

# KEY FACTS ON DROWNING AND OTHER WATER-RELATED FATALITIES IN QUÉBEC

2020 EDITION

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# FOREWORD

This study presents key facts on drownings and other water-related fatalities in Québec from 2009 to 2015. The data is primarily from the provincial Bureau du coroner. Due to the publication deadlines for coroners' reports and data collection, entry and statistical processing, data can only be presented at least two years after the last year observed.

Following the publication of the report *Faits saillants sur les noyades et les autres décès liés à l'eau au Québec de 2000 à 2008*, the Ministère de l'Éducation, the Canadian Red Cross in Québec and the Lifesaving Society collaborated once again to produce the third edition of the study. The purpose of this analysis is to gain a better understanding of circumstances and factors surrounding water-related fatalities, to identify trends over the years, and to emphasize certain prevention measures.

## NOTES ON THE METHODOLOGY

### Excluded data

Some data has been excluded from this document. In the category, "Water, air or land transport," only data on snowmobiles and all-terrain vehicles (ATVs) has been retained. There were 122 fatalities from 1991 to 2015, including 35 since 2009. Therefore, 231 fatalities have been excluded from the report (except in Figure 1); these were the result of transportation-related accidents, mainly following the loss of control of a motor vehicle that ended up in water.

### Legal and illegal drugs

Since the cases presented in this document date from 2009 to 2015 and the legalization of cannabis for recreational purposes took effect in Canada on October 17, 2018, cannabis is considered an illegal drug in this document.

On November 1, 2019, Québec's *Cannabis Regulation Act* was passed. As a result, the use of cannabis in any indoor or outdoor public place is prohibited. In addition, the minimum legal age to possess or purchase cannabis and to enter the premises of the Société québécoise du cannabis (SQDC) was raised to 21 years on January 1, 2020.

# DEFINITIONS

## *Drowning*

According to the World Health Organization, drowning is “the process of experiencing respiratory impairment from submersion/immersion in liquid.”<sup>1</sup> Drowning can be fatal or non-fatal, with or without longer-term effects.

In the interest of methodological continuity, this study focuses on fatal drownings; the word “drowning” is used here to mean death by drowning. Non-fatal drownings are noted in Section 1.8.

## *Unknown data*

The information does not appear on record and the particular variable cannot be determined.

## Purpose of the activity

The purpose of the activity refers to the context of the victim’s activity at the time of death. For example, recreational fishing is a recreational type of activity, while subsistence fishing falls under daily life.

## *Daily life*

The victim was in, on or near water or ice as part of activities included in daily life (includes non-occupational and non-recreational travel, bathing or washing in a bathtub, subsistence hunting and fishing, some snowmobile travel except for recreational purposes, and walking for non-recreational purposes). Does not include travel by boat to a secondary residence (for example, a cottage).

## *Professional (paid work)*

The victim was in, near, or on water or ice to perform work tasks, such as paid work in agriculture, commercial fishing, professional diving or professional water-skiing.

## *Recreational*

The victim was taking part in a recreational or sporting activity in, near or on water or ice.

## *Rescue attempt*

The victim died while or after attempting to rescue or succeeding in rescuing another person or an animal.

## Type of activity

The type of activity refers to the nature of the activity being performed by the victim at the time of death.

## *Aquatic activity*

The victim was in the water intentionally. For instance, swimming, hot tubbing, diving or intentionally jumping from a boat, dock or other structure are aquatic activities. Does not include boating, water-skiing or bathing.

## *Bathing*

The victim drowned in a bathtub.

## *Boating*

The victim was in a boat or vessel intentionally (includes boarding or disembarking from a boat, water-skiing, or any device towed by a boat, such as an inner tube).

<sup>1</sup> World Health Organization, *Global report on drowning: Preventing a leading killer* (Geneva: WHO, 2014), x, [www.who.int/publications/i/item/global-report-on-drowning-preventing-a-leading-killer](http://www.who.int/publications/i/item/global-report-on-drowning-preventing-a-leading-killer), consulted October 3, 2019.

### ***Non-aquatic activity***

The victim did not intend to be in the water at the time of the incident but was near water or on water or ice and was not in a motor vehicle or on a snowmobile (includes falling into the water).

### ***Water, air or land transport***

The victim did not intend to be in the water at the time of the incident but was near water or on water or ice, in or on a motor vehicle or snowmobile.

## **Type of body of water**

The type of body of water refers to the aquatic environment the victim was in at the time of death.

### ***Bathtub or hot tub***

The victim died in a bathtub or whirlpool bath or hot tub (a tub with jet-propelled water).

### ***Dam or canal***

The victim died in a constructed waterway or around human-made barriers designed to control water flow.

### ***Lake or pond (including artificial lakes, reservoirs, retention basins, dugouts)***

The victim died in a lake or pond (a body of standing water of varying depth and size surrounded on all sides by land).

### ***Ocean***

The victim died in an ocean (a large body of salt water characterized by tides).

### ***Other***

The victim died in a body of water that does not correspond to the other types listed here (for example, a quarry, ditch or gutter, wastewater retention basin).

### ***Private pool (multi-family or hotel)***

The victim died in a private swimming pool (closed to the public) in a multi-family residence (for example, a housing complex, condominium or hotel).

### ***Public pool***

The victim died in a swimming pool open to the public. This includes municipal pools, paddling pools, wave pools and water parks.

### ***Residential pool***

The victim died in a single-family residential pool.

### ***River or stream***

The victim died in a river or stream (a body of water of varying depth that flows into another body of water).

### ***St. Lawrence River***

The victim died in the St. Lawrence River.

## Type of watercraft

Type of watercraft refers to the type of boat the victim was in at the time of death.

### *Canoe*

The victim died while in a canoe (a light paddle-propelled boat with curved ends).

### *Kayak*

The victim died while in a kayak (a narrow, closed boat that is propelled by a double paddle and may be made watertight by a waterproof skirt tightly fitted around the kayaker's waist).

### *Motorboat*

The victim died while in a motorboat (a vessel designed for navigation and equipped with a motor).

### *Non-motorized boat*

The victim died while in a boat without a motor (a vessel without a motor intended for navigation). This includes inflatable boats without a motor.

### *Other*

The victim died while in a vessel that does not fall within any of the other categories listed here (for example, a pedal boat, a boat propelled by unknown means, a sailboat, or a windsurfing board).

### *Personal watercraft*

The victim died while on a personal watercraft (a small motorized vessel propelled by a high-powered jet of water generated by a motor).

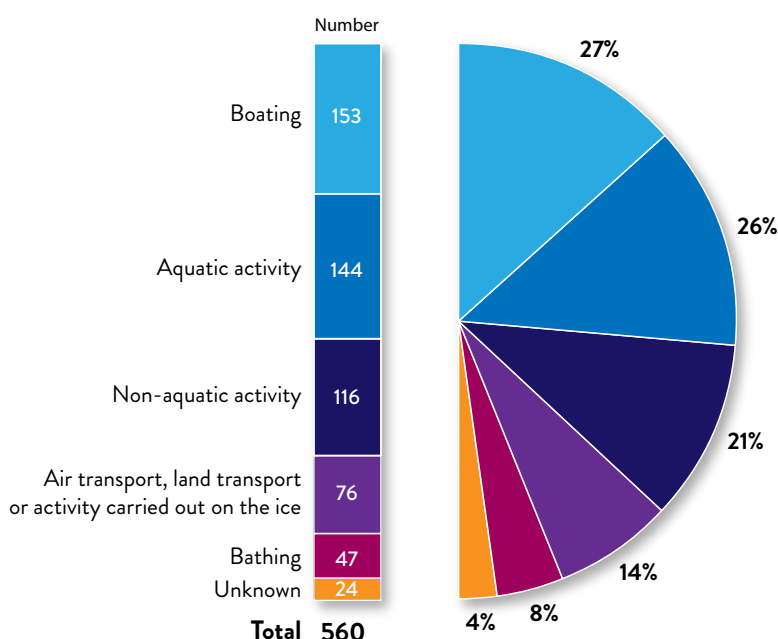


# 1 OVERVIEW

Swimming is a very popular recreational and sports activity in Québec. Across the province, 3 783 000 people aged 6 to 74 go swimming at least once a year, and more than one third (34.8%) of them do so on a regular basis. Non-motorized water sports (canoeing, tubing, rafting, kayaking, sailing, windsurfing and catamaraning) are practised at least once a year by 1 505 000 people aged 6 to 74, 12% of whom do so on a regular basis.<sup>2</sup> However, drowning during swimming and aquatic activities is a major concern, given that drowning is a leading cause of death in recreational and sports activities, taking more lives than fatal injuries associated with cycling.<sup>3</sup>

**Although the fatality rate is decreasing, unfortunately, an average of 80 water-related fatalities occur each year, most of them drownings.** The remaining fatalities are caused by traumas other than drowning, such as those resulting from boat collisions or hypothermia. This average is for 2009 to 2015, during which period 560 people died mostly during boating (27%), aquatic (26%) or non-aquatic (21%) activities (Figure 1).

**FIGURE 1: Water-related fatalities, by type of activity, Québec, 2009–2015 (n = 560)**



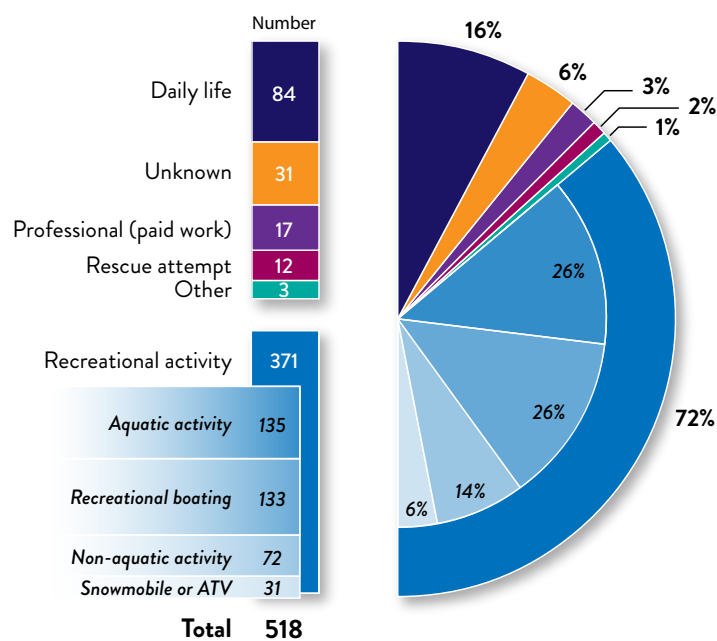
Regarding the purpose of the activities, the majority of victims were engaged in a recreational activity (72%), while others died during an activity in the course daily life (16%) or work (3%) (Figure 2). The most common recreational activities involved were aquatic activities (26%) and recreational boating (26%).

2 Denis Hamel, Bertrand Nolin, and Benoit Tremblay, *Étude des blessures subies au cours de la pratique d'activités récréatives et sportives au Québec en 2015-2016* (Québec: Institut national de santé publique du Québec, 2019), [www.inspq.qc.ca/publications/2525](http://www.inspq.qc.ca/publications/2525), consulted July 30, 2019.

3 Paul Villeneuve, *Mortalité associée aux activités récréatives et sportives au Québec, version préliminaire* (Québec: Direction de la promotion de la sécurité du ministère de l'Éducation, du Loisir et du Sport, 2007), [www.education.gouv.qc.ca/fileadmin/site\\_web/documents/loisir-sport/analyse\\_mortalite\\_associee\\_1990-2005.pdf](http://www.education.gouv.qc.ca/fileadmin/site_web/documents/loisir-sport/analyse_mortalite_associee_1990-2005.pdf), consulted July 30, 2019.



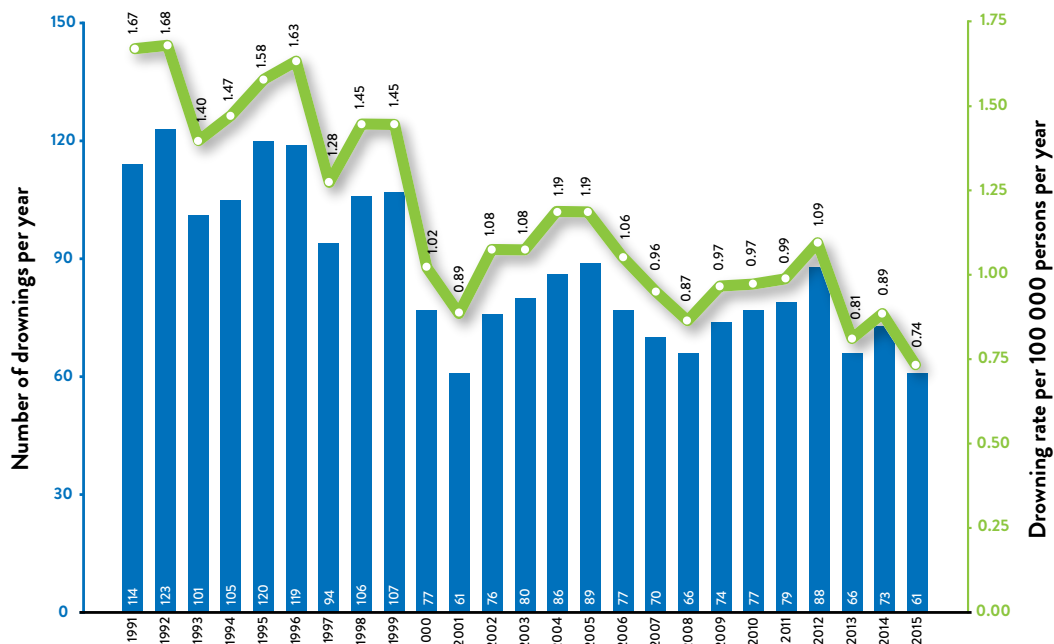
**FIGURE 2:** Water-related fatalities by purpose of activity, Québec, 2009–2015 (n = 518)



## 1.1 Downward trend in drownings and other water-related fatalities

A comparison of data for 2009 to 2015 with data for 2000 to 2008 reveals a downward trend in the number and rate of fatalities per 100 000 persons per year (Figure 3). Although the study shows that from 2000 to 2008 there were 82 fatalities per year on average, from 2009 to 2015 there were 80 drownings and other water-related fatalities per year, for a decrease of 2%.

**FIGURE 3:** Adjusted rates and numbers, water-related fatalities, Québec, 1991–2015 (n = 2189)

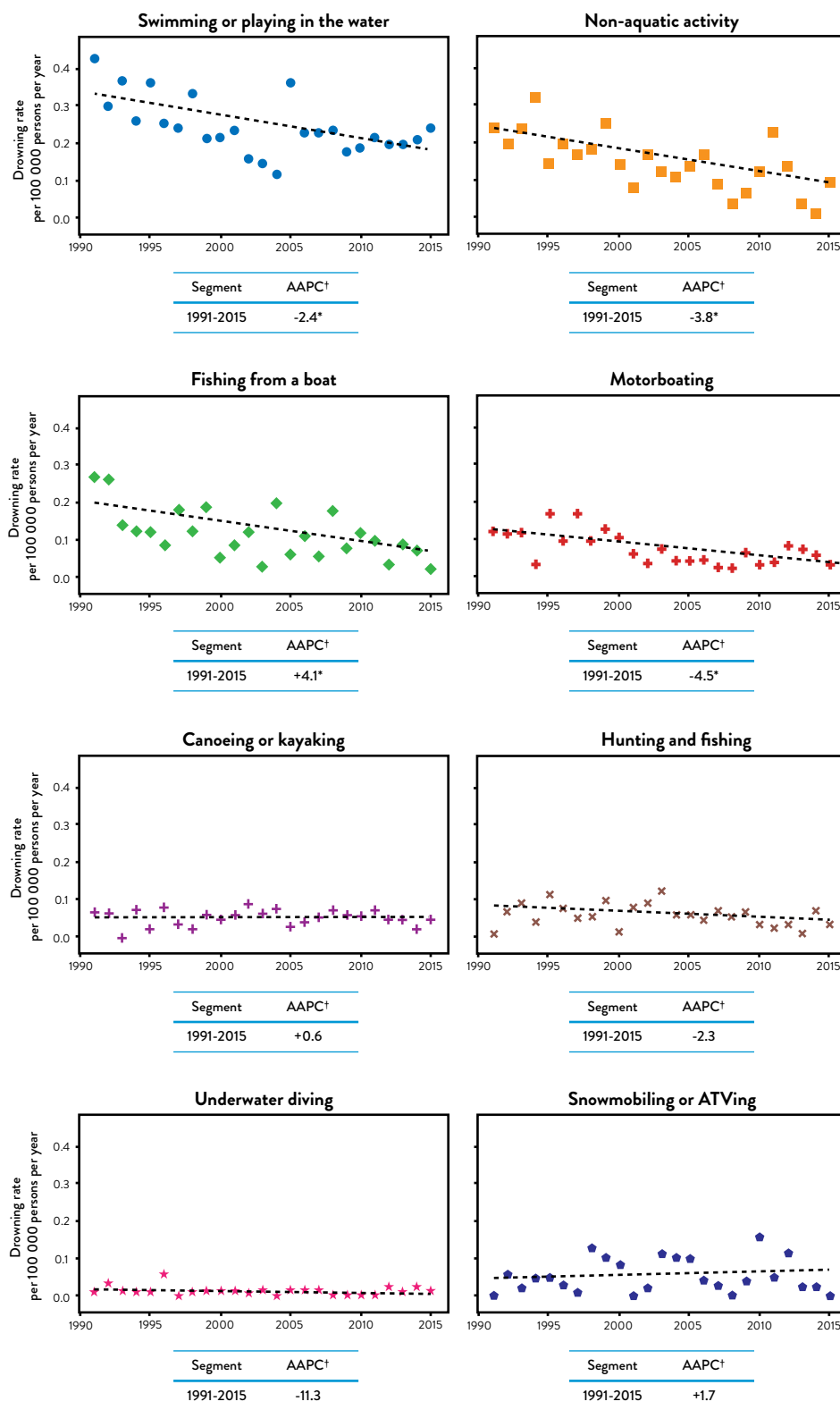


Note on methodology: The rates have been adjusted based on the population of Québec in 2014.

In addition, some recreational activities show statistically significant downward trends.<sup>4</sup> The most significant are motorboating (-4.5%), fishing from a boat (-4.1%), and non-aquatic activities (-3.8%) (Figure 4).

<sup>4</sup>  $p < 0.05$ .

**FIGURE 4:** Adjusted water-related fatality rates, by recreational activities with the highest number of fatalities, Québec, 1991–2015 (n = 1444)



† Average annual percentage change. Statistical modelling to describe changes in temporal trends. Joinpoint regression program used.

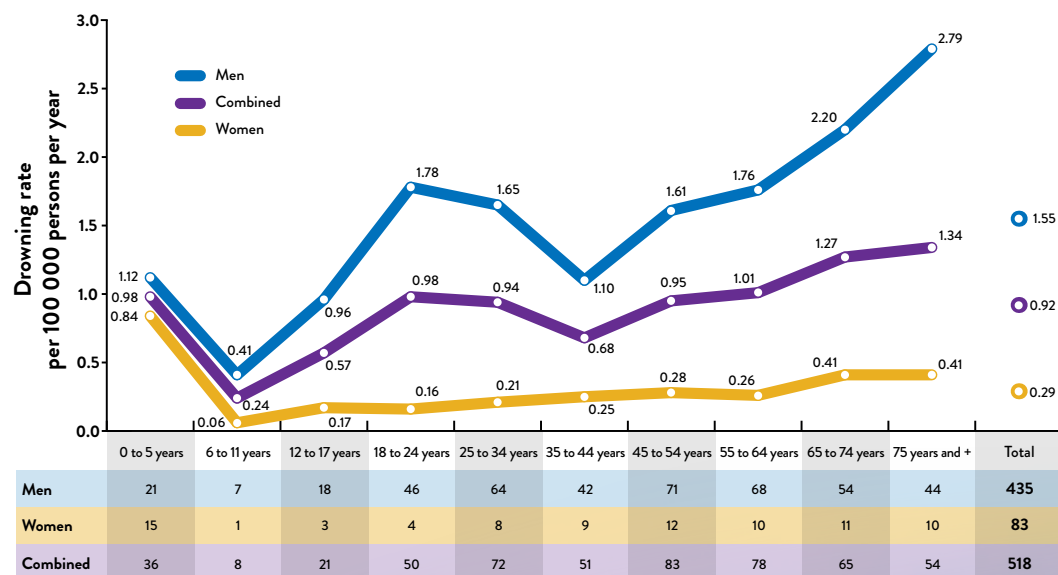
\* Statistically significant average annual percentage change (AAPC).

Note on methodology: Rates have been adjusted based on the population of Québec in 2014.

## 1.2 Groups at highest risk: Seniors, young men and young children

Drowning victims tend to be male (84%). People 65 years of age and older and young males aged 18 to 34 have particularly high drowning fatality rates compared to other population groups (Figure 5). Among victims under the age of 18, children aged 0 to 5 are also at highest risk. Young children are more likely to drown in residential swimming pools, while most male victims aged 18 to 34 lose their lives swimming or boating. People aged 65 and over die mostly during non-aquatic activities. In fact, they are 2.6 times more likely than the rest of the population to drown as the result of a sudden heart attack.

**FIGURE 5: Rates and numbers, water-related fatalities, by age and gender, Québec, 2009–2015 (n = 518; 83 women, 435 men)**

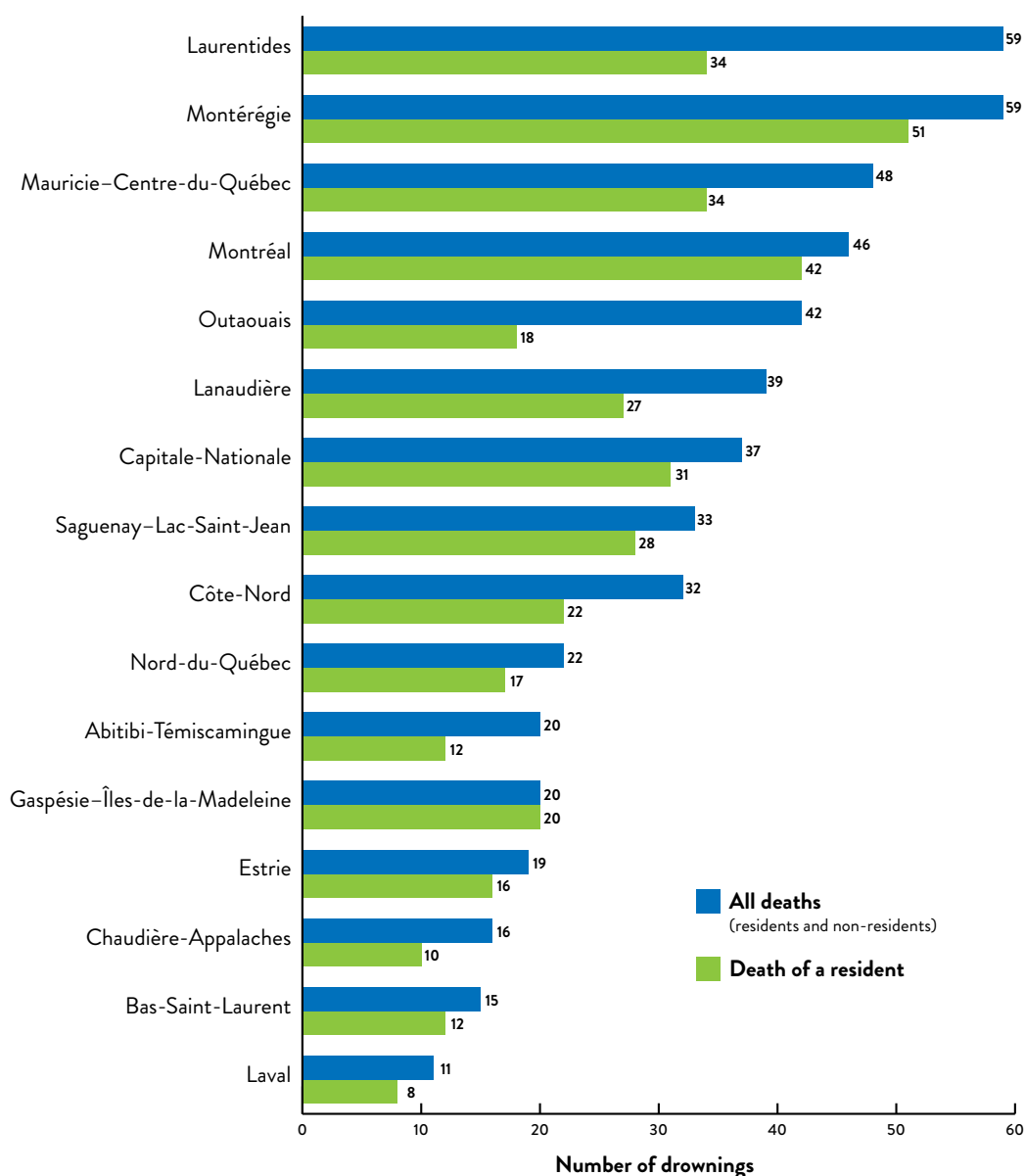


### 1.3 Where do drownings occur and where are the victims from?

In absolute numbers, the Laurentides and Montérégie are the regions in which the most fatalities occurred, followed by the Mauricie–Centre-du-Québec and Montréal regions. Note that the place of death may not be the victim's place of residence. On average, 25% of victims come from outside the region where the incident occurred (Figure 6). Note also that 5% of all victims come from outside Québec.

The study also reveals that Indigenous people, who represent 2.3%<sup>5</sup> of the population of Québec, account for 6% of victims. More than a quarter of drownings occur during fishing activities (17% during recreational fishing and 10% during subsistence fishing).

**FIGURE 6: Water-related fatalities, by region and victim origin, Québec, 2009–2015 (n = 518)**



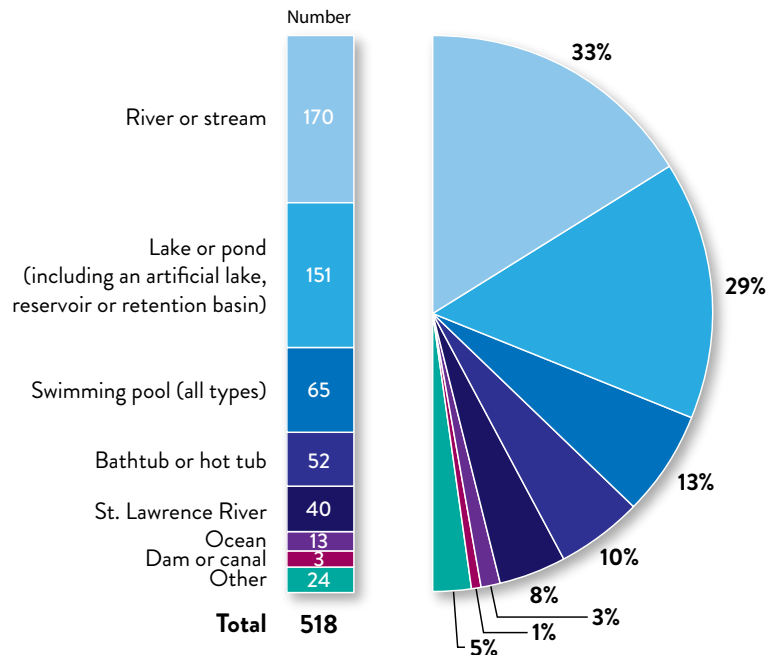
5 See Statistics Canada, *Aboriginal identity population by both sexes, total – age, 2016 counts, Canada, provinces and territories, 2016 Census – 25% Sample data*, updated February 20, 2019, [www12.statcan.gc.ca/census-recensement/2016/dp-hlt-fst/abo-aut/Table.cfm?Lang=Eng&S=99&O=A&RPP=25](http://www12.statcan.gc.ca/census-recensement/2016/dp-hlt-fst/abo-aut/Table.cfm?Lang=Eng&S=99&O=A&RPP=25), consulted July 15, 2019.



## 1.4 Rivers and lakes: Bodies of water where drowning most commonly occurs

Nearly three quarters (70%) of drownings occur in natural bodies of water—rivers (33%), lakes (29%), or the St. Lawrence River (8%)—followed by swimming pools (13%), especially residential pools, and then bathtubs and hot tubs (10%) (Figure 7). It should be noted that 31% of drowning fatalities occur in a residential setting (e.g. residential pool, bathtub, private beach).

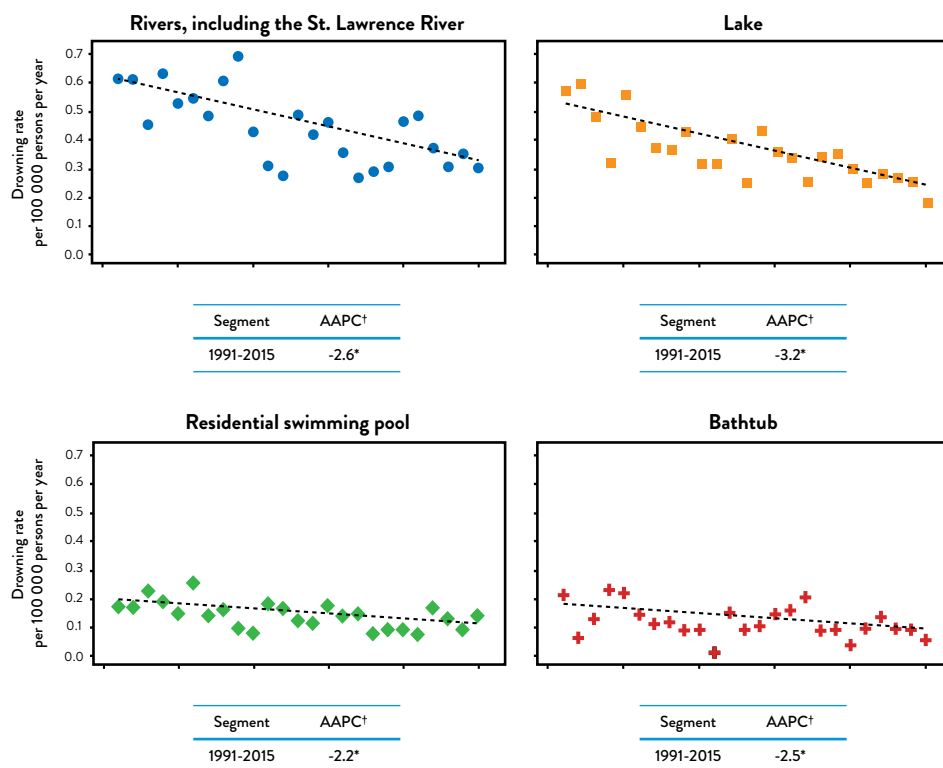
**FIGURE 7: Water-related fatalities, by body of water, Québec, 2009–2015 (n = 518)**



It is important to note that several types of bodies of water have adjusted fatality rates that show a statistically significant downward trend. Lakes (-3.2%), rivers, including the St. Lawrence River, (-2.6%), bathtubs (-2.5%), and residential swimming pools (-2.2%) have shown declining annual drowning rates in recent years (Figure 8).



**FIGURE 8:** Adjusted water-related fatalities, by type of body of water, Québec, 2009–2015 (n = 1999)



† Average annual percentage change. Statistical modelling to describe changes in temporal trends. Joinpoint regression program used.

\* Statistically significant average annual percentage change (AAPC).

Note on methodology: Rates have been adjusted based on the population of Québec in 2014.

## 1.5 Other circumstances and contributing factors

### Time of day and year

Unsurprisingly, most drowning fatalities occur in June, July and August, when many people are on vacation and there is an increase in swimming and boating. The majority (60%) of outdoor incidents take place in daylight; however, there is a significant risk after sunset, when 18% of fatalities occur. This data is unknown in 22% of cases.

Although there are fewer drownings during the winter, it is important to note that a high proportion of these drownings occur on ice. Between December and March, 39% of fatalities occur after the victim has fallen through the ice. In January and February, this proportion rises to 48%.

### Swimming ability

Approximately 24% of victims were considered non-swimmers or weak swimmers. This proportion is likely an underestimate since information on swimming ability is not included in 67% of coroners' reports.

## Alcohol and drug use

The study found that 20% of victims aged 18 years and older had a blood-alcohol level higher than 80 mg/dL, while 33% had used drugs or were suspected of having used drugs (22% legal drugs; 14% illegal drugs). It should be noted that victims may have used both legal and illegal drugs.

Furthermore, 9% had used both drugs and alcohol (blood-alcohol level higher than 80 mg/dL). However, data on alcohol and drug use was unknown in 21% and 27% of the cases respectively.

## Hypothermia

Exposure to cold or hypothermia was listed as the primary or secondary cause of death in 13% of cases.

## 1.6 Fatalities during non-aquatic activities

Of the 116 water-related fatalities that occurred during non-aquatic activities (excluding those related to transportation), 52 occurred after the victim fell into the water while walking, running or playing near water or on ice. Nearly 8% of the 116 victims were fishing from the shore.

Children from 0 to 5 years of age are at risk of falling into the water, particularly in residential pools, a subject which is explored in greater detail in Section 4.

With regard to activities related to air, land or ice transport, note that casualties are also associated with the use of snowmobiles and ATVs. Despite a decrease in the number of fatalities since the 2000s, 35 snowmobilers and ATV riders died between 2009 and 2015 while travelling on or near ice. Of this number, 32 were travelling during a recreational activity, while three were travelling in the course of their daily life or work.

## 1.7 Bathtub drownings: Most victims are adults and seniors

Bathing is a daily activity that carries risks: 9% of drowning victims, or 47 people, were found in their bathtub. Of these, 91% were 18 years of age and older, while 9% were children aged 0 to 5. More than one in two (60%) were adults 55 years of age and older. In contrast to the overall drowning rate, where males are overrepresented, 49% of victims of bathtub drownings were female. Contributing factors are drug use (55% legal drugs; 9% illegal drugs), chronic conditions such as heart disease (43%), overconsumption of alcohol (19%), alcoholism (17%), epilepsy (15%) and depression (15%). Note that overconsumption of alcohol means that the victim had a blood-alcohol level higher than 80 mg/dL at the time of death.

## 1.8 Non-fatal drownings<sup>6</sup>

Non-fatal drownings refer to incidents involving individuals who were resuscitated following respiratory failure resulting from immersion under water. These survivors either suffered no long-term effects or permanent injuries, or ultimately died from other complications (13% of cases). From 2009 to 2015, 338 hospitalizations for non-fatal drownings were recorded, an annual average of 48 hospitalizations. The most represented group (48% of victims), is children from 0 to 5. Of non-fatal drowning victims, 228 (67%) were under the age of 18 years. Men accounted for 63% of all victims.

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<sup>6</sup> Hospitalization data from Québec's MED-ÉCHO system.

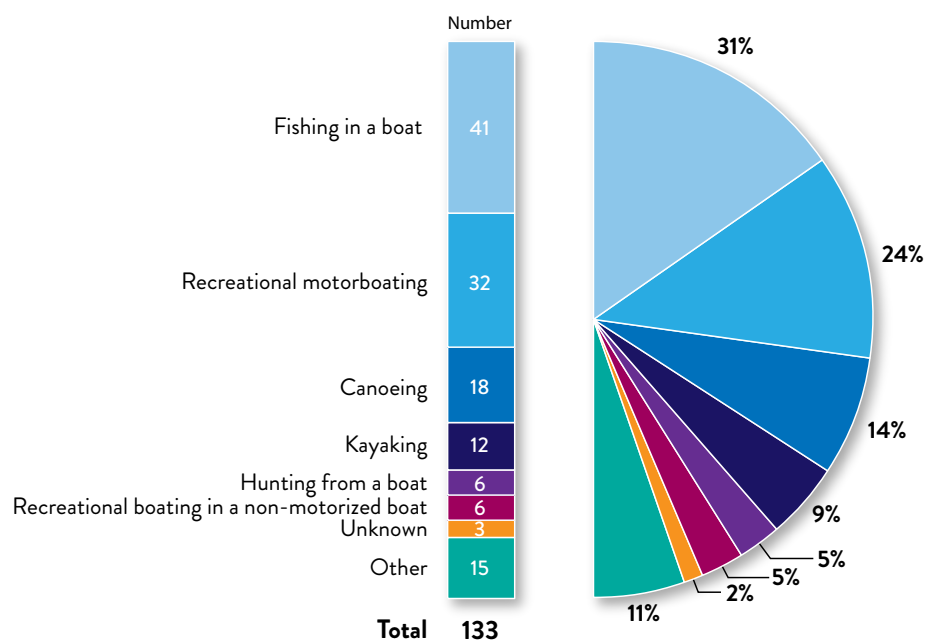
## 2 RECREATIONAL BOATING

For all recreational boating activities combined, almost half (44%) of victims were males aged 35 to 64. The data also shows that, in 37% of cases, the victim was alone in the boat, while 25% of victims were non-swimmers or weak swimmers. Numbers regarding the swimming-ability of victims are conservative, as this information is unknown in more than half (58%) of the cases.

Among recreational boating activities, fishing in a boat remains the most common activity (31%) at the time of drowning (Figure 9), followed by motorboating (24%), canoeing (14%) and kayaking (9%).

From 2009 to 2015, recreational boating fatalities occurred mostly in lakes (59%), followed by rivers in general (28%) and the St. Lawrence River (10%). Thirty-nine victims (29%) died while motorboating on a lake (Table 1).

**FIGURE 9:** Water-related fatalities associated with recreational boating, by activity, Québec, 2009–2015 (n = 133)







**TABLE 1:** Water-related fatalities associated with recreational boating, by type of body of water and type of watercraft, Québec, 2009–2015 (n = 133)

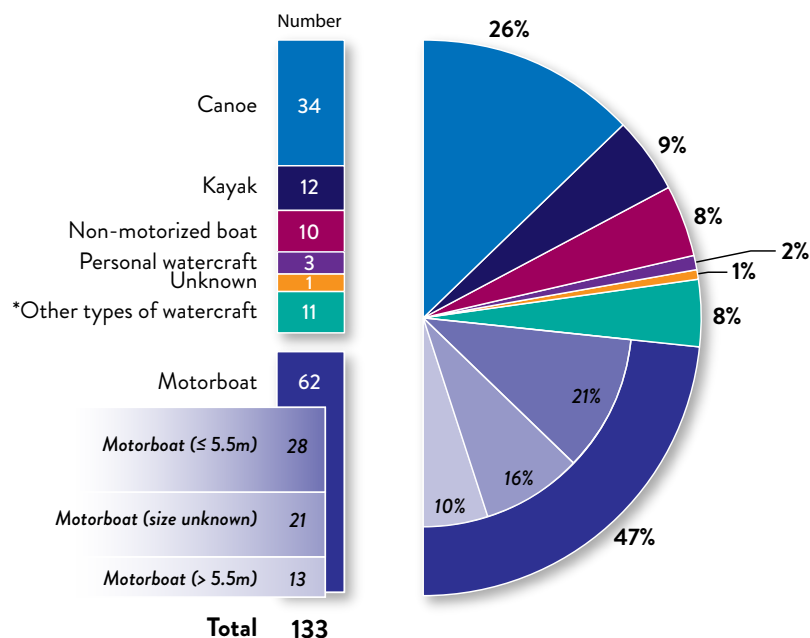
TYPE OF WATERCRAFT	BODY OF WATER			
	Lake	River	St. Lawrence River	Other
Motorboat	39	16	6	1
Canoe	23	8	2	1
Other types of watercraft*	8	5	1	0
Kayak	2	6	3	1
Non-motorized boat	7	2	0	1
Unknown	0	0	1	0

\* Other types of watercraft: includes pedal boats and boats propelled by unknown means (for which there is no data on the size of the watercraft or the presence or absence of a motor).

## 2.1 Small motorized watercraft are most often involved

Despite a decrease in the number of motorboat-related fatalities, motorboats continue to be the most frequently mentioned type of watercraft in coroners' reports (47%). Of all recreational boating fatalities, motorboats under 5.5 m were involved in 21% of cases and motorboats over 5.5 m were involved in 10% of cases (Figure 10). Watercraft size was unknown in 16% of cases.

**FIGURE 10: Water-related fatalities associated with recreational boating, by activity, Québec, 2009–2015 (n = 133)**



\* Other types of watercraft: includes pedal boats and boats propelled by unknown means (for which there is no data on the size of the watercraft or the presence or absence of a motor).

## 2.2 Under-use of personal flotation devices (PFDs)

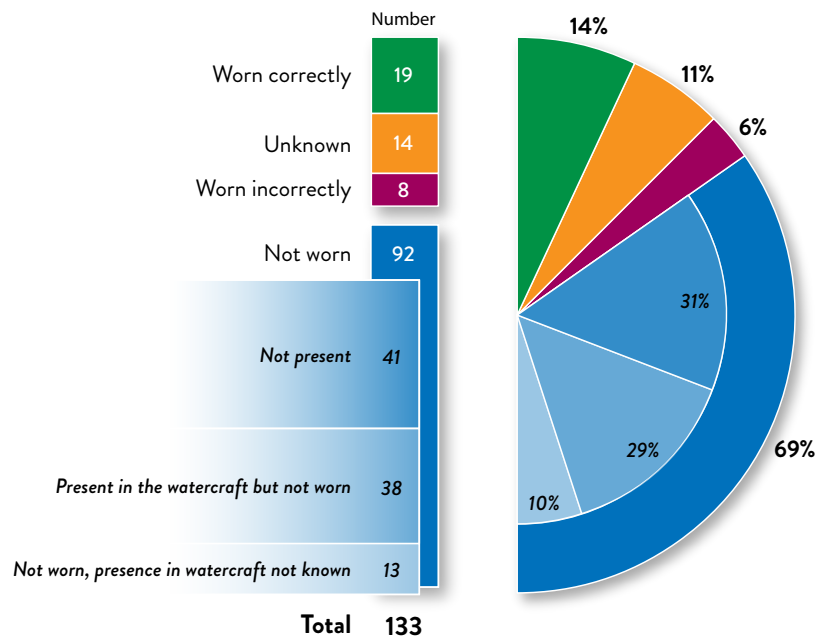
Over the 2009 to 2015 period, only 14% of victims were wearing personal flotation devices (PFDs) correctly (Figure 11). Statistically, there has been no significant change in this rate since the 1990s. It should also be noted that the majority of kayakers who drowned were wearing a PFD correctly (67%) (Figure 12).

According to a survey conducted by the Canadian Red Cross, 47% of Canadian recreational boaters say that they always wear a PFD and 23% say that they wear a PFD most of the time.<sup>7</sup> These proportions are higher than the proportion of victims who were wearing a PFD correctly. These statistics suggest that not wearing a PFD is a contributing factor in drowning fatalities.

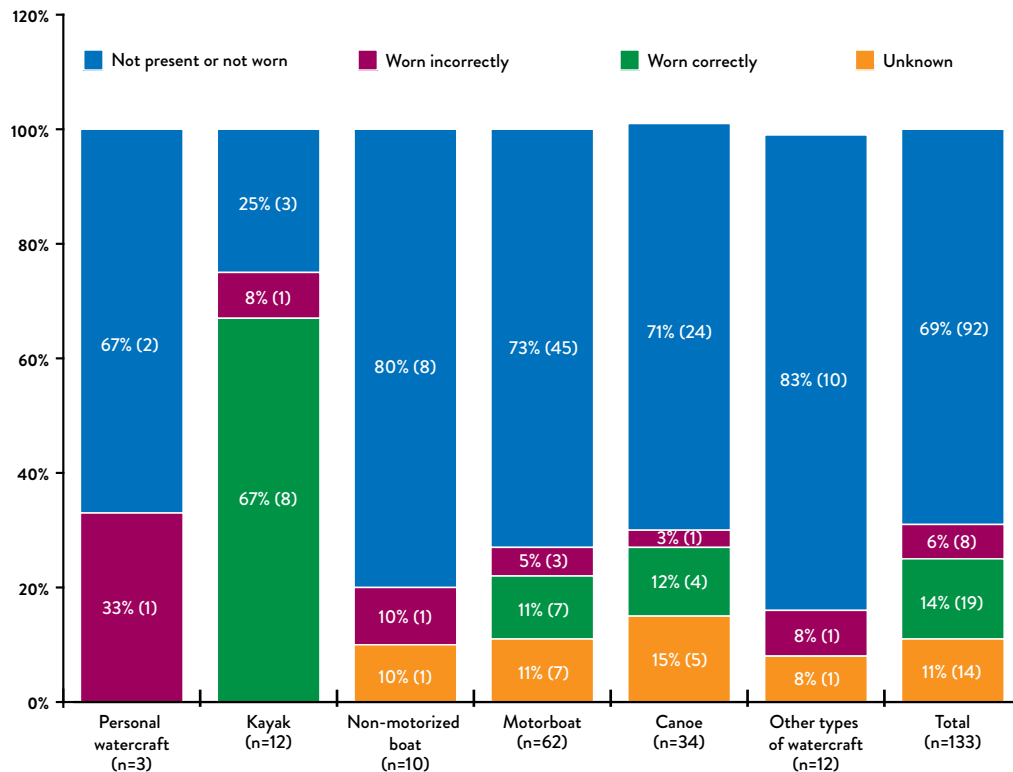
<sup>7</sup> Canadian Red Cross, *The Flotation Report: Lifejackets/Personal Flotation Devices and Boating Fatalities in Canada: 20 Years of Research*, Canadian Red Cross, 2016, [www.redcross.ca/crc/documents/What-We-Do/Swimming-Water-Safety/2016\\_Flotation\\_Report\\_E\\_May30.pdf](http://www.redcross.ca/crc/documents/What-We-Do/Swimming-Water-Safety/2016_Flotation_Report_E_May30.pdf), consulted October 3, 2019.



**FIGURE 11:** Water-related fatalities associated with recreational boating, by PFD wear, percentages and numbers, Québec, 2009–2015 (n = 133)



**FIGURE 12:** Water-related fatalities associated with recreational boating, by PFD wear and watercraft, by region, percentages and numbers, Québec, 2009–2015 (n = 133)



## 2.3 Waves and cold water: Danger

Hypothermia and exposure to cold were noted as major factors in 17% of drownings. In addition, 22% of the reports indicate that drowning occurred in cold (10°C to 20°C) or very cold (below 10°C) water. High winds and strong waves also account for a certain proportion (18%) of boating incidents.

## 2.4 Boating and alcohol: Increased risk

Almost one quarter (24%) of recreational boating drowning victims over the age of 18 had been drinking alcohol. Of these, 18% had a blood alcohol concentration above the legal limit. This is a conservative estimate since information on the presence or absence of alcohol is unknown in 23% of cases.

## 2.5 Regions most-affected

The majority of drownings occurred in the Laurentians (14%), Mauricie and Centre-du-Québec (14%), Outaouais (12%) and Côte-Nord (5%) regions (Figure 13). Note that a large proportion of victims did not live in the region where they drowned (42%). For example, only 8 of the 19 drowning victims in the Laurentians resided in the region. Eleven visitors from outside Québec drowned.

## 2.6 Safety tips: Boating

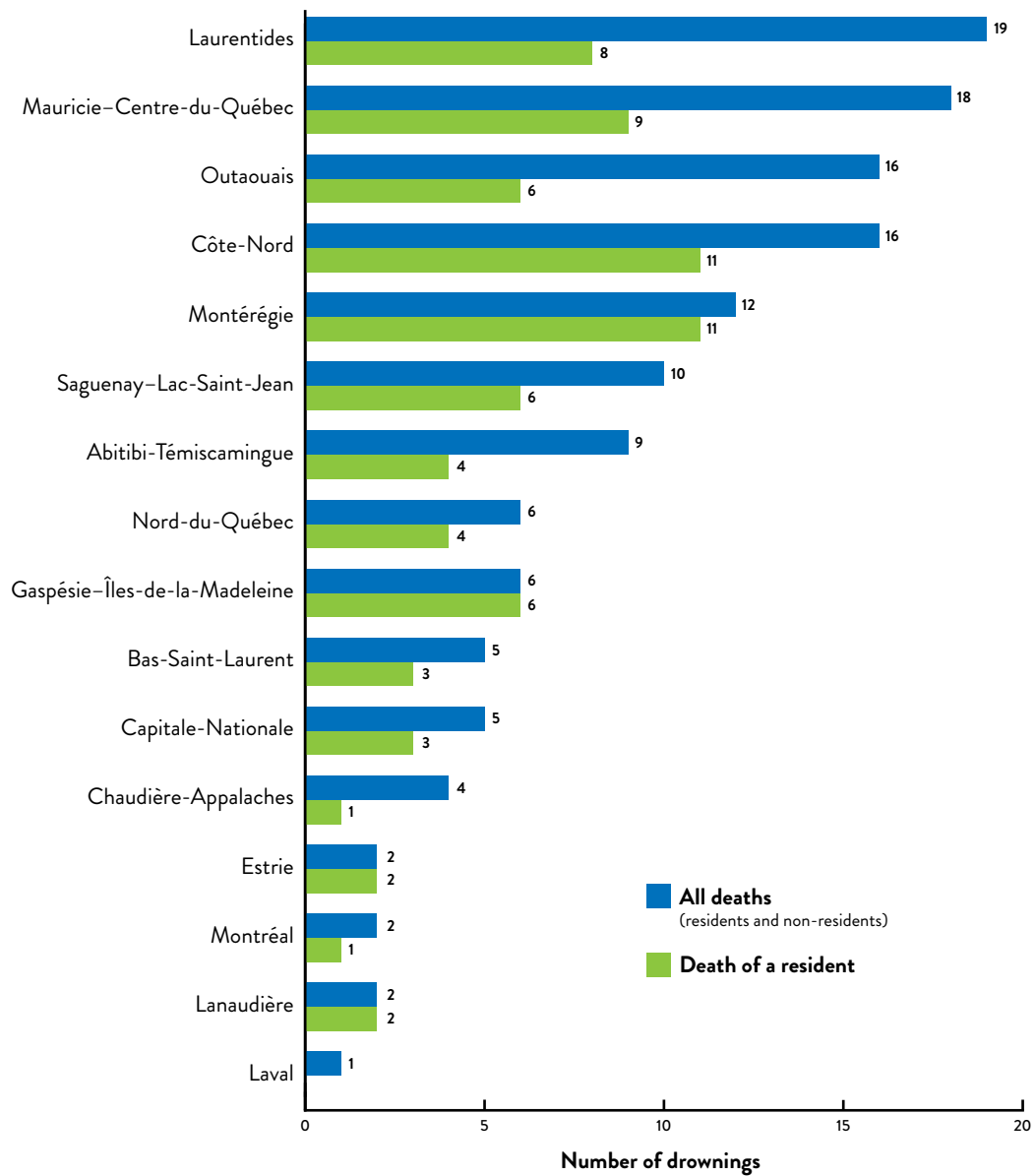
**Always wear your PFD.** A PFD that stays in the bottom of the boat is not very useful; it is difficult to put it on in an emergency.

It is important to be aware of the basics of navigation and to know the applicable regulations. Proof of competency is mandatory for motorboat operators. In addition, there is a speed limit on several bodies of water in Québec. For more information, particularly on the minimum age for operating a boat based on engine power and the specifics of operating a personal watercraft, please refer to Transport Canada's *Safe Boating Guide* (copies are available by calling 1-888-830-4911 or through the Transport Canada website, [www.tc.canada.ca/en/marine-transportation/marine-safety/office-boating-safety](http://www.tc.canada.ca/en/marine-transportation/marine-safety/office-boating-safety)). Transport Canada-approved courses are available through organizations like the Lifesaving Society.

River rafting, sea kayaking and canoeing require special skills. Learn the necessary techniques from specialists in these fields before venturing out on the water. For more information, contact Canot Kayak Québec ([www.canot-kayak.qc.ca](http://www.canot-kayak.qc.ca)) or Eau Vive Québec ([www.eauvivequebec.ca](http://www.eauvivequebec.ca)).

**Avoid drinking alcohol while boating.** Driving a boat while impaired is punishable in the same way that driving a car under the same conditions would be. Driving a boat requires your full attention and sense of responsibility. Sobriety is recommended for the driver as well as the passengers.

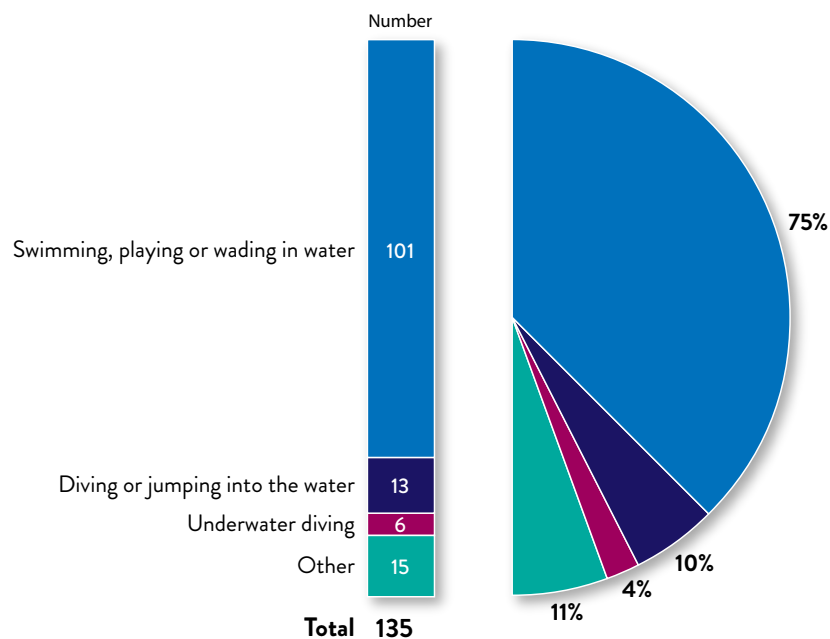
**FIGURE 13: Water-related fatalities associated with recreational boating, by region, Québec, 2009–2015 (n = 133)**



### 3 SWIMMING

Of water-related recreational activities, swimming, playing or wading in water account for the majority of drownings (75%). An average of 14 drownings per year, 75% of all water-related fatalities (Figure 14), occurred while the victims were swimming. Like deaths associated with canoeing, kayaking and some non-water activities including hunting, fishing, snowmobiling and ATVing, drowning while swimming has declined significantly since the 1990s. In fact, this rate is declining by about 2.4% each year, as noted in Section 1.1.

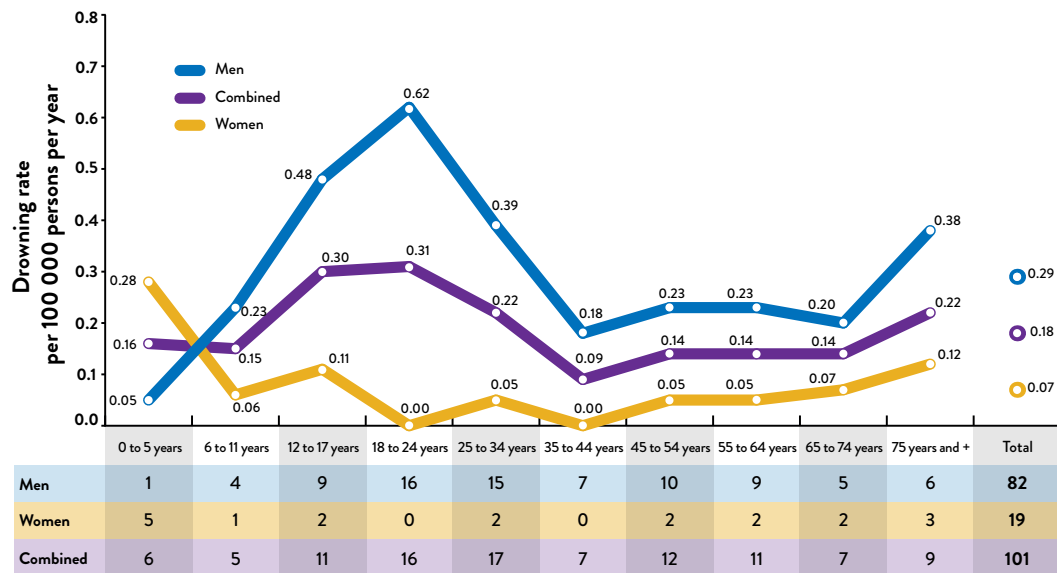
**FIGURE 14: Water-related fatalities associated with a recreational aquatic activity, by activity, Québec, 2009–2015 (n = 135)**



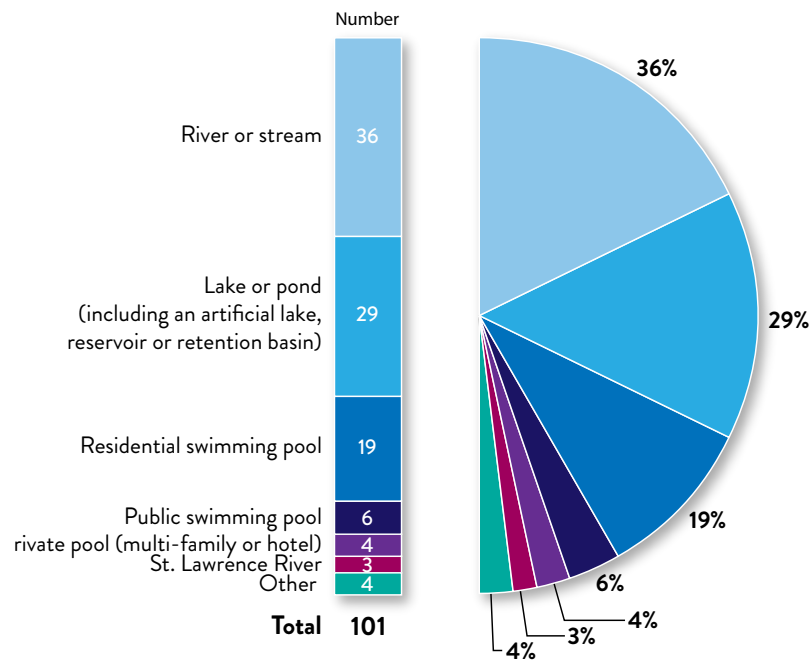
#### 3.1 A typical case: Young man drowns while swimming in a river

Although people of all ages go swimming, young males aged 18 to 24 (0.62), 12 to 17 (0.48) and 25 to 34 (0.39) have the highest drowning rates (Figure 15). Across all age groups, swimming-related drownings occurred most frequently in rivers (39%; including the St. Lawrence River), followed by lakes and ponds (29%) and, in a smaller proportion, residential pools (19%) (Figure 16). Drowning while swimming occurred in deep water (2.6 m or more) in 20% of cases, in water 1.1 to 2.5 m deep in 19% of cases, and in 1 m or less in 2% of cases (depth unknown in 59% of cases).

**FIGURE 15: Water-related fatalities associated with swimming, by age and gender, Québec, 2009–2015 (n = 101; 19 women, 82 men)**



**FIGURE 16: Water-related fatalities associated with swimming, by type of body of water, Québec, 2009–2015 (n = 101)**



## 3.2 Swimming ability

Although swimming skills do not protect all swimmers from drowning, it is important to note that 34% of the victims could not swim or were weak swimmers. This proportion may be underestimated as swimming proficiency was not specified in 49% of reports.

## 3.3 Swimming alone: Increased risk

Individuals who get into difficulty while swimming are much less likely to survive if they are alone. Twenty-eight percent of drowning victims were alone at the time of the incident. In 83% of drowning cases involving children from 0 to 5, there were no adults present.

## 3.4 Alcohol, drugs, and swimming: A dangerous mix

As with other water and water-based activities, swimming presents increased risks when associated with alcohol and drug use. In fact, 41% of drowning victims aged 18 years or older had been swimming after drinking alcohol, and 25% had a blood-alcohol level higher than 80 mg/dL. Thirty-two percent of victims aged 18 years or older had used drugs (25% legal drugs; 11% illegal drugs), and 15% had used both alcohol and drugs.

## 3.5 Risks of jumping or diving into shallow water

In Québec, from 2009 to 2016, there were 284 hospitalizations resulting from jumping or diving into shallow water. In the vast majority of cases (87%), the victim was male. One quarter (25%) of the victims were aged 12 to 17, followed by adults aged 25 to 34 (19%), adults aged 35 to 44 (15%), adults aged 18 to 24 (13%) and adults aged 45 to 54 (13%).

In 66% of cases, individuals suffered at least one fracture. Of the 284 hospitalizations, spinal cord injury was identified in 15% of cases and/or a craniocerebral injury in 18% of cases. In addition, almost half (44%) of fatalities related to jumping into shallow water involved a spinal cord injury.







### 3.6 Safety tips: Swimming

**Learn to swim.** There's nothing like learning the basics to make swimming enjoyable. For over 60 years, the Canadian Red Cross has been offering a recognized training program for all ages.

**Always be accompanied while swimming.** Anyone can get a cramp or suddenly feel unwell, regardless of age or ability. Swimming with someone else can allow a swimmer in distress to get help quickly and increases their chances of survival.

**Beware of currents and white water.** Remember that a significant number of drownings happen in rivers, compared to other bodies of water. Do not underestimate the dangers posed by river currents and rapids.

**Check location and depth before diving.** Before diving, it is important to make sure that the water is deep enough and that there are no obstacles such as rocks between the surface and the bottom of the body of water. The Lifesaving Society notes that the minimum depth requirement set out in the National Pool Safety Standards is 2.75 m for a distance of 6 m from the water's edge.

**Avoid mixing alcohol or drugs and swimming.** Dehydration, fatigue and prolonged exposure to the sun exacerbate the effects of alcohol and drugs while swimming and are a major risk factor. If you are planning to swim, consider the increased risks associated with impairment and avoid alcohol and drugs.

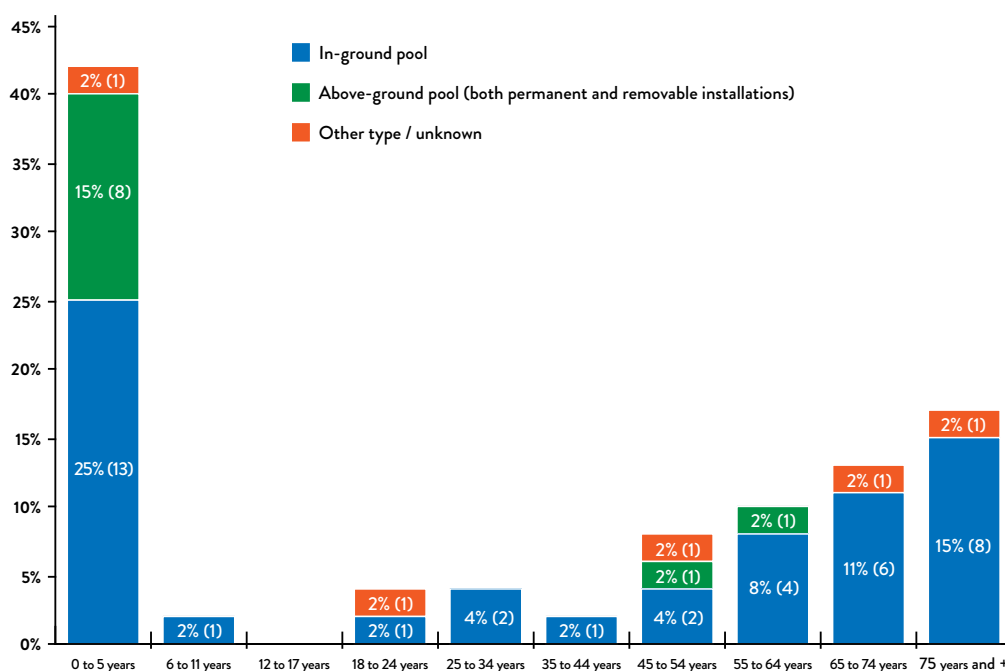
## 4 RESIDENTIAL POOLS

During the 2009–2015 period, the number of drownings in residential pools rose by 8.6%, a slight increase in comparison with the 2000–2008 period. In 2009–2015, there were 53 drownings, an average of 8 per year. Fatalities in residential pools represent 10% of all fatalities in all bodies of water combined. It should also be noted that comparably fewer fatalities (12 in 7 years, or an average of 2 per year) occur in public pools.

### 4.1 Young children: Still the group most at risk

Although fatality rates are steadily dropping, drownings in residential pools remain a concern due mainly in part to the young age of the victims and the circumstances surrounding the incidents. The typical scenario of a three-year-old child escaping adult supervision, leaving the house and moving from the deck to the pool with no barriers to prevent them from doing so remains all too common. More than one third (42%) of residential pool drowning victims are five years of age or younger (Figure 17). Individuals 75 years of age and older are the second most common (17%) drowning victims in residential pools.

**FIGURE 17: Drownings and other water-related fatalities in residential pools, by age group and type of pool, Québec, 2009–2015 (n = 53)**



### 4.2 Type of pool

In 72% of cases, victims drowned in an in-ground pool, while 19% of drownings in a residential pool occurred in an above-ground pool. In addition, of all drownings in residential pools, almost half (42%) of the victims were children aged 0 to 5 years. Only one fatality from 2009 to 2015 occurred in a removable inflatable type of pool.



### 4.3 Circumstances

That children who drown in residential pools manage to reach the pool can be attributed to three major factors:

- direct access to the swimming pool from a terrace or a patio adjacent to the house
- a fence with no automatic self-closing and self-locking mechanism or with a defective automatic self-closing and self-locking mechanism
- access to the pool using a removable ladder that was not removed after users finished swimming

In most cases, children drown in their own backyards. Fencing around a yard without fencing the pool within the yard only helps prevent children from coming in from the neighbourhood. Often, the child will not have intended to go into the water but was playing near the water or managed to get to the water without adult supervision. Victims were most often alone at the time of the tragedy. While the importance of supervision should not be overlooked, it should also be noted that easy access to a body of water plays a major role in cases of drowning among young children.

Individuals 75 years of age and older, the other at-risk age group, drown mainly while swimming (44%) or after falling into the water (22%). The data shows that 67% of victims in this category were alone at the time of the incident. Cardiovascular disease or other health problems may have contributed to these fatalities, as these factors were recorded for 67% of the victims.

## 4.4 Safety tips: Preventing young children from accessing pools

**Access to swimming pools must be prevented with a fence with an automatic self-closing and self-locking gate.** Even if the property is surrounded by fencing, the danger remains when there is nothing to prevent access from the house or the yard to the pool. The majority of young victims drowned in their own pools after briefly escaping adult supervision.

**Always swim with someone else.** If you are swimming alone, no one can help you if you get into trouble. The buddy system is crucial in order to increase your chances of survival in the event of an incident.

**Children, especially those five years of age and under, must be supervised at all times.** Among other measures, it is useful to have a telephone outside and within easy reach so that a child is never left alone in or near a pool if the adult needs to answer the phone.

**At least one adult per household should be familiar with the basics of CPR and first aid.** Remember that a procedure performed within five minutes of respiratory arrest is critical to a victim's chances of survival. For every minute that goes by without any intervention, the chances of survival decrease by approximately 7% to 10%.<sup>8</sup>

**Respect all laws, bylaws, and regulations in force.** Consult municipal authorities to find out which regulations apply.<sup>9</sup> In most cases, a permit is required for the installation of an in-ground residential pool, and sometimes for other types of pools as well.

**Be careful with diving boards in residential pools!** Most residential pools are not large enough to allow for safe headfirst dives, even from a diving board. Make sure that there is enough distance between the diving board and the slope to the shallow end so that divers are unlikely to hit the bottom and sustain serious injuries. If in doubt, see the regulations<sup>10</sup> established by the Bureau de normalisation du Québec.

8 American Heart Association and International Liaison Committee on Resuscitation, "Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care: International Consensus on Science, Part 4: The Automated External Defibrillator; Key Link in the Chain of Survival," *Circulation* 102, suppl. I (2000): 60–76.

9 In accordance with the *Residential Swimming Pool Safety Act* (CQLR, c. S-3.1.02), the Ministère des Affaires municipales, des Régions et de l'Occupation du territoire adopted regulations in this area in July 2010. Although the minimum standards apply to all Québec municipalities, they may adopt even stricter by-laws, and municipal authorities should be consulted to verify the regulations in force.

10 Bureau de normalisation du Québec, *Residential Swimming Pools Equipped with a Diving Board: Minimum Water Envelope to Prevent Cervical Spinal Cord Injuries Resulting from Diving from a Diving Board*, Standard BNQ 9461-100 (Québec, QC: Gouvernement du Québec, May 25, 2009).



## 5 RECREATIONAL UNDERWATER DIVING

Although recreational underwater diving has resulted in only six fatalities in seven years, the activity does carry risks because diving requires specific skills and leaves little room for errors in judgment or for lack of compliance with safety rules. The fact that visibility is often reduced, currents and cold water are other risks specific to diving in Québec. Despite a marked improvement, the annual fatality rate, estimated at nine fatalities per 100 000 divers, is relatively high.

### 5.1 Safety tips: Staying within your qualification and skill levels

Take lessons and obtain the required certification. To dive or to teach diving in Québec, individuals must hold a certificate of qualification and must not overstep the level attested to on their certificate. See the *Act respecting safety in sports* (CQLR, c. S-3.1, c. V.2) and the *By-law respecting qualifications for recreational underwater diving* (CQLR, c. S-3.1, r. 8). For more information, please contact the Direction de la sécurité dans le loisir et le sport (DSLS) of the Ministère de l'Éducation and the Ministère de l'Enseignement supérieur, at 1-800-567-7902, or by email through the DSLS website ([www.education.gouv.qc.ca/organismes-de-loisir-et-de-sport/securite-integrite-et-ethique](http://www.education.gouv.qc.ca/organismes-de-loisir-et-de-sport/securite-integrite-et-ethique)). Information is also available from the Fédération québécoise des activités subaquatiques, at 1-866-391-8835, or by email through its website ([www.fqas.qc.ca](http://www.fqas.qc.ca)).



# FOR MORE INFORMATION

## Québec – Canadian Red Cross

Telephone: 1-877-356-3226

Fax: 514-362-9991

Email: [myrcsupport@redcross.ca](mailto:myrcsupport@redcross.ca)

[www.redcross.ca/training-and-certification/swimming-and-water-safety-tips-and-resources](http://www.redcross.ca/training-and-certification/swimming-and-water-safety-tips-and-resources)

## Ministère de l'Éducation

### Direction de la sécurité dans le loisir et le sport

Telephone: 1-800-567-7902 or 819-371-6033

Fax: 819-371-6992

Email: [promotionsecurite@education.gouv.qc.ca](mailto:promotionsecurite@education.gouv.qc.ca)

[www.education.gouv.qc.ca/organismes-de-loisir-et-de-sport/securite-integrite-et-ethique](http://www.education.gouv.qc.ca/organismes-de-loisir-et-de-sport/securite-integrite-et-ethique)

## Lifesaving Society

Telephone: 1-800-265-3093 or 514-252-3100

Fax: 514-254-6232

Email: [alerte@sauvetage.qc.ca](mailto:alerte@sauvetage.qc.ca)

[www.sauvetage.qc.ca/en](http://www.sauvetage.qc.ca/en)

[www.societedesauvetage.org](http://www.societedesauvetage.org)

## Transport Canada

Telephone: 1-888-830-4911

[www.tc.canada.ca/en/marine-transportation/marine-safety/office-boating-safety](http://www.tc.canada.ca/en/marine-transportation/marine-safety/office-boating-safety)





