

Recreational Boating Safety: A Systems Analysis of the Causal Factors Contributing to Accidents

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ABSTRACT

Recreational boating has become an extremely popular past-time in the UK, particularly since COVID-19, with boat equipment sales up by 25%, compared with pre-pandemic levels. Wilson (2022) predicts a further 11% growth in sales in 2021-2022 and the market is currently exceeding pre-pandemic trading levels. We used a set of 12 Accimaps to analyse of contributory factors leading to recreational boating accidents documented by the MAIB. The data from the Accimaps was then used to scope a set of questions which formed the basis of two surveys. One survey was for members of the public involved in recreational boating and the other for professional individuals involved in the recreational boating community. Key findings were that lack of training, knowledge and preparation were seen as key reasons leading to unsafe boating situations, in addition to recklessness. Most participants wore lifejackets whilst boating and approximately 50% thought alcohol consumption was acceptable at some point during a boating trip. Boat/sailing clubs were seen to reinforce good safety culture but outside of clubs was less positive. Some recommendations were developed following the study. It would be beneficial to introduce a mandatory qualification prior to the purchase of any motorised vessel, such as that employed in Australia or similar to the International Certificate for Operators of Pleasure Craft (ICC). It may be worthwhile developing more interactive, nationally consistent signage at popular launch locations. A final recommendation would be to place some responsibility on manufacturers.

KEYWORDS

Accidents at sea; perceptions of safety; recreational boating

Introduction

Recreational boating has become an extremely popular past-time in the UK, particularly since COVID-19, with boat equipment sales up by 25%, compared with pre-pandemic levels. Wilson (2022) predicts a further 11% growth in sales in 2021-2022 and the market is currently exceeding pre-pandemic trading levels. The South East and South West have the highest distribution of boating activity (RYA, 2022). The increase in recreational vessel/craft (RC) use has led to an increase in accidents (MAIB, 2022), with total UK marine accidents consistently increasing since 2019, from 1090 accidents to above pre-pandemic levels, at 1530 accidents in 2021. National Water Safety, NWS (2022) documented that although accidental water-related fatalities decreased slightly in 2021, the three-year average was above that of previous years. 83% of casualties were male and 55% were due to recreational activity (NWS, 2022). The research aimed to investigate the culture and attitudes towards recreational boating safety in the UK; to identify the specific underlying conditions and active failures that lead to recreational boating accidents; and to identify what kind of recommendations may positively influence recreational boating safety culture in the future.

Methods of study

We used a set of 12 Accimaps to analyse of contributory factors leading to recreational boating accidents documented by the MAIB. The data from the Accimaps was then used to scope a set of questions which formed the basis of two surveys. One survey was for members of the public involved in recreational boating and the other for professional individuals involved in the recreational boating community, such as enforcement agencies, sales and emergency services personnel. Total sample size was 92 participants, of which 28 were professionals and 64 were members of the public. Surveys were distributed online and in-person. Results were analysed using descriptive statistics and qualitative thematic analysis.

Findings

Key findings were that lack of training, knowledge and preparation were seen as key reasons leading to unsafe boating situations, in addition to recklessness. Most participants wore lifejackets whilst boating and approximately 50% thought alcohol consumption was acceptable at some point during a boating trip. Boat/sailing clubs were seen to reinforce good safety culture but outside of clubs was less positive. Legislation and regulation surrounding use of recreational vessels in the UK is currently under-developed and most survey participants viewed mandatory training as an appropriate intervention to improve safety. Both survey groups stated that lack of knowledge, awareness for weather and tides and reckless behaviour contributed to accidents. Other people's behaviour was also highlighted by the public, with many specifically mentioning PWCs. Lack of preparation and alcohol was also a theme for both groups. Non-use of killcords was given a much higher focus from the general public than professionals, together with lack of safety equipment. However, complacency, whilst a strong theme from the professional group, wasn't mentioned by the public.

In the UK, the research focus has been on recreational boating fatalities and direct causes, such as drowning. Little is published on contributing factors, but the U.S. Coastguard publish these annually. Due to the similarity in Western cultures, these statistics are arguably comparable to accidents in the UK. Between 2020-2021 in the USA, the key contributing factors were inexperience, poor lookout, speeding and vessel maintenance/failure (Arguin, 2021). AcciMap themes included lack of knowledge/experience, training and qualifications, which supports evidence by Miller and Pikora (2007) and U.S. coastguard data.

Discussion, conclusions and future work

A range of attitudes have been revealed surrounding recreational boating safety. In conclusion, it appears that the majority of boat users believe motorised vessels to be most problematic, particularly personal watercrafts (PWCs), which was reinforced by the AcciMap analysis of MAIB reports. Furthermore, lack of knowledge and training was identified as the predominant theme that jeopardises safety at sea. Problems with enforcement were recognised as the biggest potential factor hindering progress to safety improvements, but participants agreed that a type of licensing may be the best way to make recreational boating safer. Some recommendations were developed following the analysis. It would be beneficial to introduce a mandatory qualification prior to the purchase of any motorised vessel, such as that employed in Australia (Virk and Pikora, 2010) or similar to the International Certificate for Operators of Pleasure Craft (ICC). Although safety advertising was generally dismissed, it may be worthwhile developing more interactive, nationally consistent signage at popular launch locations. For example, digital weather reports, which could be updated daily; and a traffic light system for clearly informing individuals of conditions. A final recommendation would be to place some responsibility on manufacturers. One professional participant owned a PWC sales business and with every vessel sold, an RYA personal watercraft course was included. Although the onus was then on the individual to book the course, this would

undoubtedly increase uptake of course participation, as it would negate cost, a primary theme in non-attendance.

References

- Arguin, W. R., 2021. 2020 Recreational Boating Statistics [online]. Washington DC, USA: U.S. Department of Homeland Security. Available at: <https://www.iims.org.uk/wp-content/uploads/2021/07/US-Recreational-Boating-Statistics-2020.pdf> [Accessed: 21/11/2022]
- National Water Safety (NWS), 2022. WAID UK 2021 Summary for the NWSF. Available at: <https://www.nationalwatersafety.org.uk/media/1315/waid-uk-2021-summary-11-final.pdf> [Accessed: 21/11/2022]
- Marine Accident Investigation Branch (MAIB), 2022. Marine Accident Recommendations and Statistics. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1080967/MAIBAnnualReport2021.pdf [Accessed: 21/11/2022]
- Royal Yachting Association (RYA), 2022. UK Coastal Atlas of Recreational Boating. Available at: <https://www.rya.org.uk/knowledge/planning-licensing/uk-coastal-atlas-of-recreational-boating> [Accessed: 21/11/2022]
- Virk, A. and Pikora, T., 2010. The Recreational Skipper's Ticket and its influence on boater behaviour. International Journal of Aquatic Research and Education, vol. 4, pp. 175-185.