

## Colorado Children and Booster Seat Use 2001 and 2004

March 2006

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### More Colorado Children Using Booster Seats – Fewer Children Hospitalized for Injuries

Booster seat use by children ages 4-8 increased significantly in Colorado from 2001 to 2004. In 2001, adults reported that 85.8 percent of the 4-to 8-year-olds in their household always used a restraint while riding in a vehicle (Figure 1 and Table 1). Of those who always used a restraint, 15.4 percent used a booster seat. In 2004, the percentage of children who always used a restraint remained high at 88.7 percent, but booster seat use increased to 45.2 percent. Lap/shoulder belt use decreased from 56.1 percent in 2001 to 38.3 percent in 2004. This assessment provides evidence that legislation in combination with enforcement and education can lead to a significant change in how children are restrained in motor vehicles.

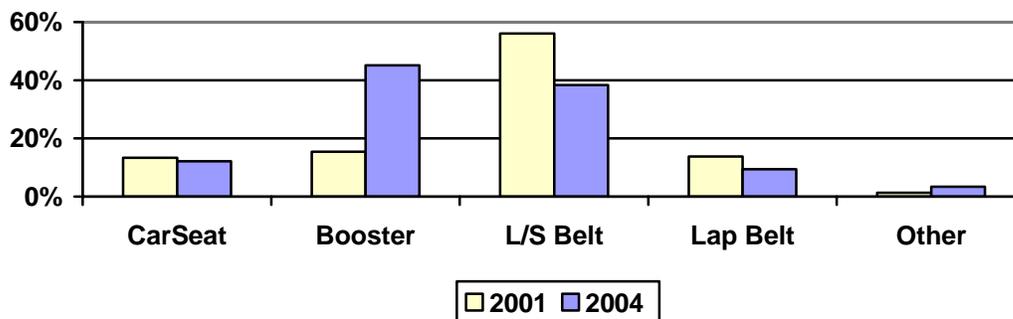
The increase in booster seat use from 2001 to 2004 appears to be because parents are choosing booster seats rather than lap/shoulder belts for restraining their children in a vehicle. A decrease in the use of lap-only seat belts was also noted which likely reflects the fact that newer passenger vehicles have more lap/shoulder belts available in the rear seating positions. Lap belts do not provide upper body and head protection for either adults or children, and booster seats are never to be used with a lap-only belt system.<sup>1</sup>

**Table 1: Prevalence of restraint use (95% confidence intervals) by selected characteristics for Colorado children ages 4-8, BRFSS\* 2001 and CHS\* 2004**

	BRFSS 2001		CHS 2004	
	Sample Size	Percent	Sample Size	Percent
<b>Frequency of Restraint Use</b>	371		288	
Always	318	85.8 (82.0-89.6)	258	88.7 (83.4-94.0)
Nearly always, sometimes, seldom	35	9.3 (6.2-12.5)	24	8.7 (3.8-13.6)
Never	18	4.9 (2.5-7.2)	6	2.6 (0.2-5.0)
<b>Type of Reported Restraint Use Among Those Who Always Used a Restraint</b>				
<b>Type of Restraint</b>	316		257	
Lap belt	44	13.8 (9.7-17.8)	4	0.9 (0-2.2)
Lap/Shoulder belt	177	56.1 (50.4-61.9)	97	38.3 (30.3-46.3)
Child car seat	42	13.4 (9.5-17.3)	30	12.2 (7.2-17.1)
<b>Booster seat</b>	<b>49</b>	<b>15.4 (11.2-19.7)</b>	<b>114</b>	<b>45.2 (37.2-53.2)</b>
Other	4	1.2 (0.1-2.4)	12	3.4 (0.6-6.3)

Note: When Confidence Intervals do NOT overlap, the difference between the percents is statistically significant.  
\*The Behavioral Risk Factor Surveillance System (BRFSS) was conducted by the Colorado Department of Public Health and Environment in 2001, and the Child Health Survey (CHS) was conducted in 2004. See page 4 for details about the surveys.

**Figure 1: Type of restraint use, 2001 and 2004, for children 4-8 who always use a restraint**



**Table 2: Prevalence of booster seat use (95% confidence intervals), by selected characteristics for Colorado children ages 4 to 8 among children who always used a method or restraint, BRFSS\* 2001 and CHS\* 2004.**

	BRFSS 2001		CHS 2004	
	Percent (95% CIs)		Percent (95% CIs)	
<b>Age</b>				
4	24.5	(14.2-34.8)	40.9	(25.3-56.4)
5	24.1	(12.5-35.7)	75.1	(57.9-92.3)
6	17.0	(7.3-26.7)	64.2	(47.8-80.6)
7	8.5	(0.3-16.7)	60.8	(40.3-81.3)
8	3.6	(0.4-9.9)	1.2	(0-3.6)
<b>Age Groups</b>				
4-5	24.3	(16.6-32.0)	55.3	(43.1-67.5)
6-8	9.8	(5.1-14.5)	38.2	(27.9-48.5)
<b>Region</b>				
Urban	15.6	(10.0-20.3)	47.1	(38.3-55.9)
Rural	15.0	(4.8-25.2)	39.2	(17.7-60.7)
<b>Household Income</b>				
< \$25,000	17.6	(7.6-27.6)	18.9	(4.3-33.5)
\$25,000-\$50,000	12.0	(5.5-18.6)	52.4	(36.7-68.1)
>\$50,000	17.6	(10.6-24.5)	50.1	(38.4-61.7)

Note: When Confidence Intervals do NOT overlap, the difference between the percents is statistically significant.  
 \*The Behavioral Risk Factor Surveillance System (BRFSS) was conducted by the Colorado Department of Public Health and Environment in 2001, and the Child Health Survey (CHS) was conducted in 2004. See page 4 for details on the surveys.

In 2001 in Colorado, booster seat use in the 4- to 5-year-old age group was significantly higher than use in the 6- to 8-year-old age group and booster seat use decreased for each year of age from 4 to 8 years (Table 2). By 2004, booster seat use increased significantly for both 4-5 and 6-8-year-old age groups. While booster seat use was slightly higher for the 4-5-year-olds than 6-8-year-olds, the difference was not statistically significant. Also, booster seat use increased from 2001 to 2004 for ages 4 through 7, but the increase is only significant for 5, 6 and 7-year-olds. Booster seat use remained quite low for 8-year-olds in both 2001 and 2004.

Many 4-year-olds weighing less than 40 pounds should be approximately restrained in car seats with a harness. Public health and traffic safety organizations recommend that children who have outgrown child safety seats should be restrained in booster seats until they are at least 8-years-old or 57 inches tall.<sup>1</sup>

In 2001 there was no statistically significant difference in use between rural and urban areas or by household income (Table 2). In 2004, there was still no difference between rural and urban areas, however booster seat use was significantly higher in households with an annual household income greater than \$25,000. The disparity in behavior by socioeconomic level is consistent with results from other injury areas.<sup>2</sup> Prevention activities need to address ways to reach all audiences with the booster seat message.

**The use of booster seats by children ages 4 to 7 lowers the risk of injury to children in crashes by 59 percent compared to the use of seat belts.<sup>3</sup>**

Booster seat use in the U.S has been increasing since national booster seat educational efforts began in 1999, and legislation in states began in 2000. Nationwide, a 2003 telephone surveys by the National Highway Traffic Safety Administration (NHTSA) reported that 21 percent of children ages 4 through 8, at least on occasion, rode in a booster seat.<sup>5</sup>

Currently 33 states and the District of Columbia have a booster seat law, but the specific provisions of the laws vary widely from state to state for height, weight, and age criteria.<sup>1</sup>

**Colorado’s Booster Seat Law**

Children over 40 pounds, who are less than 6 years old must ride in a child restraint (unless they are 55 inches tall). Typically this is a booster seat.

Colorado’s law was passed with much publicity in 2002.

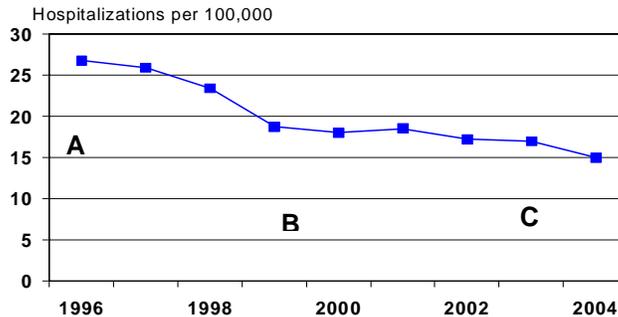
The law went into effect in August 2003 with a year of education and warnings only.

The full enforcement of the law began on August 1, 2004.

(Details on the Colorado Child Restraint Law are available at: [www.carseatscolorado.com](http://www.carseatscolorado.com))

**Motor vehicle-related hospitalizations.** In Colorado, from 1996 to 2004 the age-adjusted motor-vehicle traffic hospitalization rate decreased significantly for children ages 1-14. The rates for 4- to 8-year-olds are shown in Figure 2. These results coincide with the state laws requiring the use of car seats or booster seats and the mandatory restraint/seatbelt laws for these age groups. In 1984 Colorado’s Child Passenger Safety Law was passed which mandated restraints for children under 4-years-old and under 40 pounds, with primary enforcement. Other laws that pertain specifically to 4- to 8-year-olds are shown in Figure 2.

**Figure 2: Motor vehicle traffic occupants, hospitalization rates, 4-8 year olds, Colorado residents, 1996-2004**



**Relevant Colorado Child Passenger Safety Laws for 4-8 Year Olds**

- A.** 1995 Children under age 16 required to use seatbelts/car seats in front and back seats, primary enforcement.
- B.** 1999 Children must be in a seating position with a seatbelt/car seat available.
- C.** 2003 Children 4- or 5-years-old, unless > 55 inches tall, must ride in a booster seat, secondary enforcement.

In the US, the motor vehicle occupant death rate for 4- to 8-year-olds did not decline between 1994 and 1998,<sup>6</sup> but fatalities among 4- to 7-year-old passenger vehicle occupants declined 14.5 percent from 1999 to 2003. The number of injured passenger vehicle occupants also declined by 27 percent from 1999 to 2003.<sup>7</sup> In addition to legislation, other contributions to the reduction in child fatalities and injuries include improved motor vehicle safety technology,<sup>8</sup> enforcement, and targeted educational programs.<sup>9,10</sup>

**Traffic Safety Facts for Colorado Children Ages 4-8 in 2001-2004**

Motor vehicle traffic crashes are the leading cause of death and the second leading cause of injury hospitalizations.<sup>11</sup>

Motor vehicle traffic crashes were responsible for 61 percent of all injury deaths and 11 percent of all injury hospitalizations.<sup>11</sup>

Each year in Colorado an average of 5 children ages 4 to 8 die, and 53 are hospitalized for injuries sustained as an occupant in a motor-vehicle traffic crash.<sup>11</sup>

Sixty-one percent of 4- to 8-year-olds in Colorado who died were unrestrained.<sup>12</sup>

## Colorado's Child Restraint Law

**Infants must ride in rear-facing car seats until they are at least 1-year-old and at least 20 pounds.**

**Children aged 1 to 4 years who weigh 20 to 40 pounds must be restrained in a forward-facing car seat.**

**Children over 40 pounds, who are less than 6-years-old must continue to ride in a child restraint (unless they are 55 inches tall). Typically this is a booster seat.**

**Children between 6 and 16-years-old must be restrained in a seat belt.**

**Complete details on the Colorado Child Restraint Law are available at:  
[www.carseatscolorado.com](http://www.carseatscolorado.com)**

Safety advocates recommend that children should use booster seats until they are about 57 inches tall and that all children ages 12 and younger should ride in the back seat. Everyone in the car should always be properly buckled up, either with appropriate car seats, booster seats or vehicle seat belts.

*Note: The BRFSS survey was initiated in 1990 as a joint project of the Colorado Department of Public Health and Environment, and the Centers for Disease Control and Prevention. For this 2001 project approximately 2040 Colorado residents ages 18 years and older were interviewed, using random digit dialing techniques, by telephone. The randomly selected adult respondent from the household was asked to self-report on the restraint use for children ages 4-8 living in the household. All percentages shown have been weighted to reflect the probability of selection and to develop statewide estimates of restraint use. In January 2004 the Health Statistics Section of CDPHE initiated the Child Health Survey in conjunction with the annual BRFSS survey. Once a respondent completed the BRFSS survey, the interviewer inquired if they had a child in the target age range. For 2004, a total of 997 interviews were completed, and the percentages were weighted to reflect the probability of selection and to provide statewide estimates. The same questions on child restraint use were asked in both surveys. The use of booster seats may be over reported in the surveys if adults answering the survey do not understand the definition of a booster seat or car seat.*

### References

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