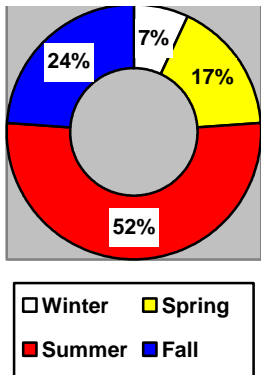


**Figure 1**  
**Colorado Drowning Deaths by Season, Children Ages 0-14, N=57**



*Many of the non-recreational drownings in rivers and lakes involved toddlers who were reported missing for less than five minutes and had wandered into bodies of water.*

*Injury in Colorado, 2002*

### Drowning Deaths and Near-Drowning Incidents Among Colorado Children Ages 0-14, 1998-2002

Drowning is the second leading cause of unintentional injury-related death among Colorado children ages 14 and under, with only motor vehicle crashes causing more fatalities. Although motor vehicle crashes claim the lives of more Colorado children in all age groups, children 12 to 23 months of age die from drowning almost as frequently (motor vehicle crash death rate of 4.9 per 100,000 population, drowning death rate of 4.6 per 100,000 population).

Type of Injury	Number	Rate <sup>+</sup>	Rate CI <sup>++</sup>
Motor vehicle related	212	4.6	(4.0-5.2)
Homicide	95	2.1	(1.6-2.5)
Drowning and Submersion*	57	1.2	(0.9-1.6)
Suicide	41	0.9	(0.6-1.2)
Fire/Burns	15	0.3	(0.2-0.5)
Falls	13	0.3	(0.1-0.4)
Poisonings	8	0.2	(0.0-0.3)

\* Includes both boat-related and non-boat-related drowning deaths  
<sup>+</sup> Deaths to Colorado resident children age 14 and under, per 100,000 population  
 Population data from the Demography Section of the Colorado Division of Local Government  
<sup>++</sup> CI = 95% Confidence Interval. When CI's do not overlap, the difference between the rates is statistically significant.

Risk factors for drowning include age, gender and race, with children under age 5, males and Black children more commonly affected. In children ages 14 and under, toddlers are at particularly high risk, typically drowning in a pool or nearby body of water during a lapse in supervision. Although most drownings occur in larger open water sites and pools, children can drown in smaller collections of water or fluid as well, such as in bathtubs, fountains and even buckets.

Childhood drownings usually occur silently and quickly, typically within a matter of minutes. It takes only two minutes after submersion for a child to lose consciousness, and between four and six minutes for irreversible brain damage to occur. How quickly a child is found and rescued after submersion is often the deciding factor in how favorable his/her prognosis will be.<sup>1</sup>

#### Drowning Deaths<sup>2</sup> in Colorado

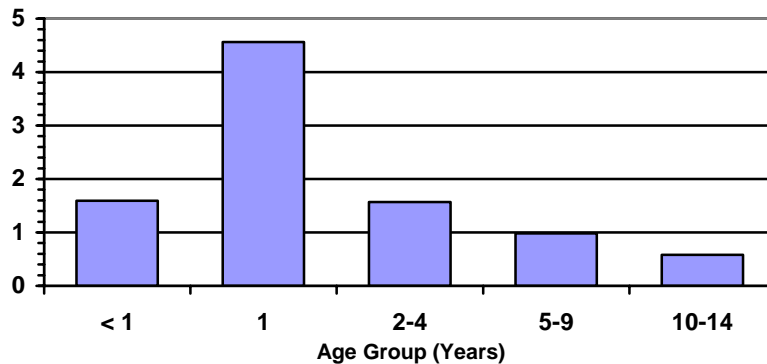
From 1998 through 2002, 57 children ages 14 and under died as a result of unintentional drowning, resulting in an average annual rate of 1.2 per 100,000 population.

Year	Number	Rate <sup>+</sup>	Rate CI <sup>++</sup>
1998	15	1.7	(0.8-2.6)
1999	15	1.7	(0.8-2.6)
2000	7	0.8	(0.1-1.4)
2001	8	0.9	(0.2-1.5)
2002	12	1.3	(0.5-2.0)
<i>Total (1998-2002)</i>	<i>57</i>	<i>1.2</i>	<i>(0.9-1.6)</i>

<sup>+</sup> Deaths to Colorado resident children under age 15, per 100,000 population  
 Population data from the Demography Section of the Colorado Division of Local Government  
<sup>++</sup> CI = 95% Confidence Interval. When CI's do not overlap, the difference between the rates is statistically significant.

Children ages 12 to 23 months accounted for nearly 25 percent of these deaths, and had the highest rate of drowning, at 4.6 deaths per 100,000 population per year. The rate for this age group was significantly higher than the rate for children ages 5 to 9 and 10 to 14.

**Figure 2**  
**Rate of Drowning Deaths by Age Group, Colorado, 1998-2002**  
 (Rate per 100,000 population)



In Colorado, as in the rest of the country, the majority (nearly 60%) of drowning deaths in children occur in males. Similar to the trend seen across the United States, Black children in Colorado have a higher rate of drowning than their White and Hispanic counterparts. However, the small number of drowning fatalities in the state is the likely reason for a statistically insignificant difference in rates between the various ethnic groups.

Race/Ethnicity	Number	Percent	Rate <sup>+</sup>	Rate CI <sup>++</sup>
White, Non-Hispanic	40	70.2%	1.3	(0.9-1.7)
White, Hispanic	7	12.3%	0.7	(0.1-1.3)
Black	9	15.8%	3.5	(1.0-6.0)
Other	*	*	**	**

<sup>+</sup>Deaths to Colorado resident children ages 14 and under, per 100,000 population for each race/ethnic group per year  
 Population data from the Demography Section of the Colorado Division of Local Government  
<sup>++</sup>CI = 95% Confidence Interval. When CI's do not overlap, the difference between the rates is statistically significant.  
 \* Indicates fewer than 3 deaths in the category  
 \*\* Indicates a rate based on fewer than 3 events in the category

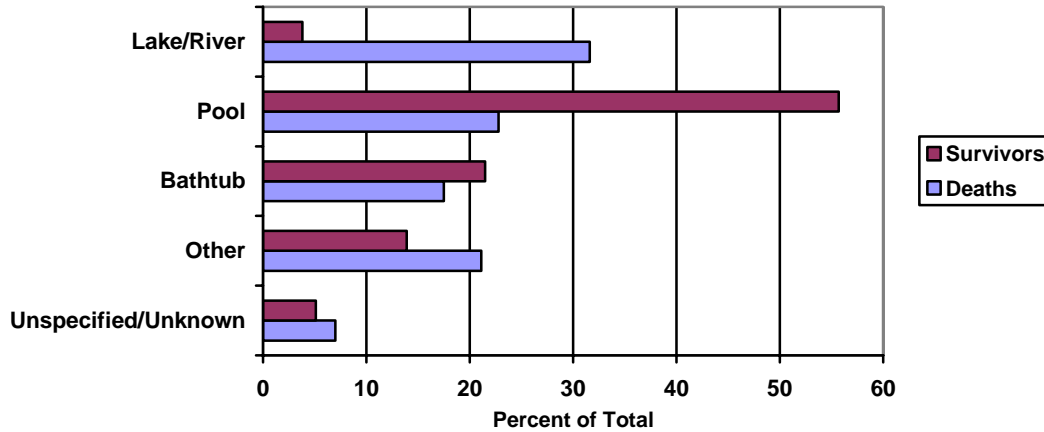
Drowning deaths in Colorado differ by season (See Figure 1, p.1). The majority of drowning fatalities occur during the summer, since access to open water sites is easier and recreational activities are more frequent. In Colorado, colder weather typically persists later into the spring, while warmer weather persists later into the fall. This could account for the higher number of drownings in fall compared to spring. From 1998-2002, all winter drownings occurred indoors, in bathtubs.

From 1998-2002, the largest percent of drowning deaths (31.6%) involving Colorado children ages 14 and under occurred in larger outdoor bodies of water, such as lakes or rivers (see Figure 3, p.3). Drownings in these sites always involved children who were mobile, with older children typically drowning during recreational activities or swimming, and wandering toddlers comprising the majority of the non-recreational deaths. The second most common location (22.8%) was in pools, both public and private. Pool drownings included older children as well as wandering toddlers, with older children occasionally drowning while under supervision or in the presence of others. The third most common location (17.5%) was in bathtubs, with the majority of these drownings occurring in children under the age of 5, particularly infants. The remaining drownings occurred in other locations, such as irrigation ditches, buckets, or small ponds in yards. All children who drowned in these sites were between the ages of 1 and 4. The most prominent fact regarding drownings is that mobile toddlers tend to be at the greatest risk. Contributing to this greater risk is the ability to move quickly while unnoticed, lack of knowledge and fear of the dangers of water, lack of ability to control one's body or swim, increased curiosity about the unknown, and the small amount of water needed to cause drowning. This emphasizes the need for constant supervision of children in this age range.



Figure 3

**Drowning Survivors vs. Deaths by Location, Colorado, Ages 0-14, 1998-2002**



**Hospitalizations for Near-Drowning in Colorado**

Survival of more than 24 hours after a submersion is termed *near-drowning*, regardless of whether the victim later dies or recovers. In Colorado from 1998-2002, 99 children ages 14 and under were hospitalized for a near-drowning incident. The majority of these hospitalized children were between 2 and 4 years of age, with roughly equal distribution across other young age groups, and less in older children.

Year	Number	Rate <sup>+</sup>	Rate CI <sup>++</sup>
1998	20	2.3	(1.2-3.3)
1999	24	2.7	(1.5-3.8)
2000	15	1.6	(0.7-2.5)
2001	20	2.1	(1.1-3.1)
2002	20	2.1	(1.1-3.1)
<i>Total (1998-2002)</i>	99	2.1	(1.7-2.6)

<sup>+</sup>Deaths to Colorado resident children under age 15, per 100,000 population  
Population data from Demography Section of the Colorado Division of Local Government  
<sup>++</sup>CI = 95% Confidence Interval.  
When CI's do not overlap, the difference between the rates is statistically significant.

As shown in Figure 3, comparing drowning survivors and deaths, near-drownings usually occur in pools or locations where there are more people present and thus, a greater number of potential witnesses/rescuers. This allows for a greater chance for rapid intervention, resulting in less morbidity and less mortality.

Type of Injury	% Deaths <sup>+</sup>	CI <sup>++</sup>	Deaths	Survivors	Total Cases <sup>#</sup>
<b>Drowning and Submersion*</b>	<b>39.3%</b>	<b>(31.0-47.6%)</b>	<b>57</b>	<b>88</b>	<b>145</b>
Homicide/Assault	16.5%	(13.4-19.6%)	95	481	576
Motor vehicle related	10.0%	(8.7-11.3%)	212	1,909	2,121
Suicide/Attempts	7.1%	(4.9-9.3%)	41	535	576
Fire/Burns	5.6%	(2.7-8.6%)	15	252	267
Poisonings	1.3%	(0.3-2.3%)	8	589	597
Falls	0.4%	(0.2-0.7%)	13	3,087	3,100

\* Includes both boat-related and non-boat-related drowning deaths  
Population data from the Demography Section of the Colorado Division of Local Government  
<sup>#</sup>Total Cases = Number of Deaths + Number of Hospitalized Survivors  
<sup>+</sup>%Deaths = (Number of Deaths)/(Total Cases) x 100% (i.e., Case Fatality Rate)  
<sup>++</sup>CI = 95% Confidence Interval.  
When CI's do not overlap, the difference between the percentages is statistically significant.

Drowning is the most deadly of the top seven causes of injury in children ages 14 and under. As shown above, 39% of all identified drowning and near-drowning events result in death, whereas only 17% of assaults and 10% of motor vehicle crashes result in death.



## **Childhood Drowning Can Be Prevented**

### **Pools**

- ✓ Fence in home pools<sup>3</sup> and keep gates latched/locked at all times.
- ✓ Diligent supervision is a must, since drowning is quick and silent and usually not preceded by screaming or splashing. Most victims are missing from sight for five minutes or less.
- ✓ During social gatherings, appoint an adult “designated watcher” to protect young children. Rotate “watchers” to avoid preoccupation and a lapse in direct supervision.
- ✓ Keep in mind that most flotation toys/devices do not prevent children from drowning. Be aware that children may drown despite wearing/using such devices.
- ✓ Remove toys from in and around the pool when not in use, since toys attract young children.
- ✓ Teach your children how to swim but be aware that this does not guarantee their safety.
- ✓ Do not allow running near the pool.
- ✓ Do not allow diving into any water less than 6 ft. deep.
- ✓ Learn CPR...it can save a life. Survival depends on quick rescue and restoration of breathing.
- ✓ Have a telephone and emergency numbers available near the pool.

### **Outdoor Sites of Water (Lakes, Rivers, etc.)**

- ✓ Never leave children unsupervised near water.
- ✓ By federal law, all children under age 13 must wear a personal flotation device (PFD) when in any type of boat.<sup>4</sup>
- ✓ Be aware of color changes in lakes. These may indicate drop-offs or changes in the depth of the water.
- ✓ Be aware of strong currents in rivers or streams, as children may be easily swept away if they fall in.
- ✓ If children are recreating (rafting, canoeing, fishing) in or near rivers or streams, consider helmets and personal flotation devices.
- ✓ Be aware of irrigation canals and ditches as potential dangers when snow melts or heavy rains occur.

### **Sites of Water At/Near Home (Outdoor Sites, Bathtubs, Buckets, Toilets, Hot Tubs)**

- ✓ Be aware of water sites other than pools on/next to your property (rivers/creeks, irrigation ditches, ponds, fountains).
- ✓ Keep young children away from neighboring rivers/creeks.
- ✓ When possible, establish barriers (fencing) to neighboring bodies of water.
- ✓ Never leave children under age 10 or sick/disabled children of ANY age unattended in the bathtub.
- ✓ A common distraction in bathtub-related drownings is the telephone. Do not answer the phone while bathing children.
- ✓ Bath seats or rings do not protect children from drowning.
- ✓ Properly dispose of liquids in open buckets when not in use.
- ✓ When using buckets containing liquids, be aware to keep away from children at all times.
- ✓ Supervise all toddlers when they are using the bathroom.
- ✓ Be sure hot tubs are covered when not in use.
- ✓ Secure hot tub areas (locked door, fenced in) so that small children cannot enter.

\*\*\*\*\*

<sup>1</sup> National SAFE KIDS Campaign (NSKC). Drowning Fact Sheet. Washington DC: NSKC, 2004. (<http://www.safekids.org>)

<sup>2</sup> Colorado “Drowning” is defined as any Colorado *resident* fatality due to drowning, regardless of the state of injury or death.

<sup>3</sup> For recommendations on pool barriers and gates, house door alarms to pools and power safety covers for pools and hot tubs, please see “Safety Barrier Guidelines for Home Pools.” U.S. Consumer Product Safety Commission. Pub. No. 362. Washington DC. (<http://www.cpsc.gov>)

<sup>4</sup> Boat U.S. Foundation for Boating Safety and Clean Water.

