

North Carolina Child Fatalities on All-Terrain Vehicles

2000-2011



The North Carolina Child Fatality Prevention Team

February 2013

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North Carolina Child Fatalities on All-Terrain Vehicles, 2000 - 2011

Executive Summary:

- Between 2000 and 2011 (12 years), 78 children died while riding all-terrain vehicles (ATVs) in North Carolina.
- There has been a 59 percent reduction in child ATV rider deaths since Senate Bill 189 took effect in December 2005 – from an average of eight deaths per year to an average of five deaths per year.
- Children between the ages of 10 and 14 years (29) and 15 and 17 years (27) accounted for the greatest number of deaths by age group both before and after passage of the law.
- Fatal injuries occurred in 48 counties.
- Drivers accounted for 77 percent of the child deaths.
- Helmet use is still low with only 17 percent of children killed wearing helmets since the passage of a requirement all children wear helmets when operating ATVs.
- There have been no reported fatalities of children who were listed as passengers when wearing a helmet.
- Head injuries accounted for 34 deaths while multiple injuries (which could include head injuries) accounted for 25 deaths.
- The number of deaths is almost evenly split between on-road (30) and off-road locations (29).
- On-road crashes were most likely to involve another motor vehicle (16).
- Some information such as supervision, engine size and safety certification is difficult to collect due to limited documentation.

Notes:

The N.C. Child Fatality Prevention Team reviews all child (birth through 17 years of age) deaths that are medical examiner cases in order to collect data, develop strategies and make recommendations that will prevent similar deaths.

All-Terrain Vehicle is defined by North Carolina statute. Medical examiner and other available information related to the fatal event were reviewed.

Percentages are rounded to the greatest whole number for reporting.

While there may be a small number in certain types of deaths, it is the belief of the N.C. Child Fatality Prevention Team that every tragic death can teach us how to make children safer and we will continue to monitor and assess these deaths for prevention strategies.

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North Carolina Child Fatalities on All-Terrain Vehicles, 2000 - 2011

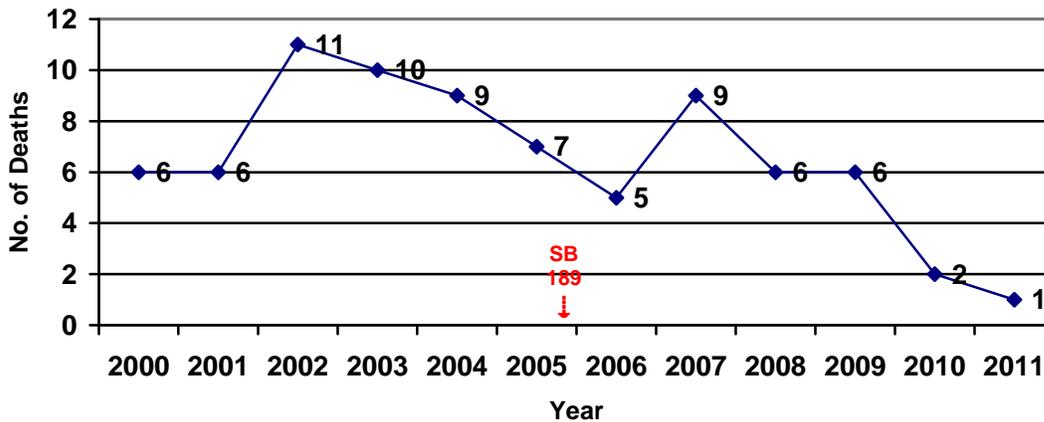


Chart 1. NC Child Deaths on All-Terrain Vehicles, 2000-2011.

Overview

During the 12-year period between Jan. 1st, 2000, and Dec. 31st, 2011 there were 78 deaths for children (17 years of age or younger) in accidents while riding ATVs. Senate Bill 189 (N.C.G.S.20-4.01 and 20-171.10 through N.C.G.S. 20-171.17), which outlined several restrictions and requirements for ATV operation, went into effect Dec. 1st, 2005. In the six years prior to the bill, there were 49 deaths with an average of eight deaths per year. In the six years following the bill there were 29 deaths, an average of five per year and a decrease of 59 percent. One of the deaths after Dec. 1, 2005, was the results of injuries sustained before the law went into effect. This report will examine the total deaths as well as the deaths before and after the effective date of the ATV safety legislation.

Demographics

Sex, Race & Ethnicity

The majority of children who died riding ATVs were male, accounting for 86 percent (67) of all child deaths on ATVs. There was minimal change from before the legislation (84%) and after (90%) in male fatalities.

White children accounted for the greatest percentage of deaths with 83(65) of the deaths and no significant change between the examined time periods (84% and 83% respectively). Black children accounted for seven deaths (10% and 7% respectively). All three Native American deaths occurred before the bill went into effect and all three of the deaths of Hispanic children with an unidentified race occurred after the bill went into effect.

Age

Children between the ages of 10 and 14 years made up the largest number of deaths, accounting for 37 percent of the ATV deaths followed by older teens between the ages of 15 and 17 years of age (35%). When examining the age makeup of both categories the 5 to 9 year age group and 15

to 17 year age group remained relatively even at approximately 20 percent and 35 percent

	1 - 4 years	5 - 9 years	10 - 14 years	15 - 17 years	Total
Before S189	3	10	19	17	49
After S189	3	6	10	10	29
Total	6	16	29	27	78

Table 1. NC Child ATV Deaths by Age Group, 2000 – 2011.

respectively while the 1- to 4-year age group accounted for 6 percent of the deaths before and 10 percent of the deaths after and the 10-14 year age group accounted for 39 percent before and 35 percent after.

County Level Data

Over the 12-year period, fatal child injuries on ATVs took place in 48 counties. Duplin and Robeson had the highest number of deaths (six each) and both counties had fewer deaths after 2005. Franklin, Guilford, Wayne and Wilkes all had one death in each time period while Pender had two deaths in each time period. While Lincoln County had no deaths from 2000 through 2005, it had the highest number of deaths (3) from 2006 to 2011.

Onset County	Prior	After	Total
Alamance	2	0	2
Alexander	1	0	1
Alleghany	0	1	1
Anson	1	0	1
Beaufort	1	0	1
Bertie	0	1	1
Camden	0	1	1
Carteret	1	0	1
Caswell	0	1	1
Chatham	1	0	1
Cherokee	0	2	2
Clay	1	0	1
Columbus	0	1	1
Cumberland	1	0	1
Davidson	2	0	2
Davie	1	0	1
Duplin	5	1	6
Edgecombe	1	0	1
Franklin	1	1	2
Gaston	0	1	1
Greene	0	1	1
Guilford	1	2	3
Halifax	2	0	2
Harnett	1	0	1
Haywood	1	0	1

Table 2. NC Child ATV Deaths by County, 2000-2005, 2006 – 2011.

Onset County	Prior	After	Total
Iredell	1	1	2
Lee	2	0	2
Lincoln	0	3	3
New Hanover	0	1	1
Onslow	1	0	1
Orange	1	0	1
Pamlico	1	1	2
Pasquotank	0	1	1
Pender	2	2	4
Perquimans	1	0	1
Randolph	1	0	1
Richmond	1	0	1
Robeson	4	2	6
Rockingham	1	0	1
Stanly	0	1	1
Stokes	2	0	2
Surry	1	0	1
Swain	1	0	1
Vance	2	0	2
Wake	1	0	1
Wayne	1	1	2
Wilkes	1	1	2
Yadkin	0	2	2
Total	49	29	78

Vehicle Type & Decedent Position

N.C.G.S. 20-4.01 defines an ATV as a motorized off-highway vehicle designed to travel on three or four low-pressure tires, having a seat designed to be straddled by the operator and handlebars for steering control. Four-wheeled ATVs were involved in 76 deaths (97%), three-wheeled in two deaths. Other off-road vehicles (i.e. go-carts) are not included in this report.

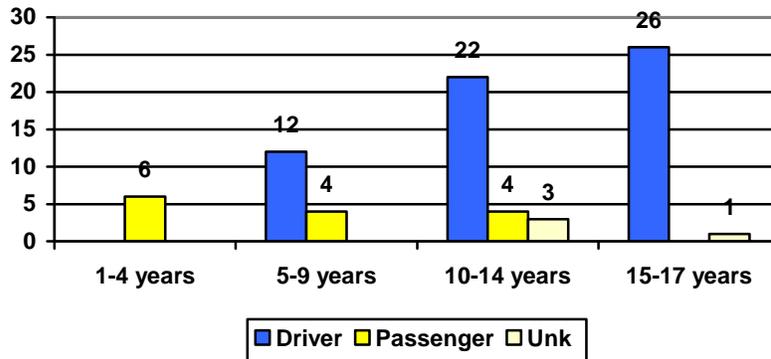


Chart 2. NC Child Deaths on ATVs by Age Group & Position, 2000-2011.

than 70 cubic centimeters displacement). Passengers are not allowed on ATVs unless they are specifically designed to carry a passenger. According to the Consumer Product Safety Commission, almost all ATVs that are sold in the United States are sole occupant vehicles. Engine size proved to be difficult information to collect and is not included in this report. Position information was as follows:

Position

After the Dec. 1, 2005 restrictions went into effect no child under the age of 8 years is allowed to operate an ATV and older children are restricted by age and engine size (i.e. children 12 years to 16 years cannot operate a vehicle with an engine size larger

Driver

- Accounted for 77 percent of the deaths (60).
- Pre/Post difference of 82 percent (40) and 69 percent (20) of the deaths.
- Two children were under the age 8 – one in each time frame.

Passenger:

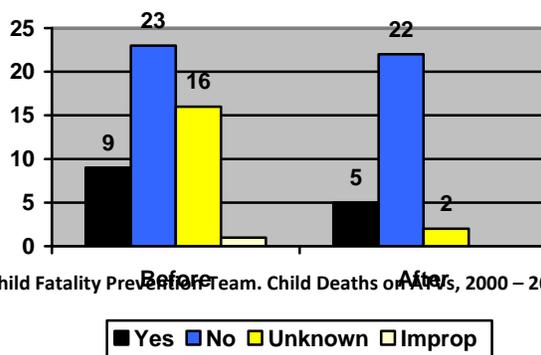
- Accounted for 18 percent of the deaths (14).
- Pre/Post difference of 14 percent (7) and 24 percent (7).
- All of the children under the age of 4 years were passengers (6).

Other:

- Information was either not available or not clear regarding the child’s position in four deaths (two prior to legislation and two after).

Safety

Two of the safety standards in the legislation include: all ATV operators wear a safety helmet meeting U.S. Department of Transportation safety standards for motorcycle helmets (adults exempted from wearing helmets on private property in October 2011), and the prohibition of ATVs on public roads, streets or highways (unless crossing).



NC Child Fatality Prevention Team. Child Deaths on ATVs, 2000 – 2011.

Helmet Use & Injuries

Prior to legislation, ATV riders were known to not be wearing helmets in 47 percent of the deaths and known to be wearing helmets in only 19 percent of the deaths.

In 33 percent (16) of the 49 deaths information on helmet use was not known or not available. One child was wearing a helmet that was inappropriate for a motorized vehicle.

et Use, 2000-2011.

Information after legislation was more complete, with only 7 percent (2) of deaths not having any documentation on helmet use (versus information not available). Strikingly, 76 percent of children (22) were not wearing helmets while only 17 percent (5) children were wearing helmets. While it is difficult to draw conclusions on overall helmet use before and after the legislation, one fact does stand out – no passenger, before or after legislation, was wearing a helmet.

Children can sustain a number of fatal injuries while riding an ATV. There were 34 children who died from head trauma alone (six were known to be wearing a helmet). Another 25 died from multiple injuries, which could involve the head and neck, head and chest, chest and abdomen, etc. (four children were known to be wearing a helmet). Thoracic (chest or abdominal) trauma resulted in seven deaths, spinal injuries in five deaths, asphyxiation in two deaths, and one child died from drowning. In four deaths the injury descriptions were not detailed enough to classify the cause of death by specific bodily injury.

Location & Circumstances

Location information was available in 78 percent (61) of the deaths. Of those deaths, two teenagers, who were both wearing proper safety equipment, were killed while riding at locations specialized for ATV use. The remaining deaths were almost equally divided between roads or highways (30) and off-road (29) locations.

On-Road

On-road crashes accounted for 30 deaths with 43 percent (21) of deaths prior to the passage of S.B.189 and 31 percent (9) of deaths after S.B.189 occurring on roads or highways. Of these deaths, 16 children collided with a motor vehicle. Another six children died when they lost control and struck an object or road feature (i.e. ditch) after leaving the roadway. In seven cases the sequence of events could not be determined from available information, and in one death no crash information was available.

Off-Road

The 29 deaths that occurred off-road had a different make up with 31 percent (15) of deaths prior to S.B.189 off-road and 49 percent (14) deaths after S.B.189 off-road. In eight deaths the ATV collided with an object (i.e. tree). In four deaths the ATV collided with another ATV. In 35 deaths the vehicle flipped or rolled due to a wide range of circumstances from turning too fast to jumping hills on the ATV.

Legislation provides certain exclusions for ATV by children who are riding while hunting or farming. When circumstances were known, there was no indication that any of the children who died while riding ATVs were participating in either activity.

Challenges with Collecting Data

There are several challenges with collecting this type of data. Prior to awareness of the problem, data points may not have existed. As laws are passed or factors become known, we are better

able to capture information. However, we rely on those who respond to and investigate the fatality to collect the needed information, which may not have a purpose in their role in the death. For instance, medical professionals are probably not going to document if a child was supervised as their job is to treat the patient, not investigate. Law enforcement may not be able to document investigative information if the event was not witnessed or if a scene was altered prior to their arrival. Therefore, assessing certain factors like engine size, location and circumstances, is widely dependent on the time period and personnel involved.

Conclusion

Seventy-eight children lost their lives in North Carolina while riding ATVs in the 12-year period between 2000 and 2011. Half way through that time period, North Carolina instituted ATV safety legislation and saw a 59 percent reduction in ATV deaths in six years after passage. Children between the ages of 10 and 14 years (29) and 15 and 17 years (27) accounted for the greatest number of deaths by age group and 77 percent of the deaths were of vehicle operators. Appropriate helmet use by child ATV operators has been required since Dec. 1st, 2005 – however, only 17 percent of children killed were known to be wearing helmets. There are no reported deaths among children wearing helmets as ATV passengers. Passenger helmet use is not addressed in legislation as passengers are prohibited on ATVs that are sole occupant vehicles. While head injuries accounted for the majority of deaths (34) another 25 deaths were due to multiple injuries, which could include head injuries, another eight children died from other injuries and four children died from unspecific traumatic injuries. The number of deaths is almost evenly split between on-road (30) where crashes were most likely to involve another vehicle (16 deaths) and off-road locations (29). Ultimately, the number of child deaths on ATVs is at the lowest point in the past 12 years. However, all preventable deaths, including ATV deaths, should be monitored to ensure that deaths do not increase and to identify the best policies, procedures, strategies, tools and laws that will save lives.

References

All N.C. Legislation that was referenced in this report can be found at:

<http://www.ncleg.net/Sessions/2005/Bills/Senate/PDF/S189v8.pdf>

<http://www.ncleg.net/Sessions/2011/Bills/House/PDF/H407v2.pdf>

Consumer Product Safety Commission: www.atvsafety.gov/rr3.pdf

Safety Resources

National: <http://www.atvsafety.gov/>

North Carolina (Safe Kids NC): http://www.ncdoi.com/OSFM/SafeKids/sk_parents_atv.asp