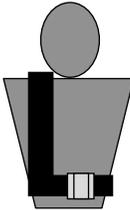


**2012 State of Colorado  
CHILD SAFETY  
RESTRAINT SYSTEM,  
BOOSTER, AND  
JUVENILE SEAT BELT  
SURVEY**

**Colorado Department of  
Transportation**

**SEAT BELT  
STUDY**



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**Colorado  
State  
University®**

**INSTITUTE OF TRANSPORTATION MANAGEMENT**

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# PREFACE

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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 17 through June 30, 2012. 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 2012 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  
Principal Investigator  
Institute of Transportation Management  
Colorado State University

# EXECUTIVE SUMMARY

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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 17 through June 30, 2012. This phase of the 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, 7,456 vehicles were observed.

Analyses of the data yielded the following results:

Driver	88.2%
Child Restraint (front/rear)	83.7%
Child Booster (front/rear)	72.5%
Juvenile (front/rear)	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 88.2% is significantly higher for drivers in this study than to the 80.8% usage rate reported in the statewide survey. The 80.4% usage rate for juveniles represents a slight drop from last year's 81.8% rate but is the second highest usage rate for any year since the beginning of this annual study. Details on the results for counties as well as variables of speed and vehicle types are presented later in this report.

# RESEARCH DESIGN

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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 2012 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 17 through June 30, 2012.
5. Observational data were recorded on counting sheets and transferred onto a field 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 2012 remain fairly high, there were declines in some categories while improvements were realized in others. Table 1 presents the summary data for 2012.

**TABLE 1. 2012 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	88.2	0.8	86.7	89.8
Child Restraint (front)	82.9	6.3*	70.3	95.5
Child Restraint (rear)	84.1	3.2	77.9	90.4
Child Restraint (front/rear)	83.7	3.2	77.4	90.0
Child Booster (front)	63.4	5.3*	52.9	73.9
Child Booster (rear)	75.5	2.5	70.5	80.5
Child Booster (front/rear)	72.5	2.3	68.0	76.9
Juvenile (front)	83.7	1.2	81.4	86.0
Juvenile (rear)	74.5	2.8	69.1	79.9
Juvenile (front/rear)	80.4	1.4	77.7	83.1

\*Note: A Std Error of 5 and over is generally suspect indicating a small sample size.

### **Children (newborn - 4 years)**

The combined front and rear seat usage rate for the child safety restraint systems of 83.7 is approximately 3 points lower than last year’s 86.5. The rear seat usage rate for 2012 was 84.1.

Although front seat usage is lower with an 82.9 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 78 observations for children (newborn - 4 years) in front seats.

## **Children in Booster Seats**

Last year (2011) was the first attempt to monitor the usage rate of child booster seats. The results were quite variable by vehicle types, but the overall usage rate was 66.3. The 2012 results show a substantial improvement with a front/rear combined rate of 72.5.

## **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. Although statistically the same as last year's the 80.4 usage rate for 2012 is 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, there was an improvement in the usage rate of child restraint systems in every vehicle type except for cars. The greatest change was the jump from 78.4 to 93.8 in X-cab trucks. Other trucks showed over a 10 point gain. Vans were once again the highest with a 98.1 usage rate. The drop for cars from 85.2 to 78.7 would normally be considered quite significant, but the relatively high standard error is evidence of a small sample size.

The usage rate for booster seats improved in all vehicle categories except for SUVs. However, the decrease from 73.9 in 2011 to 73.2 in 2012 is not significant and is technically the same for the last two years. Usage rates within trucks and cars improved approximately 11.0 and vans had the best result at 92.7.

In past studies, juveniles had consistently the lowest seat belt usage of all of the age groups surveyed. Gradual improvements have made the results for this group more comparable to others even though there was some decline this year. Juveniles in cars buckled up at almost exactly the same rate this year (77.8) as 2011 (78.0). Trucks and X-cabs had lower rates in 2012 and SUVs dropped from 84.9 to 83.6. Vans had the highest usage rate of 90.5 which was an improvement of nearly 4 points. This is the best usage rate for juveniles in any vehicle type since this age group was first surveyed.

Overall, children/juveniles who are 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 child restraint systems. As will be discussed later, this was due in part to the low estimate for front seat usage in cars.

**TABLE 2: 2012 and 2011 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Vehicle Type**

2012	Child Restraint Estimate	Std Error	Lower	Upper	2011	Child Restraint Estimate
Car	78.7	5.0*	68.7	88.6	Car	85.2
Truck	91.6	6.3*	78.8	99.9	Truck	81.3
X-Cab	93.8	3.5	86.7	99.9	X-Cab	78.4
Van	98.1	0.8	96.5	99.7	Van	95.2
SUV	86.9	3.2	80.7	93.2	SUV	85.4
2012	Booster Estimate	Std Error	Lower	Upper	2011	Booster Estimate
Car	69.5	3.0	63.6	75.4	Car	58.7
Truck	51.5	7.0*	37.2	65.8	Truck	40.4
X-Cab	91.6	2.9	85.7	97.5	X-Cab	90.5
Van	92.7	1.7	89.4	96.1	Van	88.5
SUV	73.2	4.9	63.4	82.9	SUV	73.9
2012	Juvenile Estimate	Std Error	Lower	Upper	2011	Juvenile Estimate
Car	77.8	2.4	73.1	82.5	Car	78.0
Truck	69.7	3.7	62.3	77.1	Truck	74.1
X-Cab	72.1	3.4	65.3	79.0	X-cab	87.0
Van	90.5	2.1	86.4	94.7	Van	86.7
SUV	83.6	1.6	80.4	86.8	SUV	84.9

\*Note: A Std Error of 5 and over is generally suspect indicating 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 89.8 for speeds 0-30 mph and 80.3 for speeds 31-50 mph. This result is somewhat of an anomaly as a higher usage rate is usually associated with higher speeds. For 2012, this result is unique to child restraint systems as the booster and juvenile data are more consistent with other studies where there is a positive correlation between higher speeds and seat belt usage.

**Child Booster:** For children in booster seats for speeds 0-30 mph, seat belt usage was 71.1. For speeds 31-50 mph, the seat belt usage was 72.7. Note that the standard error for children in booster seats in vehicles traveling less than 30 mph is 8.4, which again implies an insufficient sample size.

**Juveniles (5-15 years):** The usage rate for juveniles for 0-30 mph was 79.5 and 80.5 for speeds 31-50 mph. Although there is only a 1% difference, the higher usage rates at higher speed is in line with other State studies.

**TABLE 3: 2012 and 2011 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Vehicle Speed**

<b>2012</b>	<b>Child Restraint Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>	<b>2011</b>	<b>Child Restraint Estimate</b>
<u>Speed</u>					<u>Speed</u>	
0-30 MPH	89.8	3.8	82.3	97.4	0-30 MPH	97.3
31-50 MPH	80.3	4.2	72.1	88.5	31-50 MPH	82.1
<b>2012</b>	<b>Booster Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>	<b>2011</b>	<b>Booster Estimate</b>
<u>Speed</u>					<u>Speed</u>	
0-30 MPH	71.1	8.4*	54.4	87.8	0-30 MPH	68.7
31-50 MPH	72.7	2.2	68.4	77.0	31-50 MPH	63.2
<b>2012</b>	<b>Juvenile Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>	<b>2011</b>	<b>Juvenile Estimate</b>
<u>Speed</u>					<u>Speed</u>	
0-30 MPH	79.5	3.6	72.4	86.7	0-30 MPH	71.3
31-50 MPH	80.5	1.5	77.6	83.4	31-50 MPH	82.1

**Usage Rates by Weekday/Weekend**

Table 4 illustrates the differences in the usage rates on weekdays and the weekend. It is interesting to note that for all three categories the weekday usage rates were significantly higher than for the weekends.

**TABLE 4: 2012 Estimates of Combined Front and Rear Child Restraint, Booster, and Juvenile Usage by Weekday/Weekend**

	<b>Child</b>			
<b>2012</b>	<b>Restraint Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>
Weekday	87.8	2.4	83.1	92.6
Weekend	76.1	6.7*	62.7	89.4
<b>2012</b>	<b>Booster Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>
Weekday	75.0	3.1	69.0	81.1
Weekend	69.6	3.5	62.6	76.6
<b>2012</b>	<b>Juvenile Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>
Weekday	83.7	1.3	81.1	86.3
Weekend	76.2	2.6	71.1	81.3

\*Note: A Std Error of 5 and over is generally suspect  
 Indicating 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 are shown for 2012 and 2011. The 2012 rates are nearly identical to the 2011 rates for every vehicle type except for X-cabs. The X-cab rate dropped from 82.2 to 78.0. Once again, the drivers of vans had the highest seat belt usage at 95.3, and trucks were the lowest at 76.3. The higher usage rate for this study compared to the statewide study result of 80.8 is due to the fact that adult drivers tend to buckle up more frequently when children are in the vehicle.

**TABLE 5: 2012 and 2011 Driver Seat Belt Usage by Vehicle Type**

<b>2012</b>	<b>Driver Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>	<b>2011</b>	<b>Driver Estimate</b>
Car	85.7	1.1	83.5	88.0	Car	86.0
Truck	76.3	2.6	71.2	81.5	Truck	77.0
X-Cab	78.0	5.0	67.9	88.0	X-Cab	82.2
Van	95.3	0.8	93.8	96.8	Van	95.3
SUV	91.9	0.8	90.4	93.5	SUV	91.8

## 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. Statistically, the results for the different speeds are essentially the same.

**TABLE 6: 2012 Driver Seat Belt Usage by Vehicle Speed**

2012	Driver Estimate	Std Error	Lower	Upper
<u>Speed</u>				
0-30	88.9	2.0	85.1	92.8
31-50	88.1	0.8	86.4	89.8

## Driver Seat Belt Usage by Weekday/Weekend

Table 7 compares weekday and weekend usage rates for drivers. Weekday rates of 90.3 represent a slight improvement over last year's rate of 89.5. The weekend rate improved by almost three points (82.6 to 85.4). As with the children and juvenile rates, drivers had a higher usage rate on weekdays compared to weekends.

**TABLE 7: 2012 Driver Seat Belt Usage by Weekday/Weekend**

2012	Driver Estimate	Std Error	Lower	Upper	2011	Driver Estimate
Weekday	90.3	0.9	88.6	91.9	Weekday	89.5
Weekend	85.4	1.3	82.8	88.1	Weekend	82.6

## 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 2011 and 2012.

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 so the standard error for most vehicle types was higher. Given the small number of front seat observations (78), the data is somewhat less relevant than the results for the rear seat observations (324).

The rear seat restraint usage for children continues to remain high with vans the highest at 98.2 and cars the lowest at 79.3. This was over a three point improvement for vans while cars showed a drop of nearly six points.

**TABLE 8: 2012 and 2011 Front/Rear Child Restraint Usage by Vehicle Type**

2012	Child Restraint				2011	Child Restraint Front Estimate
	Front Estimate	Std Error	Lower	Upper		
Car	78.7	5.0*	68.7	88.6	Car	96.6
Truck	91.6	6.3*	78.8	99.9	Truck	79.2
X-Cab	93.8	3.5	86.7	99.9	X-Cab	42.3
Van	98.1	0.8	96.5	99.7	Van	100.0
SUV	86.9	3.2	80.7	93.2	SUV	
2012	Child Restraint				2011	Child Restraint Rear Estimate
	Rear Estimate	Std Error	Lower	Upper		
Car	79.3	5.0	69.4	89.2	Car	85.0
Truck	98.8	1.5	95.7	99.9	Truck	
X-Cab	97.5	1.9	93.6	99.9	X-Cab	93.4
Van	98.2	0.8	96.5	99.8	Van	94.9
SUV	87.0	3.0	81.1	93.0	SUV	88.9

\*Note: A Std Error of 5 and over is generally suspect indicating a small sample size.

### Front/Rear Booster Usage by Vehicle Type

As shown in Table 9, the use of booster seats was improved in 2012. In most cases, the usage rate for boosters in both front and rear seats is higher in 2012 than 2011. The lone exception is for the front seat of vans, but the standard error of 5.5 indicates that the sample size was quite small. Likewise, the sample sizes for SUVs, trucks, and cars were all low enough in numbers to have high standard errors. Again, this is an indication that more people are appropriately placing children in the rear seat.

Vans had the highest rear seat usage rate of 96.1. Although trucks had the lowest at 44.6, the number of observations was so small that the standard error was 14.8. The “rear seats” in trucks are actually jump seats that are seldom used. There were no children observed occupying those seats in 2011.

**TABLE 9: 2012 and 2011 Front/Rear Booster Usage by Vehicle Type**

2012	Booster Front				2011	Booster Front Estimate
	Estimate	Std Error	Lower	Upper		
Car	61.8	8.4*	44.9	78.7	Car	57.7
Truck	55.7	7.0*	41.5	70.0	Truck	37.7
X-Cab	95.3	3.8	87.2	99.9	X-Cab	87.0
Van	77.6	5.5*	66.2	89.1	Van	81.9
SUV	55.8	8.4*	38.9	72.6	SUV	46.1
2012	Booster Rear				2011	Booster Rear Estimate
	Estimate	Std Error	Lower	Upper		
Car	70.9	3.3	64.4	77.4	Car	58.8
Truck	44.6	14.8*	13.2	76.1	Truck	
X-Cab	91.0	3.1	84.7	97.2	X-Cab	90.1
Van	96.1	1.4	93.4	98.8	Van	91.5
SUV	79.5	4.8	70.0	89.0	SUV	78.9

\*Note: A Std Error of 5 and over is generally suspect indicating 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 2011 and 2012.

Front seat usage rates for 2012 remained fairly constant for most vehicles. X-cabs had a small decline from 80.1 to 77.4. SUVs had the greatest gain moving from 86.6 to 88.0.

Rear seat usage rates declined in all vehicle types with the exception of vans which had over a seven point improvement. Although X-cab trucks dropped from 94.8 to 69.9, there were relatively few observations causing a high standard error of 7.9.

**TABLE 10: 2012 and 2011 Juvenile Seat Belt Usage by Vehicle Type**

<b>2012</b>	<b>Front Seat Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>	<b>2011</b>	<b>Front Seat Estimate</b>
Car	80.8	1.6	77.6	83.9	Car	81.2
Truck	72.4	3.5	65.5	79.4	Truck	71.8
X-Cab	77.4	4.4	68.6	86.1	X-Cab	80.1
Van	90.1	2.6	84.9	95.3	Van	89.0
SUV	88.0	1.3	85.4	90.6	SUV	86.6
<b>2012</b>	<b>Rear Seat Estimate</b>	<b>Std Error</b>	<b>Lower</b>	<b>Upper</b>	<b>2011</b>	<b>Rear Seat Estimate</b>
Car	71.1	4.5	62.2	80.1	Car	73.3
Truck	53.6	10.0*	32.6	74.6	Truck	
X-Cab	69.9	7.9*	53.8	85.9	X-Cab	94.8
Van	90.4	3.2	84.0	96.8	Van	83.3
SUV	75.8	2.9	70.1	81.6	SUV	84.4

**2012 County Results for Colorado**

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

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

<b>Counties</b>	<b>Seat Belt Estimate</b>	<b>Std Error</b>	<b>Lower Confidence Limit</b>	<b>Upper Confidence Limit</b>
<b>Adams</b>	96.6	1.4	93.6	99.5
<b>Arapahoe</b>	65.8	5.9*	53.8	77.8
<b>Boulder</b>	97.2	2.4	92.2	99.9
<b>Denver</b>	84.1	4.9	74.3	93.9
<b>Douglas</b>	76.7	8.9*	57.5	95.9
<b>El Paso</b>	92.8	3.3	86.3	99.4
<b>Fremont</b>	94.9	3.3	87.1	99.9
<b>Jefferson</b>	98.6	1.3	96.0	99.9
<b>Kit Carson</b>	100.0	0.0		
<b>La Plata</b>	93.1	6.5*		
<b>Larimer</b>	100.0	0.0		
<b>Las Animas</b>	87.7	6.4*	72.6	99.9
<b>Mesa</b>	92.9	1.1	90.4	95.3
<b>Moffat</b>	87.5	10.5*		
<b>Montrose</b>	96.4	3.7	87.3	99.9
<b>Pueblo</b>	98.0	1.6	94.7	99.9
<b>Rio Grande</b>	100.0	0.0		
<b>Summit</b>	100.0	0.0		
<b>Weld</b>	100.0	0.0		
<b>Yuma</b>	100.0	0.0		

\*Note: A Std Error of 5 and over is generally suspect indicating 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, six had usage rates of 100% and nine counties were between 90% and 100% usage for child restraint systems.

Arapahoe and Douglas Counties, even though among the most populated counties, had low usage rates (65.8 and 76.7, respectively) and high standard errors. Several of the more “rural” counties had usage rates above or just slightly below the 90% level with five being at 100%. Even though there were some relatively low numbers in terms of observations in rural counties, the fact that there were six counties with 100% usage is a significant improvement.

**Table 11b. Front Seat and Rear Booster Seat Combined**

<b>Counties</b>	<b>Seat Belt Estimate</b>	<b>Std Error</b>	<b>Lower Confidence Limit</b>	<b>Upper Confidence Limit</b>
<b>Adams</b>	87.7	7.1*	72.7	99.9
<b>Arapahoe</b>	30.9	9.7*	11.2	50.7
<b>Boulder</b>	88.3	4.9	78.1	98.4
<b>Denver</b>	78.9	6.2*	66.3	91.5
<b>Douglas</b>	41.9	9.2*	22.4	61.5
<b>El Paso</b>	74.0	2.6	68.8	79.3
<b>Fremont</b>	75.8	7.5*	58.6	93.1
<b>Jefferson</b>	95.4	2.1	91.2	99.6
<b>Kit Carson</b>	100.0	0.0		
<b>La Plata</b>	60.8	7.3*		
<b>Larimer</b>	96.5	1.2	94.0	98.9
<b>Las Animas</b>	36.5	19.1*	0.1	83.2
<b>Mesa</b>	86.2	2.3	81.4	90.9
<b>Moffat</b>	68.1	3.7	59.0	77.2
<b>Montrose</b>	70.6	2.3	65.3	76.0
<b>Pueblo</b>	60.7	7.4*	45.0	76.3
<b>Rio Grande</b>	42.4	6.8*	24.9	59.9
<b>Summit</b>	74.7	3.6	66.0	83.5
<b>Weld</b>	77.3	5.1*	65.8	88.8
<b>Yuma</b>	92.0	4.6	80.9	99.9

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

Caution should be used in interpreting this data since the standard errors for half of the counties were greater than 5 on booster seat restraint usage estimates.

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 36.5 in Las Animas County to a high of 100.0 in Kit Carson County. Ten of the 20 counties had standard errors over 5.0 with Las Animas the highest at 19.1 causing confidence limits to have over an 82 point spread. The results seem to show that there are still many people who chose not to utilize booster seats for their children. However, Larimer County and Jefferson County were among those with the most substantial number of observations and had usage rates of 96.5 and 95.4, respectively.

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

<b>Counties</b>	<b>Seat Belt Estimate</b>	<b>Std Error</b>	<b>Lower Confidence Limit</b>	<b>Upper Confidence Limit</b>
<b>Adams</b>	76.2	4.4	67.2	85.2
<b>Arapahoe</b>	65.8	3.3	59.3	72.4
<b>Boulder</b>	83.0	2.6	77.6	88.5
<b>Denver</b>	68.3	2.3	63.7	72.9
<b>Douglas</b>	81.9	3.2	75.1	88.6
<b>El Paso</b>	86.4	1.6	83.3	89.6
<b>Fremont</b>	87.2	1.6	83.6	90.8
<b>Jefferson</b>	79.8	3.3	73.1	86.5
<b>Kit Carson</b>	91.4	6.0*	77.6	99.9
<b>La Plata</b>	86.6	3.9	77.1	96.2
<b>Larimer</b>	93.5	5.0*	83.1	99.9
<b>Las Animas</b>	61.2	8.1*	43.0	79.5
<b>Mesa</b>	76.3	4.5	67.0	85.6
<b>Moffat</b>	89.1	4.1	79.9	98.3
<b>Montrose</b>	68.8	3.0	62.1	75.5
<b>Pueblo</b>	79.8	4.6	70.1	89.5
<b>Rio Grande</b>	93.8	4.2	83.3	99.9
<b>Summit</b>	91.4	5.4*	78.2	99.9
<b>Weld</b>	96.8	1.5	93.7	99.9
<b>Yuma</b>	79.5	8.8*	59.3	99.8

\*Note: A Std Error of 5 and over is generally suspect indicating 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. Weld County had the highest usage rate at 96.8 with Larimer and Rio Grande at 93.5 and 93.8, respectively. Denver County was the lowest at 68.3. 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**

<b>Counties</b>	<b>Seat Belt Estimate</b>	<b>Std Error</b>	<b>Lower Confidence Level</b>	<b>Upper Confidence Level</b>
<b>Adams</b>	89.1	1.2	86.6	91.6
<b>Arapahoe</b>	85.0	2.2	80.6	89.3
<b>Boulder</b>	95.2	1.8	91.4	99.0
<b>Denver</b>	89.5	1.5	86.5	92.5
<b>Douglas</b>	90.5	2.4	85.6	95.5
<b>El Paso</b>	88.2	1.6	84.9	91.5
<b>Fremont</b>	89.9	1.4	86.9	93.0
<b>Jefferson</b>	92.3	1.4	89.6	95.1
<b>Kit Carson</b>	89.5	3.6	81.5	97.4
<b>La Plata</b>	92.3	5.0*	80.0	99.9
<b>Larimer</b>	95.8	1.1	93.6	98.0
<b>Las Animas</b>	69.9	1.7	66.0	73.7
<b>Mesa</b>	89.6	1.5	86.6	92.7
<b>Moffat</b>	89.4	4.6	79.1	99.8
<b>Montrose</b>	82.1	3.6	73.9	90.3
<b>Pueblo</b>	86.3	3.8	78.5	94.2
<b>Rio Grande</b>	95.0	3.2	87.5	99.9
<b>Summit</b>	98.5	1.5	94.9	99.9
<b>Weld</b>	94.2	1.4	91.3	97.1
<b>Yuma</b>	70.2	1.9	65.8	74.5

\*Note: A Std Error of 5 and over is generally suspect indicating a small sample size.

The results for driver seat belt usage are shown in Table 11d. Only two counties had usage rates lower than 82.0. Yuma County at 70.2 and Las Animas at 69.9 are both 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 98.5. Larimer County at 95.8 and Boulder County at 95.2 were also among the highest usage rates. 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

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The 2012 child/juvenile study shows some “leveling” of the usage rates across the State. While there was improvement for booster seats and drivers, the rates for child restraint systems and juvenile seat belts both declined. The overall booster seat usage of 72.5 was a major improvement over last year’s 66.3. Similarly, the usage rate of 88.2 for drivers was much higher than the 80.8 reported for the recently completed statewide study.

For 2012, the child safety restraint system usage dropped down to 83.7 from the 2011 rate of 86.5. This decline is primarily due to the relatively low usage rate of 78.7 in cars compared to 85.2 last year. Every other vehicle type had an increase with X-cabs showing over a 15 point improvement.

In 2011, the combined front and rear seat belt usage for juveniles was 81.8. This year it fell off to 80.4. Front seat usage rate was much better for all vehicle types except for vans. The front and rear seat data were nearly the same for vans with 90.1 and 90.4 rates, respectively.

As in other studies vans usually have the highest usage rates of all vehicle types. SUVs tend to be the next most consistent in usage rates although not always the second highest in all categories. Extended cab pickups generally had improved usage rates and had higher rates than standard pickup trucks. Cars were unexpectedly low as the usage rates for restraint systems, boosters, and seat belts for juveniles and drivers were below the overall rates for each category.

Since this study was designed to gather statewide data, the results for the 20 counties were considered somewhat coincidental. In most cases, however, the data is a fair indicator of the seat belt usage rate in a county. The exceptions are those counties that have high standard errors reported. Overall, there has been an upward trend for counties. This is especially true for the usage rates of drivers. Of the 20 counties included in the study, only two had usage rates for drivers that were below the statewide figure of 80.8. Fourteen counties had rates above 89.0 with the highest being 98.5.

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. The challenge of investing sufficient resources to continue making gains in a secondary law state are understandably somewhat onerous given current economic conditions. As stated in earlier reports, the costs involved to improve usage rates are increasing rather dramatically at the margin.