

## EPIDEMIOLOGY OF DEATHS FROM DROWNING IN BAIXADA SANTISTA

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**Abstract:** Drowning represents a major public health problem in the world. Currently, Brazil implements a series of preventive public policies, applied during the season, the summer period in which most drownings occur. This study seeks, through the comparison of data from the years 2016 to 2020, to evaluate the relevance and effectiveness of these policies, in addition to highlighting the occurrence of drownings in Baixada Santista.

## GOAL

This work aims to compare data on drowning deaths in Baixada Santista in the years 2016 to 2020, analyzing the relationship between the summer months and the increase in occurrences, keeping in mind the effectiveness of public prevention measures carried out during the months of season.

## INTRODUCTION

Deaths from drowning reflect a major public health problem, sometimes neglected, especially in low- and middle-income countries, where 97% of these cases occur<sup>1</sup>. According to data from the Global Burden of Diseases 2000, the annual number of deaths worldwide from drowning is 449,000 (7.4 per 100,000 people)<sup>1</sup>. These data elucidate that drownings are more recurrent among males (for all ages and regions), as well as children under 5 years of age.<sup>2</sup> Drownings among those under 15 years of age highlight a cause of mortality greater than any other type of injury.<sup>2</sup>

The continuity of these drownings suggests that water safety education alone is not enough to stop these occurrences.<sup>3</sup> Studies suggest that 90% of deaths occur in the summer months, and those that occur in the winter months are linked to hunting and fishing activities.<sup>3</sup>

Brazil has multiple drowning prevention campaigns, especially in the months of December, January and the beginning of

February; such as Operação Veraneio and mapping risk points in areas not monitored by lifeguards. This measure is carried out based on data from the previous season, and contributes to the action of the fire department, in addition to increasing signaling. However, there is an extensive debate about the effectiveness of these public policies, as higher numbers of drownings are still reported during the season.

## METHOD

Epidemiological data were collected from the Public Security Secretariat, through Necropsy Reports from the IML (Legal Medical Institute) of Santos and Praia Grande, based on Law n° 12,527/2011. The IML of Santos includes the occurrences of Santos, São Vicente and Cubatão and in the IML of Praia Grande the occurrences of Praia Grande, Mongaguá, Itanhaém, Pedro de Toledo and Itariri.

Using these data, a comparison was made of the occurrences of drownings in and out of season, as well as their behavior over the years. Therefore, these data were related to the effectiveness of preventive public policies in Baixada Santista over the years 2016 to 2020.

## RESULTS

The data obtained was compared in a series of graphs and showed a substantial difference between drownings during the season and off-season months, as seen in Figures 1, 2, 3, 4 and 5. Of the total number of cases occurring between 2016 and 2020 in Baixada Santos (204), around 77.9% (159) occurred during the season.

From the years with the highest numbers of drownings, to the years in which the data recorded lower numbers, the difference between drownings in the season and out of season is clear. In 2016 (Figure 1), 34 drownings were recorded during the season

and 9 in the winter months. In 2017 (Figure 2), 53 drownings were recorded in the summer months, compared to 10 in the winter months. In 2018 (Figure 3), 34 drownings were recorded in the summer months, while out of season there were 10. In 2019 (Figure 4) 15 drownings were recorded in the season and 12 in the winter months, a year in which drownings in and out of season they were closer, a fact justified by the clear decrease in the number of occurrences in the season (Figure 6).

There has been an exponential decrease in the number of deaths during the season, since 2017, (Figure 6), which did not occur in 2020. Outside the season (Figure 7), the numbers remained stable at the same time. throughout the years 2016 to 2019, until they suffered a sharp drop in 2020. This fact was justified by the Covid-19 pandemic, in which the use of beaches and bodies of water was reduced.

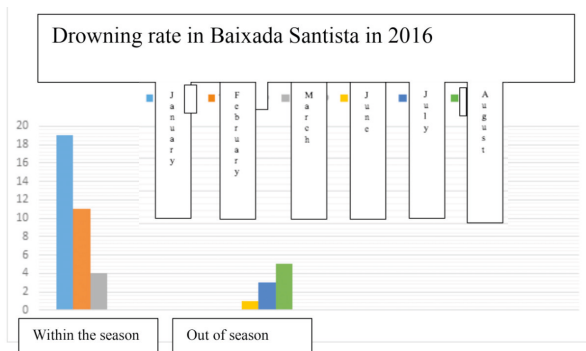


Figure 1 – Drowning rate in Baixada Santista in 2016

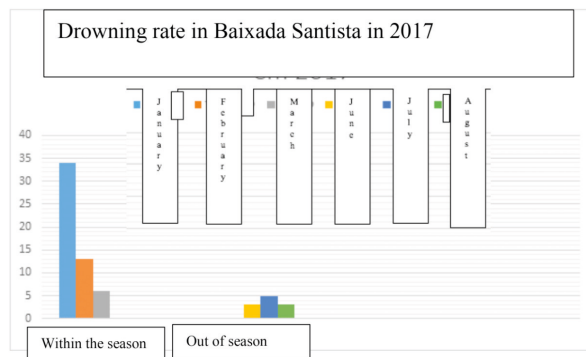


Figure 2 - Drowning rate in Baixada Santista in 2017

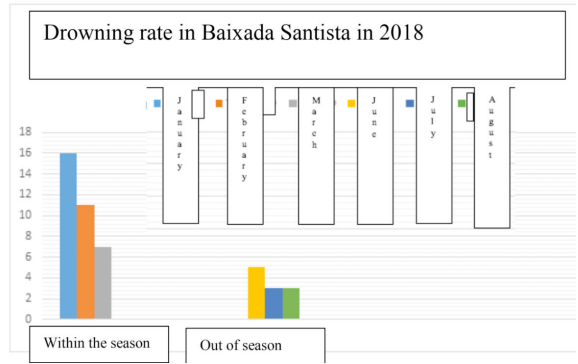


Figure 3 - Drowning rate in Baixada Santista in 2018

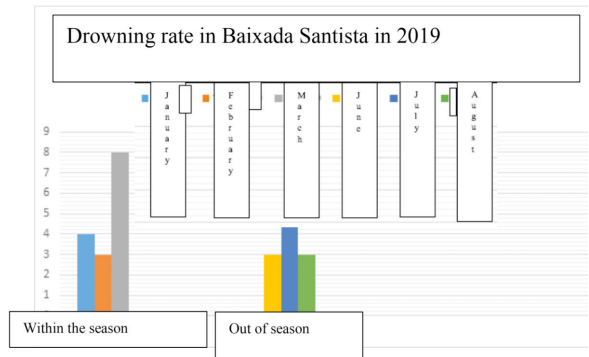


Figure 4 - Drowning rate in Baixada Santista in 2019

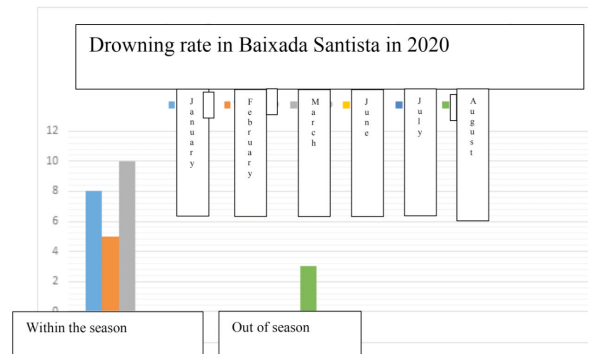


Figure 5- Drowning rate in Baixada Santista in 2020

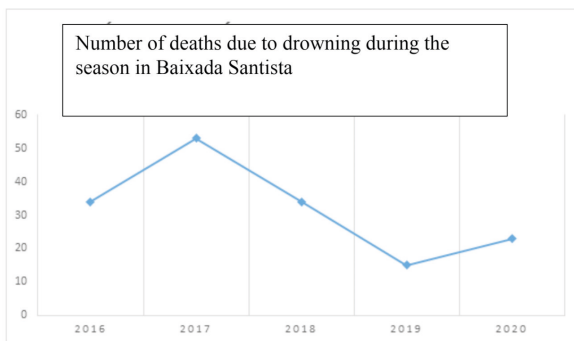


Figure 6- Number of deaths due to drowning during the season in Baixada Santos

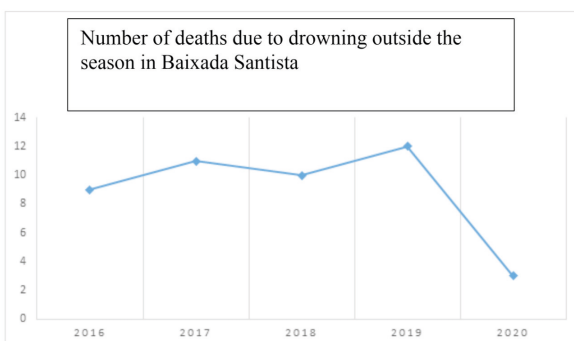


Figure 7- Number of deaths due to drowning outside of the season in Baixada Santista.

## DISCUSSION

Many authors point out the correlation, over a period of one year, of the variation in the incidence of this type of death with the seasons, climatic factors and the geographical area where these deaths occurred. The season months coincide with school holidays, work breaks and summer, increasing the flow of tourists and residents on the coast to bodies

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of water, intensifying occurrences of this kind. Data analysis confirms this relationship between drowning deaths and seasonality, given that the majority of drowning deaths occurred in the summer, between the months of January and March.

Local surveillance and data collection are necessary to identify the specific factors associated with drowning in a given region, therefore key preventative measures can be broadly divided into supervision, environmental design changes, legislation, swimming lessons and water safety education.

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While mortality is an important indicator of the magnitude of a health problem, it is important to understand that for every drowning death there are thousands of injuries in non-lethal accidents in which survivors are left with permanent injuries.<sup>2</sup>

## CONCLUSION

With the summer months, there is an increase in the flow of tourists and residents in bodies of water, even though the number of deaths due to drowning in the season has decreased over the years, the preventive measures taken during the season are still not enough to prevent these numbers match those of the winter months. Investment in preventive measures is the greatest chance of changing the statistics of drowning deaths.