

Survey of the Use of Personal Floatation Devices and Personal Locator Beacons by Professional Fish Harvesters in Newfoundland and Labrador

**A Report Submitted to the
Canadian Center for Fisheries Innovation**

Submitted by

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1 Introduction

Commercial fishing is one of the most dangerous occupations worldwide, with higher fatality and injury rates compared to national averages for all other occupations (Petursdottir et al., 2001). In 1999 the average annual number of fishing deaths worldwide was estimated to be 24,000 people (ILO, 1999), which had increased to 32,000 by 2019 (FAO, 2024). However, recent research conducted by the FISH Safety Foundation have demonstrated that these estimates are conservative and fishing-related death estimates are well in excess of 100,000 per year (Willis et al., 2023). In Canada, there were 97 fatalities reported in the fishing industry from 2008 to 2017, and in 2018 alone there were 19 fatalities, which was nearly double the 10-year annual average of 9.7 (TSB, 2019). The most recent data available indicates that there were an additional 35 fishing-related fatalities reported in Canadian waters in the three-year span from 2019 to 2021 (TSB, 2022).

Drowning as the result of vessel disasters and falls overboard make up a larger portion of the fatalities (Jensen et al, 2014; TSB, 2022). To mitigate drowning related fatalities, a personal floatation device (PFD) or lifejacket is the most critically important piece of personal protective equipment (PPE) for ensuring a person stays afloat when they are in the water. However, if the individual is lacking sufficient thermal protection, it also becomes critically important that they be rescued as quickly as possible to reduce their exposure time. One of the most versatile and reliable methods for alerting rescuers is an emergency radio beacon, such as a personal locator beacon (PLB). PLBs are

commercially available electronic radio frequency devices that have helped save thousands of people in distress worldwide each year.

Despite the demonstrated benefits, failure to use PFDs and emergency signaling devices, such as PLBs, has been identified as a factor leading to fatalities in fishing vessel accidents (TSB, 2012). When the TSB examined 63 fishing vessel-related fatalities between 2011 and 2017, they found that the use of a PFD could not be ascertained for 80 percent of cases. Similarly, accident investigation reports have often concluded that boating accidents, especially those involving smaller vessels, did not send any emergency distress signal and went undetected until the boat was reported overdue (Transportation Safety Board [TSB], 2022). Not wearing a PFD or PLB has been identified as factors leading to fatalities in fishing vessel accidents (TSB, 2022; Lincoln & Lucas, 2010).

The lack of use is the result of different personal, social, and environmental factors. If we are to improve the rate of PFD and PLB use by fish harvesters, it is critically important to first understand the barriers and facilitators for using these devices. Several studies have identified different barriers associated with the use of PFDs by professional fish harvesters including comfort, risk of entanglement, attitudes and beliefs, culture and habits, lack of regulations, and affordability and accessibility (Ahmad et al., 2017; Oporia et al., 2022a; Weil et al., 2016). Few studies have evaluated interventions that aim to increase the use of PFDs by professional fish harvesters (Oporia et al., 2023a; Sorensen et al., 2021; Teske et al., 2022). We may expect the

factors associated with PLB use to be similar to some of those associated with the use of PFDs. In addition, since PLBs are relatively new compared to PFDs, fish harvesters may be less aware of their availability or purpose.

To assess the rate of PFD and PLB use by professional fish harvesters in Newfoundland and Labrador, and factors associated with the use of these devices, the research team collected self-reported evidence using an online survey.

2 Methodology

Using the preliminary findings from the systematic review the research team developed the questionnaire and survey methodology. An online questionnaire was developed using the Qualtrics survey software (Qualtrics, 2024). The questionnaire included questions about participant demographics, boating experience and activities, behaviour around use of PFDs and PLBs, and factors associated with the use of PFDs and PLBs. Features of the Qualtrics survey software, such as skip logic and branching, were used to improve the flow of the survey by only showing the most relevant questions to each participant.

The questionnaire was developed using an iterative process whereby questions were written, reviewed, and rewritten to improve readability and reduce change of biases. The research team consulted with our industry partners (Newfoundland and Labrador Fish Harvesting Safety Association and Professional Fish Harvesters Certification Board), Canadian Centre for Fisheries Innovation, and WorkplaceNL for feedback on

the questionnaire. Finally, pilot testing was carried out with a small group of professional fish harvesters to further identify any problems with the formatting, content, and duration of the questionnaire.

Ethics was sought and approval granted from Memorial University's Interdisciplinary Committee on Ethics in Human Research (ICEHR) on October 10, 2023. Additional amendments were submitted and approved in December 2023. The amendments included minor changes to the questionnaire, consent form, and recruitment material and methods.

The survey was launched on January 9, 2024. The research team worked with the industry partners, using their communication channels (e.g., email distribution lists), to recruit professional fish harvesters 15 years of age and older in Newfoundland and Labrador to participate in the study. Participants were also recruited through local fish harvester's communities on social media (e.g., Newfoundland Fisherman's Forum) and the Marine Institute's Community Based Education Delivery program. Individuals who decided to participate in the study followed the link or QR code provided in the recruitment communications and were asked to complete a consent form followed by an anonymous online questionnaire. The survey was closed on February 6, 2024.

Participants were entered into a prize draw for a chance to win a new PLB that was donated by the Professional Fish Harvesters Certification Board. A random draw was

completed, and the prize was delivered to the winner in February, 2024. In addition, the PLB was registered with the Canadian Beacon Registry.

3 Results

The survey received 478 interactions between January 9, 2024 and February 6, 2024. A total of 392 observations remained after the removal of duplications and participants who had not completed consent or failed to begin the questionnaire.

3.1 Participant Characteristics

Of these 392 participants, the largest proportion were 45-54 years of age (33%), followed by 55-64 years of age (24%), and 35-44 years of age (17%). Less than 4% of the participants were less than 25 years of age or more than 74 years of age. Eighty-three percent of the participants identified as males and 17% identified as females. These distributions of age and gender are more representative of the professional fish harvesting population than an evenly distributed sample. Figures 1 and 2 presents the full distribution of participants by age and gender.

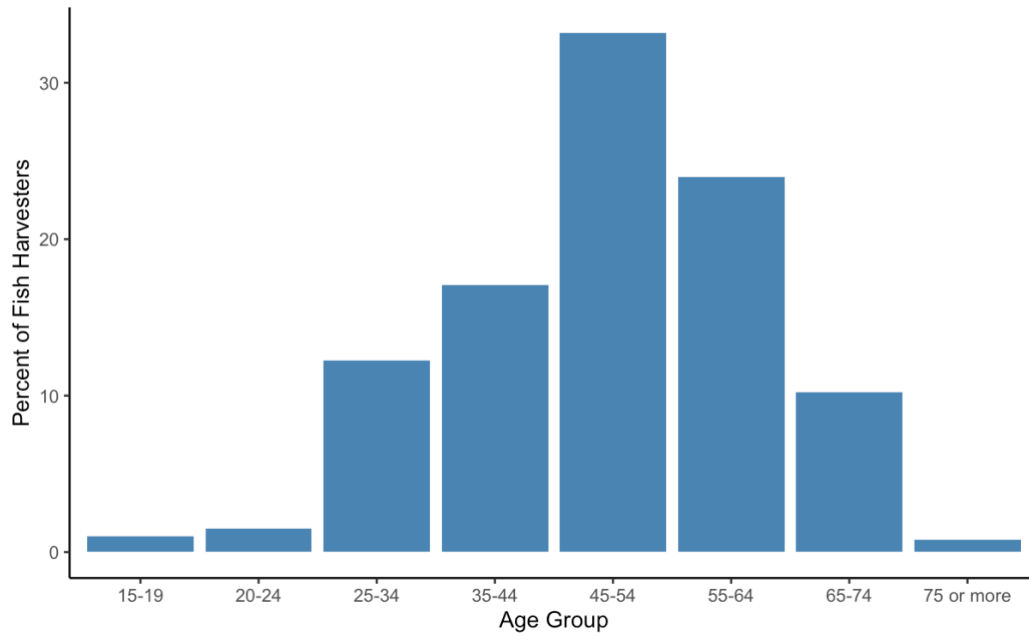


Figure 1 Distribution of participants by age

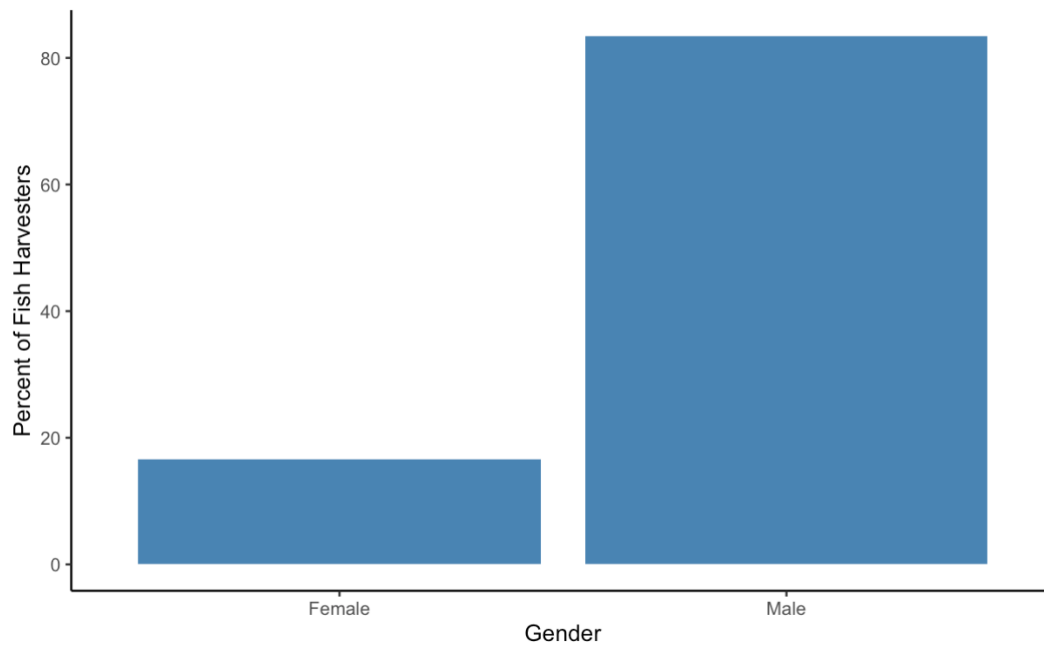


Figure 2 Distribution of participants by gender

There was a reasonably balanced distribution between operators (53%) and crew (47%) that participated in the study (Figure 3). Thirty-seven percent of fish harvesters who

completed the questionnaire reported having more than 30 years of experience fishing (Figure 4), and 52% reported not being able to swim or a weak swimmer (Figure 5).

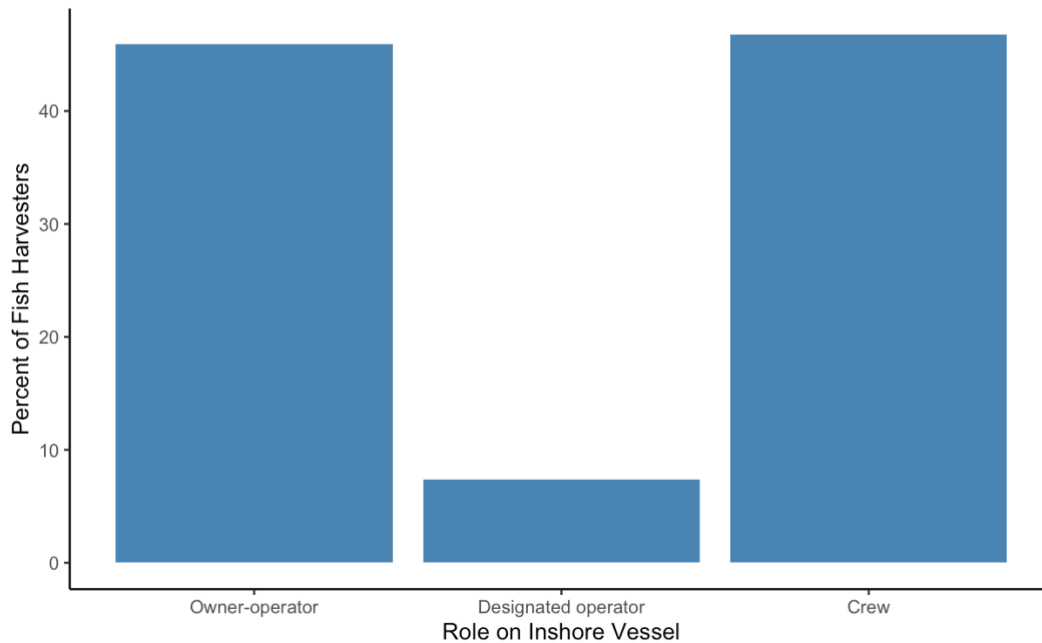


Figure 3 Distribution of participants role on the vessel

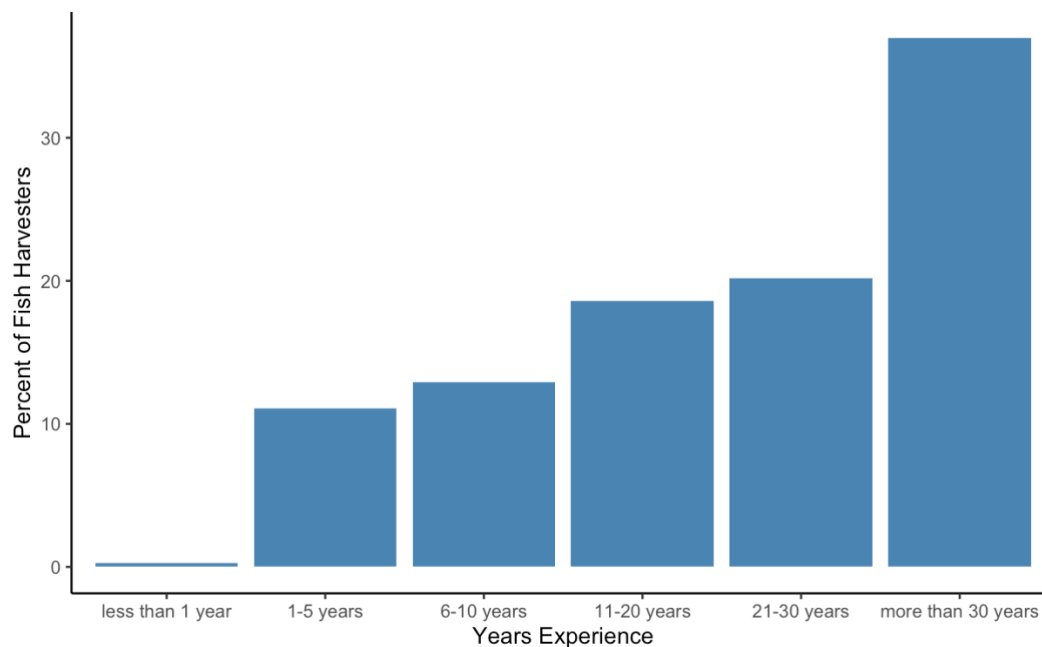


Figure 4 Distribution of participants by years of fishing experience

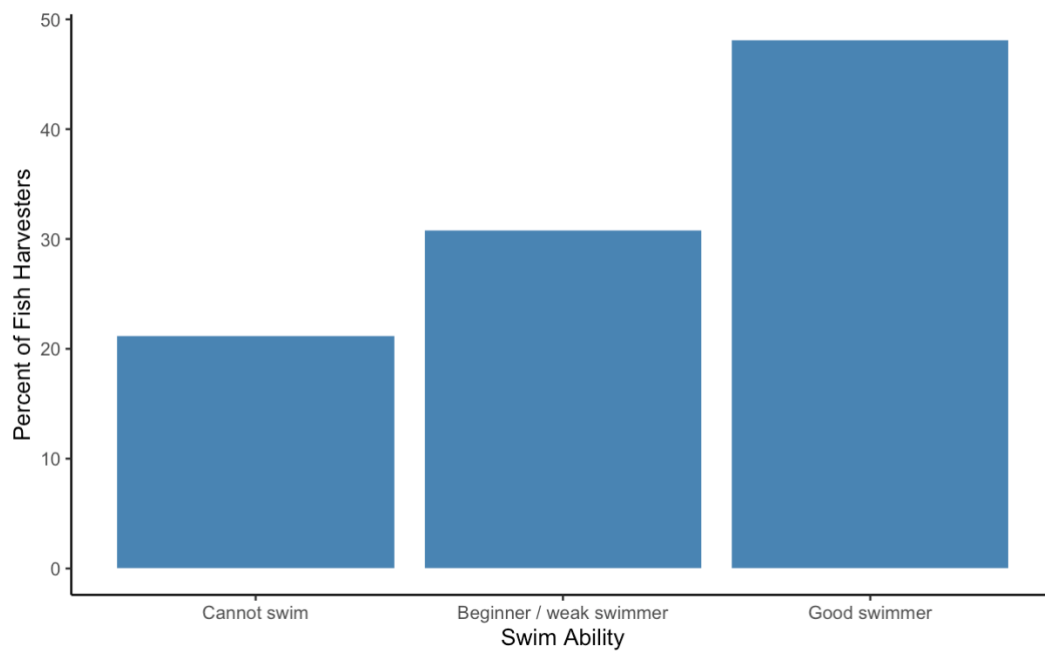


Figure 5 Distribution of participants by swim ability

3.2 Vessel Characteristics

More than 90% reported their primary vessel to be under 65' in length (Figure 6). More specifically, the majority of fish harvesters indicated that their primary vessel was a decked longliner (59%) and open speed boat (34%) (Figure 7).

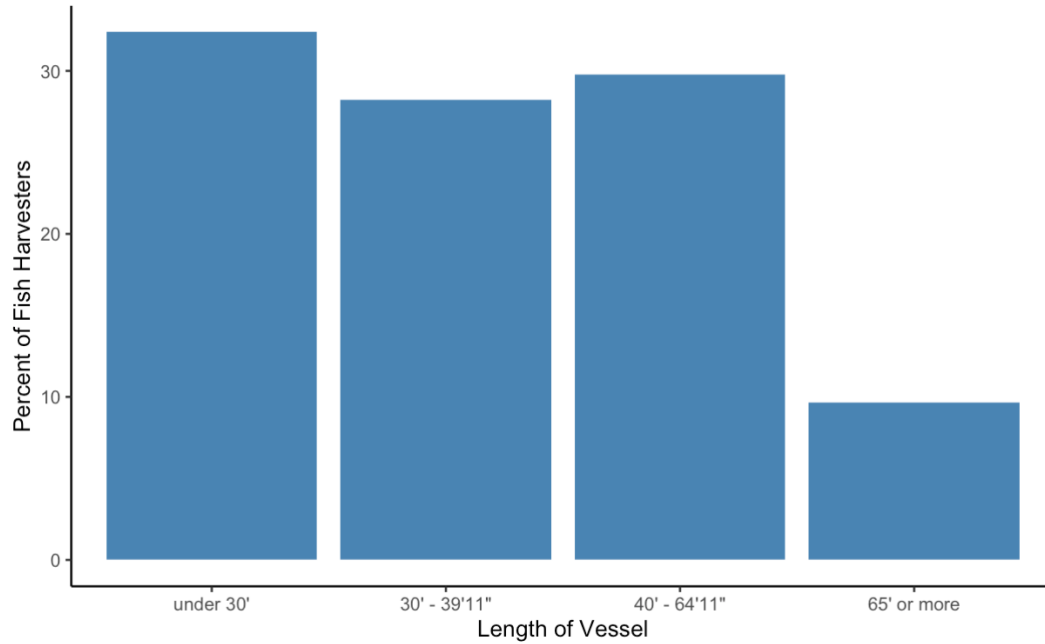


Figure 6 Length of primary vessel distribution

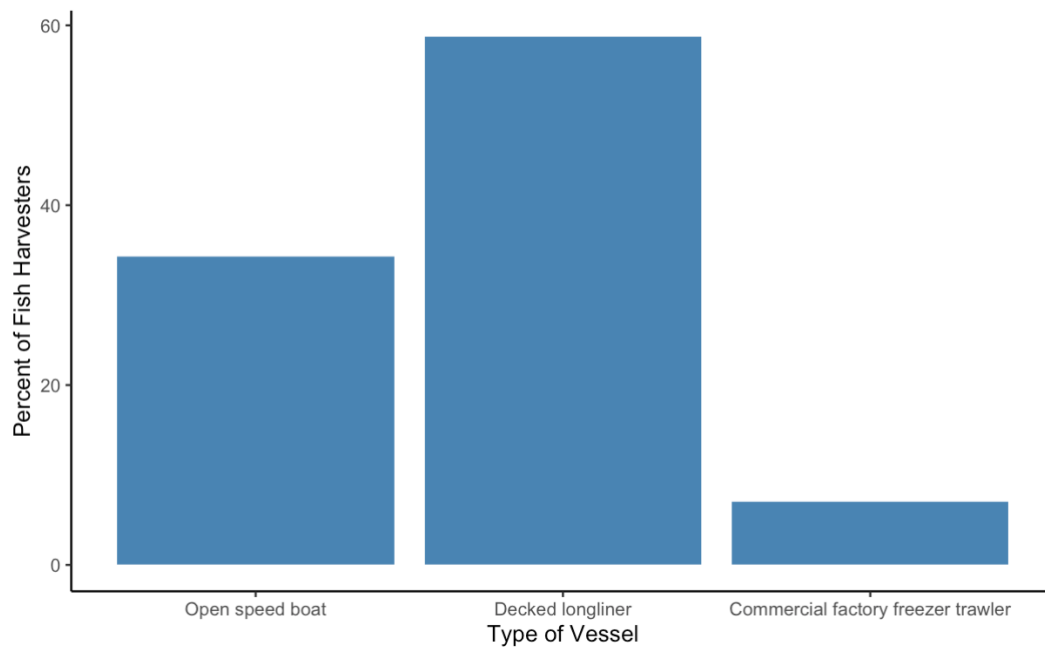


Figure 7 Distribution of primary vessel type

3.3 PFD and PLB Use

3.3.1 PFD Use

Figure 8 shows that while 42% of fish harvesters report to always wear a PFD, more than 38% report never or rarely wearing a PFD. Figure 9 shows that there was little change in the percent of fish harvesters that reported never or rarely wearing a PFD from 2022 (36%) to 2023 (38%) and the number reporting they wear it often or always from 2022 (64%) to 2023 (62%).

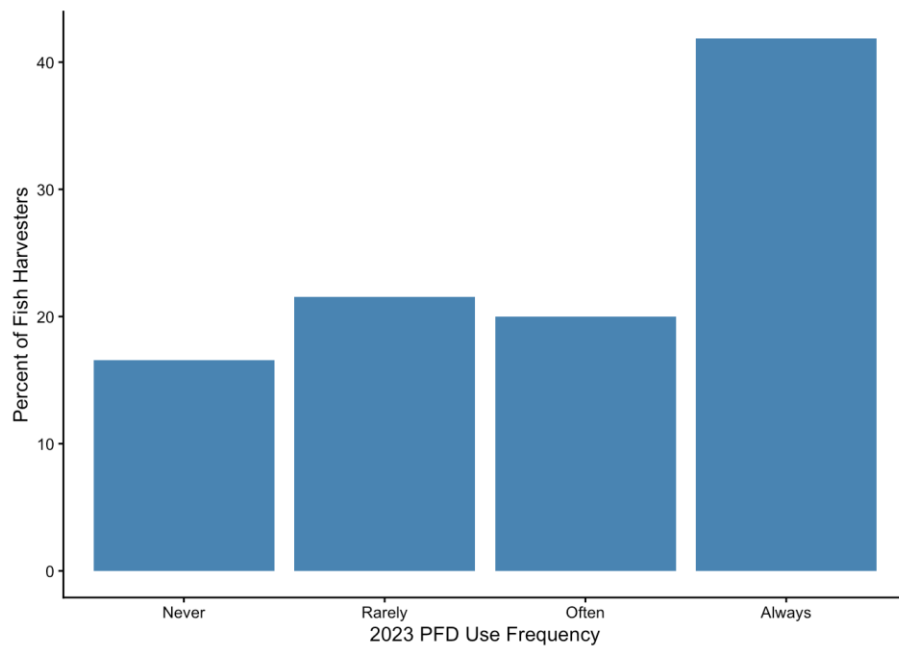


Figure 8 Fish harvesters frequency of use of PFDs in 2023

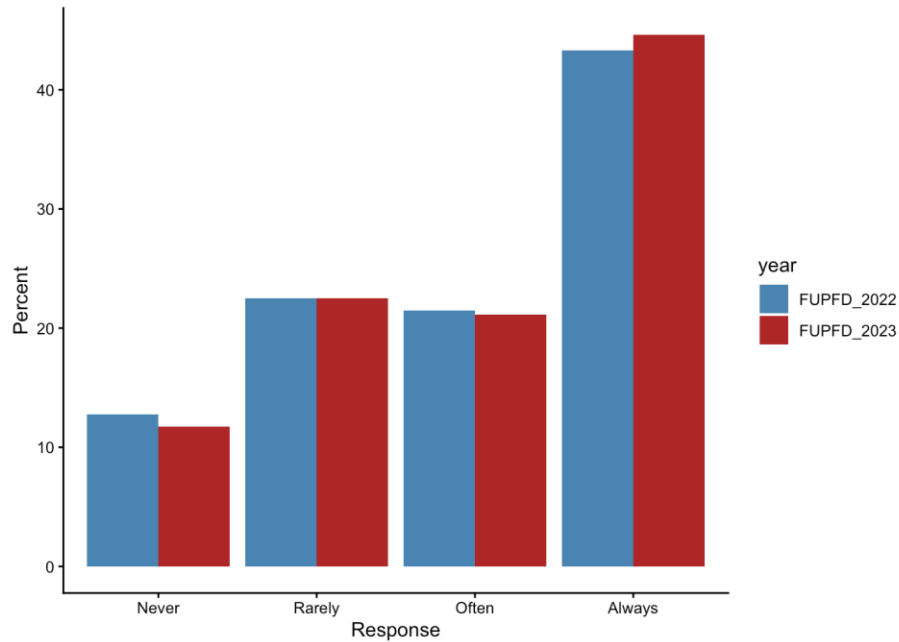


Figure 9 Fish harvesters frequency of use of PFDs in 2022 and 2023

Since the largest proportion of fish harvesters reported always wearing their PFD it is no surprise that more fish harvesters are in the maintenance stage (46%) compared to other stages. Just over 8% are still in the precontemplation stage and 17% and 12% are in the contemplation and preparation stages respectively. (Figure 10)

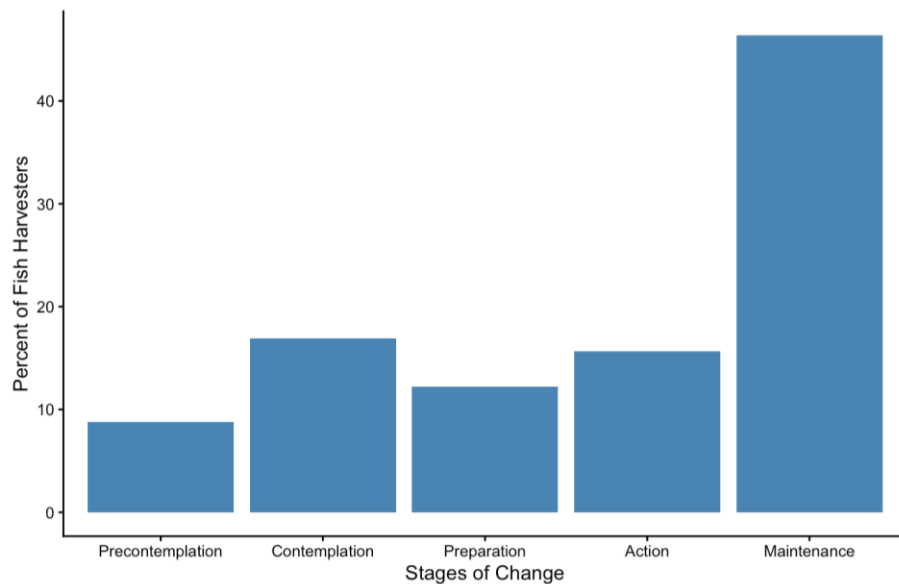


Figure 10 Fish harvesters' stage of behaviour change for PFD use

3.3.2 PLB Use

Figure 20 shows that more than 76% of fish harvesters never wear a PLB, and only 12% always wear a PLB. Figure 21 shows that there is little to no change in the use of PLBs from 2022 to 2023.

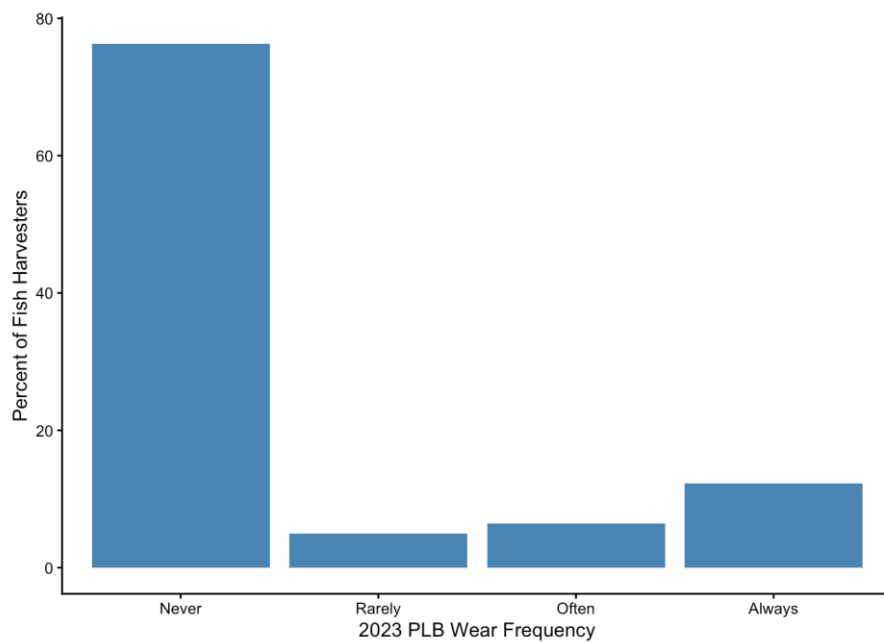


Figure 11 Fish harvesters frequency of use of PLBs in 2023

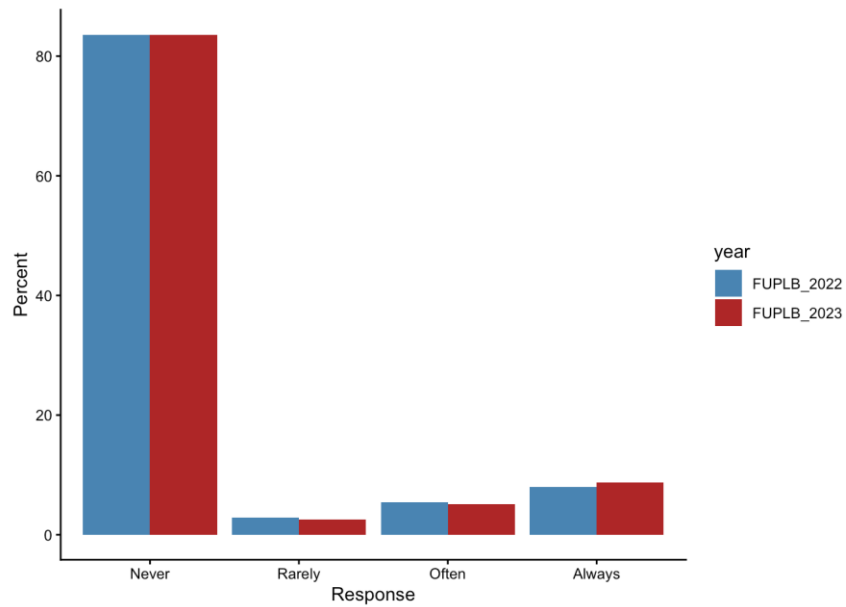


Figure 12 Fish harvesters frequency of use of PFDs in 2022 and 2023

Since the largest proportion of fish harvesters reported never wearing their PLB it is no surprise that more fish harvesters are in the precontemplation (17%), contemplation (28%), and preparation (36%) stages of change compared to other stages. Just under 6% are in the action stage and 13% are maintaining their use of PLBs. (Figure 22)

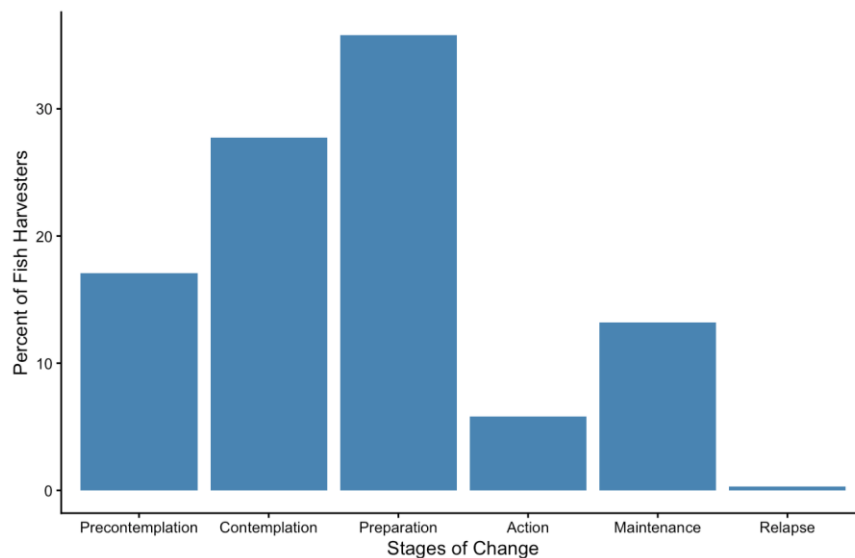


Figure 13 Fish harvesters' stage of behaviour change for PLB use

3.4 Comparison of PFD and PLB Use Across Groups

3.4.1 PFD Use Across Groups

3.4.1.1 PFD Use Across Age and Gender

Figure 14 and Figure 15 shows the distribution of self-reported frequency of PFD use in 2023 for fish harvesters in different age groups and gender. In all the age groups, the largest proportion of fish harvesters reported always wearing a PFD. A greater percentage of fish harvesters in the older age groups reported wearing a PFD more than some of the younger age brackets, with almost 64% of the fish harvesters 65 years or more and 46% of them 55-64 years reporting always wearing a PFD. Similar to the age distribution of PFD use, the largest proportion of male and female fish harvesters reported always wearing a PFD. Females reported always wearing a PFD more (50%) than males (40%).

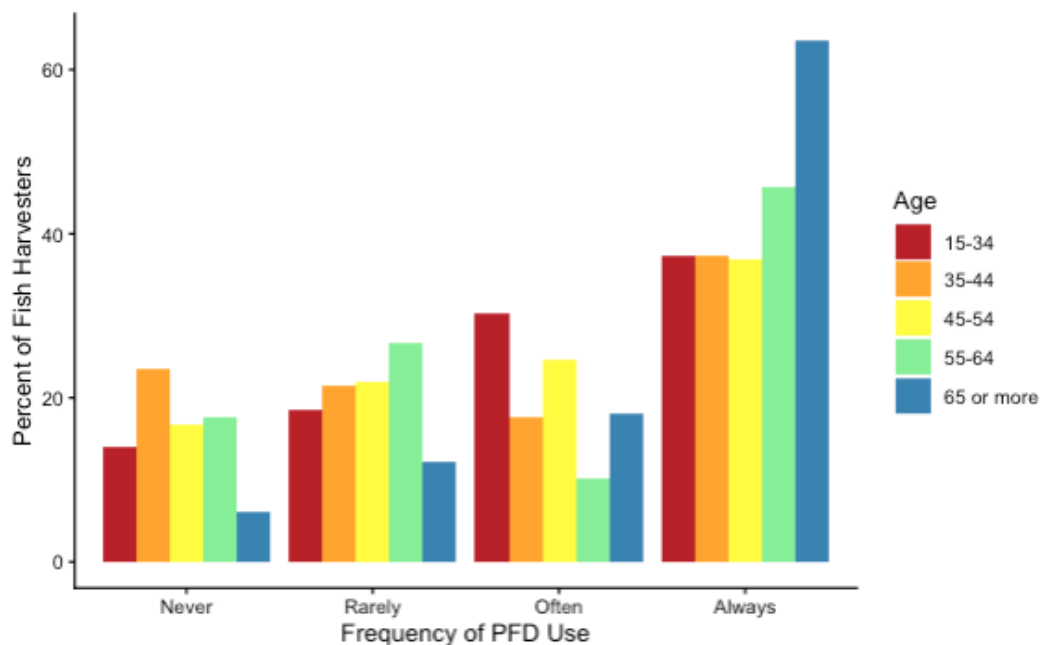


Figure 14 Percentage of fish harvesters reporting frequency of PFD use in 2023, stratified by age

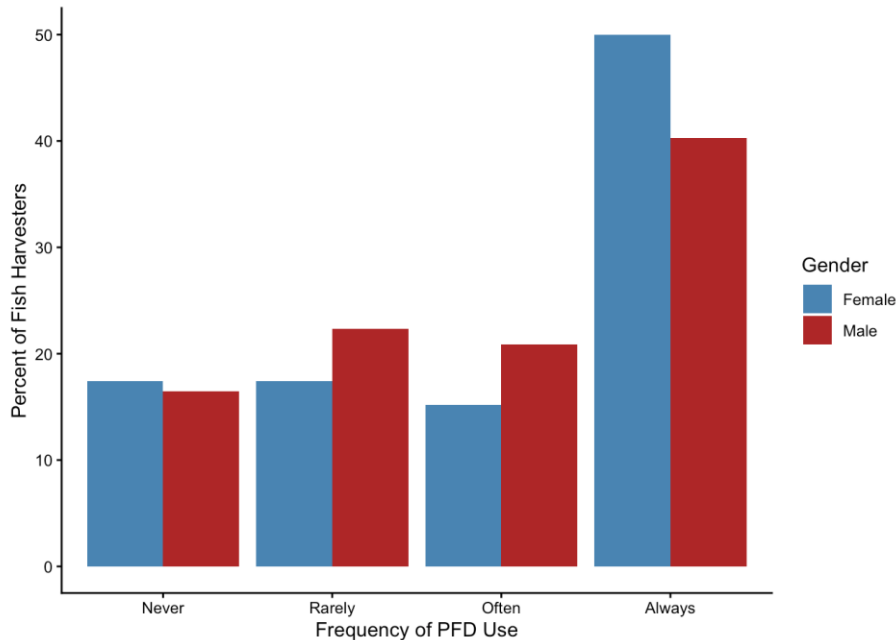


Figure 15 Percentage of fish harvesters reporting frequency of PFD use in 2023, stratified by gender

3.4.1.2 PFD Use Across Role on Vessel, Years of Experience, and Swim Ability

Figures 16-18 shows the distribution of PFD use in 2023 stratified by role on the vessel, years of fishing experience, and swim ability. Owner-operators had a greater percentage (44%) reporting always wearing a PFD compared to designated operators (21%) and crew (37%). Half (50%) of designated operators reported rarely wearing a PFD (Figure 16). When we look at the frequency of PFD use across different years of fishing experience, the largest proportion of each category reported always wearing a PFD. Those with the least experience (0-5 years) and most experience (more than 30 years) had the highest proportions reporting always wearing a PFD at 55% and 41% respectively (Figure 17). With respect to swim ability, Figure 18 shows that fish harvesters who reported they cannot swim are more likely to always wear a PFD compared to those reporting to be good swimmers, with 61% reporting always wearing

a PFD compared to 33% respectively. Forty-two percent of those who reported being weak or beginner swimmers indicated that they always wear a PFD.

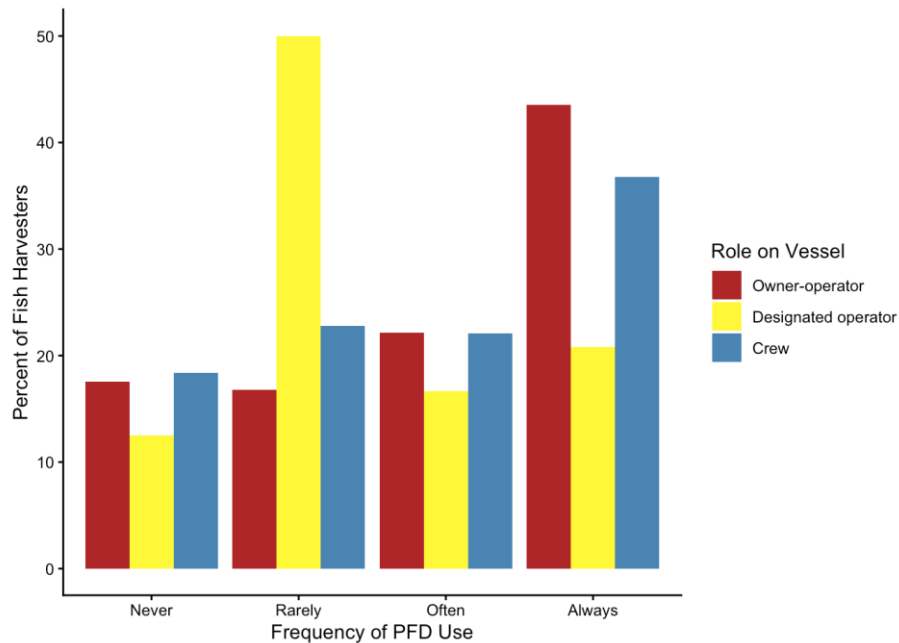


Figure 16 Percentage of fish harvesters reporting frequency of PFD use in 2023, stratified by role on vessel

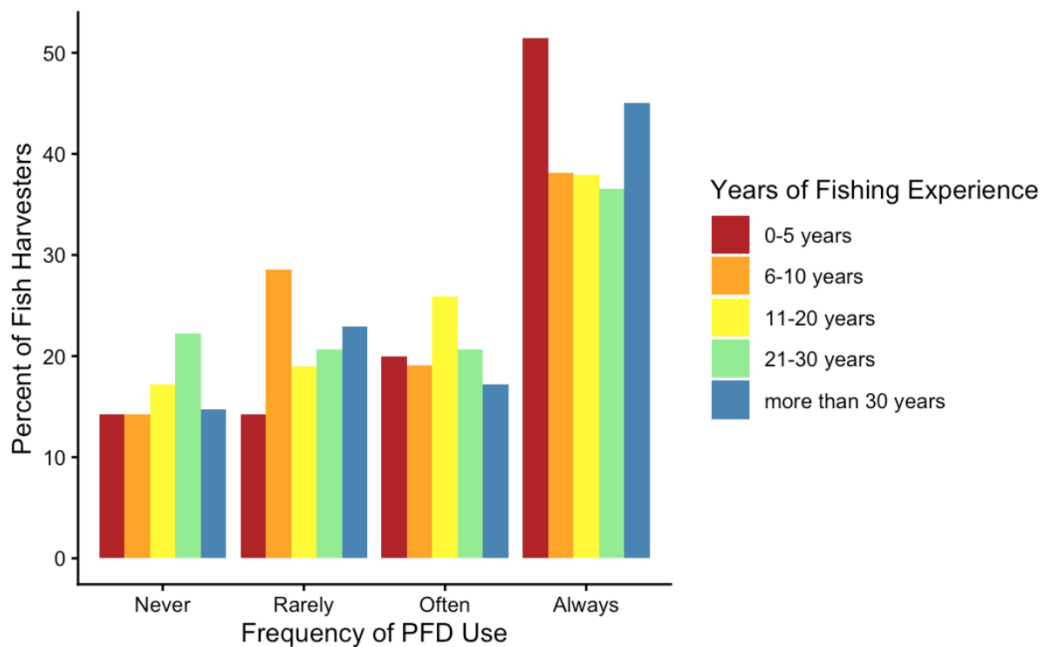


Figure 17 Percentage of fish harvesters reporting frequency of PFD use in 2023, stratified by years of fishing experience

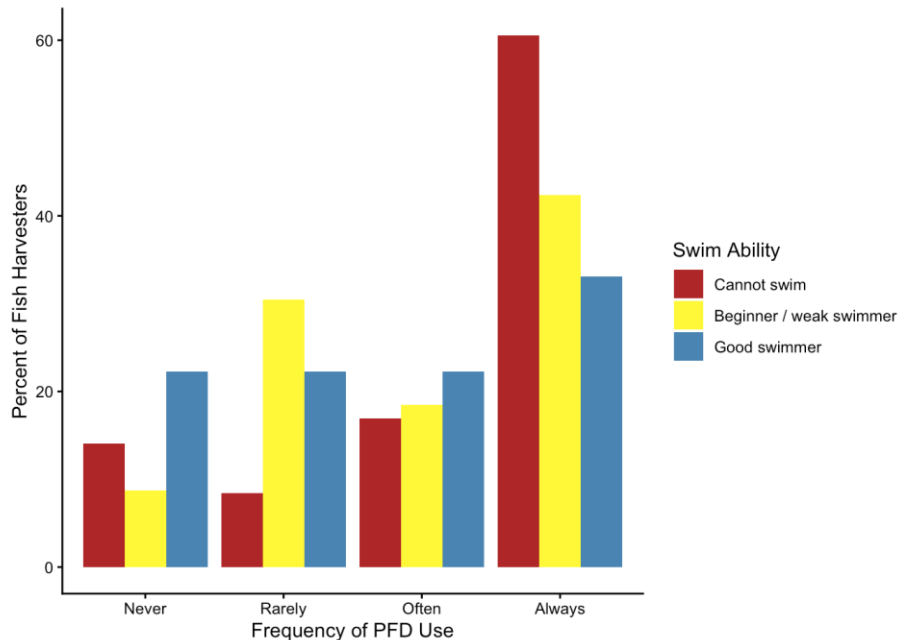


Figure 18 Percentage of fish harvesters reporting frequency of PFD use in 2023, stratified by swim ability

3.4.1.3 PFD Use Across Vessel Characteristics

Figure 19 and Figure 20 show the distribution of PFD use in 2023 stratified by length and type of vessel. Across vessel length, the majority of fish harvesters on vessels under 30' and 65' or more reported always wearing a PFD, with 67% and 70% respectively (Figure 19). In contrast only 7% of the fish harvesters on vessels 40' – 64'11" and 31% of the fish harvesters on vessels 30' – 39'11" reported always wearing a PFD, with a greater proportion (64% and 48%) reporting rarely or never wearing a PFD for vessels 40' – 64'11" and 30' – 39'11", respectively. Similarly, the majority of fish harvesters on factory freezer trawlers (85%) and open speed boats (65%) reported always wearing a PFD compared to fish harvesters on decked longliners (20%) (Figure 20).

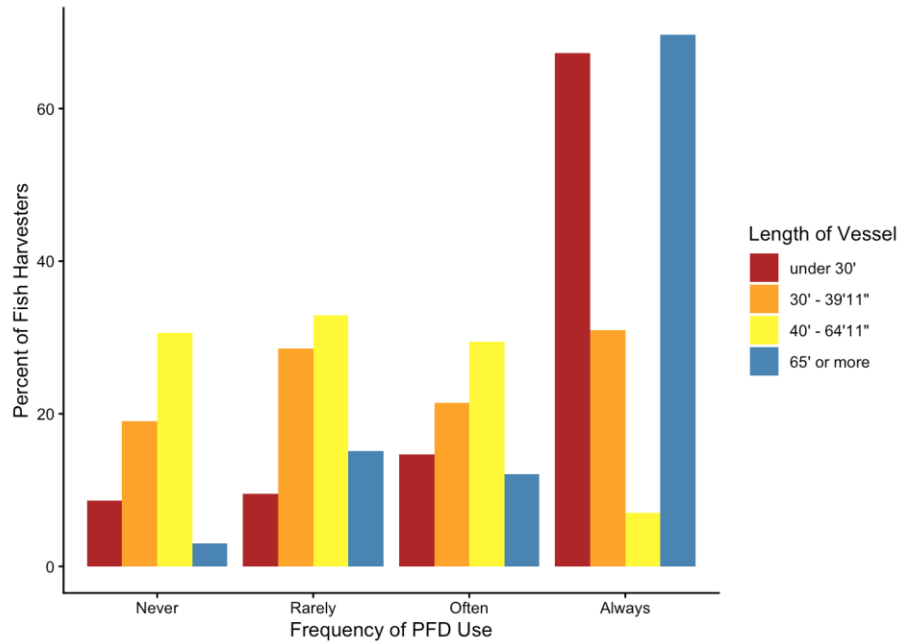


Figure 19 Percentage of fish harvesters reporting frequency of PFD use in 2023, stratified by length of vessel

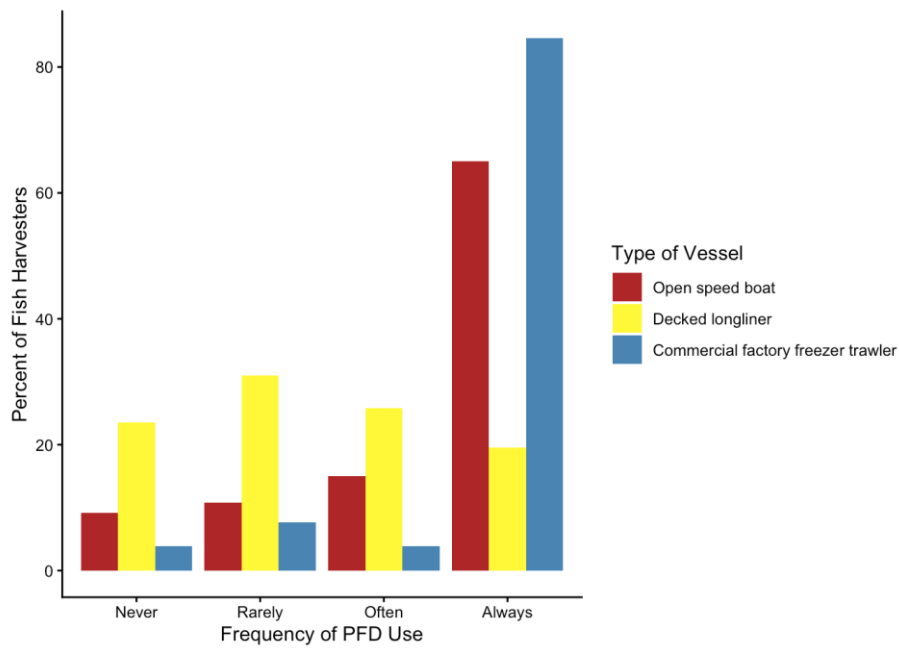


Figure 20 Percentage of fish harvesters reporting frequency of PFD use in 2023, stratified by type of vessel

3.4.2 PLB Use Across Groups

3.4.2.1 PLB Use Across Age and Gender

Figure 21 and Figure 22 shows the distribution of self-reported frequency of PLB use in 2023 for fish harvesters in different age groups and gender. In contrast with PFD use, the largest proportion of fish harvesters reported never using a PLB for all age groups. A greater percentage of fish harvesters in the younger age groups reported never using a PLB more than some of the other age brackets, with almost 88% of the fish harvesters 15-24 years of age and 70% of them 93% of them 25-34 years of age reporting never using a PLB. Similar to the age distribution of PLB use, the majority of male and female fish harvesters reported never using a PLB. Only 12% of males and 13% of females reported always using a PLB.

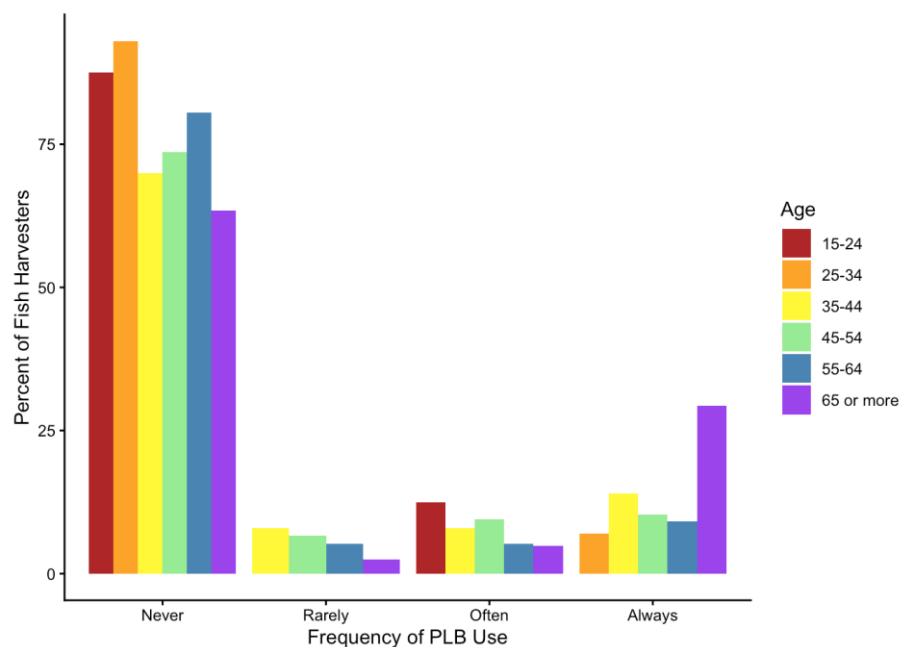


Figure 21 Percentage of fish harvesters reporting frequency of PLB use in 2023, stratified by age

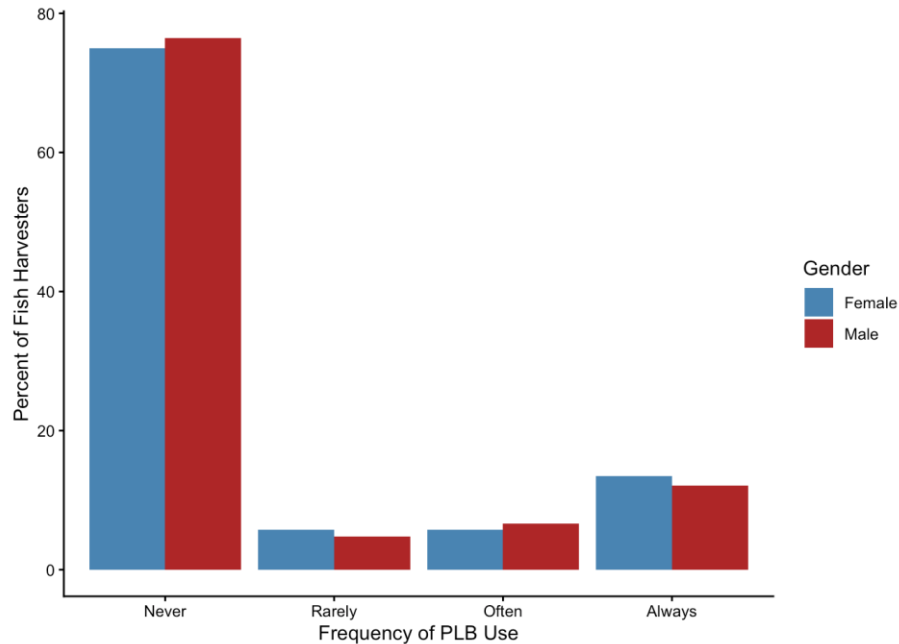


Figure 22 Percentage of fish harvesters reporting frequency of PLB use in 2023, stratified by gender

3.4.2.2 PLB Use Across Role on Vessel, Years of Experience, and Swim Ability

Figures 23-25 shows the distribution of PLB use in 2023 stratified by role on the vessel, years of fishing experience, and swim ability. Similar to PFD use across the different roles on the vessel, the owner-operators had a greater percentage (15%) reporting always using a PLB compared to designated operators (9%) and crew (9%) (Figure 23). The majority of all the roles reported never using a PLB. When we look at the frequency of PLB use across different years of fishing experience, the majority for each category of experience reported never using a PLB. Those with 21-30 years of fishing experience had the highest percentage reporting always using a PLB at 15% followed by those having more than 30 years of fishing experience at 13% (Figure 24). With respect to swim ability, Figure 25 shows that fish harvesters who reported being weak or beginner swimmers are slightly more likely (15%) to always use a PLB compared to those

reporting to be good swimmers or they cannot swim, with 11% reporting always using a PLB for both groups.

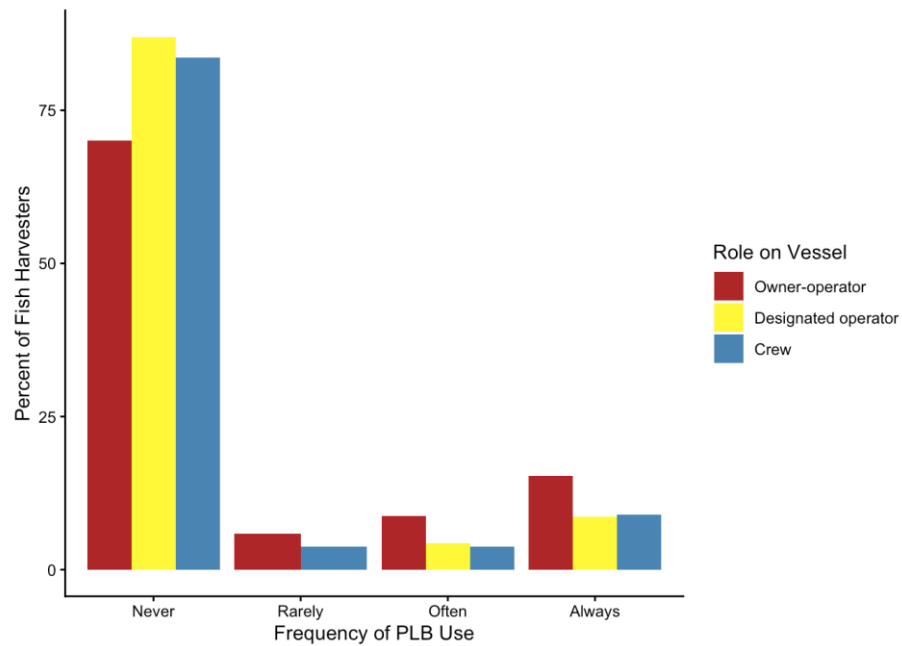


Figure 23 Percentage of fish harvesters reporting frequency of PLB use in 2023, stratified by role on vessel

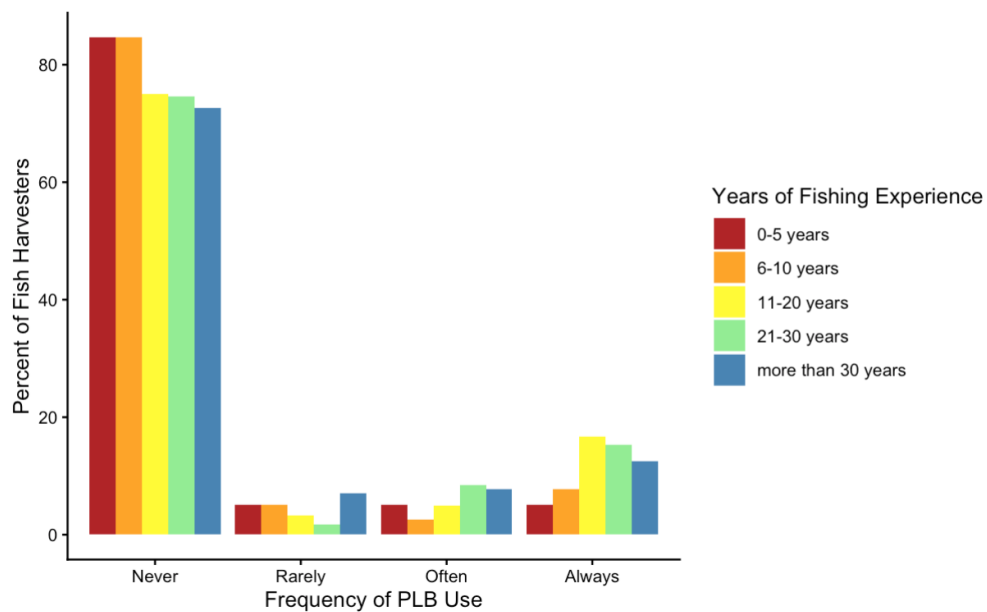


Figure 24 Percentage of fish harvesters reporting frequency of PLB use in 2023, stratified by years of fishing experience

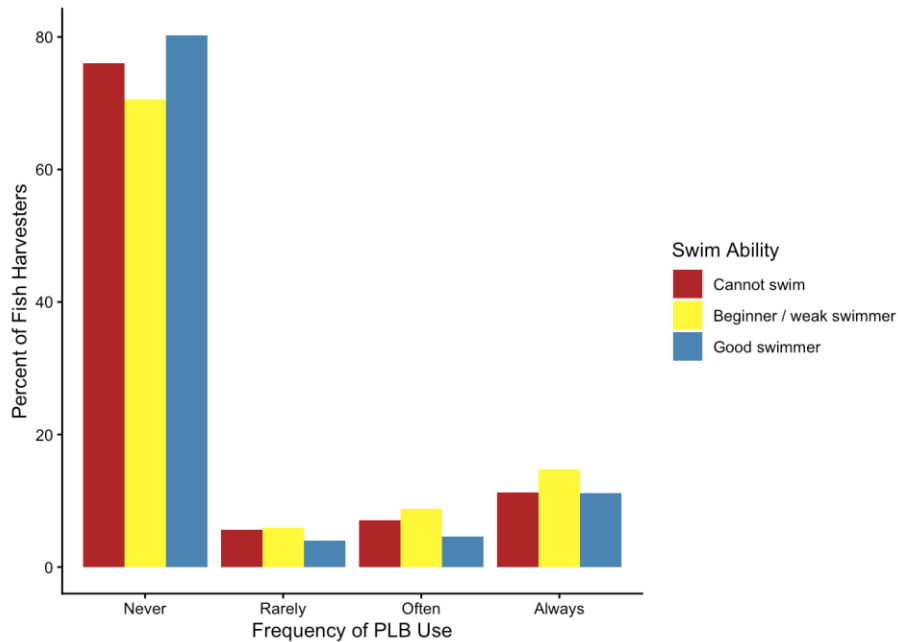


Figure 25 Percentage of fish harvesters reporting frequency of PLB use in 2023, stratified by swim ability

3.4.2.3 PLB Use Across Vessel Characteristics

Figure 26 and Figure 27 show the distribution of PLB use in 2023 stratified by length and type of vessel. Across vessel length, fish harvesters on vessels 40' – 64'11" in length had the lowest percentage report always using a PLB (1%) and highest percentage report never using a PLB (90%) compared to fish harvesters on any other vessel size. Similar proportions (17%, 16%, and 16%) of fish harvesters on vessels under 30', 30' – 39'11", and 65' or more reported always using a PLB (Figure 26). When looking at the type of vessel, the percentage of fish harvesters that fish from a decked longliners that always use a PLB (9%) is less than those that fish from an open speed boat (15%) or factory freezer trawler (20%) (Figure 27).

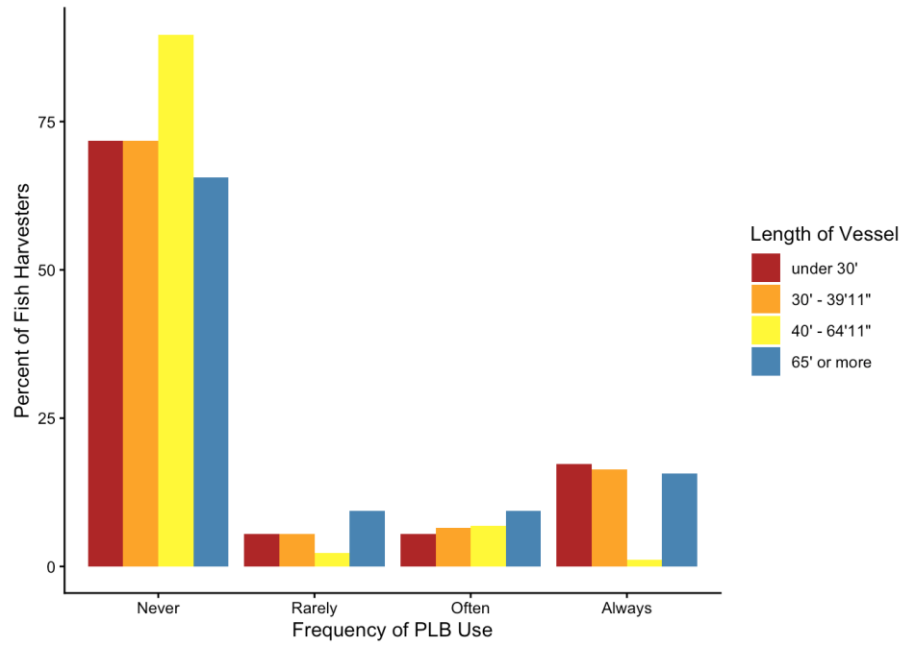


Figure 26 Percentage of fish harvesters reporting frequency of PLB use in 2023, stratified by length of vessel

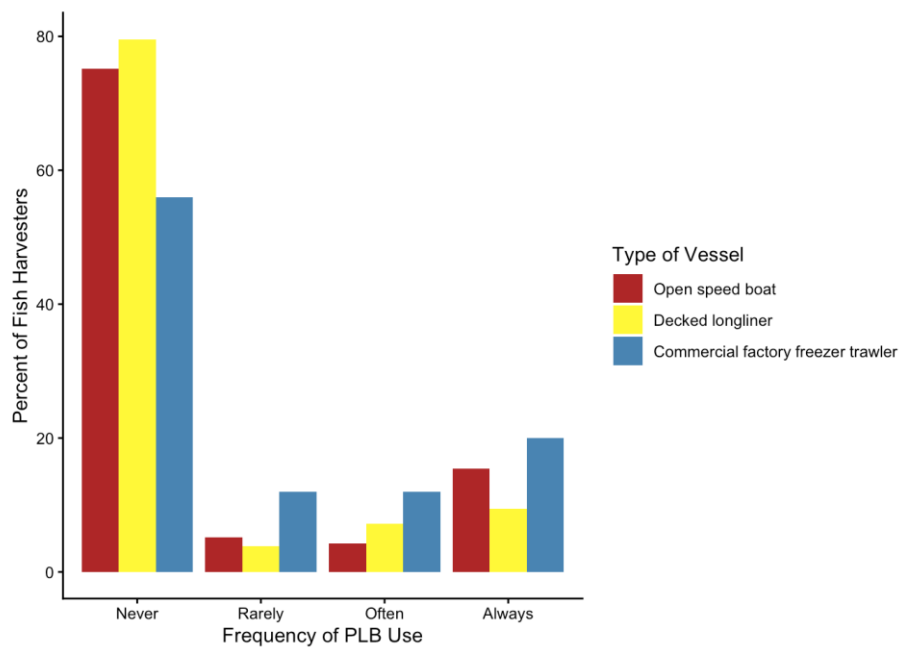


Figure 27 Percentage of fish harvesters reporting frequency of PLB use in 2023, stratified by type of vessel

3.5 Factors Associated with PFD and PLB Use

3.5.1 Factors Associated with PFD Use

3.5.1.1 *Comfort and Accessibility*

Fish harvesters reported a range of views on the comfort of PFDs, with slightly more indicating that PFDs were somewhat comfortable (39%) and very comfortable (15%) compared to somewhat uncomfortable (34%) and very uncomfortable (11%) (Figure 28). The majority (85%) of fish harvesters agreed that PFDs were readily available for purchase (Figure 29). However, only 19% agreed that PFDs were available in appropriate sizes (Figure 30). Finally, the majority (73%) of fish harvesters agreed that PFDs are affordable but more than 26% disagreed (Figure 31).

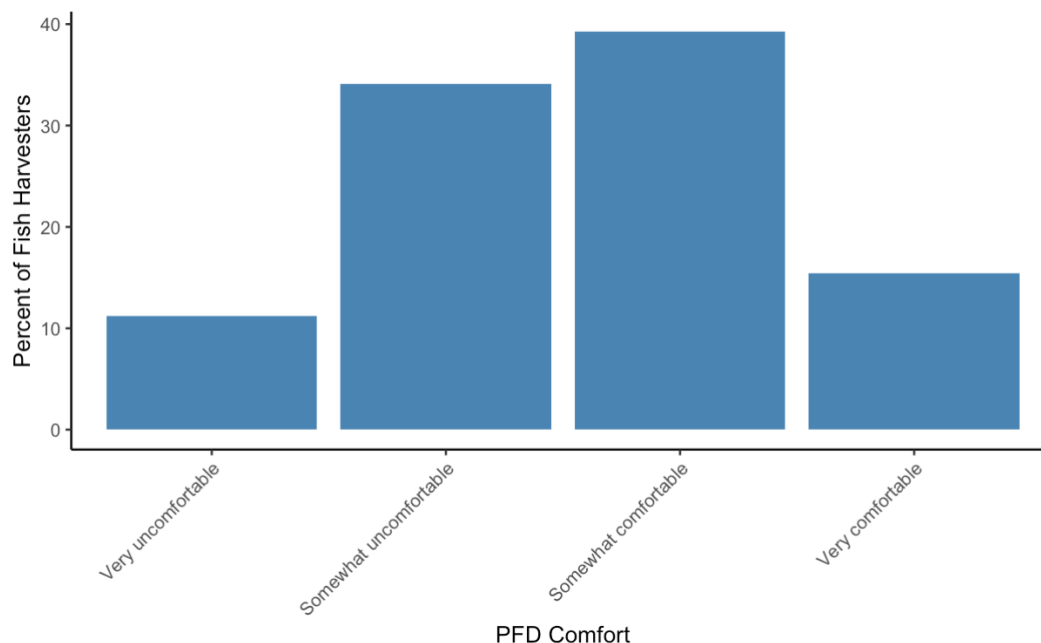


Figure 28 Reported comfort rating of PFDs by fish harvesters

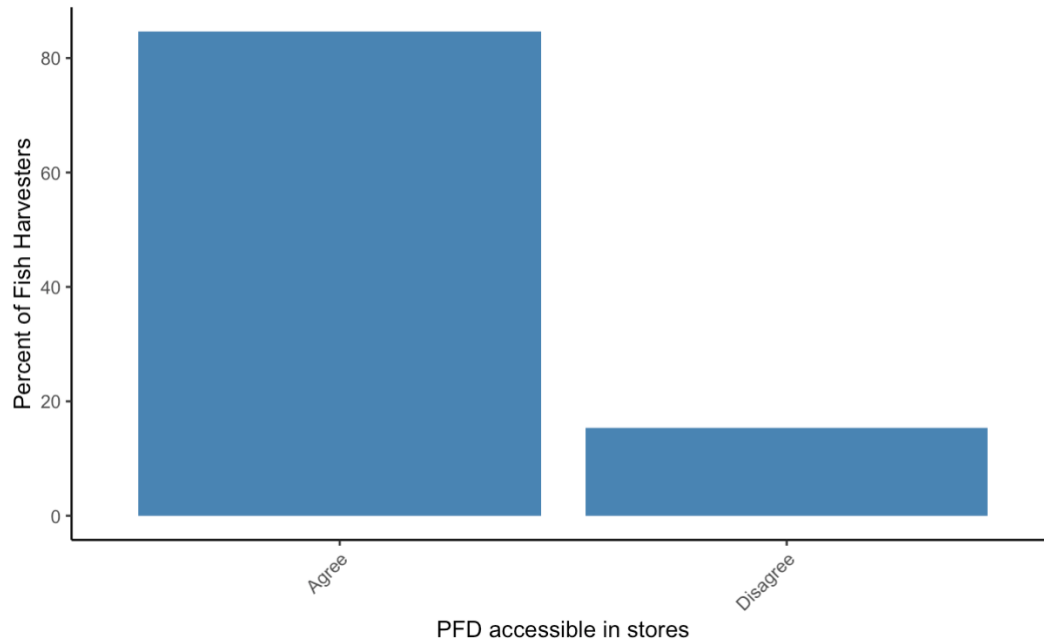


Figure 29 Fish harvesters' perceptions on if PFDs are readily available to purchase

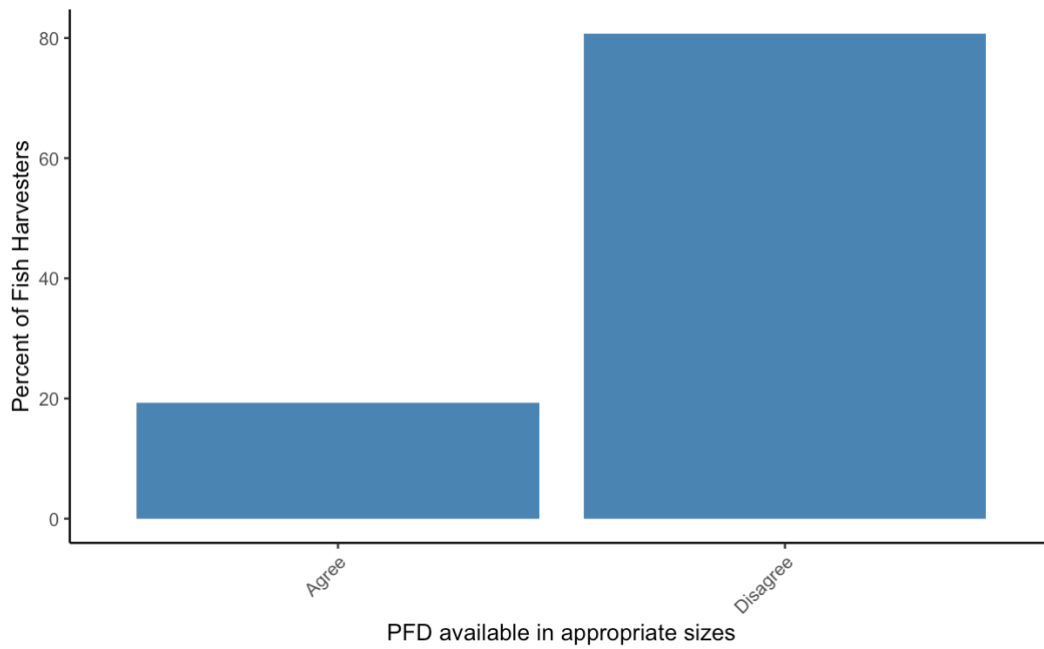


Figure 30 Fish harvesters' perceptions on if PFDs are readily available in appropriate sizes

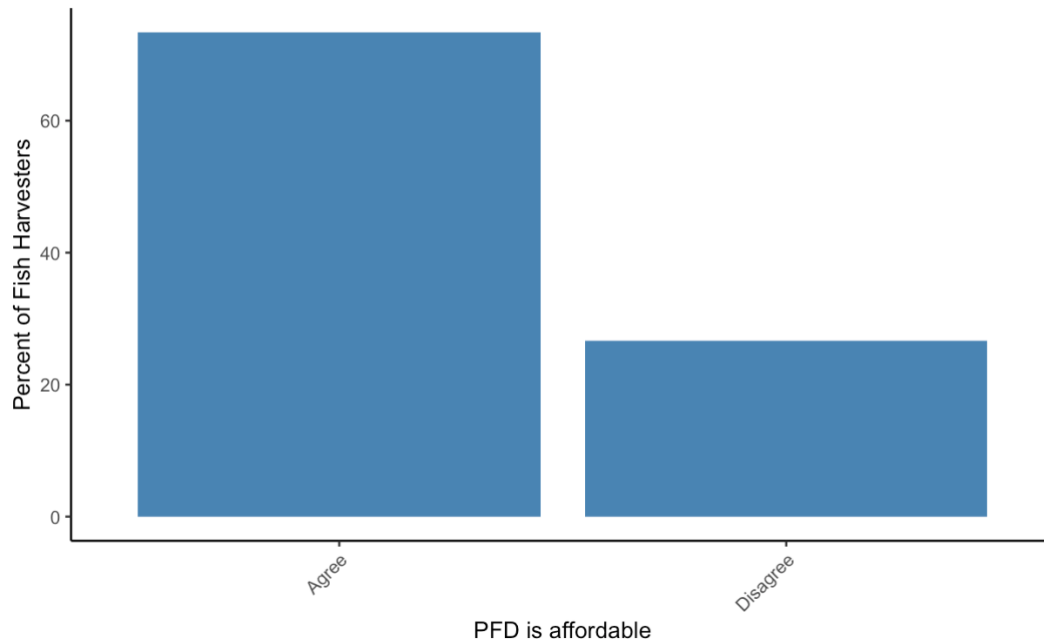


Figure 31 Fish harvesters' perceptions on the affordability of PFDs

3.5.1.2 Work Interference

Fish harvesters reported similarly when asked if PFDs interferes with work or creates an entanglement hazard. The largest proportion of fish harvesters reported somewhat for both interferes with work (46%) (Figure 32) and creates an entanglement hazard (48%) (Figure 33).

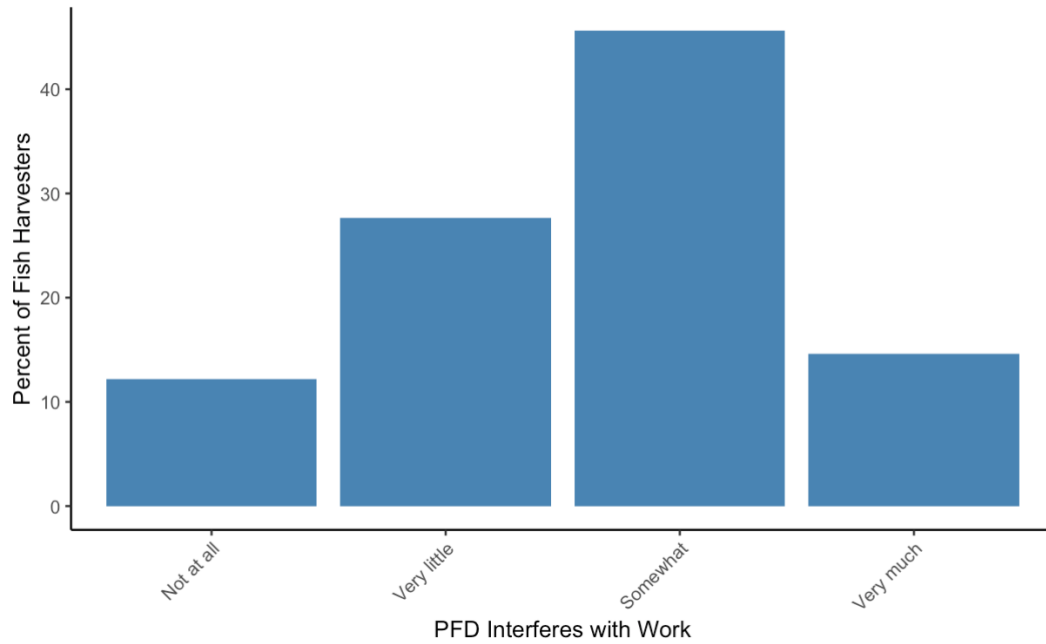


Figure 32 Fish harvesters' perception of how much a PFD interferes with work

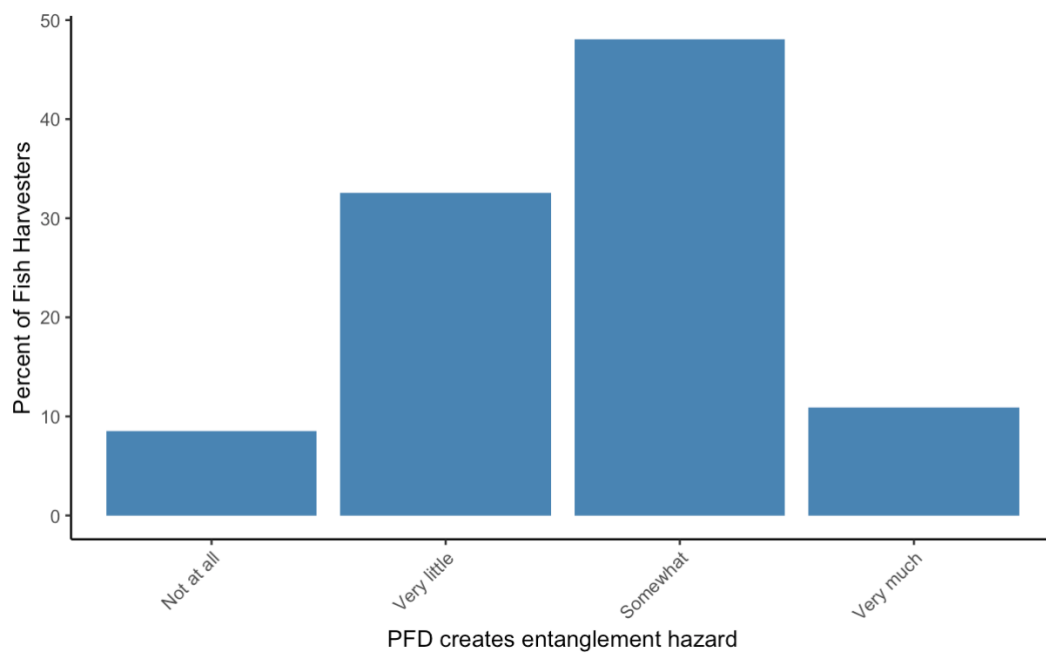


Figure 33 Fish harvesters' perception of how much a PFD creates an entanglement hazard

3.5.1.3 Social and Cultural Norms

While the majority (81%) of fish harvesters disagreed with the statement that a PFD is a sign of inexperience, 19% still agreed that wearing a PFD is a sign of inexperience (Figure 34).

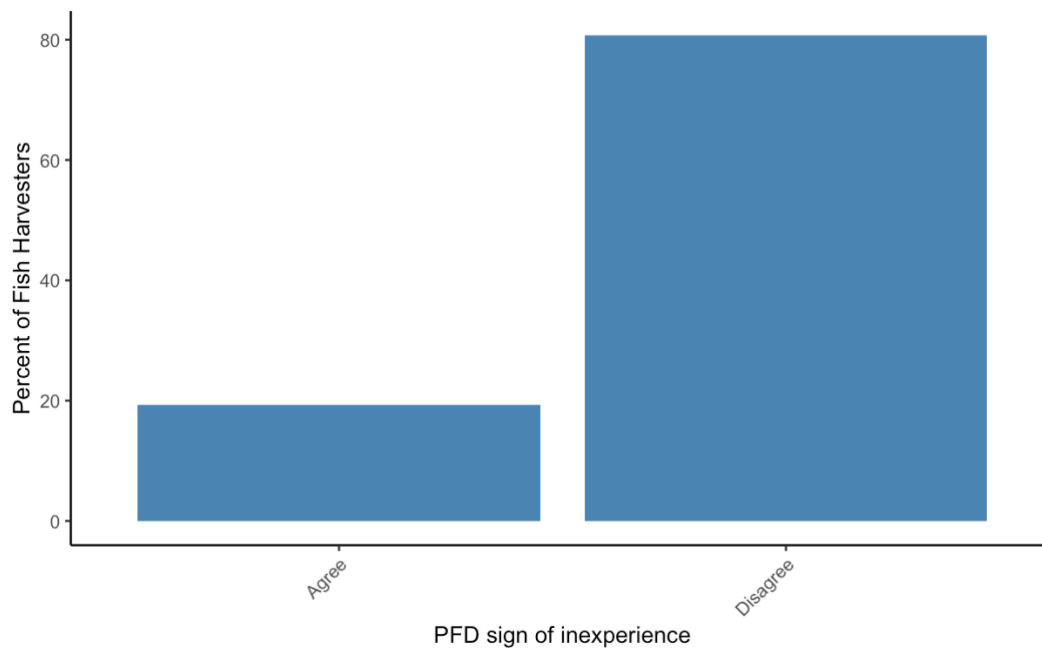


Figure 34 Fish Harvesters' perceptions of PFDs as a sign of inexperience

3.5.1.4 Confidence in PFD

Figure 35 and Figure 36 show that the majority of fish harvesters report PFDs are very effective (74%) and should be required (77%).

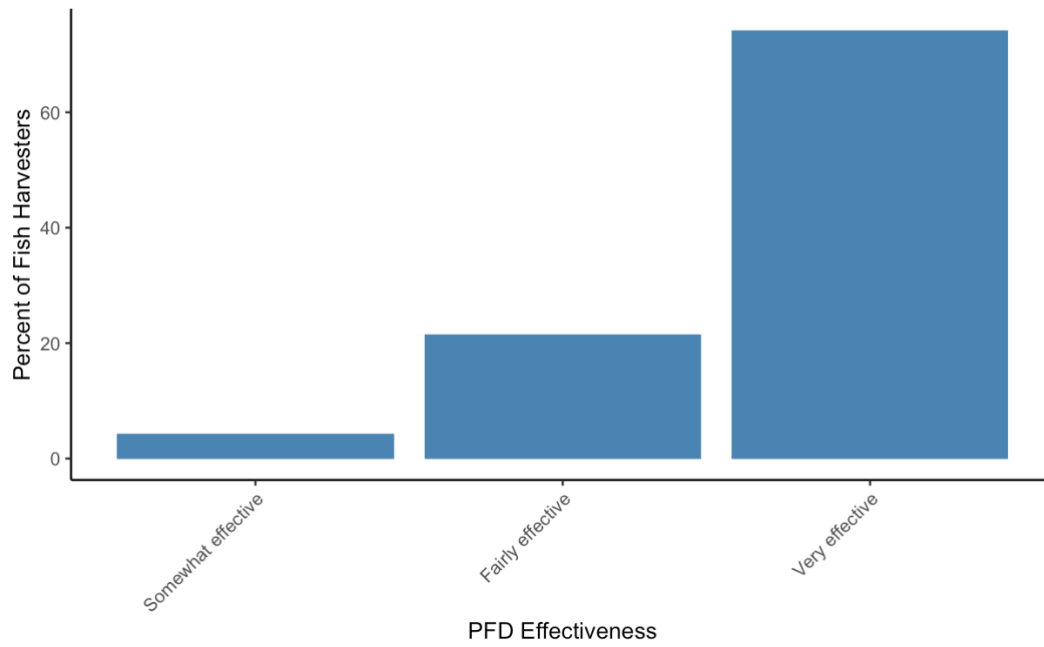


Figure 35 Fish harvesters' perception on the effectiveness of PFDs

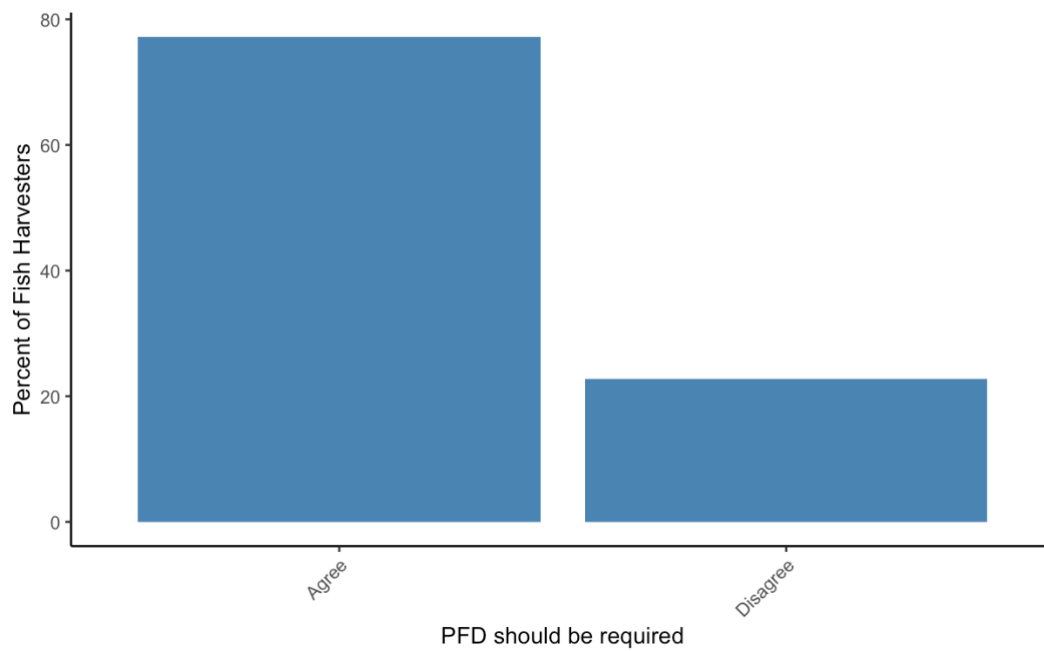


Figure 36 Fish harvesters' perspective if a PFD should be required

3.5.2 Factors Associated with PLB Use

3.5.2.1 Accessibility

In contrast to PFDs, less than 50% of fish harvesters agreed with the statement that PLBs are accessible in stores (Figure 37). In addition, the majority (57%) of fish harvesters disagreed that PLBs are affordable (Figure 38).

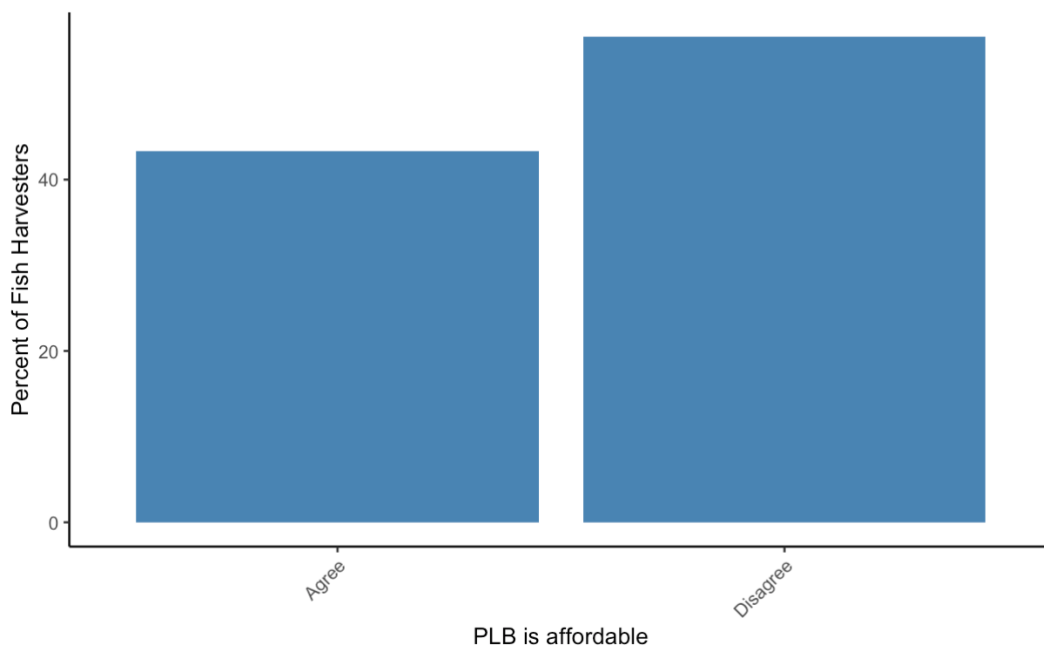


Figure 37 Fish harvesters' perceptions on the affordability of PLBs

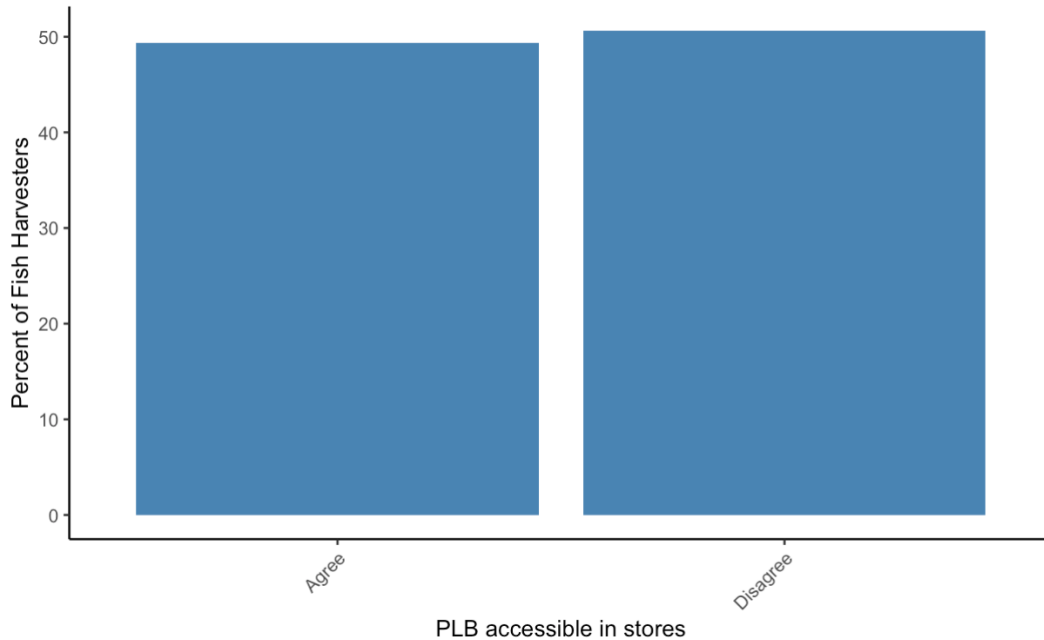


Figure 38 Fish harvesters' perceptions on if PLBs are readily available to purchase

3.5.2.2 Work Interference

Fish harvesters reported similarly when asked if PLBs interferes with work or creates an entanglement hazard. Fish harvesters don't believe the PLB interferes with work or creates an entanglement hazard the same as a PFD. The largest proportion of fish harvesters reported that the PLB didn't interfere with work at all (54%) (Figure 39) or create an entanglement hazard (43%) (Figure 40).

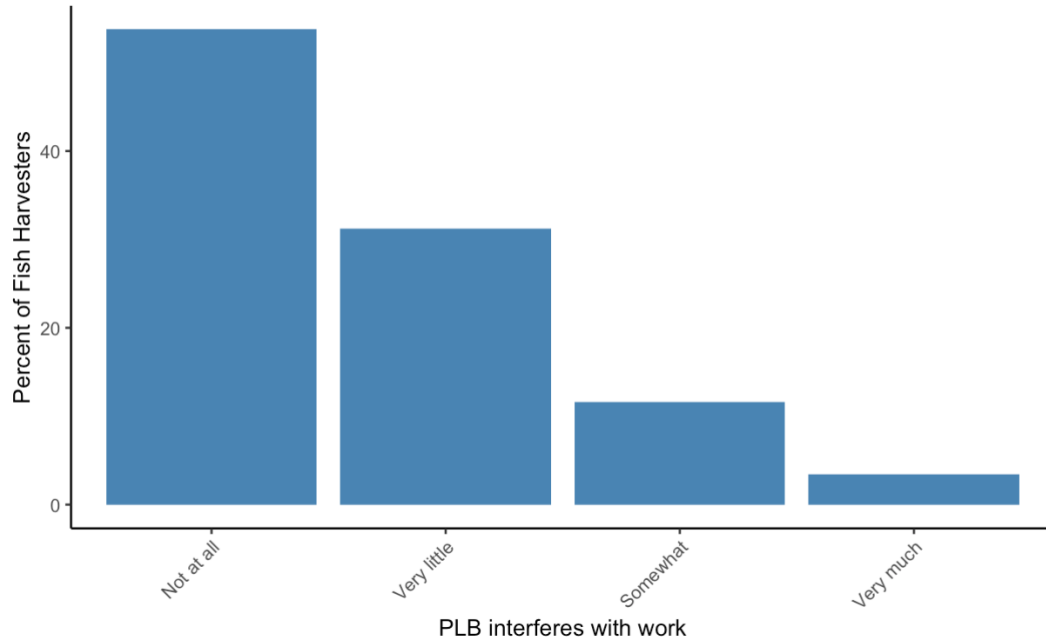


Figure 39 Fish harvesters' perception of how much a PLB interferes with work

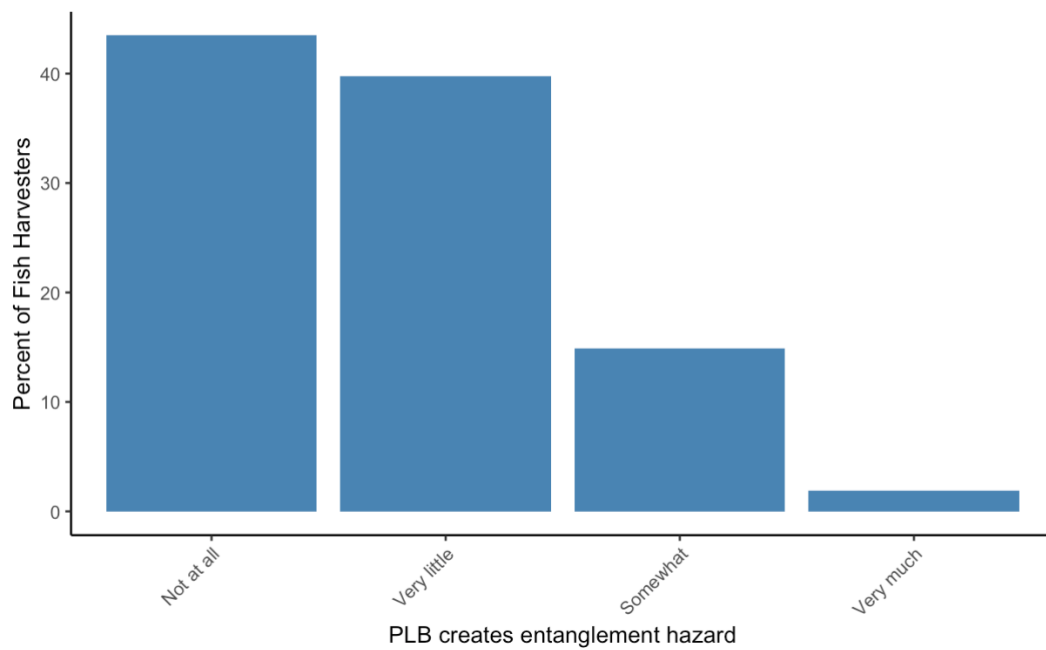


Figure 40 Fish harvesters' perception of how much a PLB creates an entanglement hazard

3.5.2.3 Social and Cultural Norms

Similar to the fish harvesters' responses to wear a PFD is a sign of inexperience, more than 87% of fish harvesters who participated in the questionnaire disagreed with the statement that using a PLB is a sign of inexperience (Figure 41). There were still 13% of the fish harvesters who agreed with the statement that wearing a PLB is a sign of inexperience.

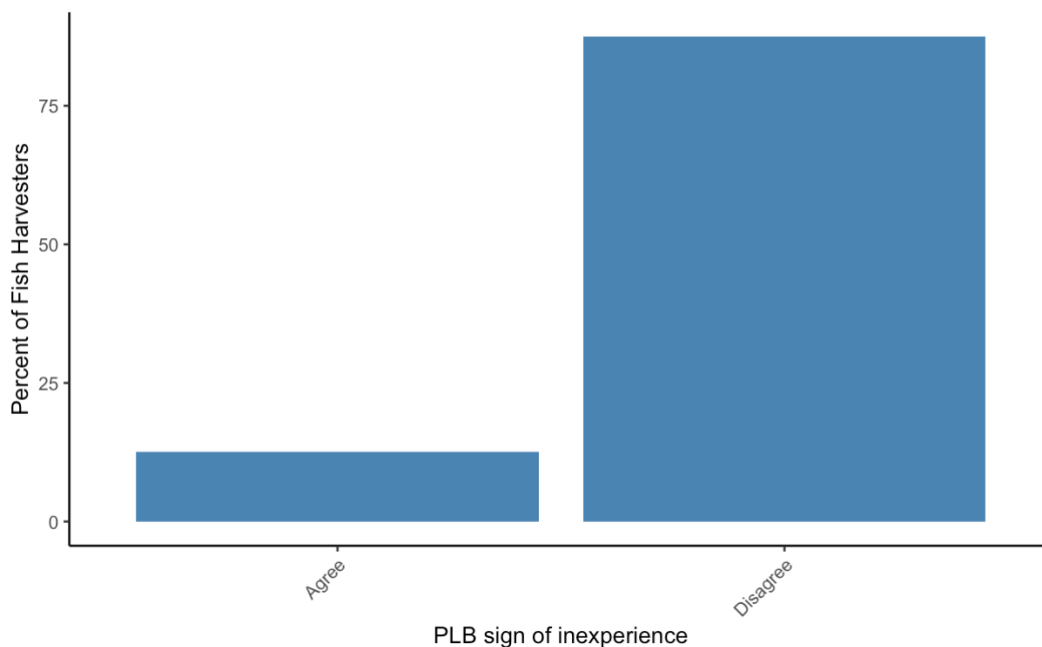


Figure 41 Fish Harvesters' perceptions of PLBs as a sign of inexperience

3.5.2.4 Confidence in PLB

Figure 42 and Figure 43 show that the majority of fish harvesters report PLBs are very effective (62%) and should be required (80%).

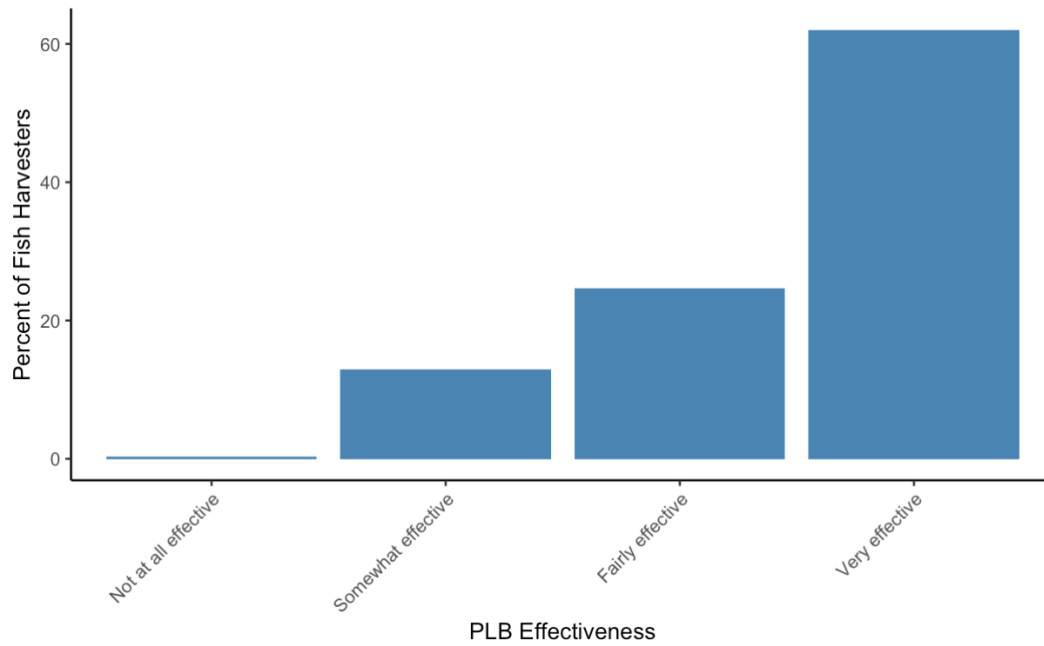


Figure 42 Fish harvesters' perception on the effectiveness of PLBs

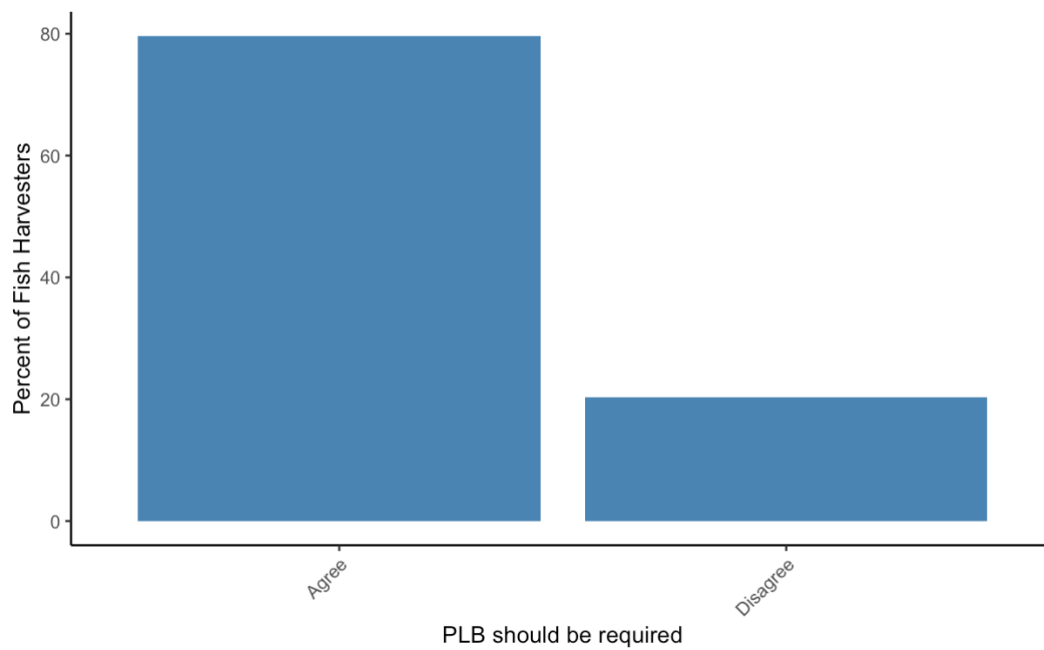


Figure 43 Fish harvesters' perspective if a PLB should be required

3.6 Comparison of Factors Associated with PFD and PLB Use Across Groups

3.6.1 PFD Comfort Across Groups

Figure 44 and Figure 45 show the distribution of perceived PFD comfort stratified by age and gender. Overall, the largest proportion of fish harvesters reported that PFDs were somewhat comfortable, with 50% of those 15-24 years of age and 48% of those 45-54 years of age. While the largest proportion of fish harvesters aged 15-24 years indicated that PFDs are somewhat comfortable, 33% of that age group also indicated that PFDs are very uncomfortable. Reports of being very comfortable were highest among those 65 years of age or more (29%). Across genders, the largest proportion of males reported that PFDs were somewhat comfortable (40%), while females reported that PFDs were somewhat uncomfortable (40%). Twenty percent of females reported PFDs to be very comfortable compared to 15% of males.

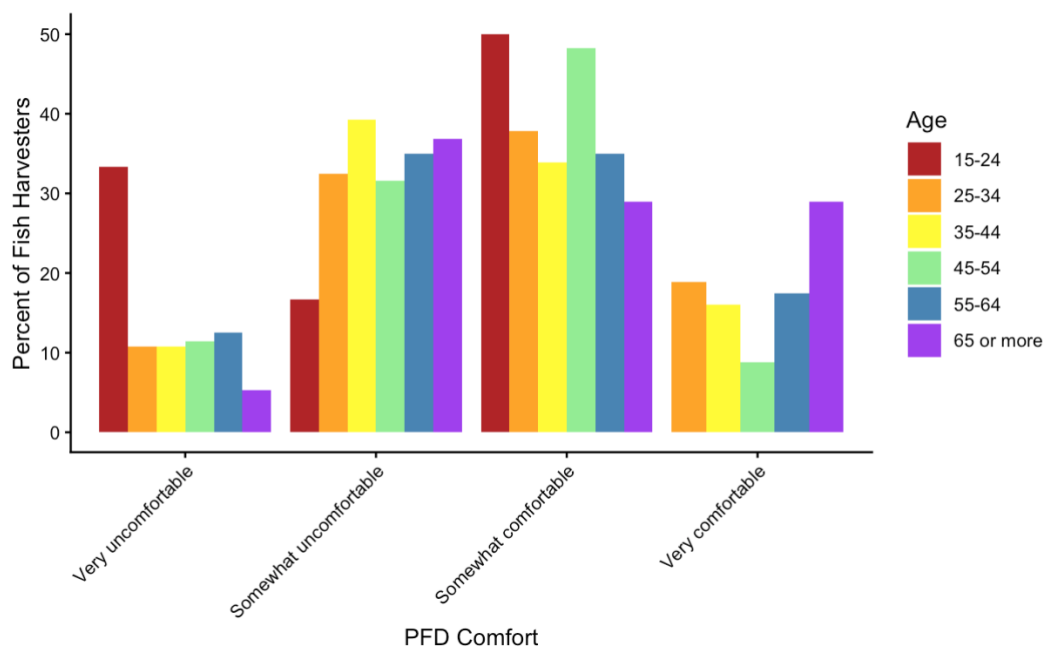


Figure 44 Percentage of fish harvesters reporting perceived PFD comfort, stratified by age group

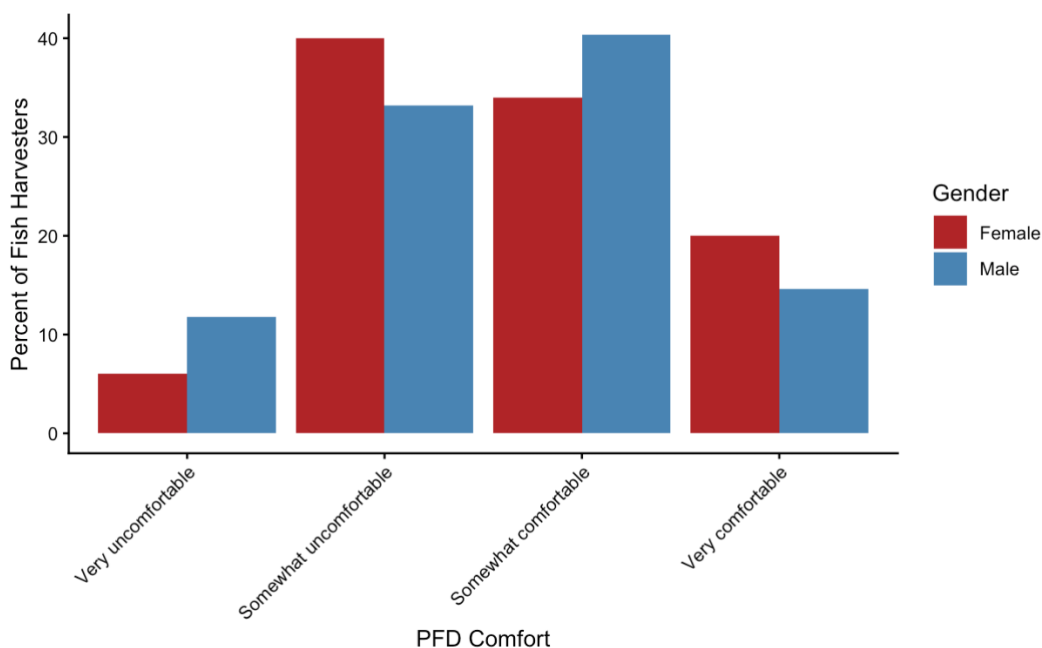


Figure 45 Percentage of fish harvesters reporting perceived PFD comfort, stratified by gender

3.6.2 PFD Interference with Work Across Groups

Figure 46 and Figure 47 show the distribution of perceptions that PFDs interfere with work, stratified by type and length of vessel. The largest proportions for all categories of type and length of vessel generally indicated that PFDs somewhat interfered with work. Across type of vessel, a greater percentage of fish harvesters that fish from decked longliners (19%) reported that PFDs interfere with work very much compared to those that fish from open speed boats (9%) or commercial factory freezer trawlers (9%). Similarly, a greater percentage (21%) of those that fish from vessels 40' – 64'11" reported that PFDs interfere with work very much compared to those that fish on smaller and larger vessels.

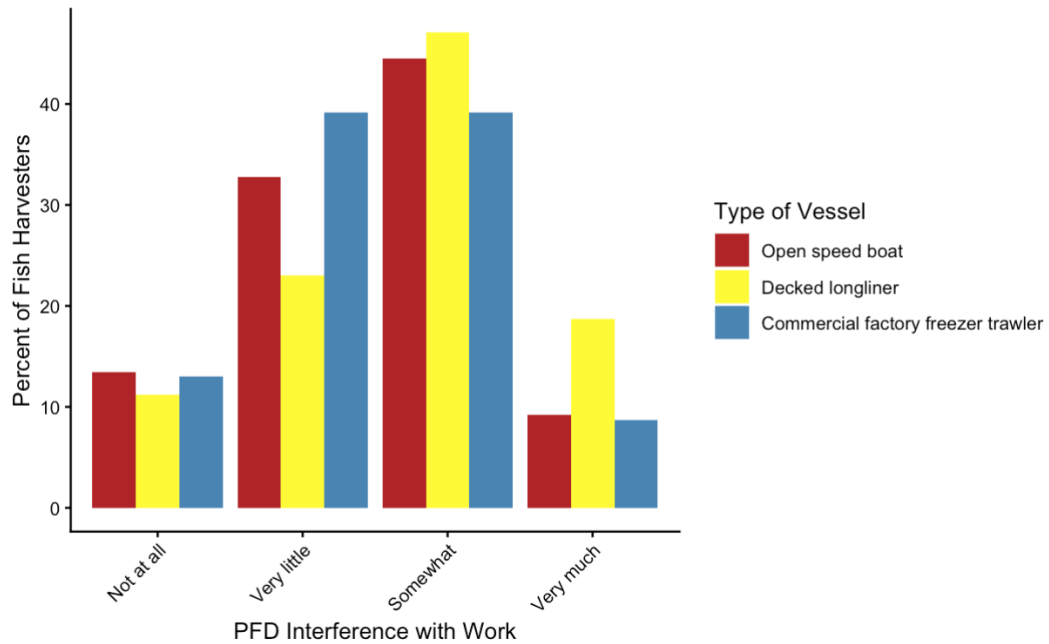


Figure 46 Percentage of fish harvesters reporting PFDs interfere with work, stratified by type of vessel

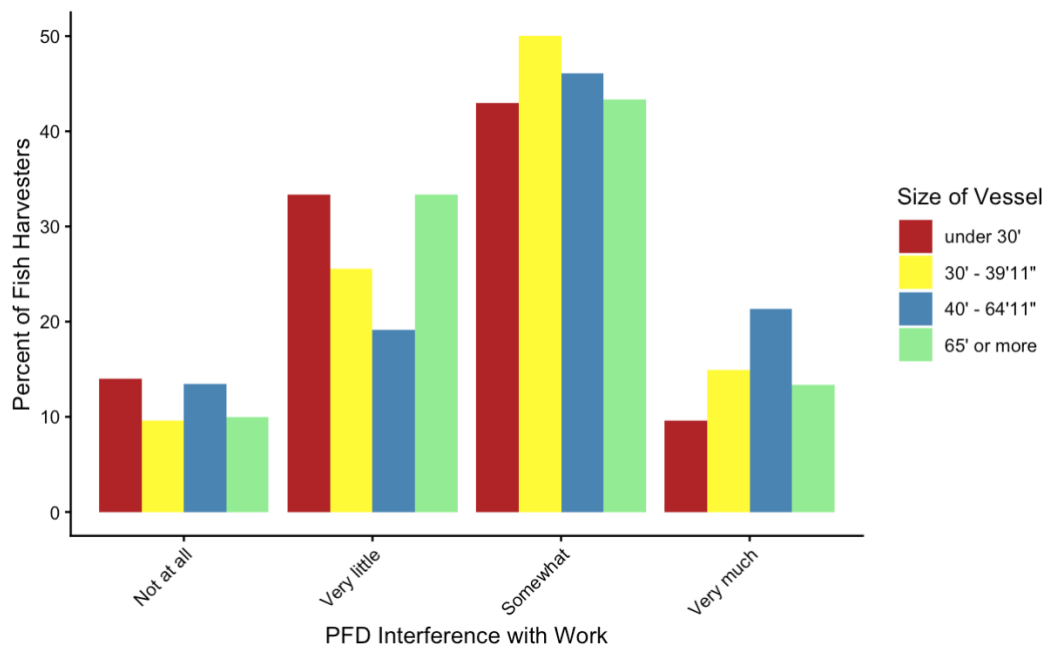


Figure 47 Percentage of fish harvesters reporting PFDs interfere with work, stratified by length of vessel

3.6.3 PFD as a Sign of Inexperience Across Groups

Figure 48 to Figure 50 show the distribution of fish harvesters reporting that wearing a PFD is a sign of inexperience, stratified by swim ability, age, and years of fishing experience. Overall, the majority of fish harvesters disagreed that wearing a PFD is a sign of inexperience. Overall, the majority of fish harvesters disagreed that wearing a PFD is a sign of inexperience. Eighty-three percent of fish harvesters who identified as good swimmers and 81% who indicated they cannot swim disagreed with the statement, while 77% of weak or beginner swimmers also disagreed. Across age groups, 100% of fish harvesters 15-24 years of age disagreed with the statement, with disagreement with the statement decreasing slightly with age. When compared to the other age groups, the oldest group (65 years or more) had the highest percentage (30%) in agreement with the statement. Similarly, a greater percentage (25%) of those with more than 30 years of experience agreed with the statement compared to fish harvesters with less years of experience.

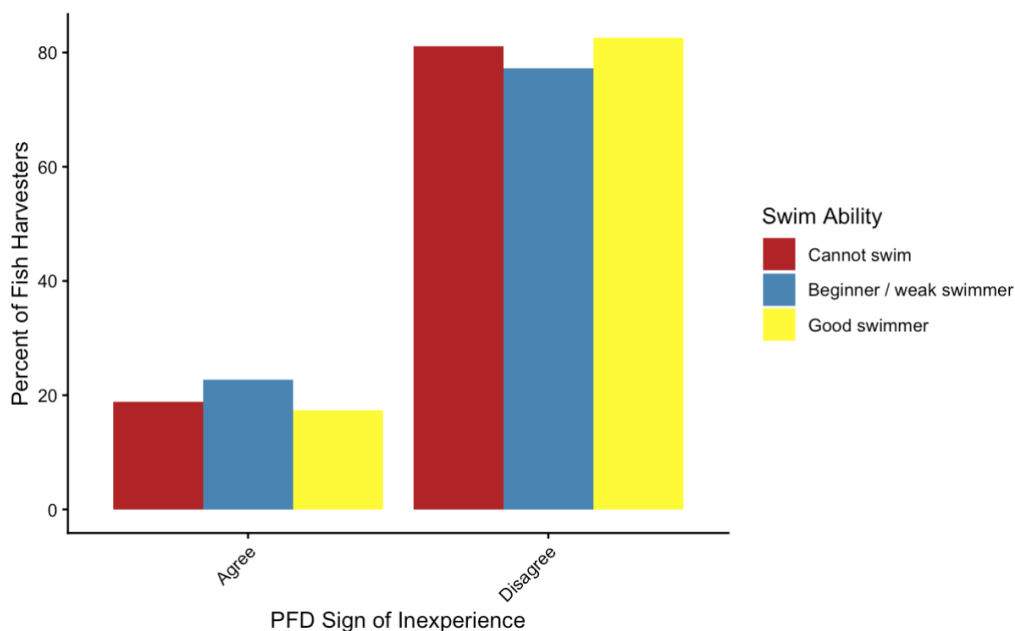


Figure 48 Percentage of fish harvesters reporting PFDs is a sign of inexperience, stratified by swim ability

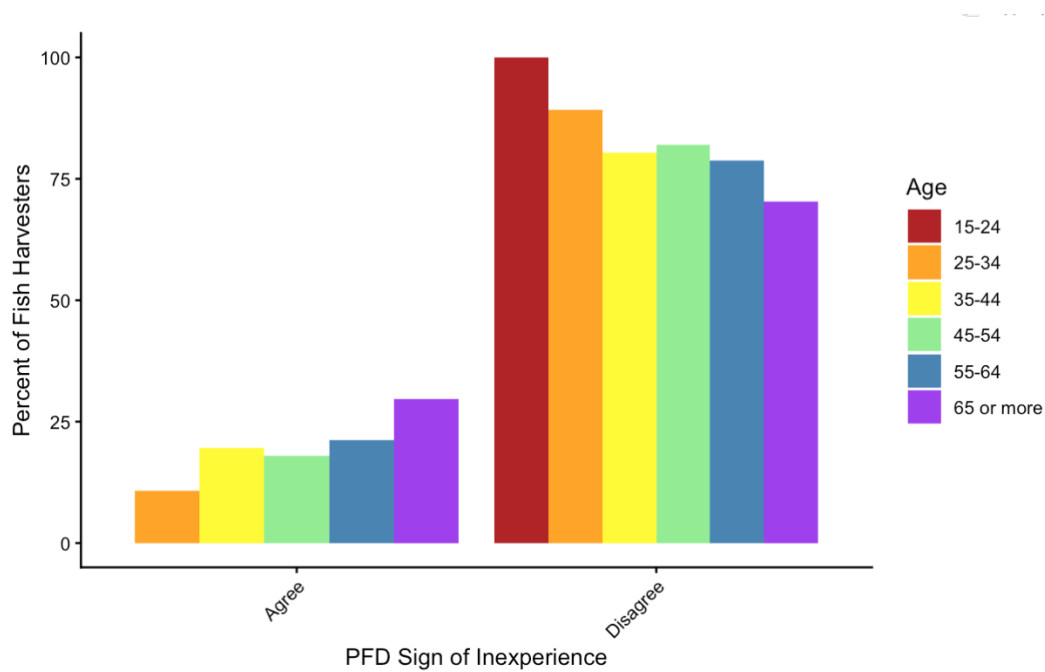


Figure 49 Percentage of fish harvesters reporting PFDs is a sign of inexperience, stratified by age

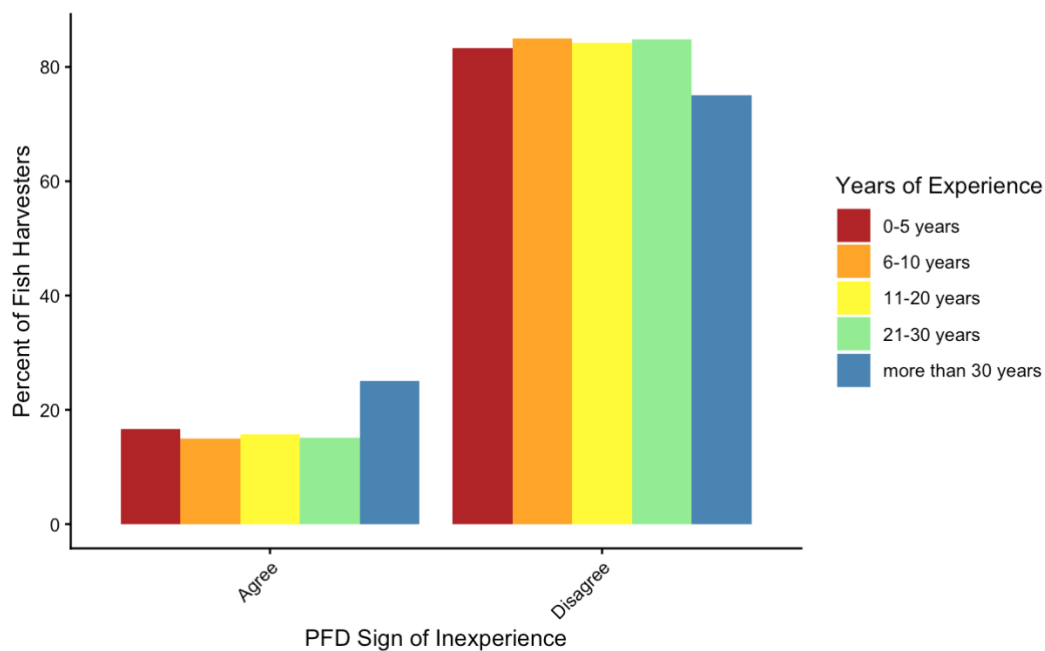


Figure 50 Percentage of fish harvesters reporting PFDs is a sign of inexperience, stratified by years of fishing experience

3.6.4 PLB Cost Across Groups

Figure 51 and Figure 52 show the distribution of perceived PLB affordability, stratified by age and gender. Overall, a greater proportion of fish harvesters across the age groups and genders disagreed with the statement that PLBs are affordable. Disagreement was highest among the younger age groups, with 67% of fish harvesters 15-24 years of age and 70% 25-34 years of age disagreeing. While 53% of those 65 years or more agreed that PLBs are affordable. Across genders, a greater percentage (63%) of females indicated that PLBs are not affordable compared to males (56%).

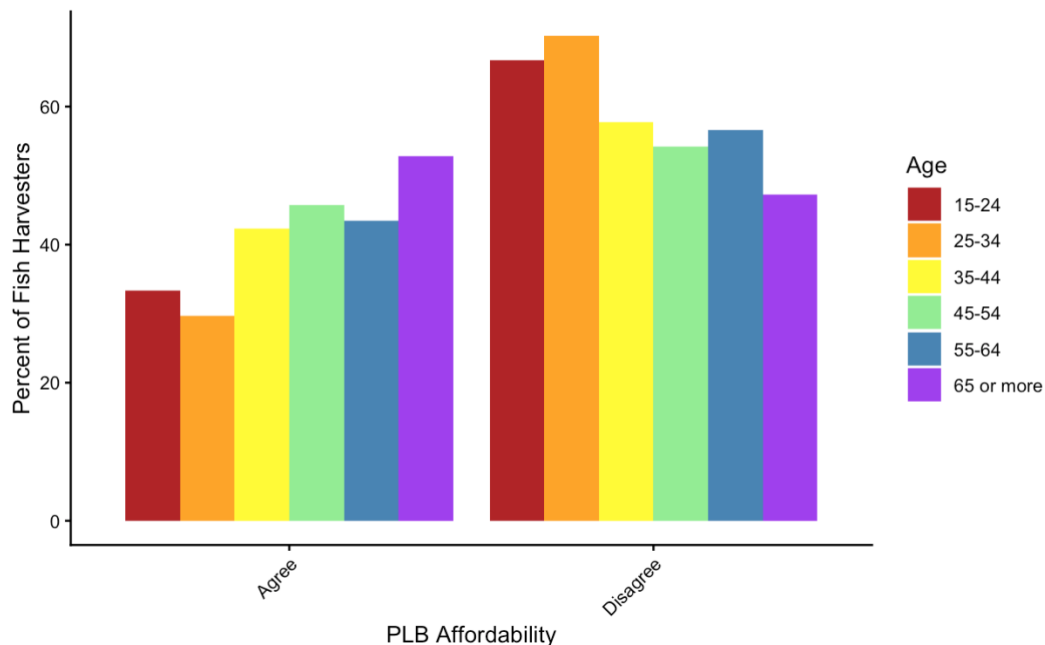


Figure 51 Percentage of fish harvesters reporting PLBs are affordable, stratified by age

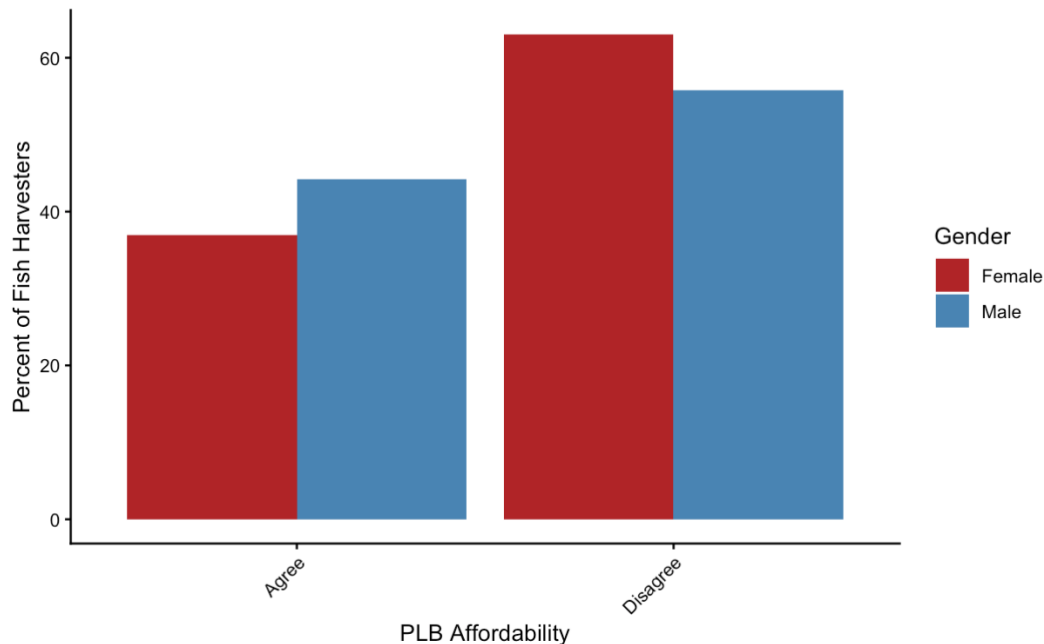


Figure 52 Percentage of fish harvesters reporting PLBs are affordable, stratified by gender

3.6.5 PLB as a Sign of Inexperience Across Groups

Figure 53, Figure 54, and Figure 55 show the distribution of fish harvesters reporting that using a PLB is a sign of inexperience, stratified by swim ability, age, and years of fishing experience. Overall, the majority of fish harvesters disagreed that using a PLB is a sign of inexperience. The percentage of fish harvesters that disagreed with the statement ranges from 82% to 90% across the different swim abilities. Across age groups, 100% of fish harvesters 15-24 years of age disagreed with the statement, with disagreement with the statement decreasing slightly with age. While the majority (81%) of the oldest group (65 years or more) disagreed with the statement, they had the highest percentage (19%) in agreement with the statement. Similarly, a greater percentage (18%) of those with more than 30 years of experience agreed with the statement compared to fish harvesters with less years of experience.

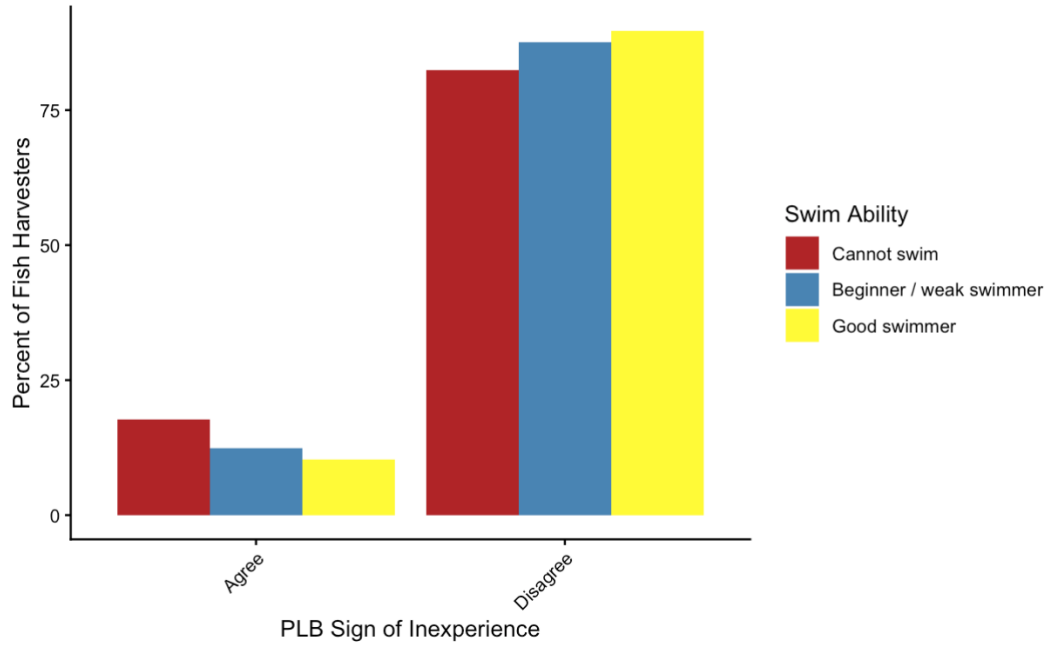


Figure 53 Percentage of fish harvesters reporting PLBs are a sign of inexperience, stratified by swim ability

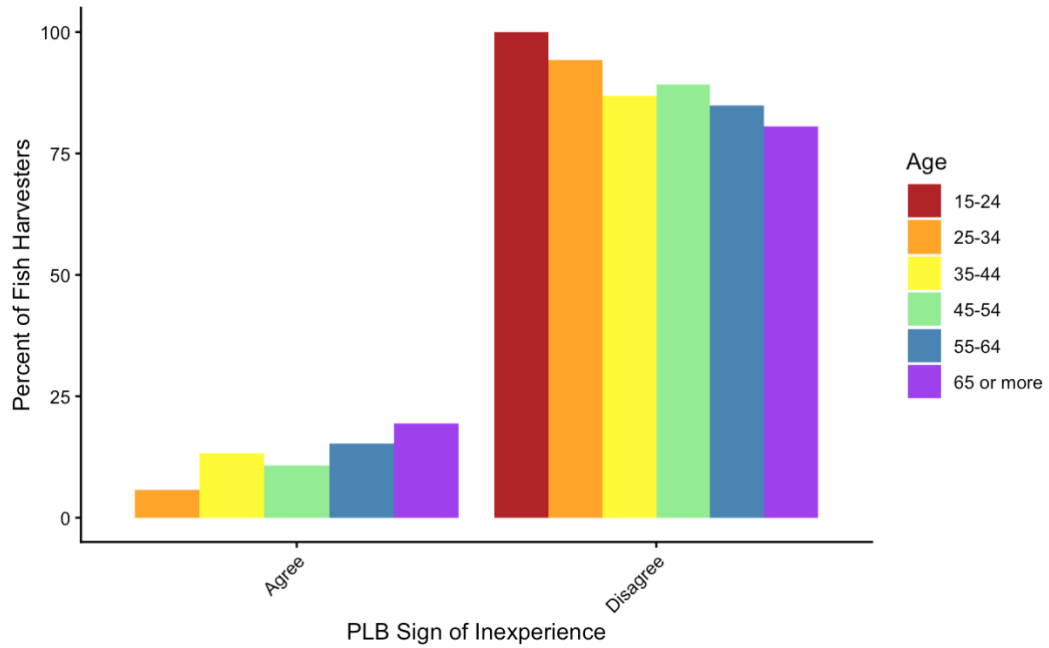


Figure 54 Percentage of fish harvesters reporting PLB are a sign of inexperience, stratified by age

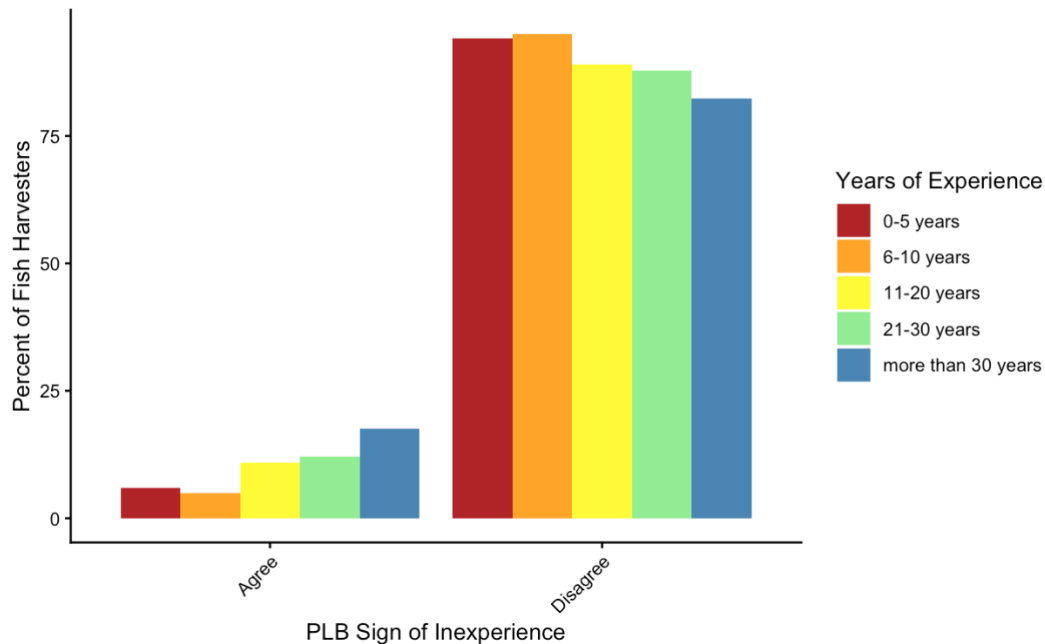


Figure 55 Percentage of fish harvesters reporting PLBs are a sign of inexperience, stratified by years of fishing experience

4 Discussion

4.1 Summary

The objective of this survey was to gather self-reported evidence on the use of PFDs and PLBs and factors associated with the use of PFDs and PLBs from professional fish harvesters in the province of Newfoundland and Labrador. Of the 392 fish harvesters that completed the questionnaire, the majority (74%) of them were 35-64 years of age, and overall 83% were male and 17% were female. These distributions of age and gender are more representative of the professional fish harvesting population than an evenly distributed sample. In addition, more than half 66% reported having more than

10 years of experience fishing, but 52% were weak or non-swimmers. In addition, more than 90% indicated that their primary boat was under 65'.

For those who responded, a large proportion of fish harvesters reported that they were using PFDs (with almost 42% indicating they always use a PFD), however fewer are using PLBs. It also appears that more fish harvesters are in the maintenance stage of using a PFD. However, for PLB use, most are in the precontemplation, contemplation, and preparation stages.

Forty-five percent of fish harvesters indicated that PFDs are either somewhat or very uncomfortable. This suggests that comfort may be a barrier to PFD use for some of the population, similar to other research that found comfort was an important factor in determining whether a fish harvester would wear a PFD or not (Sorensen et al., 2019). Perceived PFD discomfort was greater for the younger fish harvesters, with older fish harvesters reporting greater comfort. In addition, most harvesters felt that PFDs should be mandatory (more than 77%), despite the fact that fewer than 38% indicated they wear it constantly. A similar proportion felt that wearing a PFD was not a sign of inexperience and that PFDs are affordable and accessible. Interestingly, more than 80% felt that PFDs are not available in appropriate sizes, despite just a little more than half indicating they were somewhat or very comfortable. The vast majority felt that PFDs are very effective (74%).

By comparison, the vast majority of harvesters indicated that they never wear a PLB.

More than half (54%) of all respondents indicated that a PLB does not interfere with work at all and most (43%) felt a PLB posed little to risk of entanglement by wearing. As with PFDs, the vast majority respondents felt that PLBs should be mandatory and that using a PLB isn't a sign of inexperience. However, unlike PFDs, there was a roughly equal split on whether a PLB is affordable – with more (57%) indicating a PLB is not affordable and roughly 50% felt that PLBs are not easily accessible in stores – in contrast with similar questions about PFDs. The vast majority of respondents felt that PLBs were effective, with more than 76% indicating they were fairly or very effective. Further analysis and interpretation of the data will be presented in final report and manuscript for publication in a peer-reviewed academic journal.

4.2 Comparison to Systematic Review

The findings from the survey were similar with those in the systematic review of factors associated with PFD and PLB use among fish harvesters. The review indicated some of the factors associated with PFD use included comfort, work interference, risk of entanglement, social and cultural norms, and cost. Fish harvesters in NL reported similar factors in the survey.

One of the main factors highlighted in the survey was that NL fish harvesters reported PFDs to be uncomfortable. Forty-five percent of fish harvesters indicated that PFDs are somewhat or very uncomfortable, which aligns with other studies reporting PFD comfort as an issue that lead to decrease use of PFDs (Ahmad et al, 2017; Sorensen et al, 2019). The perception that PFDs interfere with work and create entanglement hazards did not appear to be an issue for the majority of NL fish harvesters with 46% indicating

that PFDs somewhat interfere with work and 48% indicating that PFDs somewhat create entanglement hazards. Similarly, prior studies noted that fish harvesters indicated that PFDs interfered with work and restricted movement, and created entanglement hazards (Lucas et al, 2013; Weil et al, 2016).

Oporia et al. (2022) reported that there was a perception that using a PFD was for women only. While a few NL fish harvesters agreed that using a PFD is a sign of inexperience, the majority disagreed with such cultural perceptions. This may indicate a shift in norms towards increased acceptance for PFD use. This shift may be the result of increased safety awareness through ongoing interventions or recent safety-related incidents or accidents.

The cost of PFDs was another barrier highlighted in the literature (Sorensen et al., 2021). However, it appeared to be less of an issue with the majority of NL fish harvesters with 74% agreeing that they are affordable. Unlike PFDs, the survey findings indicated that the majority (57%) of fish harvesters believe PLBs are not affordable.

While the objective of the systematic review was to search for any literature on factors associated with PFD and PLB use by fish harvesters, no studies were found related to PLBs use among fish harvesters. The survey findings related to PLB usage rates and factors associated with PLB use address a gap in the literature by providing novel and important contributions to the field.

5 Conclusion

The findings show that far fewer fish harvesters are using PLBs than PFDs, and highlights some of the perceived barriers that may be associated with these use rates. While PFD use is better than PLBs, it is important for future research to continue to investigate ways to improve both PFD and PLB use among fish harvesters.

The evidence collected may be used to inform the development of interventions, regulatory measures, and future research aimed at increasing the use of PFDs and PLBs by professional fish harvesters, and subsequently reduce the number of drowning related fatalities. The results of this survey will be submitted to an academic journal for peer-review and publication.

6 Acknowledgements

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