

# Ontario Non-Fatal Drowning Report, 2023

Prepared for the Lifesaving Society Ontario by the Drowning Prevention Research Centre Canada

Drowning is often thought of as fatal; however, drowning that does not result in death (non-fatal drowning) happens more frequently than fatal drowning, and can lead to life-long health issues. For every fatal drowning in Ontario, there are nearly **four non-fatal drownings** that are serious enough to require an emergency department visit.

*Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid.*

*Drowning can be fatal or non-fatal. In non-fatal drowning, the respiratory impairment is stopped before death. Non-fatal drowning can result in a range of outcomes, from no injuries to serious injuries or permanent disability.*

**164**

Average number of drowning deaths each year\*

**100**

Average hospitalizations due to non-fatal drowning each year

**568**

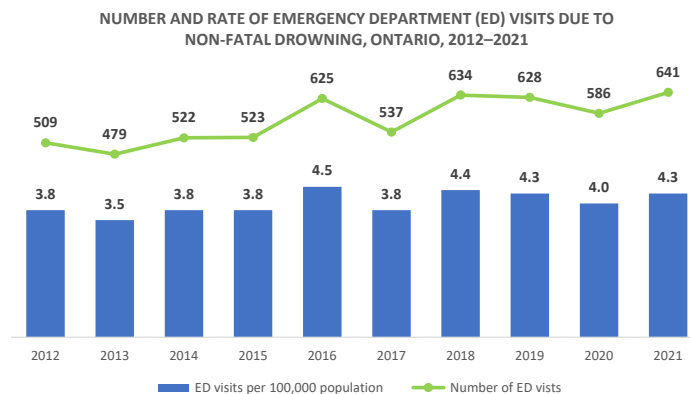
Average emergency department visits due to non-fatal drowning each year

The 2023 Ontario non-fatal drowning report provides new information on non-fatal drowning by including information on the location of non-fatal drowning. The Drowning Prevention Research Centre Canada and Public Health Ontario collaborated to analyze data from the Canadian Institute for Health Information (CIHI) National Ambulatory Care Reporting System (NACRS).

The full burden of non-fatal drowning is unknown. This report does not include non-fatal drowning incidents where the person was treated at the scene of the drowning and did not seek further medical attention, those who attended a family physician or clinic, and those who did not receive any treatment at all. If data from these sources were available, the number of non-fatal drownings included in this report would be even higher.

## Emergency department visits and hospitalizations due to non-fatal drowning

During 2012–2021, there were 5,684 emergency department visits due to non-fatal drowning, an average of 568 per year. The rate† of visits increased to 4.3 per 100,000 in 2021 (641 visits), compared to 4.0 per 100,000 in 2020 (586 visits).



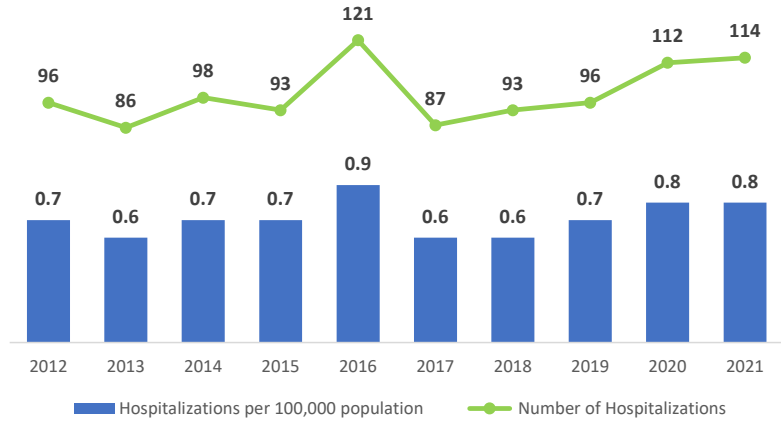
\*Average number of water-related fatalities per year where drowning was a primary or contributory cause of death in Ontario, during the most recent 10 years for which data were available, 2010–2019.<sup>3</sup>

† All rates in this report are crude annual rates per 100,000 population.

During 2012–2021, 996 patients were hospitalized after being transferred from an emergency department due to non-fatal drowning, an average of 100 per year.

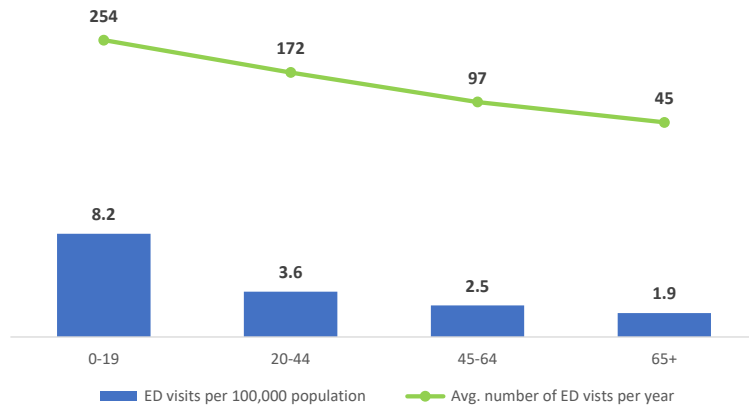
*When compared to fatal drowning, there were 3.5 times the number of non-fatal drowning incidents serious enough to require an emergency department visit.*

NUMBER AND RATE OF HOSPITALIZATIONS DUE TO NON-FATAL DROWNING, ONTARIO, 2012–2021



## Age

NUMBER AND RATE OF EMERGENCY DEPARTMENT (ED) VISITS DUE TO NON-FATAL DROWNING BY AGE GROUP, ONTARIO, 2012–2021

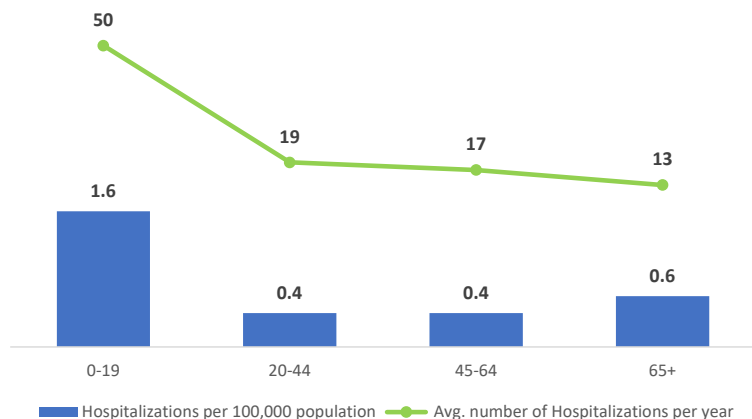


Children and youth (aged less than 20 years) had the highest number and rate of emergency department visits for non-fatal drowning (8.2 per 100,000). During 2012–2021, 2,541 0–19-year-olds attended an emergency department for non-fatal drowning, an average of 254 per year. Rates declined as age group increased, ranging from 3.5 per 100,000 among 20–44-year-olds to 1.9 per 100,000 for older adults aged 65+ years.

The number and rate of hospitalizations for non-fatal drowning were also highest among children and youth; 503 0–19-year-olds were hospitalized due to non-fatal drowning during 2012–2021, an average of 50 per year.

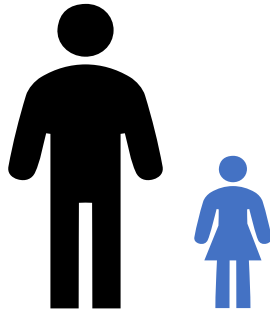
By comparison, the highest fatal drowning rates in Ontario occur among older adults 65+ (2.0 per 100,000 population) followed by 50-64-year-olds (1.4 per 100,000).<sup>1</sup>

NUMBER AND RATE OF HOSPITALIZATIONS DUE TO NON-FATAL DROWNING BY AGE GROUP, ONTARIO, 2012–2021



## Sex

The rate of emergency department visits and hospitalizations from non-fatal drowning was nearly twice as high among males as females. Almost two thirds (62%) of emergency department visits due to non-fatal drowning occurred among males, accounting for an average of 353 visits per year (5.1 per 100,000 population). The rate of emergency department visits due to non-fatal drowning for females was 3.0 per 100,000, an average of 216 visits per year. Similarly, 64% of hospitalizations for non-fatal drowning were male, contributing to an average of 64 hospitalizations per year (0.9 per 100,000). The rate of hospitalizations due to non-fatal drowning among females was 0.5 per 100,000, with an average of 36 per year. By comparison, almost 8 out of 10 fatal drownings in Ontario occur among males.<sup>1</sup>

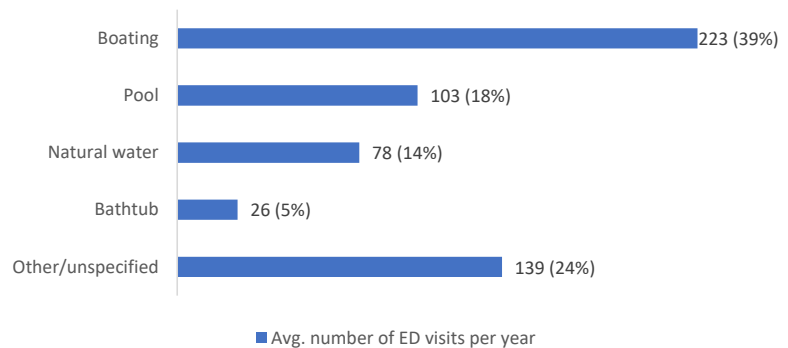


Males accounted for approximately two-thirds of non-fatal drownings, this differs from fatal drowning where males account for close to 80%.

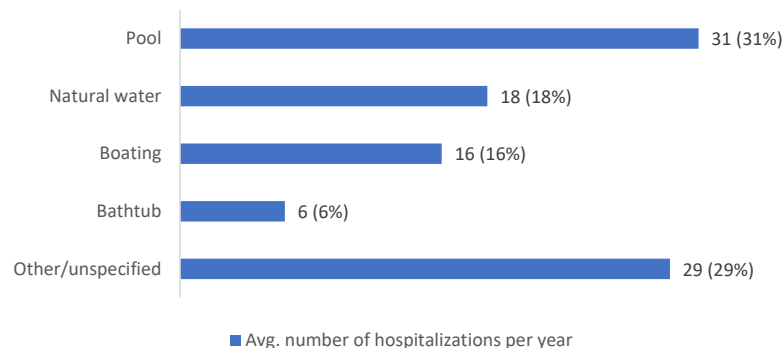
## Location

Emergency department visits due to non-fatal drowning were most frequently associated with boating. During 2012–2021 there were 2,226 (39%) boating-related emergency department visits for non-fatal drowning, an average of 223 per year. The next most common location associated with non-fatal drowning emergency department visits were pools (18%); over 1,000 non-fatal drownings serious enough to require a visit to an emergency department occurred in a pool during the 10-year period (103 per year). Non-boating related non-fatal drowning in natural water (14%) and non-fatal drowning in bathtubs (5%) were less frequently reported in emergency department records.

NUMBER OF EMERGENCY DEPARTMENT (ED) VISITS DUE TO NON-FATAL DROWNING BY LOCATION, ONTARIO, 2012–2021



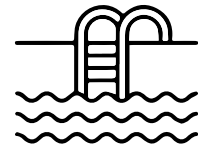
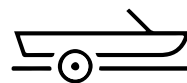
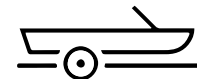
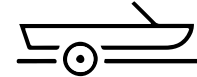
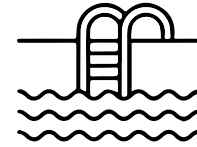
NUMBER OF HOSPITALIZATIONS DUE TO NON-FATAL DROWNING BY LOCATION, ONTARIO, 2012–2021



Hospitalizations due to non-fatal drowning most frequently occurred in pools. During 2012–2021 307 people (31%) were hospitalized as the result of non-fatal drowning in a pool (an average of 31 per year). Non-boating related non-fatal drowning in natural water (18%) was next most common (an average of 18 hospitalizations per year), followed by boating-related non-fatal drowning (16% – an average of 16 hospitalizations per year).

The most common location associated with both emergency department visits and hospitalizations from non-fatal drowning differed by age group.

- **Children 0–19 years:** non-fatal drowning resulting in an emergency department visit was most frequently associated with pools (32%), followed by boating (23%). Non-fatal drowning resulting in hospitalization most frequently occurred in a pool (46%), followed by non-boating related natural water (12%).
- **Young adults 20–44 years:** non-fatal drowning resulting in an emergency department visit was most frequently associated with boating (57%), followed by non-boating related natural water. Non-fatal drowning resulting in hospitalization was most frequently associated with non-boating related natural water (29%), followed by boating (25%).
- **Middle-aged adults 45–64 years:** non-fatal drowning resulting in an emergency department visit was most frequently associated with boating (52%), followed by non-boating related natural water (15%). Non-fatal drowning resulting in hospitalization was most frequently associated with boating (31%), followed by non-boating related natural water (23%).
- **Older adults 65+ years:** non-fatal drowning resulting in an emergency department visit was most frequently associated with boating (36%) followed by non-boating related natural water (22%). Non-fatal drowning resulting hospitalization most frequently occurred in a pool (27%) followed by non-boating related natural water (22%).



The most common location associated with both emergency department visits and hospitalizations from non-fatal drowning did not differ for males compared to females.

**Did you know?**

The Drowning Prevention Research Centre Canada is working with global experts on a categorization framework for non-fatal drowning. This will enable more comprehensive reporting on non-fatal drowning and contribute to a better understanding the full burden of drowning. With this framework, the severity of non-fatal drowning can be categorized based on the degree of respiratory impairment, and morbidity (decline from previous functional capacity) caused by the non-fatal drowning. The following draft framework is currently being finalized.

**Draft Non-Fatal Drowning Categorization Framework (NDCF)<sup>2</sup>**

| Severity of respiratory impairment after the drowning process stopped.   |  |   |
|--|--|---|
| Mild impairment  | Moderate impairment  | Severe impairment   |
| <ul style="list-style-type: none"> <li>• Involuntary distressed coughing AND</li> <li>• Fully alert</li> </ul> | <ul style="list-style-type: none"> <li>• Sustained difficulty breathing AND/OR</li> <li>• Disoriented but conscious</li> </ul> | <ul style="list-style-type: none"> <li>• Not breathing AND/OR</li> <li>• Unconscious</li> </ul> |
| Morbidity category (based upon any decline from previous functional capacity) at the time of measurement.      |  |   |
| No morbidity   | Some morbidity   | Severe morbidity  |
| <ul style="list-style-type: none"> <li>• No decline</li> </ul>   | <ul style="list-style-type: none"> <li>• Some decline</li> </ul>   | <ul style="list-style-type: none"> <li>• Severe decline</li> </ul>                              |

**More work is needed.** This report provides a brief overview of non-fatal drowning in Ontario based on emergency department and hospitalization data. Further research is needed to (1) estimate the full burden of non-fatal drowning, including incidents that are not captured in these sources; and (2) obtain more details about the circumstances of non-fatal drowning incidents and how and why these differ from fatal drowning. The Drowning Prevention Research Centre Canada and Public Health Ontario acknowledge that fatal drowning is only one part of the problem and are committed to more accurate reporting of the full burden of drowning.

## Summary

- Drowning can be fatal or non-fatal; non-fatal drowning can result in serious lifelong disability.
- During January 1, 2012 to December 31, 2021 there were 5,684 emergency department visits and 996 hospitalizations due to non-fatal drowning.
- Emergency department visits due to non-fatal drowning increased in 2021.
- Non-fatal drowning rates are highest among children and youth, this differs from fatal drowning where rates are highest among older people.
- Males accounted for approximately two-thirds of non-fatal drownings, this differs from fatal drowning where males account for close to 80%.
- Overall, emergency department visits due to non-fatal drowning were most frequently associated with boating, and non-fatal drowning that resulted in hospitalization most frequently occurred in pools.

**For every one fatal drowning, there are nearly four non-fatal drownings that require a visit to an emergency department. Non-fatal drowning is a serious problem in Ontario that can have lifelong consequences for individuals and families.**



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## References

<sup>1</sup> Lifesaving Society. Ontario Drowning Report, 2023 Edition. Toronto, ON: Drowning Prevention Research Center Canada; c2023.

<sup>2</sup> Beerman, S. Bierens, J.J.L.M., Clemens, T., Meddings, D., Rahman, A., Szpilman, D. Clarification and Categorization of Non-fatal Drowning: A draft Position Statement; c2019. Available from [https://www.who.int/docs/default-source/documents/drowning/non-fatal-drowning-categorization.pdf?sfvrsn=44d18cc1\\_2&download=true](https://www.who.int/docs/default-source/documents/drowning/non-fatal-drowning-categorization.pdf?sfvrsn=44d18cc1_2&download=true)