



February 2023

Surveys providing research concerning smoke alarms on boats

Introduction

The BSS has organised two separate boat owner surveys concerning smoke alarms on boats, one addressing attitudes and behaviours and the other looking at the current level of smoke alarm take-up.

The purpose was to inform a project the Scheme was tasked with, that is to consider the introduction of BSS Checks for working smoke alarms on boats as a means to reduce the spread of fire and to reduce the risk of harm to people and property.

The scope of both surveys concentrated on the two unregulated categories of boats in BSS Examinations, Private Boats and Non-Private Boats. Hire boats with overnight accommodation are currently regulated and require at least one suitable smoke alarm in good condition.

The Boat Safety Scheme (BSS) asked Morale Solutions to undertake a survey of boat owners to understand more about their attitudes and behaviours related to smoke alarms and wider fire safety. The survey ran during March – April 2021.

The second survey ran for a year from September 2021 to September 2022 and comprised of a collection of several thousand voluntary observations by BSS Examiners concerning the use, or non-use of smoke alarms on boats that they were examining. Examiners reported how many smoke alarms they saw on the boat that they were examining, and how many of the alarms that were fitted, activated when the test button was pressed.

The combined research has shown that there is a significant support for the use of smoke alarms and awareness of fire safety. The attitudinal survey and the evidence of the Examiner's smoke alarm survey on Canal & River Trust waterways show that there is a majority willing to have alarms on their boats.

However, there are areas where there are challenges to meet. These issues are both geographical, probably where the leisure use of boats predominates, and an educational task related to concerns about false activation or the appropriateness of smoke alarms for smaller craft.

Although slightly more positively, inertia ('getting round to it') featured in a quarter of the respondents' answers participating in the attitudes survey, who did not have an alarm.

This brief report draws on both surveys and includes these sections:

- The overall findings summary of the Morale Solutions attitudinal survey
- The results of the BSS Examiners' field observations survey
 - Overall results
 - Numbers of alarms fitted on boats
 - Canal & River Trust statistics
 - Environment Agency statistics
 - Broads Authority statistics
 - Other inland waterway statistics
 - Alarms on boats by hull material
 - Alarms on boats by length
 - Alarms on boats by people the boat is designed to accommodate (values used for ventilation calculation)
- Barriers to universal adoption based on Morale Solutions survey with BSS recommended activity

Public attitude and behaviour survey

The survey was securely hosted online by Morale Solutions

Respondents were recruited by Morale Solutions through pre-existing relationships with boat user representative organisations that participate on BSS committees. Those organisations encouraged their members to promote participation in the survey.

The survey comprised of 31 questions, 29 closed questions and 2 open-ended questions. There was a strong response rate, and the consultant compiled a database of 1020 useable survey responses (944 fully complete surveys and a further 76 partially completed surveys still meriting analysis)

The topics covered in the questionnaire were as follows;

- 'demographic' style questions about the participants;
- Vessel type, vessel size, berths, propulsion/fuel, age, region, frequency of boat usage
- Presence of smoke alarms, heat detectors and LPG gas/vapour detectors
- Connection of these units to outside horns/sirens, or home/mobile devices
- Reasons for not having a smoke alarm
- Presence and type of fixed firefighting systems in the engine space
- Presence and type of fixed water-mist firefighting systems in the accommodation area
- Importance of a range of factors in the choice of smoke alarm/systems
- Openness to the inclusion of smoke alarms within the ECP
- Attitudes towards 'fire action plans'

Summary of key findings in the attitude and behaviour survey

- The survey generated 1,020 replies from boat owners, with over three quarters of the responses from those with narrowboats.
- Roughly one quarter of respondents (27%) live aboard their vessel, 42% are regular users (weekly/fortnightly) and 29% use their boat on a less frequent basis.
- A majority of respondents (89%) had at least one smoke alarm installed, with 55% having at least one LPG / flammable vapour detector, and 23% have a heat detector in place. Larger craft are more likely to have multiple smoke alarms installed.
- Very few of the smoke alarms that are currently in use are connected to a siren/horn or people's mobile devices.
- A quarter of respondents stated they have a fixed firefighting system in the engine space. This is slightly more prevalent amongst those with cabin cruisers and sports cruisers.
- Fixed water-mist firefighting system in the main accommodation area was installed by 6% of all boaters.
- Amongst the 11% of survey respondents who do not currently have a smoke alarm in place, it appears that most consider that the alarms are too easily activated inadvertently (mostly through cooking).
- For all respondents (aggregating those that have and don't have a smoke alarm in place), the two key factors influencing people's decision-making processes are, the basic features of the alarm and, the ease of installation.

Summary of key findings continued:

- Some respondents were intrigued by the idea of a smoke alarm having ‘smart’ features, albeit the majority could not see the benefit of this type of feature given that they were normally absent from their vessel (geographically distant) and they could not identify a practical use for any activation notification sent to their device.
- There was broad agreement (84% of all survey respondents) that smoke alarms should feature in the Examiners Checking Procedures – the instructions for undertaking BSS Examinations. People are strongly supportive of the case for fire safety, and some were surprised that such a provision for checking for smoke alarms is not already part of the ECPs (possibly influenced by the CO alarm checks introduced in April 2019).
- There was geographic variance whereby 31% of boaters in the East of England (total 35 respondents) don’t have a smoke alarm (average across the survey was just 11%) and that in this region, and support for introducing smoke alarm checks was lower at 59% of respondents compared with the 84% average supporting such a proposal).
- While there was strong support for installing smoke alarms, a lower number of respondents (55%) had any kind of ‘fire action plan’. The majority of whom identified fairly rudimentary arrangements for leaving the vessel (making up 44% out of that 55%).

Morale Solutions’ Conclusions

The vast majority of boaters who responded to the survey already have a smoke alarm installed and would welcome the inclusion of a check on the equipment as part of the ECP.

People’s attitude to smoke alarms and fire safety are firmly grounded in common-sense, but there is little appetite for smart features related to connectivity.

People are content to opt for very basic smoke alarm features and make very basic fire action plans. As long as the alarm works, and they can safely exit their vessel, then they see no need to complicate matters further.

A copy of Morale Solutions’ report, is published on the BSS Website.

BSS Survey of smoke alarm use on boats observed during BSS Examinations

The surveys of the use of smoke alarms were undertaken by BSS Examiners during BSS Examinations. The BSS Examiners logged the results at the end of the BSS Examination. This was a voluntary process.

BSS Examiners logged over 9,000 surveys, although some of these included examinations of boats that did not achieve compliance. We wished to avoid double counting of the provision of alarms on any one boat, as our intention was to identify 'boats' as units populating the survey. Therefore, we assumed that one Certification result in a BSS Examination, equates with one boat (boats are unlikely to have two Certifications in any 12 months.)

Any data gathered for hire boats was excluded from this report, as most hire boats have accommodation spaces with overnight berths and BSS Requirements already include smoke alarms for these craft.

We utilised the results gathered during Examinations using Private and Non-Private Boat ECPs over a 12-month period from 02/09/2021 to 02/09/2022. A total of 6,999 logged surveys fitted this framework.

Overview of results

The national average is that slightly more than half of boats (54%) were found to have no working smoke alarm, including a small number where one or even two alarms were installed, but performing no alarm function when tested.

However, on Canal & River Trust waterways these figures are reversed, with 53% of 4906 boats surveyed having at least one working smoke alarm and 47% lacking protection.

Figures for protected boats were less encouraging for the Environment Agency waterways (25%) and Broads Authority (23%).

Working alarms on all other inland waterways were still in a minority at 41%.

A potential reason for the dissimilarity between the results of the different navigation authorities is the numbers of boats used as residences on Canal & River Trust waterways, however this is speculative and would need different research methods to confirm.

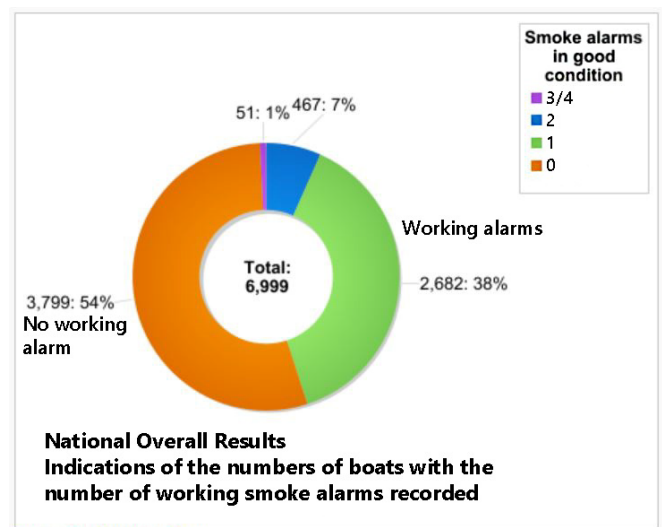
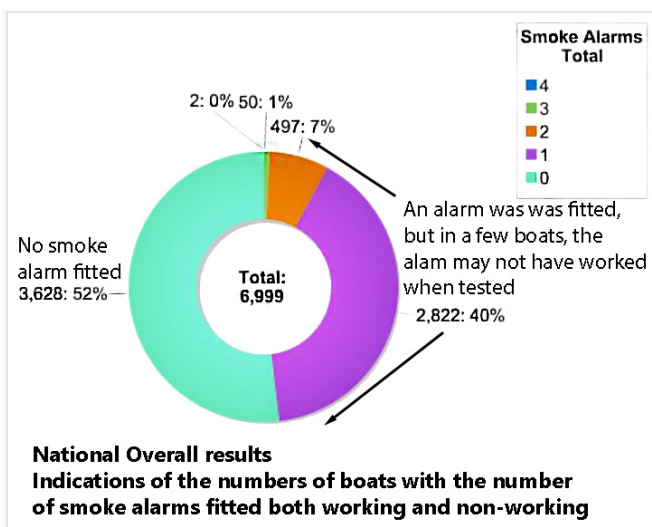
Another potential reason is indicated in the Morale Solutions survey, which includes comments from some owners of smaller cruisers and yachts to the effect that they believe smoke alarms are not of value in a small boat typically used on river navigations and Broads waterways.

One positive indicator from the Examiner survey is that the national figures indicate that when alarms were fitted, most worked. Over 94% of boats had a full complement of working alarms. It may indicate that owners fitting alarms are highly committed to maintaining their operation.

Data tables, from the survey of smoke alarm use on boats observed during BSS Examinations

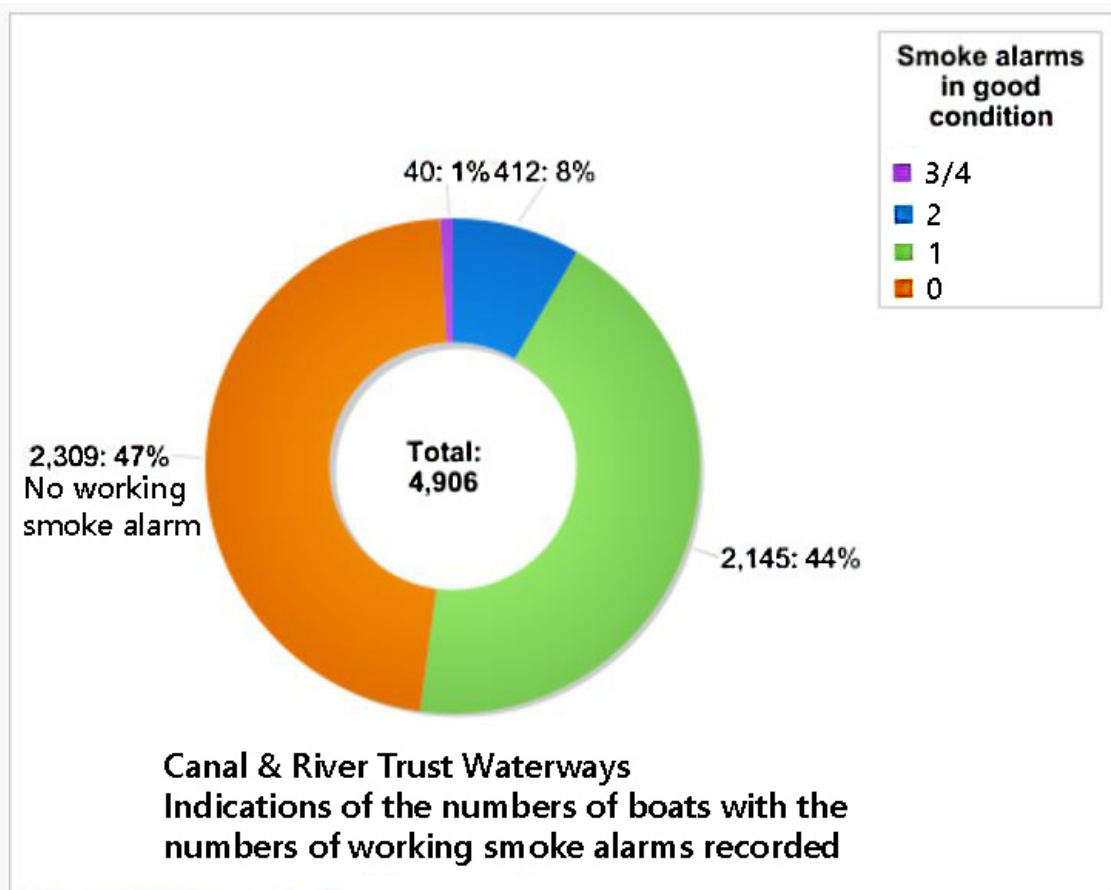
Subject	Boat nos.	Commentary
Total surveys considered	6,999	During BSSC (Yes; Yes, but some advice checks not passed)
No alarm recorded	3,628	52% of boats have no alarms, but it is important to consider separate nav authorities when looking at the proportion of boats.
No working alarm	171	Boats had one or more smoke alarms, but none worked
Total	3,799	54% boats have no working alarm, but it is important to consider separate navigation authorities when looking at the proportion of boats without provision.

Numbers of alarms fitted	Boat nos.	
One working alarm	2,660	Of 2821 boats with one alarm of one fitted 94% worked
Alarm not working of one fitted	161	
Two working of two alarms fitted	465	Both worked on 497 boats with two alarms 94% worked
One working of two alarms fitted	22	
No alarms working of two fitted	10	
Three of three alarms fitted	49	50 boats found with 3 alarms fitted = 98% worked
Two of three alarms fitted	1	
Four working of four alarms fitted	2	All worked 100%

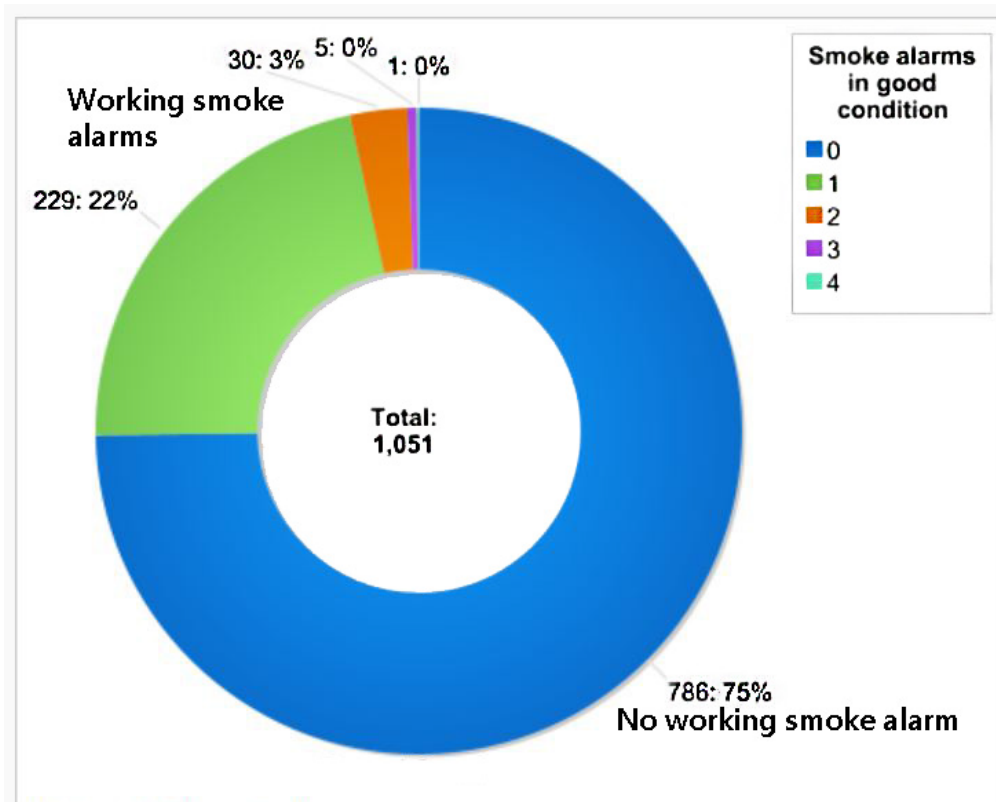


Navigation authority breakdown

Canal & River Trust – canals and rivers		
Total boats surveyed	4906	
0 alarms found	2177	
1 alarm, but not working	124	
2 alarms, both not working	8	
Unprotected total	2309	47% Trust boats do not have a working alarm aboard
1 working alarm found	2125	Of 2388 boats found with one alarm, 95% of single alarms found
2 alarms found at least 1 working	430	Of boats found with two alarms, 410 had both working, 94%
3 working alarms found	39	40 found, one boat had one alarm not working
4 working alarms found	1	All working
Protected total	2755	53% Trust boats have at least one working alarm

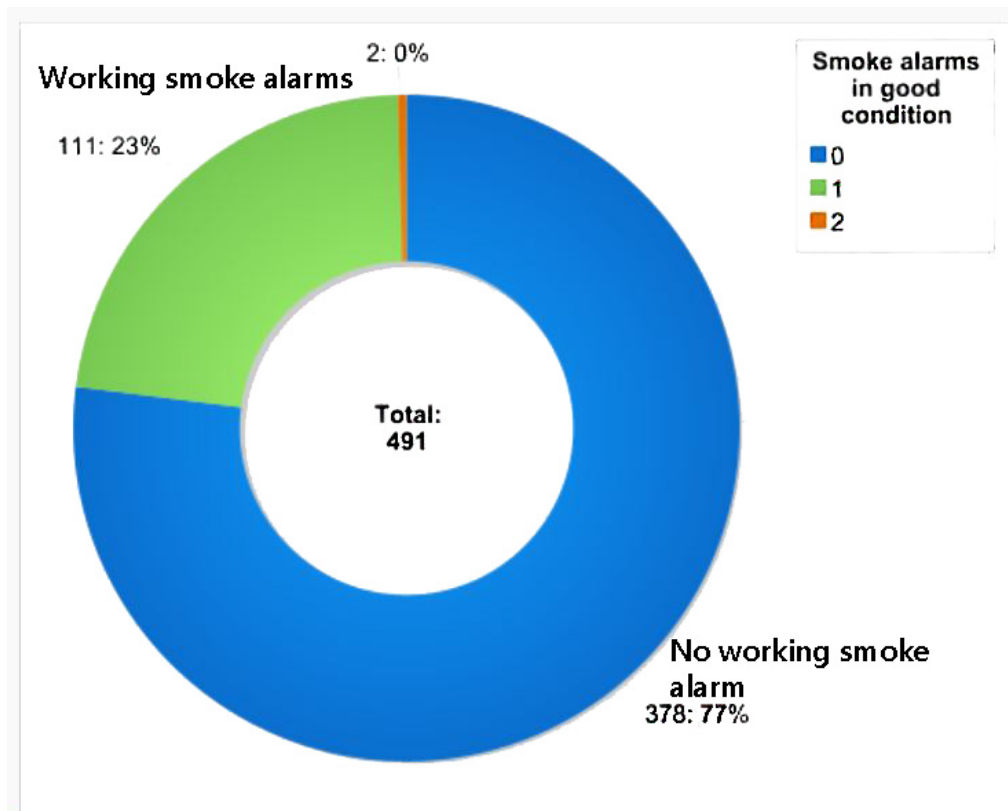


Environment Agency - all regions		
Total boats surveyed	1051	
0 alarms found	769	
1 alarm, but not working	16	
2 alarms, both not working	1	
Unprotected total	786	75 % EA boats do not have a working alarm aboard
1 working alarm found	229	Of 243 boats found with one alarm, 94% of single alarms found
2 alarms found at least 1 working	30	Of 33 boats found with two alarms, 30 had both working, 94%
3 working alarms found	5	5 found, all working
4 working alarms found	1	All working
Protected total	265	25% EA boats have at least one working alarm



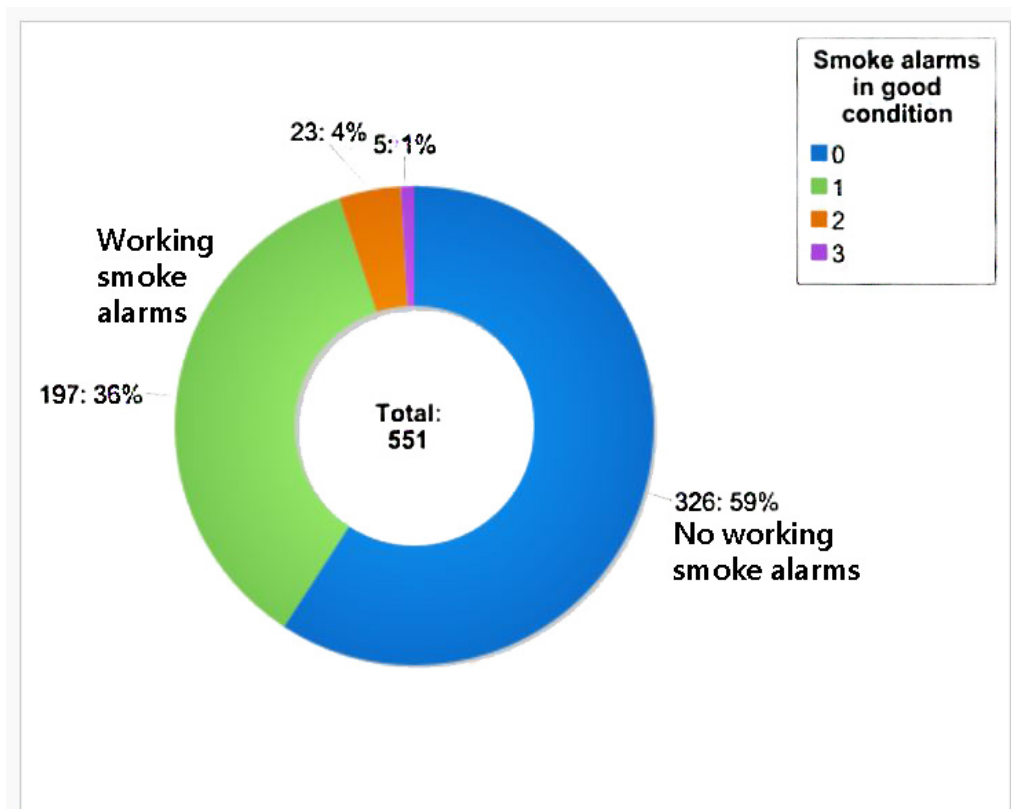
Environment Agency Waterways - Indications of the numbers of boats with the numbers of working smoke alarms

Broads Authority		
Total boats surveyed	491	
0 alarms found	367	
1 alarm, but not working	10	
2 alarms, both not working	1	
Unprotected total	378	77 % Broads boats do not have a working alarm aboard
1 working alarm found	111	Of 121 boats found with one alarm, 92% of single alarms found
2 alarms found at least 1 working	2	Of boats found with two alarms, 2 had both working
Protected total	112	23% Broads boats have at least one working alarm



Broads Authority Waterways - Indications of the numbers of boats with the numbers of working smoke alarms

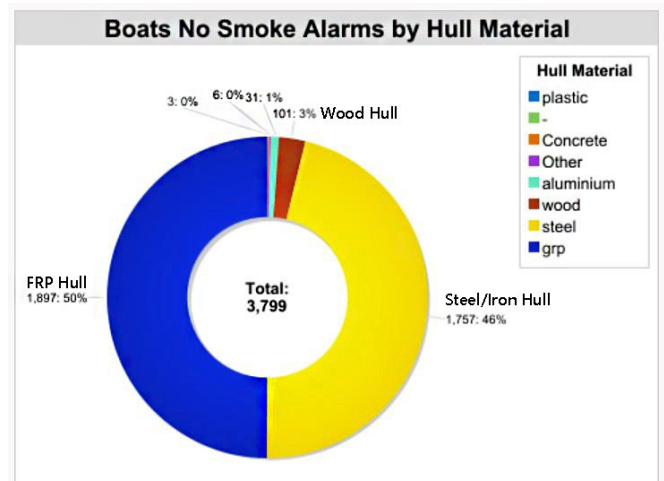
Other Navigation Authorities – i.e. Not Canal & River Trust, EA or Broads Authority		
Total boats surveyed	551	
0 alarms found	315	
1 found but it was not working	11	boats found with an alarm, but not protected
Total no working alarm	326	59% of boats surveyed did not have a working alarm aboard
1 alarm found and working	197	Of 208 boats with one alarm, 95% working
2 alarms at least 2 working	23	100% working
3 alarms at least 3 working	5	100% working
Protected total	225	41% boats survey had a working alarm (95% working rate)



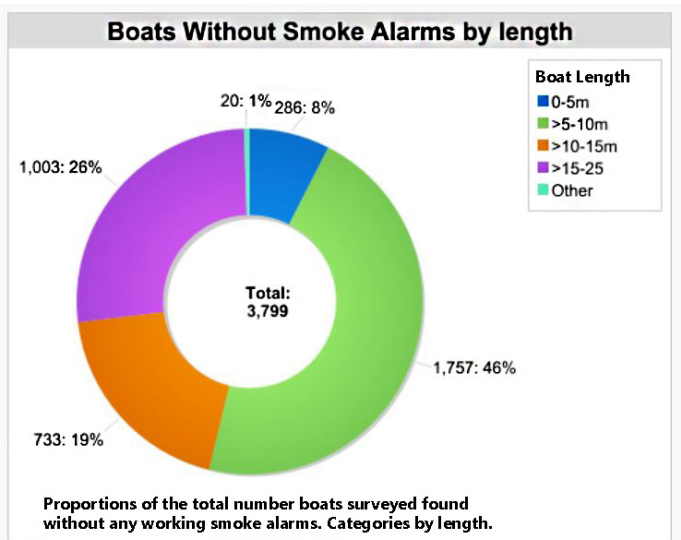
All other navigation authority waterways - Indications of the numbers of boats with the numbers of working smoke alarms

Boat Profile Breakdowns

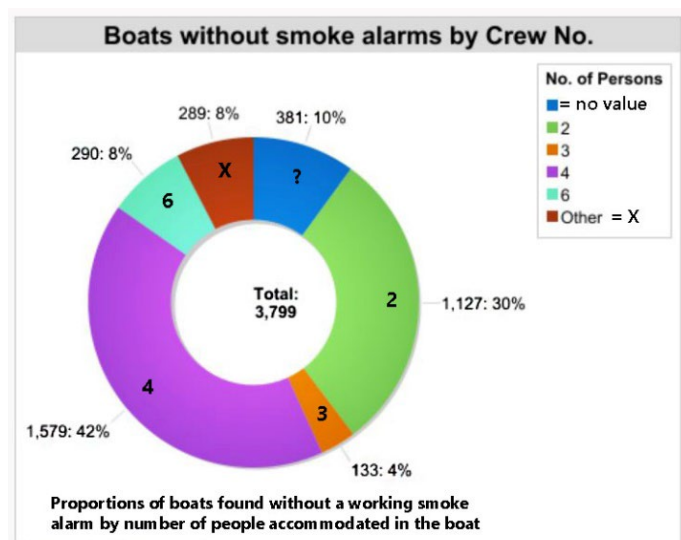
Boats without working smoke alarms < > Hull Materials	Boats	% of boats
Boats without working smoke alarms total	3,799	
GRP hulls without working alarms	1897	50%
Steel/Iron without working alarms	1757	46%
Wood hulls without working alarms	101	3%
Other materials no working alarms	44	1%



Boats without working smoke alarms < > length of boat	Boats	% of Boats
Boats without working smoke alarms total	3,799	
LOA 0-5m	286	8%
LOA >5-10m	1,757	46%
LOA >10-15m	733	19%
LOA >15-25m	1,003	26%
LOA not recorded	20	1%



Boats without working smoke alarms < > Nos. of people accommodated	Boats	% of boats
Boats without working smoke alarms total	3,799	
2 people	1,127	30%
3 people	133	4%
4 people	1,579	42%
6 people	290	8%
Other numbers of people	289	8%
No record of people accommodated	381	10%



Barriers to universal adoption of smoke alarms

Attitudes of People Without a Smoke Alarm

This information was taken from the Morale Solutions' Survey

- 11% of all respondents (a total of 108 people) do not currently have at least 1 smoke alarm in their vessel.
- These people were asked to pick their top three reasons for not having a smoke alarm (from a list of 6 provided).
- There were 3 clear 'winners' in terms of top picks
 - 38% of people felt that smoke alarms are too easily activated accidentally
 - 26% said that their boat wasn't big enough to merit a smoke alarm
 - 24% claimed that they "hadn't got around to it, but were planning to"
- Some 26% of people also wrote something in the 'Other Reason' box for this question, but the majority of these comments were simply explanations of their choices above – eg. "my boat is open, unenclosed and a smoke alarm would be irrelevant".
- The only useful additions in the comments were a handful of people who have CO alarms and felt they didn't need a smoke alarm – "I have two CO alarms that I consider adequate until expert opinion tells me otherwise."
- Compared to the average 38% who felt that smoke alarms were too easily activated, there were higher proportions of people who felt this way within the oldest age group (75+ years), amongst more frequent users or those that live aboard (50-60%) and the longer size narrowboat community.
- Only 1% of people had not installed an alarm because they considered it would be too expensive.

A separate question explored people's perceptions of pricing for smoke alarms. 48% of people thought it would cost between £10-£20. A further 35% felt £5-£10 was more likely.

BSS Note: Battery alarms meeting BS EN 14604, which is the standard recognised by the BSS for hire boats, are available from stores and online retailers from around £6. Many options meeting this specification, including optical sensor models with hush buttons, can be readily purchased at £10 or under from supermarkets, DIY and building trade specialists, chandlers, safety & security specialists and general online retailers.

Some fire and rescue services can provide residential boaters free home fire safety checks including a gratis smoke alarm.

The recommendations arising from considerations of both of these surveys are to ensure that the issues are captured within the 2023 consultation on proposals to introduce checks within the BSS Examination for suitable smoke alarms in good condition.

An education programme will benefit any potential introduction of a requirement for smoke alarms.

It will need to address resistance to alarms linked to

- the concept of frequent false activations
- that smoke alarms are not relevant to, or beneficial for, use in small boats
- inertia linked to a lack of understanding of price, availability and/or alarm placement and usage

There will need to be increased activity in some geographic regions including Environment Agency and Broads Authority areas.

And additional effort should be given to promoting fire action plans.

- Ends -