

INJURY UPDATE

*A Report to Oklahoma Injury Surveillance Participants**

August 30, 2006

Submersion Injuries in Recreational Natural Bodies of Water, Oklahoma, 1988-2003

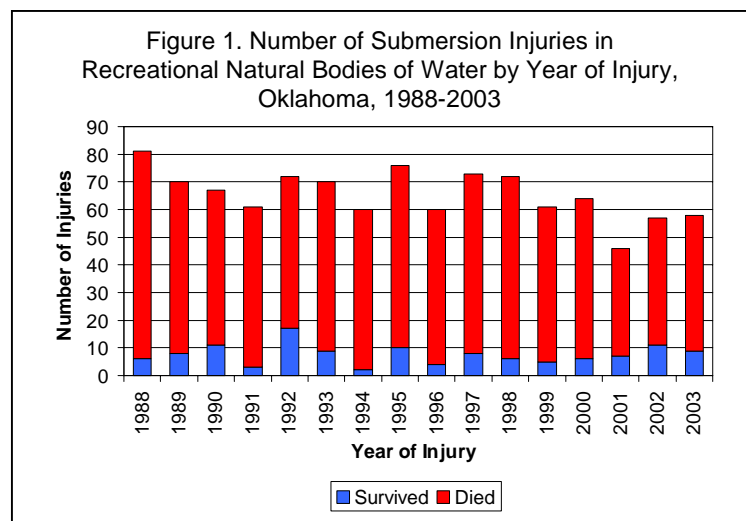
Oklahoma's rivers and streams flow over 78,000 miles and its lakes and ponds cover over 1,100 square miles. Additionally, there are more man-made lakes in Oklahoma than in any other state, which offer numerous opportunities for water-related recreational activities, such as swimming, boating and fishing. Although water-related activities can be very enjoyable, there is a risk of submersion injuries. In 2003, drowning was the third leading cause of unintentional injury death for persons under 35 years of age in Oklahoma.

Fatal and hospitalized submersion injuries were made a reportable condition in October 1987 and data has been collected statewide from medical records, medical examiner reports, Department of Public Safety Lake Patrol reports, and newspaper clippings since then. From 1988-2003, 1813 Oklahomans were hospitalized or died from a submersion injury. Of that total, 1048 injuries (58%) occurred in Oklahoma lakes, rivers, creeks, or ponds (2.0 injuries per 100,000 population); 926 (88%) persons died (1.7 deaths per 100,000 population).

Oklahomans sustaining submersion injuries in recreational natural bodies of water ranged in age from 0 to 93 years, with an average age of 31 years. The highest number of submersion injuries occurred in 1988 (81) and the lowest number occurred in 2001 (46), with an annual average of 66 per year. Over the 16-year period, the total number of submersion injuries dropped from 81 in 1988 to 58 in 2003.

Submersion injuries that occurred in a river or creek were more likely to be fatal than those sustained in a pond or lake, with 95% of river injuries and 91% of creek injuries being fatal, while 86% of lake injuries and 84% of pond injuries were fatal. The number of fatalities from all types of recreational natural bodies of water dropped from 75 in 1988 to 49 in 2003 (Figure 1).

Persons submerged for less than five minutes were more likely to survive than those submerged for longer periods of time. Eighty-four percent of persons submerged for less than five minutes survived, while 29% of those submerged between five and nine minutes survived. The average length of hospital stay for survivors was 5.2 days. Of the 122 survivors, 12 were discharged from the hospital with neurosequelae.



*The INJURY UPDATE is a report produced by the Injury Prevention Service, Oklahoma State Department of Health. Other issues of the INJURY UPDATE may be obtained from the Injury Prevention Service, Oklahoma State Department of Health, 1000 N.E. 10th Street, Oklahoma City, Oklahoma 73117-1299, 405/271-3430 or 1-800-522-0204 (in Oklahoma). INJURY UPDATES and other IPS information are also available at www.health.state.ok.us/program/injury.

Persons 15-24 years of age had the highest submersion injury rate (3.0 injuries per 100,000 population), followed by persons 0-4 years of age (2.9 injuries per 100,000 population) (Figure 2). Eighty-two percent of injuries occurred among males, with a case fatality rate of 90%. Injury rates were nearly five times higher among males than females (3.3 and 0.7 injuries per 100,000 population, respectively). There was little difference in submersion injury rates among racial groups.

Almost half of the recreational water submersion injuries occurred in lakes, while creeks, ponds, and rivers each accounted for approximately 18% of the total. Fifty percent of the submersion injuries among males occurred at a lake, followed by 18% occurring in a river; however, among females, 35% of submersion injuries occurred at a lake, followed by 25% occurring in a pond. The highest number of submersion injuries among children 0-4 years of age occurred in ponds (1.3 per 100,000 population), while the highest number for all other age groups involved lakes.

For submersion injuries involving lakes, 43% of persons were swimming just prior to injury, and 31% were boating, while with injuries involving rivers, only 24% were swimming while 27% were boating. In ponds, 42% of persons were playing/wading and 20% were swimming prior to the injury (Figure 3). Of all persons that were boating prior to the injury, 66% involved a motorboat. Heavy rains or flooded conditions contributed to at least 5% of injuries, while strong winds contributed to at least 2%.

Seventy-eight percent of natural water submersion injuries took place in the spring and summer months, peaking in July (19%) and June (17%). Additionally, these injuries peaked on weekends, with 23% of injuries occurring on Sunday and 22% on Saturday. The highest number of submersion injuries occurred in Oklahoma County (86), followed by Tulsa County (58) (Figure 4). In Oklahoma County, 49% of submersion injuries occurred in lakes, while in Tulsa County, 31% of submersion injuries occurred in rivers.

Ninety-five percent of submersion injuries in recreational natural bodies of water were unintentional. Five percent of individuals were injured as they were attempting to retrieve a dropped object, and 2% were injured as the result of an attempt to rescue an animal or another person. Only 23 injured persons were known to be wearing a life jacket. At least 5 of these were known to be wearing the life jacket incorrectly (over one arm, backwards, not zipped, etc.) Twenty-seven percent of persons over 14 years of age were reported to be drinking alcohol and 8% using drugs prior to their injury. Of the 597 persons older than 14 years that had a blood alcohol test, 37% had a blood alcohol concentration at or above the legal limit of .08 g/dL.

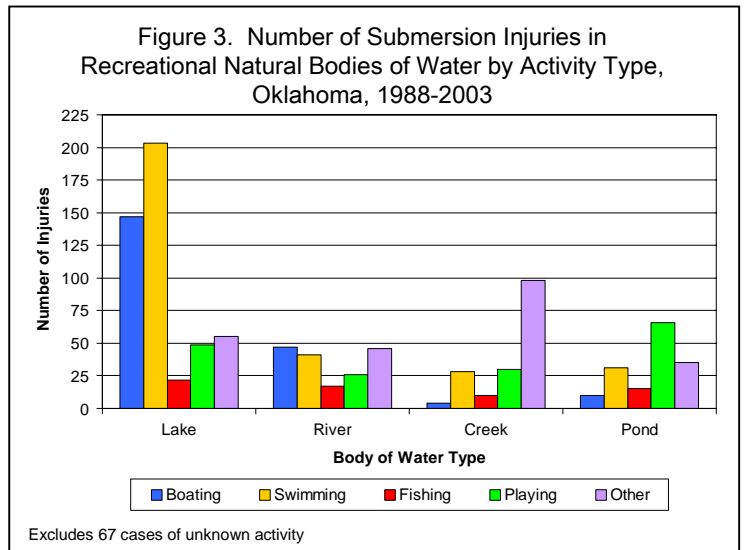
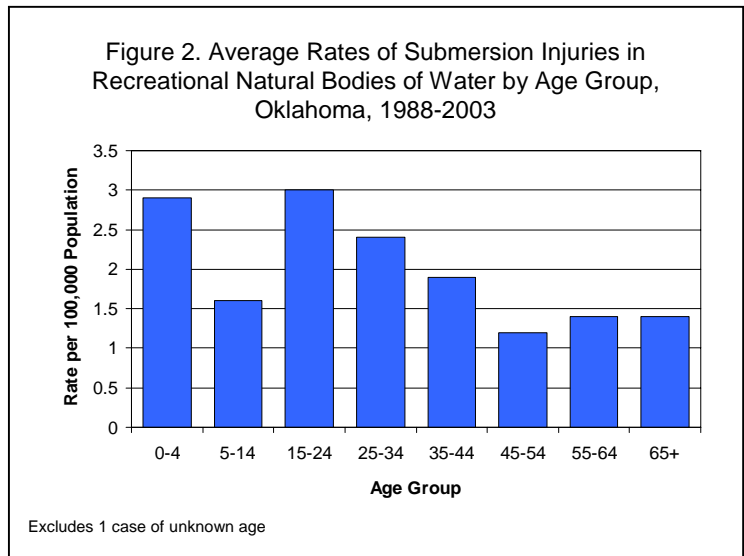
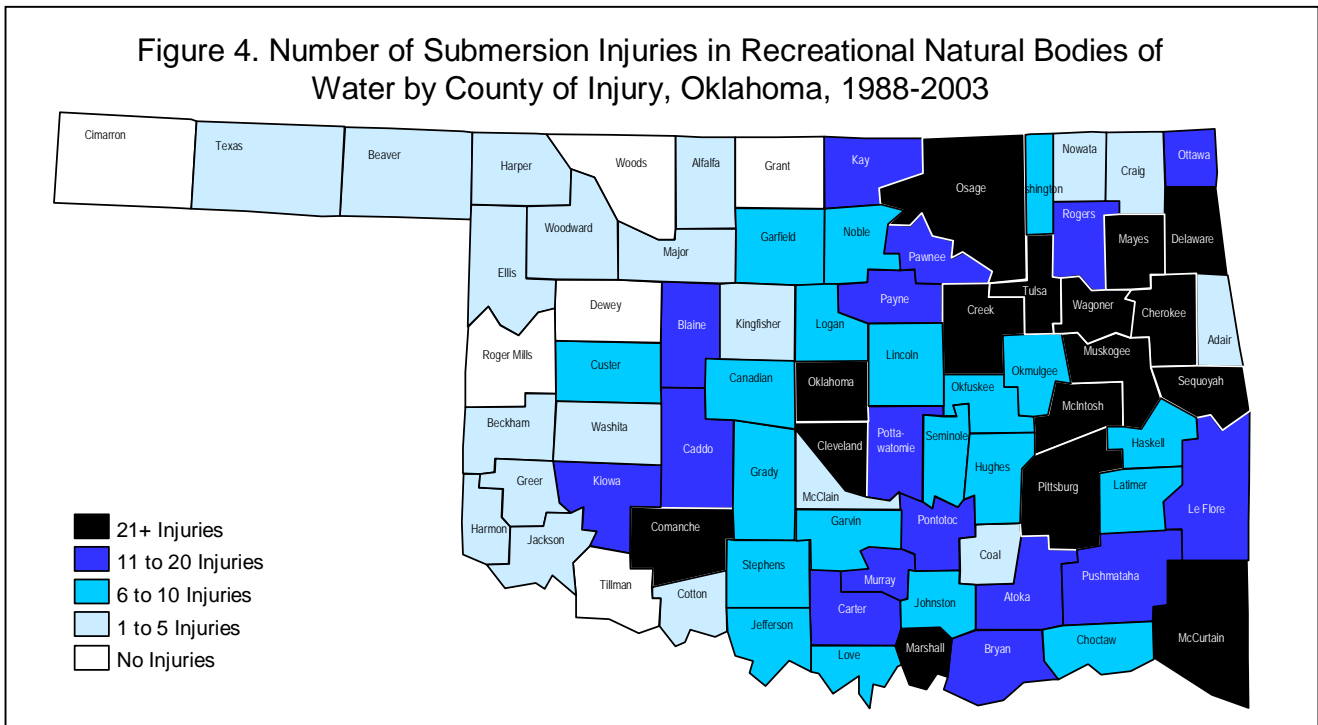


Figure 4. Number of Submersion Injuries in Recreational Natural Bodies of Water by County of Injury, Oklahoma, 1988-2003



CASE BRIEFS

- A 19-year old male was drinking and swimming with friends at a farm pond. He dove into the pond from a platform, and when he came to the surface, he began calling for help. The friends thought he was joking, so they did not attempt to help him. The victim went underwater and after five minutes his friends jumped into the water and pulled him out. The victim was taken to a local hospital with a neck fracture, and was pronounced dead.
- A three-year-old girl went to the lake with her grandfather, aunt and two cousins, aged three and four years. The three children were playing at the water’s edge, with the grandfather watching them, while the aunt was cooking dinner. The grandfather went to get a drink and was away for two minutes. When he returned, the four-year-old cousin was trying to pull the victim from the water. A witness stated that a wave from a passing personal watercraft hit the child and pushed her underwater. The child was able to be revived and was taken to the local emergency department. She was hospitalized for five days and was discharged in good condition.
- A 62-year-old male went fishing on a lake by himself in an aluminum boat. The water on the lake was rough due to high winds and the boat capsized. Two other fishermen found the drowned man floating face down in six feet of water with a life preserver flotation device under his right arm.
- A 21-year-old male was swimming with friends in a creek near a spillway. The victim swam too far out and was swept up by the current. The friends could not reach him and he was carried downstream. He was later pulled from the creek and was unable to be revived.
- A 43-year-old male and his friend had been drinking heavily. They decided to go out on the river in a canoe. They were paddling the canoe with a board and the canoe capsized. The friend told the victim to hold onto the canoe and he would swim to shore to get help. Once the friend got to shore, he thought the canoe had drifted to a sand bar and the man was safe, so the friend did not return with help. The victim had drowned and was found floating in the river 10 days later.

PREVENTION

Water Safety and Drowning Prevention

- Always wear a U.S. Coast Guard-approved life jacket or personal flotation device (PFD) when engaging in activities in recreational water. Make sure it fits and is worn properly. When boating or canoeing, use a PFD with a whistle attached.
- Take a friend on water excursions; avoid going solo.
- When boating, fishing or swimming, leave a “float plan,” which includes where you are going, the names of persons that are going, and when you will be expected back. This information should be left with a neighbor or friend that is not attending the trip.
- Avoid alcoholic beverages. Alcohol can affect judgment, vision, balance, and coordination, and its effects can be heightened by sun exposure and heat.
- Keep your eyes on the weather and the water conditions, especially currents. Leave the water before storms arrive.
- Avoid creeks and rivers after heavy rains, as these areas tend to flood and run swiftly.
- Keep children under constant adult supervision when around any type of water.

While Swimming

- Know how to swim. If you do not know how to swim, then learn. At the very least, know how to float and tread water.
- Never dive or jump into shallow, murky, or unknown water.
- Never swim while overly medicated.
- Never pretend to be a drowning victim, unless participating in a rescue exercise and all bystanders are aware of the exercise.
- Know your swimming limits. Do not allow yourself to become too tired while swimming.

While Boating/Canoeing

- Complete a boating education course. Information may be obtained from the Department of Public Safety, Oklahoma Lake Patrol at (405) 425-2424 or at www.dps.state.ok.us/ohp/aboutlp.htm.
- When canoeing, make sure the canoe is trimmed properly (sitting level in the water). A canoe that is not level has a greater potential to capsize. Try not to canoe alone. If that is not possible, use five-gallon water jugs to balance the canoe.
- Do not overload the boat or canoe. Know how much weight can be carried safely and always evenly distribute the load.
- Remain a safe distance from low water dams and other restricted areas.

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