Labour, Fisheries and Coastal Communities:

Recruitment and Retention in Small-Scale Fisheries in Newfoundland and Labrador

Written by:

María Andrée López Gómez, Memorial University

Nicole Power, Memorial University

Jahn Petter Johnsen, UiT The Arctic University of Norway

Barbara Neis, Memorial University

and Paul Foley, Memorial University

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EXECUTIVE SUMMARY

Introduction

This report presents findings from a research project titled *Recruitment, Training and Retention in Small-Scale Fisheries in Newfoundland and Labrador* that aims to document and better understand the mechanisms underpinning current trends related to recruitment, training and retention in the commercial small-scale fisheries in the province. This project is part of the Ocean Frontier Institute's Module M research program entitled *Informing Governance Responses in a Changing Ocean* that seeks to understand how governance models can work to sustain fisheries and communities in the context of a changing world. The research study was carried out by investigators Dr. María Andrée López Gómez, Dr. Nicole Power, Dr. Jahn Petter Johnsen, Dr. Barbara Neis and Dr. Paul Foley.

Methods

The research study used a mixed-methods research design, including reviews of fisheries related documents and literatures, the development of an online survey aimed at fish harvesters, and interviews with fish harvesters or individuals wanting to enter fish harvesting. Data collection took place in 2020-2021. The fish harvester survey was developed via a Delphi-like method that included participation of investigators, fish harvesters, representatives of the Fish, Food and Allied Workers Union and of the Newfoundland and Labrador Professional Fish Harvester Certification Board. The final survey consisted of 41 items for crew members and 46 items for owner-operators and designated operators. Surveys requested information about recruitment of crew, reasons to work in the fishery, future of the fishery, working conditions and COVID-19 pandemic factors related to recruitment, training and retention. Our sample includes 330 participants (162 owner-operators and 168 crew) who answered a significant portion of the survey. Due to COVID-19 pandemic restrictions, interview participants were recruited via social media and through invitations disseminated by fisheries-related organizations, and interviews were conducted by phone or videocall. Interview scripts contained questions related to current roles, involvement in the fishery, and experiences regarding recruitment, training and retention in the fishery. Eleven interviews were conducted.

Summary of Findings

Overall, the study does not indicate an immediate problem with recruitment or retention of crew or owner-operators in small-scale fish harvesting in the province.

- Owner-operators tended to have access to reliable crew labour through family and community networks, with 79% reporting no problems finding crew and 85% of crew reporting no problems finding a job as crew.
- Owner-operators and crew tended to be very invested in fishing, as demonstrated by lengthy work histories and little turnover in crew. A large majority of owner-operators and crew expected to remain fishing in five years.

Results show that both owner-operators and crew largely reported satisfaction with their fishing incomes, despite significant differences between the two groups, with crew earning substantially lower incomes. However, satisfaction is associated with not working in other occupations.

- 61% of participants reported satisfaction with their fishing income.
- Crab, lobster, cod, shrimp and capelin (in descending order) were the species that provided most fish harvester income in 2019.
- Crew and owner-operators who reported satisfaction with their incomes did not work in other occupations.
- Crew members tended to participate more in other occupations than owner-operators, and among crew, apprentices tended to participate more in other occupations compared to those with level I and level II certification.

Results show that family and community play a major role in recruitment into fishing, and despite the importance of household dynamics in supporting the viability of small-scale enterprises, we also found barriers to recruitment of women and youth in fishing households to enter fisheries.

- In general, owner-operators and crew in this study fished with the same crew, most of whom were family members or came from their community, for long periods and owner-operators relied on family and word of mouth to recruit additional crew when needed.
- Most of the women in our study were apprentices and fished with spouses or partners, and a small minority of men reported an unwillingness to fish with women.
- Most of the survey participants did not encourage their children to enter the fishery. While nearly half of the owner-operators preferred to keep the fishing enterprise in the family and pass it on to the next generation, a large proportion intended to sell their enterprise to the highest bidder.

1. INTRODUCTION

In the last couple of decades, the number of people who fish commercially in small-scale fisheries in Newfoundland and Labrador (NL) has declined dramatically. As of November 2020, there were 9,094 registered fish harvesters with the Professional Fish Harvesters Certification Board (PFHCB), compared to 18,766 registered fish harvesters in the year 2000[1]. This trend is not unique to the province. Research on fisheries across Canada, as well as in the North Atlantic (e.g. Norway, United Kingdom), shows similar trends (Figure 1). In addition to being smaller, the fish harvester labour force in the province is aging (Figure 2). Fisheries researchers and policy makers have raised concerns about the consequences of the reduced and aging labour force of fish harvesters for the sustainability of small-scale fisheries, rural communities and intergenerational recruitment. Research has shown small-scale fisheries contribute to healthy and vibrant communities, and small-scale enterprises play a key role in generating wealth and employment in rural regions (Carruthers et al., 2019; FAO, 2020; Johnson et al., 2018). Therefore, understanding the processes and dynamics surrounding recruitment and retention in fisheries is necessary to develop a governance agenda that works for fisheries, communities and people.

International research has pointed to a number of factors that play a role in the recruitment and retention of fish harvesters. In their study of the reduction in the number of fish harvesters in Norway between 1990 and 2005, Johnsen and Vik (2013) found that a combination of push and pull factors played a role. On the one hand, fisheries closures and industry restructuring reduced capacity and employment opportunities, pushing people out of the industry. On the other hand, fish harvesters were pulled into alternative forms of employment that provided more regular work hours and work-life balance. According to Sønvisen, Johnsen and Vik (2011), reduced capacity, along with relatively high incomes that continue to attract youth, mean that recruitment into Norwegian fisheries has not been a problem. The authors also found that while traditional mechanisms of recruitment to the industry through family and community continued to be important, there had been a shift towards a more professionalized and trained labour force, and toward increased reliance on migrant labour as crew (Sønvisen, Johnsen, and Vik 2011).

[1] The PFHCB provided the data to determine the number of fish harvesters in 2000. The number of fish harvesters in 2020 is based on Tax Filer data provided by Rick Williams.

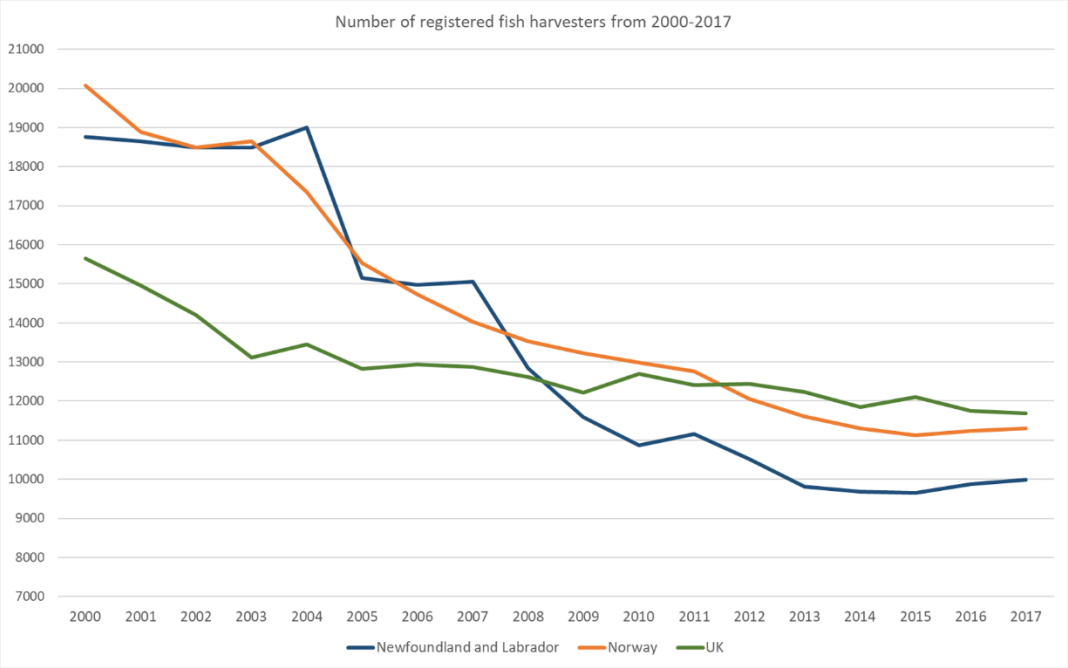

Figure 1. Number of fish harvesters who fish commercially in the North Atlantic Ocean. Numbers reflect all registered fish harvesters including those working in small-scale fisheries and offshore. Data sources: NL-PFHCB, UK sea fisheries annual statistics report and UiT

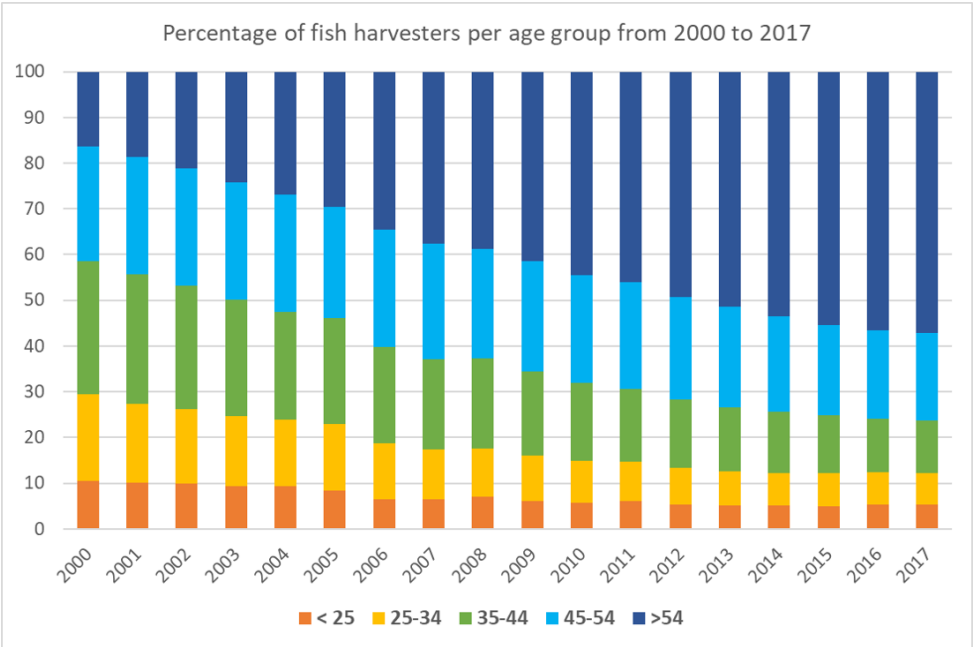

Figure 2. Percentage of people who reported fishing commercially in Newfoundland and Labrador from 2000 to 2017 by age group. Source: Taxfiler data provided by Rick Williams for this report.

In 2018, the Canadian Council of Professional Fish Harvesters (CCPFH) released a comprehensive report documenting and forecasting demographic and labour market trends in the fishing industry across Canada. The report demonstrated that fisheries are a significant source of economic activity, especially in rural regions of the country, but predicted shortages in skilled fisheries labour, which in turn, risk compromising rural, fishery-dependent economies. The aging profile of crew and owner-operators, as well as a decline in new entrants due to low incomes, less interest in seasonal work, especially among youth, and the rising cost of licenses and quotas were identified as contributors to labour shortages. In the case of NL, the CCPFH report found that in their survey of 227 captains/owner-operators in the province, 35% of them found it very difficult to find the experienced crew they needed for their fishing operations, and 12% found it somewhat difficult (CCPFH 2018, p. 32). In other words, almost half (47%) of captains/owner-operators reported at least some difficulties finding crew.

The decline in the number of fish harvesters in NL over time reflects in part regulatory and policy shifts aimed at downsizing and restructuring the industry in the aftermath of fisheries closures in the early 1990s. In 1996, the Department of Fisheries and Oceans implemented the Commercial Fisheries Licensing Policy for Eastern Canada that aimed to reduce capacity and limit access to fishing licenses and enterprises in the under 65 feet fleet through the implementation of a core and non-core classification scheme.[2] Core fishing enterprises consist of a registered fish harvester who operates as head of the enterprise, along with all registered vessels and licences in their name. The policy limits the number of core fishing enterprises and a level II fish harvester may gain entry to the core group by replacing an existing core enterprise through reissuance.

In 1997, the Professional Fish Harvesters Certification Board (PFHCB) became responsible for fish harvester registration in the province, and the DFO uses the PFHCB's certification levels of fish harvesters (apprentice, level I and level II) to determine eligibility for and access to licenses and core status. Advancement through the levels of professional certification is achieved through a combination of training, sea time and fishing income requirements[3]. The Commercial Fisheries Licensing Policy also aims to maintain a separation between the inshore harvesting sector and the processing sector through the Fleet Separation Policy that prohibits the issuance of inshore licences to corporations including fish processing companies, and the Owner-Operator Policy that requires licence holders to be aboard the vessel when fishing for permitted species.[4] In some situations, for example in the case of emergencies or for medical reasons, owner-operators may

[2] Department of Fisheries and Oceans. Commercial fisheries licensing policy for Eastern Canada, https://www.dfo-mpo.gc.ca/reports-rapports/regs/licences-permis/index-eng.htm#ch3_0

[3] PFHCB https://www.pfhcb.com/certification-structure

[4] Department of Fisheries and Oceans. Fisheries Licensing Policy Newfoundland and Labrador Region, https://www.dfo-mpo.gc.ca/reports-rapports/regs/licences-permis/nfld-labrador-tn-labrador-eng.htm

request a substitute operator to take their place. In these cases, a level I or level II fish harvester may be designated to fish the licence aboard the owner-operator's vessel.

Researchers have examined the long-term consequences of industry downsizing and restructuring that started in the 1990s on fish harvesters and their households. In the early years following the groundfish moratoria, exiting the fishery was not a viable or desirable option for many small-scale fish harvesters because of limited local employment options, nor was leaving their communities where they owned houses and had access to subsistence economies and family support. Neis, Gerrard, and Power (2013) documented different strategies used by owner-operators to stay in the industry, including on the one hand, increasing financial investment in the fishing enterprise (e.g., accessing new licenses and quotas for lucrative species such as crab, purchasing more efficient fishing gear and technologies, and bigger vessels), and on the other, drawing on the labour of family, especially wives, to keep down enterprise costs. Downsizing has also disrupted traditional entry pathways for fish harvesters' children, primarily sons, into fishing. Increased financial investment in enterprises and associated debt have pushed harvesters to sell fishing enterprises for market value rather than handing them over to children, and the rising cost of enterprises is increasingly prohibitive for new entrants (Canadian Council of Professional Fish Harvesters [CCPFH] 2018; Foley et al. 2016). Power et al. (2014) document how professionalization, fishing for species such as crab that require vessels to go farther offshore for longer periods of time, and fish plant closures mean there are fewer opportunities for children and youth to participate in fisheries work. Finally, research (CCPFH 2018, Foley et al. 2016) has shown that alongside increased professionalization among fish harvesters, occupational pluralism – while not new -- plays an important role in offsetting the instability of fisheries incomes due in part to volatility in fish prices.

In the last decade, these trends have prompted industry, government and academics to raise concerns regarding potential labour shortages, and current and future recruitment, training and retention of a new generation of owner-operators and crew for the harvesting sector. These trends were the impetus for our research project titled *Recruitment, Training and Retention (RTR) in Small-Scale Fisheries in NL* that aimed to document and better understand the mechanisms underpinning current trends related to recruitment, training and retention in the NL small-scale fisheries. This project is part of the Ocean Frontier Institute's (OFI) Research Project titled *Informing Governance Responses in a Changing Ocean* that seeks to understand how governance models can work to sustain fisheries and communities in the context of a changing world. This research was funded through an award from the Canada First Research Excellence Fund.

The remainder of the report is organized as follows:

- Section 2 provides a description of our research study, including the methods used, and provides a description of the respondents to the online survey and interview participants;
- Section 3 presents the main findings about retention in fisheries, focusing on professionalization and training backgrounds, work histories, incomes and species fished, and future plans of fish harvesters who participated in the study;
- Section 4 presents the main findings about recruitment in the industry, focusing on the contributing factors to entering fishing work, the recruitment of crew, and what is needed for a healthy fishery for future generations;
- Section 5 describes our findings related to the experiences and impacts of the COVID-19 pandemic on fishing and potential implications for recruitment and retention; and
- The conclusion highlights the main take-away findings from the survey and interviews.

2. THE RESEARCH STUDY

The objectives of the *Recruitment, Training, and Retention (RTR) in Small-Scale Fisheries in NL* project included:

> (1) documenting current trends in recruitment, training and retention of the workforce in fish harvesting in the province of NL, and
> (2) examining how interactions between governance and other factors (ecological, economic, social-cultural) shape the intergenerational resilience of small-scale fisheries.

The RTR project used a mixed-methods research design that was conducted in phases. We started by reviewing the literature, including scientific articles, grey literature and government and industry reports. We collected fisheries-related secondary data from labour market reports, as well as fisheries organizations (e.g., PFHCB) and the Department of Fisheries and Oceans, including the number of registered fish harvesters in the province and the number of fishing licenses over time. Two earlier reports present our analysis of the literature and secondary data. The first titled, Taking Stock of Recruitment, Training, and Retention Literature in Newfoundland and Labrador Fishery from 1980s to Present, describes what we knew at the time of writing about recruitment, training and retention in the province's fisheries and processing industries, and drew on publicly available information, industry reports, secondary data from PFHCB and DFO, as well as academic literature. The second report titled, Taking Stock of Newfoundland and Labrador Research on Gender, Fisheries and Aquaculture, describes the state of knowledge on the role of gender in fisheries and aquaculture industries, and fisheries communities in NL and elsewhere, reviews the relevant local and international literatures, and provides a gender and age profile of fish harvesters at the time of writing. Results from these reports and consultations with fisheries-related organizations informed the content and design of a fish harvester online survey and a qualitative interview script. The survey was aimed at fish harvesters (owner-operators and crew) and the interviews were aimed at fish harvesters, new entrants and potential entrants. The proposal for this research project was reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. This report summarizes the key results from the online survey and interviews.

2.1 Description of Research Methods

Online Survey

We designed a survey to assess which factors play a role in recruitment and retention of people in small-scale fisheries in Newfoundland and Labrador (NL). Our point of departure was a survey designed by OFI collaborators Jahn Peter Johnsen and Signe Sønvisen that focused on recruitment and employment in Norwegian fisheries. Some of the findings from the Norwegian survey are discussed in the introduction (Sønvisen et al. 2011). We were not able to adapt the Norwegian survey to the NL context as many of the questions for Norway were focused on local policies and contexts that are significantly different from the Canadian context. However, the Norwegian survey served as an example of broad issues (e.g. factors for choosing fishing as an occupation, future intentions for fishing, recruitment strategies, working conditions) that may be related to recruitment and retention of people in small-scale fisheries, issues that we considered when designing the NL survey.

For the NL survey, the research team designed multiple-choice questions based on our review of scientific articles, government reports, grey literature, and secondary data, as well as consultations with representatives from fisheries-related organizations. We established a set of broad themes for the survey (e.g., motivations for working in the fishery, factors that affect work in the fishery, the future of the fishery, working conditions, socio-demographics, COVID-19 questions) and developed related survey items. Next, we used a Delphi-like method where project investigators and fisheries experts (e.g. fish harvesters, representatives of the Fish, Food and Allied Workers Union [FFAW-Unifor] and the PFHCB) discussed the relevance of the items to include in the survey and proceeded to edit, exclude and include survey items. Preliminary versions of the survey were pilot tested with fish harvesters over the phone to assess comprehension and relevance of items. The final survey consisted of 41 items for crew members and 46 items for owner-operators and designated operators. Questions covered topics such as recruitment of crew, reasons to work in the fishery, future of the fishery, working conditions and how the COVID-19 pandemic affected issues related to RTR. The survey was administered online via the Qualtrics platform and surveys were programmed to include items relevant to each case (e.g. do you have children? Answer: no, then some questions would be skipped).

We asked participants “What was your primary role in the fishery in 2019, prior to the pandemic?” and answer options included five categories: owner-operator, crew member in owner-operator vessel, crew member in a company-owned vessel, designated operator and owner who designated an operator. For purposes of analysis, we grouped these five categories into two groups: owner-operators and crew members. Because part of their task is to hire crew

members, designated operators were grouped with owner-operators and owners who designated an operator (Group 1). Crew members who worked for a company vessel or an owner-operator vessel were grouped together as crew (Group 2).

The Professional Fish Harvester Certification Board (PFHCB) distributed the invitation to participate in the online survey via their listserv. The invitation was sent November 26th, 2020 via the PFHCB e-mail to approximately 5,350 e-mail addresses. A reminder to participate in the survey was sent January 5th, 2021 via the PFHCB e-mail address. In addition to e-mails, we published a recruitment ad in the December 2020 issue of the Fish, Food and Allied Workers magazine inviting members to participate in our survey. A paper copy of the FFAW magazine is delivered to FFAW members' home addresses. We provided an incentive to participate in the survey: optional participation in a draw for one survival suit valued at $680. The survey closed February 28th, 2021, and the prize was drawn on April 28th, 2021.

Interviews

Results from the literature review and consultations with fisheries-related organizations informed the design of the interview schedule for fish harvesters, new entrants and people interested in entering fisheries work. Table 1 shows the four sections included in the interview schedule with some examples of questions included in each section.

Table 1. Interview sections and sample questions

Section	Sample questions
1. Introductory questions	▪ What is your current role? ▪ How long have you worked on your current role? ▪ In what region of the province?
2. Recruitment questions	▪ How did you enter/become involved/ become interested in the fishery? ▪ Has any fisheries-related organization played a role in your entry to fishing? ▪ How do you recruit crew? Have you found it easy/difficult to recruit crewmembers at different times?
3. Training questions	▪ How did you learn to do your work in the fisheries? ▪ Have you done any formal training?
4. Retention questions	▪ Do you have plans to continue fishing? ▪ What factors make it difficult to stay in the fishery? ▪ What regulations and policies have played a role in remaining or not in the fishery?

We also included questions about the COVID-19 pandemic and its impacts on recruitment, training, retention and future plans of fish harvesters.

For interviews, we targeted people who worked as fish harvesters, who were new entrants in the fishery or who were interested in entering fisheries work. Due to the COVID-19 pandemic and related restrictions to conduct in-person research, recruitment protocols were modified. Instead of traveling to coastal communities and recruiting participants in person with the help of fisheries-related organizations and people interested in participating in our research, we recruited participants using social media platforms. Interview invitations were posted on social media (e.g. Facebook and Twitter) using groups exclusively targeting people working in fisheries in NL or interested in entering fisheries work in NL. We also requested fisheries-related organizations in the province to disseminate the interview invitation to their members. The FFAW, the Marine Institute and some town councils agreed to share our invitation to participate

in the interviews for our study. Before the COVID-19 pandemic, we had planned to conduct between 20 and 25 interviews in-person. We were required to adjust our research to reflect COVID-19 protocols (at the time this meant no in-person research) and in the end we completed just 11 interviews, conducted by phone or by videocall. In all but one case, the audio of the interviews was recorded and transcribed. The interviewer also took notes during the interviews.

Interviews took place between October 2020 and June 2021. Interviews ranged between 18 and 120 minutes in length, with five out of 11 interviews lasting one hour or more. Interviews were semi-structured which allowed participants to direct the conversation to a certain degree. This structure enabled us to delve into topics covered in the survey in order to explore in more detail the processes and dynamics of RTR and fisheries, and opened the possibility to learn about things not considered or included in the survey.

2.2 Description of Study Participants

Survey Participants

For the survey, 484 people accessed the survey, 368 consented to participate, and 330 participants answered a significant portion of the survey. At the time of the survey, of the 330 respondents, about half were owner-operators (n=162) and the other half, crew members (n=168). As Table 2 shows, survey respondents were mostly men. Thirteen percent (n=44) of respondents were women and 86.6% (n=285) were men (Table 2); one person left blank the question about gender. The average age of participants was 48 years (the average age for crew was 43 years and for owner-operators, 53 years). On average, respondents had been fishing for a living for 26 years (SD=15).

Table 2. Descriptive statistics of survey participants (n=330)

	Owner-operators	Crew members	All fish harvesters
	n (%)	n (%)	n (%)
Gender			
Women	9 (5.59)	35 (20.83)	**44 (13.37)**
Men	152 (94.41)	133 (79.17)	**285 (86.63)**
Age			
Mean (SD)	52.7 (11.1)	42.9 (13.1)	**47.7 (13.1)**
18-25	0 (0)	15 (8.93)	**15 (4.57)**
26-35	11 (6.88)	40 (23.81)	**51 (15.55)**
36-45	32 (20)	43 (25.6)	**75 (22.87)**
46-55	47 (29.38)	37 (22.02)	**84 (25.61)**
56-65	52 (32.5)	27 (16.07)	**79 (24.09)**
66-75	16 (10)	6 (3.57)	**22 (6.71)**
>75	2 (1.25)	0 (0)	**2 (0.61)**
Number of years fishing			
Mean (SD)	33.7 (11.5)	18.9 (14.5)	**26.1 (15.1)**
<5	1 (0.63)	31 (18.79)	**32 (9.88)**
5-10	1 (0.63)	24 (14.55)	**25 (7.72)**
11-20	21 (13.21)	41 (24.85)	**62 (19.14)**
21-30	38 (23.9)	34 (20.61)	**72 (22.22)**
31-40	47 (29.56)	17 (10.3)	**64 (19.75)**
>40	51 (32.08)	18 (10.91)	**69 (21.3)**
Total	162	168	330 (100)

The proportion of owner-operators in our study (49%) was greater than the proportion in the population of registered fish harvesters, according to PFHCB 2017 data (32%). Respondents to the online survey were also younger than the overall population of registered fish harvesters in NL, which may in part reflect the online survey delivery method (as opposed to a landline telephone survey for example). Data provided by the PFHCB show that 63% (n=5,810) of all registered fish harvesters were over 50 years of age at the time the online survey was administered. In this study's sample, only 45.4% (n=149) of respondents were older than 50 years of age. Out of 330 participants, only 12 (3.6%) were younger than 25 years of age. Nevertheless, the age profile of fish harvesters in the survey (30% over age 55 and about 50% ages 36 to 55)

reflects age trends of fish harvesters in all of Canada, where the percentage of fish harvesters aged above 55 is increasing compared to the year 2000 when 11% of fish harvesters were above 55 years of age (Canadian Council of Professional Fish Harvesters (CCPFH) 2018).

The percentage of women participants in the survey was underrepresented compared to PFHCB percent of registered women fish harvesters (23% in 2016) and number of women who reported employment earnings from fish harvesting in 2018 (29.6%)[5]. In our study, out of 330 participants, only 13% (n=44) were women, most of them (80%, n=35) worked as crew and only a small number (20%, n=9) worked as owner-operators. The distribution of roles was significantly different for men, with about half working as owner-operators (n=152, 53.3%) and under half (n=133, 46.7%) as crew. Women were also younger on average than men (M=43 vs. M=48)but among crew participants, women and men crew had the same average age (M=43).

The majority of respondents (87%, n=287) fished in a vessel under 65 feet in length, 62% (n=204) fished in a vessel under 40 feet in length and most (66%, n=217) reported fishing inshore. Most women crew (85%, n=29) worked in vessels of 40 feet or less, while fewer men crew (45%, n=59) worked in vessels of 40 feet or less. No women crew worked in a vessel of 90 feet or longer.

Survey participants by region

The province of Newfoundland and Labrador is divided into 20 economic zones. The provincial government created a partnership with the Newfoundland and Labrador Statistics Agency to create the information systems "Community Accounts" which also provides population data at the level of economic zones (Figure 3). We were able to identify the economic zones in which respondents live and fish. Half of respondents lived in just four of the 20 economic regions in the province: regions 7, 14, 16, and 17 (Figure 4). Only 3 fish harvesters reported that they lived in Labrador (regions 1 and 5). Most fish harvesters (86%) reported that they fished in the same community where they lived in 2019 (Figure 5).

[5] Data provided by Rick Williams from StatsCan Tax Filer Data

Figure 3. Economic Zones in Newfoundland. Source: Newfoundland and Labrador Department of Finance and NL Statistics Agency. Reproduced with permission.

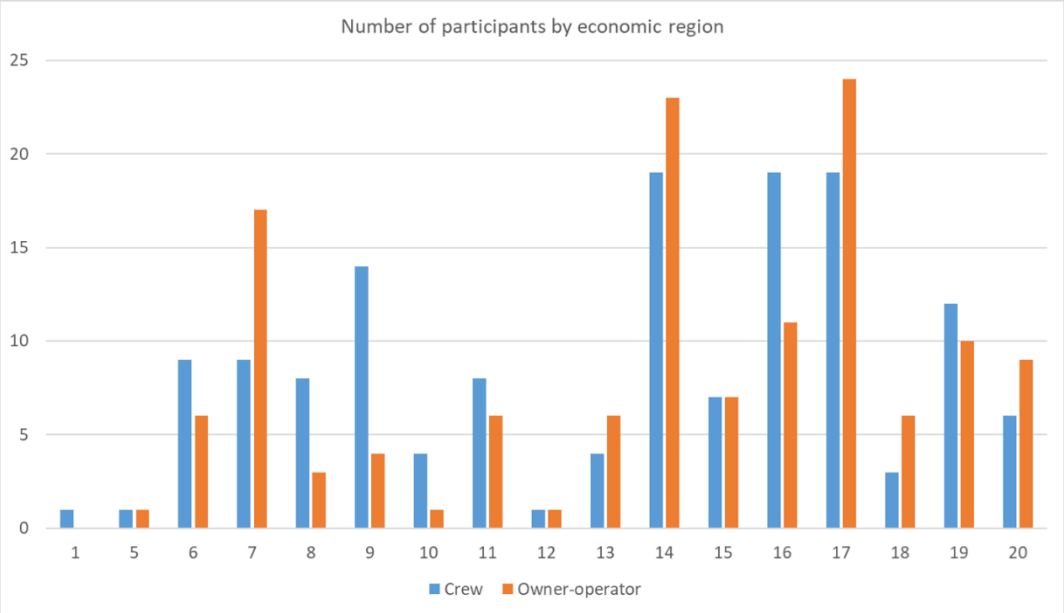

Figure 4. Number of participants by economic region and role in the fishery.

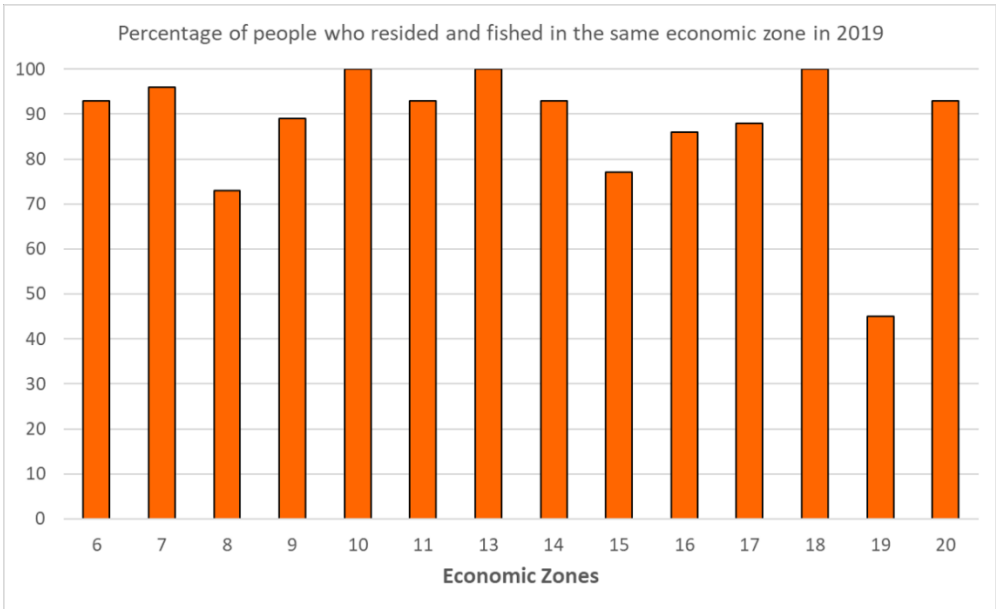

Figure 5. Percentage of people who resided and fished from the same community during 2019. Figure does not include regions where less than 5 people lived.

Interview Participants

We conducted 11 interviews (Table 3). Most participants were recruited via social media. At the time of the interviews, one participant was younger than 30, five participants were 30 to 39 years old, one participant was between 40 and 49 years old and four participants were older than 54 years. Three participants self-identified as women, six participants were owner-operators and one worked in the offshore sector as captain. Two participants worked as crew members, one was a designated operator and one worked in a fish plant, but wanted to become an owner-operator.

Table 3. Characteristics of interview participants

	Role	*Gender*	*Age*	*Marital Status*	*Children*
1	Masters student at Marine Institute	Woman	25	Single	No children
2	Owner-operator	Man	>60	Married	Yes
3	Owner-operator	Man	64	Married	Yes, 3
4	Owner-operator	Man	55	Married	Yes, 2
5	Owner-operator	Woman	41	Married	Yes, 3
6	Seeking to become owner-operator	Man	35	Married	Yes, 2
7	Owner-operator	Man	63	Married	Yes, 2
8	Designated operator	Man	38	Single	Yes 2
9	Crew member	Man	39	Married	Yes, 2
10	Captain in offshore vessel/owner-operator	Man	37	Single	No children
11	Crew member	Woman	33	Cohabits with partner	No children

3. RETENTION IN SMALL-SCALE FISHERIES

3.1 Professionalization and Training of Participants

Professional certification is determined by completion of training, accumulation of sea time, and fishing income and may tell us something about commitment to fishing given that certification is required to access licences, quotas and enterprises. We collected certification levels only for crew members as we assumed that owner-operators have a level II certification. With that assumption, 64% of all participants, both crew and owner-operators, are level II, 11% are level I, and 23% are apprentices. This is slightly different from 2019 data from the NL-PFHCB that shows the distribution of registered fish harvesters across the certification structure as 59% level II, 6% level I, and 35% apprentices. Results showed that half of crew had level I (21%) or level II (29%) certification, and almost half of crew (45%) had an apprentice level. Apprentices are on average older than crew with level I certification and have been fishing for a living on average for 15 years (1 more year than harvesters in level 1) (Table 4). Among crew members, most women crew had an apprentice level certification (69%, n=24), only one woman (3%) had a level II certification and 8 women (23%) had a level I certification (Figure 6). Among men crew, 39% (n=52) had an apprentice level, 21% (n=28) had a level I certification, and 35% (n=47) had a level II certification.

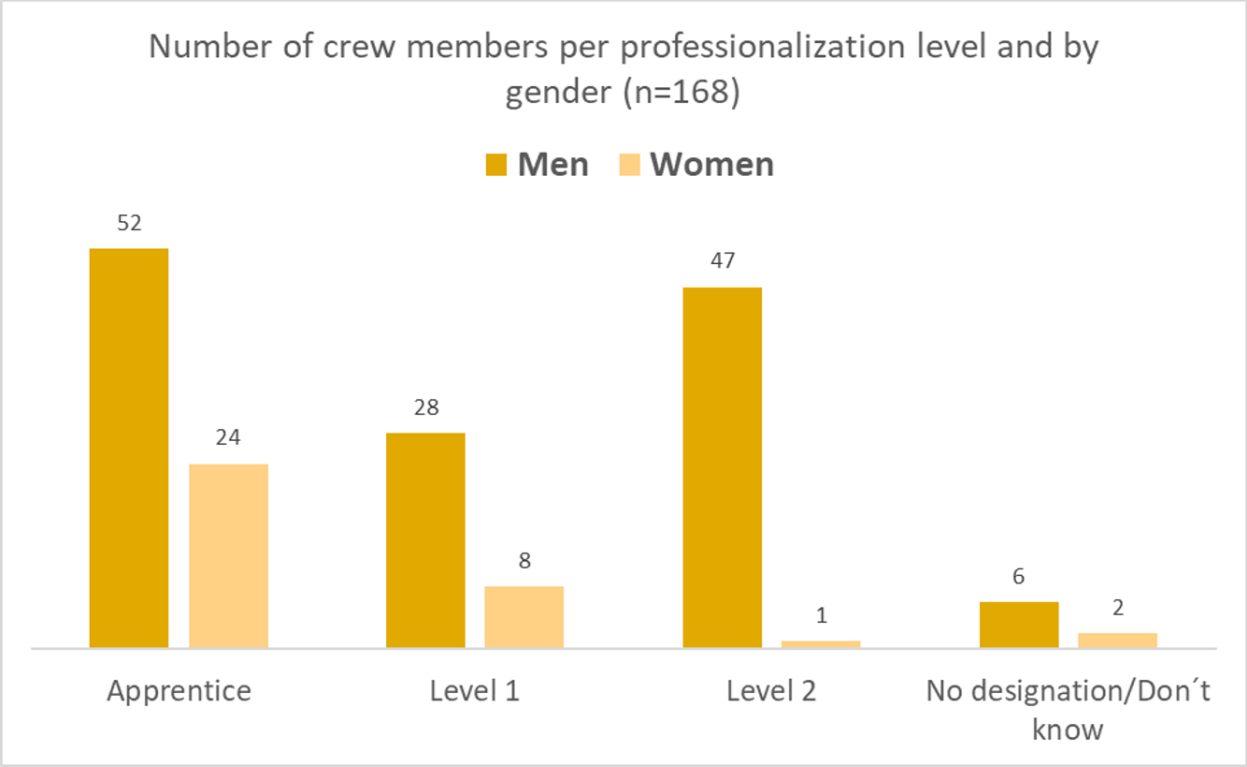

Figure 6. Number of crew members per professionalization level and by gender

Table 4. Certification level, age and number of years fishing for a living for crew members and by gender					
	Apprentice	**Level I**	**Level II**	**No designation/ Don´t know***	**Total**
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Number of crew					
Men	52 (39)	28 (21)	47 (35)	6 (5)	133 (100)
Women	24 (69)	8 (23)	1 (3)	2 (6)	35 (100)
All	76 (45)	36 (21)	48 (29)	8 (5)	168 (100)
Age M (SD)					
Men	43 (14)	37 (11)	48 (12)	31 (13)	
Women*	40 (12)	48 (14)	41 (NA)	33 (6)	
All	42 (13)	39 (13)	48 (12)	31 (11)	
Years fishing M (SD)					
Men	17 (15)	15 (11)	30 (13)	7 (6)	
Women*	11 (11)	14 (8)	11	2	
All	16 (14)	15 (11)	29 (13)	5 (7)	

*There are less than 30 people per category

We asked survey respondents to select training/courses they completed from a list of items. Most survey respondents have completed Marine Emergency Duties (MED) (79%), Marine First Aid (60%) and Radio Operator (50%) training. Respondents identified other courses less often, such as Fishing Master IV (26%), Navigation (23%) and Prior Learning Assessment and Recognition (PLAR) credits (12%) (See Figure 7).

Figure 7. Number of people who completed training by role in the fishery

Figure 8 shows the percentage of crew who completed each type of training according to their certification level. Perhaps not surprisingly, among apprentices, Marine Emergency Duties courses were most popular, while crew with a level II certification have completed a greater range of courses such as Radio Operator Certification (ROC) and Fishing Master III or higher.

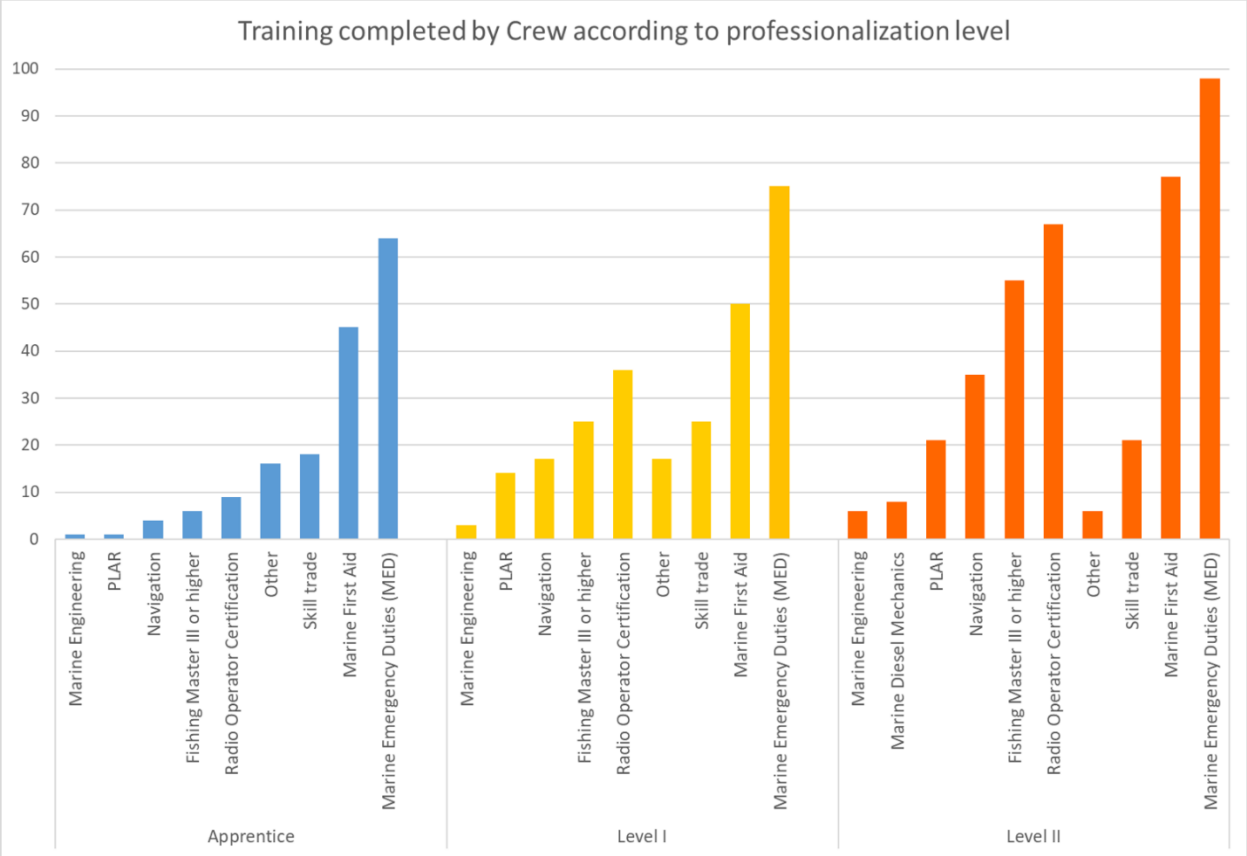

Figure 8. Number of crew who completed training according to their certification level

3.2 Work Histories

In general, respondents in the survey – owner-operators and crew alike – reported they started fishing at a young age, have been fishing for a long time, and have stayed with the same crew/owner-operator for long periods. Almost half of respondents started fishing for a living before they turned 18 and the majority had already started fishing before age 26. Crew members started fishing on average 5 years later than owner-operators, 24 years compared to 19 years old. Compared to men, women started fishing at an older age (average age= 29) (Table 5).

Table 5. Median and average age when fish harvesters started fishing for a living by job position and by gender				
	Owner-operators		**Crew members**	
	Men (n=149)	***Women (n=9)***	***Men (n=132)***	***Women (n=33)***
Median age	17	20	18	28
Mean age (SD)	18 (6)	23 (7)	22 (9)	31 (10)
	Owner-operators (n=159)		**Crew members (n=165)**	
Median age	17		20	
Mean age (SD)	19 (6)		24 (11)	

On average, fish harvesters had been fishing for a living for 26 years. Crew reported working with the same enterprise on average for 10 years (Table 6), and owner-operators reported owning their enterprise on average for 23 years. However, women reported fishing on average fewer years (M=15) than all men (M=28) and fewer years than men crew (M=21). This finding likely reflects the fact that women tended to enter fishing at an older age. Overall, 31% (n=103) of survey respondents said they had people under age 25 fishing with them in 2019. Just 14.4% (n=23) of owner-operators said they lost crew to other work in 2019. Some lost their crew to other enterprises (n=4) and to offshore fishing (n=5), and some had crew that left the community (n=3) or that retired (n=1).

Table 6. Amount of time working as fish harvesters, owner-operator or crew by gender				
		Years fishing for a living M (SD)	Years working as owner-operator M (SD)	Years working in the same enterprise you worked on in 2019 M (SD)
Owner-operators	***Men (n=149)***	34 (12)	23 (14)	--
	Women (n=9)	26 (8)	15 (12)	--
Crew	***Men (n=132)***	21 (15)	--	10 (10)
	Women (n=33)	11 (10)	--	10 (11)
All Women		15 (11)	--	--
All Men		28 (15)	--	--
All Owner-operators		34 (12)	23 (15)	--
All Crew		19 (15)	--	10 (10)

Participants were asked if they had performed other roles in the fishery during the year 2019. Almost 25% of owner operators (n=40) also worked as crew members on another owner-operator vessel and 4% of crew (n=6) worked as owner-operators during the season (Table 7). In this survey, 25% (n=80) of respondents reported they participated in other occupations during 2019. Crew members (33%) tended to participate more in other occupations than owner-operators (17%) ($p<0.01$). Other occupations include work in oil and gas, construction, carpentry, welding, commercial shipping, offshore sector, as instructors, as labourers and heavy equipment operators. A closer look at crew and certification level shows that a higher percentage of apprentices (39%) than level I (28%) and level II (27%) fish harvesters was engaged in other occupations in 2019, but the differences are not statistically significant.

Table 7. Other roles in the fishery

	Owner-operator (n=162)	**Crew members (n=168)**	
		In owner-operator vessel (n=138)	**In company vessel (n=30)**
	n (%)	**n (%)**	**n (%)**
Crew member in an owner-operator vessel	40 (24.7)	--	8 (26.7)
Crew member in a company vessel	2 (1.2)	3 (2.2)	--
Owner-operator	--	6 (4.4)	1 (3.3)

3.3 Satisfaction with Income in Small-Scale Fisheries

Satisfaction with income from fishing may influence retention in fisheries work. Sixty-one percent of respondents reported being satisfied with their income from fishing in 2019 (Figure 9) and there were no differences between crew and owner-operators, although data show that there were significant differences in income between the two groups (Table 8).

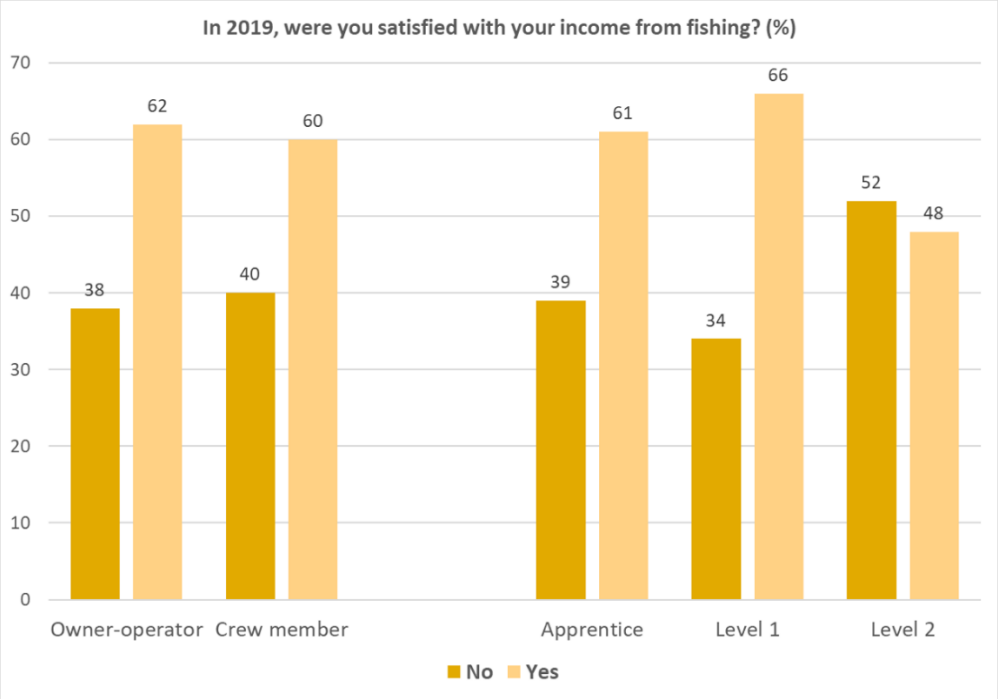

Figure 9. Income satisfaction by role and by professionalization level only for crew (Percentage)

About 40% of crew made less than $20,000 from fishing in 2019 and only 23% made more than $50,000. More than half of owner-operators (n=78) earned more than $50,000 in 2019 from fishing, and among this 54%, 21 people earned more than $100,000.

Table 8. Gross fishing income and income from other sources for crew and owner-operators

Gross income from fishing		
Income brackets	**Owner-operators n (%)**	**Crew members n (%)**
< $20,000	10 (7)	62 (41)
$21,000 - $30,000	20 (14)	25 (17)
$31,000 - $50,000	36 (25)	28 (19)
> $50,000	78 (54)	35 (23)
Total	***144 (100)***	***150 (100)***

Gross income from other sources		
Income brackets	**Owner-operators n (%)**	**Crew members n (%)**
<$5,000	57 (50)	54 (42.19)
$5,000 - $9,000	15 (13.16)	16 (12.5)
$10,000 - $19,000	14 (12.28)	22 (17.19)
>$19,000	28 (24.56)	36 (28.13)
Total	***114 (100)***	***128 (100)***

We took a closer look at satisfaction with income from fishing among crew members and found statistically significant differences between men and women. A higher percentage of women were satisfied with their income than men crew (Table 9), however the findings need to be interpreted with caution as very few women (n=32) responded to this question, compared to 125 men crew who gave responses.

Table 9. Crew responses to the question: In 2019, were you satisfied with your income from fishing?				
	Women	**Men**	**Total**	**p-value**
No	7 (21.88)	56 (44.8)	63 (40.13)	<0.05
Yes	25 (78.13)	69 (55.2)	94 (59.87)	
Total	***32 (100)***	***125 (100)***	***157 (100)***	

Satisfaction with income from fishing significantly differed between groups who engaged and did not engage in other occupations in 2019 for all fish harvesters (Table 10). The pattern of responses shows that fish harvesters who did not work in other occupations during the year were more likely to be satisfied with their income, but if we zoom in to look at responses of crew and owner-operators separately, the relationship disappears. However, trends show that a higher percentage of crew (73%) and owner-operators (88%) who were satisfied with their income from fishing did not engage in other occupations in 2019.

Table 10. Worked in other occupations in 2019 and satisfaction with income

Did you work in other occupations in 2019?	**Where you satisfied with your income from fishing?**		
	No	***Yes***	***p-value***
	n (%)	n (%)	
Crew			
No	37 (59)	68 (73)	0.06
Yes	26 (41)	25 (27)	
Owner-operators			
No	44 (76)	84 (88)	0.062
Yes	14 (24)	12 (12)	
All			
No	81 (67)	152 (80)	<0.01*
Yes	40 (33)	37 (20)	

***Statistically significant**

The survey asked fish harvesters to identify the species that provided most of their income in 2019. Some respondents reported more than one species and up to five species (Table 11). More crew (75%) than owner-operators (64%) reported one species. We performed a Kruskall-Wallis test, a rank-based non-parametric test to determine if there are differences in income brackets based on the number of species reported and did not find any differences. In other words, income was not correlated with reporting a higher number of species.

Table 11. Number of species reported that provided most income in 2019 by role in the fishery			
Number of species	**Crew**	**Owner-operators**	**Total**
1	112 (75.17)	97 (64.24)	209 (69.67)
2	31 (20.81)	36 (23.84)	67 (22.33)
3	4 (2.68)	17 (11.26)	21 (7)
4	2 (1.34)	0 (0)	2 (0.67)
5	0 (0)	1 (0.66)	1 (0.33)
Total	149 (100)	151 (100)	300 (100)

Findings from the survey showed that even though owner-operators and crew may fish the same species, their incomes are different. Owner-operators who made more than $100,000 mostly fished for crab and additional species, two fished for lobster and four for sea cucumber. In both groups with a response rate of 91% (n=300), most participants reported crab (53%), lobster (25%), cod (13%), shrimp (7%) and capelin (7%) as the species that provided most of their income in 2019 (Figure 10).

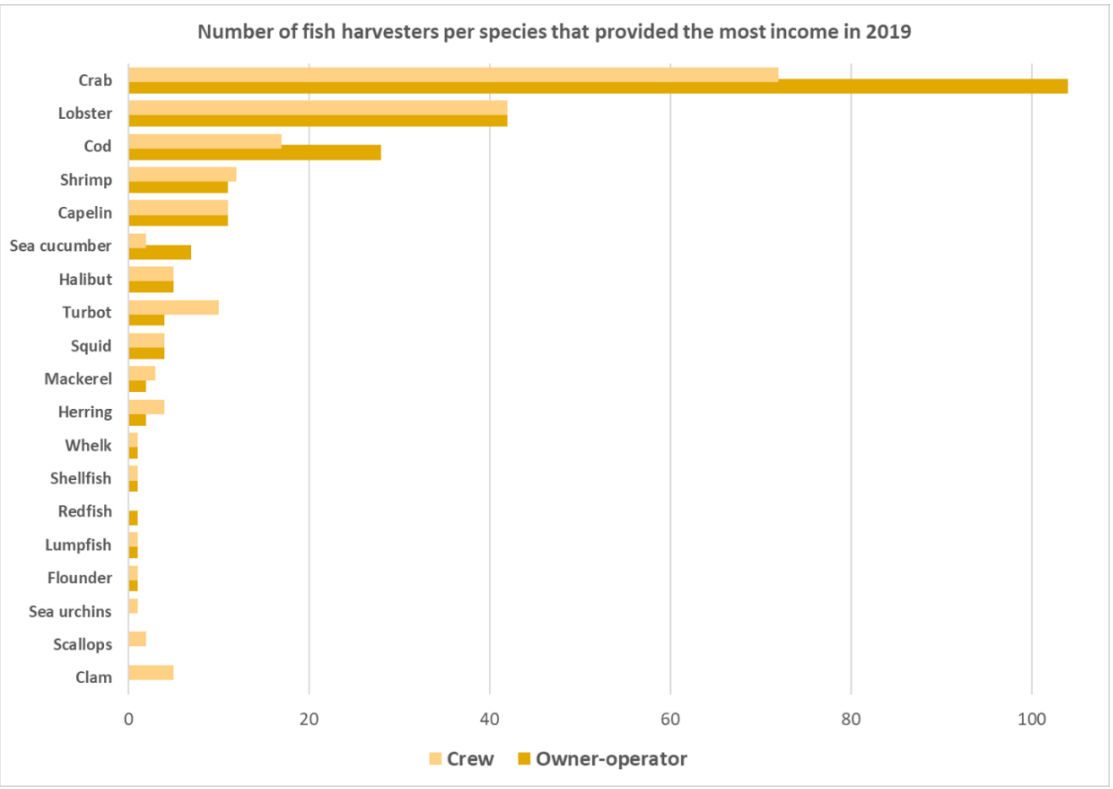

Figure 10. Species fished that provided most income in 2019 by role in the fishery

Figure 11 shows the proportion of people within each income bracket that fished for any of the main species reported: shrimp, capelin, cod, lobster and crab. Lobster and crab were the species that provided the most income for crew who earned less than $20,000, and crab and shrimp were the species that provided the most income for crew who made more than $50,000 a year. Very few owner-operators (7%) reported earning less than $20,000 from fishing and those who did, fished for cod, lobster and crab. Crab and lobster provided the most income for those earning greater than $50,000. Even though few owner-operators reported fishing mainly for capelin (n=11) and for shrimp (n=11), a larger percentage within each group had higher wages. Crab was reported to be the main species for 64% of owner-operators, and for those who fished crab, 57% (n=55) earned more than $50,000.

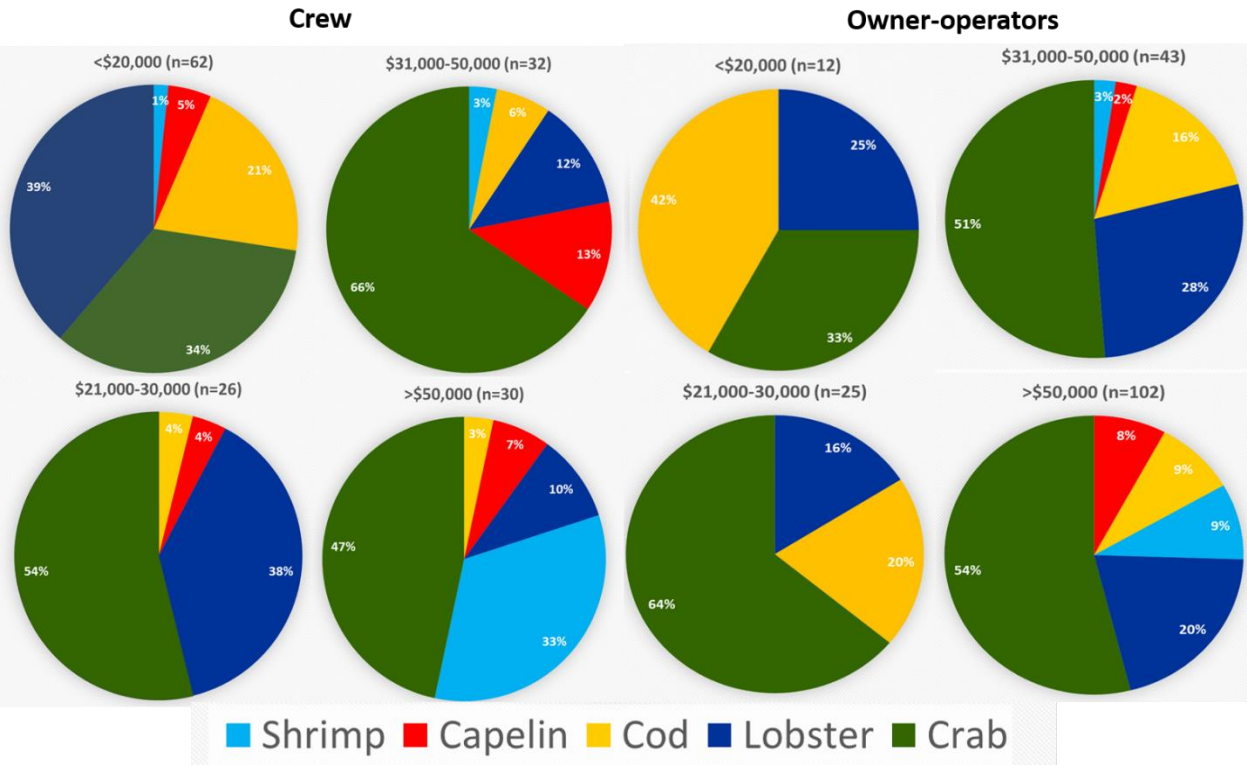

Figure 11. Proportion of income from fishing by species that provided most income in 2019 for crew and for owner-operators. The figure depicts percentages of the five most fished species.

3.4 Factors Influencing Work in the Fisheries

In the survey, respondents were asked how a number of different factors (e.g., policies, fish prices) had affected their work in the fishery during the past 10 years (Figure 12). Overall, most crew and owner-operators reported that access to Employment Insurance (EI), quota cuts and COVID-19 affected their work negatively in the past 10 years. Cost of enterprises also ranked among the top choices among crew (44%) and owner-operators (46%) as negatively impacting work. In general, interview participants described a great deal of uncertainty in the fishery (e.g., changing quota limits), and there was a general skepticism or mistrust among interviewees regarding fisheries management. As one harvester put it, "*But the only stress into the fishery now, is wondering what rule is the Professionalization going to come up with and what rule is DFO going to come up with, in order to push me out? That's the only stress into the fishery now. What next*?"

Most crew (56%) and owner-operators (56%) regarded permission to combine enterprises as affecting their work in a positive way. Enterprise combining is a policy that allows fish harvesters with core enterprises to acquire another enterprise, which in turn can no longer be reissued in the future.[6] In other words, enterprise combining allows further consolidation of fishing access. There were no differences between owner-operators and crew members in how they assessed the combining policy. Both groups perceived the policy as being positive for their work. However, there were significant differences ($p<0.01$) in how they perceived the buddy-up policy. The buddy-up policy allows two license holders to fish a particular species using the same gear type from one vessel.[7] A higher percentage of owner-operators (62%) viewed the buddy-up policy as negatively affecting their work in the past 10 years, while only 40% of crew members saw it as negatively impacting their work.

[6] Department of Fisheries and Oceans. Fisheries Licensing Policy Newfoundland and Labrador Region, https://www.dfo-mpo.gc.ca/reports-rapports/regs/licences-permis/nfld-labrador-tn-labrador-eng.htm
[7] Department of Fisheries and Oceans. Fisheries Licensing Policy Newfoundland and Labrador Region, https://www.dfo-mpo.gc.ca/reports-rapports/regs/licences-permis/nfld-labrador-tn-labrador-eng.htm

Interviews may shed some light on this difference in perception. Some interview participants described positive aspects of the buddy-up policy, especially as it relates to enhancing the safety of fish harvesters who would otherwise fish alone, and as a strategy to decrease fishing related expenses. One harvester stated: "*Like, two men can get a boat between them, and they use the two enterprises on that boat. It's a grand idea, that one. And even though I don't do it, that's a great idea, that maybe when my son gets to take over, he can get the Buddy-up and that will be a big, big help. And I'm so glad they brought that in."* At the same time, some participants expressed a sense of unfairness regarding the application of the buddy-up policy, allowing buddy-up arrangements with some species and in some areas, but not in others, and excluding designated substitute operators. As one participant put it: "*It's kind of weird, because you're allowed to buddy up with certain species, you're allowed to buddy up in certain areas, but you can't buddy up with certain species and certain other areas. So, it's kind of a lot of inequality going on in the fishery.*"

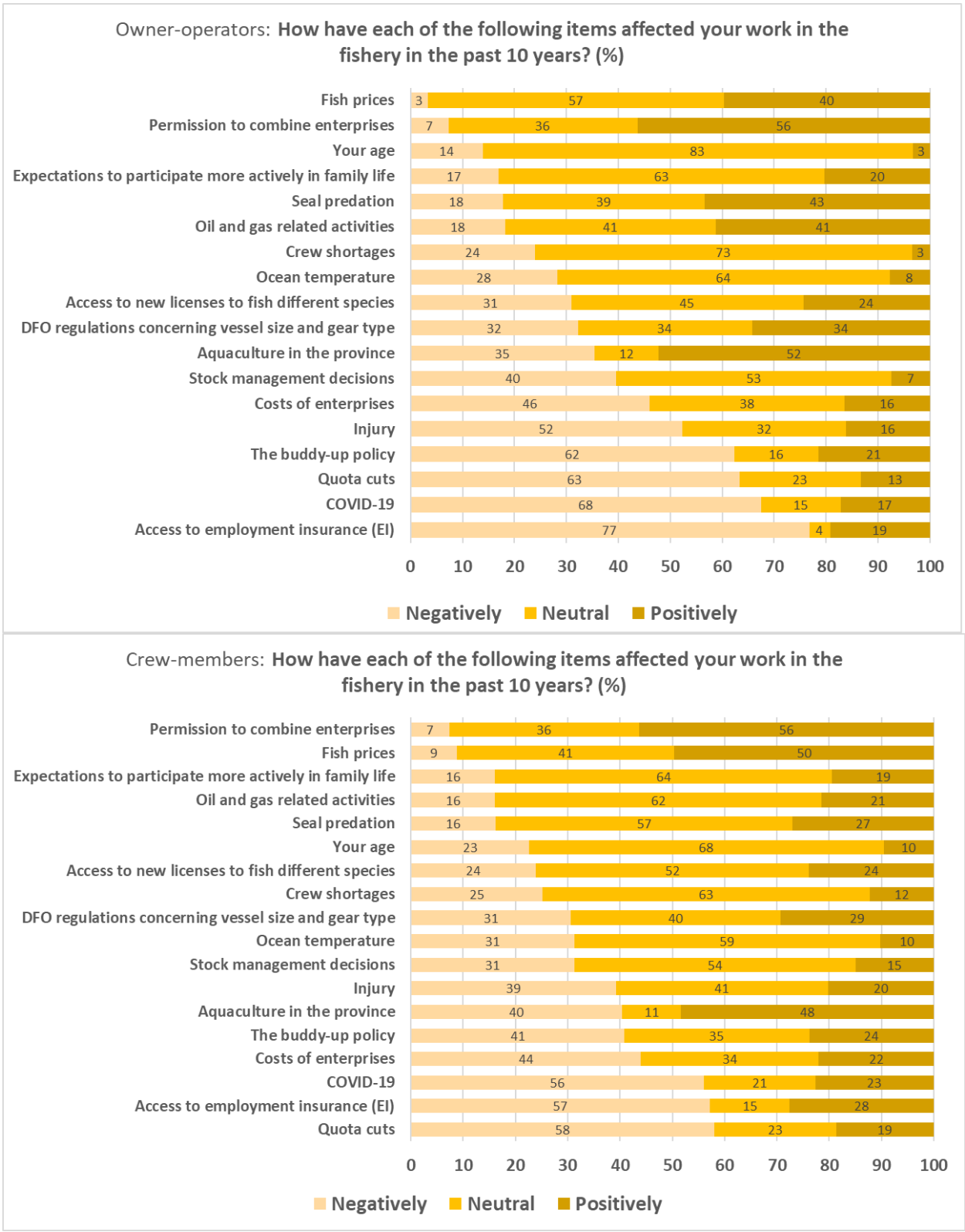

Figure 12. Factors that affected work in the fishery in the past 10 years by role

Both owner-operators and crew also ranked fish prices as positively affecting their work in the fishery in the past 10 years. This assessment may reflect in part the trend of rising prices for key species (e.g., crab) at the time of participating in the survey (Figure 13) – a trend that has turned downwards since the survey for crab.

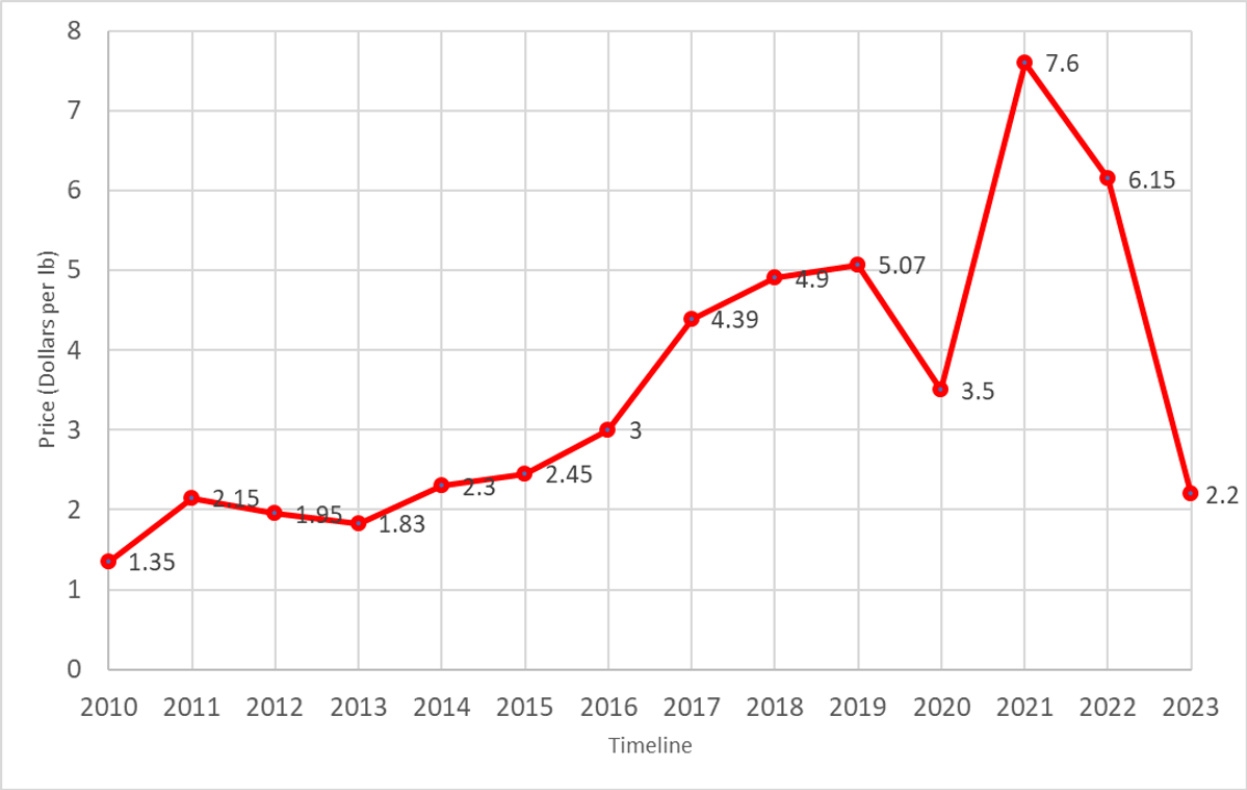

Figure 13.Prices as reported by the Standing Fish Price Setting Panel for crab from 2010 to 2023 (dollars per lb have not been adjusted for inflation). Source: NL-Government (https://www.gov.nl.ca/fishpanel/pricingdecisions/index.html#2020) and FFAW website

3.5 Future Plans

Survey participants were asked "What do you think you will be doing in five years?" and were given multiple answer options. A large majority (n=184) reported they want to keep doing the same that they do now. More crew members (n=56, 33%) than owner-operators (n=28, 17%) would like to make investments to acquire a (larger) fishing enterprise (Figure 14). For crew members, age was significantly related with the odds of making plans to acquire a fishing enterprise, with younger fish harvesters more willing to make investments. For owner-operators, younger age and more years fishing were related to higher odds to invest in a larger enterprise.

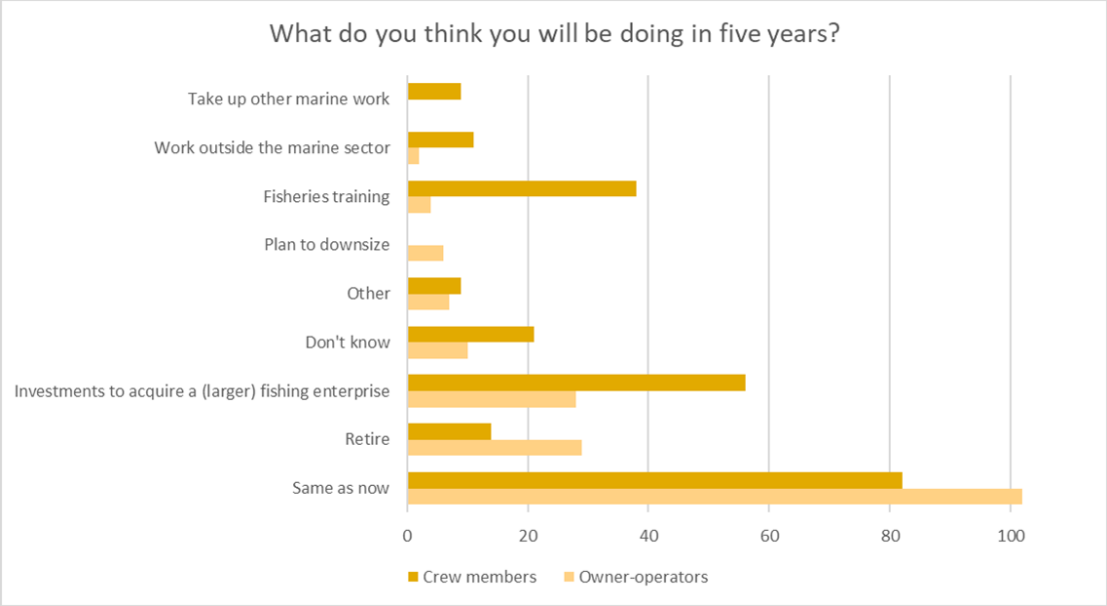

Figure 14. Number of respondents to the question "What do you think you will be doing in five years? (multiple choice question)

Focusing only on crew members and level of certification, we found that out of 76 apprentices, 27 (36%) stated they plan to make investments to acquire a fishing enterprise; these 27 apprentices were younger (median age of 31) than the apprentice group as a whole and had fewer years fishing experience (median of 11 years). Fourteen of the crew with level I (39%) and 12 of the crew with level II certification (25%) planned to make investments to acquire a fishing enterprise (Table 12). There were 35 women crew who participated in the survey and the most common responses to the question "What do you think you will be doing in five years?" were that they expected stay doing the same as now (n=16, 11 of them at the apprentice level), they wanted to make large investments to acquire a fishing enterprise (n=8, 6 at apprentice level and 2 at level I certification), and they would like to enroll in further fisheries training (n=6, 5 apprentices, 1 level I).

Table 12. Plans in the next five years for crew only according to their certifications level			
	Apprentice	**Level I**	**Level II**
	n (%)*	**n (%)***	**n (%)***
Same as now	30 (39)	19 (53)	27 (56)
I plan to make large investments to acquire a fishing enterprise	27 (36)	14 (39)	12 (25)
I plan to enroll in a fisheries training program	20 (26)	10 (28)	5 (10)
I will be retired	6 (8)	1 (3)	7 (15)
I plan to leave the fishery and take up other marine work	2 (3)	2 (6)	3 (6)
I plan to take work outside the marine sector	4 (5)	1 (3)	5 (10)
Don´t know	12 (16)	4 (11)	3 (6)
Other	4 (5)	3 (8)	1 (2)

*Percentages do not add up to 100 as participants were able to choose multiple responses

At the time of the survey, retirement plans were on the horizon for 29 owner-operators (18%) and 14 crew (8%); out of crew, 6 soon-to-be retirees were apprentices and all of them had been fishing for a living for at least 10 years. We asked what owner-operators planned to do with their fishing enterprise when they stopped fishing. Most participants (47%) indicated they would prefer to keep the fishing enterprise in the family and pass it on to the next generation; 11% said they would like to keep the license in their community and sell it to the highest bidder; 30% planned to sell their enterprise (including licenses, vessel and gear) at the highest possible price regardless of community membership. Very few planned to keep their ownership and lease their license (3%) or participate in a buy-back program (2%). Such retirement-related decisions have implications for recruitment of the next generation of owner-operators in the small-scale fishery given that the only way to become an owner-operator is through the replacement of an enterprise owner who is exiting the industry, and the high costs of enterprises may be a barrier for new entrants (see CCPFH 2018).

4. RECRUITMENT IN SMALL-SCALE FISHERIES

4.1 Contributing Factors to Entering the Fishery

In the survey, we asked participants how important were different factors in becoming a fish harvester. Overall, both owner-operator and crew responses illustrated the importance of family and community in their entry into fishing. Among owner-operators, fishing being in their family (75%), fishing allowing them to stay in the community (74%), and taking over the family enterprise (59%) were important factors. Among crew, fishing allowing them to stay in the community (76%), fishing being in the family (66%), and taking over the family enterprise (47%) were also important factors. Similarly, interview participants talked about the importance of family and community in relation to entering fishing work. In interviews, some participants described entering fishing through a parent (usually a father) who fished or owned an enterprise, and a desire to continue the family tradition of fishing and to be part of something that has cultural significance. In terms of characteristics of fishing work, in the survey most owner-operators identified being their own boss (83%), providing good income opportunities (73%), and working outdoors (67%) as important factors in choosing to become a fish harvester. Most crew identified fishing providing good income opportunities (69%) and working outdoors (62%) as important factors (Figure 15).

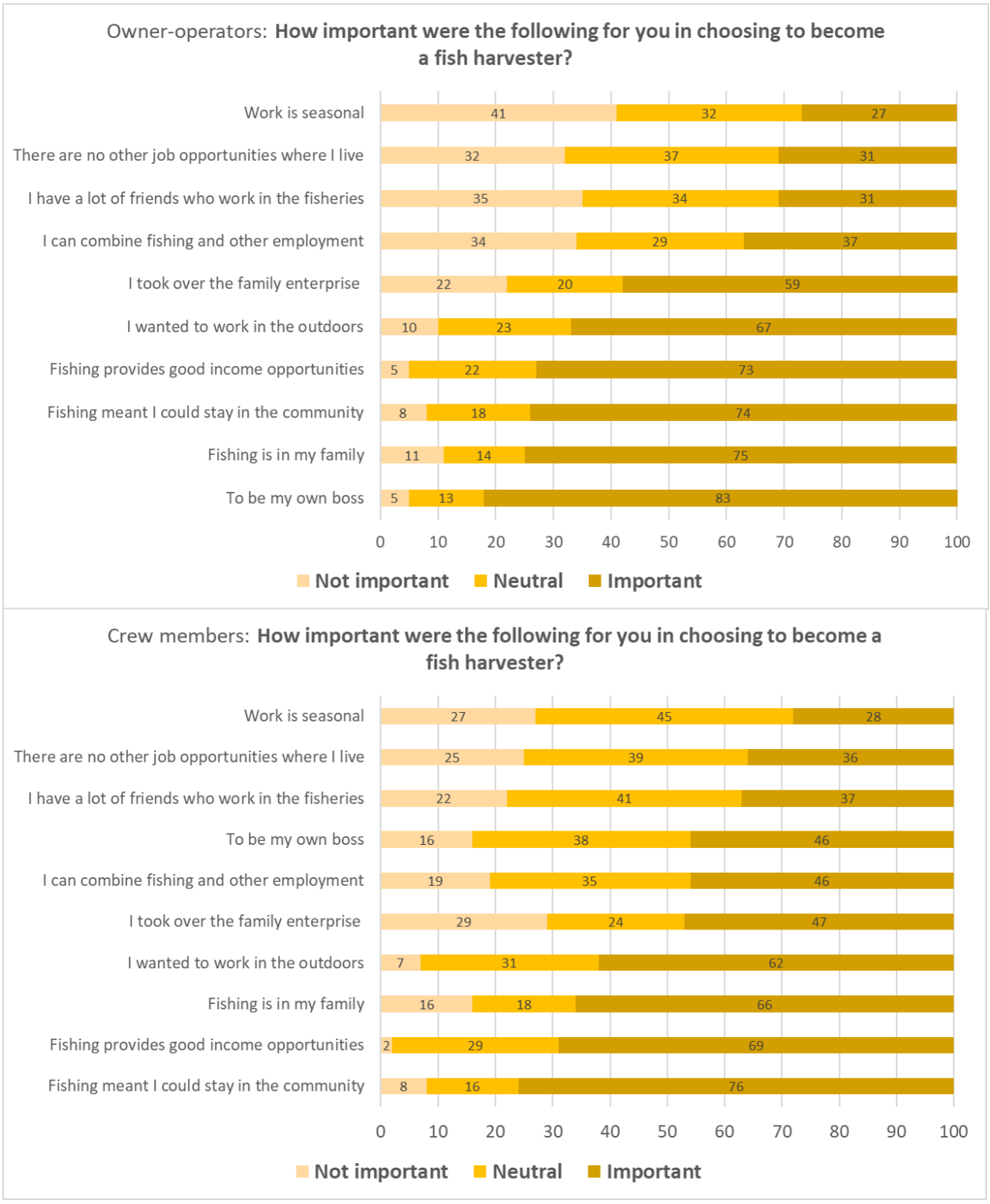

***Figure 15**. How important were the following for you in choosing to become a fish harvester? (This was a multiple choice answer option, the figure reflects percentage of respondents per category)*

When it comes to skills, most owner-operators reported seeking crew who are hardworking, reliable, willing to learn and who have interest in fishing (see Figure 16). Crew members had similar views to owner-operators when thinking about what skills are important to find a job as crew. Overall, participants identified these skills as more important than formal training and certification. Survey results show that more crew members valued training such as Marine Emergency Duties courses (n=110) or professionalization certification (n=64) than owner-operators (n=79 and n=45, respectively). It is worth noting that interview participants emphasized the importance of experience in recruitment of crew. Experience is not an option listed in the survey item on skills.

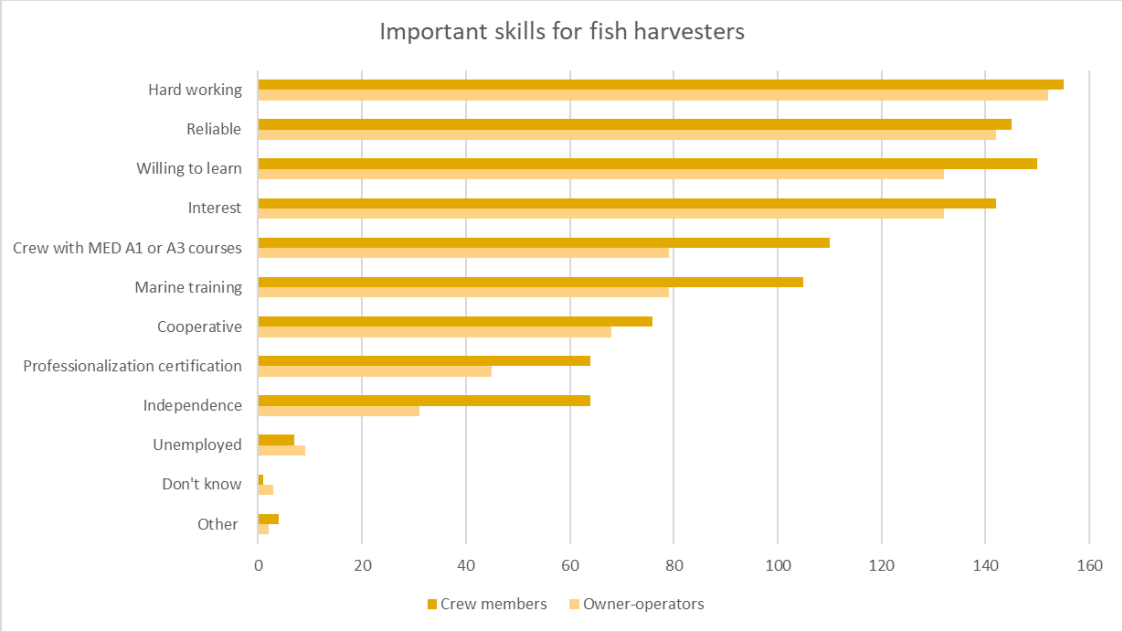

Figure 16. Owner-operators were asked "What skills/characteristics do you look for in your crew?" and crew were asked "what skills/characteristics are important to find work as crew?" (This was a multiple-choice answer option; the figure reflects number of respondents)

4.2 Recruitment of Crew

In the survey, we asked owner-operators if they had problems recruiting crew members to their vessel in 2019. Twenty-one percent (n=34) reported at least some problems recruiting crew (10% responded they had problems and 11% responded they had some problems), while the majority (79%) reported they did not have any problems. Crew members were asked a similar question:

"Did you have problems finding a job as crew in 2019?" Eighty-Five percent (n=144) did not have any problems and 14% (n=24) reported that they had at least some problems finding a job as crew. It may be that crew who had experienced difficulties finding work are no longer working as crew and therefore did not take part in the survey. There were no differences in gender, age and years spent fishing for a living between those who reported at least some problems finding a job as crew and those who did not experience problems. Absence of significant differences may indicate that experience, gender and age are not obstacles to finding a job as crew. However, interpretation of these results should be done with caution, especially in the case of women, as the number of women participants is very small, and other survey and interview data suggest a more complicated picture (discussed below).

Family and hometown were the main sites of crew recruitment. Participants reported that crew in the boat were mostly from one's hometown or region (n=204) (Figure 17). Most participants reported that crew on the vessel they worked on are their family or the family of the owner-operator (n=170, 51.5%) or their own partner or spouse (n=62, 18.8%). Fewer responded that crew came from other parts of NL (n=42), from outside the province (n=17) or from other countries (n=2).

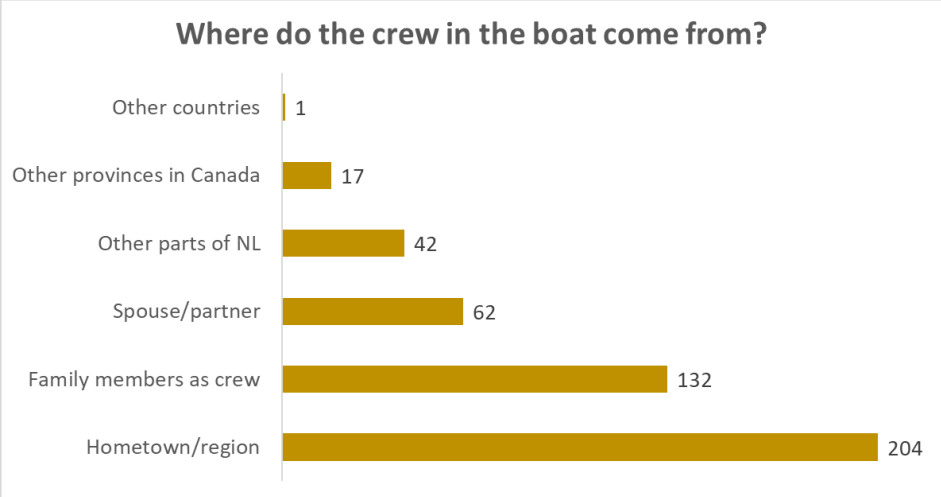

Figure 17. Owner-operators and crew members were asked where do the crew whom they work with come from. (This was a multiple choice answer option, the figure reflects number of respondents per category)

When asked "How do you find crew to work on your enterprise?", the majority of owner-operators reported having the same crew for several years (n=127), and indicated if they are looking for crew they do it mostly by word of mouth (n=41), through family members (n=37) or using the buddy-up arrangement (n=30), which allows two license holders to fish from the same

vessel using the same gear. Buddying-up could include scenarios where the two license holders crew for each other or they share the same crew (Figure 18). Interviews suggested that owner-operators like to recruit crew locally, through family, and by word of mouth, because this way, they can rely on the crew member's reputation in the community as someone who knows how and is able to do the work: "*You know your crew already before they step into the boat, you know their parents and you know if they can fish.*" While family was an important site for recruitment, the majority of fish harvesters with children (57%, n=149) reported they do not encourage their children to fish and if they do, it is more likely that owner-operators encourage their children than crew members (p-value<0.05). Most women who participated in the survey worked as crew and of these, 54% (n=19) reported that they fish with the husband or partner. Fewer women crew (n=13) reported they do not fish with their husband or partner.

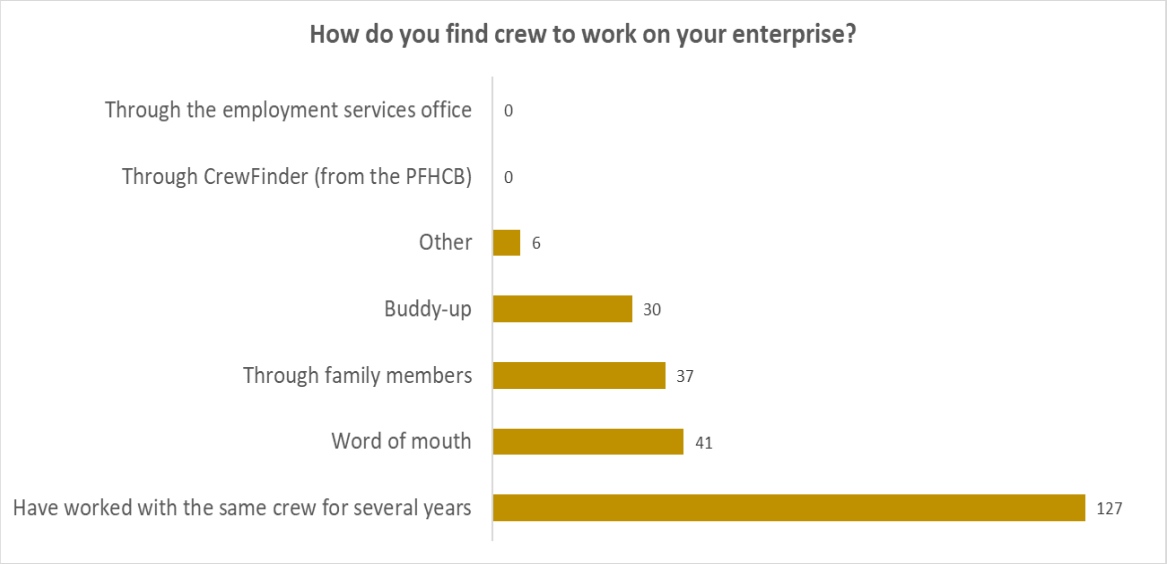

Figure 18. Owner-operators were asked how they find crew to work on their enterprise. (This was a multiple choice answer option, the figure reflects number of respondents per category)

Interviews offered a closer look at the dynamics that occur when recruiting crew and seeking work as crew. For example, some owner-operators suggested that they do not have a problem finding crew, but rather, they cannot afford to hire crew, and relatedly, some owner-operators said they rely heavily on family to cut labour costs. As one owner-operator put it: *"And my wife comes out, well my money is her money, and her money is my money, so it's all right there. But I can't really afford to hire out anyone else, only him and her. But she goes out for nothing and you can say, I goes out for nothing."* Finally, some owner-operators hired (additional) crew only for certain fisheries (e.g., crab) and fished alone or with one's spouse for other species (e.g., lobster), pointing to how the patchiness of fishing work for crew impacts recruitment. For example, when

demand for local crew is high during crab season, owner-operators may find it difficult to find additional crew, or to find crew they perceive as reliable or experienced. Buddying-up with other owner-operators may be one strategy to manage crew recruitment in such cases. Patchiness of crew work, along with low wages were discussed in interviews as possible reasons it may be difficult to recruit crew.

Despite the low numbers of women in our survey, 40% (n=131) of respondents reported having fished with at least one woman on the vessel. Both men and women owner-operators were more likely to respond they fished with a woman (51%) than crew members (29%). Owner-operators may fish with more different people as they often have multiple licenses for different species and may use different vessels and sometimes different crew for each species. For example, owner-operators who have a lobster license may need a smaller vessel and only one additional person to crew with them for this fishery, perhaps their spouse or partner. Owner-operators who did not fish with women in 2019 were asked if they would be willing to hire women on their vessel. While most of them said they would (n=68, 86%), it is worth noting that a small number said no or they don't know if they would (n=11, 14%).

4.3 Fishery for Future Generations

In the survey, when asked to think about what is important to ensure there is a fishery for future generations, most owner-operators and crew identified being able to own multiple enterprises (97% and 93% respectively), fewer regulations (96% and 96% respectively), and having access to more licences (92% of owner-operators) and subsidies to help young harvesters purchase enterprises (92% of crew members) (Figure 19). At the same time, among both owner-operators and crew there was broad support for owner-operator and fleet separation policies (80% and 83% respectively) and having a strong union (77% and 89% respectively). The results regarding the importance of professionalization to ensure a fishery for future generations are more mixed. In the survey, 60% of owner-operators and 50% of crew identified professionalization as important. Analyses by age groups showed that a larger percentage of fish harvesters above age 54 regard professionalization as positive (60%), but no statistically significant differences were observed between different age groups. Interview participants had conflicting views of the professional certification system: on the one hand, the professional certification process was seen as useful for providing standard training for fish harvesters and keeping moonlighters out; on the other hand, it was perceived as creating obstacles for new entrants into the fishery and intergenerational succession of fishing enterprises.

How important are the following items to ensuring there is a fishery for future generations?

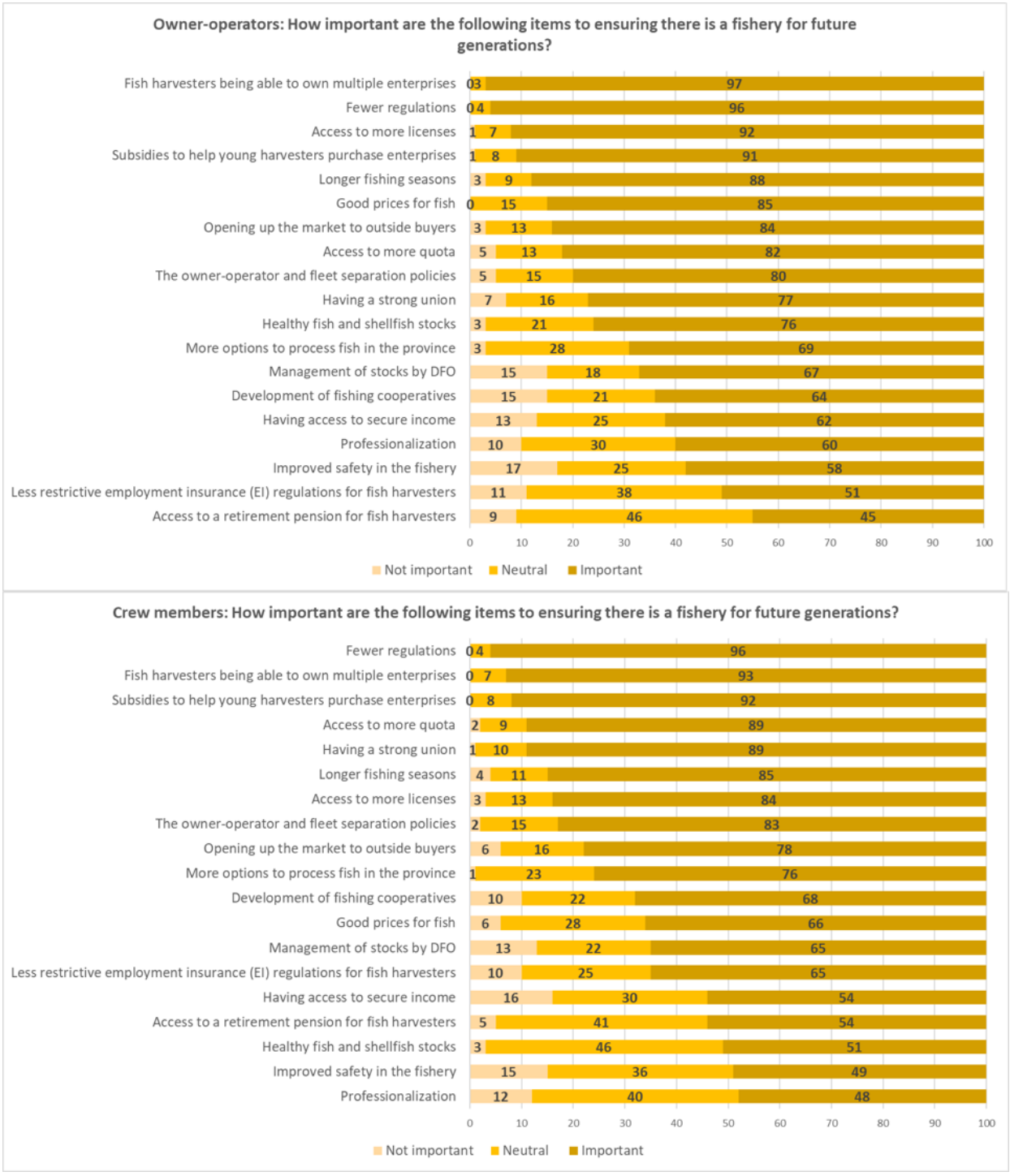

Figure 19. *Percentage of respondents to the question "How important are the following items to ensuring there is a fishery for future generations?*

5. IMPACTS OF COVID-19 ON RTR

The fish harvester survey was launched in November 2020 and was open until February 2021, and interviews were conducted between 2020 and 2021. The timeline of data collection allowed us to collect information regarding the impact of the COVID-19 pandemic on issues related to recruitment and retention. Fish harvesters were asked how different factors affected their work in the fishery in the past 10 years. At the time of the survey, 68% of owner-operators and 56% of crew members reported being negatively affected by the impacts of the COVID-19 pandemic (see Figure 12).

Even though the COVID-19 pandemic posed challenges to the fishery including market closures and safety concerns regarding the close proximity in which fishing takes place (Neis et al. 2022), only 2 owner-operators reported they did not fish in 2020. Most owner-operators (80%, n=131) hired the same number of crew as they did in 2019, only 14% (n=23) hired fewer crew in 2020 and 5% (n=8) hired more crew (Table 13).

Table 13. Compared to 2019, did you hire more, fewer or the same number of crew in 2020?

	Owner-operators
	n (%)
More crew	8 (5)
Fewer crew	23 (14)
The same number of crew	131 (80)
I did not fish as owner-operator in 2020	2 (1)
Total	***164 (100)***

We asked owner-operators and crew how likely they would be to recommend the fishing occupation to others prior to the pandemic and since the pandemic. In general, 68% (n=207) would recommend the fishing occupation prior to the pandemic and 52% (n=158) would recommend the occupation since the pandemic (Table 14). When we grouped responses in three categories (Likely, Unlikely and Neutral) we observed significant differences between owner-operators and crew members on how likely they would be to recommend the fishing occupation since the COVID-19 pandemic, with crew being less likely to do so. The pandemic may have highlighted inequalities related to access to benefits. Figure 20 highlights differences between owner-operators and crew in terms of receiving the federal government's fish harvester grant and the fish harvester benefit for 2020. A large number of crew (n=66) also did not apply for benefits. It is possible they did not apply because they did not qualify for such benefits. Crew (wage-earning and sharepersons) were not eligible to apply for the Fish Harvester Grant[8].

[8] From https://www.dfo-mpo.gc.ca/fisheries-peches/initiatives/fhgbp-ppsp/overview-apercu-eng.html

Table 14. Since the pandemic, how likely would you be to recommend the fishing occupation to others?				
	Owner-operators	**Crew members**	**Total**	
	n (%)	**n (%)**	**n (%)**	**p-value**
Unlikely	23 (15.33)	38 (25.17)	61 (20.27)	0.004
Likely	93 (62)	65 (43.05)	158 (52.49)	
Neutral	34 (22.67)	48 (31.79)	82 (27.24)	
Total	***150 (100)***	***151 (100)***	***301 (100)***	

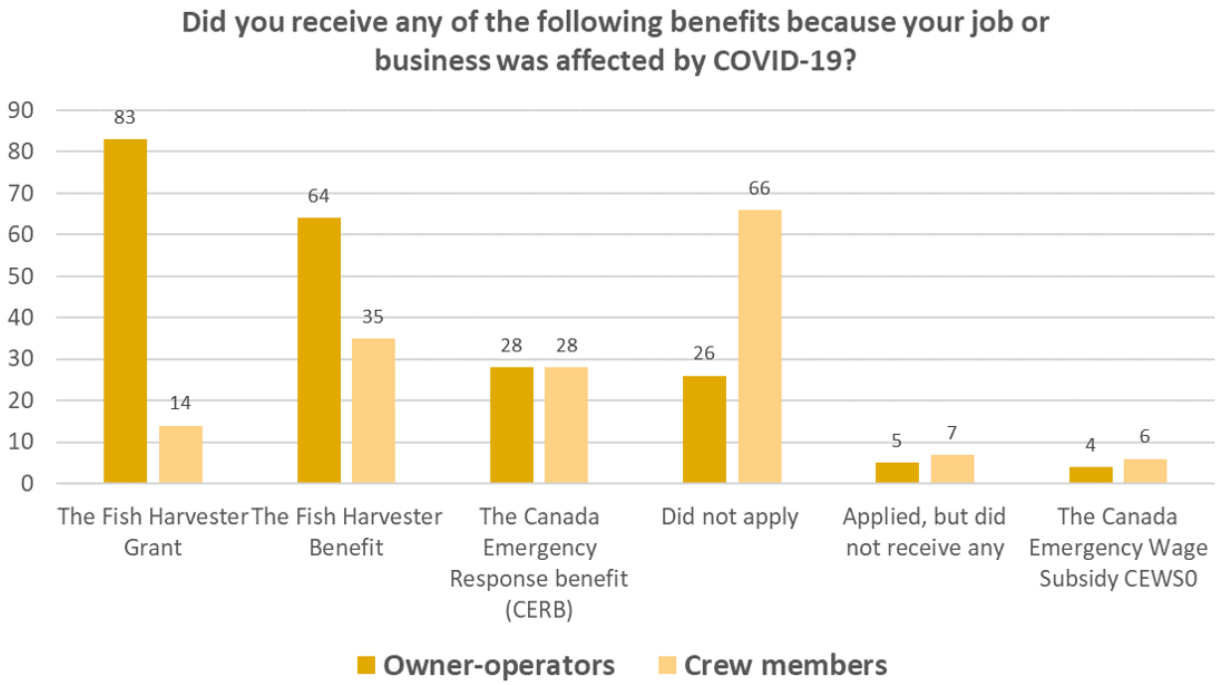

Figure 20. Number of respondents who received COVID-related benefits by role

6. CONCLUSION

- **Overall, our study does not indicate an immediate problem with recruitment or retention of crew or owner-operators in small-scale fish harvesting in the province.**

Regarding recruitment of crew, while owner-operators may occasionally seek additional labour for particular fisheries, at the time of the survey they tended to have access to reliable crew labour through family and community networks, with 79% reporting no problems finding crew and 85% of crew reporting no problems finding a job as crew. Crew and owner-operators valued such characteristics as being hardworking and reliable, willing to learn, having interest in fishing and experience as more important than formal training and certification when looking for and finding work as crew.

Likewise, our study does not indicate a problem with retention. Study participants – owner-operators and crew alike – appear to be very invested in fishing, as demonstrated by lengthy work histories and little turnover in crew. The profile of survey participants suggests the current fish harvesting labour force is largely trained and certified, suggesting commitment to the industry. Survey participants identified access to Employment Insurance, quota cuts, the COVID-19 pandemic, and the cost of enterprises as important factors negatively affecting their work in the last decade, and permission to combine enterprises and fish prices as positively affecting their work. Interviews suggested uncertainty in the industry and mistrust of management regarding their access to/ownership of fisheries resources.

A large majority of owner-operators and crew expected to remain fishing in five years. Younger crew and owner-operators indicated greater willingness to make investments in a fishing enterprise than older study participants. And, about one-third of crew (across all three levels of certification) reported future plans to invest in and acquire a fishing enterprise. Survey participants identified being able to own multiple enterprises, fewer regulations, having access to more licences, and subsidies to help young harvesters purchase enterprises, along with owner-operator and fleet separation policies and having a strong union, as important factors affecting fishery for future generations.

These findings must be understood in terms of broader restructuring and downsizing of the industry since the 1990s. There are fewer opportunities to be an owner-operator and to find work as crew with the introduction of the core enterprise system over two decades ago. In fact, our findings suggest there may be greater interest in becoming an owner-operator than available opportunities given that there is a limited number of core enterprises available to level II fish harvesters and these core enterprises can only be accessed as existing fish harvesters with core enterprises exit the fishery. These findings point to a need to examine the impact of sustained downsizing policies like enterprise combining, which can lead to increased concentration of enterprises among fewer harvesters and in turn impact intergenerational access (Parlee and Foley 2022).

- **Our results show that both owner-operators and crew largely reported satisfaction with their fishing incomes, despite significant differences between the two groups, with crew earning substantially lower incomes. However, satisfaction is associated with not working in other occupations.**

While 61% of participants reported satisfaction with their fishing income, satisfaction with income significantly differed between groups who engaged and did not engage in other occupations. In other words, crew and owner-operators who reported satisfaction with their incomes generally did not work in other occupations. Given that crew members tended to participate more in other occupations than owner-operators, and among crew, apprentices tended to participate more in other occupations compared to those with level I and level II certification, it seems that occupational pluralism may be an important consideration for understanding retention in the industry. Finally, some owner-operators may hire (additional) crew only for certain fisheries (e.g., crab) and fish alone or with their spouse for other species (e.g., lobster), pointing to how the patchiness of fishing work for crew may impact recruitment. Our study found that crab, lobster, cod, shrimp and capelin (in descending order) were the species that provided most of fish harvesters' income in 2019. These results suggest further investigation is needed regarding the factors influencing the patchiness of crew work in order to shed light on how to improve conditions for crew. While high income satisfaction was reported, it is worth considering the potential impact of low incomes for recruitment and retention of crew in the longer term. The CCPFH (2018) report pointed to a need for higher incomes to recruit future labour. Finally, it is worth noting that women reported higher levels of satisfaction with fishing income compared to men. The majority of women in our study fished with their partner or spouse contributing to the economic viability of their fishing households but this also likely speaks to the paucity of well-paid employment options in rural fishing communities for these women, including in fish processing. We did not survey spouses of harvesters who did not fish for a living. It would be interesting to know more about ways fishing households are being supported by incomes from other sectors as has been shown for farming and for fishing households in Norway (see Gerrard & Kleiber 2019, Walsh & Gerrard 2018).

- **Our study finds that family and community play a major role in recruitment into fishing, and despite the importance of household dynamics in supporting the viability of small-scale enterprises, we also found barriers to recruitment of women and youth in fishing households to enter fisheries.**

In general, owner-operators and crew in this study fished with the same crew, most of whom were family members or came from their community, for long periods and owner-operators relied on family and word of mouth to recruit additional crew when needed and when they could afford to do so. Owner-operators relied on the crew member's reputation in the community, and looked for crew who are hardworking, reliable, willing to learn and that have an interest in fishing.

Relatedly, owner-operators and crew reported entering fishing because it provides an opportunity to stay in their community and to carry on doing work that their family has done, work that may be understood as meaningful and culturally significant.

Most of the women in our study were apprentices and fished with spouses or partners. While most fish harvesters reported fishing with and a willingness to fish with women, this was not always the case. Finally, most of the survey participants did not encourage their children to enter the fishery, and while nearly half of the owner-operators said they preferred to keep their fishing enterprise in the family and pass it on to the next generation, a large proportion indicated they intended to sell their enterprise to the highest bidder. Selling enterprises to the highest bidder (particularly outside the community) has long-term implications for intergenerational succession and communities dependent on fisheries. Research (CCPFH 2018, Foley et al., 2016) shows that the high cost of enterprises and related debt may encourage owner-operators to sell to recoup their investment, and that high costs make it difficult for crew to enter. In fact, owner-operators and crew identified subsidies to help young harvesters purchase enterprises as one of the top initiatives needed to ensure a fishery for future generations, all of which points to the importance of further examination of the causes and consequences of rising costs of enterprises, and of developing or supporting policy options that enable youth without purchasing power to participate in the fishery.

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Finally, the authors wish to make a methodological note about interpreting the findings. Survey responses offer a snapshot in time. We carried out this research in the early days of the COVID-19 pandemic and this context may influence the results. Questions for the survey were designed to obtain information about the 2019 season because the 2020 fishing season was not usual due to COVID-19 restrictions and there were moments of uncertainty regarding whether the fishing season would open or not. Furthermore, there are some differences between the characteristics of the participants in the survey and the population of fish harvesters in NL. Our sample overrepresents owner-operators and underrepresents women, and overall our sample is younger than the population of fish harvesters in the province. These differences may impact the generalizability of our findings. Also, we were able to interview only two crew members giving us a limited perspective to help interpret and expand survey results related to crew.

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List of figures