

# The Perils of Snowmobiling

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## ABSTRACT

Snowmobiling is a popular winter sport in Wisconsin, but it can result in serious injury and death. From 1998-2002, 1090 people in Wisconsin were hospitalized due to injuries related to snowmobiling. From 2002 to 2004, 51 snowmobile-related fatalities were reported to the Wisconsin Department of Natural Resources. Multiple risk factors exist for snowmobile injury and death, with alcohol consumption and male gender being the 2 largest associated risks. Many of the risk factors are modifiable, and health care professionals can facilitate snowmobiling-related injury prevention.

## BACKGROUND

Snowmobiling is a popular winter recreational activity in Wisconsin. The Wisconsin Department of Natural Resources estimates that there will be more than 200,000 registered snowmobiles during the 2004-2005 winter season.<sup>1</sup> Wisconsin residents can enjoy over 25,000 miles of marked snowmobile trails connecting all parts of the state,<sup>2</sup> and many people have access to private land for snowmobiling. Nationally, 1,774,232 snowmobiles were registered during the 2003-2004 winter season.<sup>3</sup> In 2003, 114,927 snowmobiles were sold in the United States, resulting in an estimated retail sale of \$779,246,951.<sup>3</sup> In the United States, more than 10,000 patients sought medical attention in an emergency room for snowmobile-related injuries during 1997 and 1998. Approximately 10% of those patients were younger than 15 years, and 25% were between the ages of 15 and 24.<sup>4</sup> Nationally, the Consumer Product Safety Commission estimates there are 110 deaths each year

related to snowmobile use.<sup>5</sup> Health care professionals can help reduce snowmobile-related injuries and deaths by informing families about the risks associated with snowmobiling and educate families about safe snowmobiling practices.

## WISCONSIN INJURIES AND FATALITIES

Snowmobiling injuries and fatalities are common in all the snow-belt states. In Wisconsin, from 1998 to 2002 (the most recent 5-year period where data is available), 1090 people were hospitalized due to injuries related to snowmobiling,<sup>6</sup> with a yearly average of 281 hospitalizations. Of these injuries, 6 times as many occurred in males as in females, and 14% of all hospitalizations involved children (Table 1).<sup>6</sup>

From 2002-2004, 51 snowmobile-related fatalities were reported to the Wisconsin Department of Natural Resources (DNR); 50 of the 51 deaths were males (Table 2).<sup>7,8</sup> Alcohol played a substantial role in the fatalities, with 63% of those who died having a blood alcohol level (BAL) over the legal limit for driving in Wisconsin, and an additional 14% having some alcohol measurable in the blood.<sup>7,8</sup> The mechanisms of injury resulting in death among Wisconsin fatalities are listed in Table 3; injuries to the head and drowning were the most common cause of snowmobile-related deaths in Wisconsin.

## RISK FACTORS AND MECHANISMS OF INJURY

Multiple risk factors have been shown to contribute to snowmobile injury and death. Injuries and fatalities are more likely to occur during dusk or at night,<sup>9,10</sup> and during weekends or holidays.<sup>11</sup> Factors specifically associated with fatal crashes include excessive speed;<sup>4,10-12</sup> inattentive, careless, or reckless operation;<sup>4,10,12</sup> inexperienced drivers or poor decision-making;<sup>10</sup> and poor visibility.<sup>4</sup> Alcohol consumption is a common contributing factor,<sup>4,11-14</sup> and injuries occur much more frequently to male snowmobilers than females<sup>4,13,14</sup>—all findings that are consistent with Wisconsin data.

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Common mechanisms of injury and mortality during snowmobile crashes include (1) collisions with objects such as barbed wire fencing, trees, bridges, or other motor vehicles including other snowmobiles;<sup>4,9,10,12,13</sup> (2) rollovers resulting in a snowmobiler being thrown<sup>12</sup> or flipped;<sup>9</sup> (3) drowning after falling through ice;<sup>10,12</sup> and (4) injury sustained by passengers towed behind a snowmobile on a sled or inner tube.<sup>4,13</sup> Children younger than 8 years injured while snowmobiling, were usually passengers on the snowmobile, or being towed.<sup>4,13</sup> Injuries sustained by snowmobilers most often affect the extremities<sup>9,10,12,13</sup> or the head.<sup>4,9,12,13</sup> Deaths related to snowmobile crashes are most commonly caused by trauma to the head,<sup>4,9,11,13</sup> neck or spinal cord, injury to internal organs,<sup>13</sup> or drowning after falling through thin ice.<sup>11-13</sup> All of these causes are consistent with Wisconsin data.

## PREVENTION

Table 4 lists safe snowmobiling practices modified from recommendations made by the Consumer Product Safety Commission (CPSC) and the American Academy of Pediatrics (AAP).<sup>4,5</sup> Prevention measures should be reviewed with all families who enjoy snowmobiling, and particularly stressed to male family members. Given the high number of fatal injuries associated with alcohol use and death due to head injury in Wisconsin, the importance of remaining sober while operating a snowmobile, wearing an approved safety helmet, and operating the device at a speed and manner that allows for the avoidance of fixed objects cannot be over-emphasized. Regarding children, "towing" should never be allowed and, due to strength and stamina reasons, children 6 years old and younger should not be allowed to ride on a snowmobile.<sup>4</sup>

Snowmobile use in Wisconsin is regulated by the Wisconsin DNR. Information regarding registration, safety, and safety education course offerings can be found on the Wisconsin DNR Web site (<http://dnr.wi.gov/org/caer/cs/Registrations/snow.htm>). Wisconsin requires that all snowmobile operators 12 years old and older complete a snowmobile safety education course if the device is to be operated on public land. When in a public area, no child under age 12 may operate a snowmobile unless accompanied by an adult on the same snowmobile.<sup>15</sup> There are no regulations regarding age-of-operation limits or safety education certificate requirements for snowmobiles operated on private land.<sup>15</sup> The Wisconsin age-of-operation regulation differs from what is recommended by the AAP. The AAP recommends that no child under 16 years old operate a

**Table 1.** Wisconsin Childhood and Adult Snowmobile-Associated Hospitalizations, per Gender, 1998 – 2002.<sup>13</sup>

	Children*	Adults
Male	126	776
Female	28	160
Total	154	936

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\* Children = <18 years old. Adults = >18 years old.

**Table 2.** Wisconsin Childhood and Adult Snowmobile-Associated Deaths per Gender, 2002-2004.<sup>14,15</sup>

	Children	Adults
Male	4	46
Female	0	1
Total	4	47

\* Children = <18 years old. Adults = >18 years old.

**Table 3.** Causes of Death, Wisconsin Snowmobile-Related Fatalities (%), 2002–2004.<sup>14,15</sup>

Head, neck, spinal cord injury	19 (37)
Drowning	8 (16)
Internal organ injury	7 (14)
Head, neck, spinal cord injury and internal organ injury	5 (10)
Hypothermia	1 (2)
Unknown/under investigation	11 (22)

snowmobile for recreation, and encourages the use of a "graduated drivers licensing" (GDL) program for snowmobile use,<sup>4</sup> similar to the motor vehicle GDL system currently in place for Wisconsin teens. It is important for health care professionals to discuss childhood developmental issues regarding appropriate snowmobile age-of-operation with families and to point out the differences between the "best practice" recommendations from the AAP and current Wisconsin regulations.

## SUMMARY

Snowmobiling can be a pleasurable winter activity in Wisconsin, and health care professionals and snowmobilers alike should strive to make this sport one that can be safely enjoyed. Many of the risk factors associated with injury and death are modifiable, and snowmobilers should be encouraged by their physicians and peers to exhibit good judgment and avoid unnecessary risk when snowmobiling.

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**Table 4.** Safe Snowmobiling Guidelines for Recreational Snowmobiling<sup>5,12</sup>

1. Never drive your snowmobile alone or on unfamiliar ground. Travel in groups of two or more, so you can help each other in case of breakdown or crash.
2. Drive only on established and marked trails or in specified use areas away from roads, waterways, railroads and pedestrians.
3. Avoid waterways. Frozen lakes and rivers can be fatal; it is almost impossible to judge adequate ice coverage or depth.
4. Avoid snowmobiling in bad weather. Check warnings for snow, ice, and wind chill conditions before starting. Wear insulated protective clothing and goggles.
5. Watch the path ahead to avoid rocks, trees, fences (particularly barbed wire), ditches, and other obstacles.
6. Use extra caution if driving at night; unseen obstacles can be fatal. Do not drive faster than your headlights will allow you to see. Do not open new trails after dark.
7. Headlights and taillights should be on at all times to improve visibility of the vehicle.
8. Slow down at the top of a hill—a cliff, snowbank, or other hazard could be on the other side.
9. Don't hurdle snowbanks. You only have control when the snowmobile's skis are on the ground.
10. Be sensible about stopping at roads or railroad tracks. Signal your turns to other drivers, avoid tailgating, and control speed according to conditions.
11. Towing a saucer, tube, tire, sled, or skis to pull someone is dangerous, especially for children and should be avoided. If the need for towing arises, a rigid, approved bar connection device should be used.
12. Children 6 years of age and younger should not ride on a snowmobile.
13. Operators should carry a first aid kit, a survival kit that includes flares, and a cellular phone.
14. Always wear an approved safety helmet when riding on a snowmobile.
15. Be sure the snowmobile is properly maintained in good operating condition. Snowmobiles manufactured before 1983 may not have a "throttle interruption device" designed to shut off the snowmobile in the event the throttle sticks.
16. Never drink while driving your snowmobile. Drinking and driving can prove fatal.

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