

**2013 State of Colorado
CHILD SAFETY
RESTRAINT SYSTEM,
BOOSTER, AND
JUVENILE SEAT BELT
SURVEY**

**Colorado Department of
Transportation**

**SEAT BELT
STUDY**



**Colorado
State
University®**

INSTITUTE OF TRANSPORTATION MANAGEMENT

TABLE OF CONTENTS

LIST OF TABLES	ii
PREFACE	1
EXECUTIVE SUMMARY	2
RESEARCH DESIGN	3
RESULTS	5
CONCLUSIONS	18

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1	2013 Estimates for Use of Seat Belts by Drivers, Children, and Juveniles 5
2	2013 and 2012 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Vehicle Type..... 7
3	2013 and 2012 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Vehicle Speed..... 8
4	2013 and 2012 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Weekday/Weekend..... 9
5	2013 and 2012 Driver Seat Belt Usage by Vehicle Type..... 9
6	2013 and 2012 Driver Seat Belt Usage by Vehicle Speed..... 10
7	2013 and 2012 Driver Seat Belt Usage by Weekday/Weekend..... 10
8	2013 and 2012 Front/Rear Child Restraint Usage by Vehicle Type 11
9	2013 and 2012 Front/Rear Booster Usage by Vehicle Type 12
10	2013 and 2012 Juvenile Seat Belt Usage by Vehicle Type 13
11	2013 and 2012 Colorado County Results
	a. Front Seat and Rear Seat Combined Safety Restraint System (Child newborn - 4 years)..... 14
	b. Front Seat and Rear Booster Seat Combined..... 15
	c. Front Seat and Rear Seat Combined (Juvenile 5-15) 16
	d. Drivers Wearing Seat Belts 17

PREFACE

The Institute of Transportation Management (ITM) at Colorado State University conducted a comprehensive study of child safety restraint systems (child car seats and booster seats) and juvenile seat belt usage from June 16 through 29, 2013. The survey was designed to collect and analyze data related to usage of seat belts for drivers, safety restraint systems for children (newborn - 4 years), and booster and seat belt usage for juveniles (5 - 15 years). Vehicles included in the survey were passenger cars, trucks, vans, and SUVs used for private transportation. Commercial vehicles were not included in the study.

The Institute of Transportation Management is pleased to have participated in the 2013 Colorado seat belt usage surveys. The design of this study is representative of the population movements and trends within the State of Colorado and thus provides a useful projection of actual child safety restraint system, booster, and juvenile seat belt usage. With the data and analyses emanating from this study, Colorado Department of Transportation (CDOT), Office of Transportation Safety (OTS) will have current and accurate information upon which to base future transportation safety program decisions. The data and the analyses submitted to CDOT/OTS are, to the best of my knowledge, accurate and complete.

G. James Francis
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EXECUTIVE SUMMARY

Dr. G.J. Francis served as Principal Investigator, Burt Deines as Project Coordinator, and Felicia Zamora as Field Administrator for the study. James zumBrunnen of the Graybill Statistical Laboratory in the College of Natural Sciences at Colorado State University served as the lead statistician in the analysis of the data.

As in previous seat belt usage surveys conducted by the Institute of Transportation Management, retired Colorado State Highway Patrol Officers were used as observers whenever possible. The troopers' familiarity with interstate and state highways, as well as local and county roads and safety procedures, helped to minimize potential location issues and safety problems. The patrol officers have proven to be very conscientious and reliable and have helped strengthen the validity of the results. With the involvement of the Statistical Laboratory and retired state troopers, the Institute has taken measures to ensure the integrity of the survey and analyses while involving individuals in the study who have the most relevant skills.

Observers and supervisors received training emphasizing the need for consistency and accuracy in data collection and the survey process. The observers were provided information on how to properly collect, record, and report the data. Each observer was supplied data collection sheets, maps, site locations, and the supervisor's telephone numbers to facilitate completion of the seat belt usage survey.

The *Child Safety Restraint System, Booster, and Juvenile Seat Belt Survey* was conducted June 16 through 29, 2013. This study, which was carried out immediately following the *Statewide Seat Belt Survey*, encompassed 50 sites across 20 counties with each site observed on two separate dates in consecutive weeks. During the study, 7,534 vehicles were observed.

Analyses of the data yielded the following results compared with 2012:

	<u>2013</u>	<u>2012</u>
Driver	86.9%	88.2%
Child Restraint (front/rear)	92.7%	83.7%
Child Booster (front/rear)	71.6%	72.5%
Juvenile (front/rear)	78.0%	80.4%

The data reinforces past studies in that drivers who have children as passengers tend to have a higher seat belt usage rate. Thus, the 86.9% is significantly higher for drivers in this study than the 82.1% usage rate reported in the statewide survey. The 78.0% usage rate for juveniles represents a decline from last year's 80.4% rate. Details on the results for counties as well as variables of speed and vehicle types are presented later in this report.

RESEARCH DESIGN

The research design for this study is a statewide, multistage probability-based sample of possible observation sites. The approach utilized was originally designed by CDOT and has been adjusted to reflect the growth and shifts in the population of the State. The following steps were taken in drawing the sample sites where observations were to be conducted:

1. Selection of strata
2. Determination of sample clusters
3. Selection of observation sites

For this survey, eight strata were determined; each stratum represents a unique geographic and sociological segmentation of the State. Within each stratum, clusters, based on the identification of average vehicle miles and population, were determined. These clusters are represented by counties within the strata. Finally, the selection of specific sites within the selected counties was made. These observational sites were previously selected by CDOT and modified by the Institute of Transportation Management to reflect population growth and shifts within the State. Specifically, sites for observation and data collection were determined by the likelihood of the presence of the population to be observed. These sites allowed for proximity to the highest concentration of individuals in the age groups being studied and thus minimized observational error.

For the purposes of this survey, an observation site was defined as a specific road intersection or parking lot entrance/exit where observations take place. Observations were conducted at each site for 40 minutes once per week over the two-week time period. Thus, each site was observed twice for data collection.

The 2013 survey for children and juveniles was designed to meet the following criteria:

1. Samples were probability-based on population and vehicle miles so that estimates are therefore representative of seat belt usage for juveniles (5-15) and children who should be in child restraint systems and booster seats.
2. The sample data were collected through direct observation of seat belt usage on selected roadways and the ingress/egress of parking lots close to shopping centers, preschools, daycare centers, and locations frequented by families.
3. The populations of interest were drivers, children placed in child safety restraint systems, children in booster seats and juveniles through age 15 who were passengers of cars, vans, SUVs, and non-commercial lights trucks.

4. Observations were conducted in daylight hours from 7:00 AM to 6:00 PM from June 16 through 29, 2013.
5. Observational data were recorded on counting sheets and transferred onto a summary form. The data were then transcribed to create a digital record. The digital record served as input into SAS programs for data reduction.

RESULTS

Analyses of State Estimates for Use of Seat Belts

As with other seat belt usage surveys conducted in the State of Colorado, this study demonstrates some degree of “leveling” of the data over the past several years. While the usage rates for 2013 remain fairly high, there were declines in some categories while improvements were realized in others. Table 1 presents the summary data for 2013.

TABLE 1. 2013 Estimates for Use of Seat Belts by Drivers, Children, and Juveniles

Use of Seat Belt	Seat Belt Estimate	Std Error	Lower Confidence Limit	Upper Confidence Limit
Driver	86.9	0.9	85.2	88.5
Child Restraint (front)	70.7	8.8*	52.9	88.5
Child Restraint (rear)	93.3	1.2	90.9	95.8
Child Restraint (front/rear)	92.7	1.2	90.3	95.0
Child Booster (front)	44.7	4.0	36.8	52.5
Child Booster (rear)	78.0	2.4	73.2	82.8
Child Booster (front/rear)	71.6	2.6	66.4	76.7
Juvenile (front)	80.2	1.3	77.6	82.8
Juvenile (rear)	73.9	2.6	68.8	78.9
Juvenile (front/rear)	78.0	1.5	75.1	81.0

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

Children (newborn - 4 years)

The combined front and rear seat usage rate for the child safety restraint systems of 92.7 is 9 points higher than last year’s 83.7. The rear seat usage rate for 2013 was 93.3. This figure is also approximately 9 points higher than 2012 (84.1).

Although front seat usage is lower with a 70.7 rate, it should be noted that the high standard error for the front seat data is “good news” as it is due to the low number of children occupying front seats in vehicles. This year there were only 49 observations for children (newborn - 4 years) in front seats.

Children in Booster Seats

The first attempt to monitor the usage rate of child booster seats was in 2011. The results were quite variable by vehicle types, but the overall usage rate was 66.3. The 2012 results showed a substantial improvement with a front/rear combined rate of 72.5. This year the combined rate dropped to 71.6 even though the back seat usage rate was 78.0. As with the child safety restraint system, the standard error for boosters in the front seat was relatively high at 4.0.

Juveniles (5-15 years)

In 2011, juvenile (5-15 years) combined front seat and rear seat belt usage for all vehicles was 81.8, which was an improvement over the 2010 rate of 75.5. In 2012, the usage was 80.4; the drop in 2013 to 78.0 usage rate may be another indication of the possibility of a “ceiling” being reached for this age group.

Analyses of Estimates of Child Restraint, Booster, and Juvenile Seat Belt Usage Statistics

Usage Rates by Vehicle Type

As shown in Table 2, the usage rate of child restraint systems improved in cars and SUVs. The usage rate in vans showed a small decline but remained the highest of all vehicle types at 97.9%. After a major improvement of over a 10 point gain last year, trucks dropped back by over 6 points. The high standard error, however, indicates a small sample.

The usage rate for booster seats improved for SUVs and trucks while cars, Ex-cabs, and vans had lower rates than 2012. The van usage rate of 91.8 was statistically the same as last year and was the highest of all vehicle types.

As in past studies, juveniles have consistently had the lowest seat belt usage of all of the age groups surveyed. Gradual improvements have made the results for this group somewhat more comparable to others even though there was a decline for the last two years. Juveniles in cars buckled up at declining rate this year (73.8) compared to 77.8 in 2012. Cars and light pickup trucks had the lowest rates in 2013. Vans had the highest usage rate of 88.1, which was a drop of over 2 points from 2012.

Overall, children/juveniles who were passengers in vans are most likely to be buckled up or properly restrained in a booster or car seat compared to young occupants in other vehicle types. Trucks generally have the lowest usage rates although cars were the lowest for juvenile seat belt usage.

TABLE 2: 2013 and 2012 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Vehicle Type

2013	Child Restraint Estimate	Std Error	Lower	Upper	2012	Child Restraint Estimate
Car	89.7	1.8	86.2	93.3	Car	78.7
Truck	85.2	9.3*	65.8	99.9	Truck	91.6
Ex-Cab	92.0	3.7	84.5	99.5	Ex-Cab	93.8
Van	97.9	1.1	95.8	99.9	Van	98.1
SUV	97.0	1.0	95.0	98.9	SUV	86.9
Crew Cab	100.0				Crew Cab	100.0
2013	Booster Estimate	Std Error	Lower	Upper	2012	Booster Estimate
Car	63.3	3.1	57.3	69.4	Car	69.5
Truck	54.9	8.3*	38.1	71.7	Truck	51.5
Ex-Cab	87.6	4.7	78.0	97.1	Ex-Cab	91.6
Van	91.8	2.6	86.6	97.1	Van	92.7
SUV	84.4	2.1	80.2	88.7	SUV	73.2
Crew Cab	100.0				Crew Cab	100.0
2013	Juvenile Estimate	Std Error	Lower	Upper	2012	Juvenile Estimate
Car	73.8	2.3	69.2	78.3	Car	77.8
Truck	74.8	4.7	65.5	84.2	Truck	69.7
Ex-Cab	77.2	4.2	68.9	85.5	Ex-cab	72.1
Van	88.1	2.6	83.0	93.2	Van	90.5
SUV	83.7	1.7	80.4	87.1	SUV	83.6
Crew Cab	75.0	8.3*	57.3	92.7	Crew Cab	80.0

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

Usage Rates by Vehicle Speed

Table 3 illustrates the usage rates at different speeds.

Child Safety Restraint (newborn - 4 years): When considering speed of vehicles for the child safety restraint system, the usage rate was 93.2 for speeds 0-30 mph and 92.3 for speeds 31-50 mph. This result is somewhat of an anomaly as a higher usage rate is usually associated with higher speeds. Improvements in the usage rate of child safety restraint systems were significant. Although there were small declines in the use of booster seats and seat belts by juveniles, the rates were statistically the same and remain constant.

Child Booster: For children in booster seats for speeds 0-30 mph, seat belt usage was 70.9, which is essentially the same as the 2012 rate of 71.1. For speeds 31-50 mph, the seat belt usage was 71.8. These estimates are based upon a higher number of observations in 2013 than 2012 with an improved standard error of 3.3 versus 8.4 in 2012.

Juveniles (5-15 years): The usage rate for juveniles for 0-30 mph was 78.4 and 78.0 for speeds 31-50 mph. Although the juvenile usage rates are lower than the statewide average, the rates are remaining relatively constant and are well above the rates of five (2009=73.7) and six years (2008=70.5) ago.

TABLE 3: 2013 and 2012 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Vehicle Speed

2013	Child Restraint Estimate	Std Error	Lower	Upper	2012	Child Restraint Estimate
<u>Speed</u>					<u>Speed</u>	
0-30 MPH	93.2	2.1	89.1	97.3	0-30 MPH	89.8
31-50 MPH	92.3	1.5	89.4	95.3	31-50 MPH	80.3
2013	Booster Estimate	Std Error	Lower	Upper	2012	Booster Estimate
<u>Speed</u>					<u>Speed</u>	
0-30 MPH	70.9	3.3	64.4	77.4	0-30 MPH	71.1
31-50 MPH	71.8	3.3	65.4	78.2	31-50 MPH	72.7
2013	Juvenile Estimate	Std Error	Lower	Upper	2012	Juvenile Estimate
<u>Speed</u>					<u>Speed</u>	
0-30 MPH	78.4	2.4	73.6	83.2	0-30 MPH	79.5
31-50 MPH	78.0	1.7	74.5	81.4	31-50 MPH	80.5

Usage Rates by Weekday/Weekend

Table 4 illustrates the differences in the usage rates on weekdays and the weekend. There appears to be no predicable patterns other than for juveniles where the rate for weekdays has been at least 6% higher than weekends for the last two years.

TABLE 4: 2013 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Weekday/Weekend

2013	Child Restraint				2012	Child Restraint Estimate
	Estimate	Std Error	Lower	Upper		
Weekday	92.0	1.4	89.2	94.7	Weekday	87.8
Weekend	95.2	2.1	91.0	99.3	Weekend	76.1
2013	Booster				2012	Booster Estimate
	Estimate	Std Error	Lower	Upper		
Weekday	72.9	2.9	67.1	78.6	Weekday	75.0
Weekend	68.6	5.3*	58.1	79.1	Weekend	69.6
2013	Juvenile				2012	Juvenile Estimate
	Estimate	Std Error	Lower	Upper		
Weekday	80.0	1.6	76.9	83.1	Weekday	83.7
Weekend	74.0	2.5	69.0	79.0	Weekend	76.2

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

Analyses of Estimates of Driver Seat Belt Usage Statistics

Driver Seat Belt Usage by Vehicle Type

Table 5 shows a comparison of driver seat belt usage rates for 2013 and 2012. In 2013, cars and vans dropped slightly while trucks and Ex-cabs improved. SUVs were approximately the same as 2012. Once again, the drivers of vans had the highest seat belt usage at 94.2, and crew cabs were the lowest at 61.7. The standard error of 14.7 indicates that the sample size was quite small for crew cabs so 61.7 usage rate is somewhat “suspect.” The higher usage rate for this study compared to the statewide study result of 82.1 is due to the fact that adult drivers tend to buckle up more frequently when children are in the vehicle.

TABLE 5: 2013 and 2012 Driver Seat Belt Usage by Vehicle Type

2013	Driver				2012	Driver Estimate
	Estimate	Std Error	Lower	Upper		
Car	83.9	1.1	81.7	86.0	Car	85.7
Truck	80.5	4.1	72.4	88.6	Truck	76.3
Ex-Cab	83.0	2.8	77.5	88.5	Ex-Cab	78.0
Van	94.2	0.7	92.8	95.7	Van	95.3
SUV	91.4	1.0	89.4	93.5	SUV	91.9
Crew Cab	61.7	14.7*	31.3	92.1	Crew Cab	91.8

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

Driver Seat Belt Usage by Vehicle Speed

As shown in Table 6, the speed of the vehicle is not a determining factor in seat belt usage for drivers. The results for the different speeds are essentially the same and are reversed from the statewide results, which show a correlation between speed and seat belt usage; i.e., higher speed equals higher seat belt usage.

TABLE 6: 2013 Driver Seat Belt Usage by Vehicle Speed

2013	Driver Estimate	Std Error	Lower	Upper	2012	Driver Estimate
<u>Speed</u>					<u>Speed</u>	
0-30	88.0	1.2	85.7	90.3	0-30	88.9
31-50	86.5	1.0	84.5	88.5	31-50	88.1

Driver Seat Belt Usage by Weekday/Weekend

Table 7 compares weekday and weekend usage rates for drivers. Weekday rates of 88.5 represent a slight drop from last year's rate of 90.3. The weekend rate also dropped from 85.4 to 82.8. As with the children and juvenile rates, drivers had a higher usage rate on weekdays compared to weekends. The fact that the usage rates have vacillated around a point in the mid-eighties in the past three years is likely more reinforcement of the existence of a hypothetical "ceiling."

TABLE 7: 2013 Driver Seat Belt Usage by Weekday/Weekend

2013	Driver Estimate	Std Error	Lower	Upper	2012	Driver Estimate
Weekday	88.5	0.8	87.0	90.1	Weekday	90.3
Weekend	82.8	1.5	79.9	85.7	Weekend	85.4

Analyses of Estimates of Child Front/Rear Seat Belt Usage Statistics

Front/Rear Child Restraint Usage by Vehicle Type

Table 8 provides comparative data between front and rear seat usage of child restraint systems for 2012 and 2013.

The restraint usage for children (newborn - 4 years) in the front seat by vehicle type is quite variable due to the small number of observations. There are fewer children sitting in front seats than in previous years. Given the small number of front seat observations (49), the data is somewhat less relevant than the results for the rear seat observations (326).

The rear seat restraint usage for children continues to remain high with vans the highest at 98.5 and cars showing the greatest improvement in rear seat usage rates moving from 79.3 to 90.3. With cars reaching the 90% level, this is the first category of the CDOT studies wherein every vehicle type was in the 90% range. The overall combined front and rear seat usage rate of 92.7 for child restraint systems represents major progress and improvement over last year's 83.7 rate.

TABLE 8: 2013 and 2012 Front/Rear Child Restraint Usage by Vehicle Type

2013	Child Restraint				2012	Child Restraint Front Estimate
	Front Estimate	Std Error	Lower	Upper		
Car	73.3	14.6*	42.1	99.9	Car	78.4
Truck	56.3	18.1*	16.8	99.9	Truck	76.3
Ex-Cab	71.4	18.4*	26.3	99.5	Ex-Cab	75.0
Van	81.8	13.9*	49.1	99.9	Van	91.7
SUV	68.4	25.0*			SUV	98.3
Crew Cab	100.0				Crew Cab	100.0
2013	Child Restraint				2012	Child Restraint Rear Estimate
	Rear Estimate	Std Error	Lower	Upper		
Car	90.3	1.9	86.6	94.0	Car	79.3
Truck	100.0				Truck	98.8
Ex-Cab	93.8	3.5	86.6	99.9	Ex-Cab	97.5
Van	98.5	0.7	97.1	99.9	Van	98.2
SUV	97.5	1.0	95.6	99.4	SUV	87.0
Crew Cab	100.0				Crew Cab	100.0

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

Front/Rear Booster Usage by Vehicle Type

As shown in Table 9, the use of booster seats generally improved for rear seats and declined for front seat usage. While there are challenges of convincing the public to use booster seats for their children, the fact that the numbers are so low for front seats may be an indication that the educational messages have been understood. The extremely high standard error reinforces the existence of small numbers of boosters in front seats.

The various categories of trucks had both the highest and lowest rates of booster seat usage for rear seats. Crew cabs and Ex-cabs were at 100.0 and 97.5, respectively. Light trucks had the lowest at 66.7; however, the number of observations was so small that the standard error was 16.2. The “rear seats” in trucks are actually jump seats that are seldom used.

TABLE 9: 2013 and 2012 Front/Rear Booster Usage by Vehicle Type

2013	Booster Front				2012	Booster Front Estimate
	Estimate	Std Error	Lower	Upper		
Car	35.8	5.3*	25.1	46.5	Car	61.8
Truck	47.3	6.9*	33.2	61.5	Truck	55.7
Ex-Cab	55.6	15.1*	23.2	87.9	Ex-Cab	95.3
Van	61.0	8.9*	43.1	79.0	Van	77.6
SUV	60.3	6.9*	46.6	74.1	SUV	55.8
Crew Cab	100.0				Crew Cab	100.0
2013	Booster Rear				2012	Booster Rear Estimate
	Estimate	Std Error	Lower	Upper		
Car	69.4	2.8	64.0	74.9	Car	70.9
Truck	66.7	16.2*	31.4	99.9	Truck	44.6
Ex-Cab	97.5	1.7	93.9	99.9	Ex-Cab	91.0
Van	95.3	1.5	92.4	98.3	Van	96.1
SUV	89.7	2.4	84.9	94.4	SUV	79.5
Crew Cab	100.0				Crew Cab	100.0

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

Juvenile Seat Belt Usage by Vehicle Type

Table 10 illustrates the front and rear seat usage rate by vehicle type for juveniles in 2012 and 2013.

Front seat usage rates for 2013 were lower than 2012 for four of the six vehicles types. Even with a 5.0 standard error, the drop in the usage rates for crew cabs was precipitous (96.9 to 76.3).

Rear seat usage rates improved in all vehicle types with the exception of cars which dropped a little over 5 points. Vans were once again the highest with 91.1. SUVs had the next best seat belt usage rate at 82.4 and improved by over 6.5 points.

TABLE 10: 2013 and 2012 Juvenile Seat Belt Usage by Vehicle Type

2013	Front Seat Estimate	Std Error	Lower	Upper	2012	Front Seat Estimate
Car	77.3	2.0	73.2	81.3	Car	80.8
Truck	72.9	5.0*	62.9	82.9	Truck	72.4
Ex-Cab	78.1	4.3	69.6	86.6	Ex-Cab	77.4
Van	86.4	2.2	82.1	90.7	Van	90.1
SUV	84.8	1.4	82.0	87.7	SUV	88.0
Crew Cab	76.3	5.0*	65.4	87.2	Crew Cab	90.9
2013	Rear Seat Estimate	Std Error	Lower	Upper	2012	Rear Seat Estimate
Car	65.8	3.5	58.8	72.7	Car	71.1
Truck	79.7	8.4*	62.0	97.4	Truck	53.6
Ex-Cab	74.3	5.2	63.6	84.9	Ex-Cab	69.9
Van	91.1	3.5	84.2	98.0	Van	90.4
SUV	82.4	3.1	76.3	88.5	SUV	75.8
Crew Cab	60.0	33.9*			Crew Cab	33.3

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

2013 County Results for Colorado

Tables 11a-11-d summarize the results by counties.

Table 11a. Front Seat and Rear Seat Combined Safety Restraint System (Child newborn – 4 years)

Counties	Safety Restraint System Estimate (2013)	Std Error	Lower Confidence Limit	Upper Confidence Limit	Safety Restraint System Estimate (2012)
Adams	97.3	2.0	93.2	99.9	96.6
Arapahoe	84.9	3.4	78.1	91.8	65.8
Boulder	100.0				97.2
Denver	91.2	3.4	84.4	98.0	84.1
Douglas	85.0	4.5	75.4	94.6	76.7
El Paso	95.0	1.7	91.6	98.4	92.8
Fremont	93.9	3.4	85.9	99.9	94.9
Jefferson	98.2	1.3	95.6	99.9	98.6
Kit Carson	100.0				100.0
La Plata	88.5	9.5*	65.3	99.9	93.1
Larimer	100.0				100.0
Las Animas	82.1	12.7*	49.6	99.9	87.7
Mesa	94.1	3.4	86.4	99.9	92.9
Moffat	100.0				87.5
Montrose	85.6	9.1*	62.3	99.9	96.4
Pueblo	92.0	4.6	82.1	99.9	98.0
Rio Grande	100.0	0.0			100.0
Summit	100.0	0.0			100.0
Weld	100.0	0.0			100.0
Yuma	100.0	0.0			100.0

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size. Blank cells indicate that because of small sample sizes estimates could not be made.

Of the 20 counties included in the study, eight had usage rates of 100%, which is two more than last year. Seven counties were between 90% and 100% usage for child restraint systems and five counties were in the eighties with no county lower than 82.1.

Several of the more “rural” counties had usage rates above or just slightly below the 90% level with six being at 100.0. Even though there were some relatively low numbers in terms of observations in rural counties, the fact that there were eight counties with 100.0 usage is a significant improvement.

Table 11b. Front Seat and Rear Booster Seat Combined

Counties	Booster Seat Estimate (2013)	Std Error	Lower Confidence Limit	Upper Confidence Limit	Booster Seat Estimate (2012)
Adams	70.5	4.0	62.0	79.0	87.7
Arapahoe	55.6	6.6*	42.2	68.9	30.9
Boulder	84.8	3.4	77.7	91.9	88.3
Denver	59.9	6.7*	46.3	73.6	78.9
Douglas	49.5	10.7*	25.9	73.2	41.9
El Paso	70.7	5.2*	60.2	81.2	74.0
Fremont	65.8	8.6*	45.9	85.7	75.8
Jefferson	85.5	3.7	78.0	93.0	95.4
Kit Carson	85.7	13.2*			100.0
La Plata	61.9	11.4*	34.0	89.9	60.8
Larimer	81.1	8.9*	62.6	99.5	96.5
Las Animas	42.2	13.4*	10.5	73.9	36.5
Mesa	92.0	3.1	85.4	98.6	86.2
Moffat	95.0	3.1	88.0	99.9	68.1
Montrose	82.4	3.1	75.2	89.6	70.6
Pueblo	59.8	9.8*	39.0	80.6	60.7
Rio Grande	68.5	10.8*	42.9	94.1	42.4
Summit	93.6	5.1*	81.5	99.9	74.7
Weld	74.9	4.3	65.4	84.3	77.3
Yuma	82.7	3.4	75.2	90.2	92.0

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size. Blank cells indicate that because of small sample sizes estimates could not be made.

The results for the use of booster seats are perhaps more variable than any other category of this study. Usage rates range from a low of 42.2 in Las Animas County to a high of 95.0 in Moffat County. The results seem to show that there are still many people who chose not to utilize booster seats for their children. Overall, some caution should be used in interpreting this data since the standard errors for 12 of the counties were greater than 5 on booster seat restraint usage estimates.

**Table 11c. Front Seat and Rear Seat Combined
(Juvenile 5-15)**

Counties	Seat Belt Estimate (2013)	Std Error	Lower Confidence Limit	Upper Confidence Limit	Seat Belt Estimate (2012)
Adams	63.0	7.3*	47.9	78.2	76.2
Arapahoe	67.3	4.1	59.0	75.6	65.8
Boulder	93.4	1.6	90.1	96.6	83.0
Denver	67.1	2.5	62.1	72.1	68.3
Douglas	80.9	3.0	74.5	87.3	81.9
El Paso	84.3	1.2	81.9	86.8	86.4
Fremont	77.7	3.7	69.4	86.0	87.2
Jefferson	76.8	4.5	67.8	85.8	79.8
Kit Carson	85.2	6.0*	71.2	99.3	91.4
La Plata	90.1	2.6	83.6	96.5	86.6
Larimer	98.9	0.8	97.2	99.9	93.5
Las Animas	66.0	4.7	55.1	76.9	61.2
Mesa	77.9	5.4*	66.6	89.3	76.3
Moffat	87.5	2.3	82.2	92.8	89.1
Montrose	80.4	5.6	67.8	92.9	68.8
Pueblo	68.9	2.9	62.8	75.0	79.8
Rio Grande	96.9	1.6	93.4	99.9	93.8
Summit	91.0	2.2	85.9	96.1	91.4
Weld	99.8	0.2	99.3	99.9	96.8
Yuma	62.3	7.7*	45.3	79.4	79.5

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

The juvenile survey data shown in Table 11c was more consistent with the results of the pre-mobilization and statewide studies although the combined front and rear seat belt usage rates of 78.0 is below the statewide usage rate of 82.1%. Weld County had the highest usage rate at 99.8 with Larimer and Rio Grande at 98.9 and 96.9, respectively. Adams and Yuma counties were the lowest at 63.0 and 62.3, respectively. The juvenile data continues to improve across most counties and has obviously been impacted in a positive way by the educational efforts focusing upon early teenagers.

Table 11d. Drivers Wearing Seat Belts

Counties	Seat Belt Estimate (2013)	Std Error	Lower Confidence Level	Upper Confidence Level	Seat Belt Estimate (2012)
Adams	83.6	2.8	77.8	89.5	89.1
Arapahoe	85.0	2.2	80.6	89.4	85.0
Boulder	96.8	1.9	92.9	99.9	95.2
Denver	86.5	1.9	82.7	90.4	89.5
Douglas	91.4	1.8	87.5	95.2	90.5
El Paso	87.4	1.2	85.0	89.7	88.2
Fremont	80.9	2.1	76.2	85.6	89.9
Jefferson	89.9	1.5	86.9	92.8	92.3
Kit Carson	91.2	5.7*	78.4	99.9	89.5
La Plata	92.4	4.3	82.4	99.9	92.3
Larimer	98.2	0.8	96.4	99.9	95.8
Las Animas	76.2	4.3	66.3	86.1	69.9
Mesa	89.1	1.9	85.2	93.1	89.6
Moffat	89.8	1.9	85.5	94.1	89.4
Montrose	87.4	1.5	83.9	90.9	82.1
Pueblo	78.2	1.5	75.0	81.4	86.3
Rio Grande	97.8	0.7	96.3	99.3	95.0
Summit	99.0	0.8	97.1	99.9	98.5
Weld	98.6	0.6	97.4	99.8	94.2
Yuma	82.3	4.7	71.8	92.7	70.2

*Note: A Std Error of 5 and over is generally suspect as it indicates a small sample size.

The results for driver seat belt usage are shown in Table 11d. Only three counties had usage rates lower than the 82.1% rate of the statewide survey. Yuma and Pueblo counties are mostly rural in nature and had the lowest usage rates of the 20 counties. Eight of the counties were over 90.0 with Summit County having the highest rate of 99.0. Weld County at 98.6, Larimer County at 98.2, and Boulder County at 96.8 were also among the highest usage rates, and all three counties showed an improvement over last year. As noted earlier in the report, it appears that drivers tend to buckle up more consistently when children are in the car. The much higher usage rates for drivers in this study compared to the pre-mobilization and statewide surveys reinforces this assumption.

CONCLUSIONS

The 2013 child/juvenile study shows some “leveling” of the usage rates across the State. While there was improvement in the rates for child restraint systems, the driver and juvenile seat belt usage rates both declined, and booster usage remained nearly the same (71.6). However, the usage rate of 86.9 for drivers was still much higher than the 82.1 reported for the recently completed statewide study. The gains and losses in the categories were nearly reversed from 2012 providing further evidence of the leveling of results.

For 2013, the child safety restraint system usage improved to 92.7 from 83.7 in 2012 and established a new all-time high, well above the previous high of 86.5 in 2011. The combined front and rear seat belt usage for juveniles declined for the second year in a row. In the last two years, seat belt usage has fallen from 81.8 to 78.0. The combined (front/rear) usage rate for booster seats dropped from 72.5 to 71.6, but the rear seat usage was 78.0. The goal to have fewer children in boosters in the front seat is being accomplished as the absolute numbers in the front seat are declining.

With regard to vehicle types, vans generally have the best record in terms of children being in safety restraint systems and properly buckled up. Even the usage rate for juveniles in vans was the highest at 88.1. Ex-cab usage rates have remained fairly constant, and crew cabs although a small sample size had 100.0 usage rates for child restraint systems and for booster seats. SUVs have the second highest usage rate and showed improvement in all children’s age groups with a high of 97.0 for car seats. Cars improved by 11 points (78.7 to 89.7) for car seat usage and dropped by an average of five points in the other two categories. Light trucks remained the lowest in usage rates but showed improvement in booster and juvenile seat belt usage.

Overall most counties improved in usage rates for safety restraint systems. The exceptions are those counties that had relatively small sample sizes and reported high standard errors (La Plata, Las Animas, and Montrose). The upward trend in counties is especially true for the usage rates of drivers. Of the 20 counties included in the study, only three had usage rates for drivers that were below the statewide figure of 82.1. Eleven counties had rates above 89.0 with the highest being 99.0 and the lowest 76.2.

While there were some declines in usage rates within the categories surveyed, these results were offset by improvements in other categories. The data, overall, should be considered as quite positive although there is still room for improvement. Usage rates for child safety restraint systems are especially encouraging with an overall improvement of nine points and fewer children placed in front seats. The challenge, however, of investing sufficient resources to continue making gains in a secondary law state are understandably somewhat onerous. As stated in earlier reports, the costs involved to improve usage rates are increasing rather dramatically at the margin.