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BRIEF

Child safety belt, car safety seat, and bicycle helmet use: Colorado Behavioral Risk Factor Surveillance System, 1995 and 1997

An update from the Survey Research Unit

The Colorado Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing, statewide survey of noninstitutionalized adult Coloradans regarding their health behaviors and preventive health practices. The BRFSS 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. Using random digit dialing techniques, approximately 210 Colorado residents aged 18 and older were interviewed by telephone each month in 1995 and 150 residents were interviewed each month in 1997.

Methodology

Various questions regarding injury prevention awareness and behaviors of the adult respondent have been included in the BRFSS interview every year since 1990. These data have been used to describe safety belt use, drinking and driving behavior, water safety, fire escape planning, and firearm safety in the adult population^{1,2}. In the 1995 and 1997 surveys, questions were added to determine how often children living in the respondent's household wore helmets when bicycling and were secured in safety belts or child safety seats when riding in a car.

The randomly selected adult respondent from the household was asked to self-report on his or her own safety belt and bicycle helmet use as well as to report on the child safety belt/safety seat and helmet use for the oldest child under the age of 16 living in the household. Data collected over an entire year were combined to develop statewide estimates of helmet and safety belt/safety seat use for children less than 16 years old. All percentages shown have been weighted to reflect the probability of selection.

Sample

Data collected specifically on the children included age and injury prevention behavior. In addition, household level information was collected to describe region of residence and income. Characteristics of the children in the sample (age, region of residence, household income) can be found in Table 1.

Child Safety Seat and Safety Belt Use

Riding without safety belts or child safety seats is the greatest risk factor for death and injury among child occupants in motor vehicles. Riding unrestrained in a motor vehicle places children ages four and younger at twice the risk of death or

Table 1. Characteristics of children in the sample: Colorado BRFSS, 1995 and 1997

Characteristic	1995 (%*)	1997 (%*)
	(N=832)	(N=608)
Age (years)		
<5	26.1	20.3
5-8	17.5	22.0
9-12	29.1	24.9
13-15	27.3	32.8
Region of Residence		
Denver Metro	52.7	54.0
Other Metro	29.4	30.3
Rural	17.9	15.7
Household Income		
<\$20,000	20.1	14.8
\$20,000-35,000	26.6	23.7
\$35,000-50,000	20.2	23.7
\$50,000+	33.2	37.8

*Weighted percentage based on probability of selection. Denver Metro region includes Adams, Arapahoe, Boulder, Denver, Douglas, and Jefferson counties. Other Metro region includes El Paso, Larimer, Mesa, Pueblo, and Weld counties. Rural region includes the remaining counties of the state.

injury compared to those who are restrained³. Child occupant protection and safety belt laws have been proven effective at increasing the rate of restraint use⁴. In Colorado, all children less than 16 years of age are required by law to use a child safety seat or safety belt while riding in a car⁵.

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To reduce fatalities and injuries from motor vehicle crashes, two National Healthy People 2000 Objectives were developed addressing child safety belt and safety seat use. By 1997, both objectives had been met in Colorado, according to self-reported data from the BRFSS. While self-reported data are considered a valid indicator of safety belt/seat use, it should be noted that observational studies in Colorado report lower rates of use.

HP 2000 Objective 9.12: Increase use of occupant protection systems, such as safety belts, inflatable safety restraints, and child safety seats, to at least 85 percent of motor vehicle occupants (6).

HP 2000 Objective 9.12a: Increase use of child safety seats to at least 95 percent of motor vehicle occupants aged 4 and younger (6).

In the BRFSS, consistent use of safety belts and child safety seats is defined as those respondents who reported that the oldest child in the household always used a child safety seat (for children under 5 years of age) or always used a seat belt (for children ages 5-15) when riding in a car. The consistent use of child safety seats and safety belts increased between 1995 and 1997, with a statistically significant increase in use among children in rural regions of the state. One factor that may have contributed to the overall increase in use was passage of an expanded child restraint law. In July of 1995, a law requiring safety belt or child safety seat use for all children under the age of 16 was enacted in Colorado. The publicity surrounding the enactment of this law and the law itself may have increased the actual use or the reported use of child safety belts/seats.

In both 1995 and 1997, young children (<5 years old) were much more likely to be restrained while riding in a car as compared to older children (5-15 years old). In 1995, children in the rural region of the state were the least likely to use safety belts or child safety seats; however, in 1997, the prevalence of restraint use in all three regions was very similar (see Table 2, below).

Table 2. Percent of children ages <16 years who always use a child safety seat or safety belt by age, region of residence, and household income: Colorado BRFSS, 1995 and 1997

	1995 (N=832)		1997 (N=607)	
	%	95% CI*	%	95% CI*
Total	78.9	(75.6, 82.2)	84.9	(82.0, 87.8)
Age (years)				
<5	92.9	(89.2, 96.6)	95.5	(91.8, 99.2)
5-8	84.3	(77.8, 90.8)	91.8	(87.1, 96.5)
9-12	75.2	(68.5, 81.9)	85.5	(79.8, 91.2)
13-15	66.2	(58.8, 73.6)	73.3	(67.0, 79.6)
Region of Residence				
Denver Metro	80.4	(75.5, 85.3)	86.8	(83.1, 90.5)
Other Metro	82.8	(77.3, 88.3)	82.1	(76.4, 87.8)
Rural	68.6	(60.9, 76.1)	83.9	(76.3, 91.5)
Household Income				
<\$20,000	77.2	(69.8, 84.6)	78.8	(69.8, 87.8)
\$20,000-35,000	78.6	(72.5, 84.7)	84.3	(78.0, 90.6)
\$35,000-50,000	76.4	(68.0, 84.8)	85.5	(79.4, 91.6)
\$50,000+	82.6	(76.4, 88.6)	88.4	(84.0, 92.6)

*Confidence Intervals

In 1995, a comparison of adults and children showed that children were 9.1 times more likely to always use a safety belt or seat when riding in a car if they lived in a household with an adult who also always used a safety belt. In 1997, these children were 15.7 times more likely to always use safety belts/seats as compared to children living with adults who didn't always use safety belts.

Prevention Tips for Child Safety Seats and Safety Belts ³

- Restrain children ages 12 and under in the back seat of a vehicle.
- Infants, until at least 1 year old and at least 20 pounds, should be in rear-facing child safety seats.
- Until they can properly fit into adult safety belts, a car booster seat is the best option for children weighing 40-80 pounds.
- Never put a rear-facing infant or convertible safety seat in the front passenger seat of a vehicle with a passenger air bag.

Many child safety seats are installed improperly. It is important to read the child safety seat instruction manual and the motor vehicle owner’s manual for directions on proper installation.

Interested persons can call the National Highway Traffic Safety Administration’s Auto Safety Hotline at 1-800-424-9393 to inquire about any recalls or safety notices on child safety seats.

Child safety seats may be available on loan or at reduced cost from local agencies. Information on these programs can be obtained from the Injury Prevention Program at the Colorado Department of Public Health and Environment, (303) 692-2586.

Bicycle Helmet Use

Bicycle riders who do not use helmets are at 6.6 times higher risk of head injury and 8.3 times higher risk of brain injury than riders who do wear helmets⁷. The National Healthy People 2000 Objective for the use of bicycle helmets was developed in an attempt to encourage and increase the use of bicycle helmets.

HP 2000 Objective 9.13: Increase use of helmets to at least 80 percent of motorcyclists and at least 50 percent of bicyclists⁶.

This objective has not yet been met among Colorado’s children (5-15 years old), as indicated by the 1995 and 1997 BRFSS self-reported data. In Colorado, the proportion of children always wearing bicycle helmets increased from 28.2 percent in 1995 to 37.1 percent in 1997. For both years, children in the youngest age group (5-8 years) had a significantly higher prevalence of helmet use as compared to children in the older age groups. Although helmet use increased in all regions of the state from 1995 to 1997, children in the rural counties of Colorado were the least likely to always use bicycle helmets when riding a bicycle. As has been demonstrated in other studies, the use of bicycle helmets tends to increase with household income⁸; the same holds true in Colorado (see Table 3).

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Table 3. Percent of children ages 5-15 years who always use a bicycle helmet by age, region of residence, and household income: Colorado BRFSS, 1995 and 1997

	1995 (N=568)		1997 (N=425)	
	Percent	95% Confidence Intervals	Percent	95% Confidence Intervals
Total	28.2	(23.9, 32.5)	37.1	(32.4, 41.8)
Age (years)*				
5-8	47.9	(38.3, 57.5)	56.7	(47.7, 65.7)
9-12	29.9	(23.2, 36.6)	38.8	(30.6, 47.0)
13-15	13.0	(7.7, 18.3)	20.6	(14.1, 27.1)
Region of Residence				
Denver Metro	27.2	(21.0, 33.2)	38.7	(32.2, 45.2)
Other Metro	35.8	(27.4, 44.2)	39.2	(30.6, 47.8)
Rural	20.9	(12.7, 29.1)	28.3	(17.7, 38.9)
Household Income				
<\$20,000	23.5	(13.3, 33.7)	25.3	(13.3, 37.3)
\$20,000-35,000	26.2	(18.2, 34.2)	34.8	(24.6, 45.0)
\$35,000-50,000	21.6	(12.6, 30.6)	33.8	(23.6, 44.0)
\$50,000+	36.2	(28.2, 44.2)	43.5	(35.9, 51.1)

Children who did not ride bicycles were excluded from the analysis.

* Children under the age of 5 were not asked about bicycle riding or helmet use.

Safety Tips for Bicycle Helmets⁸

Every bicyclist should wear a helmet every time they ride. A bicycle helmet should fit comfortably and snugly, with no more than one finger width between the chin and the chin strap. It should sit on top of the head level with the eyes and ears and should not rock forward and back or from side to side. The helmet straps must always be buckled.

Buy a bicycle helmet that meets or exceeds the safety standards developed by the American National Standards Institute (ANSI), the Snell Memorial Foundation, the American Society for Testing and Materials (ASTM), and/or the Consumer Product Safety Commission (CPSC).

Child Safety Belt and Bicycle Helmet Use

According to Colorado BRFSS data, children between the ages of 5 and 15 who always use safety belts are more likely to also always use bicycle helmets (children <5 years old were not asked about bicycle riding behavior; children who did not ride bicycles were excluded). In 1995, children who always used safety belts were 9.8 times more likely to also always use bicycle helmets, as compared to children who didn't always use safety belts. In 1997, children who always used safety belts were 7.3 times more likely to always

wear bicycle helmets. Although the odds ratio decreased from 1995 to 1997, it was not a statistically significant decrease. In addition, it is important to note that even though the odds ratio was smaller in 1997, the association between safety belt and bicycle helmet use remained strong.

Adult and Child Bicycle Helmet Use

In 1997, data were collected on the adult respondent's bicycle helmet use and the bicycle helmet use of the oldest child in the household. Children living in households with adults who reported always using bicycle helmets were 3.6 times more likely to also always use bicycle helmets as compared to children living with adults who didn't always use bicycle helmets.

Additional Information

For more information about child safety seat, safety belt, and bicycle helmet use, please contact the Injury and Disability Prevention Program at the Colorado Department of Public Health and Environment, (303) 692-2586. For more information on the Colorado Behavioral Risk Factor Surveillance System, please contact the Health Statistics Section at the Colorado Department of Public Health and Environment, (303) 692-2160. □

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