

Boating safety and personal flotation device research report 2014-15

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Executive summary

Harbourmaster staff observations, and research in 2013 and 2014 identified issues with carriage, and fit of personal flotation devices (PFDs) in the boating community. These observations and findings motivated further research in the 2014-15 boating season. The purpose of the research undertaken was to identify safety and compliance gaps in the boating community.

Two researchers completed the quantitative field research, in six harbourmaster areas, on the water. This methodology ensured data was collected consistently, that the findings are indicative of boaties behaviour on the water, and that the results are across harbourmaster areas. The harbourmaster areas included in the research were Northland, Auckland, Waikato, Bay of Plenty, Taupo, and Canterbury.

A total of 963 vessels were surveyed. Aboard these vessels were 2374 adults and 533 children (13 years or less). Powerboats were the most common vessels used, and on the east and west coast the majority of these being used for fishing; on inland waters, towing was the most common activity. The most frequent age for skippers was 35-44, followed closely by 45-54 years, 95% of skippers surveyed were male.

61 skippers failed to carry sufficient PFDs for the number of people aboard their vessel. 27.2% of children wore PFDs which were substantially too small or large. Continued enforcement and education is needed in relation to these items.

Inflatables were a popular choice of PFD with 36.2% skippers surveyed carrying at least one inflatable aboard their vessel. However, 59.7% of skippers were unaware of the servicing requirements for these PFDs. In addition, some skippers and passengers struggled with how to put an inflatable on, this, and the lack of knowledge of how to use it in an emergency situation was also highlighted. Children under the age of 12 years or less than were also observed to be wearing adult inflatable PFDs. The research indicates that this a national issue. It is recommended that the national agency, Maritime NZ, work with manufacturers and distributors of PFDs to improve safety in relation to inflatable PFDs from point of sale.

There are compliance gaps with vessel identification and jetski registration in the areas that have regional bylaws requiring these.

Cellphones were the most commonly carried form of communication and yet there were a high number of skippers not waterproofing this form of communication. VHF radios were the second most commonly carried form of communication and a small number of skippers indicated they did not know how to use their VHFs. Further education is needed in both of these areas.

Boaties are a mobile community; a number of boaties came from outside of the region in which they were boating in. It is important that harbourmaster offices collaborate on activities, and the findings further highlight the importance of the national agency guidance and activities.

1 Introduction

1.1 Background

Harbourmaster staff observations identified issues around carriage and fit of personal flotation devices (PFDs) in the boating community. Quantitative field research in 2013 and 2014 confirmed this and further highlighted issues with servicing of inflatable PFDs.

Initial, on the water, field research was undertaken in the Waikato region in the summer 2013-14. In 2014-15, the research expanded and additional harbourmaster offices around the country participated in the research. Evaluation of previous surveys indicated a need for improved consistency of data gathering, therefore, 2014-15 surveys were undertaken by two researchers across a number of harbourmaster areas. In addition, survey questions were expanded to capture other safety related information.

1.1.1 The rules and safety advice

Part 91 of the Maritime Transport Act requires skippers to ensure that sufficient, appropriately-fitting personal flotation devices are carried for the people aboard the vessel.

Regional bylaws differ slightly in their safety requirements. Items relevant to the survey are listed below:

Harbourmaster area	Rule
Waikato and Canterbury	Compulsory wear PFDs in vessels 6m or less
Northland, Auckland, Taupo, and Waikato	Personal watercraft (jetski) registration
Auckland and Waikato	Compulsory carriage of one waterproof form of communication
Auckland, Waikato, and Taupo	Vessel identification requirements for powerboats 4m and over

While there is not legislation in place for all safety aspects of boating there are some clear safety recommendations.

- It is recommended to carry at least two forms of usable communications. It is recommended that the communications are waterproofed; this includes cellphones waterproofed or carried in a drybag.
- Inflatable PFDs need to be regularly serviced. Manufacturers recommend servicing once every two years. Adult inflatables are not recommended for children (12 years or less) and persons under 40 kilograms.

1.2 Purpose

The purpose of this research is to identify safety and compliance gaps in the boating community.

The research was undertaken across harbourmaster areas to assess differences in behaviour, and to allow for benchmarking.

1.3 Methodology

All surveys were completed on the water from harbourmasters' vessels (except by a Coastguard vessel, McKenzie Lakes), by two Waikato regional council harbourmaster staff, with market research experience.

Every vessel that was passed, when researchers were not already engaged with a vessel, was stopped (with the exception of most yachts and launches, as there were challenges to stop these vessels and they do not have high representation in fatality statistics).

Every person aboard was asked to put on the PFD, if not already worn, that was carried aboard the vessel for them. Additional questions in relation to PFDs and other safety equipment were asked. All questions were asked of the skipper (questions in Appendix A).

A child, for the purpose of this research, is 13 years or younger, as is consistent with the previous research. Note, if uncertain of age, age was asked.

Each vessel interacted with also received first hand education and information relating to their equipment. This included showing how to use and service inflatable PFDs.

Some observations of interactions have been noted in the results, as these are relevant to understanding the current state.

With regard to geographic spread, it is postulated that 75% of boating occurs from Taupo north (Colmur Brunton survey 2008). In this vein, the majority of research was undertaken Taupo north. Data from Mackenzie Lakes District was also collected.

Note: weather and time restricted the ability to gather data as was planned in the South Island, and additional planned west coast surveys.

Skipper age was assessed by the researcher and put into categories aligning with Water Safety New Zealand DrownBase statistical fields.

No commercial vessels or vessels hired for reward were included in the results.

1.4 Limitations

There were a number of limitations which impacted the collection of data. These included:

- individual perception of appropriate fit,
- the day in which the data was collected in each location will affect results (for example there will be a higher proportion of persons out of an area in peak holiday period),
- on occasion skippers presented children's PFDs intended to be worn by adults, these vessels are still listed as carrying sufficient PFDs, therefore the data does not reflect these situations,
- when PFDs were not carried the vessel was escorted back to shore, this meant data collected was limited,
- areas in which surveys were completed are disproportionate to boating numbers, specifically a lack of west coast and south island coastal data.

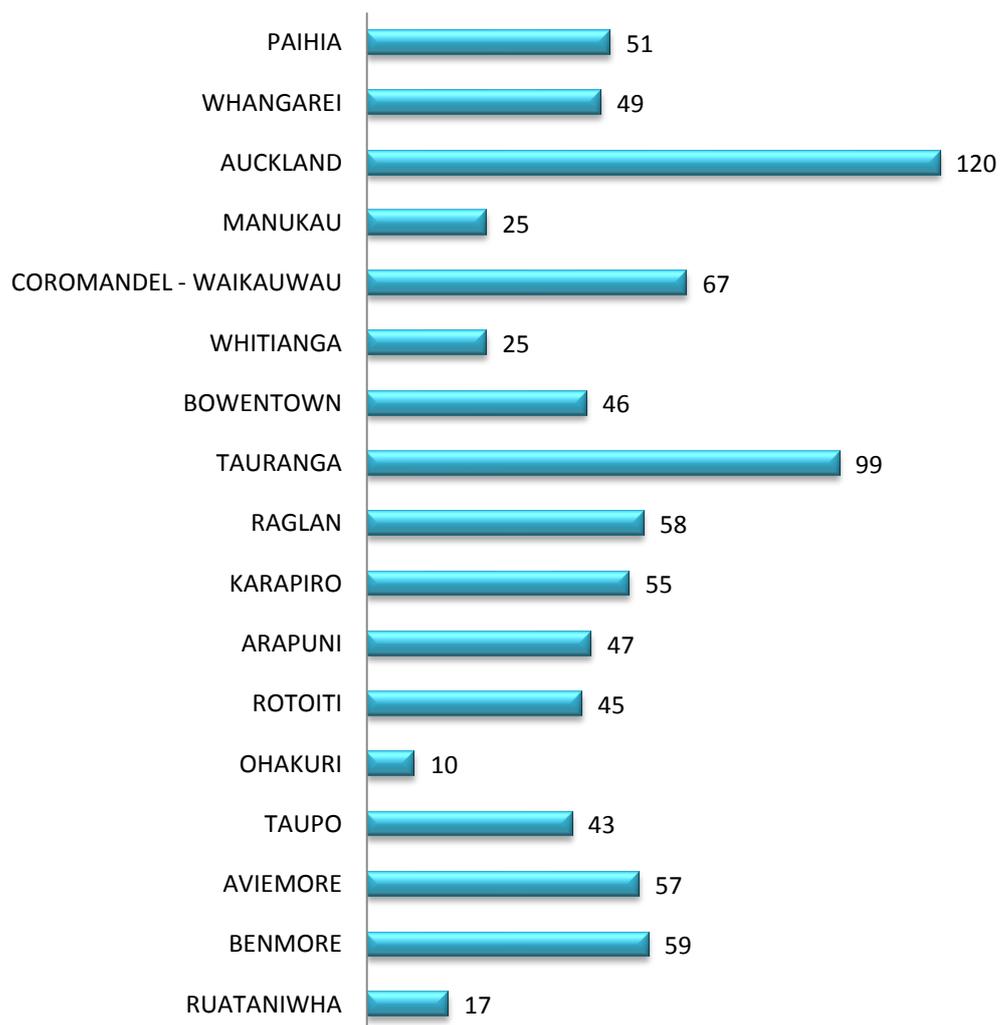
2 Findings

2.1 General

- 963 vessels were surveyed*
- 17 waterways (detailed in 2.1.1)
- six harbourmaster areas; Northland, Auckland, Waikato, Bay of Plenty, Taupo and Canterbury
- 2374 adults, 533 children
- mode size of powerboat, 5.5 metres

**the total may vary further where there were blank responses.*

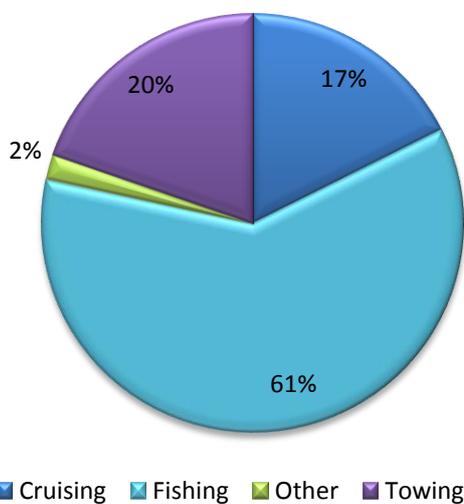
2.1.1 Surveys by waterway



2.1.2 Surveys by harbourmaster area and geographic spread

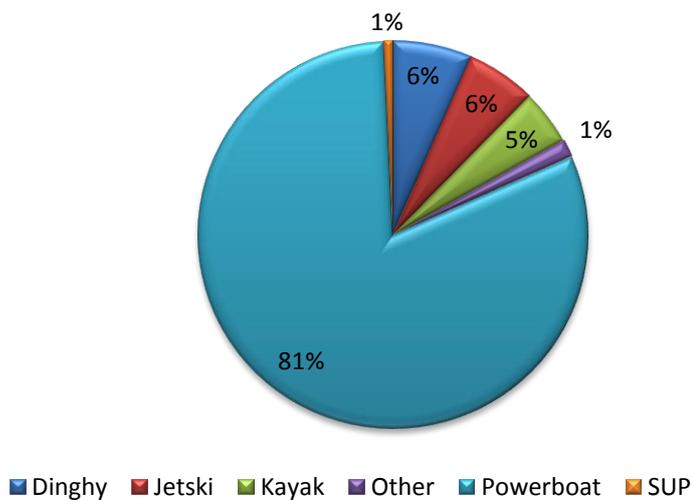
	East coast waters	Inland waters	West coast waters	Total
Northland	100	-	-	100
Auckland	120	-	25	145
Waikato	182	112	58	352
Bay of Plenty	145	45	-	190
Taupo	-	43	-	43
Canterbury	-	133	-	133
Total	547	333	83	963

2.1.3 Activity type



Note: 'other' was typically support vessels, or persons diving

2.1.4 Vessel type

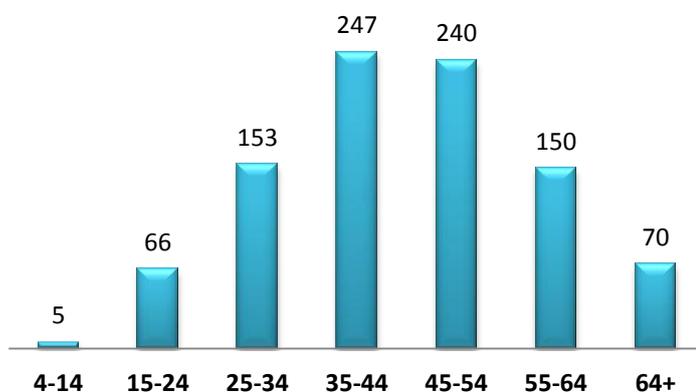


2.2 Activity type by area

	East coast waters	West coast waters	Inland waters	Total
Fishing	401	70	57	528
Towing	8	3	160	171
Cruising	60	8	84	152
Other	11	2	4	17

2.3 Skipper demography

2.3.1 Skipper age



2.3.2 Skipper gender

- 95% of skippers surveyed were male.

2.4 Personal Flotation Devices

2.4.1 Carriage of PFDs

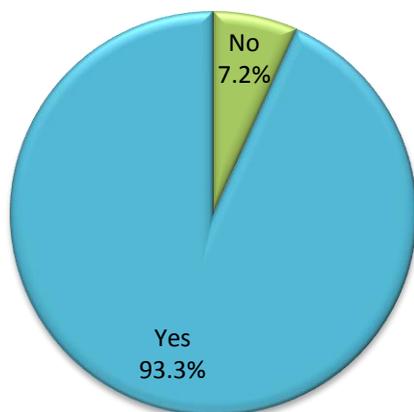


Figure 1: Percentage of sufficient carriage of PFDs for the number of people aboard

Table 1: Insufficient PFD carried by harbourmaster area

Harbourmaster area	Percentage
Northland	15.5%
Auckland	8.3%
Waikato	5.5%
Bay of Plenty	4.9%
Taupo	9.3%
Canterbury	3.0%

Table 2: Insufficient PFD carriage by skipper age

Age group	Percentage
4-14	0.0%
15-24	6.5%
25-34	7.6%
35-44	7.1%
45-54	6.3%
55-64	6.9%
64+	5.8%

2.4.2 PFD fit

Table 3: Adult and child PFD fit

	Total people	Number of poor fit PFD	Percentage of poor fit PFD
Adult	2374	291	12.3%
Child	533	145	27.2%

2.4.3 Inflatable PFDs

Table 4: Inflatable PFD carriage and service knowledge by area

	East coast waters	West coast waters	Inland waters	Total
Total number of vessels	532	78	313	923
Number of vessels with inflatable PFD aboard*	235	32	67	334
Percentage of inflatable	44.1%	41%	21.4%	36.2%
Number unaware of inflatable servicing requirements	139 (of 225)	14 (of 31)	38 (of 64)	191 (of 320)
Percentage unaware of inflatable servicing requirements	61.8%	45.2%	59.4%	59.7%

* Note, this measures whether there is 1 or more inflatable PFD aboard the vessel. Blanks were removed from each data set.

Table 5: PFDs worn by harbourmaster area and geographic area

		All	Some	None
Northland	East coast waters	21.1%	22.1%	56.8%
Northland	Total	21.1%	22.1%	56.8%
Auckland	East coast waters	43.5%	18.3%	38.3%
	West coast waters	48.0%	16.0%	36.0%
Auckland	Total	44.3%	17.9%	37.9%
Waikato	East coast waters	36.9%	21.3%	41.9%
	West coast waters	65.5%	8.6%	25.9%
	Inland waters	53.6%	32.0%	14.4%
Waikato	Total	47.3%	22.2%	30.5%
Bay of Plenty	East coast waters	43.7%	18.3%	38.0%
	Inland waters	23.3%	34.9%	41.9%
Bay of Plenty	Total	38.9%	22.2%	38.9%
Taupo	Inland waters	53.5%	23.3%	23.3%
Taupo	Total	53.5%	23.3%	23.3%
Canterbury	Inland waters	84.2%	9.0%	6.8%
Canterbury	Total	84.2%	9.0%	6.8%
Total		48.1%	19.6%	32.3%

Table 6: PFDs worn by vessel size and harbourmaster area

Area	Size *	All		Some		None	
Northland	6m or less	20	25.6%	17	21.8%	41	52.5%
	6.1m +	0		4		13	
Auckland	6m or less	60	50.4%	20	16.8%	39	32.8%
	6.1m +	2		14		5	
Waikato	6m or less	139	52.5%	58	21.9%	68	25.7%
	6.1m +	10		12		28	
Bay of Plenty	6m or less	68	41.2%	37	22.4%	60	36.4%
	6.1m +	4		4		12	
Taupo	6m or less	23	56.1%	9	22%	9	22%
	6.1m +	0		1		1	
Canterbury	6m or less	108	88.5%	10	8.2%	4	3.8%
	6.1m +	4		2		5	
Total	6m or less	418	52.9%	151	19.1%	221	28%
	6.1m +	20		37		64	

* Percentages for vessels 6.1m or more were not evaluated as the numbers were too low.

2.5 Vessel identification

2.5.1 Powerboats over 4 metres named

- 40.1% of powerboats surveyed were not named.
- Auckland, Waikato, and Taupo require boat naming on powerboats 4m or more.

2.5.2 Powerboats over 4 metres named, by area

Area	Percentage not named
Northland	40.3%
Auckland	38%
Waikato	26.2%
Bay of Plenty	41%
Taupo	30.8%
Canterbury	75.2%
Total	40.8%

2.5.3 Personal watercraft (jetski) registered

- 52% of jetskis surveyed were not registered.
- Northland, Auckland, Waikato, Taupo require jetski registration.

2.5.4 Jetskis registered by harbourmaster area

Area	Number not registered
Northland	0 of 2
Auckland	3 of 8
Waikato	4 of 13
Bay of Plenty	5 of 10
Taupo	4 of 7
Canterbury	10 of 10

2.6 Communications carriage

2.6.1 Total number of communications carried

Number of communications carried	Total	Percentage
0	142	14.8%
1	328	34.1%
2	386	40.1%
3 +	107	11.1%

2.6.2 Number of communications carried by harbourmaster area - table

Area	0	1	2	3 +
Northland	18%	24%	44%	14%
Auckland	7.6%	31%	55.9%	5.5%
Waikato	12.8%	32.7%	38.1%	16.5%
Bay of Plenty	13.2%	31.1%	43.7%	12.1%
Taupo	14%	53.5%	25.6%	7%
Canterbury	27.8%	46.6%	24.8%	0.8%

2.6.3 Number of communications carried by vessel

Vessel type	0	1	2	3 +
Powerboat	8.5%	32.2%	46.2%	13.1%
Dinghy	27%	54%	15.9%	3.2%
Jetski	48.2%	37.5%	14.3%	-
Kayak	50%	38.6%	11.4%	-
SUP	100%	-	-	-
Other	18.2%	45.5%	27.3%	9.1%

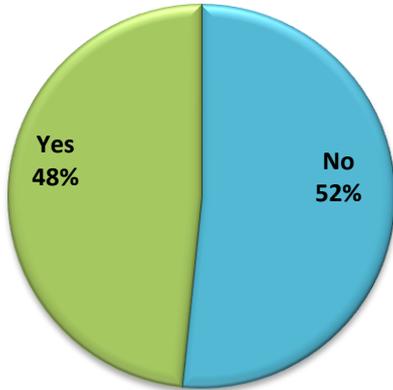
2.6.4 Number of communications carried by geographic spread

Area	0	1	2	3 +
East coast waters	10.4%	26.9%	47.7%	15.0%
West coast waters	22.8%	47.4%	26.4%	3.3%
Inland waters	10.8%	27.7%	44.6%	16.9%
Total	10.4%	26.9%	47.7%	15.0%

2.6.5 Cellphones

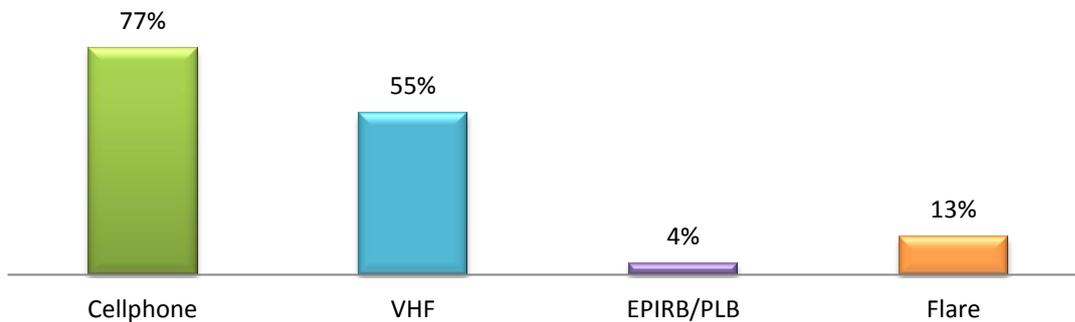
- 76.84% carried a cellphone as a form of communication
- 26.79% (258) of vessels carried a cellphone as their only form of communication

2.6.6 Cellphone in waterproofed or carried in a drybag



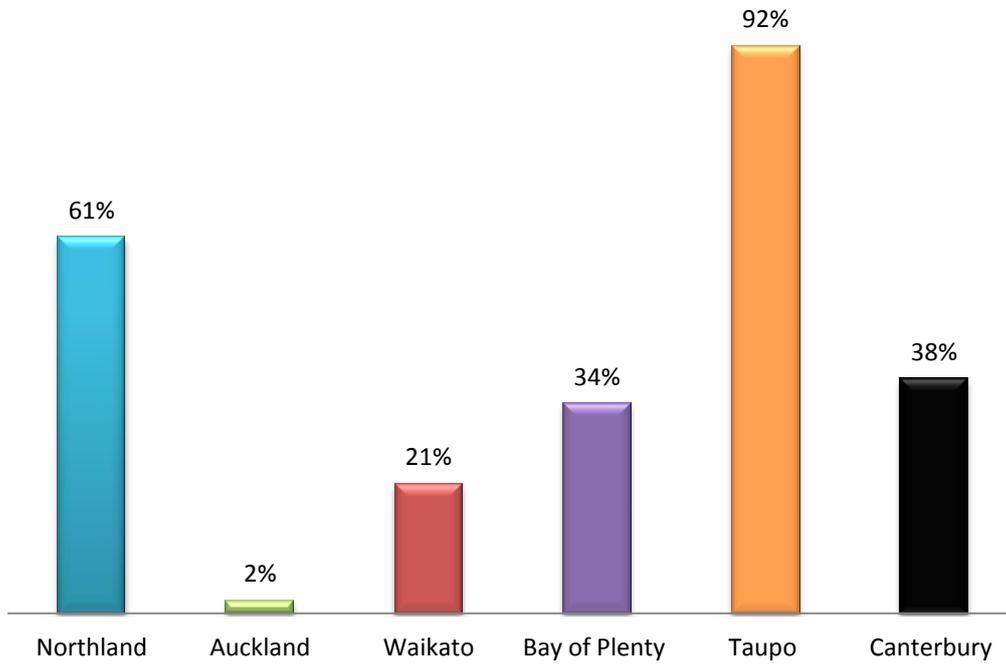
- Of the 26.79% of vessels that only carried a cellphone as a form of communication, 50.39% did not have a waterproofed or cellphone in a drybag.

2.6.7 Types of communications carried



2.7 Where skippers reside vs. survey location

2.7.1 Percentage of skippers from outside the region they were boating in



3 Observations

While the purpose of the research was to capture quantitative data on PFD fit and safety behaviour, an excellent opportunity to note observations from when undertaking the research is presented to assist in informing the current state.

3.1 Personal flotation devices

3.1.1 Carriage of PFDs

There were a number of occasions where an adult male would put on a child PFD as their PFD. When informing the skipper that the PFD was significantly too small, researchers were often told 'it'll be fine'.

When skippers were found not carrying sufficient numbers of PFDs, some did not appear concerned, stating they would be able to swim ashore, albeit they were over two kilometres from shore or in an area of high current. This indicates a lack of risk awareness.

Other skippers said they did not realise they did not have enough PFDs on board, when they could not find PFDs they stated that they thought there were enough PFDs aboard.

For example, in Whangarei, a 5.8m powerboat was approached. There were 4 adults and 3 children aboard, none were wearing PFDs. When asked to put on the PFDs carried for themselves, they were two PFDs short, the children were put in adult PFDs and one of the PFDs that was put on was in such a poor condition that when attempting to be fastened the straps broke.

Photo 1 & 2: vessel Whitianga, insufficient PFDs



Photo 1 & 2: This vessel was over two nautical miles from shore, overloaded, with insufficient PFDs for the number of people aboard. Of the PFDs put on, two were a good fit and two were a poor fit, with straps unable to be fastened. The picture on the right shows the lack of freeboard when this vessel was underway.

3.1.2 Children wearing PFDs

The survey did not specifically ask whether children were wearing PFDs when the vessels were approached. However it was found that, a significant number of children were not wearing PFDs or in some circumstances PFDs were not carried for the child.

3.1.3 PFD fit

Typically when a PFD was considered a poor fit for an adult, the PFD was (a) too small, or (b) the person showing an inability to zip or (c) buckle the jacket.

PFDs which were a poor fit for children were often a PFD for (a) an adult, sometimes a XL or XXL, or (b) the PFD so large, that the child would easily and quickly fall out of the bottom if they were to end up in the water.

Photo 2: Example of Child PFD sighted



Photo 2 is an example of a well fitted PFD sighted on a child on the water in Auckland.

3.1.4 PFDs in a readily accessible location

Part 91 of the Maritime Transport Act requires personal flotation devices to be carried in a readily accessible location. Whilst data was not collected on this item in particular, it is noted that quite a few skippers had to take a minute or more to find the PFDs aboard for their vessel. One in particular took a minute to find their PFDs then had to take the PFDs out of their original wrapping, and then adjust the straps to fit the passengers. A waka ama crew we stopped had their PFDs in a waterproof barrel under seat number 6; not readily accessible for the 5 other crew, if required in an emergency.

3.1.5 Inflatable PFDs

On a number of occasions, when asked to put on the PFD, people struggled with how the straps worked and how to put on the PFD.

A number were unaware of how an inflatable PFD worked. For example they did not know to pull the red tag for the jacket to inflate.

On occasion children, (12 years or less and or under 40kgs), wore adult manual inflatable PFDs. This is against manufacturer recommendations for minimum weight of 40kg's, and also against recommendations for children, 12 years or less, not to wear adult manual inflatables.

A number of skippers had inflatable PFDs that showed clear signs of wear and often they were not aware that inflatables require servicing, nor had they serviced or checked their inflatable

Example: A gentleman in Auckland, was shown how to service his inflatable. In the process the gas cylinder was pulled out and it had already been pierced. The gentleman had been wearing the inflatable when the vessel was approached. When asked if he knew it had been discharged and he said he did not. He thought he was being safe and wearing a PFD.

Of the 40.3% of people who said they were aware of servicing requirements, when asked further questions appeared to have incomplete knowledge of the requirements.

3.1.6 Communications

While a number of skippers had VHF radios aboard their vessel, several stated they were unaware how they worked.

3.1.7 General knowledge of rules

There was a general lack of knowledge around collision prevention rules. We informed many skippers of the rules.

Lack of collision prevention knowledge was more apparent on the inland waters. This lack of rule awareness may have been more apparent due to the more condensed nature of boating on inland waters; requiring more collision prevention manoeuvres.

4 Trends

	2014	2015
Number insufficient PFDs carried	69	61
Percentage insufficient PFDs carried	9.7%	7.2%
Number of adult poor fit	176	291
Percentage of adult poor fit	11.3%	12.3%
Number of children poor fit	76	145
Percentage of children poor fit	24.9%	27.2%
Percentage of no PFD worn	46%	31.9%

5 Discussion

5.1 Insufficient PFD carried

61 skippers (7.2%) failed to carry a sufficient number of personal flotation devices for the number of people aboard their vessels. Skippers in Northland, where wearing PFDs in vessels 6m or less is not compulsory, had the lowest compliance rate, while skippers in Canterbury, where compulsory wearing of PFDs in 6m or less is required, had the highest. Age did not significantly affect compliance.

Observations of skippers failing to carry sufficient PFDs indicated a 'she'll be right' attitude in some circumstances, or a lack of awareness in others.

When comparing 2015 results to 2014 results there is not a significant difference.

5.2 PFDs in readily accessible location

Researchers observations identify there is an issue with skippers carrying PFDs in a readily accessible location.

5.3 PFD fit

291 (12.3%) of adults put on PFDs which were a poor fit; a PFD that was significantly too large or significantly too small. This result is similar to last year's figures. More typically a large adult male put on a PFD they were unable to zip or buckle up.

145 children surveyed put on PFDs that were significantly too large or too small for them. That is over a quarter of the children observed. This is similar to last year's results.

5.4 Wearing of PFDs

48.1% of vessels surveyed had all persons aboard wearing PFDs when researchers approached the vessel. 32.3% of vessels wore no PFDs when approached.

When the data was correlated to vessels 6m or less, 28% wore no PFDs when approached. Waikato, Taupo, and Canterbury had the highest percentage of PFDs worn in vessels 6m or less. Waikato and Canterbury require PFDs to be worn in the navigation safety bylaws for the areas.

Significantly less people wore PFDs in Northland than the average.

5.5 Inflatable PFDs

36.2% of vessels surveyed carried at least one inflatable PFD aboard their vessel. Over a third of skippers chose this as a form of PFD, however a high number of users were not aware of servicing requirements (59.7%).

In addition, observers noted that there were a number of people who were confused with how the strapping worked. Indicating they had not previously used an inflatable PFD. A number of people when asked if they were aware how the inflatable worked said no, demonstrating that the skipper had not shown them how to use the PFD if they were required to use the PFD in an emergency situation. While the results show that the jacket fitted appropriately, in an emergency situation inflatable PFDs would have proven challenging for the people to have put on quickly and in a way that would assist them if they required it.

An inflatable was found with the gas cylinder already pierced. The person was unaware that the PFD would not assist them in an emergency situation.

Children, under 13 years and or under 40kgs, were observed wearing inflatable PFDs, against manufacturer recommendations. There was a lack of awareness of recommendations.

5.6 Vessel identification

40.8% of powerboats over 4m did not display a boat name. Waikato and Taupo had the highest number of vessels identified. Auckland, Waikato and Taupo required vessel identification.

5.7 Communication carriage

51.2% carried the recommended two forms of communication or more. 14.8% carried no communication.

Area had a minor affect on the results, with Canterbury vessels carrying less communications than other areas.

Vessel type affected carriage results. Jetski's, kayaks, stand up paddle boards are more likely to not carry any communications.

Cellphones were the most commonly carried form of communication at 76.84%. However, 52% failed to carry the cellphone in a waterproof bag.

VHF radios were the second most likely carried form of communication. A small number of skippers commented that they had a VHF aboard but were unaware how it was used.

5.8 Collision prevention rules

Researchers observed a high lack of awareness of collision rules, particularly in inland waters.

6 Recommendations

There continues to be a small number of skippers failing to carry sufficient PFDs for the number of people aboard. Continued education and enforcement is needed.

Inflatable PFDs are a popular choice, however there is high lack of awareness around servicing requirements, and how inflatable PFDs work. A number of people exceeding the weight limit are wearing the inflatable, and children were found to be wearing adult inflatables when it is not recommended. In addition, skippers are failing to show other people on board how to use the inflatable when carried as the PFD for them. Manufacturers and distributors need to improve awareness of how their products should be used, how their products work, and of servicing requirements. Results show that this is a national issue. It is recommended that the national agency Maritime NZ address these issues with manufacturers and distributors.

There is a minor issue with the fit of PFDs for adults. Education and enforcement is needed.

PFD fit for children continues to be a moderate problem with over a quarter of children wearing PFDs which were significantly too small or too large. Education and enforcement is needed.

Further promotion and education is needed for carrying communications, particularly with jetski, kayak, and stand up paddle boarder users.

Cellphones were a commonly carried communication and in some circumstance were the only carried communication. Waterproofing cellphones presented particularly poor results. Further education and promotion is needed.

7 Conclusion

This research successfully highlighted compliance and education gaps in the boating community. This year's research, consistent with previous research, continues to highlight a number of areas where improved compliance is needed.

Appendix A – survey questions

Vessel type	Powerboat
	Dinghy
	Jetski
	Kayak
	SUP
	Yacht
	Other
Vessel size	Numerical field
Activity type	Fishing
	Towing
	Cruising
	Other
Name on boat	Yes / No
PFD's worn by	All
	Some
	None
Number of adults onboard	Numerical field
Number of PFD good fit adult	Numerical field
Number of children onboard	Numerical field
Number of children good fit adult	Numerical field
Was there enough lifejackets onboard for the number of people	Yes / No
Inflatables onboard	Yes / No
Aware of servicing inflatable (asked – when you purchased the inflatable were you made aware of the servicing requirements and when unclear would further ask if they were made aware of service requirements)	Yes / No
Communications carried	Cellphone in drybag
	Cellphone not in drybag
	VHF
	EPIRB/PLB
	Flare
	Other
Where do you live	Free entry
Skipper age	0-14
	15-24
	25-34
	35-44
	45-54
	55-64
	64+
Comments	Free entry