

## Classification of drowning deaths in the river basins of Parana state: probable cause, activities and locations

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### Introduction

According to the World Health Organization drowning is a serious and neglected public health threat claiming the lives of 372.000 people a year worldwide; 40 people every hour of every day. More than 90% of these deaths occur in LMICs. In Brazil nearly 1 million people drown and 6.500 die by drowning each year. Between 2010 and 2012, 1.043 people from Paraná drowned to death (3,32 deaths/100.000 inhabitants in the state). The State of Paraná is located in the south of the country and is geographically divided in 16 river basins, each with its own particularities. There are sites that have excellent rivers for fishing, while others are considered ideal for the practice of bathing and boat driving. Understanding these features and classifying them regarding the cause triggering the drowning may allow a more effective preventive approach.

The objective of this work is to understand this dynamic and know the profile of drowning causes, comparing the different river basins and thus allowing us to customize our prevention activities.

### Material and Methods

For this study were analysed and classified drowning deaths by river basin in Paraná State. The risk index was considered as the number of deaths divided by the sum of the population of the cities belonging to the basin, using as reference the 2010 IBGE census tabulated for 100,000 inhabitants.

### Results

Between 2010-2012, the National Health System Database (DATASUS) registered 1043 drowning deaths in the state, classified geographically among the 16 river basins.

We've observed that Paraná River Basin II is the most dangerous of the state considering the drowning rate of 6,7/100.000 inhabitants – 100% highest than the average of the state (3,3/100.000). The Itacaré River Basin comes in second (5,9) – 77,1% above state's average, and in third the Paranapanema River Basin I with a drowning rate of 5,5/100.000 inhabitants – 53% above state's average.

The Paraná River Basin II has an average of 2,3 drowning deaths per year, being fishing the main activity prior to drowning, falls the precipitating cause of the event and river rapids the main location, encompassing 75% of all cases.

The Itacaré River Basin has an average of 7,7 drowning deaths per year, being bathing/recreational swimming the main activities prior to drowning, with problems during swimming precipitating the event and river rapids the main location, covering 36,3% of all cases.

The Paranapanema River Basin I has an average of 5 drowning deaths per year, being bathing/recreational swimming the main activities prior to drowning, with problems during swimming precipitating the event and river rapids the main location, including 46,7% of all cases.

### Conclusion

With the research and the systematization of data in this study was possible to identify the areas of the state that need more investment in water safety thus assisting a future implementation of specific preventive measures, making the cities located in these river basins more resilient against drowning incidents.

As preventive measure we emphasize the need to enforce the use of lifejacket while boating/fishing after verifying that several deaths occurred after falling from a boat, and to ban bathing and recreational swimming in certain river sections.

### References

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2. Szpilman, David. Drowning - epidemiological profile in Brazil - 2012. Brazilian Society of Aquatic Rescue - SOBRASA, Rio de Janeiro, 2012. Available at <<http://www.sobrasa.org>>. Accessed 10th may 2013.