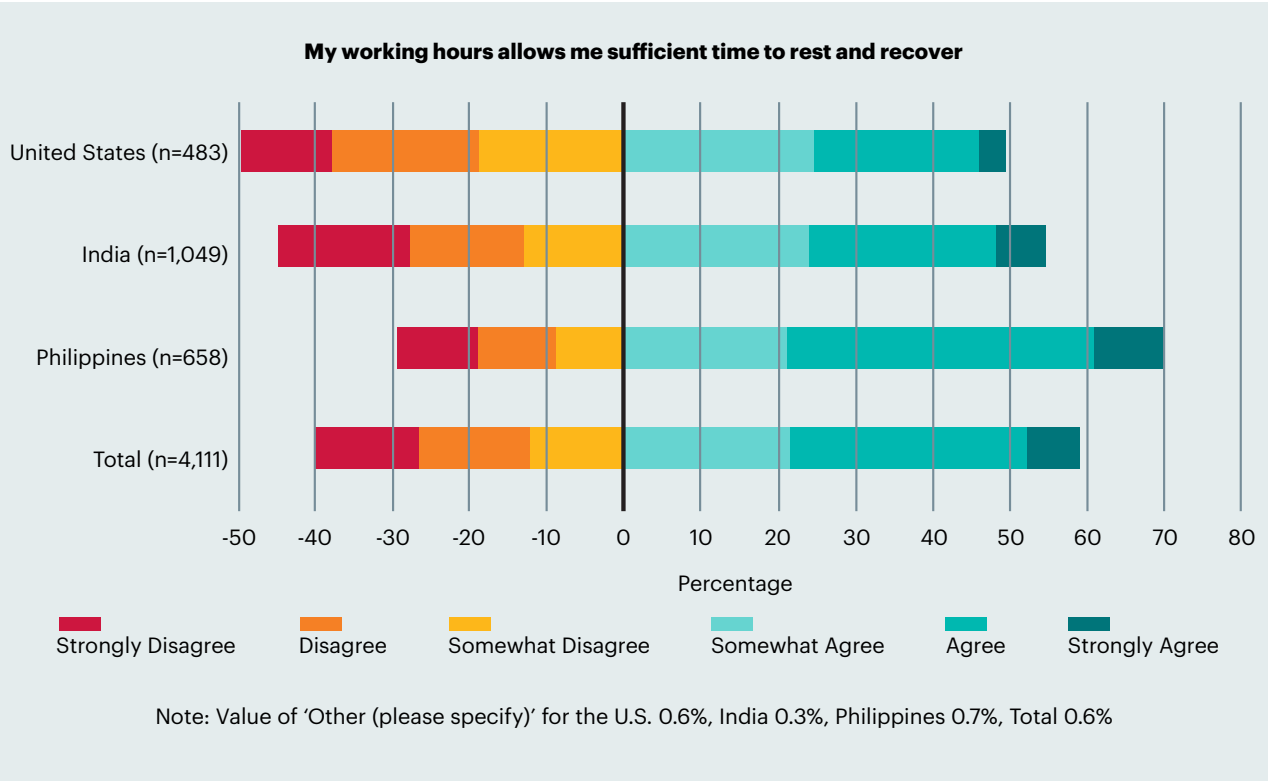
Note: Value of 'Other (please specify)' for the U.S. 1.0%, India 1.4%, Philippines 1.1%, Total 1.9%

3.4.5 Working hours and their impact on rest and recovery

When asked if their working hours allow adequate rest and recovery (Figure 10):

- Overall, 40.2% of seafarers considered that their working hours do not allow sufficient time to rest and recover;
- Nearly half of U.S. seafarers (49.6%) confirmed that working hours hinder sufficient rest and recovery; and
- 44.8% of Indian and 29.2% of Filipino seafarers also considered the incapacity of obtaining enough rest and recovery time.

Figure 10: Working hours' impact on rest and recovery among seafarers



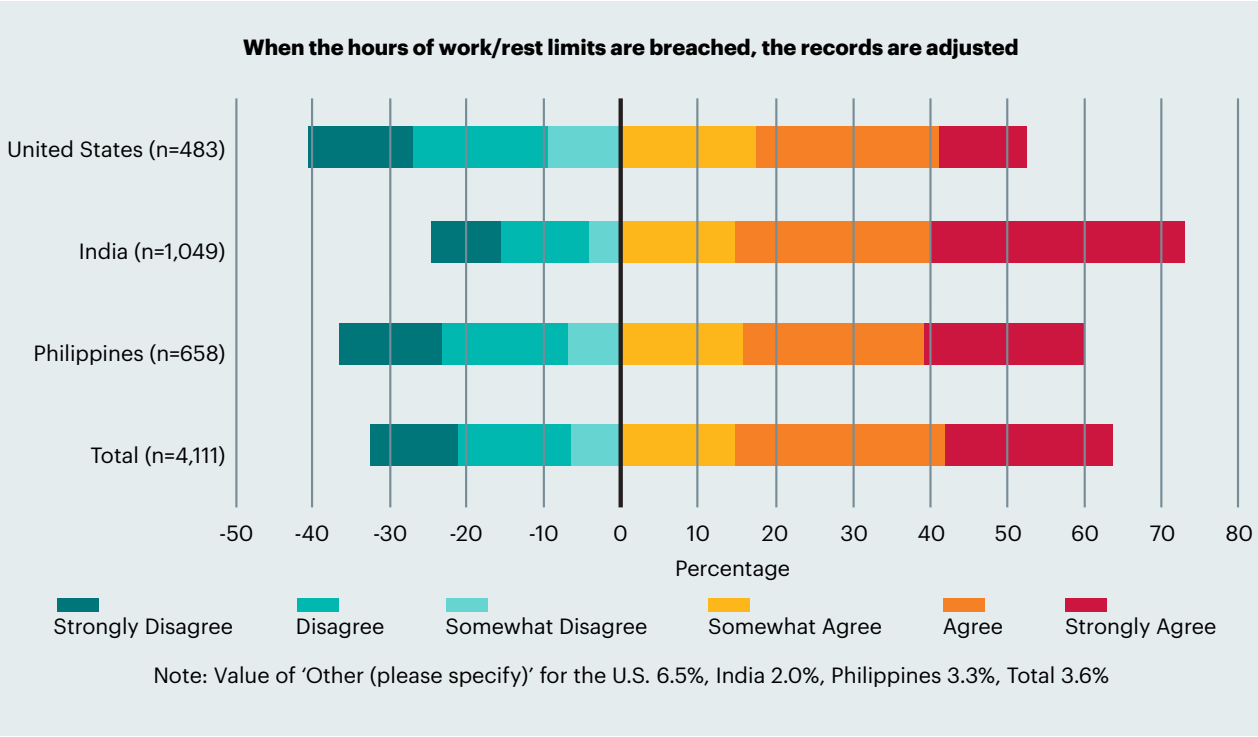
Note: Value of 'Other (please specify)' for the U.S. 0.6%, India 0.3%, Philippines 0.7%, Total 0.6%

3.4.6 Adjustment of work/rest hours record

When asked about adjusting records following a breach[13] in hours of work/rest, seafarers responded as follows (Figure 11):

- Overall, 64.0% of seafarers reported adjusting records when exceeding the working time limits;
- While U.S. seafarers adjust their records less frequently than the average, a notable 52.9% of them reported doing so; and
- Among the three groups, Indian seafarers reported adjusting the most (73.5%), followed by Filipino seafarers (60.4%).

Figure 11: Adjustment of work/rest hours record among seafarers



Note: Value of 'Other (please specify)' for the U.S. 6.5%, India 2.0%, Philippines 3.3%, Total 3.6%

13 Here, breach refers to non-compliance or violation of the work/rest hours limits. It should not be confused with exceptions or deviations, which denote authorised departures permitted under the regulations.

Qualitative findings

Interviews on hours of work and rest highlighted persistent record adjustments or falsifications. Survey findings confirmed this, showing that it is routine practice to alter work/rest hours records to appear compliant.

Seafarers' comments stress the gap between official records and onboard realities:

> "Work hours recorded are a joke." (>60, U.S., Able seafarer, Product tanker)

> "Of course, the hours of rest records are falsified." (>60, U.S., Captain, Offshore support vessel)

> "Work rest hours are often false as we are not allowed in the red [violations]." (54, U.S., Chief officer, Product tanker)

One of the seafarers expressed deep frustration:

> "STCW is a sham. It would be nice if everyone stopped pretending any of it is real." (44, U.S., Second officer, Product tanker)

Another pointed to company-driven pressures that make falsification inevitable:

> "Companies pressure senior officers to lie when recording hours of work that have been breached. The coast guard has mandated these hours so the crew can have sufficient rest, but companies and ports don't care. You're in trouble if you lie about your hours, but you're also in trouble if you work over your rest hours period, and the only ones who suffer from this are the crew." (26, U.S., Second officer, Ro-Ro)

One of the seafarers reflected on the tension between their moral values and expectations:

> "I myself prefer to be honest and truthful in my work rest hours, but as a Master and a non-watch stander, I am expected to go over when necessary. I often see that junior officers or other departments tend to falsify their work rest hours to maintain the required hours of rest rather than be honest about the hours when they work over." (48, U.S., Captain, PCC)

Another one reported how manipulation was institutionalised through monitoring tools:

> "We used programs that gave us red/yellow/green work hours, but manipulation was not just encouraged but mandatory." (40, U.S., Second officer, Bulk carrier)

The systemic nature of this issue was summarised bluntly:

> "Per hours we work, we are 75% breaking the rules and raising red flags, if we were to log accordingly." (53, U.S., Captain, Tug)

In the literature

This survey found that more than half of U.S. seafarers adjust their work/rest records. The U.S.-flagged El Faro sinking investigation confirmed the practice when a former crew member candidly described how seafarers manipulate onboard record-keeping systems:

> "You're not going to hear, because just like I said, they make good money, and there's ways around everything. Even the STCW just being honest. There's ways around it because they got a program on the ship where once you put your hours in and it don't line up, get red, it turns red. So the only thing you have to do is just go around and fixing numbers and you're back." [39]

The evidence from the U.S. strengthens the notion of a pervasive "A Culture of Adjustment", one that extends beyond national borders [40]. The findings of this survey are consistent with earlier research, which has documented similar practices globally for two decades.

For example, Cardiff University in 2006 reported that "37.3% reported never under-recording working hours" [41]. Similarly, the 2016 survey observed that only 31% of seafarers "[...] never breach the work and rest period regime, all overtime is written down" [42]. More recent evidence from the 2024 large-scale multinational survey showed that "Only 31.6% of seafarers admit to never adjusting their records"[19]. Likewise, a U.K. Department of Transport–commissioned study in 2024 found that "[O]nly 35% reported that they were always able to do so" when asked whether they could accurately complete their work/rest hour records [43].

In addition to survey data, a 2025 qualitative study by Cardiff University further highlighted that "lack of sleep and fatigue were problems that they regularly faced on board, notwithstanding work/rest hour regulations which they reported to be poorly observed" [44].

Work/rest hours record malpractices have been repeatedly confirmed through a range of research methods, including document analysis, field studies, focus groups, interviews, systematic review, surveys, and corroborated by evidence from casualty investigations and an official government report. Together, these sources provide over 30 separate pieces of evidence [19], [45], [46]. Collectively, they paint a clear picture of a widespread issue, confirming that adjusting work/rest records is not an isolated phenomenon but a global practice embedded in the maritime industry that remains to be addressed.

Remark

Despite being well documented and some variations by nationality, the problem of work/rest hours records adjustment remains widespread and severe. This failure to address the issue questions the regulators' commitment to remediation and the possibility of any meaningful human factors strategy in shipping.

3.5 Work-related stress

Work stress is a critical factor affecting seafarers' health, safety, and operational performance. High stress levels can undermine decision-making, fatigue management, and overall well-being, potentially creating new operational risks.

Evaluating stress levels with a validated questionnaire allows for an accurate understanding of the extent of the issue. Such a measurement would later inform appropriate responses.

Understanding the prevalence and sources of work stress among seafarers is essential to developing targeted interventions and improving safety and mental health outcomes.

Highlights about work-related stress

- U.S. seafarers reported higher work stress levels than other seafarers in the study.
- Worryingly, about a third of seafarers (32.8%) exhibited work stress levels considered 'severe' or 'potentially dangerous.' The U.S. seafarers have a marginally higher level (33.9%) than Filipino seafarers (27.2%), but lower than that of Indian seafarers (37.5%).
- All seafarers agreed that ship inspection (such as flag, PSC, vetting, etc.) is their number one stressor, followed by onboard administrative duties.
- Notably, the top four stressors affecting U.S. seafarers were not operational or navigational hazards, but instead associated with bureaucratic and external controls.
- Counterintuitively, seafarers did not cite the most inherently hazardous activities as the most stressful. This suggests their stress is driven not by risk, but by a persistent social fear of being blamed and penalised, which is maintained through constant administrative scrutiny and unstable work relationships.
- Such a situation blurs priorities, confuses attention needs and generates new risks such as overstress and chronic fatigue.

3.5.1 Work stress scale

A validated work-stress scale with eight Likert-type questions assessed seafarers' stress levels (Figure 12).

- Overall and consistent across the focused populations, one-third (32.8%) of seafarers were classified as being in the 'severe stress' or 'potentially dangerous' range;
- U.S. seafarers reported the highest overall stress (69.0%). Additionally, 33.9% of them presented scores suggesting 'severe stress' or 'potentially dangerous' stress;
- Among Indians, 65.9% reported stress, with 37.5% of them being categorised under the 'severe' or 'potentially dangerous' stress categories; and
- Filipinos were assessed as reporting a lower stress level, but still 53.3% stated either 'moderate', 'severe' or 'potentially dangerous' stress; 27.2% of them are situated in the last two categories.

Figure 12: Workplace stress score of seafarers



In the literature

As summarised [47], working conditions at sea are inherently stressful due to core characteristics, ocean and geographic dynamics, limited space and resources, and an uncaring socioeconomic environment. These factors lead to increased workload, stress, and fatigue among seafarers, with detrimental impacts on physical and mental health, as reported in the general and maritime literature [48]—[52].

Furthermore, the World Health Organization (WHO) and ILO acknowledge "the role of work in promoting or hindering mental wellness and its corollary – mental illness" [53]. High stress levels may detrimentally affect seafarers' physical and/or mental health. A study showed that "about 25% of seafarers completing a patient health questionnaire had scores suggesting depression (significantly higher than other working and general populations)." [54]

Remark

When records show such a high level of 'severe' and 'potentially dangerous' stress categories within an isolated population of workers, poor mental health and high suicide rate should not be a surprise.

3.5.2 Activities causing work stress

When asked about activities that cause the most stress (Figure 13):

- Onboard inspections (flag, PSC, vetting, etc.) were ranked as the most stressful across all groups;
- Administrative duties (SMS, cargo/port papers, management requirements, etc.) ranked second overall and among U.S. seafarers;
- For Indian and Filipino seafarers, port-related activities (bunkering, spare parts, stores, supplies, etc.) were the second most stressful; and
- Company communication and port-related activities ranked third and fourth overall, and in the U.S. sample, with the order reversed.

Figure 13: Heat map showing the ranking of stress-related activities among seafarers

	U.S.	India	Philippines	Total
Inspections	1	1	1	1
Onboard administrative duties	2	4	3	2
Port-related activities	4	2	2	3
Company communication	3	5	7	4
Cargo-related operations	5	6	4	5
Pilotage, berthing, and canal transits	6	3	5	6
Port formalities (customs, immigration, etc.)	7	7	6	7
Commercial communication (agents, cargo-owners, charterers, etc.)	8	8	8	8

Rank 1 (Most stressful work activity) – **Rank 8** (least stressful)

Qualitative findings

While interviews captured time pressure, the survey replaced it with work-related stress. This broader concept includes, but is not limited to, time pressure, thereby allowing other work stressors to emerge. The following are some of the comments capturing activities causing work stress:

> "Far and above anything else stress-wise is vettings, audits, and outside inspectors. Any question is on the table, and all records must be presented [...]. Relaxation takes a back seat, and unplanned difficulties are rushed to meet unrealistic benchmarks." (>60, U.S., Chief engineer, Ro-Ro)

> "The vessel has many inspections. Every inspector feels they must find something [...]. This causes hours of paperwork and follow-up emails where you are forced to repeatedly explain how, why, and what you will do to prevent it again." (55, U.S., Captain, Container Ship)

> "The administrative duties take far more time than any other tasks. We have become slaves to office staff [...]. Inspectors arrive with deficiencies already written, making the inspection a formality." (44, U.S., Second officer, Product Tanker)

> "The majority of my duties are administrative—data entry, mostly [...]. Records must be printed, signed, stamped, scanned, saved, and sent. Most coincide with port arrivals, dramatically increasing workload during port stays." (42, U.S., Captain, PCC)

In the literature

Inspection stress has been associated with malpractices such as adjustments of records [40], [55]. Furthermore, scholars have reported that the bureaucratisation of safety has serious implications for workload and stress, prompting fatigue [56], [57].

Remark

Crews fear inspections because documented deficiencies are immediately relayed to the company, often resulting in endless questioning and blame against seafarers. Despite industry claims to the contrary, a blame culture remains deeply rooted in shipping and thrives amid the unstable working terms. This environment creates a strong incentive for seafarers to conceal non-conformities, leading them to adjust records to deceive inspectors.

The ISM Code and the ease of today's communication have intensified management's desire to control every aspect of ship operation, leading to increased demands on seafarers. Unsurprisingly, administrative duties are seen as control systems and additional workload, generating constant stress.

3.6 Safety Management System

The SMS is supposed to support safe and efficient ship operations. However, its effectiveness depends on its usability and relevance, which both condition seafarers' engagement in its implementation and continuous improvement.

Excessive length, generic procedures, and administrative burden can undermine its practical value and divert attention from operational safety. Understanding seafarers' perceptions of SMS size, quality, and responsiveness is therefore essential to evaluate its real-world impact and guide improvements.

Highlights about SMS

SMS size was reported to be overwhelmingly large.

For 79.0% of U.S. seafarers, SMS is too long. Globally, 66% of seafarers agreed with this view, and dissatisfaction increases with page count, particularly for manuals over 1,000 pages.

SMS procedures were considered too generic, poorly aligned with ship-specific operations, and disconnected from daily tasks, resulting in inefficiency and an administrative burden.

Further, excessive paperwork was reported to divert attention from operational tasks, increase the workload, and make complete comprehension impractical.

Most seafarers' suggestions to improve the SMS were not acted upon, showing weak feedback mechanisms and poor integration of crew experience into safety management.

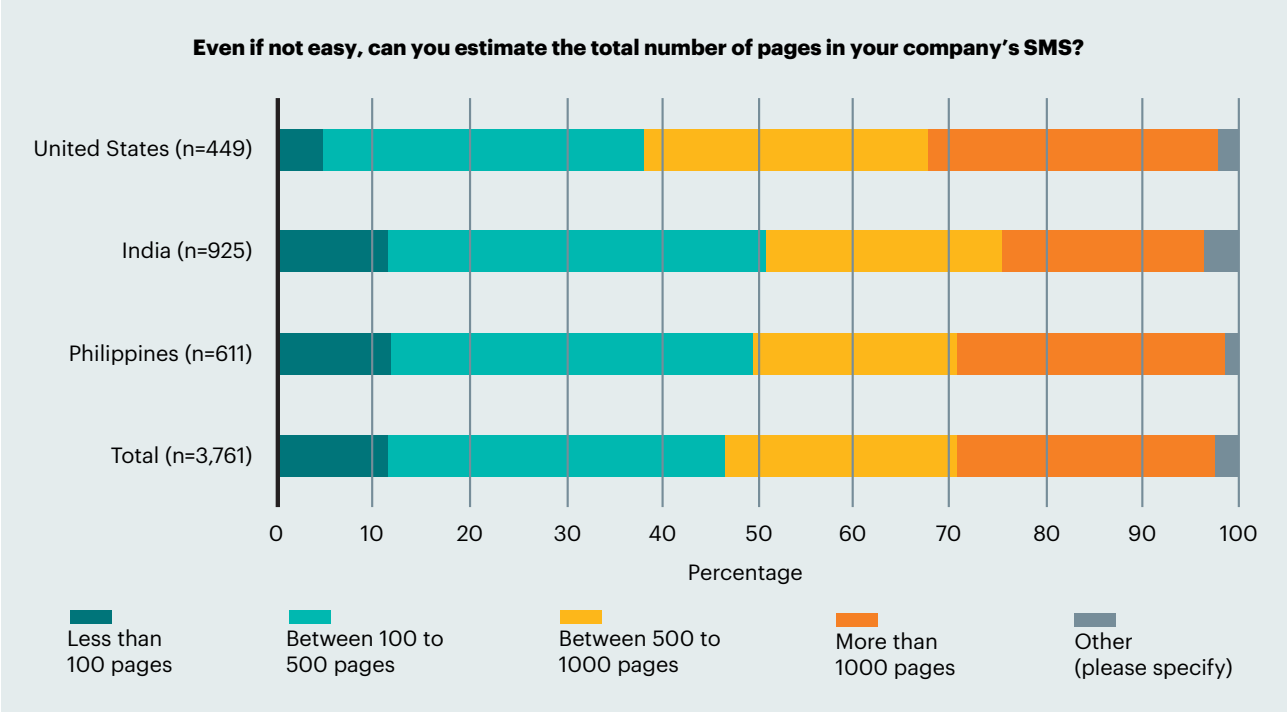
3.6.1 Estimation of pages in SMS

Seafarers' estimates of SMS length are shown in Figure 14:

- Overall, 51.0% of seafarers reported that their SMS exceeded 500 pages;
- The majority of U.S. seafarers (59.7%) indicated SMS exceeding 500 pages, with 30.1% reporting over 1,000 pages;
- Among Filipino (49.1%) and Indian (45.5%) seafarers, nearly half reported SMS exceeding 500 pages; and

SMSs of fewer than 100 pages were the least common, reported by only 11.6% of respondents.

Figure 14: Estimated number of SMS pages among seafarers

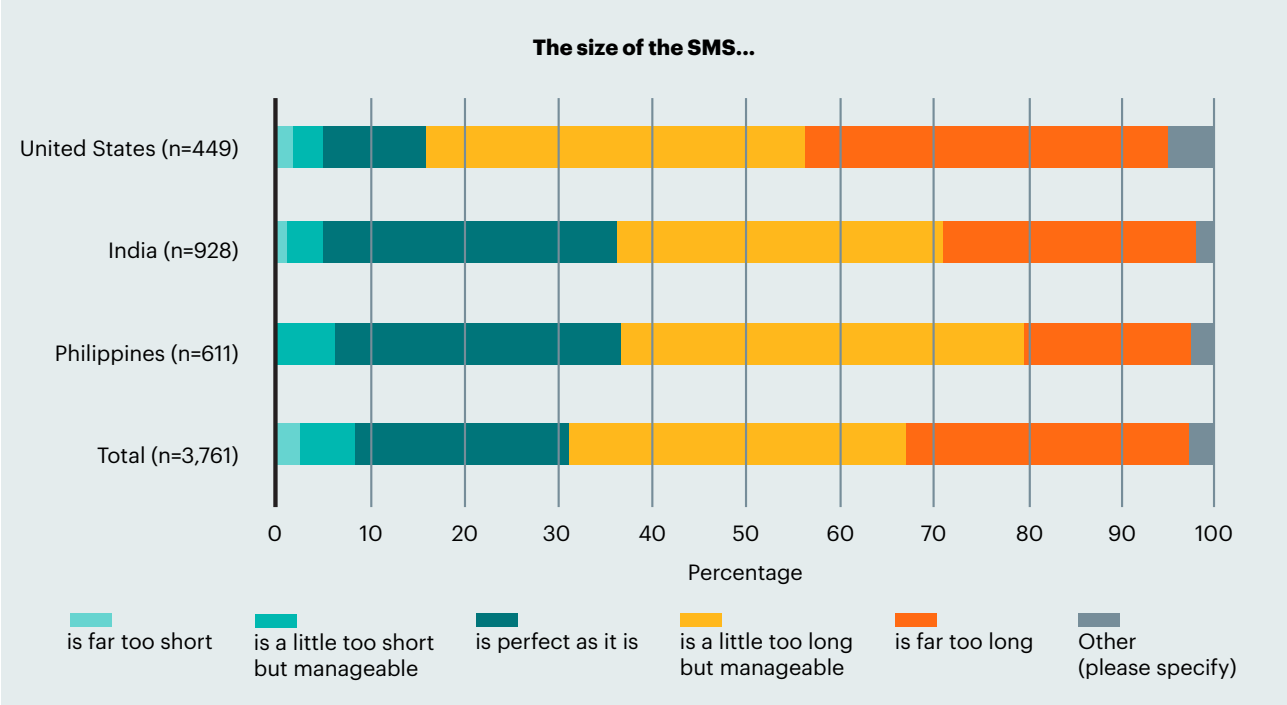


3.6.2 Perceived SMS size

As indicated in Figure 15:

- In the overall sample, 66.0% of seafarers reported SMSs to be 'too long', with 22.9% believing it is 'perfect as it is' and only 2.5% consider the SMS 'far too short;'
- U.S. seafarers stand out with the strongest view (79.0%) that SMS length is too long, combining 'a little too long but manageable' (40.5%) and 'far too long' (38.5%); and
- Indian (61.7%) and Filipino (60.7%) seafarers shared this view but at lower levels.

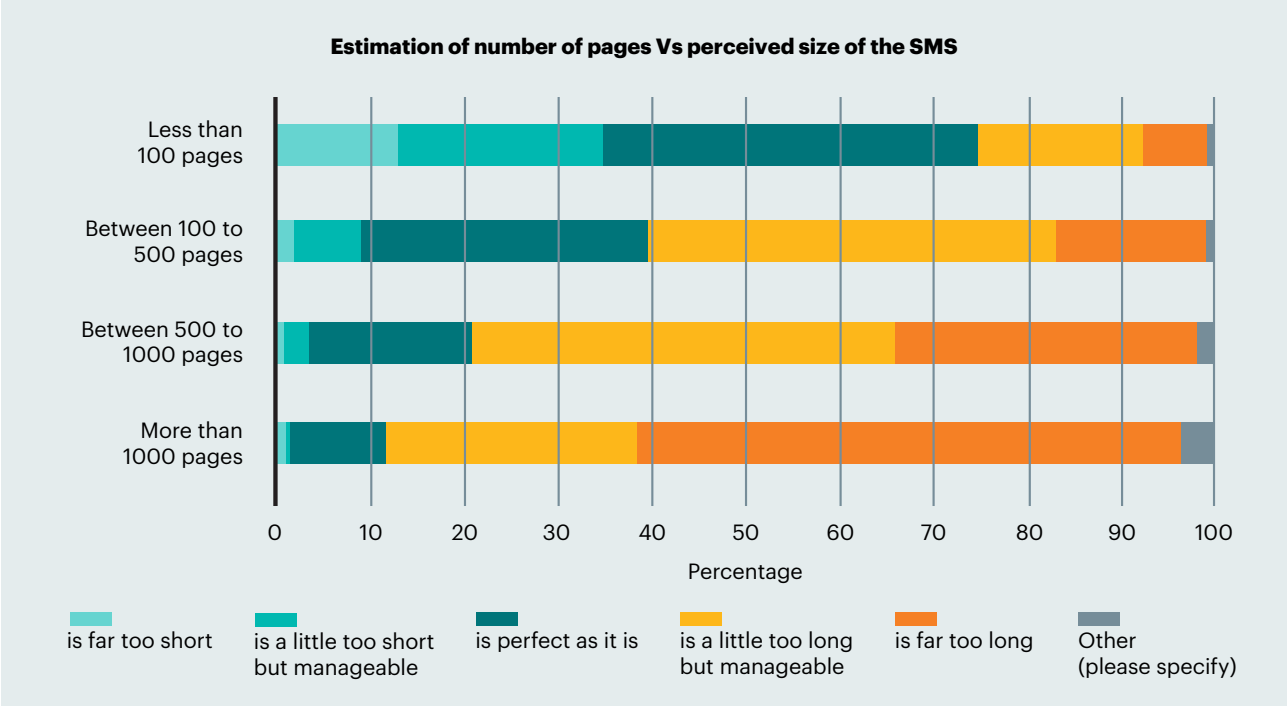
Figure 15: Perception of SMS's size among seafarers



3.6.3 Estimation of the number of pages vs. perceived size of the SMS

For respondents who estimated the SMS to be 'Less than 100 pages,' the most common response was that SMS 'is perfect as it is' (40.0%) (Figure 16). In stark contrast, for those who estimated 'More than 1000 pages,' the majority response was 'is far too long' (58.2%).

Figure 16: Relationship between the number of SMS pages and its perceived size among seafarers



Qualitative findings

This survey data on SMS magnitude aligns with interview findings, which emphasised the overwhelming volume of SMS and the impossibility of mastering its content. Seafarers repeatedly described excessive and burdensome paperwork in the following survey comments:

> "[...] the paperwork has gotten out of hand. I'm filling out JSAs (Job Safety Analysis) and all sorts of permits to complete quick jobs. Sometimes the paperwork takes longer than the job [...]." (28, U.S., Second engineer, Ro-Ro)

> "It would be a lie to say that I have ever fully read an SMS because there tends to be too much to realistically cover and memorize, on top of fulfilling all the other responsibilities and workload. I simply do not have the time or mental bandwidth to sit and read SMS constantly other than to ensure we are compliant for audits and flag state. Additionally, these SMSs vary between companies, and an officer may only be aboard several months." (35, U.S., Chief officer, Container ship)

Beyond daily routines, seafarers highlighted that constant revisions and add-ons contribute to SMS size and the related increase in workload:

> "Company SMS is huge. No one reads it except me, and they change it constantly. I will be off the vessel for 3 months, and there will be hundreds of document changes. Most of these will be small changes in names, email addresses, punctuation, etc. but they are still listed the same as a full change, and I end up reading through it to find the actual changes. This takes days after I first sign on." (45, U.S., Captain, Container ship)

> "Much paperwork exists solely for the sake of completing it, is duplicative, inefficient, or inapplicable. For example, there is literally a permit for a permit: when performing hot work, there is a hot work permit, but there is another document as a permit for the hot work permit. You can't make this up." (42, U.S., Chief engineer, Cruise ship)

> "These companies put so many pages and checklists into an SMS that it takes valuable time away from us to do other things. I have to fill out 15 different checklists to pull the anchor. The unnecessary paperwork has become the most overwhelming part of the job." (34, U.S., Chief officer, Ro-Ro)

Participants also reported that SMSs tend to grow over time. A seafarer's comment also reflects this:

> "The biggest issues with SMS have to do with the ponderous nature of the beast. I've worked with three companies since ISM came into being, and found these systems only grow over time to the point of ridiculousness, where the paperwork associated takes longer than the task [...]." (>60, U.S., Chief officer, Container ship)

Interviews found that this incremental growth was often described as a reactive approach, in which companies found an easy way to address issues raised by third parties (during inspections or investigations) rather than tackling root causes. Interviewees also noted a tendency to continually add procedures without removing outdated or redundant ones, further inflating the SMS.

In the literature

Our findings show that many seafarers, particularly in the U.S., encounter SMS manuals exceeding 500 pages, or even 1,000 are common, while manuals under 100 pages are rare. Similarly, a 2024 study analysed SMS manuals from 12 shipping companies and found page counts ranging from 298 to 4,999, with estimated reading times of 8.9 to 103.6 days (at one hour per day) [58]. In this context, U.S. seafarers would, in practice, require more than the length of a standard contract to finish reading the SMS in full.

Dissatisfaction appears to rise with length: 40% of respondents rated SMS under 100 pages as 'perfect as it is,' whereas 58.2% judged manuals over 1,000 pages as 'far too long.' These perspectives echo a 2018 study that claims the ISM Code is widely regarded as an 'administrative burden' [59].

Excessive documentation, rather than strengthening safety, appears to undermine it. The paper-heavy systems increase workload and divert attention from shipboard operations [60], [61].

Scholars further suggest that the ISM code became a bureaucratic control system, instrumentalised by managers and sustained by crew [47], [60], [62], [63].

The International Maritime Organization (IMO) expert assessment report on the ISM Code (MSC 109/INF.3) confirmed the issues in a dedicated chapter entitled '5.4.4.1. Paperwork, checklist mentality, and procedures not aligned with shipboard tasks.' It noted their detrimental impacts on effective implementation [64].

Remark

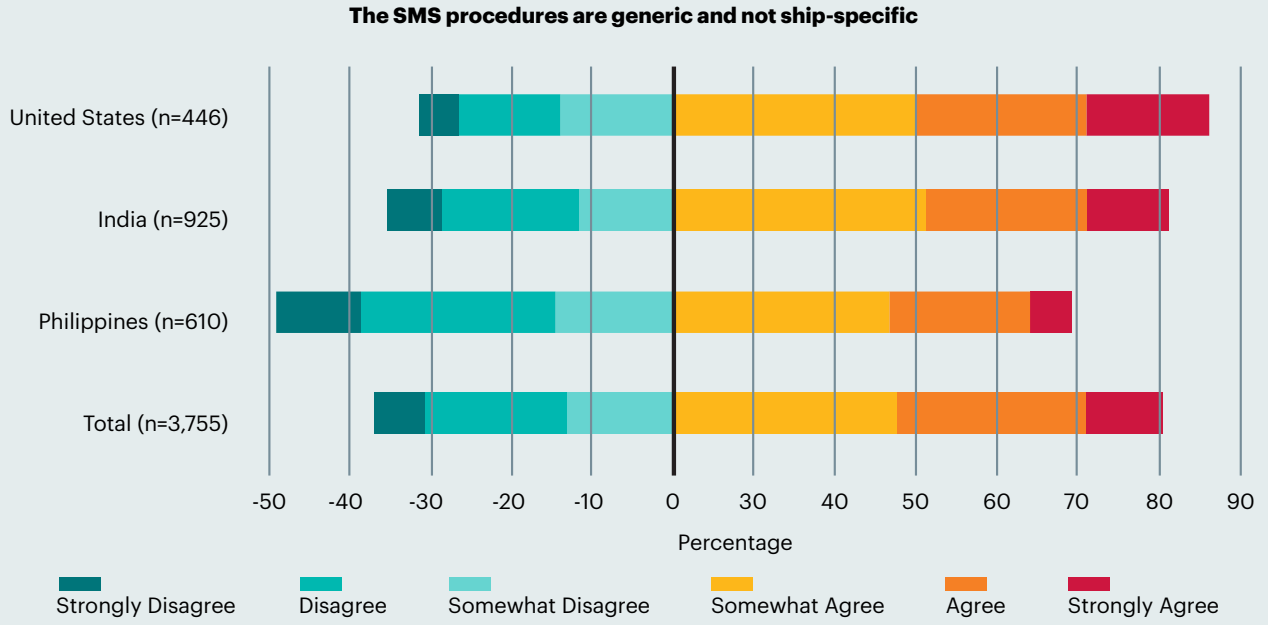
As documented in the safety science literature, SMSs tend to be bureaucratic-control systems rather than safety-support systems. The multiplication of procedures and the distance between those managing the SMS and those applying it progressively erode SMS credibility and usefulness. Consequently, safety and usability become secondary to the satisfaction of bureaucratic indicators.

3.6.4 Quality of SMS

When asked if the SMS procedures are generic and not ship-specific (Figure 17):

- 60.6% of the survey respondents considered the SMS procedures as generic and non-specific; and
- U.S. seafarers had the highest level of agreement (66.3%), followed by Indian (61.4%); and Filipino (49.5%).

Figure 17: Seafarers' responses to the statement "The SMS procedures are generic and not ship-specific"

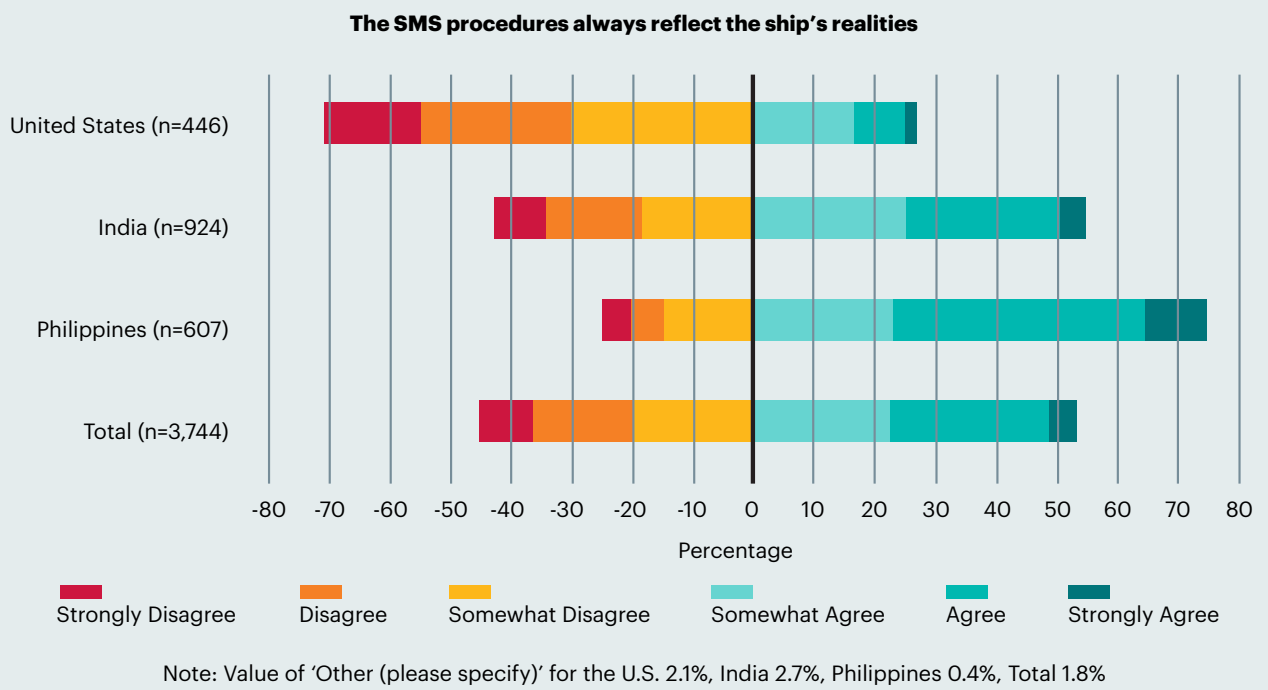


Note: Value of 'Other (please specify)' for the U.S. 2.3%, India 3.2%, Philippines 1.5%, Total 2.5%

When asked if the SMS procedures always reflect the ship's realities (Figure 18):

- Overall, 53.1% agreed;
- U.S. seafarers (71.0%) reported the highest level of disagreement;
- In stark contrast, Filipino (74.6%) seafarers reported the strongest belief that procedures reflect reality; and
- Indian seafarers followed (54.6%), with agreement slightly above the overall.

Figure 18: Seafarers' responses to the statement "The SMS procedures always reflect the ship's realities"

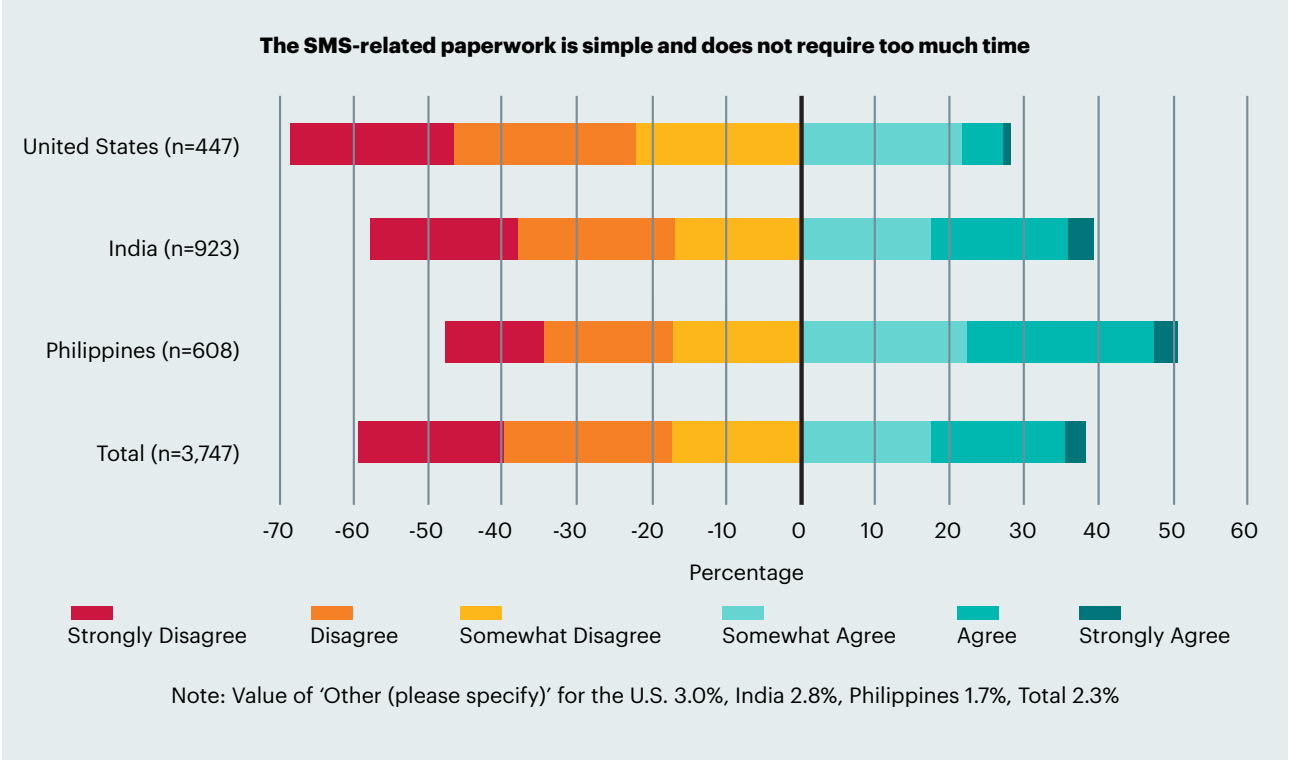


Note: Value of 'Other (please specify)' for the U.S. 2.1%, India 2.7%, Philippines 0.4%, Total 1.8%

When asked if SMS-related paperwork is simple and not too time-consuming (Figure 19):

- For 59.3% of seafarers, SMS-related paperwork is not simple and requires too much time;
- U.S. seafarers reported the most negative perception (68.6%);
- Indian seafarers followed with 57.7% expressing a negative view; and
- Filipino seafarers were more divided, with 50.7% holding a positive view.

Figure 19: Seafarers' responses to the statement "The SMS-related paperwork is simple and does not require too much time"



Note: Value of 'Other (please specify)' for the U.S. 3.0%, India 2.8%, Philippines 1.7%, Total 2.3%

Qualitative findings

Interviews highlighted several SMS quality issues that align with the survey data.

First, SMS procedures were generic and poorly adapted to the realities of their specific ships. This is also reflected in seafarers' comments:

> "SMS is fleet specific but not ship specific." (42, U.S., Chief officer, Container ship)

> "Ship forms are a one-size-fits-all, regardless of whether your ship is 300 feet or 1,000 feet, with 20 people or 3,000 people." (42, U.S., Chief engineer, Cruise ship)

Second, SMS procedures were viewed as impractical and disconnected from daily operations, and as illustrated by seafarers' comments:

> "Too long, too convoluted and WAY too in-depth on some of the procedures. It is anything but ideal when compared to the requirements of the ISM Code and principles of Organizational Quality Management standards." (45, U.S., Captain, Research vessel)

Finally, seafarers emphasised the heavy administrative burden created by SMS, which consumes valuable time and reduces efficiency:

> "The SMS is horrible and keeps the vessel crew from being able to complete the work that actually matters. It should not take 8 checklists to enter a tank, drive a forklift, or paint." (44, U.S., Captain, Container- Roll-on roll-off [Con-Ro])

In the literature

While SMS procedures were found to be too numerous, they also distanced themselves from actual operations. When procedures do not align with operational realities, they become difficult to comply with [65]. The ill-adapted nature of procedures was confirmed by scholars [60] [62] [63] [66]—[68] and, more recently, by the IMO [64].

The variation in this perception is noteworthy, with U.S. seafarers consistently reporting the most negative perceptions across all measured SMS dimensions. Conversely, Filipino seafarers demonstrated more positive perceptions. This cultural variation supports a 2007 study that found national cultures significantly influence safety orientation and attitudes toward safety management systems [69].

In another study [70], the authors suggested that "misalignment between institutional expectations and operational realities fosters procedural mistrust, leading to circumvention or superficial compliance" and called for a cooperative procedure development rather than the current top-down approach.

Remark

The tendency of SMS to differ from reality has also been reported in other industries. The mistrust between frontline operators and managers often explains the gap. Motivated by different agendas, those having a hand in SMS strive to shape it to their beliefs and needs. Such tendencies distance the procedures and instructions from operational realities, rendering them inoperative and impacting SMS credibility.

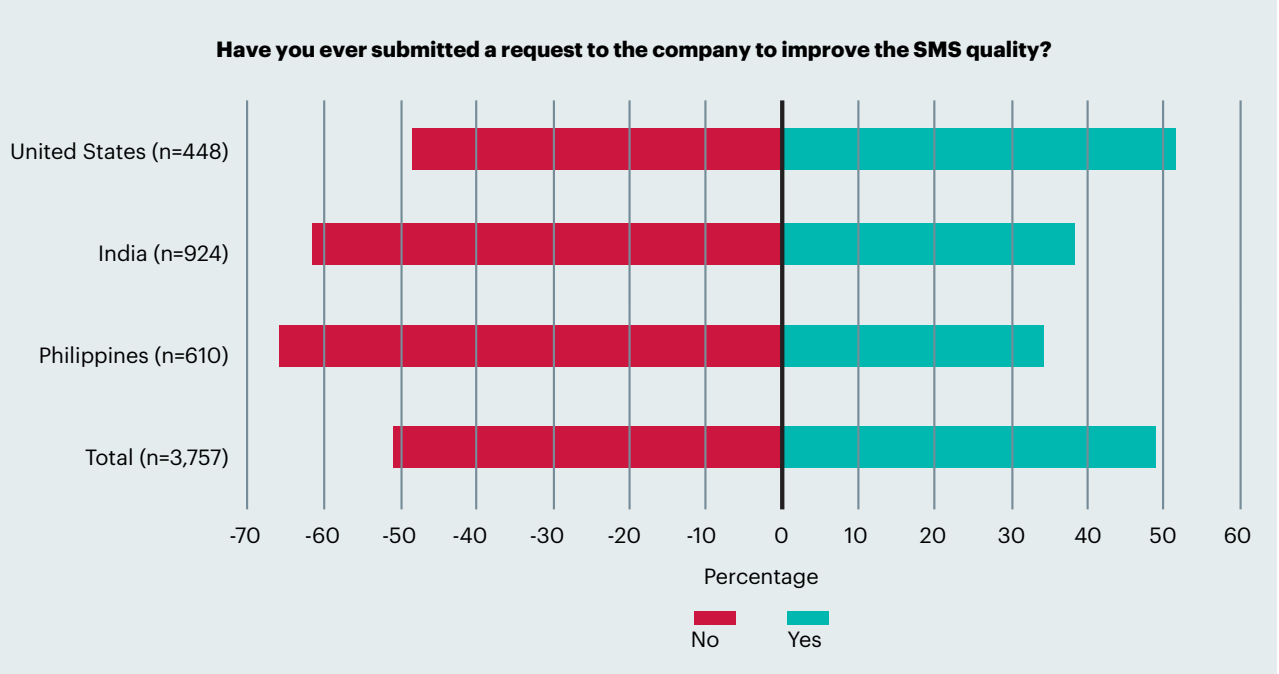
3.6.5 SMS review

An effective participation in the continuous improvement process is an essential condition for the success and evolution of any management system.

When asked if they had ever submitted a request to improve SMS quality (Figure 20):

- Overall, nearly half of the seafarer respondents (49.1%) indicated having requested improvements to the company;
- U.S. seafarers were nearly evenly split, with 51.6% confirming having requested improvements; and
- In contrast, Indian (38.5%) and Filipino (34.3%) seafarers reported the lowest reporting levels.

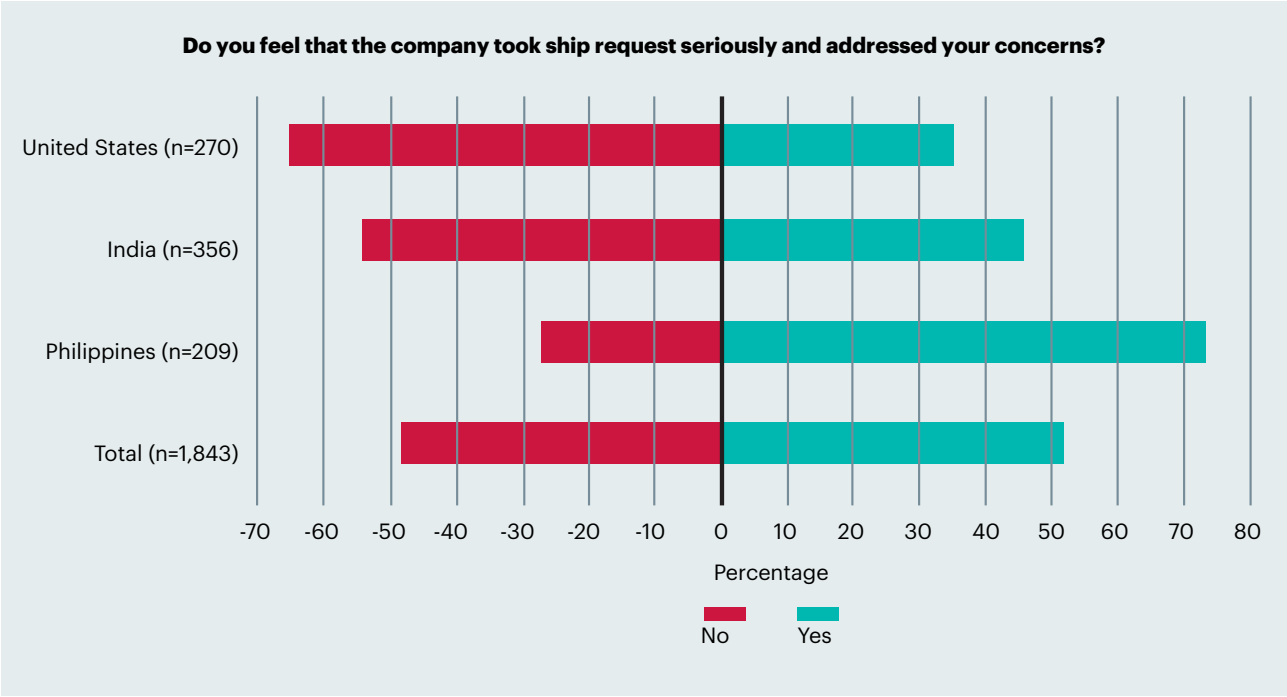
Figure 20: Proportion of seafarers who submitted a request to change SMS quality



When asked if the company took their SMS-related requests seriously and addressed concerns (Figure 21):

- Overall, respondents were nearly split: 52.2% felt their concerns were addressed;
- 64.9% of U.S. seafarers reported that their requests were not addressed seriously;
- Indian seafarers also leaned negative (54.2%); and
- Filipino seafarers had the most positive perception, with 73.2% feeling their requests were taken seriously.

Figure 21: Perceived company responsiveness to ship requests among seafarers



Qualitative findings

Interview findings aligned with survey data, with most seafarers reporting that companies do not take their SMS requests seriously or fail to address them. Seafarers' comments also expressed their frustration:

> "We submit requests to improve SMS procedures constantly, and they are always ignored." (43, U.S., Second officer, Cruise ship)

> "Repeated requests for SMS improvements were never addressed." (>60, U.S., Captain, Ro-Ro)

> "Editing suggestions are usually accepted. Suggested alterations of the actual SMS are largely ignored, even when coming from multiple ships/masters." (>60, U.S., Chief officer, Container ship)

> "It can take forever to get our SMS updated, because of internal organization politics shoreside and people who would do anything not to do their jobs." (45, U.S., Chief officer, Other)

> "When the SMS is concerned, any feedback from the vessel is met with disdain from the company. They lack the ability to utilize the experience of the mariners, often met with a sense that we should just keep quiet and do what we are told. This may be due to the fact that no one in the office has any sailing experience. The corporate mantra doesn't translate to ship work." (37, U.S., First assistant engineer, Container ship)

In the literature

Prior research has highlighted the limited participation of seafarers in workplace health and safety management [60], [63]. One explanation may be companies' resistance to addressing crew concerns meaningfully. In this study, only 51.6% of U.S. seafarers submitted requests, and companies adequately addressed the concerns of only 35.1% of those who reported. Additionally, previous research suggests that seafarers are reluctant to report to companies, fearing sanctions [71], [72].

The data aligns with section "5.4.4.2 Continuous improvement is poorly implemented" of the MSC 109/INF.3 [64]. The IMO review stressed that deficiencies in reporting relate to the potential risk of "self-incrimination and punishment." The MSC 109/INF.3 report also noted that failing feedback mechanisms are indicators of a defective safety culture.

Insufficient company support has also been repeatedly observed in other reporting areas, such as work/rest hours, where research shows that seafarers' concerns are often not appropriately addressed [19], [40], [73]—[75].

Remark

The lack of consideration for ship feedback may have long-term detrimental consequences on the seafarers' willingness to propose improvements. Furthermore, the ISM Code was initially designed with such a mechanism to ensure that ship safety concerns are taken seriously by the top management via the designated person ashore. The weaknesses of such a feedback mechanism seriously question the relevance of such a tool.

3.7 Shore leave

Shore leave, a key component of seafarers' well-being, helps maintain their health, morale, and connection to the world. Access to shore-based facilities and services reflects the principle of "humane conditions of labour" (ILO Constitution, preamble). In addition to home leave, seafarers are entitled to shore leave to support their health and well-being (MLC, 2006; Regulation 2.4, paragraph 2).

Highlights about shore leave

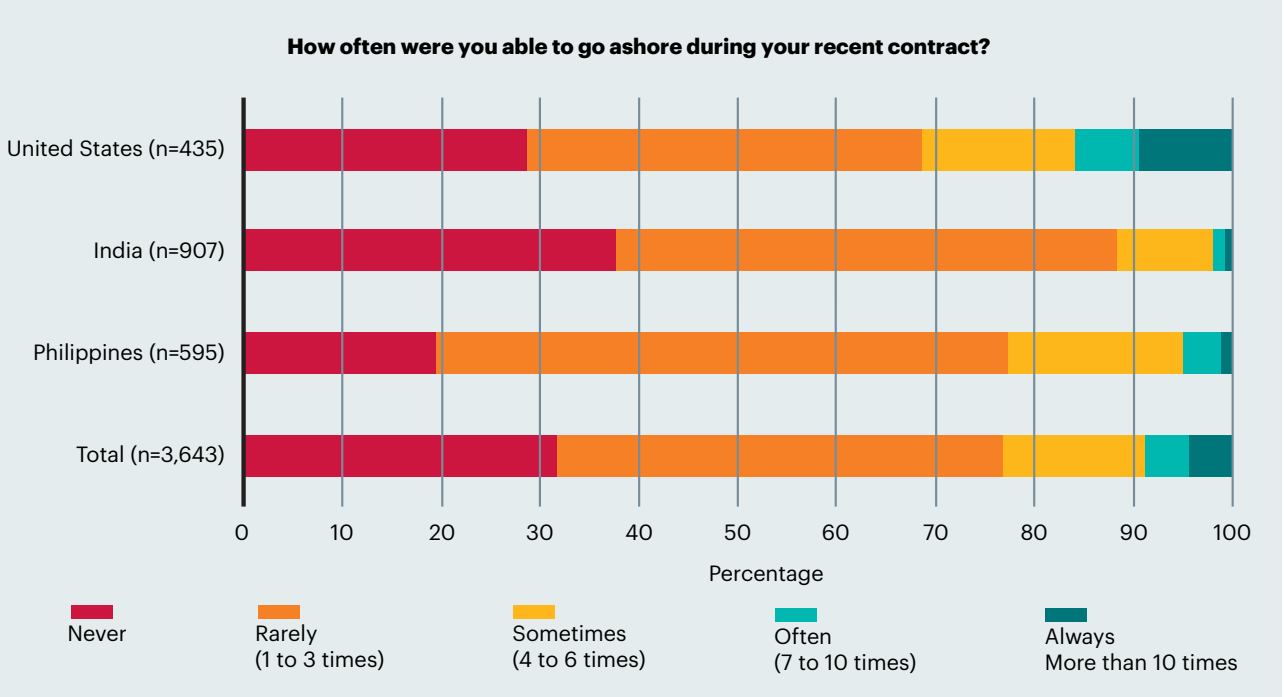
- Three-fourths of seafarers 'never' or 'rarely' go ashore, with Indian seafarers reporting the lowest access (88.2%), followed by Filipino seafarers (77.3%).
- U.S. seafarers were slightly better off; still, 68.5% 'never' or 'rarely' go ashore.
- Workload aboard and insufficient port time were the top constraints across groups.

3.7.1 Frequency of shore leave

As depicted in Figure 22:

- Globally, 76.9% of seafarers reported 'never' or 'rarely' going ashore;
- 68.5% of U.S. seafarers reported going ashore either 'never' (28.7%) or 'rarely' (39.8%). Only 15.8% of them reported going ashore 'often' (7–10 times) or 'always' (11 or more times). Even if comparatively better for U.S. seafarers, access to shore leave remains a challenge for all; and
- Indian seafarers reported the lowest level of shore leave, with 88.2% 'never' or 'rarely' going ashore. Filipinos are around the global average (77.3%).

Figure 22: Frequency of shore leave during the recent contract among seafarers



Qualitative findings

Interviews with U.S. seafarers indicated slightly better access to shore leave compared with those from other groups. However, the difference observed in the survey was relatively modest across the U.S., India, and the Philippines. It appears U.S. seafarers may notice the impact of restricted shore leave less, given their short contracts and their relatively higher presence on passenger ships. Additionally, nationals from developed countries tend to have easier access to shore facilities and shore passes.

Overall, seafarers described the broader reality of modern shipping as discouraging shore leave:

> "Going to sea is decent pay, but you are basically going to prison with hard labor in exchange for money." (44, U.S., Second officer, Product tanker)

In the literature

Limited shore leave for seafarers has been well documented [12], [76], [77]. A recent U.K.-based study found that only one-third of seafarers had adequate opportunities for shore leave [78]. Similarly, a large-scale international survey of more than 5,000 seafarers reported that opportunities for shore leave have been seriously eroded, with 69.9% of seafarers never or rarely (1-3 times) having shore leave [79]. This finding was supported by a survey of port welfare centres, which found that "61% of respondents reported a decline in visitor numbers since the pandemic" [77].

Remark

Restricted or absent shore leave locks seafarers within ships, isolating them from normal life. It may have severe consequences on mental health and motivation to remain in the profession.

3.7.2 Barriers to shore leave

As depicted in Figure 23:

- Workload on board and insufficient ship time in port ranked the top two barriers across all seafarers;
- U.S. seafarers ranked distance from shore facilities as the third barrier and preference to stay on board to rest as the fourth;
- By contrast, Indian seafarers placed greater emphasis on the port and terminal restrictions (third and fourth), aligning with the overall ranking, whereas U.S. and Filipino seafarers ranked these lower (fifth and sixth);
- Indian seafarers ranked 'lack of visa or shore pass' higher (fifth) than Filipinos (ninth) and U.S. seafarers (eighth), indicating that passport-related restrictions pose a greater barrier for Indian seafarers compared with their Filipino and U.S. counterparts; and
- Company restrictions, lack of port facilities, non-availability of seafarers' centre and staying on board to save money were generally ranked lower across groups.

Figure 23: Heat map showing barriers to shore leave among seafarers

	U.S.	India	Philippines	Total
Workload on board	1	1	1	1
Insufficient ship time in port	2	2	2	2
Port restrictions	6	3	5	3
Berth (or terminal) restrictions	5	4	6	4
Facilities too far from the port (e.g. shops, restaurants)	3	6	7	5
Prefer to stay on board to rest	4	10	4	6
High transport costs	10	7	3	7
Lack of visa or shore pass	8	5	9	8
Company restrictions	9	8	12	9
Lack of facilities in port (e.g. shops, restaurants)	7	9	10	10
Non-availability of seafarers' centre	12	11	11	11
Staying on board to save money	11	12	8	12

Rank 1 (Topmost barrier to shore leave) – **Rank 12** (bottom most barrier)

Qualitative findings

Survey findings aligned with interviews on the main barriers to shore leave: workload and insufficient port time, with additional obstacles related to port or berth restrictions, transport, and rest preferences. Seafarers' comments highlighted these challenges, consistently identifying workload as the top barrier. One seafarer remarked:

> "There is usually too much work to catch up on in order for me to be able to go ashore." (32, U.S., Second engineer, Container ship)

Engine staff must perform certain maintenance and repairs that require the engines to be stopped. Therefore, specific tasks can only be done in ports. Given the limited time in port, the engine work eliminates any possibility of shore leave. Port stays became extensions of shipboard duties:

> "Main engine repairs can only be done in port [...]. There isn't enough time to go ashore." (43, U.S., First assistant engineer, Container ship)

Others questioned company practices and suggest an unwillingness to spend and facilitate shore leave:

> "Too much work, companies will find any reason to keep you aboard to avoid launch boat expenses and dock fees." (29, U.S., Second engineer, Chemical tanker)

On the other hand, a few companies have practices that facilitate access to shore facilities in specific locations:

> "Most US ports are easy to go ashore, especially if I'm working for a company that provides night mates/cargo mates." (28, U.S., Second officer, Ro-Ro)

The combination of high workload and short port stays makes shore leave virtually impossible for the crew:

> "US Flag vessels simply do not spend enough time in port, often 12–24 hours max... you have to choose between rest or time ashore." (25, U.S., Second assistant engineer, Product tanker)

> "Port time is too often too short; I never leave the vessel." (>60, U.S., Chief officer, Container ship)

Fatigue risk and need for recovery often overcame any desire for shore leave:

> "If I do go ashore, I am cutting into my rest period due to the port movement schedule." (42, U.S., Captain, PCC)

> "I tend to stay on board to rest up rather than go ashore." (55, U.S., Second engineer, Container ship)

Regulatory barriers, such as immigration and port restrictions, also prevent access to shore:

> "Governments are increasingly making it more difficult to go ashore [...]. Even when there is sufficient time over multiple days, governments only allow one time ashore." (>60, U.S., Captain, Container ship)

Certain berth and terminal restrictions prevent crew access to shore leave:

> "Most berths are military terminals and/or explosive berths, which you cannot walk to the gate. When anchored out, the launch rides of +1 hr each way are not worth it." (52, U.S., Captain, Other)

> "Negotiating the hoops, we must go through at some of these terminals just to run up to the store is outrageous [...]. I was once charged $30 for transportation inside a terminal." (43, U.S., Second officer, Product tanker)

The cumulative barriers and significant costs associated with shore leave deter many seafarers from leaving the ship:

> "It is not worth going ashore anymore. The amount of paperwork and lack of facilities make it useless. Stay on board and save $." (>60, U.S., Second engineer, General cargo ship)

Several barriers prevent seafarers from taking shore leave. Sometimes, just one factor, like a heavy workload or a short port stay, is enough to stop them from going ashore. More often, though, multiple barriers come together, including tight schedules, maintenance work, immigration rules, terminal restrictions, and fatigue. Each of these alone might be manageable, but when they happen at the same time, there is little or no opportunity for shore leave.

In the literature

Consistently, workload pressures and limited port time emerged as the two leading barriers to shore leave, confirming past evidence [77], [79], [80]. The accelerating pace of shipping has not only intensified workloads but also shortened port stays, often to less than 24 hours [81].

These barriers significantly restrict seafarers' opportunities to go ashore, thereby limiting social interaction beyond the vessel [82], [83].

A port chaplain underscored this trend:

> "The biggest issue about shore leave is actually do seafarers have the time? [s]hips only make money when they are moving [...] So there has been a huge move to speed up turnaround times [...]. Now we have ships carrying 21,000 TEU and the turnaround could be eight hours [...] By reducing the crew on board, you heighten the issue [...]." [80]

Seafarers themselves echoed these concerns as reported in the Lloyd's List [84]:

> "To be honest, the chance for going ashore is very limited since I have duties and responsibilities on board, and this is the priority. Above all, this is the priority [...] especially when the vessel operation is very fast for some ports, it takes [few] hours regarding cargo operation, that's why I think the time is limited [...]."

The consistent combination of a heavy workload and insufficient port time across groups transform these factors into structural barriers, rooted in the global

organisation of shipping. Other barriers tend to be contextual, shaped by national regulations or practices, port conditions, or company-specific policies.

The amalgamation of structural and contextual barriers restricts opportunities for shore leave, which some evidence suggests may even be on the verge of extinction [79]. This erosion of shore leave has significant implications for seafarers' well-being and career retention [85].

Remark

While the barrier order varies by nationalities due to different social realities and motivations, the top three barriers directly relate to ship and commercial operations: workload, time in port and port restrictions. This implies that productivity and operational matters take priority over any other consideration. The countries' incapacity to address shore leave barriers suggests an implementation failure with regard to Regulation 4.4 - Access to shore-based welfare facilities.

Together, shore leave restrictions, exhausting working hours, and the lack of days off represent salient features of an industry obsessed with productivity and trade acceleration, while disregarding the detrimental impacts of work intensity and the absence of recreation on health and well-being. Despite some industry claims, this evidence suggests a systemic neglect of the human element.

3.8 Screening mental well-being

If the international shipping community intends to address human factors and decent work, it is vital to promote well-being. Before any targeted action, it remains essential to measure seafarers' well-being using validated tools to accurately gauge current conditions and enable comparisons with other industries and populations. In this regard, the survey used a well-established, scientifically validated questionnaire developed by the WHO. The WHO-5 provide scores indicating well-being and is a screening tool for mental health issues.

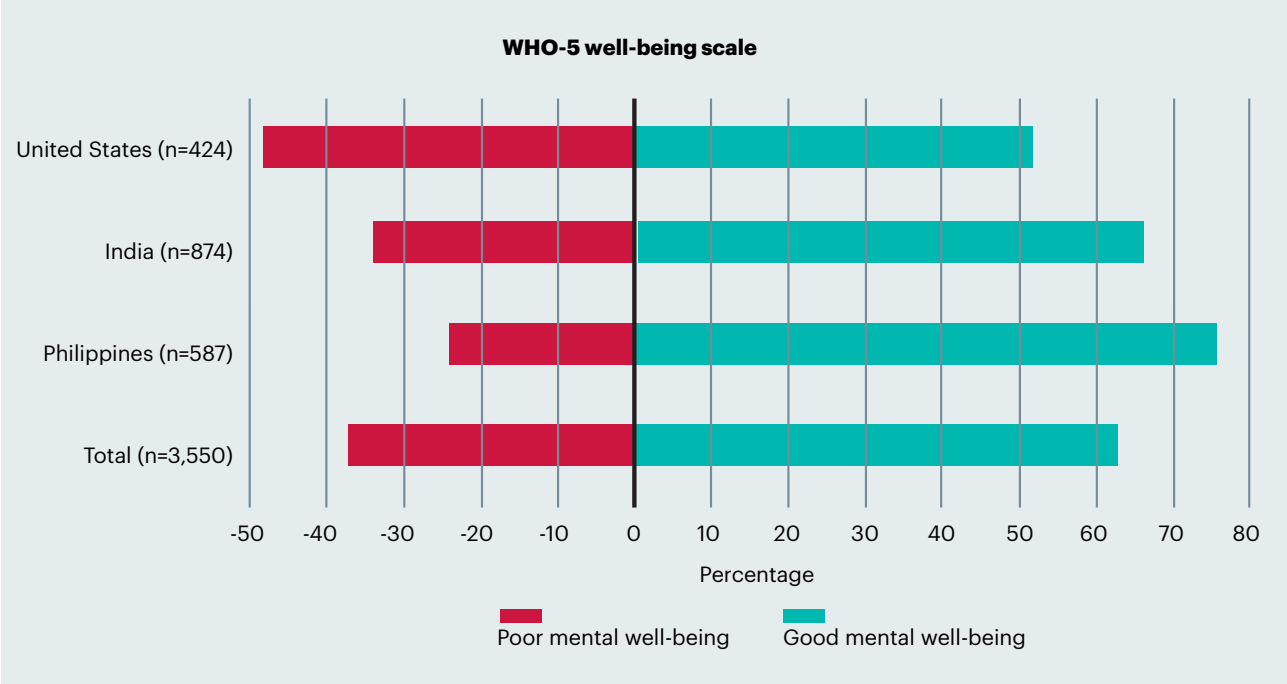
Highlights about mental well-being

- Globally, 37.2% of seafarers reported poor mental well-being (WHO-5 percentage scores <50).
- U.S. seafarers were most affected. Nearly half (48.2%) of U.S. seafarers reported poor mental well-being, 11% higher than the survey global average, and double that of Filipino seafarers, who reported the lowest levels of poor well-being (24.2%).
- Indian seafarers (33.8%) reported poor well-being levels similar to the global average.
- U.S. seafarers reported poorer well-being on board (57.5%) than when on leave (42.9%), suggesting challenging work environments with high workload and administrative pressure.

As indicated in Figure 24:

- Globally, 37.2% of seafarers presented scores indicating poor mental well-being;
- Worryingly, the U.S. seafarers stood out, with nearly half of them (48.2%) reporting poor mental well-being (11% above the average); and
- Indian seafarers reported scores (33.8%) close to the average well-being score (37.2%), whereas Filipino seafarers' scores (24.2%) were nearly half that of their U.S. counterparts.

Figure 24: WHO-5 well-being scale scores among seafarers



Since the WHO-5 questionnaire assesses well-being over the past two weeks, an analysis of On board vs On leave was conducted:

- 57.5% of U.S. seafarers on board reported poor well-being, compared with 42.9% of those on leave. Considering the other evidence in this report, the U.S. seafarers' work environment may be more challenging than that of other groups. The situation may result from reported higher workloads, work stress, heavy bureaucratic demands, limited opportunities for shore leave, and poor company communication.

Qualitative findings

While the survey assessed mental well-being using the WHO-5 questionnaire, the interviews explored the key factors that contribute to it.

The interview findings corroborated that onboard "Social Interaction Matters" [86]. Further, the quality of food, the onboard entertainment system, including internet access, and the support from the shore management company were reported as important contributors to seafarers' mental well-being.

Seafarers also highlighted the company's failure to address core barriers, including overwork and administrative burdens.

In the literature

Though more than 500 studies have used the WHO-5 scale [87], its application in the maritime context appears limited. Maritime studies mainly used ad-hoc questionnaires, which limit the ability to replicate and compare studies on well-being [88].

One large-scale study of over 13,000 seafarers, primarily from India and the Philippines, reported that 77.2% had good overall well-being, suggesting that the remaining 22.8% had poor well-being [89]. In another restricted distributed research study, the WHO-5 data were collected directly on board ferry ships by researchers. In this particular research, which was ship-type specific, the WHO-5 varied significantly across ships, ranging from 19.4% to 42.9% with an average of 28.5% [90].

In comparison, the current study found a remarkably higher prevalence of poor well-being (37.2%) than these previous studies. The distinction in respondents' nationalities and the mode of questionnaire administration (distributed by shipping companies for the first survey and administered on board ships for the second research) may largely explain the gaps with our study.

Despite this gap, seafarers' scores were still considerably higher than those of the European general population, in which 16% reported impaired well-being, as reported by Baumler in 2024 [90]. Similarly, in a U.S. County, approximately one in five individuals (18.8%) had impaired well-being [91]. Among U.S. seafarers, however, nearly half were identified as having poor well-being, highlighting a substantially higher prevalence in this occupational group than in the general population [92].

High scores in the WHO-5 Well-being Index indicate the possible presence of mental health conditions, like depressive and anxiety disorders [88]. A recent study of seafarers from the Black Sea regions, using validated psychological instruments like Beck Depression Inventory-II (BDI-II) and Generalized

Anxiety Disorder 7-item (GAD-7), found 38.8% of participants showed signs of depression, and 56.7% symptoms of anxiety [93]. Depression and anxiety levels among seafarers are still comparable but clearly surpassing those reported in classical studies like Lefkowitz and Slade (2019) [54].

Remark

This type of measurement is essential for capturing the magnitude of the problem and beginning to address it. Worryingly, U.S. seafarers scored substantially higher than other groups in this study and any other seafarers screened in other research. The prevalence of poor mental well-being in shipping suggests a structural problem in managing well-being and mental health. In this respect, enhanced research on seafarers, especially in the U.S., using other validated tools, would confirm and enable identification of responses and interventions.

3.9 Career intention

As the backbone of world trade, the maritime sector relies on a skilled, experienced, and stable seafaring workforce to operate safely and efficiently. Therefore, research into career retention is critical due to growing concerns about seafarers' scarcity.

High turnover rates directly threaten this stability, leading to a dangerous loss of institutional knowledge, increased operational costs for recruitment and training, and heightened safety risks.

Highlights about career intention

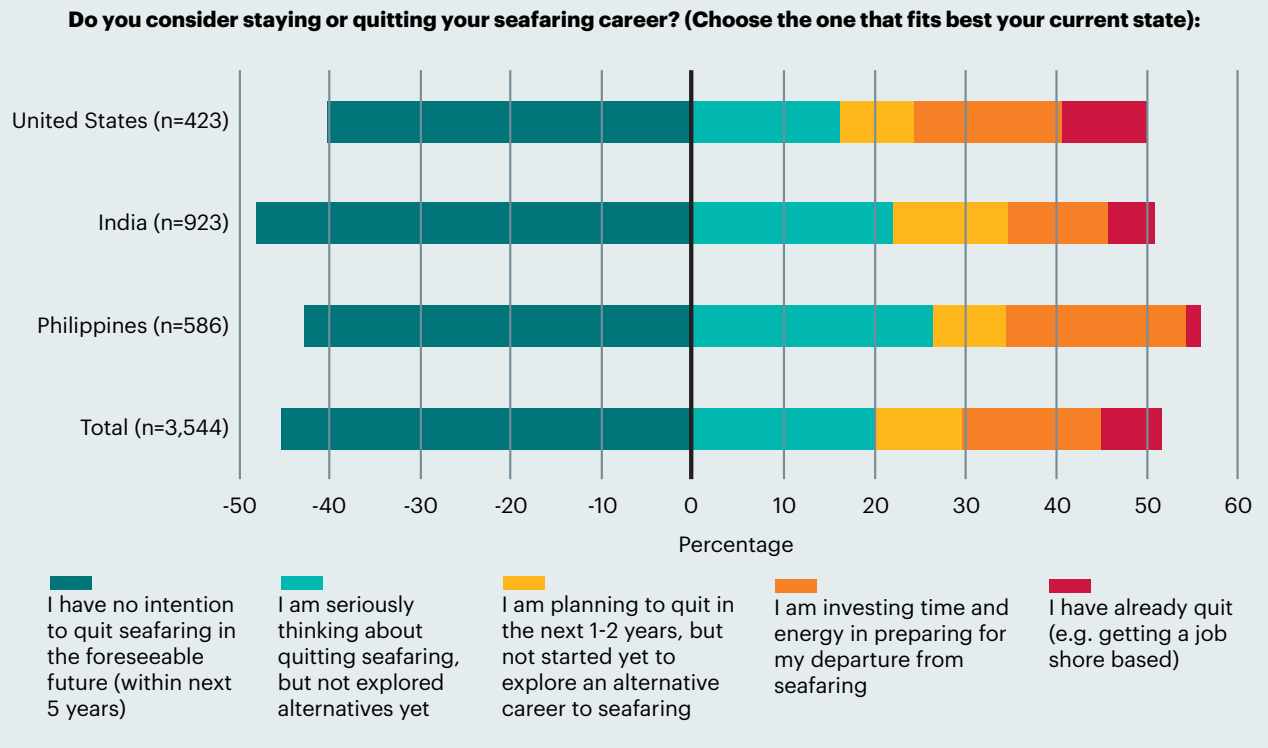
- Nearly half of seafarers globally intended to quit within the next five years.
- U.S. seafarers had the lowest intention to stay (40.2%), followed by Filipino and Indian seafarers.
- Notably, correlation with mental well-being scores showed that those scoring under the poor mental health category were higher among those planning to quit (49.8%) than among those planning to stay (25.4%).
- Family and work-life balance were reported as major factors for career re-evaluation.
- There is a growing disillusionment with the profession due to stress, heavy workload, stagnant wages, unhealthy living conditions on board, and a lack of support from employers.

Strikingly, the survey indicates that half of seafarers (51.9%) intend to quit within 5 years.

As indicated in Figure 25:

- Globally, less than half of seafarers (45.2%) reported not wishing to change occupation;
- 40.2% of U.S. seafarers reported their willingness to stay at sea within the next five years, which is the lowest figure among the study groups;
- Among U.S. respondents, 49.8% were at different stages of quitting: 16.3% are seriously considering it, 8.0% are planning to quit in the next 1-2 years, 16.5% are actively preparing to leave, and 9.0% have already quit;
- Filipino seafarers reported the highest levels of quitting intention, with 54.3% at various stages: 26.5% seriously considering quitting, 7.8% planning to quit in the next 1-2 years, 20.0% actively preparing to leave, and 1.5% having already quit; and
- Indian seafarers presented a balanced picture: 45.6% intend to quit, while 47.9% have no intention of quitting in the next five years.

Figure 25: Career intention among seafarers



Note: Value of 'Other (please specify)' for the U.S. 10.0%, India 1.1%, Philippines 1.5%, Total 3.1%

Mental well-being vs. Career intention

Data crossed between mental well-being (poor vs. good) and career intention (staying vs. quitting) showed that:

- Seafarers intending to quit reported higher rates of poor mental health (49.8%) compared with those intending to stay (25.4%); and
- Among U.S. seafarers, the gap was even larger, with 65.3% of those planning to quit reporting poor well-being versus 34.9% of those intending to stay.

Qualitative findings

Interviews revealed that many seafarers expressed openness, or even concrete plans, to transition ashore. The survey comments also captured such intentions or actions.

Thoughts of leaving were common:

> "This job is bullshit. To be frank, it's a great career for recluse individuals or those running away from something. A job like seafaring further inhibits personal growth and keeps a person into the doldrums of work-work-work and say thank you for a pay check and your life at home be damned." (42, U.S., Chief officer, Container ship)

> "If the workload does not decrease and pay does not increase, I will be looking for an alternative career. This is simply not physically or mentally sustainable for the amount we are getting paid at the moment." (32, U.S., Second engineer, Container ship)

> "Reason I'm thinking about quitting: very hard time finding work, upcoming renewal of DP certification and more required training, increasing costs of keeping licenses, increasing workload and ZERO increase of pay." (>60, U.S., Captain, MPV)

Some had taken steps toward transitioning ashore:

> "I'd say biggest reason is the wages are falling behind. Shoreside engineers are starting to make as much on just base pay/40hrs a week. [...] Whether it's family, friends or whatever, when you spend this much time away from those people you grow distant." (28, U.S., Second engineer, Ro-Ro)

Others had already left the profession:

> "I miss going to sea, but life on board was not healthy or safe, and life in port was not either. I gave up the good pay and freedom, to get sleep, and I didn't want to kill or be killed by someone's exhausted negligence." (40, U.S., Second officer, Bulk carrier)

Seafarers' quotes further highlighted personal priorities, unsustainable stress, and declining job satisfaction.

Family life was a central driver of career re-evaluation:

> "The pay-to-work ratio is not worth spending time away from loved ones. Cost of living has increased exponentially more than the wages in maritime. [...] There is no longer an incentive to continue the stress of being away from home for months on end." (33, U.S., Chief officer, Ro-Ro)

> "The older I get, the more I reflect on life, especially on the time I have to spend away from my family and kids. That time feels heavier now." (55, U.S., Second engineer, Container ship)

Professional dissatisfaction with the evolution of the work also emerged:

> "I have lost some of my passion for this profession due to regulations and documentation overkill." (>60, U.S., Chief officer, MPV)

Seafaring also acknowledged the cumulative strain that comes with the profession:

> "The stress level and workload has steadily increased over the years that I have been doing this job. [...] With the intensity of the job and the time away from home, I'm not sure if it's been worth it." (55, U.S., Second engineer, Container ship)

Finally, wider concerns were raised about an industry direction that makes the job unsustainable, and companies seem unable to address growing disaffection:

> "Seagoing profession is no more charm with no increase of wages, criminalization, too much commercial pressure, and no family carriage." (>60, U.S., Captain, PCC)

> "It was thrilling in 1970–1980, before the world went upside down with terrorism. It is sad that the next generation of seamen will never have the excitement and feeling of being one with nature and our universe. They will never have the excitement of freedom." (>60, U.S., Second engineer, General cargo ship)

> "I have reached a point where I no longer believe my company has any interest in complying with the rules. [...] I am convinced it is only a matter of time before something happens, and they hang the Captain out to dry." (45, U.S., Captain, Container ship)

In the literature

In this study, only half of seafarers (45.2%) have no intention to quit. This closely aligns with a recent survey reporting that just over half (52.2%) expressed no immediate intention to leave the profession [94]. Together, these studies suggest that about half of seafarers intend to quit in the short term. This reinforces longstanding concerns about retention in the global shipping industry, as also emphasised in the recent Drewry Manning Report [7].

Prior research has shown that poor working conditions, limited shore leave, increased regulatory burdens, stress, and fatigue all contribute to high turnover [95]—[97]. Psychosocial factors such as work-life balance and job satisfaction are especially critical, with evidence suggesting they account for the majority of seafarers' decisions to leave the sea [98].

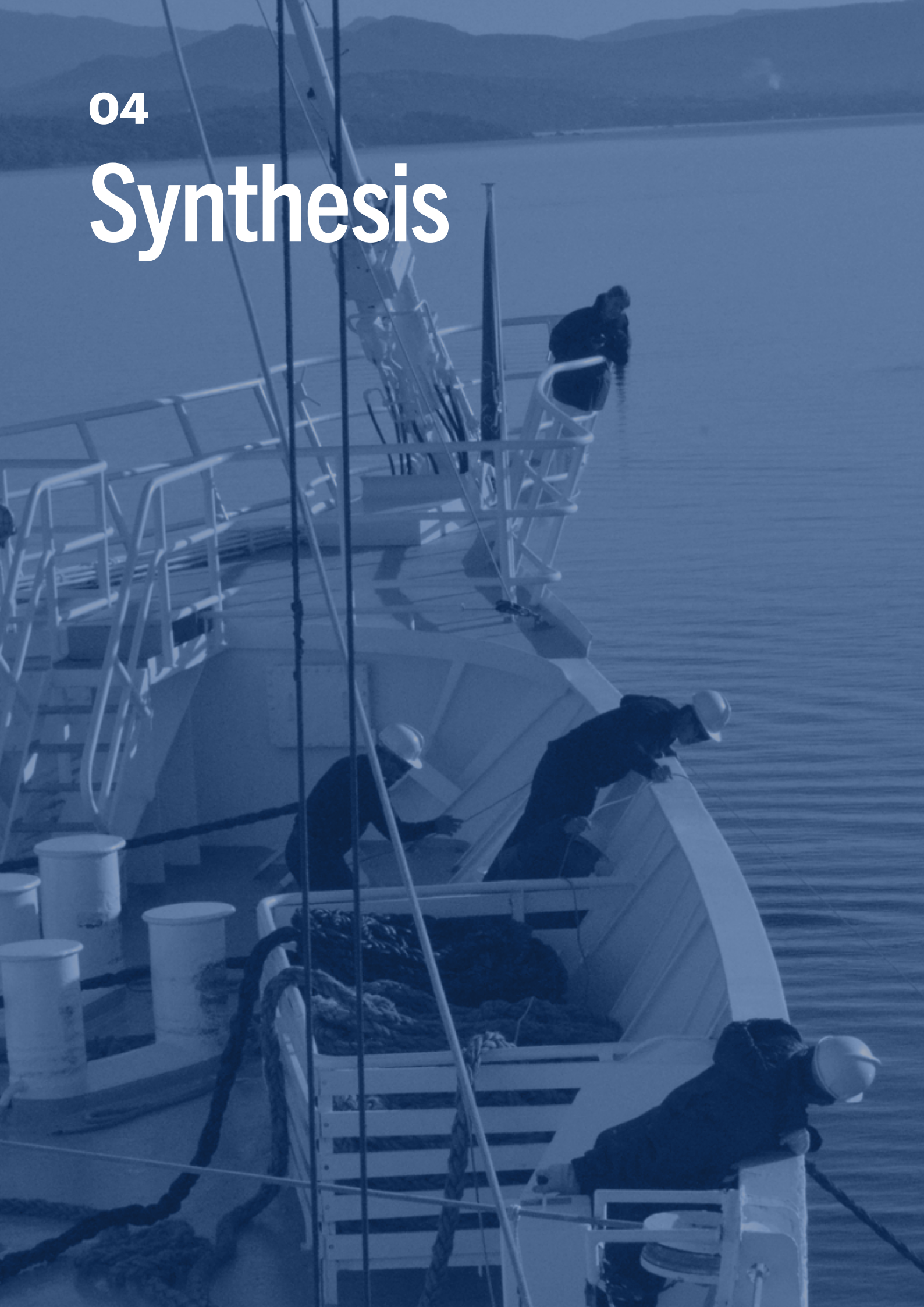
In this context, the high prevalence of poor well-being observed in our study may be a symptom and a driver of attrition. Because seafarers experiencing mental health issues are more likely to consider quitting the profession [99], regardless of whether they report good work-life balance or job satisfaction [94].

Remark

An array of evidence concerning working conditions suggests a deepening retention crisis. Crucially, this crisis appears to be inadequately measured, understood, and addressed by employers. Even the financial compensation ('the money'), historically the main attractor to sea, is questioned. When such an attractor is eroded —and areas of dissatisfaction such as excessive workload, stress, paperwork, and absence of shore leave continue to grow unaddressed— there is no objective reason to retain seafarers at sea. When half of them plan to quit in an industry that takes 10 to 15 years to certify senior officers, the exodus may threaten the industry's fundamental capacity to operate. Additionally, de-qualification of crew may worsen the working conditions of those who remain, forcing them to deal with reduced crew, high turnover among newcomers, and increased pressure, potentially compromising an already fragile safety. Furthermore, potential salary increases alone may not be sufficient to compensate for this increased hardship. This visible risk of worsening working conditions will only exacerbate the retention crisis and accelerate the exodus.

04

Synthesis



This section provides a synthetic analysis of the key aspects studied. The references and evidence underpinning this analysis are described in the survey data and literature review boxes.

Multidimensional well-being review (work-life balance and working time)

Seafarers would appreciate shorter periods on board, but not at any price. Indeed, this preference implies a complex trade-off between better work-life balance and the need for 'sufficient' incomes. Untangled, these dimensions cannot be treated in isolation.

Beyond individual preferences, choices are also motivated by background contextual questions, such as fiscal frameworks. While the 1:1 model seems to be appreciated for its potential to improve work-life balance, the financial system of tax exemption impedes further reduction in onboard time and incentivises seafarers to work at least six months a year.

On board, the data confirms the normalization of very long hours for all seafarers. Seafarers work in excess of what the ILO considers decent working conditions and far beyond what is acceptable in any other safety-critical sector. Furthermore, the lack of sleep recovery opportunities (i.e. regular days off) does not mitigate the cumulative effect of very long work hours. As widely recognised in the scientific literature, chronic fatigue is widespread in the maritime sector and remains unaddressed. This fatigue undermines cognitive, physical and behavioural capacities of seafarers, potentially causing accidents and health troubles as indicated by the 2019 IMO Guidelines on Fatigue.

Compared to shore workers, seafarers work, on average, more hours per year. The gap is wide, particularly in developed nations. As the ILO research postulates, structurally excessive working hours result from insufficient basic income for individuals and unsuitable investments in overall crewing. The current practices in terms of seafarers' employment agreements confirm the excessive overtime incentive, in package form or not.

Although research has unequivocally documented the dangers of fatigue at sea, regulations continue to permit unsustainable working time and crewing levels that fail to reflect actual operational demands. Consequently, the sector is plagued by chronic overwork, exhausting seafarers. The resulting cognitive, physical, and behavioural impairments of excessive work render any human factors safety strategy ineffective.

Finally, a three-variable equation emerges: work-life balance, satisfactory income and human factors (safe performance at work and health protection). The first two parameters are inherently subject to individual appreciation. However, targeted regulatory actions driven by scientific research can address human factors, especially fatigue risk management. As observed in other safety-critical systems, designing and implementing adequate responses is possible with sufficient political will.

Currently, the structural inability to address fatigue questions the genuine willingness of maritime stakeholders to integrate human factors science at sea.

Shore-generated demands subjugate operational stress

Seafarers report comparatively higher levels of severe and potentially dangerous stress than shore workers. When placed in perspective, it appears that high stress is essentially associated with predictable blame and increased workload demands.

The most stressful situations are inspections. Any negative outcome attracts companies' attention, which invariably questions crews' capacity and demands corrective responses, leading to unpleasant communication and additional workloads. The second source of stress is related to onboard administrative duties, which add to operational workload and are designed as a bureaucratic control system. Finally, port-related activities involve performing multiple activities simultaneously with a reduced crew and under commercial time pressure.

Paradoxically, seafarers do not report the objective risks of navigation and operations as major stressors, despite carrying an incommensurably higher stake. Fears and control pressure seem to be blurring priorities and incentivising malpractices in recordkeeping, such as hiding non-conformities.

Relevance of current Safety Management Systems

As in many industries, the SMSs become little more than a paper-making system, generating ever more procedures and instructions in an attempt to control everything. Additionally, the gap between procedures and operational practices undermines SMS credibility, suggesting that the SMS serves interests other than the claimed goal.

Finally, reported weaknesses in the ISM Code's feedback mechanism raise some serious questions. The fear of reporting and the absence of a satisfactory response are indicative of degraded relationships between sea and shore staff and a structural mistrust. Without an effective feedback mechanism, the relevance of the ISM Code is undermined. The purpose of highlighting safety concerns for top management to take action is lost, which is detrimental to the establishment of any meaningful safety culture.

Worrying trends jeopardising seafarers' health and industry sustainability

As reported in other research, restricted or absent shore leave isolates seafarers on the ship. Trapped on the ship and under endless stress, there is almost no time to relax. Despite regulations requiring port authorities to facilitate crew access to shore, the top barriers to shore leave confirm that operational (workload, port time, restrictions) considerations take priority over everything else, suggesting a systemic failure to uphold basic human considerations against productivity in operation.

Depicting a working environment that neglects human needs and limitations, the poor mental well-being scores were unsurprising. Seafarers have higher rates of poor mental health than the general population.

The ultimate consequence of such a working environment is escape. In this regard, an array of evidence points to a deep retention crisis. Without providing suitable responses that address working and living conditions, many seafarers will quit, potentially affecting the overall shipping industry.

05

U.S. seafarers: A conclusion



U.S. seafarers appear to benefit from more favourable contractual terms—shorter contracts, longer leave periods, and a more balanced work-to-home ratio. In principle, these factors would enhance satisfaction by promoting better work–life balance. However, this apparent advantage seems offset by the intensity of their working schedules and discontent about their work environment.

First, the examination of annual hours of work showed that, counterintuitively, shorter periods on board are not associated with lower overall working load pressure. It means that expected higher remuneration and shorter periods at sea for U.S. seafarers are retroactively paid in work intensity. Hypothetically, the international labour market and crew internal mechanisms seem to be equilibrating annual workloads across nationalities.

The supposedly better working conditions offered to seafarers from developed countries appear to be undermined by enhanced pressure and expectations. Directly associated with shore management decisions and practices, factors such as high workload, concerns about SMSs, inspection outcomes, administrative burden, and company communication seem to converge in deteriorating the work environment. Consequently, dissatisfaction and acute stress impact U.S. seafarers' well-being, who exhibit poorer mental well-being than other seafarers.

In addition, U.S. seafarers reported that core elements that compensate for the hardships of ship life, such as seeing the world and earning money, had vanished. The examination indicates that multiple other frustrations (e.g. distance from families or isolation) are no longer compensated for. Furthermore, the qualitative data suggest that working conditions are worsening continuously.

Disillusionment seems widespread, prompting half the seafarers to consider quitting the occupation within a short timeframe.

Therefore, any U.S. national strategy that considers maritime expansion may face severe difficulties in mobilising a dissatisfied workforce. To ensure a stable pool of seafarers capable of operating future ships and transmitting the know-how, authorities, industry leaders, and social partners need to acknowledge the issues and respond accordingly.

References



1 The Marlin Company and the American Institute of Stress, "The Workplace Stress Scale," 1978. [Online]. Available: https://www.stress.org/wp-content/uploads/2024/06/The-Workplace-Stress-Scale-2024.pdf

2 WHO, "The World Health Organization-Five Well-Being Index (WHO-5)," 2024. [Online]. Available: https://www.who.int/publications/m/item/WHO-UCN-MSD-MHE-2024.01

3 G. D. Israel, "Determination of sample size," 1992. [Online]. Available: https://www.researchgate.net/profile/Subhash-Basu-3/post/how_could_i_determine_sample_size_for_my_study/attachment/5ebaa4924f9a520001e613b6/AS:890361492811785@1589290130539/download/samplesize1.pdf

4 R. V. Krejcie and D. W. Morgan, "Determining Sample Size for Research Activities," Educ. Psychol. Meas., vol. 30, no. 3, pp. 607–610, Sep. 1970, doi: 10.1177/001316447003000308.

5 Taherdoost H, "Determining Sample Size; How to Calculate Survey Sample Size by Hamed Taherdoost," Int. J. Econ. Manag. Syst., vol. 2, no. February 2017, pp. 237–239, 2018, [Online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3224205

6 BIMCO and ICS, "Seafarer Workforce Report: The Global Supply and Demand of Seafarers in 2021," 2021. [Online]. Available: https://www.ics-shipping.org/publication/seafarer-workforce-report-2021-edition/

7 Drewry, "Manning Annual review and Forecast 2024/2025, Maritime Research," 2024. [Online]. Available: https://commons.wmu.se/lib_reports/86/

8 ILO and SIRC, "The global seafarer: Living and working conditions in a globalized industry," 2004. [Online]. Available: https://webapps.ilo.org/public/libdoc/ilo/2004/104B09_82_engl.pdf

9 IDWAL, "Social impact report," 2024. [Online]. Available: https://www.idwalmarine.com/social-impact-report

10 O. C. Jensen, J. F. L. Sørensen, M. L. Canals, Y. P. Hu, N. Nikolic, and M. Thomas, "Incidence of self-reported occupational injuries in seafaring - An international study," Occup. Med. (Chic. Ill)., vol. 54, no. 8, pp. 548–555, 2004, doi: 10.1093/occmed/kqh090.

11 M. Oldenburg, H. J. Jensen, U. Latza, and X. Baur, "Seafaring stressors aboard merchant and passenger ships," Int. J. public ., 2009, doi: 10.1007/s00038-009-7067-z.

12 E. Kahveci, "Port Based Welfare Services for Seafarers: Summary Report," ITF Seafar. Trust, 2007, doi: https://www.itfglobal.org/sites/default/files/resources-files/port-based-welfare-services-2007.pdf

13 A. Slišković and Z. Penezić, "Testing the associations between different aspects of seafarers' employment contract and on-board internet access and their job and life satisfaction and health," Arch. Ind. Hyg. Toxicol., vol. 67, no. 4, pp. 351–363, Dec. 2016, doi: 10.1515/aiht-2016-67-2785.

14 S. Jonas and J. Algirdas, "Association between environment and psycho-emotional stress experienced at sea by Lithuanian and Latvian seamen," Med., 2006, [Online]. Available: https://pubmed.ncbi.nlm.nih.gov/17028475/

15 A. Carotenuto, I. Molino, A. M. ari. Fasanaro, and F. Amenta, "Psychological stress in seafarers: a review.," Int. Marit. Health, vol. 63, no. 4, pp. 188–94, 2012, [Online]. Available: http://www.ncbi.nlm.nih.gov/pubmed/24595974

16 M. Oldenburg, X. Baur, and C. Schlaich, "Occupational risks and challenges of seafaring.," J. Occup. Health, vol. 52, no. 5, pp. 249–256, 2010, doi: 10.1539/joh.k10004.

17 J. An, W. Gao, R. Liu, and Z. Liu, "Empirical Study on the Relationship Between Vacation Schedule and Seafarers' Fatigue in Chinese Seafarer Population.," Front. Psychol., vol. 13, p. 838811, 2022, doi: 10.3389/fpsyg.2022.838811.

18 A. Sánchez-González, L. A. Díaz-Secades, J. García-Fernández, and D. Menéndez-Teleña, "Screening for anxiety, depression and poor psychological well-being in Spanish seafarers: An empirical study of the cut-off points on three measures of psychological functioning," Ocean Eng., vol. 309, p. 118572, Oct. 2024, doi: 10.1016/j.oceaneng.2024.118572.

19 B. S. Bhatia, R. Baumler, M. Carrera-Arce, M. Manuel, and I. Bartuseviciene, "Quantifying an inconvenient truth: revisiting a culture of adjustment on work/rest hours," World Maritime University, 2024. doi: 10.21677/240201.

20 D. Andrei et al., "Assessing the safety culture in the consequences of determinants and maritime industry," 2017. [Online]. Available: https://www.amsa.gov.au/sites/default/files/assessing-the-determinants-consequences-of-safety-culture-in-maritime-ind.pdf

21 M. Mansyur, R. Sagitasari, G. Wangge, A. B. Sulistomo, and A. Kekalih, "Long working hours, poor sleep quality, and work-family conflict: determinant factors of fatigue among Indonesian tugboat crewmembers," BMC Public Health, vol. 21, no. 1, p. 1832, Dec. 2021, doi: 10.1186/s12889-021-11883-6.

22 V. Cole-davies, "Fatigue, health and injury offshore: A Survey," in Contemporary Ergonomics 2001, CRC Press, 2001, pp. 556–564.

23 H. Yilmaz, E. Baźar, and E. Yúksekyildiz, "Investigation of Watchkeeping Officers' Watches Under The Working Hours Ineligible to STCW Regulation," TransNav, Int. J. Mar. Navig. Saf. Sea Transp., vol. 7, no. 4, pp. 493–500, 2013, doi: 10.12716/1001.07.04.03.

24 R. McNamara, P. H. Allen, B. Wellens, and A. P. Smith, "Fatigue at sea: Amendments to working time directives and management guidelines," in Contemporary Ergonomics 2005, Taylor & Francis, 2005, pp. 568–572.

25 F. Hjorth, "Hours of work and work conditions on board two-navigator ships : a study of vessels trading the Baltic Sea with only a master and one officer as nautical competense on board," (In swedish), Kalmar Maritime Academy Report, no. 1 University of Kalmar Kalmar-Sweden, 2008. [Online]. Available: http://lnu.diva-portal.org/smash/record.jsf?pid=diva2:1015

26 Ö. Uğurlu, "A case study related to the improvement of working and rest hours of oil tanker deck officers," Marit. Policy Manag., vol. 43, no. 4, pp. 524–539, May 2016, doi: 10.1080/03088839.2015.1040476.

27 NTSB, "Group Chairman's Factual Report Human Factors Group," pp. 1–93, 2017, [Online]. Available: https://data.ntsb.gov/Docket/Document/docBLOB?ID=40455457&FileExtension=.PDF&FileName=5-HP-HumanPerformanceFactualReport-Master.PDF

28 ILO, "Ensuring decent working time for the future. General Survey concerning working-time instruments. Report III (Part B) International Labour Conference 107th Session," 2018, [Online]. Available: https://www.ilo.org/resource/conference-paper/ilc/107/general-survey-concerning-working-time-instruments-ensuring-decent-working-1

29 ILO, "Statistics on working time," 2024. https://rplumber.ilo.org/data/indicator/?id=HOW_TEMP_SEX_ECO_NB_A&sex=SEX_T&classif1=ECO_AGGREGATE_TOTAL&lang=en&type=label&format=.csv&timefrom=2010&latestyear=TRUE&v=1756802547414

30 Z. Kayla, "Visualizing the Average American Work Week (2006-2025)," Visual Capitalist, 2025. https://www.visualcapitalist.com/visualizing-the-average-american-work-week-2006-2025/

31 U.S. Bureau of Labor Statistics, "Average weekly hours and overtime of all employees on private nonfarm payrolls by industry sector, seasonally adjusted," 2025. https://www.bls.gov/news.release/empsit.t18.htm

32 United States Government Accountability Office, "Work hours and health: Research shows that very long hours may modestly increase the risk of certain health outcomes report to congressional committees," 2024, [Online]. Available: https://www.gao.gov/assets/gao-24-106772.pdf

33 J. W. Seo, "Excessive Overtime, Workers, and Productivity: Evidence and Implications for Better Work. Better Work Discussion Paper No. 2.," International Labour Organization and International Finance Corporation-Geneva, 2011. [Online]. Available: https://betterwork.org/reports-and-publications/excessive-overtime-workers-and-productivity/

34 P. W. T. Huberman and Minns, "Annual working hours per worker," 2019. https://ourworldindata.org/grapher/annual-working-hours-per-worker?focus=~USA

35 A. W. Parker, L. M. Hubinger, S. Green, L. Sargent, and R. Boyd, "A survey of the health, stress and fatigue of Australian seafarers," Australian Maritime Safety Authority, Australian Government, 1996. [Online]. Available: https://www.amsa.gov.au/sites/default/files/health-stress-and-fatigue-study-1997.pdf

36 B. S. Bhatia, "Exploration of implementation and reporting of hours of work and hours of rest onboard ships. [Master's thesis, World Maritime University]. World Maritime University dissertations," 2019.

37 F. Buscema, A. Grandi, and L. Colombo, "How can the seafarers do it? Qualitative research in psychosocial risks of South Italy's seafarers," Int. Marit. Health, vol. 74, no. 1, pp. 54–61, Mar. 2023, doi: 10.5603/IMH.2023.0006.

38 National Archives and Record Administration, "49 CFR Part 395: Hours of service of drivers," 2025. [Online]. Available: https://www.ecfr.gov/current/title-49/subtitle-B/chapter-III/subchapter-B/part-395

39 NTSB, "Marine Investigation - Sinking of the Freight Vessel El Faro. 4 Interviews - Transcript of interview El Faro MBI 3 Hearing Day 7 Dir Flt Srvcs TSI Former Bosun Former AB 14 Feb 2017," 2017. [Online]. Available: https://data.ntsb.gov/Docket/?NTSBNumber=DCA16MM001

40 WMU, "A Culture of Adjustment, evaluating the implementation of the current maritime regulatory framework on rest and work hours (EVREST). World Maritime University. (Attributed authors: Baumler, R., De Klerk, Y., Manuel, M.E., and Carballo Piñeiro, L.)," 2020. [Online]. Available: https://commons.wmu.se/lib_reports/66/

41 P. Allen, E. Wadsworth, and A. Smith, "The relationship between recorded hours of work and fatigue in seafarers," in Contemporary Ergonomics 2006, Taylor & Francis, 2006, pp. 546–548.

42 H. Simkuva, A. Purins, S. Mihailova, and I. J. Mihailovs, "Optimization of work and rest hours for navigation officers on the ship," in SHS Web of Conferences, Sep. 2016, vol. 30, p. 00004, doi: 10.1051/shsconf/20163000004.

43 A. Filtness et al., "Understanding seafarer fatigue in ferry operations," 2024. [Online]. Available: https://assets.publishing.service.gov.uk/media/6746c60c83f3d6d843be9792/understanding-seafarer-fatigue-in-ferry-operations.pdf

44 H. Sampson, I. Acejo, N. Ellis, and N. Turgo, "The Health and Wellbeing of Seafarers Working on Cargo Ships in 2023-2024," 2025. [Online]. Available: https://orca.cardiff.ac.uk/id/eprint/178526/1/Report One Cargo seafarers%27 health and wellbeing 2023 2024 FINAL.pdf

45 B. S. Bhatia, R. Baumler, M. C. Arce, and A. Pazaver, "Adjustment of Work-Rest Hours Records in the Shipping Industry: A Systematic Review," Case Stud. Transp. Policy, vol. 15, p. 101125, Mar. 2024, doi: 10.1016/j.cstp.2023.101125.

46 B. S. Bhatia, "Practice unveils weaknesses: analysing the implementation of regulations on seafarers' work/rest hours," World Maritime University, Malmö, Sweden, 2024.

47 R. Baumler and M. Carrera-Arce, "Suicide at sea: navigating in restricted visibility," Marit. Stud., vol. 24, no. 3, p. 42, Sep. 2025, doi: 10.1007/s40152-025-00422-3.

48 F. Baygi, F. Shidfar, A. Sheidaei, A. Farshad, M. Mansourian, and C. Blome, "Psychosocial issues and sleep quality among seafarers: a mixed methods study," BMC Public Health, vol. 22, no. 1, pp. 1–10, 2022.

49 R. J. Williamson et al., "The relationship of fatigue to mental and physical health in a community sample," Soc. Psychiatry Psychiatr. Epidemiol., vol. 40, no. 2, pp. 126–132, 2005.

50 P. Afonso, M. Fonseca, and J. F. Pires, "Impact of working hours on sleep and mental health," Occup. Med. (Chic. Ill)., vol. 67, no. 5, pp. 377–382, 2017.

51 IMO, "MSC.1/Circ.1598 Guidelines on Fatigue," London, United Kingdom, 2019.

52 Project MARTHA, "Project MARTHA - The final report," Your Res. Proj., 2017, doi: 10.4324/9780203430491_chapter_8.

53 WHO and ILO, "Mental health and work : impact, issues, and good practices," 2000. [Online]. Available: https://www.ilo.org/publications/mental-health-and-work-impact-issues-and-good-practices

54 R. Y. Lefkowitz and M. D. Slade, "Seafarer mental health study," ITF Seafarers' Trust & Yale University, 2019, [Online]. Available: https://www.seafarerstrust.org/publications/seafarer-mental-health-study-lefkowitz-slade-yale

55 R. Baumler, B. S. Bhatia, and M. Kitada, "Ship first: Seafarers' adjustment of records on work and rest hours," Mar. Policy, vol. 130, p. 104186, Aug. 2021, doi: 10.1016/j.marpol.2020.104186.

56 S. Bhattacharya and L. Tang, "Fatigued for safety? Supply chain occupational health and safety initiatives in shipping," Econ. Ind. Democr., vol. 34, no. 3, pp. 383–399, Aug. 2013, doi: 10.1177/0143831X12439760.

57 S. Bhattacharya, "The Impact of the ISM Code on the Management of Occupational Health and Safety in the Maritime Industry. [PhD thesis, Cardiff University]. ORCA," 2009.

58 L. A. Xian, "Assessing the burden of an excessive SMS size on the effective implementation of the ISM Code," WMU Marit. Commons, 2024, [Online]. Available: https://commons.wmu.se/cgi/viewcontent.cgi?article=3313&context=all_dissertations

59 C. Laverick, "Enforcing the ISM Code, and improving maritime safety, with an improved corporate manslaughter act: a safety culture theory perspective.," 2018. [Online]. Available: https://clok.uclan.ac.uk/23768/2/23768 Laverick Craig Final e-Thesis %28Master Copy%29 Volume 2.pdf

60 S. Bhattacharya, "The effectiveness of the ISM Code: A qualitative enquiry," Mar. Policy, vol. 36, no. 2, pp. 528–535, Mar. 2012, doi: 10.1016/j.marpol.2011.09.004.

61 A. M. Teperi, J. Lappalainen, V. Puro, et al., "Assessing artefacts of maritime safety culture-current state and prerequisites for improvement," JOMA, vol. 18, pp. 79–102, 2019, doi: 10.1007/s13437-018-0160-5.

62 H. Sampson, N. Turgo, I. Acejo, N. Ellis, and L. Tang, "'Between a Rock and a Hard Place': The Implications of Lost Autonomy and Trust for Professionals at Sea," Work. Employ. Soc., vol. 33, no. 4, pp. 648–665, 2019, doi: 10.1177/0950017018821284.

63 B. Kirwan, B. Bettignies-Thiebaux, M. Cocchioni, R. Baumler, and M. Carrera Arce, "Towards a Safety Learning Culture for the Shipping Industry: A White Paper," 2021. [Online]. Available: https://commons.wmu.se/lib_documents/1/

64 IMO, "Study on the effectiveness and effective implementation of the International Safety Management (ISM) Code. MSC 109/INF.3," IMO-London, 2024. [Online]. Available: https://docs.imo.org

65 J. Lappalainen, "Finnish maritime personnel's conceptions on safety management and safety culture. Doctoral thesis University of Turku," 2016.

66 B. M. Batalden and A. K. Sydnes, "Maritime safety and the ISM code: a study of investigated casualties and incidents," JOMA, vol. 13, pp. 3–25, 2014, doi: 10.1007/s13437-013-0051-8.

67 H. Oltedal, "Safety culture and safety management within the Norwegian-controlled shipping industry State of art, interrelationships, and influencing factors. Doctoral thesis University of Stavanger," 2011.

68 P. Anderson, "Managing Safety at Sea - The findings and conclusions of an international survey into the Implementation of the ISM Code. Doctoral thesis Middlesex University," 2003. [Online]. Available: https://repository.mdx.ac.uk/item/81vvx

69 J. I. Håvold, "National cultures and safety orientation: A study of seafarers working for Norwegian shipping companies," Work Stress, vol. 21, no. 2, pp. 173–195, Apr. 2007, doi: 10.1080/02678370701424594.

70 A. Rajapakse and G. R. Emad, "Are 'doubts related to work procedures' the enigma behind accidents? – a sociocultural perspective from the maritime industry," Aust. J. Marit. Ocean Aff., pp. 1–26, Apr. 2025, doi: 10.1080/18366503.2025.2488088.

71 S. Bhattacharya, "Sociological factors influencing the practice of incident reporting: the case of the shipping industry," Empl. Relations, vol. 34, no. 1, pp. 4–21, Nov. 2011, doi: 10.1108/01425451211183237.

72 C. Xue, L. Tang, and D. Walters, "Decoupled implementation? Incident reporting in Chinese shipping," Econ. Ind. Democr., vol. 42, no. 1, pp. 179–197, Feb. 2021, doi: 10.1177/0143831X18758175.

73 G. Colliander and H. Olsson, "Seafarers Work and Rest Hour-Logging-Adjustment in the systems. [Bachelor's thesis, Chalmers University of Technology]. Chalmers ODR," 2021.

74 H. Simkuva, A. Purins, S. Mihailova, and I. J. Mihailovs, "Optimization of work and rest hours for navigation officers on the ship," SHS Web Conf., vol. 30, p. 00004, Sep. 2016, doi: 10.1051/shsconf/20163000004.

75 P. Zhang, L. Zhao, O. Vata, and S. Rajagopal, "Restructuring seafarers' welfare under the Maritime labour convention: an empirical case study of Greece," Marit. Bus. Rev., vol. 5, no. 4, pp. 373–389, 2020, doi: 10.1108/MABR-02-2020-0009.

76 S. K. Brooks and N. Greenberg, "Mental health and psychological wellbeing of maritime personnel: a systematic review," BMC Psychol., vol. 10, no. 1, p. 139, Dec. 2022, doi: 10.1186/s40359-022-00850-4.

77 ITF Seafarers' Trust, "Shore leave & the future of port-based welfare," 2025. [Online]. Available: https://www.seafarerstrust.org/publications/shore-leave-future-port-based-welfare

78 J. McVeigh and A. Kay, "Seafarers 2040: Understanding UK Demographics and Welfare Needs," 2025. [Online]. Available: https://closed-sites.co.uk/retain/mcg-seafarers-2040-full-report.pdf

79 M. Carrera-Arce, R. Baumler, B. S. Bhatia, and L. Du, "Shore leave: rare, brief and in danger of extinction," Malmö, 2025. doi: 10.21677/250326.

80 The Mission to Seafarers, "Addressing the shore leave lottery," 2019. [Online]. Available: https://www.missiontoseafarers.org/the-sea/addressing-the-shore-leave-lottery

81 C. Comtois, B. Wiegmans, P. Witte, and B. Slack, "Ships time in port," Int. J. Shipp. Transp. Logist., vol. 10, no. 1, p. 45, 2018, doi: 10.1504/IJSTL.2018.10008534.

82 M. Oldenburg and H.-J. Jensen, "Maritime welfare facilities - utilization and relevance for the compensation of shipboard stress," J. Occup. Med. Toxicol., vol. 14, no. 1, p. 11, Dec. 2019, doi: 10.1186/s12995-019-0231-3.

83 M. Carrera-Arce, R. Baumler, B. S. Bhatia, and J. Hollander, "Seafarers' voices during the COVID-19 crisis and beyond: when excessive workload and related impacts become a turning point to quit," Aust. J. Marit. Ocean Aff., pp. 1–20, Mar. 2025, doi: 10.1080/18366503.2025.2480951.

84 Lloyd's List, "Why is shore leave heading for extinction?," 2025. [Online]. Available: https://www.lloydslist.com/LL1154748/Why-is-shore-leave-heading-for-extinction

85 F.-C. Yang, R.-H. Chiu, and Y.-H. Lin, "Shore Leave Policy—Paving the Path to a Sustainable Career Environment for Seafarers," Sustainability, vol. 17, no. 10, p. 4300, May 2025, doi: 10.3390/su17104300.

86 K. Pike, "Social Interaction Matters: Project Report Phase One, for the International Seafarers' Welfare and Assistance Network (ISWAN). ISWAN.," 2020. [Online]. Available: https://www.iswan.org.uk/wp-content/uploads/Social-Interaction-Matters-SIM-Project-Report-Phase-One-1.pdf

87 A. Domenech, I. Kasujee, V. Koscielny, and C. E. M. Griffiths, "Systematic Review of the Use of the WHO-5 Well-Being Index Across Different Disease Areas," Adv. Ther., vol. 42, no. 8, pp. 3657–3677, Aug. 2025, doi: 10.1007/s12325-025-03266-9.

88 M. Carrera-Arce, R. Baumler, and J. Hollander, "A Systematic Review of Assessment Methods for Seafarers' Mental Health and Well-Being During the COVID-19 Pandemic," Inq. J. Heal. Care Organ. Provision, Financ., vol. 60, Jan. 2023, doi: 10.1177/00469580231212218.

89 R. Hayes-Mejia and M. Stafström, "Wellbeing and Happiness and Their Association With Working Conditions at Sea: A Cross-sectional Study Among the Global Workforce of Seafarers," Inq. J. Heal. Care Organ. Provision, Financ., vol. 61, Jan. 2024, doi: 10.1177/00469580241256349.

90 R. Baumler, "Final Report. Renseigner les rythmes de travail des marins sur les transbordeurs transmanche et évaluer la FAtigue des MArins (Étude FAMA). Project Funded by the Government of France. Report for policy-makers.," 2024.

91 A. L. Murad et al., "Evaluating Well-being at Community Level," Mayo Clin. Proc. Innov. Qual. Outcomes, vol. 5, no. 6, pp. 961–968, Dec. 2021, doi: 10.1016/j.mayocpiqo.2021.08.012.

92 H. Sampson, N. Ellis, I. Acejo, and N. Turgo, Changes in seafarers' health 2011-2016: A summary report. orca.cardiff.ac.uk, 2017.

93 F. Sivri, Ö. Uğurlu, E. Blanco-Davis, N. Şenbursa, and J. Wang, "Mapping Mental Health of Seafarers Post-COVID-19: A Gaussian Graphical Model of Depression, Anxiety, and Maritime Working Conditions," Inq. J. Heal. Care Organ. Provision, Financ., vol. 62, Sep. 2025, doi: 10.1177/00469580251371386.

94 N.-M. I. Jabati, "Work and health balance at sea: study on seafarers' work and health balance and its influence on retention," [Master's thesis, World Maritime University]. World Maritime University dissertations," 2024.

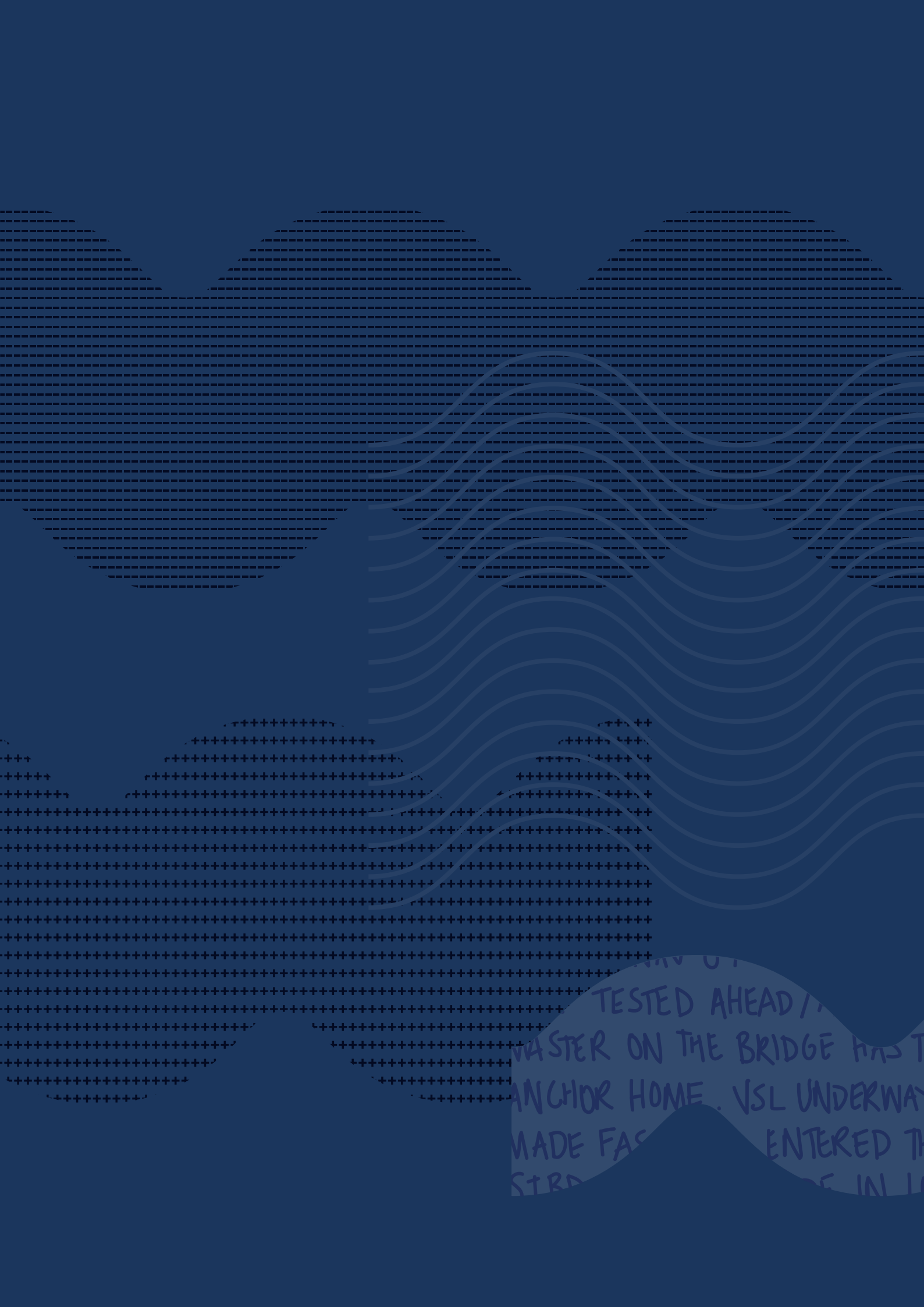
95 M. Carrera-Arce, R. Baumler, H. Singh, and J. Hollander, "COVID-19 Crisis – Lasting Effects on Seafarers' Well-Being and Its Potential Impact on Retention," Inq. J. Heal. Care Organ. Provision, Financ., vol. 62, Sep. 2025, doi: 10.1177/00469580251375264.

96 C. Livingstone Divine, "The Global Shortage of Ship Officers: An Investigation of the Complexity of Retention Issues Among Australian Seafarers," Univ. Tasmania, 2016, [Online]. Available: https://figshare.utas.edu.au/articles/thesis/The_global_shortage_of_ship_officers_an_investigation_of_the_complexity_of_retention_issues_among_Australian_seafarers/23240582?file=40957505

97 V. Gekara, "Understanding attrition in UK maritime education and training," Glob. Soc. Educ., vol. 7, no. 2, pp. 217–232, Jun. 2009, doi: 10.1080/14767720902908190.

98 M. Haka, D. F. Borch, C. Jensen, and A. Leppin, "Should I stay or should I go? Motivational profiles of Danish seafaring officers and non-officers," Int. Marit. Health, vol. 62(1), pp. 20–30, 2011.

99 M. Svetina et al., "Factors Impacting Seafarers' Mental Health and Career Intentions," Inq. J. Heal. Care Organ. Provision, Financ., vol. 61, Jan. 2024, doi: 10.1177/00469580241229617.


TESTED AHEAD
MASTER ON THE BRIDGE
ANCHOR HOME. VSL UNDERWA
MADE FA
ENTERED