CANADIAN MARINE CAREERS FOUNDATION

Canadian Seafarers Pathway Study

MALATEST

May 2025

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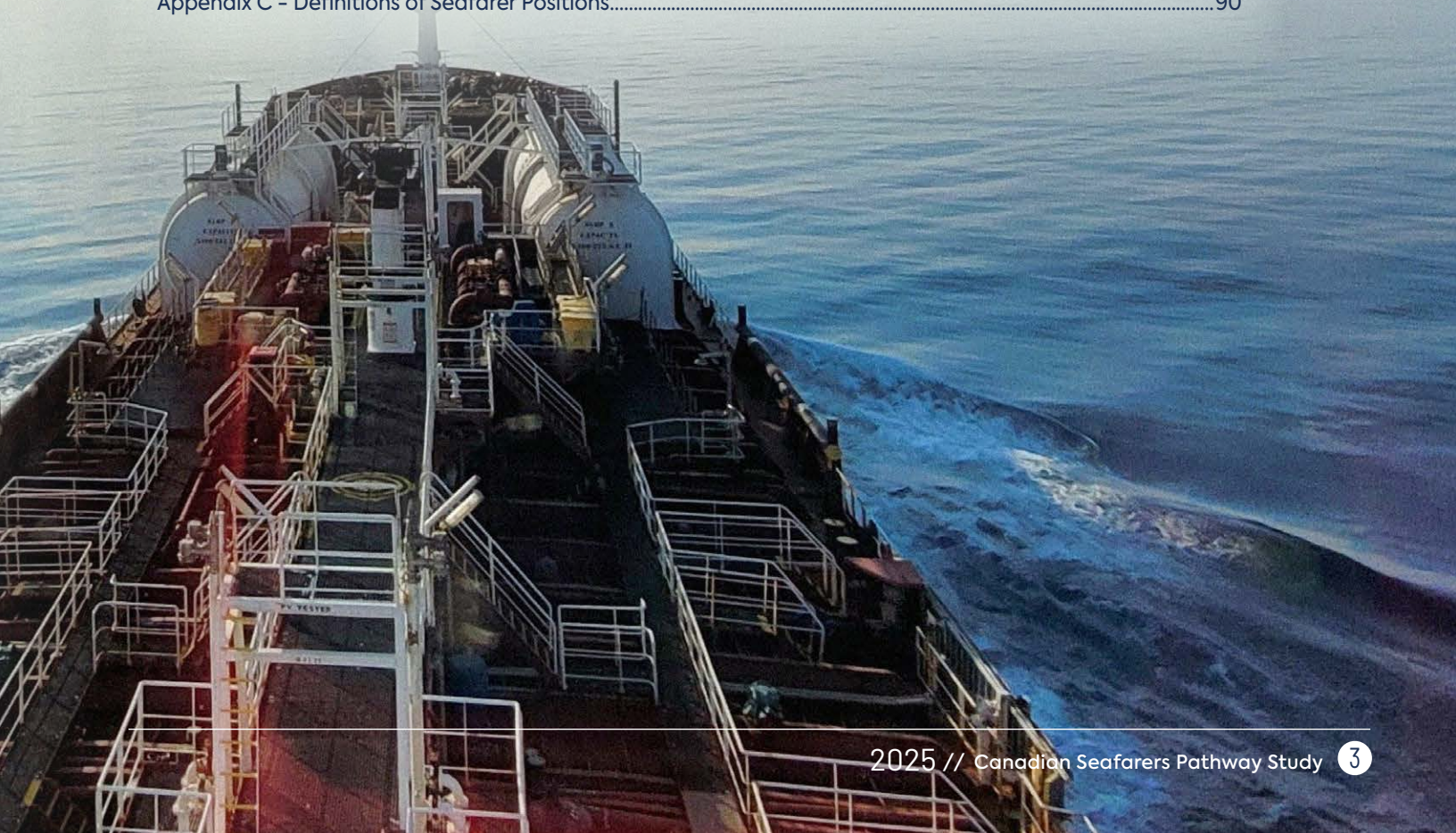

ACKNOWLEDGEMENTS

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During the study process, a Study Advisory Group provided guidance on areas of research, data collection and to validate findings. We would like to thank members of the Study Advisory Group for their time, knowledge and diligence in the carrying out of this role, which was essential to the success of the project. The Study Advisory Group included representation from a wide array of education, labour and industry stakeholders, as listed below.

- British Columbia Institute of Technology – Marine Campus
- Canadian Coast Guard
- Canadian Ferry Association
- Canadian Merchant Service Guild
- Chamber of Marine Commerce
- Council of Marine Carriers
- Georgian College
- I.L.W.U. Local 400 Marine Section and General Workers
- Laurentian Pilotage Authority
- Master Mariners of Canada
- Pacific Pilotage Authority
- Seafarers' International Union of Canada

REPORT SUMMARY

Introduction

Canada's extensive 243,000 kilometers of coastline (the longest of any country in the world), and its many lakes and rivers, mean that the marine sector is a major contributor to our country's economic, environmental and social fabric. In 2023, the marine economy generated over $50 billion in gross domestic product, including over $9 billion for the marine transportation and support activities for marine transportation.

Canada's domestic commercial and public sector vessels — cargo and supply vessels, tugs and barges, ferries, sightseeing and tour boats, Canadian Coast Guard, government, science and safety-related vessels — are the linchpin of this marine economy, carrying goods and passengers; connecting thousands of communities; and ensuring the safe and efficient operation of our harbours, ports and waterways. Maintaining a secure pipeline of Canadian seafarers is critical to the continued operation of this sector, as well as to the success of a multitude of other industries including energy, manufacturing, agriculture, construction, mining, forestry, recreation, retail and tourism, among others.

Study Purpose

The Canadian Marine Careers Foundation (CMCF) was established to address workforce development challenges in Canada's marine sector, including both shipboard and shore-side personnel. The goal of the CMCF is to develop dynamic and innovative solutions to help build a diverse, inclusive and future-ready workforce for the marine sector.

In recent years, Canadian vessel operators from both the private and public sector have experienced high rates of retirement and struggled to hire and retain marine talent domestically, with fierce competition for workers and cases of marine vessels being idled due to lack of crew. To help address these shortages and develop evidence-based strategies, the CMCF contracted R.A. Malatest & Associates Ltd. (Malatest) to conduct the Canadian Seafarers Pathway Study to provide national and regional labour data and analysis, to clearly identify workforce development and training gaps, and to recommend actions to close those gaps.

Methods

The Canadian Seafarers Pathway Study portrays Canada's marine sector in 2023 in terms of profile of employers, make-up of the workforce, workforce attraction and retention challenges and opportunities, capacities of the training system, skills and training gaps, and employment outlook. In particular, the study compares the estimated hiring requirements over the next five years (2025 to 2029) to the capacity of the education sector to meet those needs.

The marine sector represented in this study includes three target industries, namely water transportation of passengers and goods, scenic and sightseeing transportation on water, and specialized services to water transportation (excluding port and harbour operations). The marine sector in this study also includes the Canadian Coast Guard. However, the study excludes the Royal Canadian Navy, and some marine operations, such as operations of foreign-flag cruise ships outside of Canada, port and harbour operations, as well as Canada's fishing sector.

The "seafaring" or marine workforce represented in this study is defined as marine occupations onboard vessels in all sectors but also occupations onshore that support the operation of domestic commercial vessels and public sector-related vessels in the three target industries.

Data is presented at a national level as well as by region, including Central (Ontario and Quebec), Atlantic (Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island) and Pacific (British Columbia and the Prairies) and, where possible, the Territories.

The results are based on several lines of evidence that include a literature review, secondary data analysis from Statistics Canada and other sources, qualitative interviews with private and public sector marine stakeholders, data collection and interviews with marine training institutions, and surveys of employers, and students and recent graduates.

KEY FINDINGS

There is a significant need to develop the marine workforce and expand access and opportunities for training to meet current and future labour and skills requirements.

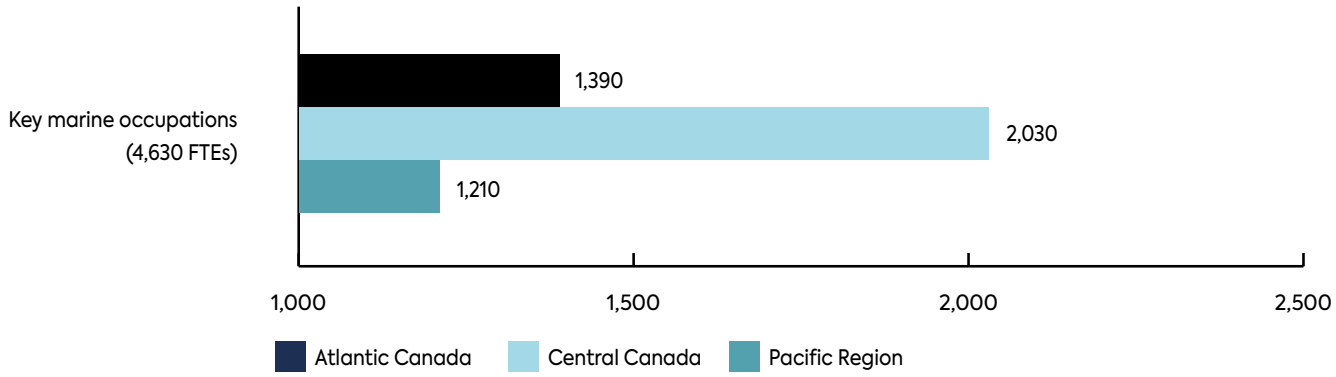
1 High Job Vacancy Rates for Numerous Occupations

- An estimated **28,500 people** were employed in the Canadian seafaring workforce in 2023.
- **86% of employers** say they are struggling to recruit candidates. There are not enough applicants and applicants are not qualified enough.
- The overall sector **job vacancy rate of 11% is more than three times higher** than the national average for the transportation and warehouse sector. Based on current estimates, the seafaring workforce already has **over 3,600 vacant positions**, including highly skilled positions that require years of training and practical experience. If those positions were filled, the sector could employ as many as 32,100 (28,500 plus 3,600).

2 Future Hiring Requirements in the Next 5 Years Are Significant

- Based on current estimates, the sector will require an additional **8,300** new full-time equivalent employees over the next five years to meet industry growth demands, to replace retirees, and to counter turnover to other sectors. That represents **more than 30%** of the current seafaring workforce of 28,500 people. The Pacific region will account for 64% of future requirements for all occupations.
- More than half **(56%)** of the **8,300** positions are for **key marine occupations**, including marine navigation officers, engineering officers and deck and engine crew, which are specialized positions that are federally regulated and critical to the operation of marine vessels. The Central region (Ontario/Quebec) will account for 44% of these key positions; followed by Atlantic (30%) and Pacific (26%) regions.

Figure S1: Future hiring requirements for key marine occupations by region



Source: Estimates based on the 2024 Survey of marine employers (n=73) and 2021 Canadian Census. Key marine occupations include licensed marine navigation and engineering officers and deck/engine ratings (unlicensed) positions.

3 Canada's Marine Training System Will Not Meet Labour Demand

- Without significant changes, Canada's marine training system will not be able to meet labour demands. At current enrolment and graduation rates, the major training institutions would only graduate enough students **to fill 40% of anticipated future openings** for key marine occupations. Drilling down, this gap is even more acute for licensed marine navigation and engineering officer occupations. At the regional level, the shortage will be the most acute for the Central region where graduates' current output will help fill less than two-in-ten (16%) key occupations required over the next five years, followed by the Pacific (56%) and Atlantic (68%) regions.

Figure S2: National future hiring requirements for key marine occupations vs expected graduates from marine training programs

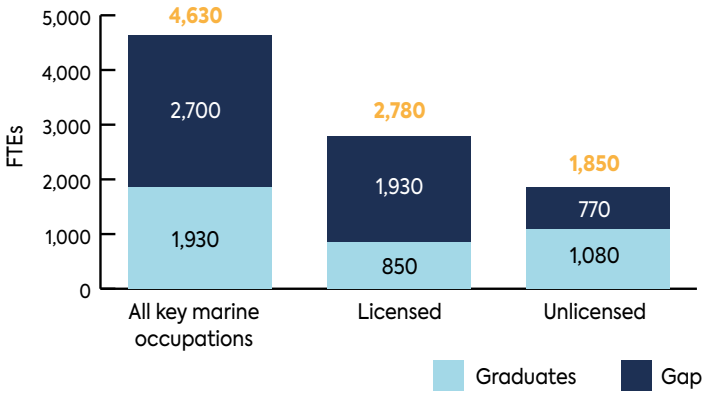
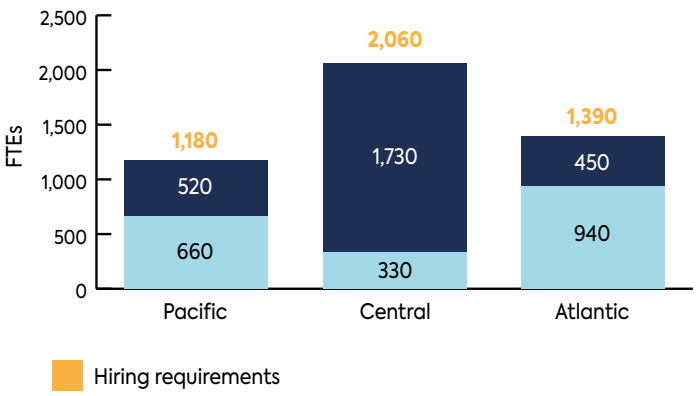


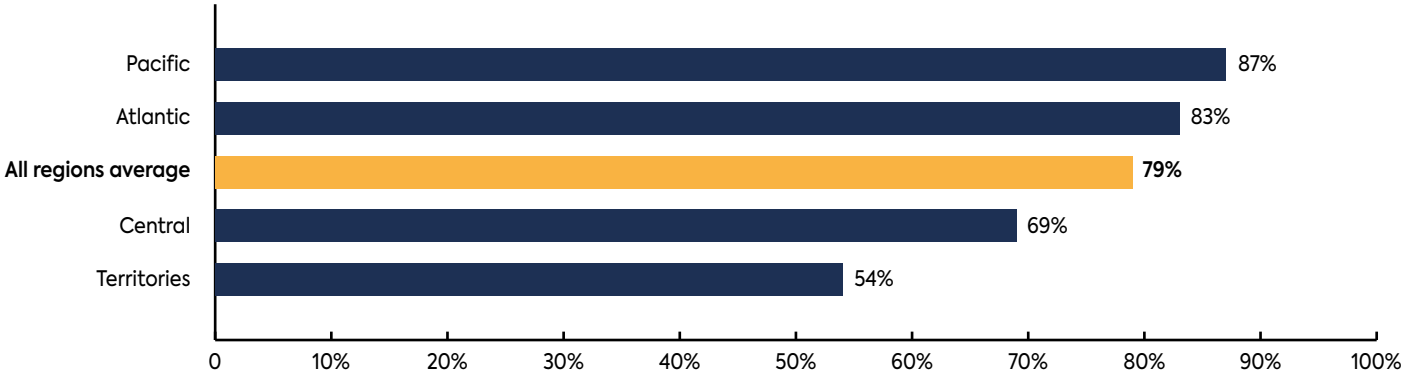
Figure S3: Future hiring requirements for key marine occupations vs expected graduates from marine training programs (By region)



Source: Estimates based on the 2024 Survey of marine employers (n=73) and data provided by nine educational institutions.

- **These gaps are in part driven by underutilized training capacity.** Marine training institutes have more seats in their programs than students sitting in them. The study estimates that current enrolment levels represent 79% of the education system's capacity nationally. It is particularly challenging to fill marine engineering and engine ratings programs.
- **More training capacity will be required to meet future hiring requirements.** Even at full enrollment capacity and a 100% graduation rate (an unrealistic scenario given current graduation rates), a shortfall will remain as graduates would fill 86% of requirements for licensed occupations and 76% for unlicensed occupations.

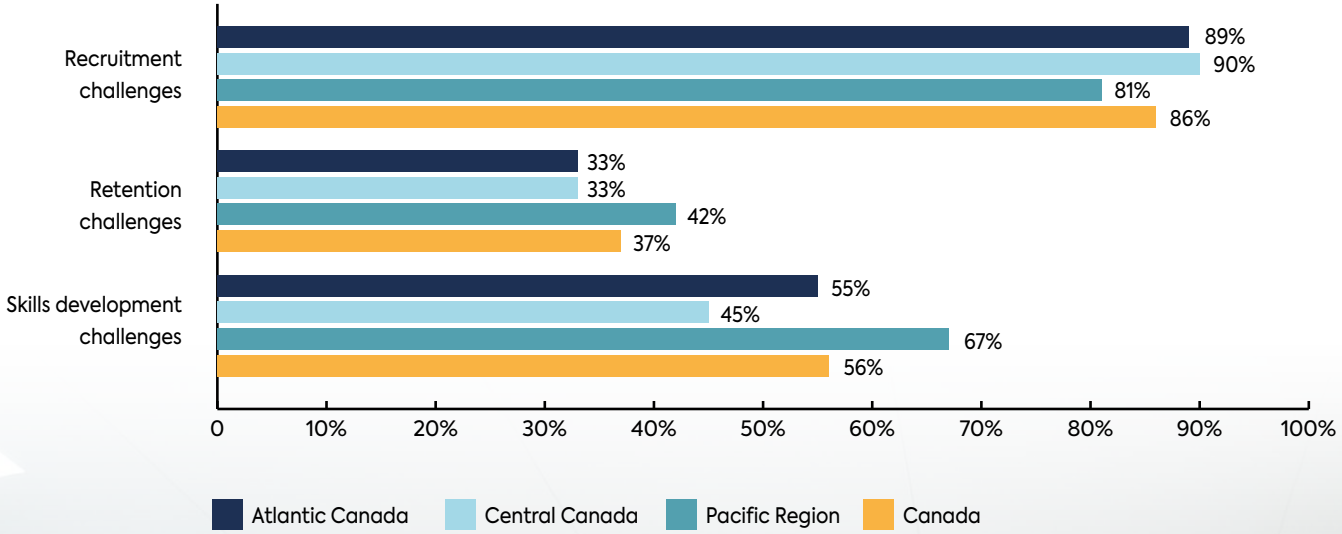
Figure S4: Percentage of marine training program seats filled by region



Source: Estimates based on the 2024 Survey of marine employers (n=73) and data provided by nine educational institutions.

KEY CHALLENGES IN THE WORKFORCE

Figure S5: Prevalence of workforce challenges among marine employers



Source: 2024 Survey of marine employers (n=73).

Recruitment

The marine sector struggles to recruit talent due in part to insufficient public awareness of marine careers. Many Canadians, particularly youth, are unaware of job options, the value of marine expertise and training pathways. Other barriers to recruitment include the high cost of living in particular regions like BC; and the challenge of attracting workers for onboard positions due to the time away from home that can be required. Temporary foreign worker programs have been complex and costly for employers and it has been difficult for interested seafarers that want to stay to become permanent residents.

Workforce Demographic and Diversity

Currently, the workforce is dominated by older, male workers and more than 33% of future hiring requirements are needed to replace retiring employees. Although progress is being made in increasing female and indigenous participation, women and visible minorities are still significantly underrepresented. Stakeholders have reported workplace culture challenges, such as discrimination and harassment, that will hinder efforts to recruit from these pools of talent.

Marine Student Barriers

Students that pursue careers in the marine sector face challenges in obtaining the education and experience they need to work in the sector. Due to the small number of marine training institutes and the requirement for in-person training, many students must pay for tuition and the housing costs associated with staying near campus. Bottlenecks are formed by limited opportunities to spend training-time at sea (which is required for certification), shortages of qualified instructors and insufficient funding for programs that train marine officers. Existing seafarers also have insufficient opportunity and financial assistance to upgrade their skills or certifications.

Retention

A quarter of employers have struggled to retain their workforce owing to competition with other employers within the marine sector and 20% have struggled owing to competition with other industries. In addition, not all new graduates want to remain in seagoing positions for their entire careers and prefer to move ashore for various reasons. (isolation, rough weather, strenuous tasks, internet connectivity, living conditions and time away from home). There can also be misalignment between young workers' expectations and reality, including the long timeline for career progression to meet required education and at-sea experience.

Skills and Training

Most employers report skill gaps among their staff, with technical, practical, and job-specific skills being the most critical needs. Many stakeholders indicated a disparity between the training imparted (as mandated by Transport Canada) and the practical learning experience and skills required, particularly as vessel operators adopt new technologies. There is also inadequate funding for marine training institutions to increase capacity (equipment costs and competitive instructor salaries) and improve access to training (i.e. in communities that have marine labour demands but no local training or for students with financial or geographical barriers.)

RECOMMENDATIONS

To improve
attraction

Short-term

- **Increase public awareness**: Implement sector-coordinated initiatives to highlight marine career opportunities, targeting youth, educators, and the broader public. This may include deepening engagement with high schools and student-facing organizations by providing virtual and/or experiential opportunities to engage directly with mariners and explore life onboard different types of vessels and in ports.
- **Debunk seafaring misperceptions**: Emphasize the domestic seafarer experience (i.e., high pay and benefits, less time at sea, commitment to safety, advanced technology) and the value of "mariner skills & expertise" that leads to a multitude of careers onboard and ashore.
- **Deepen equity, diversity and inclusion efforts**: Develop targeted outreach for specific populations (youth, new Canadians, women, Indigenous) or locations (non-coastal areas, prairies). Hiring a diverse faculty would also attract a more diverse range of applicants.
- **Explore additional incentives**: Employers should investigate the possibility of offering incentives to entice workers to relocate to high-cost regions or have travel benefits so they can live where they choose. Some companies already have implemented some of these ideas, such as living in Alberta and flying people to Vancouver or Nanaimo.
- **Improve temporary foreign worker pathway:** Transport Canada and employers should work to streamline pathways for international recruitment and the recognition of foreign maritime credentials to address acute labour shortages. The federal government should work with employers to provide a clearer pathway for interested seafarers with endorsements to become permanent residents/ Canadian citizens and join the domestic workforce.

Medium-term

- **Improve access to training:** Sector collaboration with federal and provincial governments to increase availability of remote, intensive, hybrid and simulation learning within marine training programs, to help reduce geographical, financial and time barriers for learners that do not live in proximity to training institutions or have to juggle life responsibilities. This will require coordination with and approval by Transport Canada to modernize program delivery models.

To improve
retention

Short-term

- **Employers to enhance compensation**: Investigate the possibility of offering financial rewards for time at sea to encourage mariners to stay and progress their career in onboard roles. This is particularly but not exclusively important for the Coast Guard.
- **Evaluate current approaches to address bullying and harassment**: In addition to the current anti-harassment policies and training initiatives, employers should investigate strategies that foster a sentiment that these issues are everyone's responsibility and other changes to improve workplace culture, including those related to performance management, conflict resolution, and psychological safety.
- **Increase mental health support**: Develop sector-wide initiatives for broader impact, and that could assist small and medium-sized enterprises with less resources.

Medium-term

- **Improve onboard living experience**: While there has been progress, there are still opportunities for employers to improve accommodation and facilities as well as connectivity at sea. This should also be a primary consideration during fleet renewal.
- **Improve inclusion in the workplace:** Encourage and support employers to develop, implement, and evaluate both top-down and bottom-up initiatives aimed at fostering inclusion and equity at work. This includes, for example, establishing employee resource groups, implementing anonymous feedback systems, dialogue groups or creating peer mentorship programs. These efforts will help create workplaces that meet the needs of all seafarers, especially those from underrepresented groups, ensuring a more inclusive and supportive environment for everyone. The marine sector should look at initiatives being piloted internationally that could be adapted or applicable to domestic seafaring in Canada.[1]
- **Review maternity leave policies regarding sea time and certification retention**: To keep women in vital positions, Transport Canada should review its retention of sea-time requirements while on maternity leave. This could apply to parental leave policies as well.

[1] For instance, Diversity@Sea workstream. See https://globalmaritimeforum.org/diversity-at-sea.

To improve

training and skills development

Short-term

- **Transport Canada, Employment and Social Development Canada and provincial governments to increase support for marine education**: Enhance student financial support for marine training and upskilling. Greater investment in financial aid, such as grants, scholarships, tuition subsidies and debt forgiveness programs, would help attract new talent to the maritime sector and support career progression for existing seafarers. To achieve this, industry stakeholders—such as training institutions, employers, and unions—should collaborate to advocate for additional government resources.
- **Industry stakeholders —including professional/ industry associations, employers, and unions— to increase funding**: Increase funding for scholarships, and bursaries for marine officer cadets, as well as allocate more resources to pathways that assist and incentivize marine officers and ratings seafarers to upskill and progress their careers. Improve sector-wide promotion and coordination of these resources.
- **Increase student access to seatime:** Federal government to work with marine stakeholders to develop pilot projects to increase opportunities for onboard training to gain practical experience while accounting for the necessary sea time.

Medium-term

- **Modernize training curricula:** Federal government to work with marine stakeholders to develop and implement effective training/upskilling strategies to prepare the workforce for new technological developments on vessels. (i.e. related to decarbonization, digitalization, automation, safety).
- **Expand marine training capacity:** Federal and provincial governments to increase financial assistance to marine training institutions to increase the capacity of programs. This would require increasing instructor compensation and capital investments for physical space and equipment.
- **Skilled Trades Research Project:** The marine sector to conduct a research project to evaluate the feasibility and process required to obtain Skilled Trades recognition for specific mariner positions.

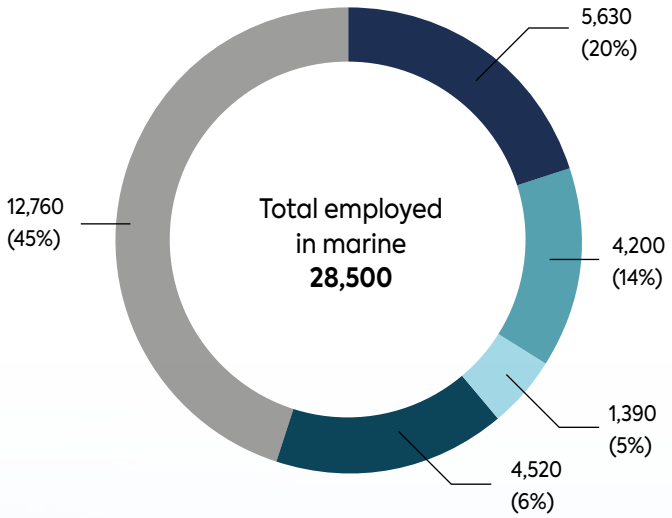
To improve

marine labour market data and research

- This study should be repeated in three years (after 2026 census data will have been published) to examine demographic and business changes that could impact future labour requirements as well as assess the progress of the training system and recommendations actioned from this report.

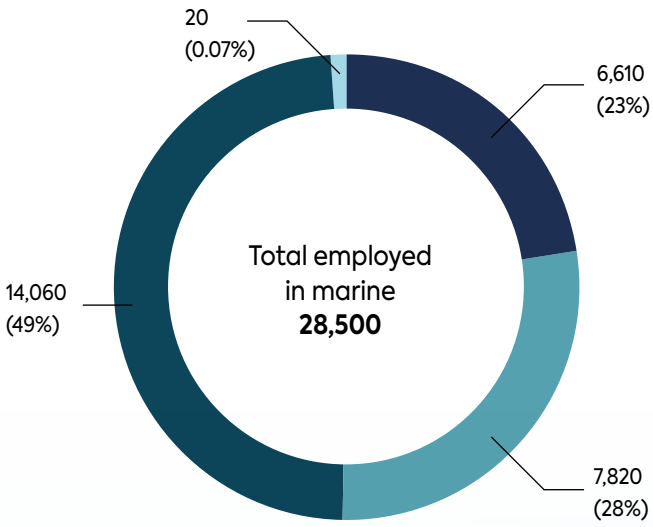
CANADIAN SEAFARING WORKFORCE AT A GLANCE

Estimated seafarer employment
by occupation group - 2023



NOC 72602 Deck officers
NOC 74201 Deck/engine crew
NOC 72603 Engineering officers
Total related occupations
All other occupations

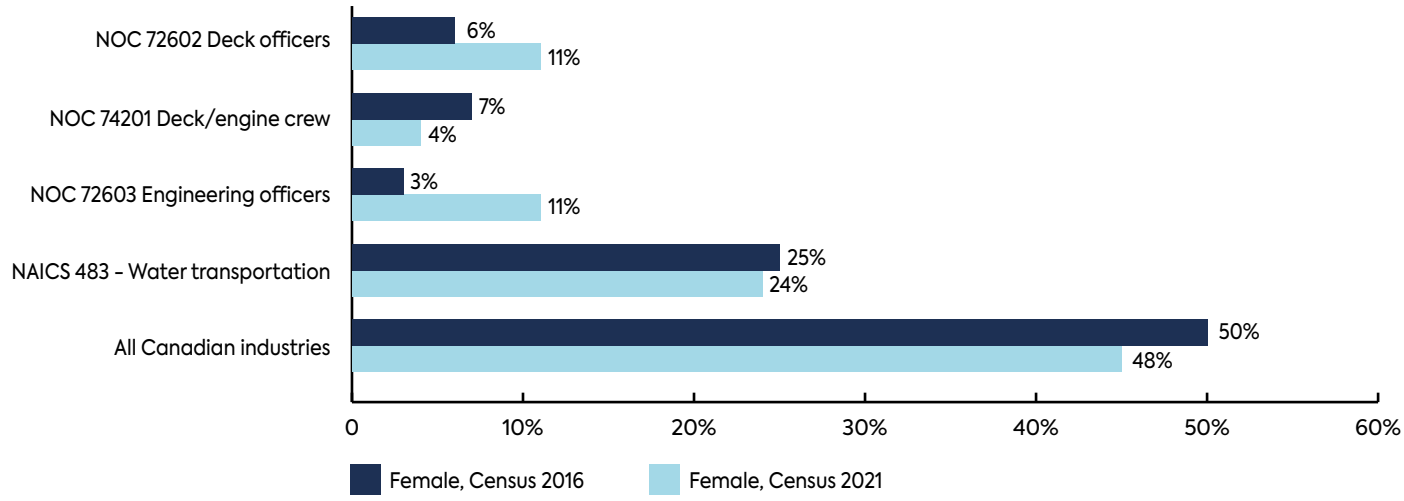
Estimated seafarer employment
by region - 2023



Atlantic Canada
Central Canada
Pacific region (BC and the Prairies)
Territories

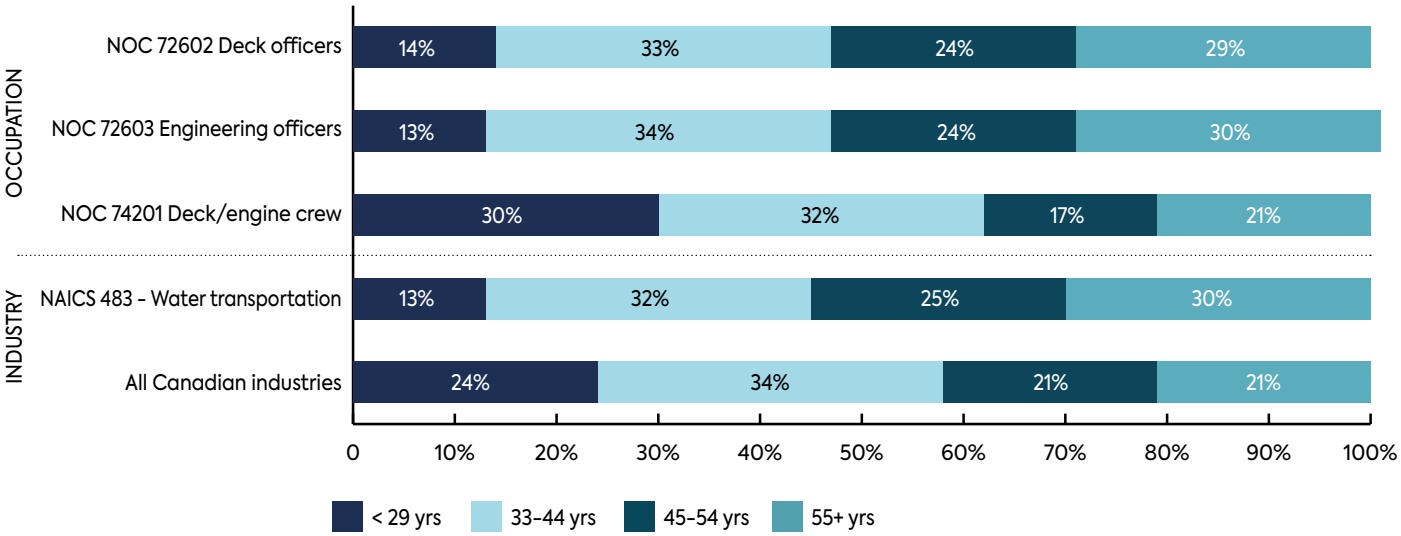
Source: Estimates based on 2021 Census data, Labour force characteristics (employment) for NAICS 48-49, and parameters from the 2021 Transport Canada study on «Current and Future Gaps in Seafarers in Canada».

Workforce female share for key marine industry and occupations



Source: 2021 Census data.

Workforce age distribution for key marine occupations and industry



Source: 2021 Census data.

1 STUDYING THE CANADIAN MARINE SECTOR

The Canadian Seafarers Pathway Study portrays Canada's marine sector in 2023 in terms of profile of employers, make up of the workforce, workforce challenges, capacities of the training system, and employment outlook. In particular, the study compares the estimated hiring requirements over the next five years (2025 to 2029) to the capacity of the education sector to meet those needs. The study also draws recommendations to address challenges facing the marine sector, including both the commercial marine transportation sector (and related service industries) and the public marine sector.

CONTEXT OF THE CANADIAN SEAFARERS PATHWAY STUDY

The Canadian Marine Careers Foundation (CMCF) was established to address workforce development challenges in Canada's marine sector, including both shipboard and shore-side personnel. The goal of the CMCF is to develop dynamic and innovative solutions to help build a diverse, inclusive and future-ready workforce for the marine sector.

In 2021, R.A. Malatest & Associates Ltd. (Malatest) conducted the study "*Current and Future Gaps in Seafarers in Canada*" for Transport Canada. The study revealed that the sector was already facing significant hiring challenges. For instance, more than 1,100 marine positions remained unfilled, while over 12,000 marine transportation workers were expected to retire over the next decade.

The study also showed challenges in onboarding new talent. Training institutions were often unable to recruit instructors because they could not match the salaries offered by private businesses. Additionally, the limited number of marine vessel berths restricted the ability of marine officer cadets to gain their required sea time to be certified/licensed by Transport Canada. More detailed data or information, however, was not available to the public and the study did not assess the capacity of the marine training system to meet labour demands or skills gaps.

In addition, the previous study did not examine the Canadian Coast Guard, a major player in developing and employing Canadian seafarers. It also did not examine the expected need of pilotage authorities to hire or contract marine pilots. Marine pilots board and conduct commercial vessels on designated high-risk Canadian waterways to ensure their safe and efficient transits. Shortages among this profession has the potential to directly impact the fluidity and safety of international traffic, both cargo and passenger ships entering Canadian ports, as well as some domestic operators. It also has cascading effects on the wider available workforce of senior navigation officers. Given the desire to examine these issues and the fact that three years have passed since the Transport Canada study, the CMCF contracted Malatest to conduct the Canadian Seafarers Pathway Study.

THE CANADIAN MARINE SECTOR, A DRIVER FOR THE CANADIAN ECONOMY

Altogether, Canada's marine sector contributes significantly to the Canadian economy in terms of economic growth and job creation. In 2023, the marine economy generated over $50 billion in gross domestic product, including over $9 billion for marine transportation and support activities for marine transportation. The marine economy employed approximately 446,000 Canadians in 2023 (representing over 2% of Canada's workforce), including over 85,000 Canadians in marine transportation and support activities for marine transportation.[2]

Ensuring a secure pipeline of seafarers is critical to the continued operation of the sector, as well as to the success of a multitude of other industries from energy, manufacturing and agriculture to mining, forestry, recreation, retail and tourism as well as thousands of communities – all of which rely on vessels to carry goods and/or passengers, and to ensure the safe operation of our harbours, ports and waterways.

There are two pathways to become a seafarer eligible to work onboard Canadian vessels: through direct work experience or through post-secondary marine cadet training programs.

Direct work experience: Canadian citizens or permanent residents who meet minimum Transport Canada requirements, pass a marine medical, and take safety training can start working directly in unlicensed positions (also referred to as ratings positions). Ratings seafarers are crew members who have not passed through officer training but fill a variety of skilled positions in all departments on a vessel (such as deckhands, engine room crews and cooks). The work can involve a wide range of tasks essential to the safe operation and maintenance of vessels. Additional training is often provided by the employer. Ratings seafarers can also access shorter courses or programs provided through a variety of marine training providers.

These seafarers can also advance their career over time to become a marine officer by accumulating the required sea time, by studying independently or through courses, and by passing Transport Canada examinations. Taking this pathway to become a marine officer requires self-motivation and patience, as it can take much longer than a formalized marine cadet training program.

Post-secondary marine cadet training programs: Canadian citizens or permanent residents that meet admission requirements can attend a post-secondary three- or four-year marine cadet training program at one of six training institutions approved by Transport Canada. These programs combine academics with simulation training and co-op work placements onboard a vessel to prepare students for a career as a navigation or engineering officer. The student must also acquire the required sea time and pass Transport Canada examinations to receive a Certificate of Competency (often referred to as a license).

Navigation officers help sail the vessel, supervise deck crew and cargo/passenger handling, and ensure the safety of the crew, the vessel and the waters in which they operate. Navigation officers can progress with additional training, experience and examinations over time to the role of captain or master mariner. Engineering officers maintain the engines, mechanical and environmental systems of the ship. These officers can progress with additional experience and examinations through the ranks to become a chief engineer.

More information on seafarer positions is provided in Appendix C.

[2] For more details on the marine sector's economic output and employment, see Statistics Canada's summary tables available here: www.dfo-mpo.gc.ca/stats/maritime-eng.htm.

OBJECTIVES AND RESEARCH QUESTIONS OF THE STUDY

This study collected new data and assessed existing capacity to train different streams of Canadian seafarer students, to identify gaps, and to recommend actions to close those gaps. It is hoped that with this information, the government and private marine sectors will be able to collaborate in developing the workforce of tomorrow. The study sought to address the following research questions:

- What are the current numbers of inflows and outflows of seafarers in the Canadian marine sector? What is the current number of vacant positions? How do these differ by demographic groups and geographic regions?
- What are the trends and factors influencing the inflow and outflow of seafarers in the Canadian marine sector, and how do these trends impact the industry's workforce dynamics and future sustainability?
- What are the main gaps and barriers that exist in the training capacity available to seafarers to crew Canadian vessels, including the use of licensed and unlicensed Canadian seafarers?
- What are the main gaps in current recruitment and retention practices within the marine sector, including those pertaining to meaningful engagement with employment equity deserving groups?
- What is the current level of employment and future demand for licensed navigation and engineering officers and unlicensed crew (deck/engine/galley) for government and private sector employers? Future demand is defined as next five years. How do these differ by geographic regions?
- What is the current graduate output and capacity of existing marine training institutes to instruct enough seafarers to meet the future demand for officers and unlicensed crew? What are the main areas that need improvement in the recruitment, training, and retention of Canadian seafarers in view of current and expected gaps as well as the impacts of technology on labour in the sector? What recommendations can be put forward to improve the aforementioned areas?

DEFINING THE SCOPE OF MARINE INDUSTRIES AND OCCUPATIONS

The marine economy spans various industries in the private sector (such as commercial marine transportation, fishing, manufacturing, construction, tourism) and the public sector (such as the Department of National Defence, and the Department of Fisheries and Oceans).

The Canadian Seafarers Pathway Study did not focus on the entire marine economy, but to specific industries within the marine economy. Using the North American Industry Classification System (NAICS) as a guide, the Study concentrated on one subsector and three industries that are related to marine activities (Table 1). Although the water transportation subsector employs most seafarers in Canada, other industries also employ seafarers.[3] For instance, deck officers may also work in scenic and sightseeing transportation on water, and marine pilots are employed in specialized services to water transportation. The Canadian Coast Guard (considered part of "Other federal government public administration" in the NAICS) also employs seafarers, such as deck (navigation) officers and engineer officers among others. This study excluded some marine operations, including operations of foreign-flag cruise ships outside of Canada, port and harbour operations, as well as Canada's fishing sector.

The study also excluded the Royal Canadian Navy, which has a separate training system, qualifications, and classification of sea-going occupations. Despite being out of scope for this study, the Royal Canadian Navy is a key stakeholder in the public marine sector. The Royal Canadian Navy employs over 9,800 sailors and officers (including regular force and reservists) and is required to grow by over 3,000 personnel to achieve their sovereignty and security mandate for Canada. Although the Royal Canadian Navy's workforce is different from the marine economy's workforce, it will compete for the same prospects to recruit their future fleet. There are efforts underway to align Navy occupations and qualifications with the marine workforce to ensure that skills and experience earned with the Navy can be transferable. The Royal Canadian Navy has also been collaborating with the wider marine sector on joint career awareness activities and recruitment events. The Commander of the Royal Canadian Navy has called for a national strategy to address the workforce development challenges of the broader marine sector.

[3] Technically, NAICS codes with three digits (such as NAICS 483) represent subsectors, while NAICS codes with four digits (such as NAICS 4872) represent industry groups. For sake of language simplicity, we will refer to NAICS 483 (Water transportation of passengers and goods) as a sector throughout the report (after Table 1).

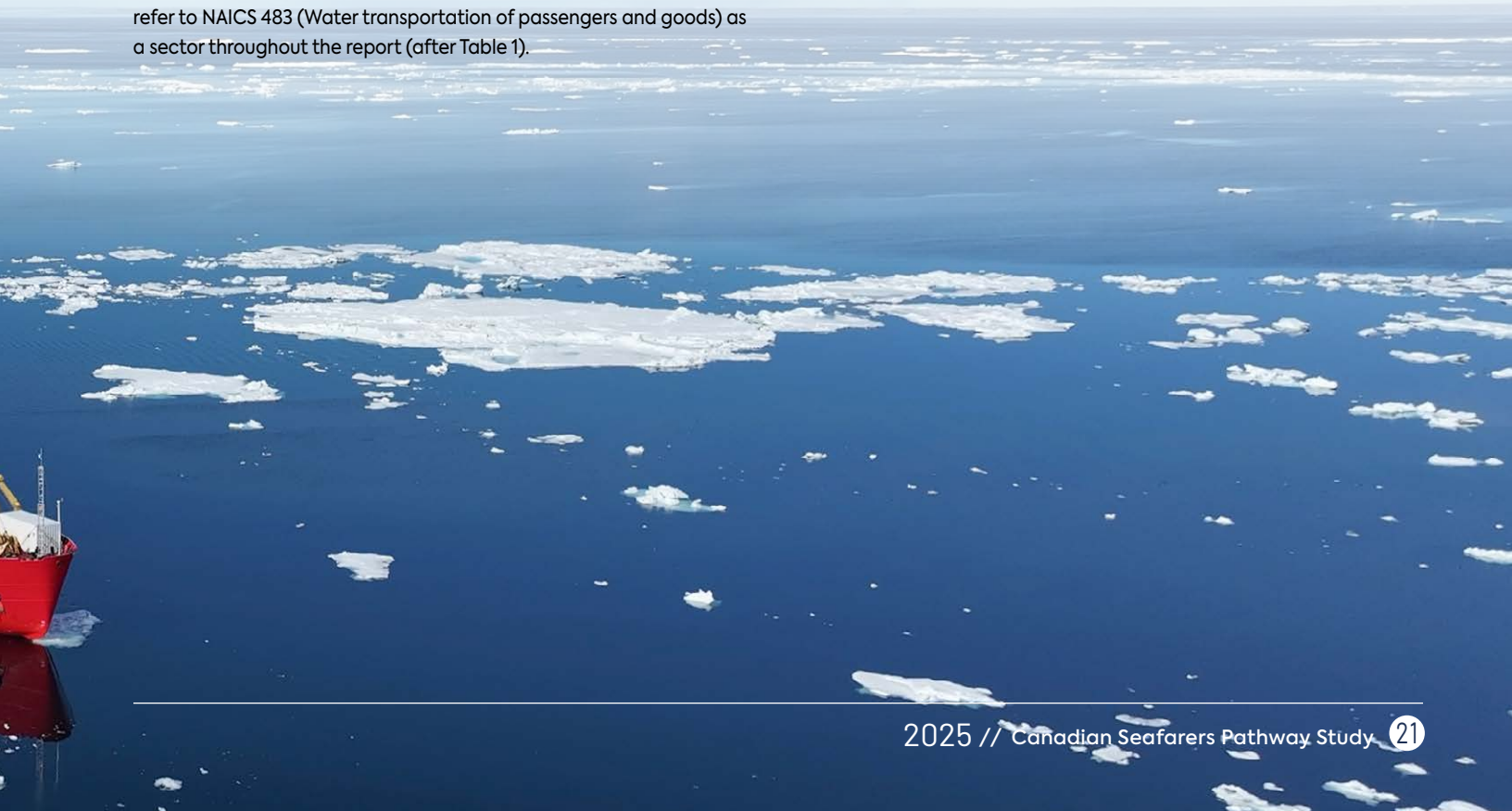


Table 1: Target marine industries

SUBSECTOR	NAICS # (2012 VERSION)	SUBSECTOR/ INDUSTRY	EXAMPLES OF ESTABLISHMENTS
Key marine subsector	483	Water transportation of passengers and goods	Establishments primarily engaged in the transportation of passengers and goods (e.g., cargo vessels, tankers, barges, ferries) offshore or within territorial waters, and the Exclusive Economic Zone of Canada (including the St. Lawrence and Great Lakes Basin).
Other marine industries	4872	Scenic and sightseeing transportation on water	Establishments providing dinner cruises, sight-seeing tours or air-boat rides.
	4883	Specialized services to water transportation (excluding NAICS 48831 - Port and harbour operations)	Establishments providing marine cargo handling services; navigational services to shipping (e.g. pilotage, moorage and vessel traffic services); marine salvage services (e.g., salvage tugs); Marine construction services (e.g. dredging, construction support); cable laying, pipe laying or bunkering services; seabed or geological mapping or research services; offshore oil and gas marine transportation services.
	Not applicable	Canadian Coast Guard	The Canadian Coast Guard is considered part of 911910, formally known as "Other federal government public administration."

The seafaring workforce represented in this study is defined as marine occupations onboard vessels but also occupations onshore that support the operation of domestic commercial vessels and public sector-related vessels. Using the National Occupation Classification, the study focused on three key marine occupations and eight related onboard occupations. Further it pooled administration occupations, such as marketing and information technology into a single shore-based category (Table 2). The terms marine sector, seafarers and marine workforce are used interchangeably throughout the study.

Table 2: Target key marine occupations and related occupations

OCCUPATION	NOC # (2021 VERSION)	SUBSECTOR/INDUSTRY
Key occupations	72602	Deck officers, water transport
	72603	Engineer officers, water transport
	74201	Deck/engine crew
Related onboard occupations	75210	Boat and cable ferry operators and related occupations*
	63200	Cooks
	64313	Water transport clerks
	64311	Pursers/attendants
	72201	Industrial electricians
	21120	Health/safety inspectors
	65200	Food/beverage servers
	72500	Crane operators
Related shore-based occupations		For example, administration, accountant, marketing, information technology

*** Note:** "Boat/Cable ferry operators and related occupations" are not representative of all ferry positions. Ferry jobs are also included in other occupation categories in the Table. More details on the Statistics Canada definition of the NOC "75210 - Boat/Cable ferry operators and related occupations" is available here: Statistics Canada definition of NOC 75210.

KEY RESEARCH ACTIVITIES

To address the research questions above, the study relied on a mix of quantitative and qualitative lines of evidence, including:

- A review of documents and literature relevant for this study, such as the Transport Canada study on "*Current and Future Gaps in Seafarers in Canada*";
- A survey of employers in the marine transportation sector (including private and public sector employers) to collect data about their current workforce, future workforce needs, gaps and barriers to workforce development;
- A survey of students and recent graduates in the marine transportation sector to collect data about their experience with marine education and training, and insights as to their plans with respect to possible careers in the marine sector;
- Semi-structured interviews with key stakeholders in Canada's marine sector (including training institutions, labour unions, professional/industry associations, and government representatives) to gather their insights about various topics of interest, such as training practices, capacities and gaps; practices and challenges related to workforce recruitment and retention; the role of government, including in terms of support to the marine sector; and
- An analysis of program data provided by marine educational institutions, including metrics like program capacity, student enrollment, graduation rates and others.

More details on each of the lines of evidence are available in Appendix A.

Most of the key findings of this report are based on data from the survey of employers, which gathered feedback from 73 organizations operating in the marine sector. Although these employers represented a modest proportion of the population of marine employers, they represent many of the leading employers, together accounting for 85% of the estimated seafarer workforce. Furthermore, employer survey data was weighted by sector and region to improve their representativeness of the collected information. Data is presented at a national level as well as by region, including Central (Ontario and Quebec), Atlantic (Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island) and Pacific (British Columbia and the Prairies) and, where possible, the Territories.

RESEARCH LIMITATIONS

Several limitations should be kept in mind when interpreting study findings related to the employer survey data and Transport Canada certificate data. These include:

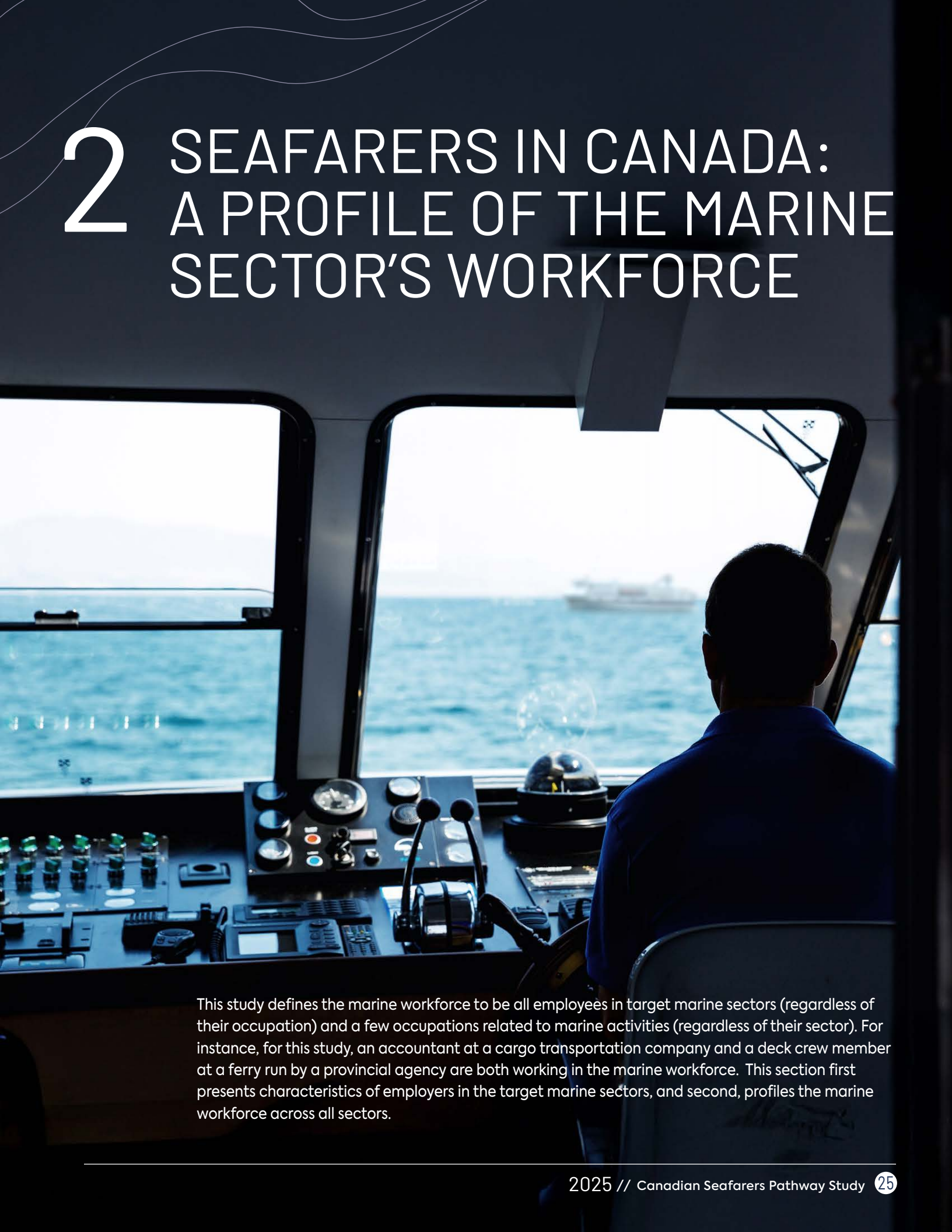
Self-reported estimates: Responses are self-reported, and that may introduce bias in the responses, particularly since some questions are especially challenging, such as their assessment of future demand in occupations of interest. Forecasting future demand requires assumptions that vary widely across employers. For instance, the rapid advancements in technology may lead some individuals to perceive opposite trends, such as an increase in hiring due to new positions or a decrease due to automation.

The number of Transport Canada certificates: Data was collected regarding the total number of Certificates of Competency issued by Transport Canada over the last decade. Transport Canada was unable to disaggregate the data into categories such as first-time issuances, renewals or endorsements. Therefore, the data does not allow Malatest to ascertain the number of certificates issued specifically to graduates of marine training programs who received entry-level certifications. Additionally, Malatest was unable to distinguish these from renewals, endorsements, or certificates acquired through direct work experience or through post-secondary marine cadet training programs.

Tariffs and trade uncertainty: This study was conducted before the United States and Canada entered into a trade war. Growth and workforce expectations for the future may change owing to tariffs and trade uncertainty.

Recent Transport Canada policy changes: The study estimates for future hiring requirements do not include the potential impacts of the recent Transport Canada change in interpretation of Engineering Watch requirements and policy change regarding NC2 Limited voyages, which could result in a significant increase in engineering officers on West Coast tugboat operations in the years to come.

2 SEAFARERS IN CANADA: A PROFILE OF THE MARINE SECTOR'S WORKFORCE



This study defines the marine workforce to be all employees in target marine sectors (regardless of their occupation) and a few occupations related to marine activities (regardless of their sector). For instance, for this study, an accountant at a cargo transportation company and a deck crew member at a ferry run by a provincial agency are both working in the marine workforce. This section first presents characteristics of employers in the target marine sectors, and second, profiles the marine workforce across all sectors.

CHARACTERISTICS OF MARINE EMPLOYERS

Based on statistics data published by Innovation, Science and Economic Development Canada, the marine sector included 940 employer establishments (with one or more employees) in 2023 (Table 3). About half (49%) provided specialized services to water transportation (excluding port and harbour operations), three-in-ten (30%) employer establishments were involved in water transportation of passengers and goods, and finally one fifth (21%) was involved in scenic and sightseeing transportation on water.

Table 3: Marine employer establishments by sector, region and employment size

DIMENSION	CATEGORY	EMPLOYERS	
		#	%
Total		**940**	**100%**
Sector	483 – Water transportation of passengers and goods	280	30%
	4872 – Scenic and sightseeing transportation on water	200	21%
	4883 – Specialized services to water transportation (excluding NAICS 48831 - Port and harbour operations)	460	49%
	Canadian Coast Guard	1	<1%
Region	Atlantic	190	20%
	Central	380	40%
	Pacific (West Coast and the Prairies)	370	39%
	Territories	4	<1%
Employment size	Micro (1-4)	370	39%
	Small (5-99)	510	54%
	Medium (100-499)	50	5%
	Large (500+)	5	<1%

Source: Statistics Canada, special tabulation, unpublished data, unclassified excluded, 2023. For instance, data for NAICS 483 is available here: https:/ised-isde.canada.ca/app/ixb/cis/businesses-entreprises/483. The sum of employers by region and employment size does not equal the total because numbers were rounded to the nearest 10.

Regionally, the Central and Pacific regions accounted for 40% of these establishments each, and Atlantic made up one fifth (20%) of these establishments. And in terms of size, over nine-in-ten (94%) marine employers were either micro businesses employing 1-4 employees (40%) or small businesses employing 5-99 employees (54%).

CHARACTERISTICS OF THE CURRENT MARINE WORKFORCE

The study estimated Canada's marine workforce, broken down by region and by occupation. The study also profiled the marine workforce by demographic factors (such as gender and age) and equity-deserving groups. (See Appendix B for a description of the methods utilized to estimate these figures).

Employment by region and by occupation

This study estimated that Canada employed more than 28,500 seafarers in 2023 (Table 4).[4] The Pacific region employed about half of Canada's total seafarer employment in 2023 (14,100 jobs, or 49%). The three key marine occupations (including deck officers, engineering officers and deck/engine crew) employed about 39% of seafarers in 2023 (11, 200 jobs).

Table 4: Estimated employment in 2023

DIMENSION	CATEGORY	2023 ESTIMATES (CMCF STUDY)
Regions	Atlantic	6,610
	Central	7,820
	Pacific (BC and the Prairies)	14,060
	Territories	20
Key occupations	Deck officers (NOC 72602)	5,630
	Engineering officers (NOC 72603)	1,390
	Deck/engine crew (NOC 74201)	4,200
	Total Key Marine Occupations	**11,220**
Related NOCs (2021 version)	NOC 75210 Boat and cable ferry operators and related occupations	1,860
	NOC 63200 Cooks	990
	NOC 64313 Water transport clerks	800
	NOC 64311 Pursers/attendants	580
	NOC 72201 Industrial electricians	130
	NOC 21120 Health/safety inspectors	70
	NOC 65200 Food/beverage servers	50
	NOC 72500 Crane operators	50
	Total Related Occupations	**4,520**
All other occupations		**12,760**
Total Employed in Marine		28,500

Source: Estimates based on 2021 Census data, Labour force characteristics (employment) for NAICS 48-49, and parameters from the 2021 Transport Canada study on "Current and Future Gaps in Seafarers in Canada".

Note: Numbers rounded to the nearest 10.

***Note:** "Boat/Cable ferry operators and related occupations" are not representative of all ferry positions. Ferry jobs are also included in other occupation categories in the Table. More details on the Statistics Canada definition of the NOC "75210 - Boat/Cable ferry operators and related occupations" is available here: Statistics Canada definition of NOC 75210.

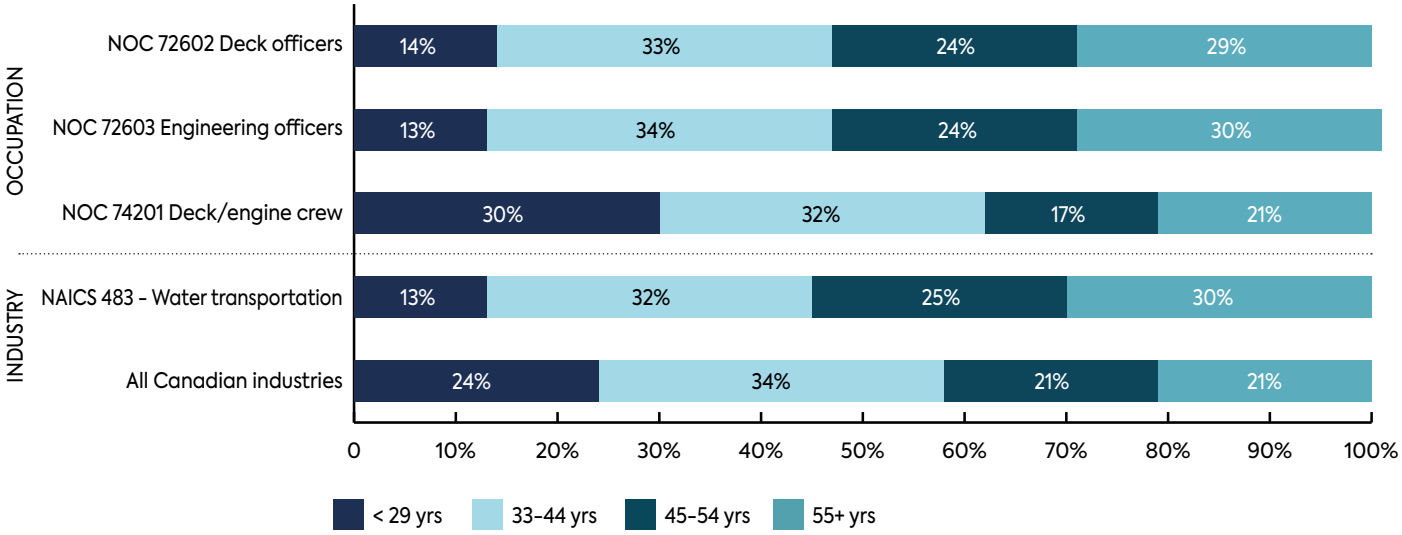
[4] By comparison, the earlier Transport Canada study (2020) estimated employment at 28,000. Although both studies estimate similar employment levels, they did so by employing different methods and definitions. While the similarity of the two estimates lends credibility to both studies, it would not be prudent to calculate workforce growth rates from one to the other. For example, the Transport Canada study also included an estimate of the number of Canadian mariners who worked offshore for other entities.

Marine workforce by age

The marine workforce is aging

The marine sector is currently characterized as employing a workforce that is on average older than the general working population. Three-in-ten (30%) of workers employed in the marine transportation sector are 55 years or older, while only one fifth (21%) of all Canadian workers are 55 years or older (Figure 1). This is particularly true of deck officers and engineering officers. Although the proportion of deck/engine crew aged 55 years or older was in line with the overall Canadian workforce, they are still at risk of suffering the loss of a significant portion of their experienced workers.

Figure 1: Workforce age distribution for key marine occupations and industry



Source: 2021 Census data.

When considering the data above, it should also be noted that some niche roles are even more at risk. For instance, some stakeholders highlighted that the issue of aging will be particularly acute for marine pilots over the short and medium term, considering the average age of pilots — which in some regions is already over 60 years. This trend is being compounded by recent challenges in retaining trainee pilots and the fact that marine pilots typically require at least a decade of experience plus additional training as a pilot before being licensed. Future needs for marine pilots will also have a cascading effect on the supply of captains available for commercial vessels, as marine pilot candidates are recruited from the same labour pool of master mariners with years of local experience and knowledge.

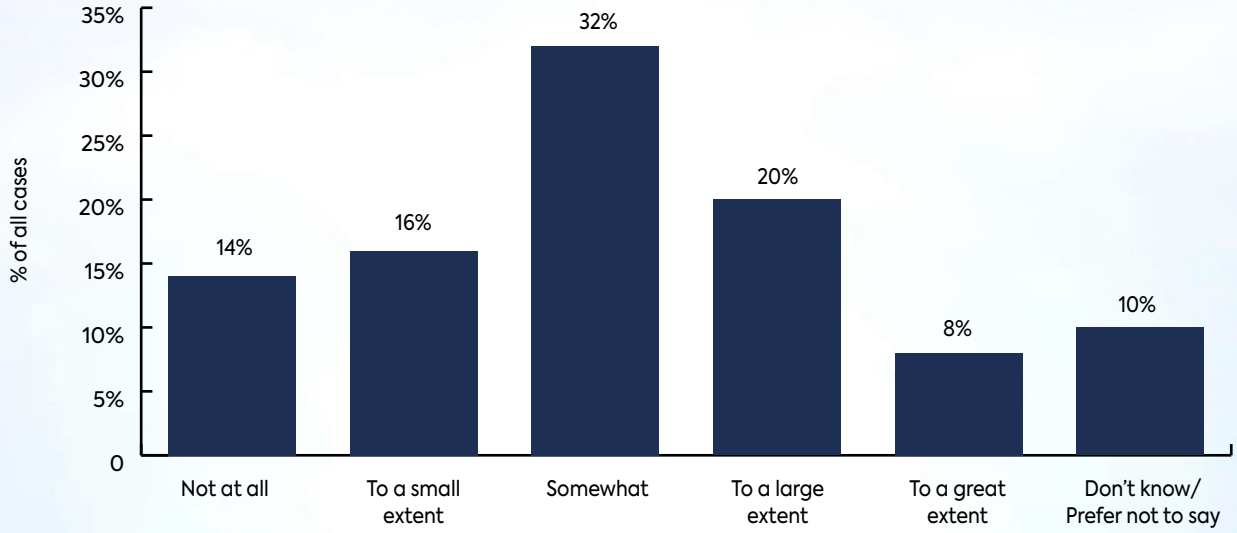
> *"In our region, 80% of pilots are over 60 years old, with a small percentage (1.5%) over 70."*
>
> — Pilotage authority representative

> *"Although pilotage authorities have been traditionally perceived as stealing people from the Canadian industry, this situation is evolving with pilotage authorities having more and more difficulties in recruiting from within the maritime industry, which means that the pool of candidates for pilots has become even smaller."*
>
> — Pilotage authority representative

Marine workforce diversity

Most employers from the study survey indicated that their organization had made progress in hiring seafarers from underrepresented groups — such as women, and members of the lesbian, gay, bisexual, transgender, queer, and two-spirit communities, indigenous peoples, peoples with disabilities, members of visible minorities — either somewhat (32%), to a large extent (20%) or to a great extent (8%) (Figure 2).

Figure 2: Extent of progress towards hiring seafarers from underrepresented groups



Source: 2024 Survey of marine employers (n=73).

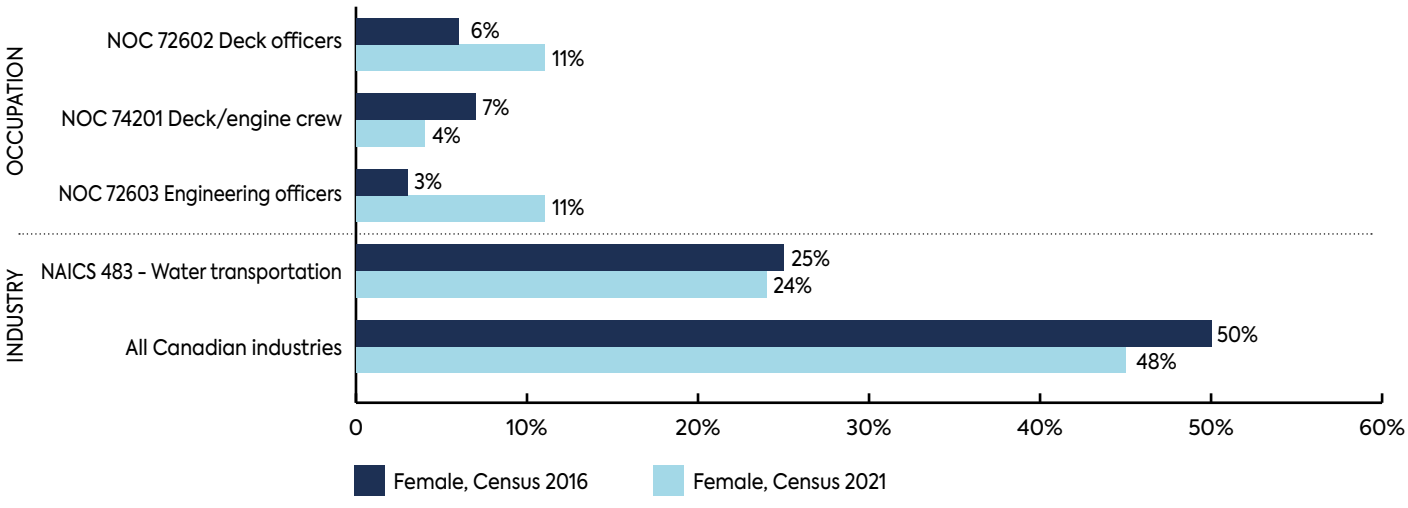
The marine sector still employs relatively few women

Although the data confirms that progress is being made, the workforce is not as diverse as it could be. Although the female proportion for most key marine occupations has increased over time, the marine sector remains primarily male dominated. Women made up one quarter of the workforce in the water transportation sector (24% in 2021), half of what they represent in the overall Canadian workforce (48% in 2021).

This gap is particularly acute in some occupations. The proportion of female deck officers increased from 6% in 2016 to 11% in 2021, and that of female engineering officers increased from 3% in 2016 to 11% in 2021. Even this growth is uneven with some occupations bucking this trend. In fact, at least one key occupation has seen a reduction in female employment; the proportion of female deck/engine crew decreased from 7% to 4% over the same period (Figure 3). Pilotage authorities also reported that increasing the representation of females has been challenging, with one specifying that females constituted less than 2% of the overall pilot workforce.

> *"And the biggest challenge we have is recruiting women or self-identified women. We do not have a single one."*
>
> — Pilotage authority representative

Figure 3: Workforce female share for key marine occupations and industry

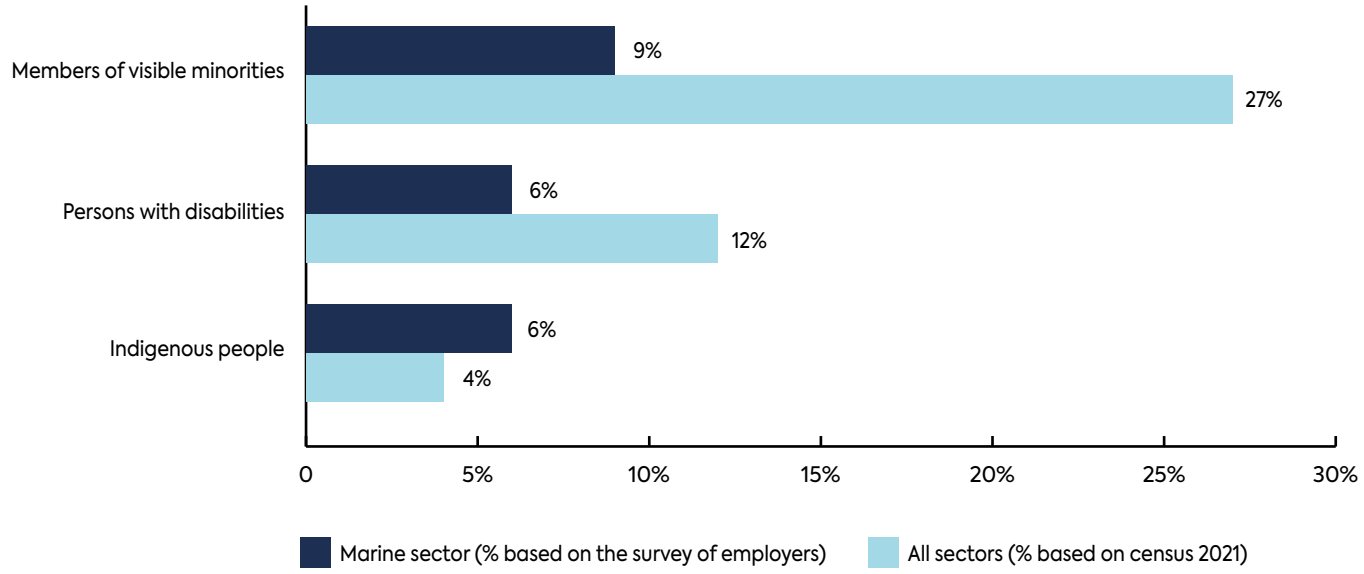


Source: 2021 Census data.

The marine sector underrepresents equity-deserving groups

In addition to the gender imbalance, the marine sector employed a less diverse workforce compared to the Canadian workforce overall. For instance, while members of visible minorities made up about three-in-ten of the overall Canadian workforce (27%), they made up less than one-in-ten workers in the marine sector (9%) (Figure 4). Further, the marine sector was significantly less likely to employ persons with disabilities than all Canadian sectors (6% vs. 12%). This gap may be in part caused by seafarers needing to meet medical and physical standards and holding a marine medical certificate, as required by Canadian law.[5] The marine sector employed Indigenous people at a rate at or above that of the Canadian workforce.

Figure 4: Marine workforce by ethnic group and disability status



Source: 2024 Survey of marine employers (n=73).

[5] For more information about the marine medical certificate, see https:/tc.canada.ca/en/marine-transportation/marine-training-certification-individuals/how-obtain-canadian-marine-medical-certificate

3 ESTIMATING THE CURRENT AND FUTURE DEMAND FOR SEAFARERS

Based on the data collected through the employer survey, the Canadian Seafarers Pathway Study concluded that there is already considerable unmet demand for seafarers with a high number of vacant unfilled positions, and the potential of this being significantly exacerbated over the next five years.

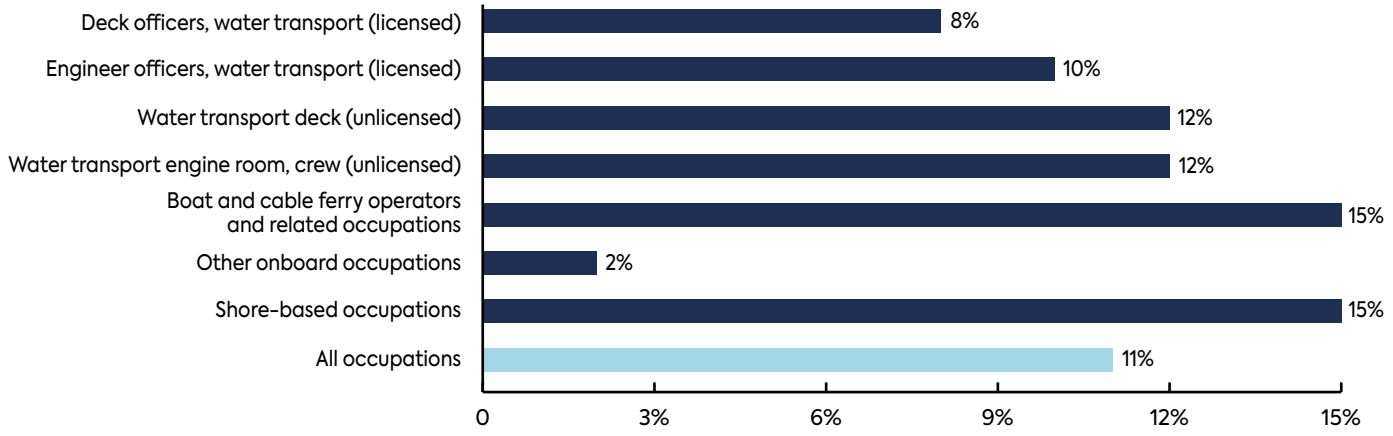
CURRENT VACANCIES

The marine sector faces high vacancy rates for a number of occupations.[6] Based on the employer survey data where employers were asked to provide not only the number of employees in each occupation but the number of vacancies for each as well, the overall vacancy rate in the marine sector was estimated to be 11% (Figure 5) which is more than three times higher than in other sectors of the economy, at 3%.[7]

With this data, the study estimates that 3,600 positions are currently vacant, which undoubtedly hinders the operation of the sector (Table 5).[8] If those positions were filled, the sector could employ as many as 32,100 (28,500 plus 3,600).

Within the marine sector, vacancy rates varied by occupation and region. Vacancy rates for key marine occupations ranged from 8% for deck officers to 12% for water transport deck and engine room crew (Figure 5). Interestingly, other onboard occupations featured the lowest vacancy rate (2%), while boat and cable ferry operators (and related occupations) and shore-based occupations featured the highest vacancy rate (15%).

Figure 5: National vacancy rates for marine occupations



Source: 2024 Survey of marine employers (n=73).

Note: "Boat/Cable ferry operators and related occupations" are not representative of all ferry positions. Ferry jobs are also included in other occupation categories in the Figure. More details on the Statistics Canada definition of the NOC "75210 - Boat/Cable ferry operators and related occupations" is available here: Statistics Canada definition of NOC 75210.

At the regional level, the Pacific region featured the highest vacancy rate for all key marine occupations combined (13%, which represents 625 jobs), while Atlantic featured the lowest vacancy rate for all key marine occupations combined (7%, which represents 275 jobs) (Table 5).

[6] Vacancy rate is calculated as the number of vacant positions divided by the sum of vacant positions and current workforce.

[7] More specifically, 3.3% in Q2 2024.

[8] The total number of vacant positions is calculated based on the estimated overall vacancy rate (11%) applied to the estimated workforce in the sector plus the vacancies (vacancy rate * estimated workforce)/(1-vacancy rate).

Table 5: Estimated workforce, vacant positions and vacancy rates by region

REGION	KEY MARINE OCCUPATION	ESTIMATED TOTAL WORKFORCE	ESTIMATED VACANT POSITIONS	ESTIMATED WORKFORCE AND VACANT POSITIONS	VACANCY RATES
Atlantic	Deck officers (licensed)	1,700	90	1,790	5%
	Engineer officers (licensed)	400	10	410	2%
	Water transport deck and engine room crew (unlicensed)	1,410	170	1,580	11%
	Key marine occupations - subtotal	**3,510**	**270**	**3,780**	**7%**
	All other occupations	3,100	90	3,190	3%
	All occupations - subtotal	**6,610**	**360**	**6,970**	**5%**
Central	Deck officers (licensed)	1,600	100	1,700	6%
	Engineer officers (licensed)	720	120	840	14%
	Water transport deck and engine room crew (unlicensed)	1,320	90	1,410	6%
	Key marine occupations - subtotal	**3,640**	**310**	**3,950**	**8%**
	All other occupations	4,170	2,240	6,410	35%
	All occupations - subtotal	**7,810**	**2,550**	**10,360**	**25%**
Pacific (BC and the Prairies)	Deck officers (licensed)	2,320	330	2,650	12%
	Engineer officers (licensed)	260	10	270	4%
	Water transport deck and engine room crew (unlicensed)	1,480	290	1,770	16%
	Key marine occupations - subtotal	**4,060**	**630**	**4,690**	**13%**
	All other occupations	10,000	60	10,060	1%
	All occupations - subtotal	**14,060**	**690**	**14,750**	**5%**
Canada	Deck officers (licensed)	5,630	520	6,150	8%
	Engineer officers (licensed)	1,390	150	1,540	10%
	Water transport deck and engine room crew (unlicensed)	4,200	550	4,750	12%
	Key marine occupations - Total	**11,220**	**1,220**	**12,440**	**10%**
	All other occupations	17,280	2,390	19,670	12%
	All occupations - Total	**28,500**	**3,610**	**32,110**	**11%**

Source: Estimates based on 2021 Canadian Census, Labour force characteristics (employment) for NAICS 48–49, and parameters from the 2021 Transport Canada study on "*Current and Future Gaps in Seafarers in Canada*", and the 2024 Survey of marine employers.

Note: Estimated total workforce and vacant positions are rounded to the nearest 10. Estimated total workforce for Canada includes 21 jobs in the Territories.

EXPECTED HIRING REQUIREMENTS

Employers were also asked to estimate the numbers of workers that would be needed to support growth (or decline) in their business or operations, to replace expected retirements and to replace those leaving to work in other sectors. Based on this data, this study estimated that the sector will require over 8,300 FTE employees over the next five years (Table 6). Over half of this requirement (4,390 jobs, or 53%) is to replace turnover to other sectors, mainly driven by the loss of workers to shore-based occupations (such as operational, commercial, engineering or technical roles).

The study estimated that 2,750 marine personnel will retire in the next five years, which represents about 10% of the total estimated marine workforce in 2023. Given the proportion of the workforce aged 55+ detailed in Section 2.2 above, this retirement rate may appear lower than expected.

More than half of all hiring requirements (4,630 jobs, or 56%) will be for the four key marine occupations, including deck officers (2,250 jobs, or 27%), deck and engine crew (1,850 jobs, or 22%), and engineering officers (530 jobs, or 6%). When considering those four key marine occupations at the regional level, Central is expected to account for 44% of future hiring requirements for the four key marine occupations (2,030 jobs), followed by Atlantic (30%, or 1,390 jobs) and Pacific Canada (25%, or 1,210 jobs) (Table 7).

Table 6: Future hiring requirements by occupation

OCCUPATION	FUTURE REQUIREMENTS TO SUPPORT GROWTH (FTEs)	FUTURE REQUIREMENTS TO REPLACE RETIREMENT (FTEs)	FUTURE REQUIREMENTS TO REPLACE OTHER TURNOVER TO OTHER SECTORS (FTEs)	TOTAL FUTURE REQUIREMENTS	
				FTEs	%
Deck officers (licensed)	1,260	490	500	2,250	27%
Engineering officers (licensed)	300	120	110	530	6%
Sub-total – licensed occupations	**1,560**	**610**	**610**	**2,780**	**33%**
Deck/engine room crew (unlicensed)	730	290	830	1,850	22%
Sub-total – key marine occupations	**2,290**	**900**	**1,440**	**4,630**	**56%**
Boat and cable ferry operators and related occupations**	100	440	890	1,430	17%
Other onboard occupations	140	70	240	440	5%
Shore-based occupations	-1,360*	1,340	1,820	1,800*	22%
Total future requirements (FTEs)	**1,170**	**2,750**	**4,390**	**8,310**	**100%**
Total future requirements (%)	**14%**	**33%**	**53%**	**100%**	

Source: Estimates based on the 2024 Survey of marine employers (n=73) and 2021 Canadian Census. Numbers are rounded to the nearest 10.

*** Note:** Although the marine sector may expect a decrease of shore-based workers in the coming years (a reduction of 1,360 positions), the sector's need for shore-based workers to replace retirements and to replace those lost to other sectors means that sector will still need to find a net of 1,800 workers in shore-based occupations over the next five years.

**** Note:** "Boat/Cable ferry operators and related occupations" are not representative of all ferry positions. Ferry jobs are also included in other occupation categories of the Table. More details on the Statistics Canada definition of the NOC "75210 - Boat/Cable ferry operators and related occupations" is available here: Statistics Canada definition of NOC 75210.

Table 7: Future hiring requirements for key marine occupations by region

REGION	KEY MARINE OCCUPATION	FUTURE REQUIREMENTS TO SUPPORT GROWTH (FTEs)	FUTURE REQUIREMENTS TO REPLACE RETIREMENT (FTEs)	FUTURE REQUIREMENTS TO REPLACE OTHER TURNOVER TO OTHER SECTORS (FTEs)	TOTAL FUTURE REQUIREMENTS	
					FTEs	% of key marine occupations
Atlantic	Deck officers (licensed)	420	180	160	760	16%
	Engineer officers (licensed)	90	40	40	170	4%
	Deck and engine room crew (unlicensed)	320	80	60	460	10%
	Key marine occupations - subtotal	**830**	**300**	**260**	**1,390**	**30%**
	All other occupations	200	330	240	770	N.A
	All occupations - subtotal	**1,030**	**630**	**500**	**2,160**	**N.A**
Central	Deck officers (licensed)	440	150	210	800	17%
	Engineer officers (licensed)	150	70	40	260	6%
	Deck and engine room crew (unlicensed)	140	200	630	970	21%
	Key marine occupations - subtotal	**730**	**420**	**880**	**2,030**	**44%**
	All other occupations	-3,040	920	940	-1,180	N.A
	All occupations - subtotal	**-2,310**	**1,340**	**1,820**	**850**	**N.A**
Pacific	Deck officers (licensed)	400	150	130	680	15%
	Engineer officers (licensed)	60	20	30	110	2%
	Deck and engine room crew (unlicensed)	260	10	150	420	9%
	Key marine occupations - subtotal	**720**	**180**	**310**	**1,210**	**26%**
	All other occupations	1,720	610	1,760	4,090	N.A
	All occupations - subtotal	**2,440**	**790**	**2,070**	**5,300**	**N.A**
Canada	Deck officers (licensed)	1,260	490	500	2,250	49%
	Engineer officers (licensed)	300	120	110	530	11%
	Deck and engine room crew (unlicensed)	730	290	830	1,850	40%
	Key marine occupations - subtotal	**2,290**	**900**	**1,440**	**4,630**	**100%**
	All other occupations	-1,120	1,850	2,940	3,670	N.A
	All occupations - Total	**1,170**	**2,750**	**4,380**	**8,300**	**N.A**

Source: Estimates based on the 2024 Survey of marine employers (n=73) and 2021 Canadian Census. Numbers rounded to the nearest 10.

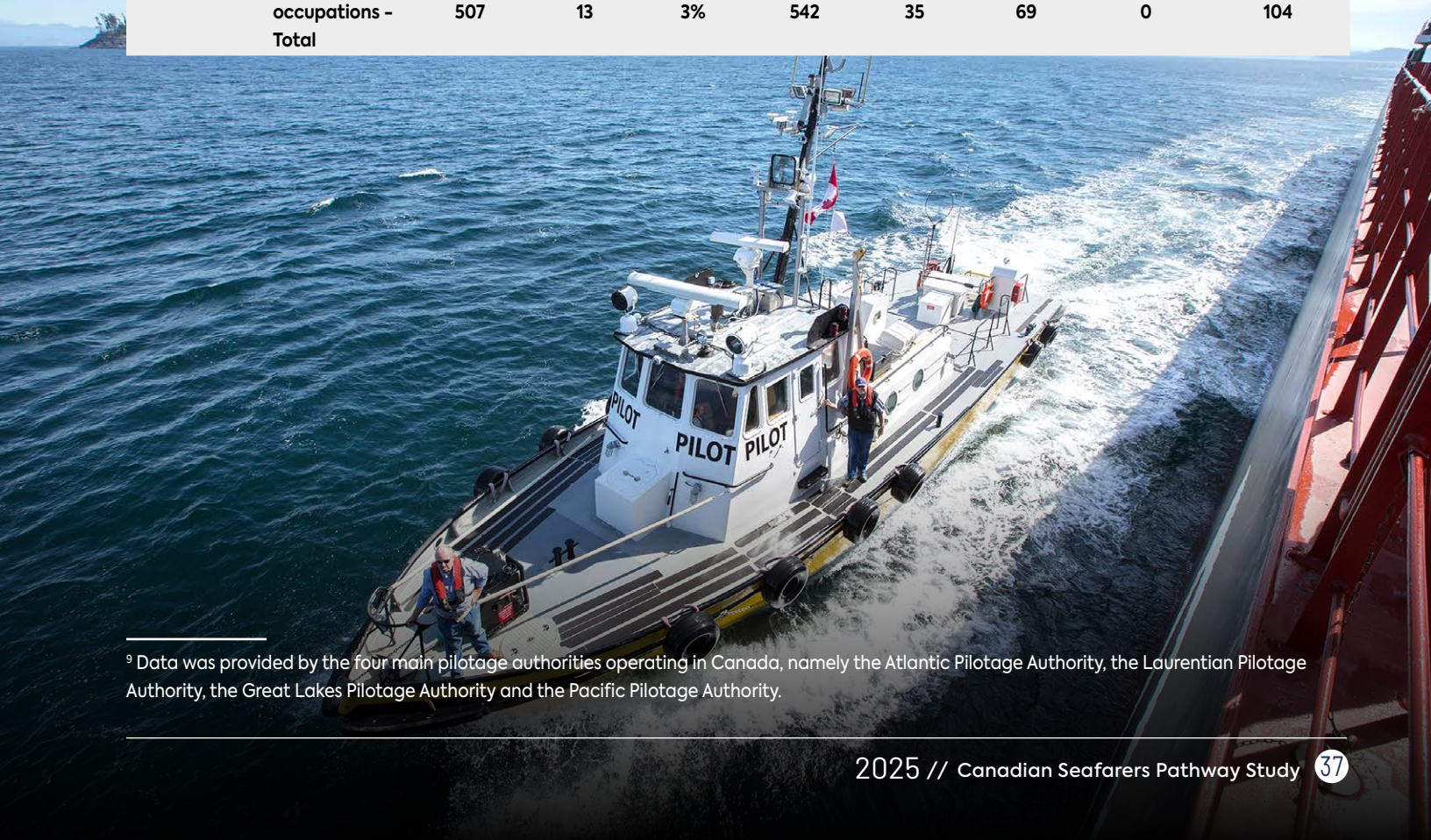
As discussed earlier in the report, marine pilots are niche roles with distinctive challenges and needs. The pilotage authorities together employed over 500 deck officers, most of whom being contractor pilots (335 jobs) followed by employed pilots (127 jobs) (Table 8).[9]

Given their critical nature to the operations of the sector, perhaps it's not surprising to see lower vacancy rates. The one exception is apprentice pilots, which featured a high vacancy rate (24%).

Pilotage authorities expected to hire over 100 pilots to support growth and replace retirement over the next five years. Specifically, pilotage authorities will need to add a significant number of employed pilots (37%; i.e., 47 hiring requirements for 127 pilots employed currently) in the next five years. Since the Pilotage authorities are already experiencing high vacancy rates among apprentice pilots, it may be a challenge for these organizations to achieve these aims.

Table 8: Current workforce and future hiring requirements for marine pilots

OCCUPATION	SUB-CATEGORY FOR DECK OFFICERS	CURRENT WORKFORCE	VACANT POSITIONS	VACANCY RATE	FUTURE WORKFORCE	FUTURE REQUIREMENTS			
						TO SUPPORT GROWTH	TO REPLACE RETIREMENT	TO REPLACE TURNOVER TO OTHER SECTORS	TOTAL FUTURE REQUIREMENTS
Deck officers, water transport (licensed)	Employed pilots	127	5	4%	146	20	27	0	47
	Contractor pilots	335	0	0%	350	15	37	0	52
	Apprentice pilots	25	8	24%	28	3	0	0	3
	Deck officers (other than pilots)	21	0	0%	18	-3	5	0	2
	Deck officer occupations - Total	**507**	**13**	**3%**	**542**	**35**	**69**	**0**	**104**



[9] Data was provided by the four main pilotage authorities operating in Canada, namely the Atlantic Pilotage Authority, the Laurentian Pilotage Authority, the Great Lakes Pilotage Authority and the Pacific Pilotage Authority.

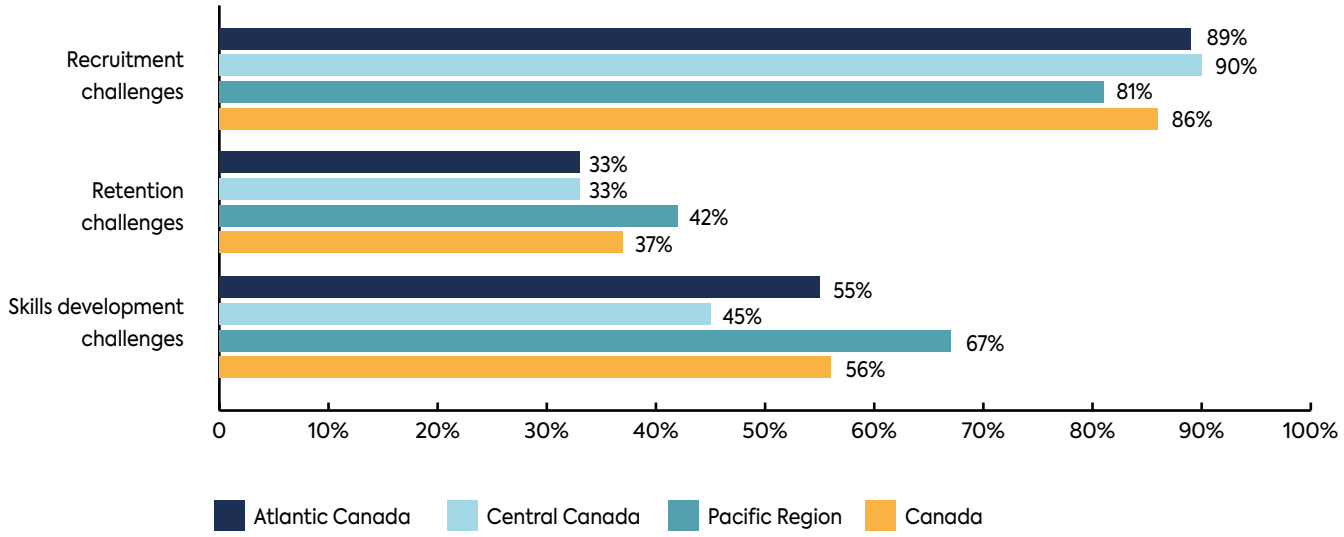
4

CHALLENGES TO RECRUITING, DEVELOPING AND RETAINING SEAFARERS

To meet future hiring requirements, the marine sector must be able to attract and retain talent. However, the study underscored the challenges faced by employers in the sector. As highlighted in Figure 6, the majority of Canadian marine employers noted they faced challenges in recruiting workers (86%), but many also experienced challenges in developing their workforce's skills (56%), and some faced challenges in retaining their workers (37%).

Across the country, employers face recruitment and retention challenges at similar levels. There are clear differences in skill development challenges. Employers in the Pacific were the most likely to face skills development challenges (67% for employers in Pacific, compared to 55% in Atlantic, and 45% in Central).

Figure 6: Prevalence of workforce challenges among marine employers



Source: 2024 Survey of marine employers (n=73).

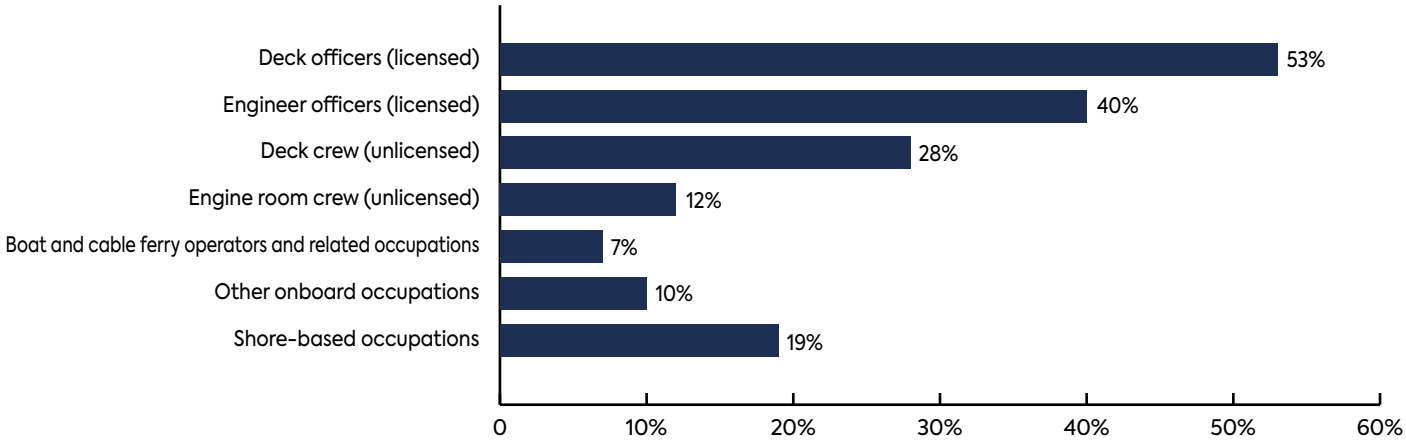
RECRUITMENT AND ATTRACTION CHALLENGES AND OPPORTUNITIES

The survey data and qualitative data showed that most employers struggled to fill key marine occupations for a variety of reasons, such as a lack of awareness of marine job opportunities, strong domestic competition, and negative perceptions about sea working conditions.

Employers struggle to fill licensed occupations

Occupations that featured high vacancy rates (as previously discussed) were also the most difficult to fill. Based on the survey of employers, more than half of employers found it somewhat or very difficult to fill deck officers (53%) and four-in-ten employers found it somewhat or very difficult to fill engineering officers (40%) (Figure 7). Fewer, but still significant proportions of employers struggled to fill unlicensed positions. More than one quarter of employers struggled to fill unlicensed deck positions (28%), and about one fifth struggled to fill shore-based occupations (19%).

Figure 7: Occupations somewhat or very difficult to fill



Source: 2024 Survey of marine employers (n=73).

Note: "Boat/Cable ferry operators and related occupations" are not representative of all ferry positions. Ferry jobs are also included in other occupations. More details on the Statistics Canada definition of the NOC "75210 - Boat/Cable ferry operators and related occupations" is available here: Statistics Canada definition of NOC 75210.

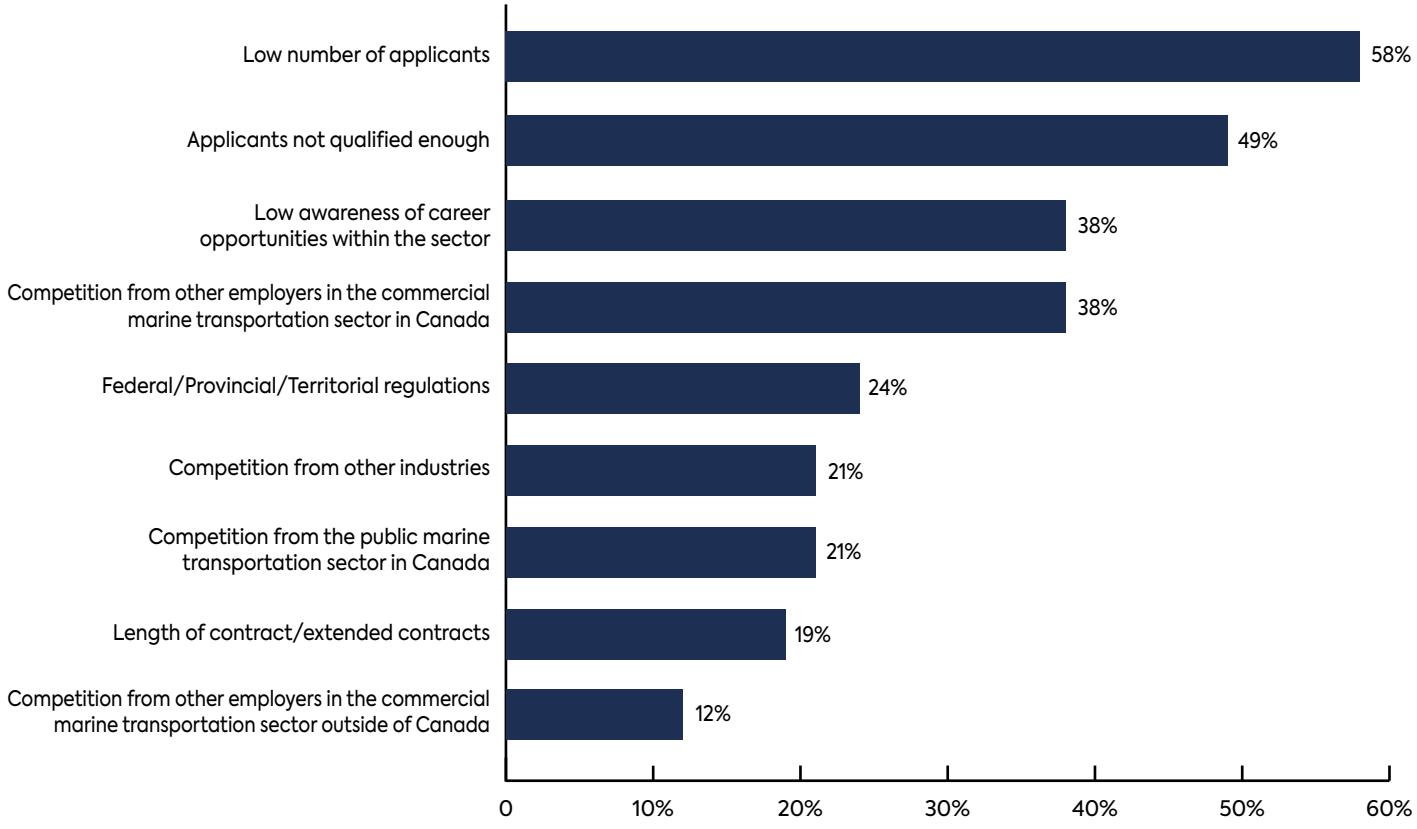
Pilotage authorities stated that although recruitment is not currently an immediate problem, it could be in the future. There is a concern about the aging pilot workforce, the challenge in sourcing recruits, especially in remote areas, and recent challenges in retaining apprentice pilots in some regions. Recruitment is complicated by the length of training required for these positions. Recruits need to have at least a decade of experience in the sector before they can start training, and even then, the training process is lengthy.

Employers compete for a limited talent pool

Based on the employer survey data and stakeholders' insights, marine employers compete for a limited pool of talent, especially for key marine occupations. As a result, most employers indicated that there were not enough applicants (58% of employers are experiencing this) and that applicants were not qualified enough (49%), making labour and skill shortages the top two reasons for hard-to-fill occupations (Figure 8).

Employers faced competition from other employers in the commercial marine transportation sector in Canada, making it one of the main reasons for hard-to-fill occupations (38% of employers are experiencing this, as shown in Figure 8) and the second top challenge for worker attraction (45% of employers are experiencing this, as shown in Figure 9). Marine employers were also concerned about other types of competition. For instance, more than a third of marine employers were concerned about competition with other industries when it comes to attracting workers (36%) (Figure 9).

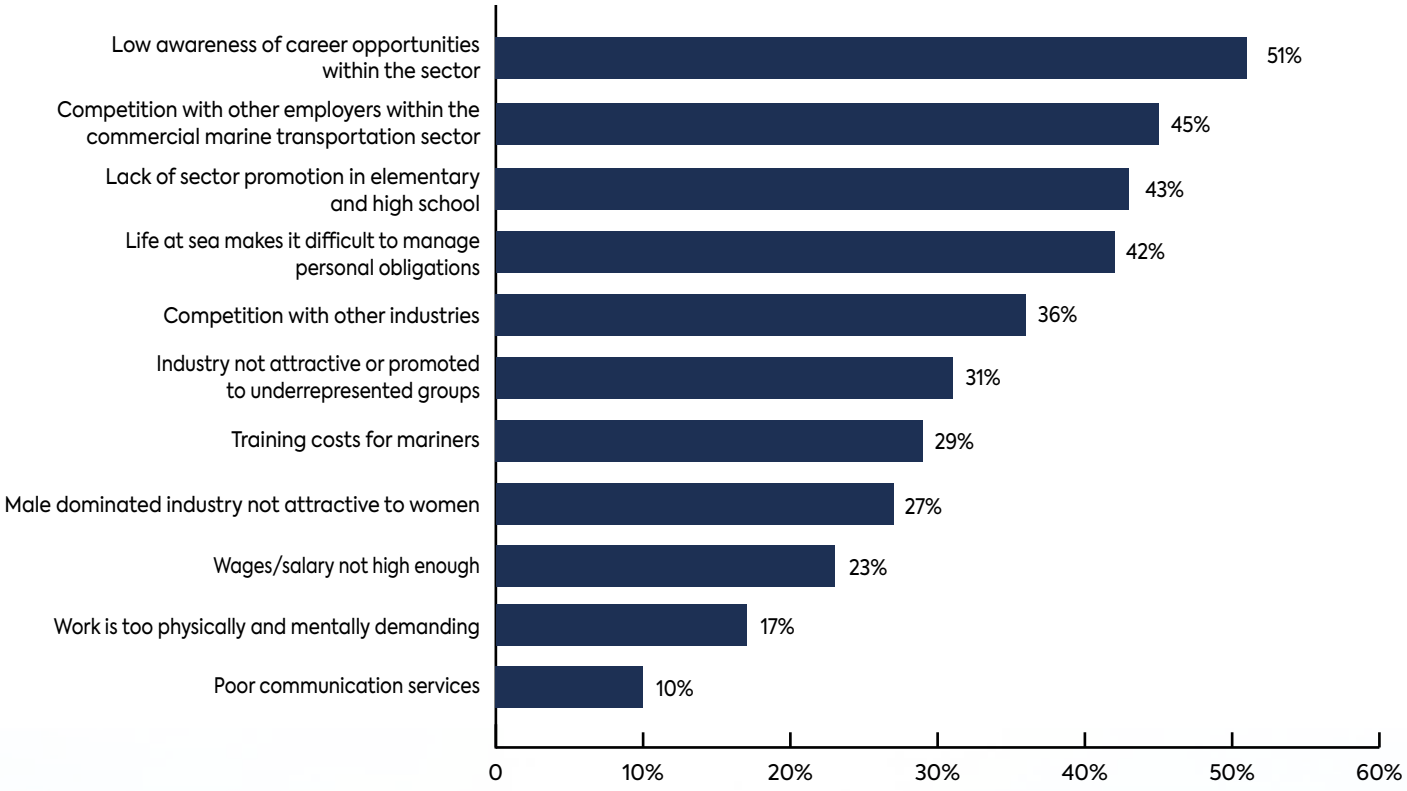
Figure 8: Reasons for hard-to-fill occupations



Source: 2024 Survey of marine employers (n=73).

Note: The public marine transportation sector includes the Canadian Coast Guard that works to ensure the safety of mariners in Canadian waters and protect Canada's marine environment.

Figure 9: Challenges for worker attraction



Source: 2024 Survey of marine employers (n=73).

The public lacks awareness about marine career opportunities

Recent polls of young and adult Canadians over recent years have shown that as much as 47% of adult Canadians and 40% of young Canadians have not heard anything about marine careers.[11,12]

This was reinforced by this study's employer survey data and stakeholders' insights. More than half of marine employers indicated that attracting workers was challenging owing to low awareness of marine career opportunities, making it the top challenge for worker attraction (51%) (see Figure 9 on page 42). Specifically, youth lacked such awareness of marine career opportunities owing to a lack of sector promotion in elementary and high school (43%) (see Figure 9).

Many stakeholders, including labour organizations, industry associations and government representatives, indicated that most Canadians did not widely recognize the importance of the marine sector in Canada and the wealth of marine career opportunities. Almost every stakeholder indicated that the sector has historically underinvested in outreach and marketing about the sector, resulting in the public lacking interest in marine careers.

> *"The average person does not understand the impact the maritime industry has on the economy of Canada."*
>
> — Professional/Industry association representative

Overcoming negative perceptions of working conditions at sea

Insights from students and recent graduates, and an array of stakeholders (including educational institutions, labour unions, professional/industry associations, and other stakeholders) suggested that younger generations were no longer attracted to spending time away from family and friends as they once were. For instance, a third of students and recent graduates anticipated that long periods at sea were going to be a challenge in their marine career (33%) (Figure 10).

Similarly, some stakeholders indicated that younger people did not like being away from home for long periods. Especially, they dislike being unable to speak with friends and family every day. Some stakeholders indicated that younger people were unaware today's seafarers no longer spend extended periods at sea as in the past. In particular, seafarers aboard domestic vessels in Canada have many different schedules depending on the nature of operations, voyage length and type of vessel. For example, seafarers onboard cargo vessels in the Great Lakes can work for four to eight weeks on and then have an equal time off. Ferry employees can work shifts that allow them to return home every day. Coast Guard can work four weeks on and four weeks off. That differs considerably to contracts that can range from several months to up to 11 months onboard international vessels.

> *"The industry is not all that well known. Most of the public do not consider it a career option because they just do not see the industry. We should tell everybody that 95% of what you use in a day was on the ship at one point. It is hard to attract new entrants because of that."*
>
> — Labour organization representative

> *"The maritime community has not done a very good job of advertising and encouraging people to join this industry for years."*
>
> — Government representative

> *"Workers at sea used to be on boats for 7 months. Now, younger workers don't want to go for seven months. They have adapted to six weeks on and six weeks off."*
>
> — Educational institution representative

[10] For more details, see the report "2024 Public Opinion Poll: Canadians' Attitudes Towards Marine Shipping" published by Clear Seas in partnership with the Angus Reid Institute (available here: https://clearseas.org/research/2024-public-opinion-poll-canadians-attitudes-towards-marine-shipping/)

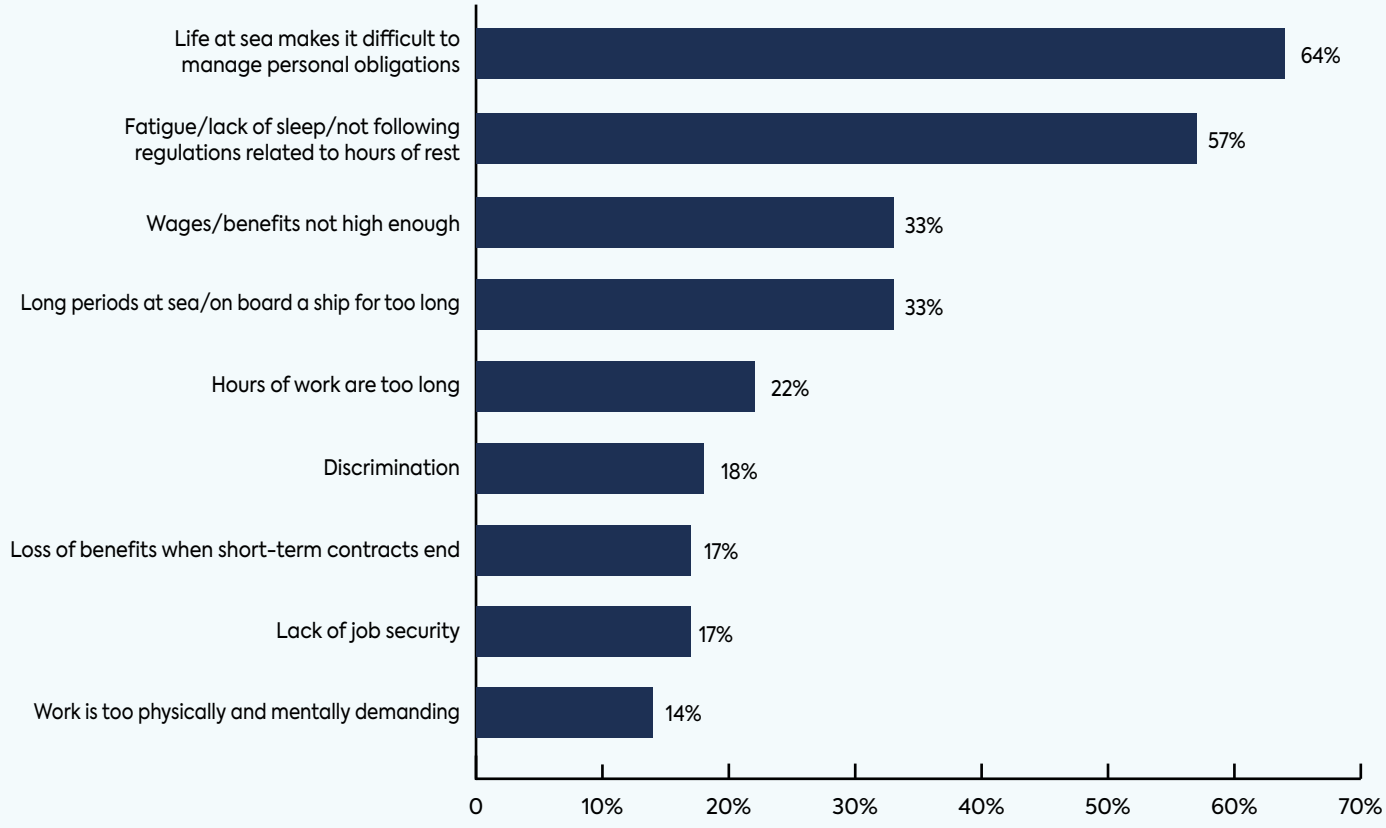
[11] For more details, see the 2022 report "National Youth Report: Marine and the Next Generation" published by Canadian Marine Careers Foundation in partnership with Abacus Data (available here: https://imagine-marine.ca/national_youth_survey)

As a result of these changing worker expectations, employers, students and recent graduates, and about a half of stakeholders all related how sea working conditions hindered attracting people in the sector. Based on the employer survey data, more than four-in-ten employers indicated that attracting workers into the marine sector was challenging because life at sea made it difficult to manage personal obligations (42%) (see Figure 9 on page 42).

Based on the students and recent graduates survey data, more than six-in-ten students and recent graduates anticipated that life at sea would make it difficult to manage personal obligations, making it the most common anticipated challenge in their marine career (64%) (Figure 10).

> *"Despite better working conditions, modern, tech-savvy generations dislike the lifestyle, the culture, connectedness conditions, and solitude at sea."*
>
> — Government representative

Figure 10: Student-anticipated challenges in a marine career



Source: 2024 Survey of marine students and recent graduates (n=305).

High cost of living

The high cost of living in places like British Columbia represents a challenge for some employers to recruit staff. For example, representatives from the Canadian Coast Guard indicated that they have a hard time attracting workers to those locations. Indeed, personnel deployed to that area often seek transfers to more economical locales after a few years, resulting in attrition.

However, some educational institution representatives, labour organizations representatives and other stakeholders mentioned that, despite the high cost of living on the West Coast, the location is still attractive because of the high wages of private companies and many workers want to work there at least at the beginning of their careers.

> *"A problem is the increasing costs of living. I think a perpetual problem out in our Western region is we lose individuals to industry. We also recognize the increased cost of living in the Arctic."*
>
> — Government representative

> *"People are attracted to the unique nature of the West Coast marine industry, high wages, and short times at sea."*
>
> — Educational institution representative

> *"The government pays very little. A deckhand, who makes $120,000 on a tug in Vancouver, is not going to work for $70,000 for the government, in Vancouver. The pay is not regionally allocated, but across Canada, making it difficult for [workers] to afford rent."*
>
> — Labour organization representative

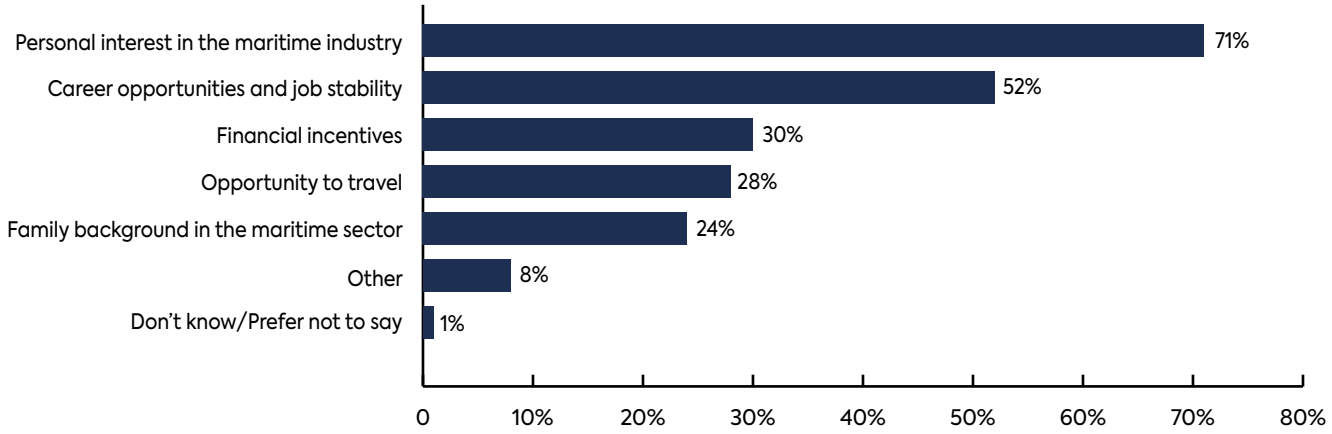
> *"We have the benefit of higher wages, which people tend to look at when they come into the market. I think we tend to get more of the entry level workers because they see that big dollar as they're young and then as their circumstances change, they may move."*
>
> — Professional/Industry association representative

What makes marine careers attractive to marine students?

Although marine students and recent graduates anticipated challenges, they were still attracted by a marine career for various reasons. As the sector grapples with the recruiting challenges above, it should consider the factors that attracted those just entering the workforce and the sources of information for career opportunities.

More than seven-in-ten (71%) students and recent graduates indicated that they enrolled in a marine training program because they had a personal interest in the maritime industry (Figure 11). More than half of students and recent graduates enrolled in their marine training program due to expectations of good career opportunities and job stability in the marine sector. About one-in-three students and recent graduates (30%) enrolled in their program because they were offered financial incentives, which speaks to the importance of funding and financial support being available for marine training programs. Family background in the maritime sector also mattered, as about one quarter (24%) enrolled because of that history.

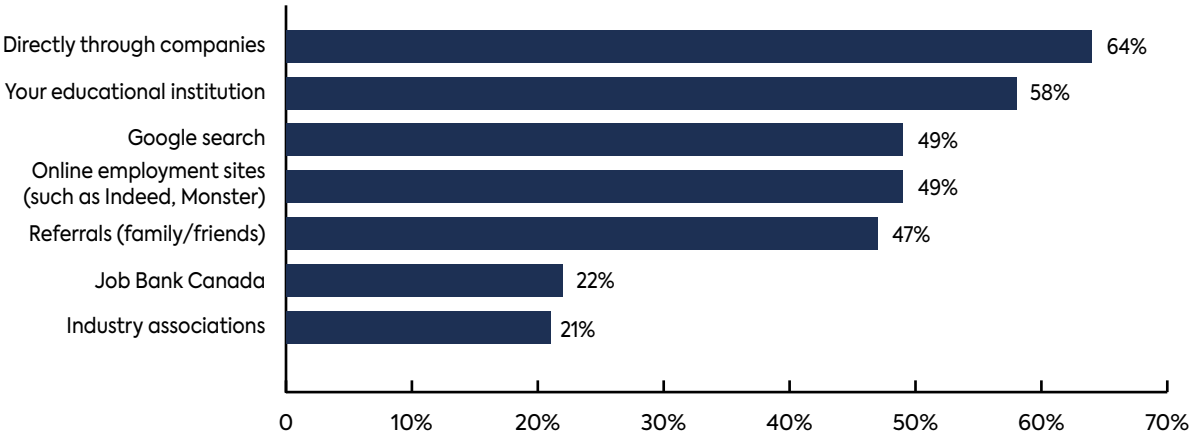
Figure 11: Reasons for enrolling in a marine training program



Source: 2024 Survey of marine students and recent graduates (n=305).

About eight-in-ten students and recent graduates (78%) indicated that they were aware of the range of career opportunities available in marine occupations. Students and recent graduates indicated that they gathered information about marine careers and job opportunities through various sources of information. However, passive searches of employment sites were less commonly cited (49%) than directly through companies (64%) or their institutions (58%) (Figure 12).

Figure 12: Students' source of information about marine careers and job opportunities



Source: 2024 Survey of marine students and recent graduates (n=305).

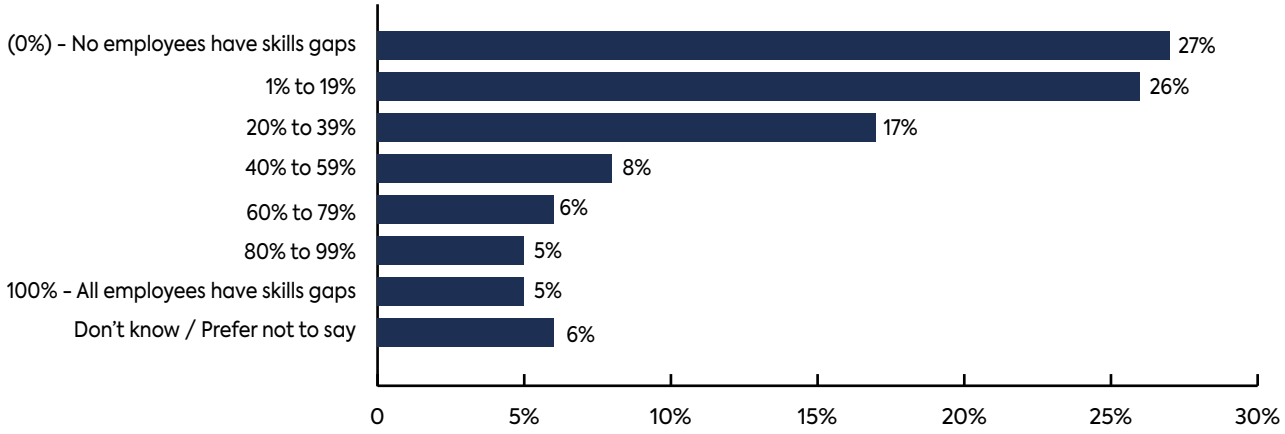
SKILLS SHORTAGES

As shown earlier in the report, most employers indicated that some occupations were hard to fill because applicants did not possess the necessary qualifications. Skills shortages persist in the current workforce as well. Employers provided further insights as to perceptions of their employees' skills, including gaps and improvement.

Most businesses face employee skill gaps

More than seven-in-ten employers reported that they had employees with skills gaps that impacted their ability to do their job proficiently, with only 27% indicating that they had no employees with skills gaps (Figure 13). Although only a small proportion, it is still worth noting that 5% of employers indicated that all their employees had skills gaps.

Figure 13: Proportion of employees with skills gaps

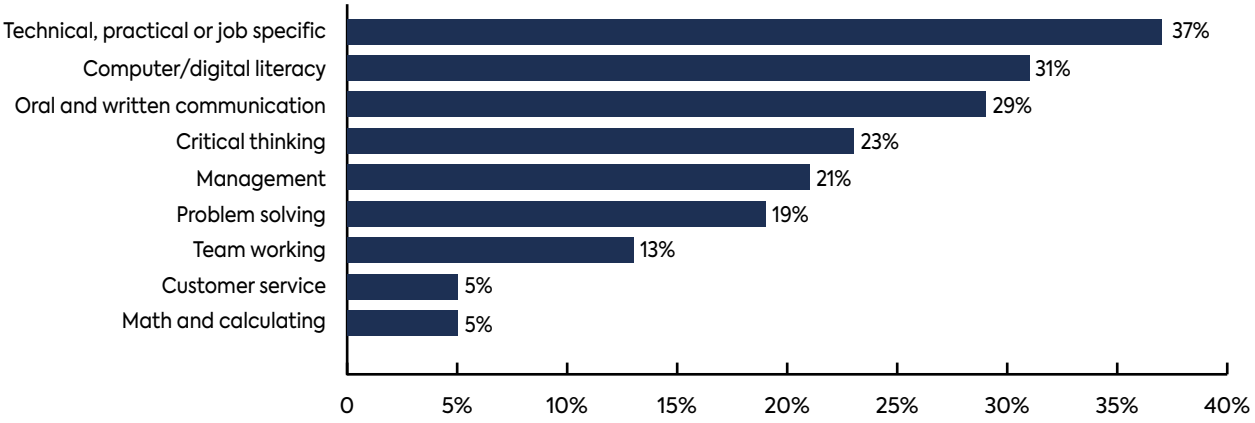


Source: 2024 Survey of marine employers (n=73).

Employees lack various types of skills

About four-in-ten businesses indicated that technical, practical and job-specific skills were most in need of improving (37%), followed by computer/digital literacy skills (31%) and oral and written communication skills (29%) (Figure 14).

Figure 14: Skills that need to be improved



Source: 2024 Survey of marine employers (n=73).

Many stakeholders, including industry associations and labour organizations, have highlighted a gap between the theoretical training delivered following Transport Canada regulations and the practical, hands-on experience required in real-world maritime operations. Concerns have been raised that existing training programs may not fully equip graduates with the skills to transition seamlessly into the workforce, particularly in high-demand operational roles. Addressing this disconnect may require enhanced partnerships between training institutions, employers, and regulatory bodies to ensure a more integrated approach to competency development.

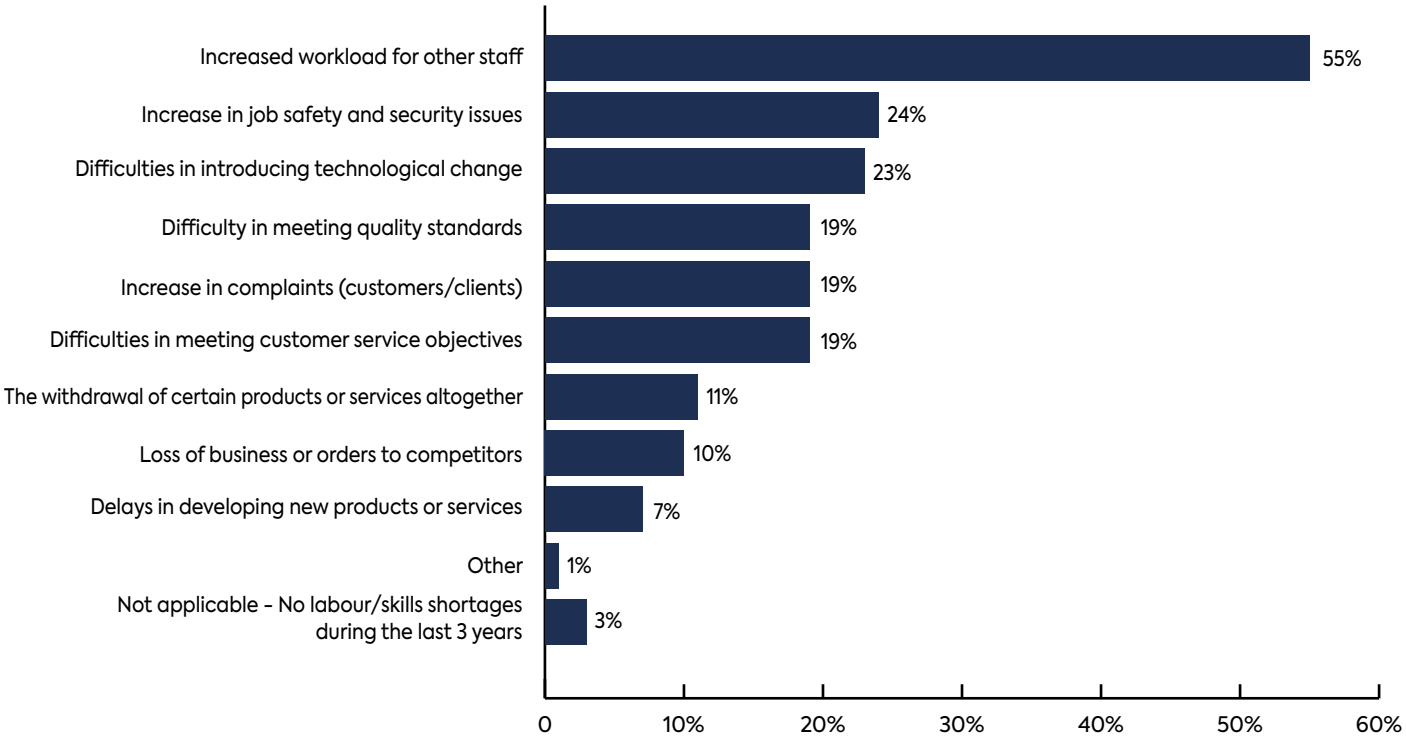
Regarding technological skills gaps, educational institution representatives acknowledged efforts to integrate new technologies, such as decarbonized propulsion systems, into training programs to prepare students for the maritime industry. However, they noted that regulatory constraints slow curriculum updates, making it difficult to keep pace with technological advancements. Meanwhile, professional and industry association representatives highlighted that frequent technological changes pose challenges for marine workforce training offices, as each update requires additional training.

> *"It's been a big jump for engineers and for us as well with the monitoring equipment and the way the vessels perform, there's no physical connection now between propellers and the engines on a lot of the new ships."*
>
> — Professional/Industry association representative

Consequences of skills gaps

Employers were able to point to significant consequences arising from skill shortages and labour shortages. Over the past three years, more than half of employers (55%) have experienced increasing workloads on other staff due to the labour shortages and skills gaps among some staff (Figure 15).

Figure 15: Consequences of labour and skills shortages over the last three years

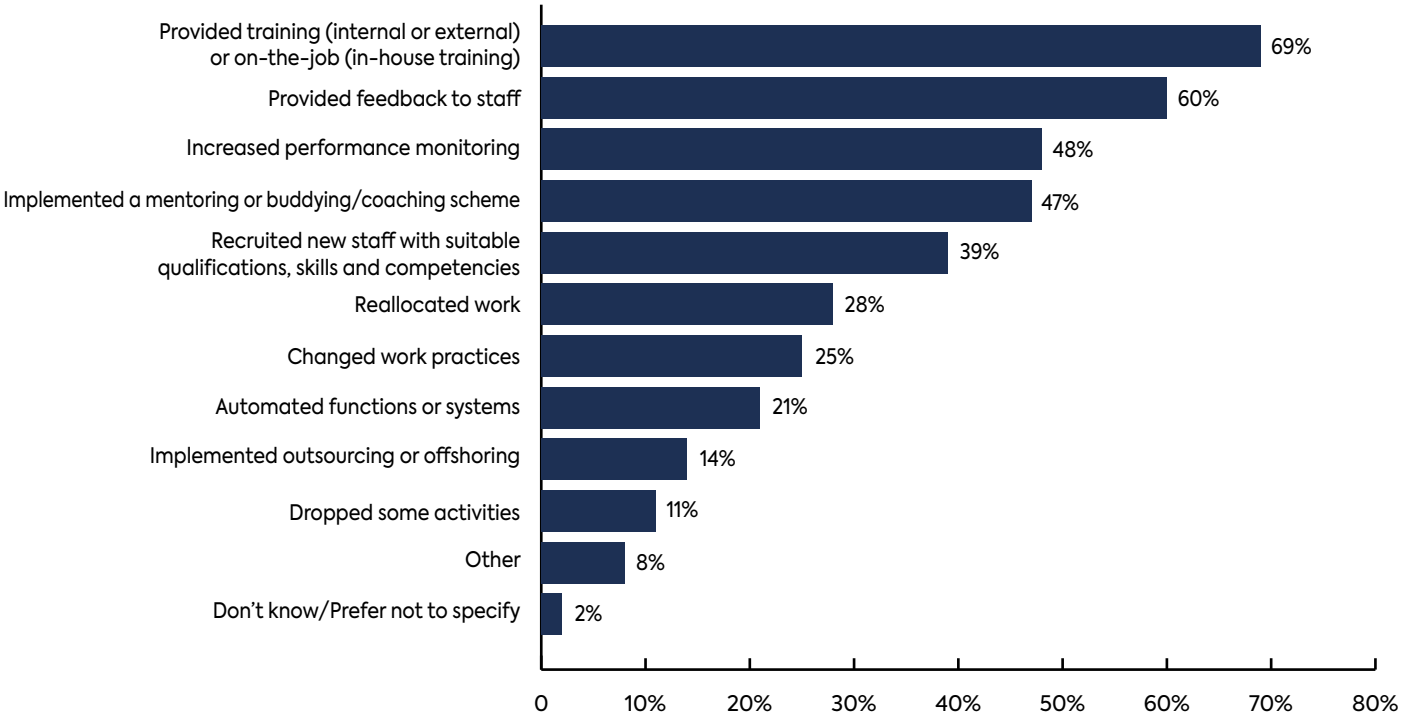


Source: 2024 Survey of marine employers (n=73).

Ongoing skills development

While organizations prioritize direct staff development, some also use process changes and structural shifts to address skill gaps. Training and coaching efforts were the most common, with seven-in-ten employers (69%) of businesses providing internal or external training and a similar percentage (60%) offering feedback to staff. Additionally, 47% implemented mentoring, buddying, or coaching schemes to support employee development. Workflow adjustments included increasing performance monitoring (48%), reallocating work (28%), and changing work practices (25%) to optimize existing resources. Structural changes were less common, but still significant, with 21% automating operations or systems, 14% outsourcing or offshoring work, and 11% discontinuing specific tasks (see Figure 16 below).

Figure 16: Strategies to improve skills deficiencies



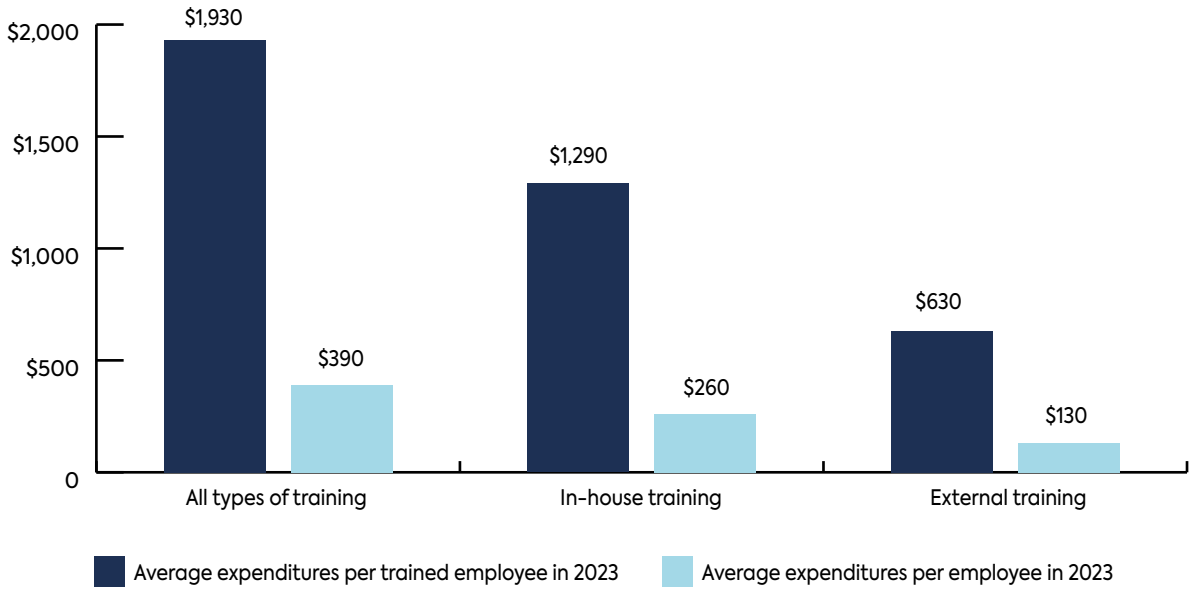
Source: 2024 Survey of marine employers (n=73).

Overall, one fifth of marine employees received training in 2023 (20%).[12] On average, employers spent over $1,900 for each employee receiving training in 2023, or $390 for each employee in the sector (Figure 17). This represents over $11.1 million in training expenditures for the estimated marine workforce in 2023.[13] Most of the training expenditures related to in-house training, rather than external training.

[12] Employers that provided training indicated the number of their employees that received training. This percentage was calculated based on the number of trained employees and the total number of employees for all surveyed organizations.

[13] This amount is calculated as the product of the average amount of training expenditures per employee ($390) and the estimated marine workforce (28,505), which gives $11,116,950. It is unclear exactly what amounts were included in responding to this question, for instance whether these amounts included only out-of-pocket expenses or whether it included the salaries of staff taking the training. The question asked: "estimate your organization's total training expenditure, including in-house and external training expenditures (purchased outside your business)."

Figure 17: Average training expenditures per employee in 2023



Source: 2024 Survey of marine employers (n=73).

Note: Average expenditures per employee for in-house and external trainings can be summed to get the average expenditures per employee for all types of training (for every employer had at least one employee). However, average expenditures per trained employee can not be summed across types of training because not every employer provided training to their employees.

Challenges in accessing skills development

Many stakeholders said there is inadequate support for seafarers transitioning from on-deck roles to higher certifications. Although there is some funding for studies for entry-level positions (such as Enhanced Bridge Watch programs at some institutions), there is a significant vacuum in funding for skill upgrading and the required courses to advance to more senior positions. The most important funding sources available for these courses are private companies, bursaries, and private grants, such as those provided by Master Mariners of Canada.

Although some employers cover the costs of further education for their employees, many students struggle with the financial burden of tuition, travel and accommodations, especially when relocation is required. As a result, high training costs, self-funding requirements, and the absence of guaranteed career advancement serve to deter potential trainees.

> *"Although (training courses) are important, taking time away from home and the cost might be an issue if the companies do not pay for them."*
>
> — Industry association representative

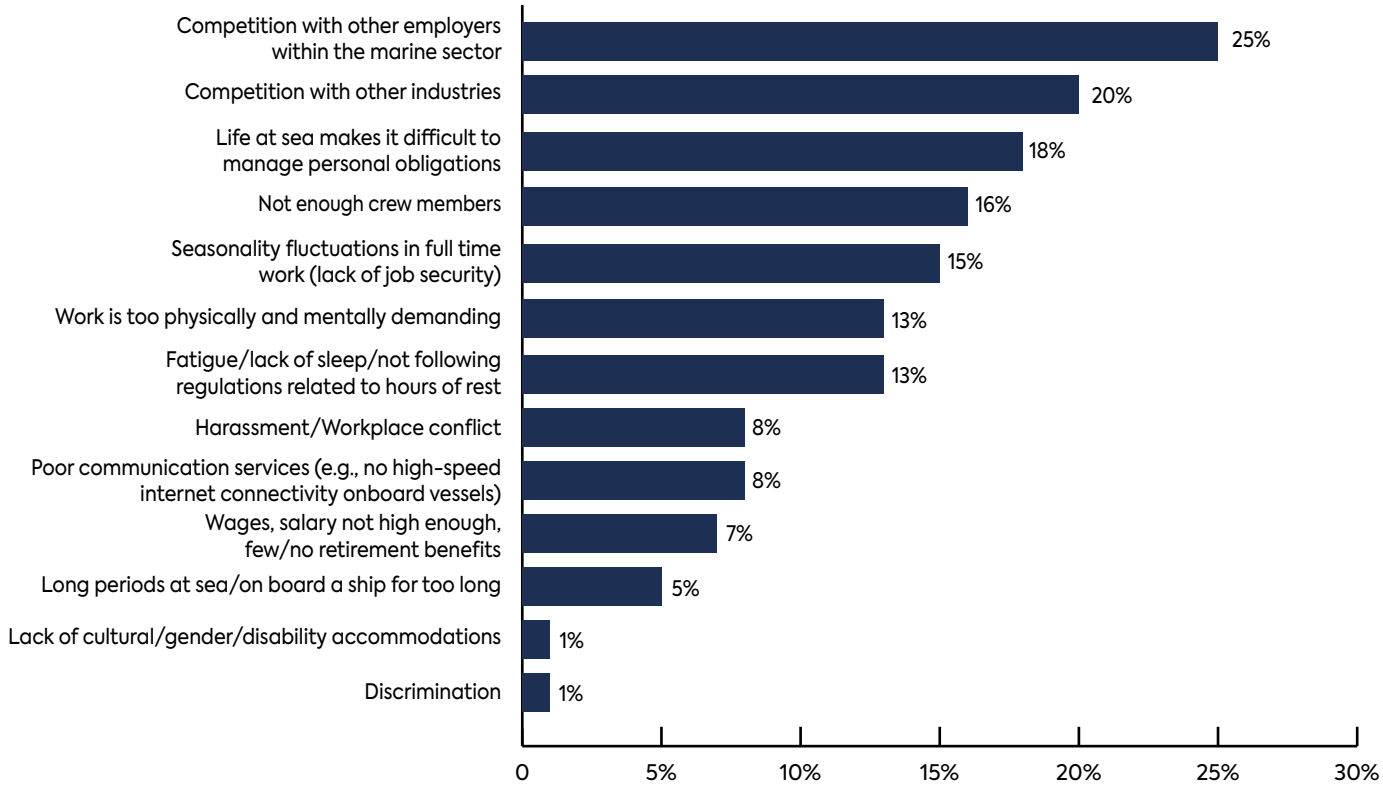
STAFF RETENTION CHALLENGES AND OPPORTUNITIES

Not only does the marine sector face challenges in hiring the talent they need, but they also face challenges in retaining the talent they have.

Employers lose workers due to competition with other employers

Based on the survey data, a quarter of employers (25%) struggled to retain their workforce owing to competition with other employers within the marine sector and one fifth (20%) struggled to retain their workforce owing to competition with other industries (Figure 18).

Figure 18: Challenges for worker retention



Source: 2024 Survey of marine employers (n=73).

The physical and mental load is heavy

Stakeholders indicated that the physical and mental toll of marine jobs affected seafarers' decision to remain in the sector. Some people did not like the working environment (including things like rough weather, isolation and strenuous tasks), and the amount of time away from home.

> *"It takes a certain type of person to be able to, you know, survive and strive in the industry because of the isolation, the time away from home, physically demanding work."*
>
> — Labour organization representative

Inadequate onboard working conditions and accommodations

Employers indicated that retaining their workforce was challenging because life at sea makes it difficult to manage personal obligations (18%) (Figure 18). While Wi-Fi access onboard commercial vessels has improved with the advent of satellite networks like Starlink, it is not available on all vessels in Canada and is sometimes limited by cost or operational constraints, which prevents seafarers from staying in touch with their friends and families. This impacts their life quality onboard, with negative consequences on their willingness to stay in the sector. Some stakeholders also mentioned that some vessels featured poor accommodations, with instances where a mixed crew shares cabins or beds.

> *"Connectivity aboard the ship will help with work-life balance. If somebody can Facetime or whatever with their family to stay in touch because they are gone for extended periods, [it] helps. If they were able to play games aboard, [it] would help to preserve the lifestyle they have or want."*
>
> — Labour organization representative

> *"The drive for quicker career advancement exacerbates the [retention] issue. They do not want to put in the time to gain experience but have expectations to have a high-level job very early in life."*
>
> — Government representative

Traditional seafaring roles do not match young people's career expectations

Some stakeholders observed that a significant number of young individuals sometimes departed from their positions early in their careers because the marine job failed to align with their expectations regarding professional development and career progression.

Young individuals anticipate greater prospects for professional development and accelerated career progression, which conventional seafaring positions failed to provide to them. Consequently, these individuals transitioned from their seafaring positions to different industries. The observation about expectations is consistent with the feedback provided by students and graduates in the survey who indicated they were not committed to their seafarer careers. People who mentioned this explained that the wait is considered "too long" and requires too much additional education and sea time. Furthermore, the cost and effort needed to accomplish the requirements are often deterrents.

> *"People now are looking to move up quickly, and I don't think a person should be in the same position for more than 5 years, and that happens in the industry. That's not attractive for new entrants."*
>
> — Labour organization representative

> *"It is very normal now for people to jump from one to another job, to find a place that meets their needs."*
>
> — Government representative

> *"It takes a long time to move up the ladder 6-10 years to become a master mariner. Instead, they can become a welder, do their red seal and in two years they will make more than mariners, have a lot fewer responsibilities (than a master mariner)."*
>
> — Industry association representative

Workplace culture can be challenging, especially for women

Many stakeholders from all groups indicated that women faced unique challenges that impacted their willingness to stay in the sector, including perceived discrimination and workplace harassment. Many things are being done according to the interviewees, such as funded training programs specifically for women. Support from employers in providing more inclusive work environments would further boost the retention of such workers in marine occupations.

However, there is still some work that is necessary to improve the sector in this regard. For instance, a few stakeholders pointed out that Transport Canada's regulations on sea time and certifications disadvantage women on maternity leave, as they stop accruing sea time and risk losing their certification if they do not have enough accumulated as per Transport Canada regulations. Since sea time is essential for career advancement and maintaining certifications in the marine sector, this issue exacerbates gender inequality and discourages women from staying in the industry.

All stakeholders emphasized that the industry has made significant progress in implementing changes and establishing policies and training against harassment, bullying, sexism, racism, and other issues. However, many stakeholders highlighted incidents that have made it challenging for some individuals, particularly women, to continue in the marine sector. For instance, some indicated that female seafarers were subjected to harassment, and there is a tendency to adopt behaviors that minimize situations or push people to leave the industry.

> *"Without getting anybody in trouble, I could say that they probably haven't had the smoothest progression in their career because of being a woman."*
>
> — Industry association representative

These statements echoed findings from the recent *Harassment at Sea Survey (2024)*[14] *and the Study on Equity, Diversity, and Inclusion in the Maritime Industry in Québec (2024).* The survey found that about seven-in-ten female seafarers have experienced harassment at some point in their careers (69%, compared to 46% for all seafarers), and more than one third of female seafarers have experienced sexual harassment (35%, compared to 9% for all seafarers). More than four-in-ten of those who have been harassed indicated that their harassment had a large impact on their motivation and willingness to continue the job.[15] The study in Quebec found that 44% of the female respondents indicated that they have experienced some form of violence, discrimination or harassment. Around a half of the respondents of that study have witnessed discriminatory acts or harassment at least once.

> *"Women have also experienced sexual harassment, with little support from their employers. For example, one woman... was given a lot of sexual harassment on the boat... When she went to the captain, they were like, 'Well, you know, you got to suck it up.'"*
>
> — Educational institution representative

[14] Leblanc, Melanie (2024) Study on Equity, Diversity, and Inclusion in the Maritime Industry in Québec, Industrie Humaine. Presentation at the Imagine Marine conference in 2024. The full report available in French only: https://www.imq.qc.ca/media/pages/une-ecole-nationale-unique/industrie-humain-e/5a4c22e5c9-1729178637/etude-sur-la-diversite-lequite-et-linclusion-dans-lindustrie-maritime-au-quebec_final.pdf

[15] For more details about findings of the 2024 Harassment at Sea survey, see https://seafarers.ca/wp-content/uploads/2024/01/SIU-Canada-Harassment-Survey-Report-en.pdf?x70400

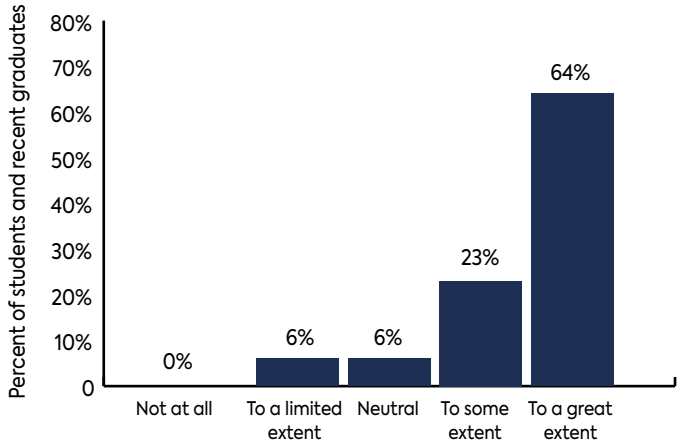
Most students and recent graduates are committed to pursuing a marine career

The good news is that about nine-in-ten marine students and recent graduates indicated that they were committed to pursuing a marine career (including 23% that stated to some extent and 64% that stated to a great extent) (Figure 19).

Reasons for pursuing a marine career varied and included the fact that a marine career offered (Figure 20):

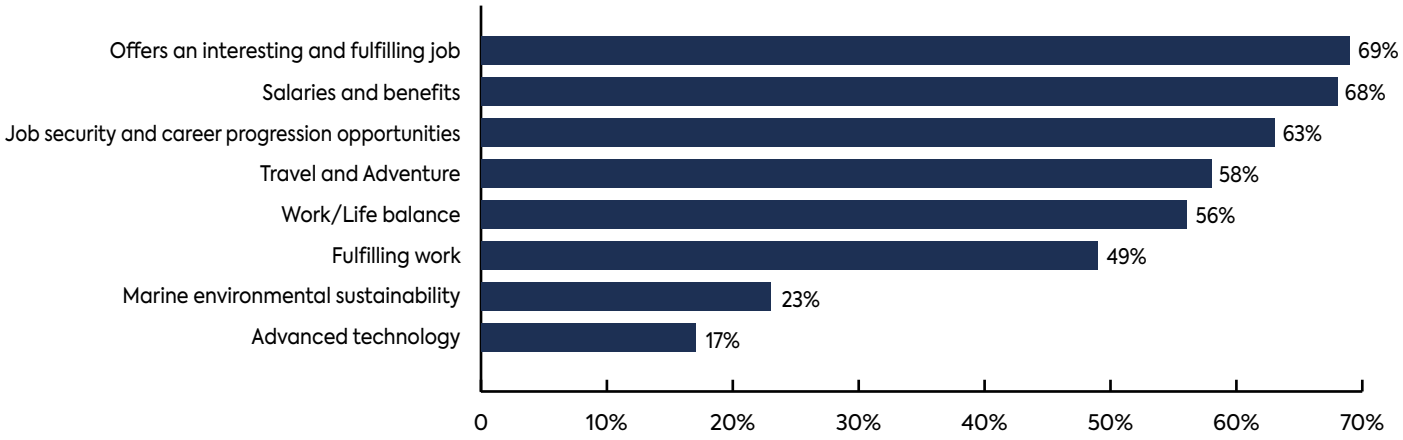
- An interesting and fulfilling job (69%);
- Good salaries and benefits (68%);
- Job security and career progression opportunities (63%);
- Travel and adventure (58%).

Figure 19:
Students' commitment to pursuing a marine career



Source: 2024 Survey of marine students and recent graduates (n=305).

Figure 20: Students' reasons for pursuing a marine career



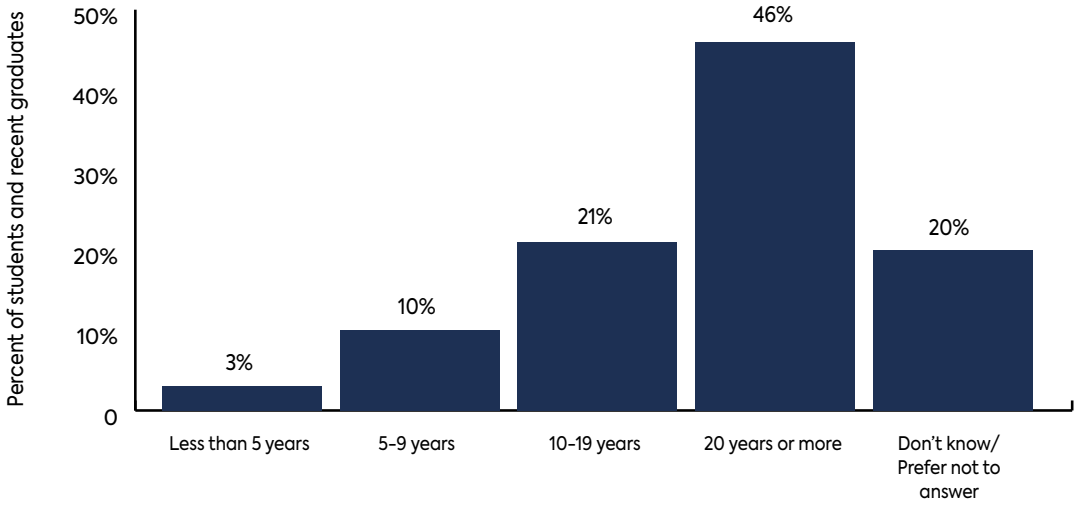
Source: 2024 Survey of marine students and recent graduates (n=305).

More than half (56%) indicated that they were attracted to the marine sector for work/life balance. While this may seem counterintuitive given some mariners live aboard ship for weeks at a time, there are individuals that prefer the different schedules on a vessel as they enjoy having extended blocks of time off to pursue recreational travel or other personal goals. Also, this may reflect the fact that the industry has adapted to shorter periods of time away at sea.

> *"There's always a time on-time off component that is not a typical Monday to Friday, 9 to five type job"*
>
> — Government representative

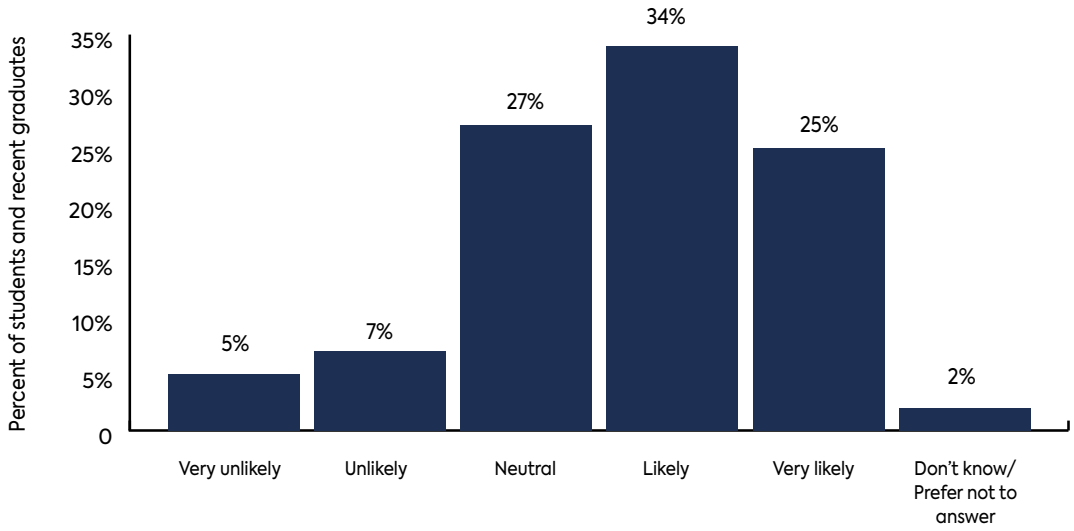
In line with their commitment about pursuing a marine career, about seven-in-ten students and recent graduates expected to work as a seafarer for years to come, including nearly half of students and recent graduates expecting to work in the sector for 20 years or more (Figure 21). With this commitment, recent graduates and students are able to recommend a seafaring career; about six-in-ten indicated that they were likely (34%) or very likely (25%) to recommend a seafaring career to others (Figure 22).

Figure 21: Students' expectations about period of working as a seafarer



Source: 2024 Survey of marine students and recent graduates (n=305).

Figure 22: Students' likelihood of recommending a seafarer career to others

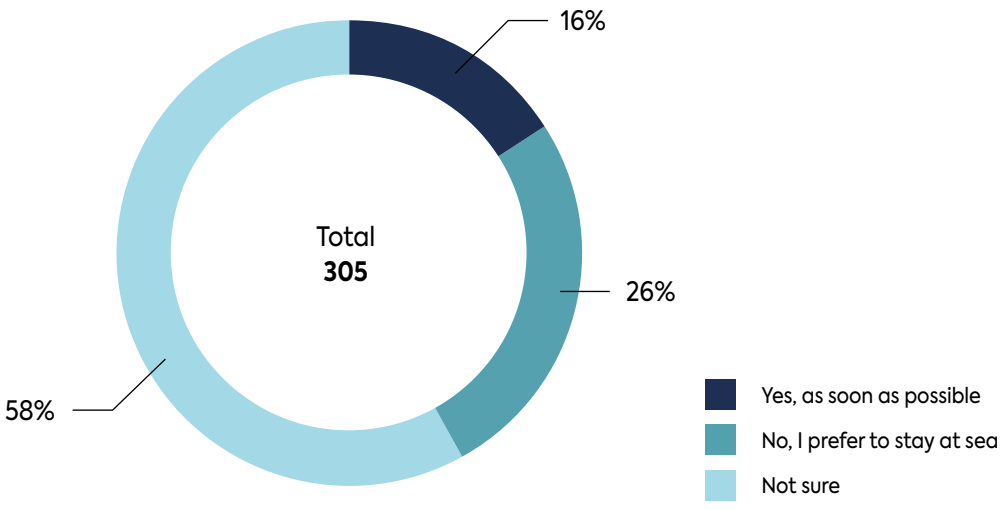


Source: 2024 Survey of marine students and recent graduates (n=305).

Many students and recent graduates are not sure if they are committed to remain working at sea

Although many students were committed to a long career in the marine sector, fewer preferred to stay in a sea-going role (26%) (Figure 23). About one-sixth (16%) of students and recent graduates considered shifting to a shore-based role in the marine sector as soon as possible, while about six-in-ten were unsure about staying in a sea-going role or shifting to a shore-based role (58%).

Figure 23: Students' consideration of shifting to a shore-based role within the marine sector



Source: 2024 Survey of marine students and recent graduates (n=305).
Note: * The "Not sure" category includes 3% of students that did not know whether they would shift to a shore-based role within the marine sector.

5 PATHWAYS INTO THE SECTOR: ABILITY OF THE EDUCATION AND TRAINING SYSTEMS TO MEET THE DEMAND FOR SEAFARERS

Overall, it appears that the capacity of education and training systems is insufficient to meet the growing demand for seafarers. The study found that the educational system was not operating at its full capacity, with significant variation by educational institution and program, and by region. At current rates of enrolment and graduation, the major marine training institutions will not produce enough candidates to fill key occupations required over the next five years, and such shortages vary by type of key occupations and regions. Although operating at full capacities would help address the shortages, it would not close the gaps completely.

The education system's capacity is hindered due to a few key challenges, including limited public awareness of maritime careers, difficulties in accruing the required sea time for certification, shortages of qualified faculty, and the ability to respond to the adoption of new technologies by the marine sector. Regulatory gaps and inconsistencies further compound these issues, creating barriers to effectively modernize training delivery and content; and integrate new talent.

Photo: Mike Black PhotoWorks

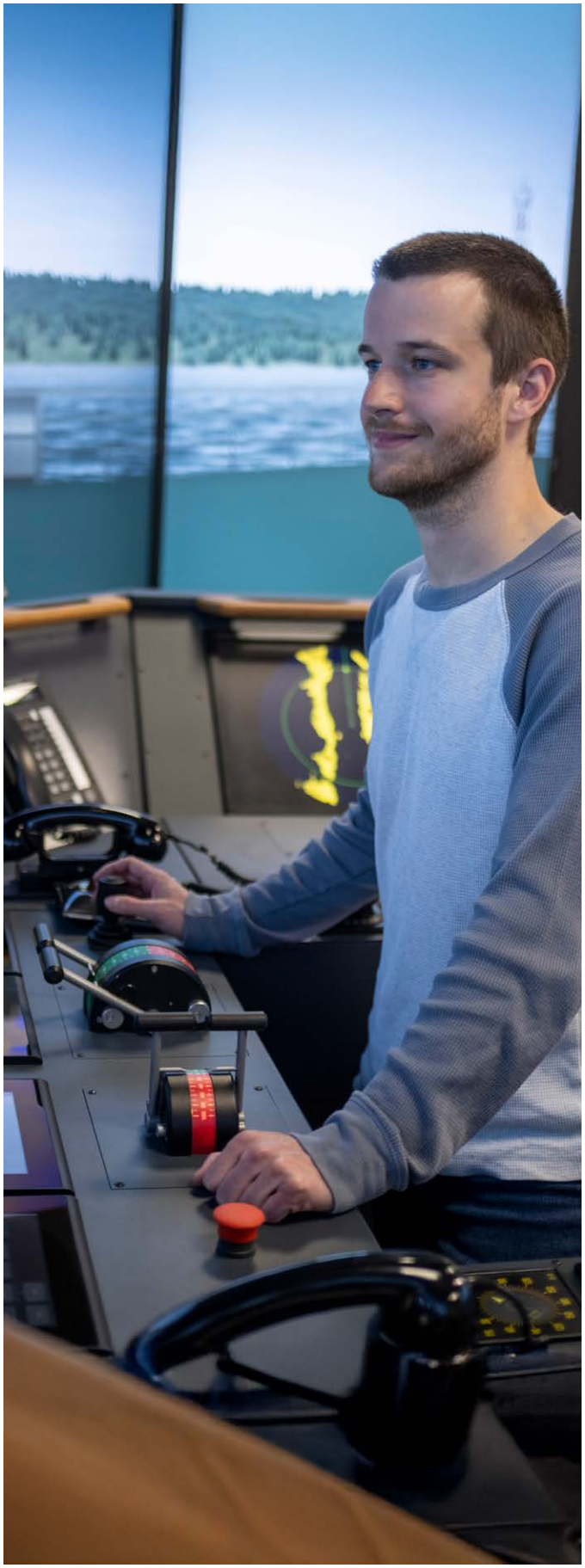
OVERVIEW OF TRAINING INSTITUTIONS AND PROGRAMS

While provinces and territories regulate most academic post-secondary programs, Transport Canada oversees the regulations for training, testing and certifying marine personnel (including seafarers) to ensure safe marine vessel operations in Canada.[16] The marine personnel regulations incorporate international standards and establish minimum qualifications for masters, officers, and watch personnel serving on seagoing merchant ships.[17] The regulations also specify a number of Domestic Certificates of Competency, which are primarily limited to smaller vessels operating in domestic waters (such as tour boats, small fishing vessels and tug and barges.)

Training providers offer courses and programs that meet Transport Canada's training, testing and certifying standards.[18] Upon completion of the programs, students obtain their academic credentials (such as diplomas of technology), but must also meet mandatory sea time experience and pass examinations to obtain the Transport Canada certificates of competency required to work as seafarers in licensed or unlicensed occupations. The design of each program is provided by Transport Canada, while the institutions determine the learning outcomes and other requirements for obtaining diplomas.

Furthermore, training institutions offer continuing education for workers in the marine sector. These courses allow seafarers to renew or advance their certificates to the next level.

There are six educational institutions in Canada approved by Transport Canada to provide full-time navigation and engineering marine cadet training programs. These institutions also provide continuing education and other types of marine training. Other institutions or organizations are approved by Transport Canada to provide training that can range from courses for ratings positions, domestic certificates, continuing education with refresher courses, and training on safety, fishing and small vessel operation and maintenance.[19]



[16] Canada Shipping Act - 2001.

[17] International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)

[18] Transport Canada, The Examination and Certification of Seafarers www2.tc.gc.ca/publications/en/tp2293/pdf/hr/tp2293e.pdf

[19] For more information see https:/tc.canada.ca/en/marine-transportation/marine-safety/recognized-institutions-approved-training-courses-tp-10655e.

MARINE EDUCATIONAL INSTITUTIONS ARE NOT OPERATING AT THEIR FULL CAPACITIES

Perhaps because of insufficient promotion of the marine section to youth, especially high school students, as well as second career seekers, marine educational institutions are not enrolling students at their full capacity. Based on program data provided by marine educational institutions, these institutions reported a total seating capacity of 748. Thus, over the next five years, marine educational institutions could potentially enrol 3,800 Canadians in these programs. However, not all these seats are currently occupied. The average first year enrollment was 594,[20] meaning that they were operating at only 79% of capacity (Table 9).

Although some programs appear to be operating at or near full capacity, other programs are struggling to fill seats. Programs in Bridge Watch Rating tend to have high enrollment rates, with several institutions, such as Camosun College and Nova Scotia Community College, consistently filling all available seats. Conversely, some marine engineering programs, particularly at Institut Maritime du Québec (33%) and Georgian College (56%), exhibit lower occupancy. Notably, the Canadian Coast Guard College's Officer Training Program maintains a strong enrollment rate (95%), suggesting sustained interest in government-sponsored maritime careers.

Table 9: Estimated numbers of seats and enrollments by educational institution and program

REGION	EDUCATIONAL INSTITUTION	PROGRAM	SEATING CAPACITY	AVERAGE ANNUAL ENROLLMENT	% OF SEATS FILLED
Pacific	**British Columbia Institute of Technology**	Nautical Science/Marine Navigation	24	14	58%
		Marine Engineering	16	14	88%
		Bridge Watch Rating	96	86	90%
	Camosun College	Bridge Watch Rating	36	36	100%
Central	**Georgian College**	Nautical Science/Marine Navigation	32	29	91%
		Marine Engineering	32	18	56%
	Institut Maritime du Québec	Nautical Science/Marine Navigation	66	66	100%
		Marine Engineering	66	22	33%
Atlantic	**Memorial University**	Marine Engineering	48	35	73%
		Nautical Science/Marine Navigation	48	41	85%
		Bridge Watch Rating	24	21	88%
		Marine Diesel Mechanics	24	23	96%
	Canadian Coast Guard College	Officer Training Program (Engineering and Navigation)	80	76	95%
	Nova Scotia Community College	Nautical Science/Marine Navigation	24	22	92%
		Marine Engineering	24	15	63%
		Marine Engineering Management	12	10	83%
		Bridge Watch Rating	12	13	100%
	Holland College	Bridge Watch Rating	36	35	97%
		Engine Room Rating	24	5	21%
Territories	**Western Arctic Marine Training Consortium**	Bridge Watch Rating	24	13	54%
Total			**748**	**594**	**79%**

Source: Data provided by educational institutions.

Note: This average is based on two academic years. 2021-2022 and 2022-2023.

Note: The Western Arctic Marine Training Consortium was previously operating as the Nunavut Fisheries and Marine Training Consortium (NFMTC).

[20] Average calculated from data provided for academic years 2021-2022 to 2022-2023.

The Pacific region has the fewest problems filling seats of their marine training programs, with a rate of 87%, followed by the Atlantic (83%) and then Central with (69%). Finally, the territories, with only one school represented in the study, are able to fill 54% of their seats (Table 10).

Table 10: Estimated numbers of seats and enrollments by region.

REGION	SUM OF TOTAL CAPACITY	SUM OF ENROLLMENT	% OF SEAT FILLED
Pacific	172	150	87%
Central	196	135	69%
Atlantic	356	296	83%
Territories	24	13	54%
Total	**748**	**594**	**79%**

Source: Data provided by educational institutions

GRADUATES' OUTPUT WILL NOT MEET FUTURE HIRING REQUIREMENTS

Based on program data provided by marine educational institutions, the education programs graduate approximately 390 on average each year. Thus, the study estimates that these marine educational institutions will graduate over 1,900 people over the next five years (Table 11).

Table 11: Estimated graduates' output per educational institution

EDUCATIONAL INSTITUTION	ESTIMATED NUMBER OF GRADUATES FROM (2025 TO 2029)
Memorial University	370
British Columbia Institute of Technology	445
Camosun College	175
Western Arctic Marine Training Consortium	40
Canadian Coast Guard College	225
Nova Scotia Community College	150
Holland College	195
Georgian College	105
Institut Maritime du Québec	225
Total	**1,930**

Note: The number of graduates over the next five years is estimated as the average number of graduates of the last two years (2021-22 and 2022-23) multiplied by five. Using the average for the last two years only helps exclude the effect of COVID-19 on graduation levels.

Comparing future hiring requirements and graduates expected over the next five years shows that graduates' output will not meet future hiring requirements for marine key occupations, including both licensed and unlicensed occupations.[21] If the education sector continues on course (with output at current enrolment capacities and graduation rates) over the next five years, the graduates will fill only about four-in-ten (42%) required positions in key occupations (Table 12). The gap will be more acute for licensed occupations, where graduates will help fill about three-in-ten (31%) licensed positions required over the next five years.

Given that not all marine graduates enter the marine labour sector, the actual shortage for licensed occupations could be greater, although a proportion of future vacancies could also be filled through other channels like immigration (for instance under temporary reciprocal agreements that allow Transport Canada to recognize foreign-issued certificates issued by selected foreign countries)[22] and the Department of National Defence's Equivalencies Program (whereby some Royal Canadian Navy trades receive credits towards obtaining a commercial marine certificate).

Some licensed positions could also be filled by ratings seafarers that progress their certifications over time to become marine officers, which depends on the individual's initiative. Further, it is unclear how frequently this occurs as there is currently no available data tracking the number of seafarers that are pursuing this pathway.

At the regional level, the shortage will be the most acute for the Central region where graduates' current output will help fill less than two-in-ten (16%) key occupations required over the next five years, followed by the Pacific (56%) and Atlantic (68%) regions.

Even if the education system boosts the output of students, gaps would remain. If education institutions enrol students at full capacity and graduation rates remain unchanged, graduates would fill just over half (52%) of key occupations that will be required over the next five years. The gap would remain more acute for licensed occupations, as graduates' output would help fill four-in-ten (40%) licensed occupations, compared to seven-in-ten (70%) unlicensed occupations required over the next five years. Even at full enrollment capacity and with all students graduating, the sector would still experience gaps in meeting future hiring requirements (graduates would help fill 86% licensed occupations and 76% unlicensed occupations required over the next five years).

Table 12: Future hiring requirements and graduates' output for key marine occupations and by region

DIMENSION	CATEGORY	HIRING REQUIREMENTS IN THE NEXT 5 YEARS	AT CURRENT ENROLLMENT CAPACITIES AND CURRENT GRADUATION RATES		AT FULL ENROLLMENT CAPACITY AND CURRENT GRADUATION RATES		AT FULL ENROLLMENT CAPACITIES AND A 100% GRADUATION RATE	
			# Graduates in the next 5 years	% filled	# Graduates in the next 5 years	% filled	# Graduates in the next 5 years	% filled
Type of key marine occupation	Licensed	2780	850	31%	1,100	40%	2,400	86%
	Unlicensed	1850	1,080	58%	1,300	70%	1,400	76%
Region	Pacific	1,180	660	56%	800	68%	1,000	85%
	Central	2,060	330	16%	500	24%	1,000	49%
	Atlantic	1,390	940	68%	1,100	79%	1,800	129%
Total		**4,630**	**1,930**	**42%**	**2,400**	**52%**	**3,800**	**82%**

Source: Estimates based on the 2024 Survey of marine employers (n=73) and data provided by nine educational institutions.

Note: The number of graduates in the next five years at full enrollment capacity and current graduation rates is computed as follows: (*number of graduates in the next five years at current enrollment capacities and current graduation rates*) + (*additional annual enrollments to get to full capacity * weighted graduation rate * five years*). The weighted graduation rate is specific to type of key marine occupation (licensed vs. unlicensed) and region. The number of graduated in the next five years at full enrollment and a 100% graduation rate is computed as follows: (*number of seats capacity * five years*).

[21] The comparison between future hiring requirements and graduates' system capacity is relevant for the four licensed and unlicensed occupations, for which the education system trains students. This excludes other onboard occupations such as cooks, and shore-based occupations.

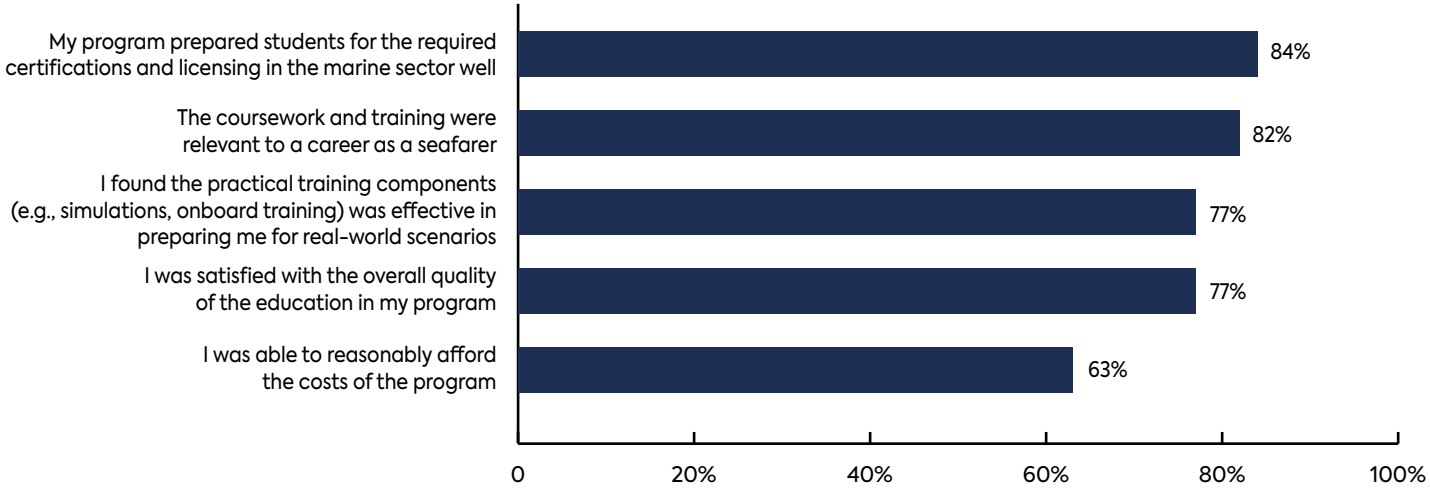
[22] These countries include Australia, France, Georgia, Norway, Ukraine, the Republic of the Philippines, Ireland, Jamaica, Panama, Brunei Darussalam and the United Kingdom.

STUDENTS' SATISFACTION WITH MARINE TRAINING PROGRAMS

Students and recent graduates of marine education programs reported high levels of satisfaction, with 77% expressing overall approval of the quality of their training. A strong majority felt that their education effectively prepared them for the marine sector, particularly in terms of certification and job relevance. Specifically, 84% agreed that their program equipped them for required licensing, while 82% found their coursework relevant to a career as a seafarer. Additionally, 77% believed the practical training components were effective in preparing them for real-world scenarios.

Despite these positive perceptions, financial accessibility remains a concern for some students. While 63% agreed that they were able to reasonably afford the costs of their program, this figure is notably lower than satisfaction rates in other areas. Unsurprisingly, students that received financial support were more likely to agree that they were able to reasonably afford the costs of their program than those that did not receive financial support (73% vs. 52%). This suggests that financial barriers could impact access to marine education and may warrant further support measures, such as scholarships, grants, or tuition assistance programs.

Figure 24: Students' perceptions about marine education and training programs (% of agreement)



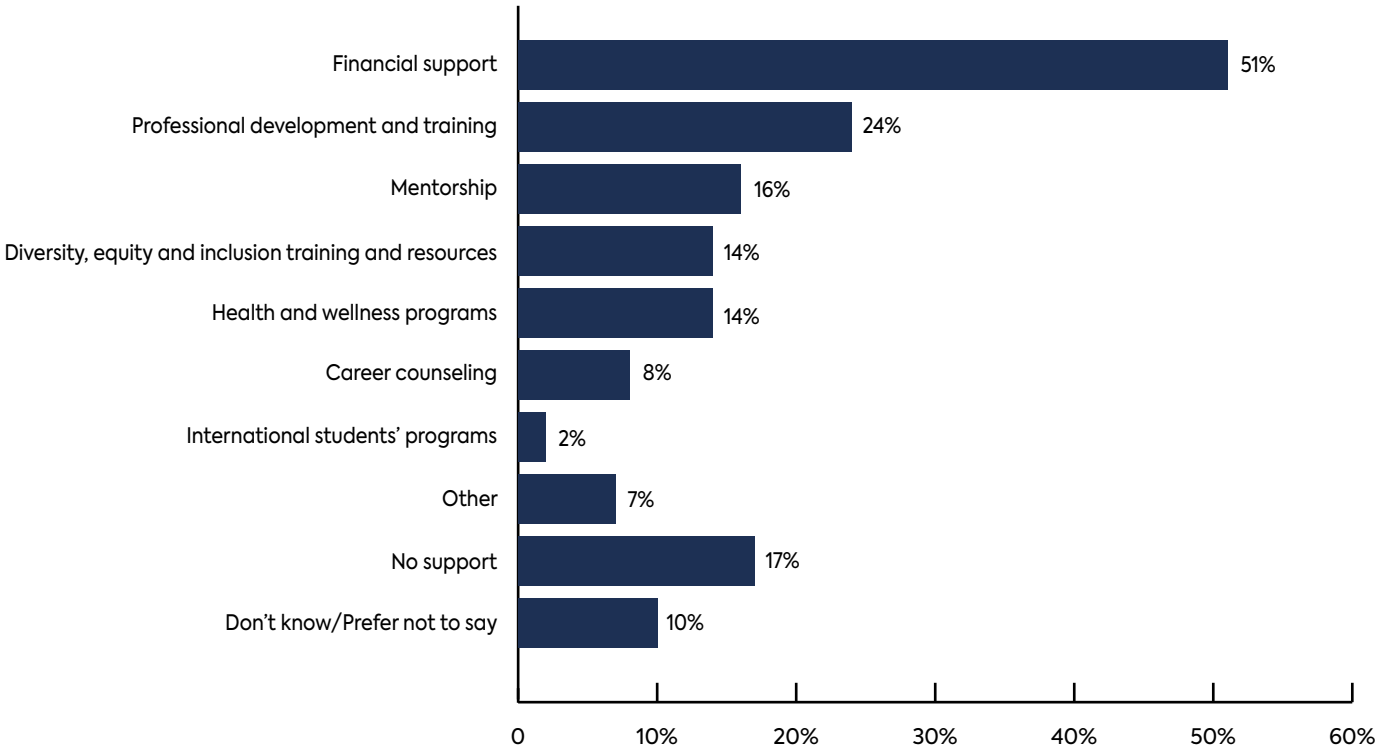
Source: 2024 Survey of marine students and recent graduates (n=305).

FUNDING SUPPORT FOR MARINE STUDENTS AND TRAINING PROGRAMS

More than half of marine students and recent graduates received financial support

Given the importance of ensuring a pipeline of seafarers for the sector, governments, educators and employers are supporting students' education in various ways. More than half of marine students and recent graduates surveyed received financial support (51%), with more than seven-in-ten of them reporting at least one type of support (Figure 25).[23] Other common types of supports included skills development through professional development and training (24%), and mentorship (16%).

Figure 25: Students' support received during enrollment



Source: 2024 Survey of marine students and recent graduates (n=305).

[23] This is based on the fact that 17% of students and recent graduates reported no support, while 10% didn't know of preferred not to say, meaning that at least 73% of surveyed students indicated receiving at least one type of support.

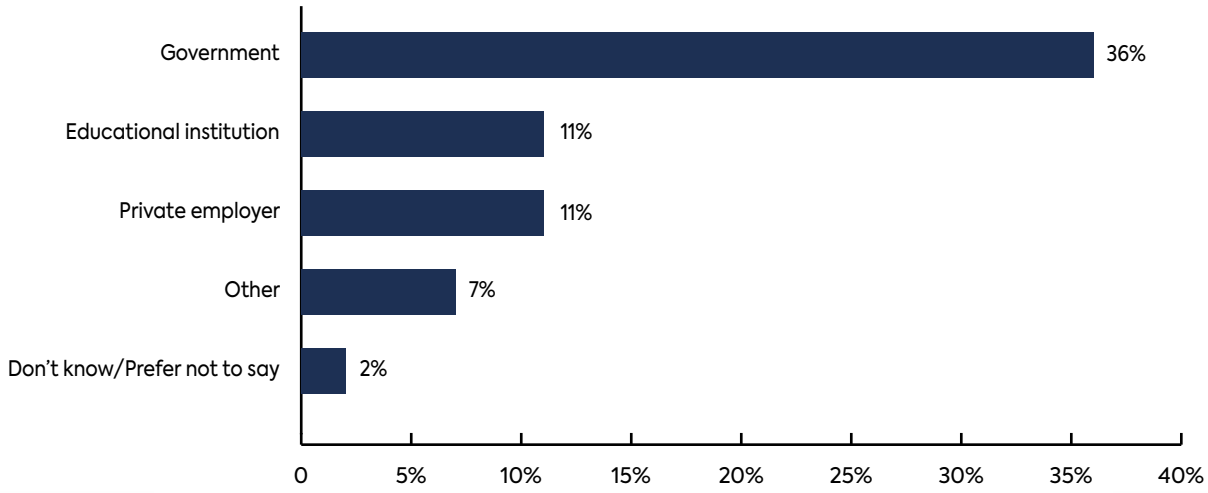
Government was the main source of financial support

Over a third (36%) of students and recent graduates received financial support from government (Figure 26). This financial support may include student loans provided by provincial governments or federal funding for students through the Coast Guard College or the Marine Training Program. The federal government has provided funding for mariner training through the Marine Training Program, which raises public awareness of, and access to, training for underrepresented groups like women, northerners, and Indigenous peoples. Since 2016, the Government of Canada has invested $58 million in the Marine Training Program, with funding currently allocated to four marine training institutions across the country until 2027. As of 2023, over 1,100 students had graduated from a range of training courses (such as the Enhanced Bridge Watch Rating program).

Fewer students from the survey reported that they benefited from financial support from educational institutions or private employers (both at only 11%).

Although some employers and industry associations (such as Master Mariners of Canada) provide funding to persons interested in furthering their education and skills in marine navigation and engineering, educational institutions, labour unions and professional industry associations pointed out that employer and private funds were not substantial and were less common in Canada compared to other countries. As a result, employees often have to bear high training costs ranging from approximately $400 to $6,000 per course, which deters potential trainees from participating in such upskilling.

Figure 26: Source of student financial support

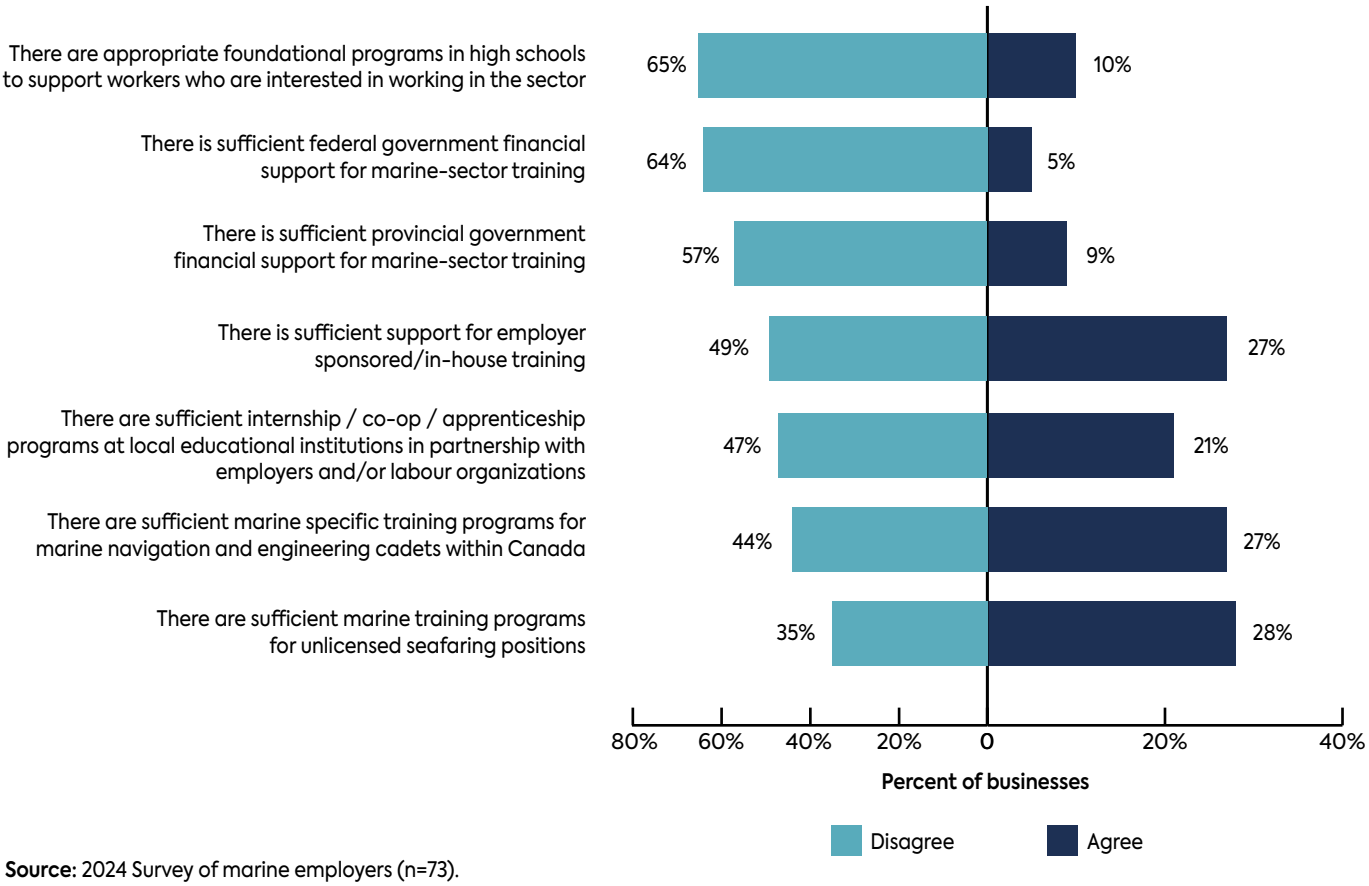


Source: 2024 Survey of marine students and recent graduates (n=305).

Marine training programs and courses are under-funded

Employers were not satisfied with various aspects of marine training options, especially when it came to financial support for marine training programs. For instance, most employers disagreed that there was sufficient financial support from the federal government (64%) or provincial governments (57%) (Figure 27).

Figure 27: Employers' perceptions about courses available for marine workers



Source: 2024 Survey of marine employers (n=73).

Labour organizations, professional/industry associations, and educational institutions representatives also spoke to the source and amount of funds for marine training programs and how it impacted marine educational institutions and students. Programs and courses require in-person instruction. As a result, students often have to pay tuition as well as costs related to relocating near the campus. In addition, colleges and universities that offer marine training programs have financial pressures related to internal and external factors, such as maintaining expensive simulators and specialized equipment, that with rapid technological advancement need constant upgrading, as well as reduced provincial funding or tuition caps that make it difficult to cover the costs related to running marine training programs.

Educational institutions indicated that international students could be a source to increase their enrollment and resources, since they pay a higher tuition. However, international students with student visas are not eligible to earn Canadian Certificates of Competency and sail onboard Canadian vessels due to provisions in the Canada Shipping Act that require these seafarers to be permanent residents or Canadian citizens.

> *"Updating our equipment is challenging because of funding. Industry partners fund some equipment but not all that we require. The current provincial government rolled back their tuition and then froze it for a number of years. They haven't increased the funding to the programs and that is causing problems."*
>
> — Educational institution representative

> *"We do not see private employers extensively sponsoring students for their full four-year programs"*
>
> — Professional/Industry association representative

> *"For organizations that do not have Transport Canada funding, the cost for students is exorbitant."*
>
> — Labour organization representative

6 CHARTING THE WAY AHEAD: STRATEGIES TO IMPROVE ATTRACTION, RETENTION AND TRAINING CAPACITIES

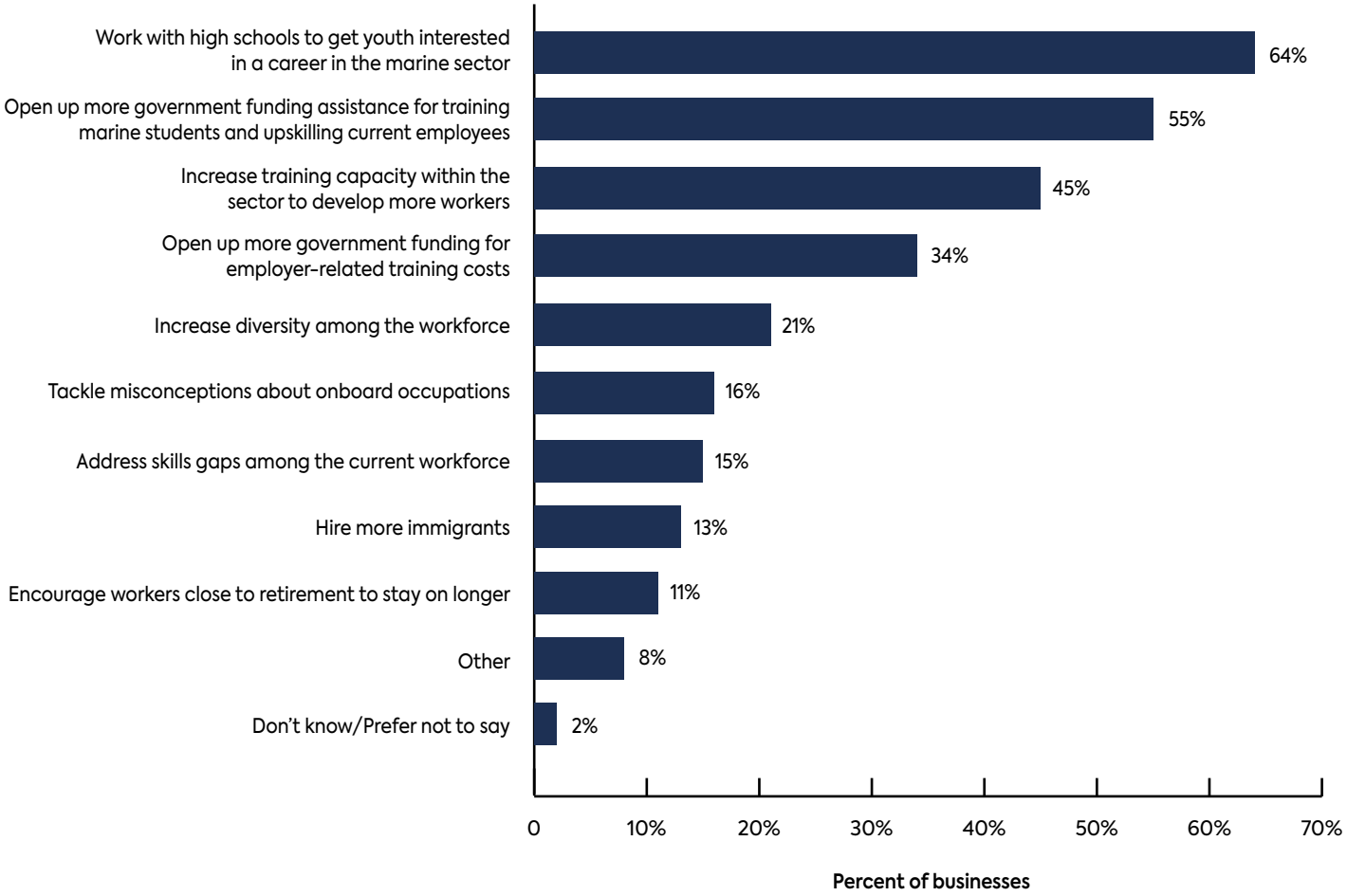
Employers, students and recent graduates, as well stakeholders provided insights into strategies that are being employed or could be implemented to address some of the challenges in the marine sector.

STRATEGIES TO IMPROVE ATTRACTION AND RECRUITMENT

Marine stakeholders to further promote the marine sector

Employers and stakeholders (including labour organizations, educational institutions and industry/professional associations) indicated that promoting the marine sector to young people would help attract them into the marine sector. To make this work, employers suggested that marine stakeholders could continue to work together with high schools to promote the sector and its occupations to high school students and to get those interested in a marine career to enroll into marine training programs (64%) (Figure 28). This could help educational institutions address the issue of unfilled seats for their training programs.

Figure 28: Strategies to address labour and skills shortages



Source: 2024 Survey of marine employers (n=73).

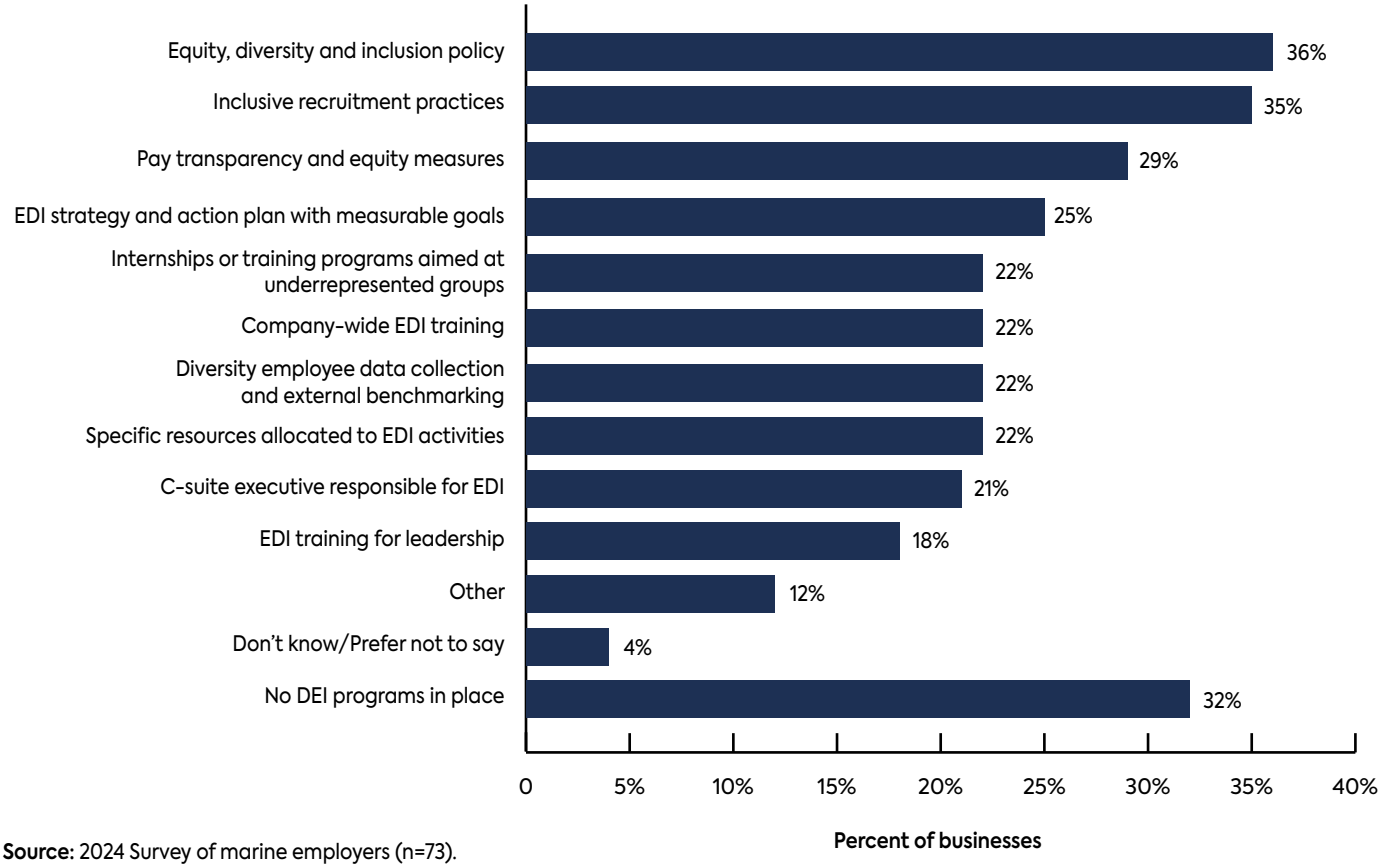
Half of employers have programs to promote workforce diversity and inclusion

A number of employers (21%) suggested increasing the diversity among the workforce. In fact, a greater percentage, 51% of employers, indicated that they had specific programs or initiatives to promote equity, diversity, and inclusion (EDI) within their workforce, although this was significantly more common of larger organizations. Only 23% of micro employers (those with 1-4 employees) had implemented specific programs or initiatives. This rises to 51% for small employers (5-99 employees), 86% for medium employers (100-499 employees) and 95% for large employers (500 or more employees).

Examples of such programs included (Figure 29):

- EDI policies (36% of employers have implemented);
- Inclusive recruitment practices (35%);
- Pay transparency and equity measures (29%);
- Internships and training programs aimed at underrepresented groups (22%).

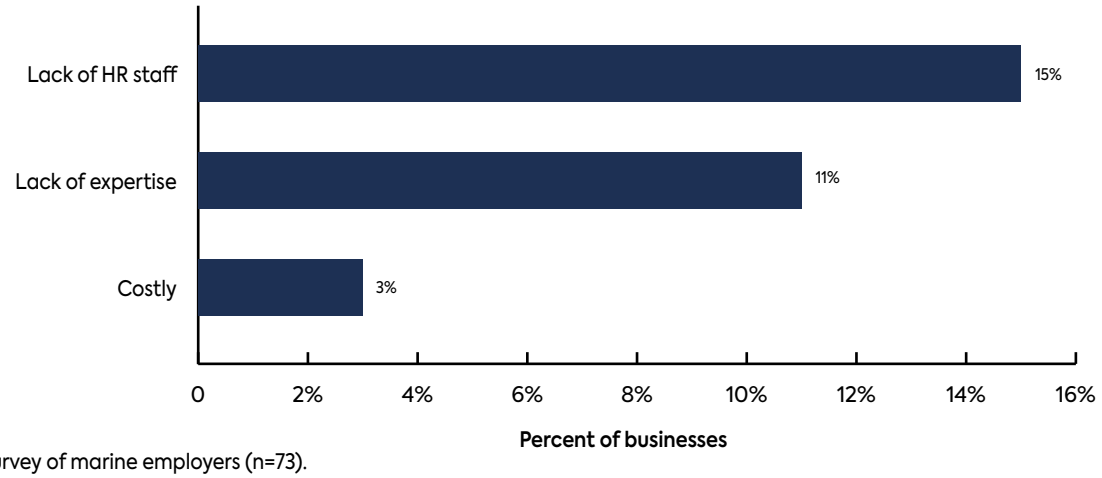
Figure 29: Types of programs in place to promote diversity and inclusion



Source: 2024 Survey of marine employers (n=73).

Interestingly, cost was not a common reason for not having EDI programs in place, as only 3% of businesses indicated that they lacked EDI programs owing to cost (Figure 30). Rather, businesses lacked such EDI programs owing to lack of HR staff (15% of all employers) and lack of expertise (11%).

Figure 30: Reasons for not having EDI programs or initiatives in place



Source: 2024 Survey of marine employers (n=73).

Even with these initiatives, some stakeholders, students, and graduates have pointed out that the sector continues to be a less appealing option to a large number of women and other underrepresented groups. A variety of strategies were discussed to enhance representation of underrepresented groups in the marine sector including:

- Expand targeted outreach programs: Experiences such as "Pathways to Shipbuilding" a program launched in Nova Scotia might serve as an inspiration to create similar programs for seafarers, targeting specific populations (for example, at-risk youth, women, indigenous) or locations (for example, noncoastal areas, prairies).[25] Some stakeholders felt that this could make the sector more attractive to potential candidates to provide training and entry opportunities into marine careers.
- Encouraging the hiring of diverse faculty: Hiring diverse faculty members and participating in outreach programs to reflect inclusivity. Educational institution representatives and professional/industry associations felt that people do not see themselves represented in the maritime community and that deters potential applicants.

Exploring tax incentives

Professional and industry associations as well as other stakeholders spoke about how implementing tax incentives have helped make working in the sector and at sea more attractive in some countries. For instance, Norway and the United Kingdom offer eligible seafarers personal income tax deductions.[26,27]

> *"The reasoning is that if you are home half of the time you are not using the resources that everyone has, so those seafarers should pay less taxes."*
>
> — Professional/industry associations

[25] https://shipsforcanada.ca/opportunities/pathways-to-shipbuilding

[26] www.skatteetaten.no/en/rates/seafarers-allowance/

[27] www.gov.uk/guidance/seafarers-earnings-deduction-tax-relief-if-you-work-on-a-ship

STRATEGIES TO IMPROVE RETENTION

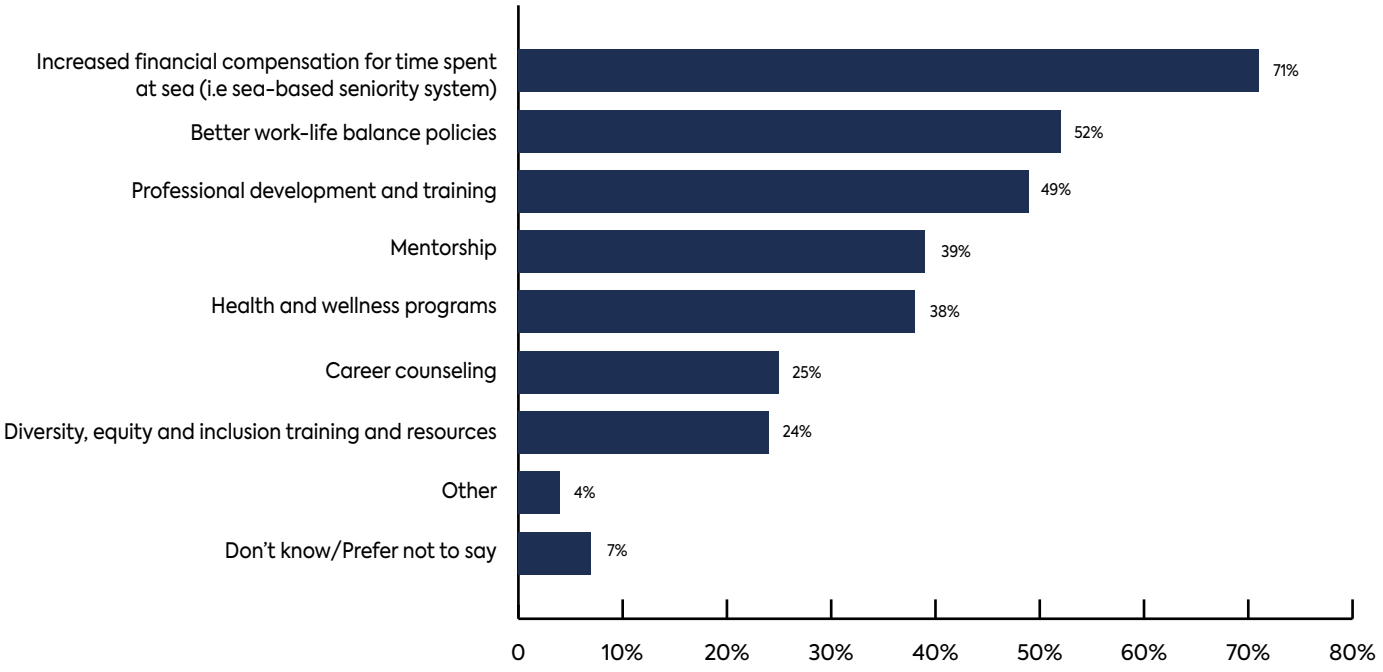
Employers to increase financial compensation for time spent at sea

Students and recent graduates provided insights as to support and resources that would increase their commitment to a career at sea. Over seven-in-ten students and recent graduates suggested increasing financial compensation for time spent at sea as a way to increase their commitment to a career at sea (71%) (Figure 31). This could help the many students and recent graduates (56%, as discussed above) who were unsure about remaining in a sea-going role or shifting to shore-based role decide to stay at sea.

Although high wages are one of the attractive features of the sector, industry associations and labour unions mentioned that the cost of living has gone up, and salaries are not going up as fast. Government representatives, labour organizations, and industry associations also mentioned that higher wages would help retain seafarers employed by public sector employers.

Most students and recent graduates also suggested that policies that improve work-life balance would help them increase their commitment to a career at sea (52%) (Figure 31).

Figure 31: Support and resources to increase students' and recent graduates' commitment to a career at sea



Source: 2024 Survey of marine students and recent graduates (n=305).

Employers to provide better living standards

Many stakeholders felt that the sector needs to adapt to generational preferences and shifts, such as the expectation of better living standards, contrasting with older generations' tolerance for longer rotations sailing under more basic conditions. They believed that the industry has a lot to offer in terms of competitive salaries, travel opportunities, and non-traditional work-life balance; however, some things need to change faster.

- **Improve accommodation and facilities:** Investing in modern vessels and improved living spaces and onboard amenities, including avoiding shared cabins and accommodating food preferences, would be good steps toward attracting and retaining employees.
- **Improve connectivity at sea:** Stakeholders, as well as students and graduates, have emphasized the importance of improving connectivity at sea as a growing expectation. This has a major impact on family and friend communication, mental health (e.g., feelings of isolation), and entertainment.

Employers to address harassment, discrimination and mental health issues

Systemic issues such as harassment, bullying, racism, and sexism persist, particularly affecting equity-deserving groups like women and Indigenous people. Some companies have made efforts to address workplace harassment and discrimination, but according to some stakeholders (labour organizations and educational institutions) and survey respondents from the students and graduates survey, there are a few approaches that might be helpful to adopt.

- **Change approach to bullying and harassment**: Workplace violence, bullying, and power imbalances remain critical issues. Internal cultural shifts, in addition to external consultancy, are required to address these. Several stakeholders mentioned that having support for issues related to wellness and diversity, equity, and inclusion done by third-party consultants, courses and talks about these issues is helpful, but more important would be to build a culture that these issues are everyone's responsibility. Peer policies such as "see something, say something" pushed by some organizations and avoiding retaliation practices would greatly improve workplace well-being.
- **Increase mental health support**: Some companies now provide mental health programs, but industry-wide initiatives are necessary for a broader impact. Given that the marine sector is dominated by small and medium-sized enterprises, funding assistance from federal or provincial programs would likely be necessary to develop these initiatives.

> *"People don't pay attention to that, they need a cultural change that is internal, not external pressure."*
>
> — Labour organization representative

Employers to ensure that good management practices are in place

Stakeholders indicated that management practices mattered for retention in the marine sector more than in many other sectors, especially when it comes to managing people living together 24 hours a day for long periods.

Inadequate management practices and power imbalances can result in higher turnover rates. Therefore, ensuring that good management practices are in place, for instance with training and clear procedures for conflict management, is key to retaining the workforce.

> *"High salaries are not equal to better retention. Rather, it's usually because the company is hiring a good manager. Have people to take care of its employees. When 15 to 16 people are living together...the smallest things get on your nerves."*
>
> **— Labour organization representative**

Sector to review maternity leave policies

As discussed above, professional/industry organizations, labour organizations and other stakeholders expressed concerns that current policies make it difficult for women to maintain certificates required for key marine occupations when they go on maternity leave, which hinders their ability to remain in the sector. To improve the retention of women in key marine occupations, the sector should review the current maternity leave policies, especially as it relates to recognition of sea time and certificates (such as Captain's license) while on maternity leave.

STRATEGIES TO IMPROVE TRAINING AND SKILLS DEVELOPMENT

Government to increase funding assistance for marine training

Employers and stakeholders suggested increasing government funding to address issues related to training and skills development. More specifically, more than half of employers suggested increasing government funding for training marine students, particularly cadets, and upskilling current employees (55%), while more than a third of employers suggested increasing government funding for employer-related training costs (34%) (see Figure 28 on page 68).

Training institutions highlighted the necessity of securing funding for the training of cadets, as well as the importance of providing training onboard ships. Institutions pointed to programs that exist in other sectors that could be replicated for the marine industry. For example, provincial programs such as "Learn and Stay[28]" aimed at nurses in Ontario could be adapted to help students pay for mariner training and tie these funds to sector needs. They get their tuition reimbursed if they work in the sector in a particular region for a defined number of years. This would contribute to increasing the pool of prospective interested students who stay in the industry after finishing the program. Stakeholders did not mention it, but the Canada Student Loan forgiveness benefits program is another one to consider. It is aimed at encouraging essential workers to work in rural, remote or underserved communities and it could be expanded to include eligible marine deck and engineering students.

[28] See Government of Ontario's website on "Learn and Stay"

Some stakeholders such as professional/industry organizations, educational institutions and students and graduates, among others assert that additional training berths and entry-level marine officer positions are necessary for the new cadets. They also expressed that having a clear path and funding for career advancement would significantly enhance retention. Furthermore, participants in the students and graduates survey indicated that acquiring the necessary marine medical and safety training to work on a vessel poses significant challenges, as it is both expensive and time-intensive. Therefore, the sector should carefully examine the potential for federal support in this context, which mirrors Norway's approach. There, medical and safety training, along with certifications, are subsidized at a national level for qualifying candidates.

An advance for the sector would be obtaining a skill trade recognition. An entry-level seafarer in a deckhand or engine room assistant position can take further education, gain sea time and onboard experience and challenge exams to advance into higher skilled positions and eventually a marine officer position. This career advancement channel, often referred to as the "hawsepipe," could potentially provide a basis for a skilled trades certification program. Seafaring is not classified as a skilled trade, limiting access to federal funding and creating barriers to modernizing workforce training.

Government and educational institutions to examine potential additional pathways

Several stakeholders from all groups also discussed the potential for international recruitment. Since 2019, Transport Canada has implemented reciprocal arrangements with eleven nations that have permitted foreign seafarers with certain valid internally-recognized certificates, who are sponsored by a Canadian authorized representative, to apply for an endorsement attesting the recognition by Canada of their certificates to serve on board a Canadian flagged vessel. [29] As of October 2024, Transport Canada reported that 498 endorsements had been issued for foreign seafarers through this program. Of these, 394 were for foreign workers from Ukraine. In general, stakeholders recognized from the employer's perspective that this strategy is a key part of solving critical employee shortages, but currently the process is costly and time-consuming.

Unions and other stakeholders have also been concerned about international recruitment based on the conditions of their work, credentials, and the impact on wage negotiations. Professional/industry associations and labour organizations also spoke about how international hiring provokes tensions between existing staff and the new "international people." For example, they explained that many newly hired international seafarers come from deep-sea shipping, where they have little-to-no ship-handling experience because they usually work on larger vessels that rely on pilots. As a result, these deep-sea seafarers struggle to adapt to the hands-on maneuvering required in Canada's coastal industry. Another example is related to integration challenges when foreign-trained officers work on Canadian ships, as their approaches may not align with Canadian expectations. On foreign-flagged vessels, a chief engineer is a high-ranking supervisory role—they direct work but do not typically perform hands-on repairs. In Canada, because crews are smaller, chief engineers are expected to work alongside the crew to fix problems quickly. These operational differences create challenges when trying to integrate foreign-trained officers into Canadian fleets.

> *"Hiring internationally is not streamlined, even though it appeared to be a promising opportunity. Currently, companies are encountering more challenges than benefits."*
>
> — Professional/industry association

[29] https://tc.canada.ca/en/marine-transportation/marine-training-certification-individuals/canadian-endorsement-attesting-recognition-foreign-certificate-through-reciprocal-arrangement-1-overview.

"There has been a big push for the last few years to hire personnel from Ukraine and I know it's not just our company. Sort of saved the industry as there weren't enough people to fill in for people that are retiring. But also, it's sort of lowered our wage negotiations as well as they can come in and change the price."

— Professional/industry association representative

"It is a temporary solution but not a permanent solution. A temporary foreign worker program may be good but because it is temporary. But it would be better to introduce foreign seafarers on a path to citizenship or permanent residency."

— Labour organization representative

Government with educational institutions to create a pilot project with onboard training:

According to professional/industry organizations, educational institutions, government representatives, and labour organizations; it is necessary to give individuals the opportunity to experience practical training onboard a vessel more quickly so that they can determine whether or not they are interested in a seafarer career earlier in a training program. These experiences would allow candidates to better understand the requirements and work environment onboard vessels before investing considerable time and money into a training program. Currently, that may not be a feasible option due to basic training requirements imposed by regulations, and the maritime community would need to work with Transport Canada for that to happen.

To increase the number of mariners joining the industry and advancing their careers, these stakeholder groups also indicated the need to increase the availability of onboard training opportunities to help with hands-on instruction, to gain sea time while learning, and to increase the attractiveness of working as a seafarer. Some of these stakeholders suggested that a first step would be having a pilot training ship program. The Royal Canadian Navy uses a civilian-operated naval support vessel called the MV Asterix. This vessel has capacity and could be used to expand training opportunities in the short term. When the supply contract is completed, this vessel could potentially be repurposed to provide prospective seafarers with practical training in navigation, engineering, and operational scenarios.

Some cited the United States' experience with this approach. The United States boasts a more extensive training infrastructure, with several training vessels, operated by federal institutions, maritime educational institutions, and private companies. These ships are highly regarded because they offer robust at-sea learning experiences for officers. Vessels have classrooms, and faculty on board, and other accommodations.

7

CONCLUSIONS AND RECOMMENDATIONS

The Canadian Seafarers Pathway Study has highlighted the significant and pressing need to develop the marine workforce. Beyond already experiencing higher vacancy rates than that of other sectors, the study estimates that over 8,300 full-time equivalent workers will be needed to meet hiring demands over the next five-years (2025-2029).

To meet this need, the sector will depend upon an education system that does not have the required number of seats yet operates below capacity. On average, the education programs preparing students for seafaring jobs are only 79% full. Marine training institutes struggle to recruit candidates in part due to inadequate public awareness, insufficient financial assistance and negative perceptions of seafaring careers. Students who pursue careers in the marine sector face bottlenecks such as limited opportunities to spend training time at sea.

Even if enrollment was maximized, a significant gap would remain. Currently, the education system may only graduate enough students to fill 40% of these openings. In addition, while new graduates want to remain in the sector, not all want to remain in seagoing positions. The sector as a whole and employers in particular are going to have to invest concerted efforts to attract and retain the qualified workers they need.

With these findings in mind, the study concludes with the following recommendations:

To improve
attraction

Short-term

- **Increase public awareness**: Implement sector-coordinated initiatives to highlight marine career opportunities, targeting youth, educators, and the broader public. This may include deepening engagement with high schools and student-facing organizations by providing virtual and/or experiential opportunities to engage directly with mariners and explore life onboard different types of vessels and in ports.
- **Debunk seafaring misperceptions**: Emphasize the domestic seafarer experience (i.e., high pay and benefits, less time at sea, commitment to safety, advanced technology) and the value of "mariner skills & expertise" that leads to a multitude of careers onboard and ashore.
- **Deepen equity, diversity and inclusion efforts**: Develop targeted outreach for specific populations (youth, new Canadians, women, Indigenous) or locations (non-coastal areas, prairies). Hiring a diverse faculty would also attract a more diverse range of applicants.
- **Explore additional incentives**: Employers should investigate the possibility of offering incentives to entice workers to relocate to high-cost regions or have travel benefits so they can live where they choose. Some companies already have implemented some of these ideas, such as living in Alberta and flying people to Vancouver or Nanaimo.
- **Improve temporary foreign worker pathway:** Transport Canada and employers should work to streamline pathways for international recruitment and the recognition of foreign maritime credentials to address acute labour shortages. The federal government should work with employers to provide a clearer pathway for interested seafarers with endorsements to become permanent residents/ Canadian citizens and join the domestic workforce.

Medium-term

- **Improve access to training:** Sector collaboration with federal and provincial governments to increase availability of remote, intensive, hybrid and simulation learning within marine training programs, to help reduce geographical, financial and time barriers for learners that do not live in proximity to training institutions or have to juggle life responsibilities. This will require coordination with and approval by Transport Canada to modernize program delivery models.

To improve
retention

Short-term

- **Employers to enhance compensation**: Investigate the possibility of offering financial rewards for time at sea to encourage mariners to stay and progress their career in onboard roles. This is particularly but not exclusively important for the Coast Guard.
- **Evaluate current approaches to address bullying and harassment**: In addition to the current anti-harassment policies and training initiatives, employers should investigate strategies that foster a sentiment that these issues are everyone's responsibility and other changes to improve workplace culture, including those related to performance management, conflict resolution, and psychological safety.
- **Increase mental health support**: Develop sector-wide initiatives for broader impact and that could assist small and medium-sized enterprises with less resources.

Medium-term

- **Improve onboard living experience**: While there has been progress, there are still opportunities for employers to improve accommodation and facilities as well as connectivity at sea. This should also be a primary consideration during fleet renewal.
- **Improve inclusion in the workplace:** Encourage and support employers to develop, implement, and evaluate both top-down and bottom-up initiatives aimed at fostering inclusion and equity at work. This includes, for example, establishing employee resource groups, implementing anonymous feedback systems, dialogue groups or creating peer mentorship programs. These efforts will help create workplaces that meet the needs of all seafarers, especially those from underrepresented groups, ensuring a more inclusive and supportive environment for everyone. The marine sector should look at initiatives being piloted internationally that could be adapted or applicable to domestic seafaring in Canada.[1]
- **Review maternity leave policies regarding sea time and certification retention**: To keep women in vital positions, Transport Canada should review its retention of sea-time requirements while on maternity leave. This could apply to parental leave policies as well.

[1] For instance, Diversity@Sea workstream. See https://globalmaritimeforum.org/diversity-at-sea.

To improve

training and skills development

Short-term

- **Transport Canada, Employment and Social Development Canada and provincial governments to increase support for marine education**: Enhance student financial support for marine training and upskilling. Greater investment in financial aid, such as grants, scholarships, tuition subsidies and debt forgiveness programs, would help attract new talent to the maritime sector and support career progression for existing seafarers. To achieve this, industry stakeholders—such as training institutions, employers, and unions—should collaborate to advocate for additional government resources.
- **Industry stakeholders —including professional/ industry associations, employers, and unions— to increase funding**: Increase funding for scholarships, and bursaries for marine officer cadets, as well as allocate more resources to pathways that assist and incentivize marine officers and ratings seafarers to upskill and progress their careers. Improve sector-wide promotion and coordination of these resources.
- **Increase student access to seatime:** Federal government to work with marine stakeholders to develop pilot projects to increase opportunities for onboard training to gain practical experience while accounting for the necessary sea time.

Medium-term

- **Modernize training curricula:** Federal government to work with marine stakeholders to develop and implement effective training/upskilling strategies to prepare the workforce for new technological developments on vessels. (i.e. related to decarbonization, digitalization, automation, safety).
- **Expand marine training capacity:** Federal and provincial governments to increase financial assistance to marine training institutions to increase the capacity of programs. This would require increasing instructor compensation and capital investments for physical space and equipment.
- **Skilled Trades Research Project:** The marine sector to conduct a research project to evaluate the feasibility and process required to obtain Skilled Trades recognition for specific mariner positions.

To improve

marine labour market data and research

- This study should be repeated in three years (after 2026 census data will have been published) to examine demographic and business changes that could impact future labour requirements as well as assess the progress of the training system and recommendations actioned from this report.

APPENDICES

APPENDIX A
More details on the study lines of evidence

Reviewing documents and literature

Malatest reviewed relevant documents and literature on the issues of interest for this study. This included:

- Previous labour market information study reports, such as the Transport Canada study on "*Current and Future Gaps in Seafarers in Canada*";
- Royal Canadian Navy data on their levels of recruitment and turnover for marine-related roles;
- Transport Canada data on certificates issued over the last 10 years;
- Canadian Coast Guard Arctic Strategy and Long-Term Strategy;
- Graduate survey reports from training institutions;
- 2024 Imagine Marine conference presentations;
- Published papers; and
- Online information from websites of government agencies (Transport Canada, Coast Guard, Pilotage Authorities, etc.), training institutions, labour organizations, professional associations, etc.

Surveying employers in the Canadian marine sector

Identifying businesses eligible for the survey of marine employers:

Malatest purchased a sample of businesses (with employees) involved in the target industries described above from a national business sample provider. Malatest and CMCF reviewed the sample of businesses to exclude some businesses that were deemed not eligible for the survey. CMCF suggested including businesses that were deemed eligible for the study but that were not included in the purchased sample.

Sending email invitation to participate in the survey:

All businesses in the sampling frame with known email addresses were sent an email invitation requesting their participation in the study. The invitation letter included detailed information about the study, such as the purpose of the study and the survey, instructions for participating in the survey, and privacy provisions. Several rounds of invitation reminders were sent to businesses that had not participated in the survey at the time of the reminder.

Recruiting survey participants by telephone:

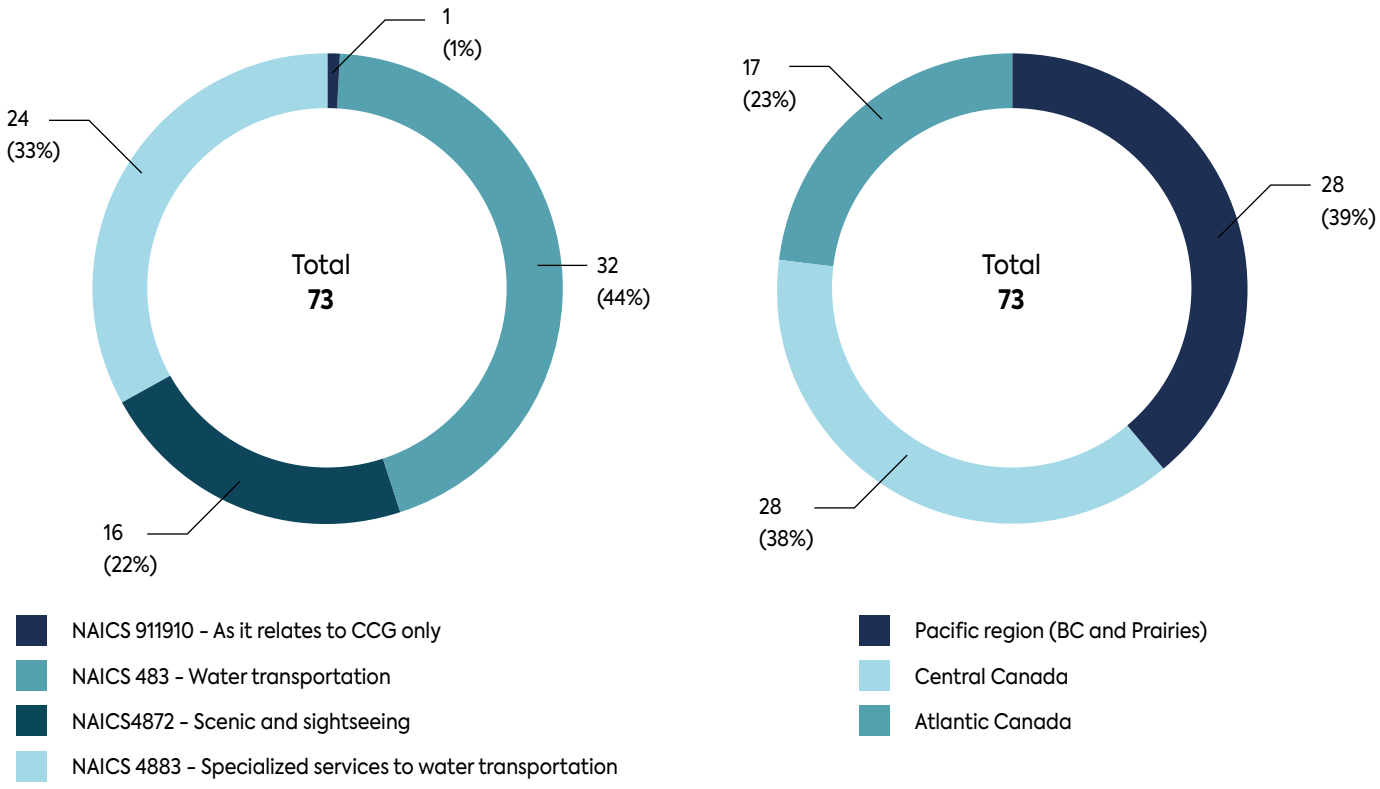
A few weeks after sending email invites, Malatest called businesses in the sampling frame that had not completed the survey (regardless of whether they were sent an email invite) to recruit them for the study. Businesses contacted successfully were provided with the same information included in the invitation letter. If available and willing to participate in the survey, they were surveyed over the phone.

Businesses were given two options to complete the survey, including:

- **Completing the survey online:** using a unique URL and access code that allowed participants to complete the survey online at a time most convenient to them. Participants were given the flexibility to save information entered in the survey and return to it eventually.
- **Completing the survey via telephone:** via outbound or inbound call with one of Malatest's surveyors. Participants were provided the option to complete the survey when they first spoke with a Malatest surveyor or schedule a later date and time for the interview.

Using the approach described above, Malatest surveyed 73 businesses, most of which were involved in water transportation of passengers and goods (44%), followed by businesses providing specialized services to water transportation (33%) and those involved in scenic and sightseeing transportation (22%). The Pacific and Central regions accounted for an equal proportion of surveyed businesses (38% each), and about one-quarter of surveyed businesses were in Atlantic (23%) (Figure 32).

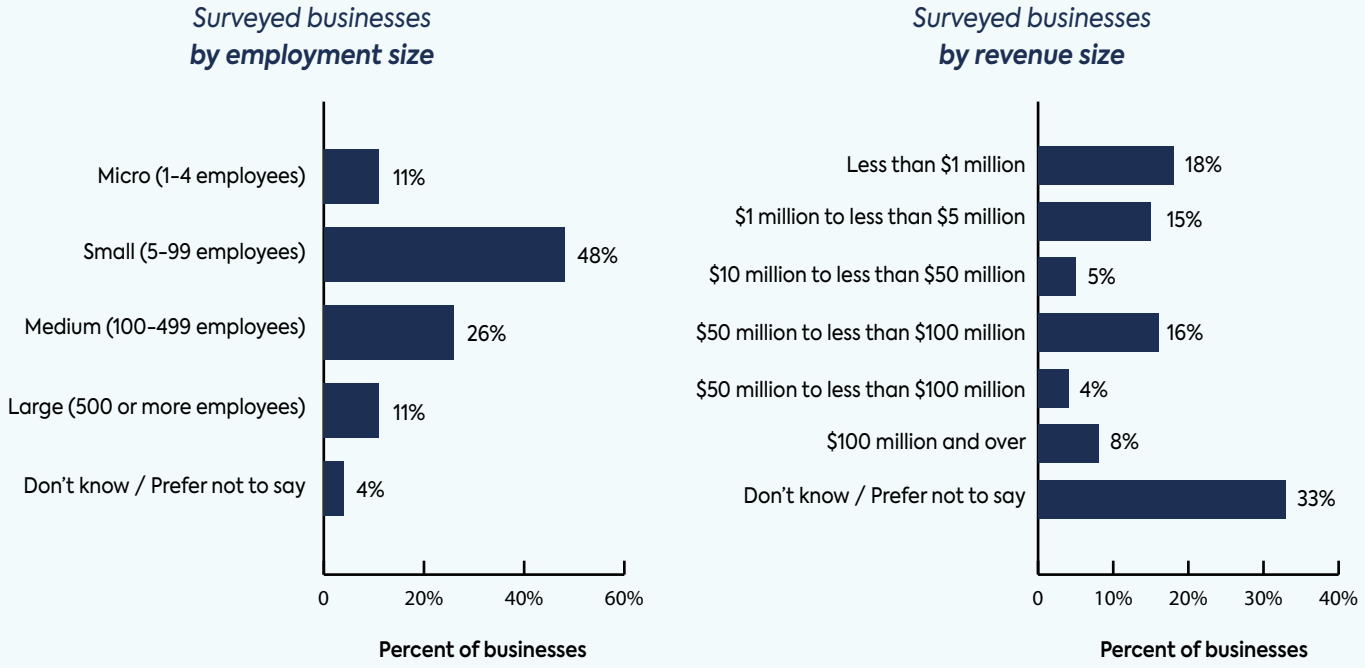
Figure 32: Surveyed businesses by industry and region



Source: 2024 Seafarers Pathway Study, Survey of employers (based on unweighted data).

About a half of surveyed businesses were either small in that they employed between 5 and 99 employees (48%) and more than a quarter were medium-size businesses in that they employed between 100 and 499 employees (26%) (Figure 33).

Figure 33: Surveyed businesses by employment size and revenue



Source: 2024 Seafarers Pathway Study, Survey of employers (based on unweighted data).

Surveying marine students and recent graduates from marine

Malatest asked participating educational institutions to invite their current students and recent graduates (such as those that graduated less than five years before the survey) to participate in the survey of students and recent graduates. Malatest developed email invites including an embedded URL that students and graduates could use to complete the survey online.

The survey for students and recent graduates was approximately 10 minutes in length, and included a mix of closed-ended and open-ended questions that inquired about their:

- Educational and training experiences;
- Current occupations;
- Perceptions of skills, gaps and improvement
- Perceptions of recruitment and retention challenges, including their commitment to a career in the marine sector;
- Demographics.

A total of 305 respondents completed the survey, including 62% recent graduates, 37% current students (Table 13). Over a half of respondents were associated with two educational institutions, namely the Canadian Coast Guard College (32%) and the Western Maritime Institute (24%).

Table 13: Students and recent graduates survey completes by type of respondent and educational institution

DIMENSION	CATEGORY	SURVEY COMPLETES	
		#	%
Type of respondent	Student	114	37%
	Graduate	188	62%
	Past student (unfinished)	3	1%
	Total	**305**	**100%**
Educational institution	Canadian Coast Guard College	97	32%
	Western Maritime Institute	74	24%
	Institut Maritime du Québec	40	13%
	Camosun College	29	10%
	Nova Scotia Community College	24	8%
	British Columbia Institute of Technology	16	5%
	Georgian College	11	4%
	Memorial University	2	1%
	Western Arctic Marine Training Consortium	1	0%
	Other	9	3%
	Don't know/Prefer not to say	2	1%
	Total	**305**	**100%**

Source: Survey of students and recent graduates (based on unweighted data).

Interviewing stakeholders

Malatest invited and interviewed a total of 20 stakeholders. Invited stakeholders were recommended by the CMCF and represented different perspectives including training institutions, labour organizations and government, as well as professional/industry associations (Table 14).

Table 14: Key informant interviews by stakeholder group

STAKEHOLDER GROUP	SAMPLE (#)	INTERVIEWS COMPLETED (#)
Professional/Industry associations	4	4
Government	4	4
Training Institutions	9	9
Labour organizations	3	3
Total	**20**	**20**

The purpose of the interviews was to gather stakeholders' insights as to:

- Labour trends in the marine sector;
- Recruitment and retention challenges;
- Skills development and training challenges;
- Technology considerations;
- Public and private sector resources available to advance the marine sector; and
- Outlook for the sector.

Interview participants were provided with an interview guide to help them prepare for the interview. Interviews lasted 30-60 minutes, were recorded upon consent of the interviewee, and summarized to highlight the main findings.

When describing qualitative findings in this report, the following qualitative qualifiers are used to indicate the proportion of stakeholders who responded similarly (Table 15).

Table 15: Qualitative qualifiers

TERM	RANGE OF RESPONSES
None	0%
Few	>0% to <25%
Some	>25% to <50%
Half	50%
Many	>50% to <75%
Most	>75% to <100%
All	100%

Gathering marine training program data

Malatest requested data from 10 educational institutions regarding their programs, including:

- Program name and length;
- The number of full-time instructors;
- Total enrolment capacity;
- Number of students enrolled over the last five academic years;
- Number of students that graduated over the last five academic years; and
- Average graduation, dropout, and job placement rates.

Table 16: Number of marine training programs reported by institution

INSTITUTION NAME	PROVINCE	NUMBER OF PROGRAMS
Memorial University	Newfoundland and Labrador	4
Nova Scotia Community College	Nova Scotia	4
British Columbia Institute of Technology	British Columbia	3
Holland College	Prince Edward Island	2
Georgian College	Ontario	2
Institut Maritime du Québec	Québec	2
Western Arctic Marine Training Consortium	Northwestern territory	1
Camosun College	British Columbia	1
Coast Guard College	Nova Scotia	1
Western Maritime Institute	British Columbia	0

Analyzing data and reporting findings

Weighting survey data: Malatest analyzed survey data using descriptive statistics, such as means, proportions. Employer survey data was weighted based on the employer's sector and size of employment, so that the survey sample becomes representative of the population of target marine employers by sector and employment size. Students and recent graduates survey data was weighted so that the survey sample becomes representative of the population of target students and recent graduates by educational institutions.

Estimating seafarer employment: Malatest estimated 2023 seafarers' employment in 2023 using a four-step approach that allows for comparing the 2023 estimate with the estimate in the 2021 Transport Canada study. The seafarer employment estimation approach is detailed in Appendix B.

APPENDIX B
Estimating seafarer employment

The seafarers' employment in 2023 was estimated using a four-step approach that allows for comparing the 2023 estimate with the estimate in the 2021 Transport Canada study.

Step 1

Gathering 2021 Census data publicly available from Statistics Canada 2021 Census data (highlighted in grey):

Malatest gathered employment data published by industry from Statistics Canada, which included:

- Employment data for the key marine transportation sector (NAICS 483) for Canada and by region: This data showed that Canada employed a total 12,310 workers in the marine transportation sector in 2020 (Table 17).
- Employment data for key marine occupations and related occupations for all industries: This data showed that Canada employed a total of 10,135 workers in the three key marine occupations in 2020, and a total of 285,215 workers in various related occupations as listed in Table 17.

Step 2

Computation of 2020 employment estimates by occupation for key marine occupations, related occupations, and other occupations

- For this exercise, Malatest leveraged occupation-specific ratios of related or other occupations per key marine occupation (shaded in blue), some of which were borrowed from the TC study.
- **For key marine occupations**: the ratio is 1, in other terms employment for key marine occupations is accounted fully because those occupations are entirely in marine industries.
- **For related occupations:** the ratios are borrowed from the TC study. For instance, for NOC 75210 – Boat/cable ferry, the TC study estimated that 165 boat/cable ferry operators were essential to support every 1,000 jobs key marine occupations (hence a ratio of 0.165). Therefore, it is estimated that 1,676 boat/cable ferry operators were employed in support of the 10,135 key marine occupations in 2020. The same approach is applied to all other related occupations. The total employment for marine related occupations that are essential to support the 10,135 jobs in key marine occupations was estimated at 4,082 workers in 2021.
- **For all other occupations**: the ratio is also borrowed from the TC study. The TC study estimated that 1,137 jobs in all other occupations were essential to support every 1,000 jobs in key marine occupations (hence a ratio of 1.137). Therefore, the total employment for all other occupations that are essential to support the 10,135 jobs in key marine occupations was estimated at 11,522 jobs in 2020.
- The total marine employment in 2020 was calculated as the sum of employments for key marine occupations, related occupations and all other occupations in 2020, which amounted to 25,739 jobs (=10,135 + 4,082 + 11,522).

Table 17: Estimation of seafarer employment

DIMENSION	CATEGORY	EMPLOYMENT BY REGION FOR NAICS 483 - MARINE TRANSPORTATION INDUSTRY (BASED ON 2021 CENSUS)	EMPLOYMENT IN OTHER INDUSTRIES (ESTIMATES)	EMPLOYMENT BY OCCUPATION FOR ALL INDUSTRIES (BASED ON 2021 CENSUS)	RATIO	2020 ESTIMATES	% CHANGE FROM 2020 TO 2023	2023 ESTIMATES
REGIONS	**Canada**	**12,310**	**13,429**			**25,739**	**11%**	**28,505**
	Atlantic	2,730	2,978		0.22	5,708	16%	6,612
	Central	3,500	3,818		0.28	7,318	7%	7,815
	Pacific (BC and the Prairies)	6,050	6,600		0.49	12,650	11%	14,057
	Territories	10	11		0.001	21	0%	21
KEY NOCS (2021 VERSION)	NOC 72602 Deck officers			5,085	1	5,085	11%	5,631
	NOC 74201 Deck/ engine crew			3,795	1	3,795	11%	4,203
	NOC 72603 Engineering officers			1,255	1	1,255	11%	1,390
	Total Key Marine Occupations			**10,135**	**1**	**10,135**	**11%**	**11,224**
RELATED NOCS (2021 VERSION)	NOC 75210 Boat/ cable ferry			2,225	0.165	1,676	11%	1,856
	NOC 63200 Cooks			148,140	0.088	895	11%	991
	NOC 64313 Water transport clerks			1,480	0.071	723	11%	800
	NOC 64311 Pursers/ attendants			6,125	0.052	526	11%	582
	NOC 72201 Industrial electricians			20,010	0.011	115	11%	128
	NOC 21120 Health/ safety inspectors			19,410	0.007	66	11%	73
	NOC 65200 Food/ beverage servers			75,085	0.004	41	11%	45
	NOC 72500 Crane operators			12,740	0.004	41	11%	45
	Total Related Occupations			**285,215**	**0.403**	**4,082**	**11%**	**4,521**
	All other occupations				**1.137**	**11,522**	**11%**	**12,760**
	Total employed in Marine	**12,310**				**25,739**	**11%**	**28,505**

Source: Estimates based on 2021 Census data, Labour force characteristics (employment) for NAICS 48-49, and parameters from the 2021 Transport Canada study on "Current and Future Gaps in Seafarers in Canada".

Step 3

Computation of 2020 employment by region for key marine occupations, related occupations, and all other occupations

- The 25,739 marine jobs in Canada in 2020 were distributed regionally based on the regional shares of employment in the key marine transportation sector
- NAICS 483 (shaded in green). For instance, Atlantic accounted for 22% of employment in Canada's marine transportation (2,730/12,310 = 0.22). Therefore, it is estimated that of the 25,739 marine jobs in Canada in 2020, 5,708 jobs were in Atlantic (0.22*25,739 = 5,708).

Step 4

Estimation of 2023 marine employment

- Malatest used LFS employment data for NAICS 48-49 to calculate the growth rate by region from 2020 to 2023. Employment percentage growth for NAICS 48-49 ranged from 7% for Central to 16% for Atlantic (Table 18).
- Estimated regional employments for 2023 were summed to get the 2023 estimate for Canada (28,505 jobs).
- The overall employment percentage growth was then calculated as ((28,505-25739)/25,739) = 11%, and applied to key marine occupations, related occupations and all other occupations to get their 2023 employment estimates.

Table 18: Employment data for NAICS 48-49

Region	2020	2021	2022	2023	% change rate 2020-2023
Atlantic	48,000	54,300	51,500	55,600	16%
Central	572,700	587,200	590,800	611,600	7%
Pacific	321,900	344,000	339,000	357,700	11%

Source: Statistics Canada. Table 14-10-0023-01 Labour force characteristics by industry, annual (x 1,000)

APPENDIX C
Definitions of Seafarer Positions

DECK POSITIONS

Deck positions refer to the jobs and responsibilities of the crew members who work on the deck or top portion of the vessel. The deck crew is responsible for tasks such as mooring and unmooring the vessel, handling cargo, maintaining and repairing equipment, and assisting with navigation. These positions require physical strength, technical skills, and an ability to work in a team to ensure the smooth running of the ship.

- **Marine Navigation Officers** - The officers of the deck department on a ship (i.e., Captain and mate positions) are responsible for the safe and efficient operation of the vessel. They work together to ensure the ship's safe navigation, cargo handling, and emergency response. Officers of the Watch are the highest-ranking crew within the Deck Department after the master. They have the necessary certifications and qualifications to occupy these positions and are often referred to as "licensed crew". Officers of the watch are responsible for the safe and efficient operation of a ship during their assigned watch period.
- **Navigation Cadet** - A navigation cadet is an officer in training and is assigned to a vessel for work terms during their formal study sessions with a maritime college. The navigation cadet will follow the directives of the vessel Mates during the work period, typically called "sea time," and benefit from practical, hands-on training.
- **Deck Ratings** - assist with tasks such as mooring and anchoring the ship, cleaning and maintaining the decks, and performing routine maintenance on the ship's equipment. They work under the supervision of the officers of the deck department. Deck ratings are also known as "unlicensed deck crew" though some positions require specialized certification.

ENGINEERING POSITIONS

Engineering positions refer to the personnel responsible for the maintenance and operation of the ship's propulsion and power systems. This includes the ship's engines, boilers, generators, pumps, and other machinery. The engineering department is critical to the safe operation of the ship and works closely with the deck department to ensure the vessel's overall safety and efficiency.

- **Marine Engineering Officers -** The Chief Engineer and engineering officers on a ship are responsible for managing and maintaining the ship's mechanical, electrical, and propulsion systems. They supervise the operation, repair, and maintenance of the ship's equipment, and work closely with other departments to ensure the ship's safe and efficient operation. Officers have the necessary certifications and qualifications to occupy these positions and are often referred to as "licensed crew".
- **Engineering Cadet** – an engineering cadet is an officer in training and assigned to a vessel for work terms during their formal study sessions with a maritime college. The engineering cadet will be directed by the engineering officers during the work period, typically called "sea time," and benefit from practical, hands-on training.
- **Engineering Ratings** - assist with general and specialized tasks within the engineering team. They are also known as "unlicensed engine crew" though some positions require specialized certification.

STEWARD POSITIONS

The steward department (also referred to as the galley or catering department) consists of service staff responsible for managing the ship's living and dining areas on a ship. They are responsible for procuring and managing the inventory of food, supplies, and equipment needed to support the crew. The steward's department is also responsible for preparing and serving meals and maintaining the cleanliness of the ship's cabins, galley, and other common areas. This essential department is comprised of personnel working in positions of Chief Cook, Second Cook, Steward, Clerk or Storekeeper, depending on the size of the vessel.

MARINE PILOTS

In Canada, once a ship enters a compulsory pilotage area, the ship must have a licensed marine pilot or pilotage certificate holder onboard to guide it through the area. When engaged in pilotage duties, a licensed pilot, or a pilotage certificate holder, has conduct of a ship and is responsible to the Master for the safe navigation of the ship.

Certificate of Competence is a document under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) issued to masters, officers, radio operators and ratings forming part of a watch who meet the standards of competence relevant to their particular functions, level of responsibility on-board and tonnage thresholds that apply.

Marine Medical Certificate is a document that proves that a seafarer meets the required medical and physical standards required by Canadian law. Seafarers must hold either a Marine Medical Certificate or Provisional Medical Certificate and show it when asked.

National Occupational Classification (NOC) is the national reference for occupations in Canada. It provides a systematic classification structure that categorizes the entire range of occupational activity in Canada for collecting, analyzing, and disseminating occupational data for labour market information and employment-related program administration. Occupational information is of critical importance for the provision of labour market and career intelligence, skills development, occupational forecasting, labour supply and demand analysis, employment equity, and numerous other programs and services.

North American Industry Classification System (NAICS) is an industry classification system developed by the statistical agencies of Canada, Mexico and the United States. It is designed to provide common definitions of the industrial structure of the three countries and a common statistical framework to facilitate the analysis of the three economies. NAICS is based on supply-side or production-oriented principles, to ensure that industrial data, classified to NAICS, are suitable for the analysis of production-related issues such as industrial performance.

Canadian Seafarers Pathway Study

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