

OKLAHOMA STATEWIDE CHILD RESTRAINT SURVEY

August 2012



Robert D. Delano, Ph.D.
Associate Professor

University of Central Oklahoma
College of Education and Professional Studies
Department of Adult Education and Safety Science
Industrial Safety Program
100 N. University Dr., HES 200A
Edmond, Oklahoma 73034

This report was prepared for the Oklahoma Highway Safety Office in cooperation with the National Highway Traffic Safety Administration, U.S. Department of Transportation and/or Federal Highway Administration, U.S. Department of Transportation. The conclusions and opinions expressed in this report are those of the University of Central Oklahoma, College of Education and Professional Studies, Department of Adult Education and Safety Science, Industrial Safety Program, and do not necessarily represent those of the State of Oklahoma, the Oklahoma Highway Safety Office, the U.S. Department of Transportation, or any other agency of the State or Federal Government.

TABLE OF CONTENTS

	<u>Page Number</u>
Executive Summary	iii
Introduction	1
Background	1
Analysis of Statewide Child Restraint Use	2
Analysis of Child Restraint Use by Region	6
Summary and Recommendations	7
References	9
Appendix A - Child Restraint Observation Form	10
Appendix B - Methodology	12

LIST OF TABLES

	<u>Page Number</u>
Table 1. Frequency Distribution of Sample Characteristics, 2006 - 2012	2
Table 2. Child Restraint Use, 2006 - 2012.....	3
Table 3. Child Restraint Use by Whether or Not the Driver is Belted, 2006 - 2012	4
Table 4. Child Restraint Use by Type of Vehicle, 2006 - 2012	5
Table 5. Child Restraint Use by Region (Combined Ages), 2006 - 2012	6

EXECUTIVE SUMMARY

This report compares the use of child restraints (car seats and safety belts) in passenger vehicles in Oklahoma over seven observation periods: June 2006, July 2007, July 2008, July 2009, June 2010, June 2011, and June 2012. Visual observations were made at 100 different locations selected on the basis of geography, population, and urban versus non-urban status. Drivers and child passengers from infants to eight year old children were observed to determine proper restraint usage. Twenty-five vehicles carrying children were observed at each of the 100 sites on one specified date per site, yielding a total of 2,500 observations for the state.

Percent Properly Restrained

	2006	2007	2008	2009	2010	2011	2012
Combined	86.7	85.4	85.0	86.3	85.5	82.6	89.1
Infants (Up to 1 year)	78.4	82.5	68.8	74.6	73.1	64.0	82.2
Children (1-8 years)	87.6	85.7	87.3	87.9	87.5	85.6	90.7

Overall, the combined percentage of infants and children properly restrained increased from 86.7% in 2006 to 89.1% in 2012. The 2012 number has risen to the highest level seen in the last few years and reverses a trend of slowly decreasing usage rates. A similar trend was seen for infants and children respectively.

The National Highway Traffic Safety Administration's (NHTSA) State Data System Analysis (Kindelberger and Starnes, 2003) reports that since 1995 more children have been placed in the back seat indicating positive effects of child safety campaigns. Furthermore, infants and children placed in the front seat of vehicles are left unrestrained at a greater rate than their counterparts in the back seat (Pickrell and Ye, 2009). Oklahoma observations during 2012 support the NHTSA findings. Oklahoma infants and small children are less likely to be restrained in the front seat (81.9% restrained) than in the back seat (93.2% restrained).

A comparison to previous survey results shows an increase in the protection rate for infants to its highest rate in the past seven years. The same was true for the protection rate for small children.

Substantial differences in restraint rates exist across the regions of the state although the usage homogenized greatly compared to 2011. It should be noted that the Northeast Region and the Southeast Region showed large improvements moving from the two lowest regions to two of the highest. The two metro regions were still among the highest regions in the state.

Regional Restraint Rates – 2011 & 2012

Region	Percent Properly Restrained in 2011	Percent Properly Restrained in 2012
Oklahoma City Metro	98.5	93.5
Tulsa Metro	88.9	94.8
Southwest	85.7	87.7
Tulsa	81.9	90.9
Oklahoma City	80.9	85.7
Northwest	80.6	90.7
Northeast	76.9	96.4
Southeast	72.4	93.9

The greatest variation in use of child restraints was found when considering whether or not the driver was belted. Infants and small children are more likely to be restrained properly when the driver is wearing a seatbelt (95.4%) than when the driver is not belted (56.7%). Infants and children are much more likely to be properly restrained when riding in a vehicle with a belted driver compared to those riding with an unbelted driver. Pickrell and Ye’s recent report (2009) on child restraint use notes that 92% of birth to 7 year old children driven by buckled drivers were restrained, compared to 54% for children riding with unbelted drivers.

Percent Properly Restrained by Driver Belted or Not

	Driver Belted	Driver Not Belted
Combined	95.4	56.7
Infants (Up to 1 year)	84.5	65.5
Children (1-8 years)	96.6	55.8

The benefits of child restraint use continue to be substantial. The National Highway Traffic Safety Administration (NHTSA) notes that over the period 1975 through 2007, an estimated 8,709 lives were saved by child restraints (child restraints and adult safety belts). Among children under the age of five, an estimated 382 lives were saved in 2007 by child restraint use. An estimated 543 lives could have been saved in 2007 if all children less than five had been restrained. Research on child safety seats has

found them to reduce fatal injury by 71% for infants and by 54% for toddlers (1-4 years old) in passenger cars. These reductions are 58% and 59%, respectively, for infants and toddlers riding in pickup trucks (NHTSA, 2008).

The 2012 Oklahoma child restraint study shows a very strong connection between driver seat belt use and the use of child passenger restraints. This reconfirms the conclusions of previous years: education and public awareness of child restraint protections are strongly related. Special attention to pickup truck drivers should be continued as the protection of infants and children riding in pickup trucks remains lower than any other vehicle type (cars, SUVs, Jeeps, or vans).

Overall, the proportion of infants and small children who are properly restrained has been relatively stable since 2006 but showed a significant rise in 2012. It is too early to know if 2012 was an anomaly or the beginning of a new trend. In light of the data collected in the 2012 study, our recommendations suggest that Oklahoma build upon recent successes by doing the following:

- Continue to encourage and support *vigorous* enforcement of penalties for noncompliance with the Child Passenger Restraint System Act;
- Collect county-level data on enforcement of the use of passenger belts and child restraint devices to document the relationship between enforcement and restraint use;
- Direct special attention (enforcement and education efforts) toward pickup truck drivers since the protection rate of child passengers riding in pickup trucks remains much lower than for any other kind of vehicle;
- Continue to develop and expand statewide public education and awareness programs using guidelines proposed by NHTSA, by encouraging the use of booster seats for older children, the placing of infants and small children in the back seat of all vehicles, and the elimination of exemptions;
- Promote the use of child restraints in identified populations where the highest percentage of young children and their parents are located. This would likely include day care centers, doctor offices, hospitals, and faith-based organizations. Proper instructions for parents, grandparents, older siblings, and other care givers of infants and small children are especially important.

OKLAHOMA CHILD RESTRAINT OBSERVATION STUDY: 2012

INTRODUCTION

This report is the 26th statewide observation study of the use of child restraints by infants (birth to one year) and small children (one to eight years of age) in Oklahoma. The study was conducted by the University of Central Oklahoma, College of Education and Professional Studies (CEPS), Department of Adult Education and Safety Science, Industrial Safety Program, under contract with the Oklahoma Highway Safety Office (OHSO). Observations occurred during June 2012.

The Institute for Public Affairs developed the survey instrument (Appendix A) using various sources, including but not limited to the National Highway Traffic Safety Administration's (NHTSA) 1983 *Guidelines for Conducting a Survey of the Use of Safety Belts and Child Safety Seats*, and NHTSA publications, *Are You Using It Right?* (IP0040), and *Child Transportation Safety Tips* (IP0835). The observation survey instrument includes:

- age of child, location of the child in the vehicle, use or non-use of child restraint devices, position child is facing in the vehicle, vehicle type, and the driver's use or non-use of a seat belt.
- For continuity purposes, the CEPS used the survey instrument (Appendix A) developed by the Institute of Public Affairs at the University of Oklahoma.

BACKGROUND

In March 1983, the Oklahoma Legislature approved H.B. 1005 which required the use of "a passenger restraint system or a properly secured seat belt for children up to the ages of four or five." The law provided that if a motorist with children was observed to be in violation of the law, a law enforcement officer had the discretion to stop the motorist and give the violator a "verbal warning" on the dangers of non-restraint. The statute granted no enforcement or punitive measures for use by the law enforcement officer.

Amendments to the law in 1987 strengthened the 1983 Child Passenger Restraint System Act by providing penalties and fines for violators who failed to properly protect child passengers in their vehicles. The law was amended again in 2004 (S.B.1224) to increase the age of children from 4 to 6 years of age who are required to be transported using a child restraint system. The 2004 amendments also state children at least 6 years of age but younger than 13 years of age shall be protected by the use of a child restraint system or a seat belt.

This study was conducted so as to replicate the previous studies. The basic design for the initial study was a variation on cluster sampling in which a random selection of observation sites was made based on population and geographic distribution. A sufficiently large number of observations were taken to assure a reasonable level of confidence in the results. The methodology employed is

included as Appendix B.

Table 1 provides the frequency distributions for other sample characteristics from the 2006 to 2012 surveys. The proportion of infants in the survey was lower this year than last (9.7% vs. 14.2% in 2011). As in past years, the preponderance of vehicles observed were automobiles (86.6%). Of the drivers, (86.5%) were belted.

TABLE 1							
Frequency Distribution of Sample Characteristics, 2006 - 2012							
CHARACTERISTIC							
<u>Age (N=2,500)</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
Infants (Birth - 1 year)	9.4	11.0	12.2	12.0	13.5	14.2	9.7
Children (1-8 years)	90.6	89.0	87.8	88.0	86.5	85.8	90.3
<u>Type of Restraint (N=2,500)</u>							
Car Seat	43.2	38.1	41.8	44.5	48.1	40.8	47.5
Seat Belt	45.2	49.1	46.5	44.6	40.5	45.9	44.1
No Restraint	11.6	12.8	11.7	10.9	11.4	13.2	8.4
<u>Type of Vehicle (N=2,500)</u>							
Automobile*	88.6	87.4	87.3	87.2	87.2	85.9	86.6
Pickup	11.4	12.6	12.7	12.8	12.8	14.1	13.4
<u>Driver (N=2,500)</u>							
Belted	87.5	84.9	83.5	83.3	88.4	81.0	86.5
Not Belted	12.5	15.0	16.5	16.7	11.6	19.0	13.5

*SUVs, Jeeps, vans, and cars are included within the automobile category for analysis.

ANALYSIS OF STATEWIDE CHILD RESTRAINT USE

The analyses in this section describe child restraint use for the state as a whole for both infants (birth to one year) and small children (from 1 to 8 years of age), then separately for infants and small children during seven separate time periods (from 2006 to 2012). The remainder of the data is presented as combined ages to permit easier comparisons by regions within the state and to facilitate comparisons of Oklahoma data with national usage rates (Table 2).

TABLE 2
Child Restraint Use, 2006 - 2012

<u>Percent Restrained</u>								
<u>Restrained (N=2,500)</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Change 2011- 2012</u>
Restrained (proper and improper)	88.4	87.2	88.3	89.1	88.6	86.8	91.6	+4.8
Properly Restrained	86.7	85.4	85.0	86.3	85.5	82.6	89.1	+6.5
Properly Restrained as a Percent of Restrained (proper and improper)	97.6	97.9	96.3	96.8	96.5	95.2	97.3	+2.1
<u>Percent Properly Restrained</u>								
	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Change 2011- 2012</u>
<u>Infants/Children</u>								
Infants	78.4*	82.5	68.8*	74.6*	73.1*	64.0*	82.2*	+18.2
Children	87.6*	85.7	87.3*	87.9*	87.5*	85.6*	90.7*	+5.1
Combined	86.7	85.4	85.0	86.3	85.5	82.6	89.1	+6.5
<u>Metropolitan Area</u>								
Metropolitan**	89.4*	84.8	89.8*	90.9*	86.5	86.3*	89.6	+3.3
Non-metropolitan	83.2*	86.1	78.7*	80.2*	84.2	77.6*	90.3	+12.7

*Differences are statistically significant at the .0001 level using a two-tailed chi-square test. The tests of significance are calculated within each observation period, not across periods. Thus, the differences between infants and children are statistically significant at the .0001 level for 2012.

**Metropolitan areas include Oklahoma City, Oklahoma City Metro, Tulsa, Tulsa Metro, Enid, and Lawton.

According to the census bureau, Metropolitan Statistical Areas (MSAs) are made up of cities with 50,000 or more in population and include counties that are economically dependent on those central cities. The four Oklahoma MSAs include:

- Oklahoma City proper combined with its outlying metropolitan areas
- Tulsa proper combined with its outlying metropolitan areas
- Enid along with the surrounding area of Garfield County
- Lawton including the surrounding area of Comanche County.

The 2012 survey results showed that the previously seen differences in usage rates between the more urban and rural areas were not evident. It is difficult to tell if this is an anomaly or the beginning of a new trend.

Like other years, the analysis taking into account whether or not the driver was belted showed a stark contrast. The important conclusion from the analysis of these data is the fact that a very strong relationship exists between the driver’s use of a seat belt and the proper restraint of children overall (Table 3). *If the driver is buckled up, children are much more likely to be protected as compared to children riding with unbelted drivers (95.4% versus 56.7%).*

TABLE 3								
Child Restraint Use By Whether or Not the Driver is Belted, 2006-2012								
	<u>Percent Properly Restrained</u>							
<u>Driver Belted</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Change 2011-2012</u>
Infants	79.8*	83.2*	69.5*	72.3*	74.2*	64.7*	84.5*	+19.8
Children	93.6*	95.0*	94.2*	92.5*	93.4*	91.5*	96.6*	+5.1
Combined	92.2	93.6	91.0	89.9	90.7	87.7	95.4	+7.7
<u>Driver Not Belted</u>								
Infants	61.1	75.0*	62.9	93.8*	55.0	61.2	65.5	+4.3
Children	47.5	36.7*	54.1	66.3*	45.4	60.7	55.8	-4.9
Combined	48.2	39.2	54.9	68.4	46.0	60.8	56.7	-4.1

*Differences are statistically significant at the .0001 level using a two-tailed chi-square test. The tests of significance are calculated within each observation period, not across periods. The difference between infants and small children riding with belted drivers is statistically significant at the .0001 level for 2012.

As in the past, the 2012 study recorded the type of vehicle observed. Vehicles were categorized as automobiles and pickup trucks. Table 4 profiles the differences between the protection rate of infants and small children based on the type of vehicle in which they were riding. Like most previous years,

the combined rate for all children properly restrained was higher for automobiles than it was for pickup trucks, although pickup truck drivers did close the gap somewhat compared to other recent years.

TABLE 4								
Child Restraint Use By Type of Vehicle, 2006 - 2012								
	<u>Percent Properly Restrained</u>							
<u>Automobiles</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Change 2011- 2011</u>
Infants	75.9*	85.4	68.7*	73.3*	72.6*	63.2*	81.2	+18.0
Children	87.3*	85.9	89.8*	89.1*	88.8*	86.6*	91.9	+5.3
Combined	86.2	85.8	87.4	87.1	86.4	83.0*	90.9	+7.9
<u>Pickup Trucks</u>								
Infants	79.2	45.8*	45.5*	87.0	73.1	60.0	91.7	+30.7
Children	80.5	79.8*	71.5*	74.5	73.1	77.6	83.3	+6.7
Combined	80.4	77.2	69.7	75.4	73.1	76.1	83.9	+7.8
<u>Vans**</u>								
Infants	86.0*	89.5	76.5*	75.0	76.2*	71.4		
Children	94.1*	90.5	89.3*	94.0	94.0*	89.3		
Combined	93.1	90.4	86.8	91.7	92.0	86.8		

*Differences are statistically significant at the .0001 level using a two-tailed chi-square test. The tests of significance are calculated within each observation period, not across periods.

**Effective in 2012, the vehicle category included cars and pickups.

ANALYSIS OF CHILD RESTRAINT USE BY REGION

For the purposes of this study, the state was divided into four geographical regions, excluding the Oklahoma City and Tulsa areas. These regions include the Northwest (generally west of I-35 and north of I-40), Northeast (east of I-35 and north of I-40), Southwest (west of I-35 and south of I-40), and Southeast (east of I-35 and south of I-40). These four regions were analyzed as mutually exclusive units and compared to the state average. In addition to the four broad geographic regions, Tables 5 includes four other comparisons – 1) Oklahoma City proper, 2) the metropolitan area surrounding Oklahoma City, 3) Tulsa proper, and the 4) metropolitan area around Tulsa.

Table 5 displays child restraint use by region from 2006 to 2012.

TABLE 5								
Child Restraint Use By Region (Combined Ages), 2006 – 2012								
<u>Region</u>	<u>Percent Properly Restrained</u>							<u>Change 2011 - 2012</u>
	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	
Statewide, Combined Areas	86.7	85.4	85.0	86.3	85.3	82.6	89.1	+6.5
Oklahoma City	92.0	73.8	88.4	96.0	86.7	80.9	85.7	+4.8
Oklahoma City Metro	94.5	85.8	94.2	94.2	89.1	98.5	93.5	-5.0
Tulsa	86.1	95.5	88.3	85.6	86.7	81.9	90.9	+9.0
Tulsa Metro	87.4	96.0	92.6	88.6	85.7	88.9	94.8	+5.9
Northeast Region	81.8	90.4	83.8	84.4	88.7	76.9	96.4	+19.5
Northwest Region	85.7	81.1	87.4	89.1	84.0	80.6	90.7	+10.1
Southeast Region	86.4	84.8	74.4	74.0	78.0	72.4	93.9	+21.5
Southwest Region	81.1	79.7	74.3	76.9	82.0	85.7	87.7	+2.0

The most important trend to note in the regional data is the relatively high usage rate increase across all regions in 2012 (compared to previous years). In fact, the lowest usage rate was 85.7% and in 2011, only two regions were higher than 85.7%. This shows a marked increase across the state and a homogenization of usage rates in different parts of the state. It’s too early, however, to tell if this finding is an anomaly or the beginning of a new trend.

SUMMARY AND RECOMMENDATIONS

The results of the 2012 survey can be summarized as follows:

- The combined (infants and small children from birth to age 8) statewide rate for proper child restraint use was 89.1%. This is an increase from 2011 and is the highest use rate over the past seven years.
- The percentage of infants and small children not restrained at all in 2012 was 8.4%. This was down markedly from the 13.2% recorded in 2011.
- Infants (birth to one year) were properly restrained at a rate of 82.2%. This was up from 64.0% in 2011 and is the highest rate in recent years.
- Small children (age 1- 8 years) were properly restrained at a rate of 90.7% (up from 85.6% in 2011).
- There was no statistical difference between restraint use by infants and children observed in MSAs (89.6%) and those observed in non-MSAs (90.3%). This reversed a long-term trend where MSAs had higher usage. Data in future years will be needed to determine if this finding was an anomaly or whether it is a new trend.
- Infants and small children traveling in automobiles were more likely to be properly restrained (90.9%) than those riding in pickup trucks (83.9%) although this difference was much smaller than in previous years.
- Like previous surveys, the most striking distinction was in the difference between the safety of infants and small children riding in vehicles when the driver was using a seat belt (95.4% properly restrained) than when the driver was not belted (56.7% of children properly restrained) - a 38.7 percentage point difference. This may indicate that the unbelted drivers now represent truly “hardcore” non-users.
- When comparing geographic regions, the large differences that had existed in previous years were less evident. In fact, two of the lowest usage areas in 2011 showed very large gains in 2012 and no region was below 85.7% in 2012. In contrast, only two regions were above 85.7% in 2011. Whether this broad increase and homogenization of usage rates is an anomaly or represents a new trend is unclear at this point.

The benefits of child restraint use continue to be substantial. The National Highway Traffic Safety Administration notes that over the period 1975 through 2007, an estimated 8,709 lives were saved by child restraints and adult safety belts. Among children under the age of five, an estimated 382 lives were saved in 2007 by child restraint use. An estimated 543 lives could have been saved in 2007 if all children less than five had been restrained. In 2007, of the 317 deaths of children under the age of 4,

28% were unrestrained, when restraint use was known. Similarly, 44% of the 265 fatalities among children four to seven years old were unrestrained. Research on child safety seats has found them to reduce fatal injury by 71% for infants and by 54% for toddlers (1-4 years old) in passenger cars. These reductions are 58% and 59%, respectively, for infants and toddlers riding in pickup trucks (NHTSA, 2008).

The Oklahoma Department of Public Safety's Highway Safety Office (2010) notes in its *Children Age 1-8 in 2009 Crashes Fact Sheet* report there were 3,533 child passengers in passenger vehicles and pickup trucks involved in crashes. Of these, 16 were killed and 1,401 were injured. Three of the fatalities were not restrained, two infants were restrained improperly (forward facing child restraint) and two children were restrained by a lap belt only (proper restraint once the child is 4'9" tall and over 70 pounds). The majority of child passenger fatalities occurred in 4-door passenger vehicles and SUVs in 2009 crashes.

Overall, the proportion of infants and small children who are properly restrained had been relatively stable since 2006 but showed a significant rise in 2012. It is too early to know if 2012 was an anomaly or the beginning of a new trend. **In light of the data collected in the 2012 study, our recommendations suggest building upon recent successes and suggest that Oklahoma does the following:**

- Continue to encourage and support *vigorous* enforcement of penalties for noncompliance with the Child Passenger Restraint System Act;
- Collect county-level data on enforcement of the use of passenger belts and child restraint devices to document the relationship between enforcement and restraint use;
- Direct special attention (enforcement and education efforts) toward pickup truck drivers since the protection rate of child passengers riding in pickup trucks remains much lower than for any other kind of vehicle;
- Continue to develop and expand statewide public education and awareness programs using guidelines proposed by NHTSA, by encouraging the use of booster seats for older children, the placing infants and small children in the back seat of all vehicles, and the elimination of exemptions;
- Promote the use of child restraints in identified populations where the highest percentage of young children and their parents are located. This would likely include day care centers, doctor offices, hospitals, and faith-based organizations. Proper instructions for parents, grandparents, older siblings, and other care givers of infants and small children are especially important.

REFERENCES

- James, Thomas and Matthew Krimmer. 2008. *Statewide Child Restraint Survey, 2008*: Norman, OK: The University of Oklahoma, Institute for Public Affairs. July
- Kindelberger, John and Marc Starnes. 2003. *Moving Children from the Front Seat to the Back Seat: The Influence of Child Safety Campaigns*. DOT HS 809 698. Washington, D.C.: National Highway Traffic Safety Administration, National Center for Statistics and Analysis.
- National Highway Traffic Safety Administration, National Center for Statistics and Analysis. 2008. *Traffic Safety Facts 2007 Data–Occupant Protection*. DOT HS 810 991. Washington, D.C.: National Center.
- Guidelines for Conducting A Survey of the Use of Safety Belts and Child, 1983. Safety Seats. Washington, D.C.: National Center.
- Are YOU Using It Right?* Washington, D.C.: National Center. IP0040, 2000.
- Child Transportation Safety Tips*. Washington, D.C.: National Center. IP0835, 2000.
- Oklahoma Department of Public Safety, Oklahoma Highway Safety Office. 2010. *Children Age 1-8 in 2009 Crashes Fact Sheet*. <http://spss.dps.state.ok.us/sv/catalog> July.
- Pickrell, Timothy and Tony Jianqiang Ye. 2009. *Child Restraint Use in 2008 – Overall Results*. DOT HS 811 135. Washington, D.C.: National Highway Traffic Safety Administration, National Center for Statistics and Analysis. May.

APPENDIX A
Oklahoma Child Restraint Observation Form

June 2012

Observer: _____

Location: _____

Observation Date: _____

Site ID#: _____

Start Time: _____ **End Time:** _____

If location changed - indicate where you were when you observed - and if you moved during the observation period to another location - indicate that below, in addition to identifying the observation number in which you relocated.

After 1 hour, I changed location
to: _____ **within 1 mile of the original**
site locale.

INFANT OR CHILD						DRIVER
	Child's Age I=Infant (newborn - 1yr.) C=Child (+1-8 yrs. old)	Location of Child F=Front B=Back	Child Protection S=Car Seat B=Belted N=No Protection	Child Facing F=Front B=Back	Vehicle C=Car P=Pickup	Belted Y=Yes N=No
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

INFANT OR CHILD						DRIVER
	Child's Age I=Infant (newborn - 1yr.) C=Child (+1-8 yrs. old)	Location of Child F=Front B=Back	Child Protection S=Car Seat B=Belted N=No Protection	Child Facing F=Front B=Back	Vehicle C=Car P=Pickup	Belted Y=Yes N=No
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Please add any comments, corrections, or additional observation dates (including start and end times) if applicable:

APPENDIX B METHODOLOGY

The methodology employed to conduct the child restraint survey was based on several considerations:

- The approach followed should conform to NHTSA recommendations described in the 1983 Guidelines for Conducting a Survey of the Use of Safety Belts and Child Safety Seats.
- Only privately-owned passenger vehicles (including vans and pickups) were observed, consistent with the requirements of the state law.
- Only children covered under 47 O.S. Supp. 2004 § 11-1112 were counted. The 2004 amendments to the law (SB 1224) require all infants and children from birth to age 6 be in an approved "child passenger restraint system" whether in the front or back seat. Given the limitations of observing children in a few seconds at roadway intersections and shopping malls, no distinction was made between the ages of 1 to 6. Thus, if a small child (other than an infant) was belted in the front or back seat, it was recorded as a properly belted observance.
- Drivers would be counted because of their culpability under the law and to permit a comparison to the statewide surveys of automobile safety belt use.
- In part because of procedures established when earlier child restraint surveys were conducted, the actual mode of observation would follow both a training manual prepared by the Institute for Public Affairs under a previous contract with OHSO and NHTSA's Guidelines.
- A modified random selection of sites was used that assured an adequate dispersion of sites geographically and by a metropolitan/non-metropolitan division.

General Site Selection

The total number of observation sites selected was first determined by a division of the state by metropolitan statistical area (MSA) and non-MSA classification. Using Census data for 2000, 60.8% of the state's population resides in an MSA.

One hundred randomly chosen sites with 25 observations per site were selected, yielding a sample size of 2,500. Of these 100 sites, 57 were in MSAs and 43 were in non-MSAs. Assignment for sites within the MSAs was based on the weighing of a particular MSA's population against the total metropolitan population in the state (less the Ft. Smith, Arkansas MSA). Using this criterion the Oklahoma City MSA was assigned the greatest number of sites (29). Enid, being the smallest MSA, had the fewest sites (2).

The non-MSA remainder of the state was divided into four quadrants using the two principal north-south and east-west arterial highways bisecting the state, Interstate Highway 35 (I-35, north-south) and Interstate Highway 40 (I-40, east-west). Each quadrant was allotted its proportionate number of the 43 remaining sites based on its share of the state's population. Certain unusual site determinations resulted from the procedure outlined above. For example: although Enid has nearly four times the population of Woodward in the northwest, because Enid is an MSA it was assigned only two sites. Woodward, a non-MSA community, was designated for three sites because it was the largest community in the northwest when Enid was deleted from consideration.

The 100 observation sites were chosen as follows:

Oklahoma City and Metro	29
Tulsa and Metro	22
Enid	2
Lawton	4
Non-MSA	<u>43</u>
	100

Specific Site Selection

The sites were chosen in the following manner:

- City maps were used to provide a geographical distribution of sites in each city. Further, U.S. Bureau of the Census population data were used to capture an adequate measure of the socioeconomic and racial mix of each city;
- Tentative locations chosen for both their suitability and accessibility by the general population were designated;
- Field checks by survey teams were then made to ascertain the suitability of each tentative site. Shopping malls, fast food restaurant chains, department store chains, and recreation facilities were selected based on the following characteristics:
 - a) accessibility by the general population to the selected site;
 - b) accessibility to vehicular traffic;
 - c) sufficient traffic volume existing to generate 25 observations of children in cars;
 - d) locations represented the regional variations in socioeconomic and racial characteristics;

The observer was advised that upon arrival at a specific observation site a determination should be made as to its suitability following the criteria enumerated above. If the pre-assigned site was not suitable, the observer was permitted to make another selection that would be more satisfactory. In most cases when a change was necessary, a site within one mile of the original site was used.

The following lists the specific communities and exact locations where child restraints were observed:

Site ID	LOCATION
1	OKC: McDonald's (NW 122 nd at Penn)
2	OKC: Babies R' Us (Penn at NW 50th)
3	OKC: Academy Sports/Chuck E Cheese I-240 at SW 74th)
4	OKC: McDonald's (NW 23 rd at Penn)
5	OKC: McDonald's (SW 59th at Penn)
6	OKC: Target (SW 44 th at Western)
7	OKC: Walmart Supercenter (I-240 at Santa Fe)
8	OKC: Walmart (NW 23 rd at MacArthur)
9	OKC: Target (7012 NW Expressway)
10	OKC: Science Museum (2100 NE 50 th) NE 50th at MLK
11	OKC: Sonic/McDonald's (5815 Martin Luther King Blvd.)
12	OKC: McDonald's (6700 N. May)
13	OKC: McDonald's (10809 N. May at Hefner Rd.)
14	OKC: McDonald's (5812 NW Expressway)
15	OKC: McDonald's (113 NW 23)
16	OKC: Braum's (I-240 at S. May)
17	OKC: Oklahoma City Zoo (2101 NE 50 th at Martin Luther King Blvd.)
18	OKC: Braum's (436 SW 59th)
19	Edmond: Braum's / Walmart (15 th at I-35)
20	Edmond: Super Target (1200 E. 2 nd St.)
21	Norman: Walmart Supercenter (Main at I-35)333 N Interstate Dr.
22	Norman: Super Target (Robinson at I-35) 1400 24th Ave NW
23	Norman: Walmart Supercenter (Main at 601 12th Ave NE)
24	Midwest City: McDonald's (7025 SE 15th)
25	Midwest City: Walmart Supercenter (9001 NE 23rd)
26	Moore: Walmart (501 S.E. 19 th at I-35)
27	Mustang: McDonald's (I-40 at Mustang Rd.)
28	Yukon: McDonald's (31 W Main)
29	Bethany: McDonald's (7061 NW 23rd)
30	El Reno: McDonald's (2424 S Country Club Dr.)
31	Purcell: McDonald's (2211 S 9th Ave)
32	Noble: Mr. C's Grocery (US 77/Main St)
33	Tulsa: Woodland Hills Mall (7021 S. Memorial)
34	Tulsa: Walmart (81 st at Lewis)
35	Tulsa: McDonald's (51 st at Memorial)
36	Tulsa: Quick Trip (12910 E 21st St)
37	Tulsa Promenade Mall (41 st Street at Yale)
38	Tulsa: Quick Trip (1302 S Garnett Rd)
39	Tulsa: McDonald's (S Harvard at E 14th St)
40	Tulsa: Big Splash Water Park/Centennial Wayne Plaza (21 st Street at Yale)
41	Tulsa: Walmart (6310 S. Elm Place)
42	Tulsa: Braum's (5048 S. 33 rd West Ave.)

- 43 Tulsa: Pyrimid Foods/Chili's 3328 E 51st St
- 44 Tulsa: McDonald's (4935 S Memorial)
- 45 Tulsa: McDonald's (4249 S. Yale)
- 46 Jenks: McDonald's (605 W Main)
- 47 Tulsa: Wendy's (1905 E 21st)
- 48 Broken Arrow: Walmart (2301 Kenosha)
- 49 Broken Arrow: McDonald's (3800 S. Elm Place)
- 50 Broken Arrow: McDonald's (2525 N Aspen)
- 51 Bristow: Walmart (Main at SH16)
- 52 Owasso: McDonald's (7590 Owasso Expressway)
- 53 Sand Springs: Wendy's (Adams Road at Charles Page Blvd.)
- 54 Sapulpa: Walmart (Hwy. 117 at US 66)
- 55 Cushing: Walmart Supercenter (3100 E Main St)
- 56 Stroud: McDonald's (801 Ada Webb Dr.)
- 57 Chandler: IBC Bank (3108 E 1st St) (In front of Walmart)
- 58 Enid: McDonald's (Maine at Van Buren)
- 59 Enid: Oakwood Mall (O.K. Garriott at Oakwood)
- 60 Bartlesville: Braum's (2539 SE Washington)
- 61 Bartlesville: Walmart (4000 SE Green Country Rd)
- 62 Muskogee: Braum's (2909 Old Shawnee Road)
- 63 Muskogee: McDonald's (101 S. 32nd Street)
- 64 Muskogee: McDonald's (2415 Chandler)
- 65 Stillwater: McDonald's (920 W. 6th)
- 66 Stillwater: Walmart (Virginia at Perkins Rd.)
- 67 Stillwater: YMCA (3rd at Duck)
- 68 Ponca City: Ponca Plaza (N 14th Street)
- 69 Pawnee: Sonic (521 4th Street)
- 70 Techumseh: Sonic (109 E Walnut St)
- 71 Ponca City: Walmart Supercenter (Prospect Ave.)
- 72 Ponca City: McDonald's (N. 14th)
- 73 Shawnee: McDonald's (4849 N Kickapoo St)
- 74 Cushing: Braum's (Main St at Linwood Ave)
- 75 Tahlequah: Walmart (Musgkogee Ave)
- 76 Okmulgee: Walmart (Hwy. 75 South)
- 77 Okmulgee: Dairy Queen (W. 56 Hwy.)
- 78 Okmulgee: Burger King/Shell (2800 N Wood Drive)
- 79 Pawhuska: Family Dollar (East 6th Street)
- 80 Skitook: Walmart (778 W. Rogers Blvd.)
- 81 Wagoner: Walmart (State Highway 51)
- 82 Coweta: Country Mart (13937 S Highway 51)
- 83 Pryor: Walmart (4901 S Mill St.)
- 84 Ft. Gibson: Harp's Food Store (1010 E Poplar St)
- 85 Lawton: Central Mall (2nd at C Streets)
- 86 Lawton: McDonald's (30SW Sheridan at Gore)
- 87 Lawton: Shopping Center Strip Mall (Sheridan at Gore)

- 88 Lawton: Walmart Supercenter (Sheridan at Gore)
- 89 McAlester: Walmart (Hwy. 69 at Comanche)
- 90 McAlester: McDonald's (1758 E. Carl Albert Pkwy)
- 91 Krebs: Baseball Field/Park (Electric Ave)
- 92 Sallisaw: Swimming Pool/Park (Redwood at West of Hospital)
- 93 Gore: Harp's Grocery (State Hwy 100 at State Hwy 10)
- 94 Poteau: McDonald's (1801 N Broadway)
- 95 Spiro: Baseball Field (Hwy 271 - W of Hwy 59 (Cavanal Scenic))
- 96 Duncan: Braum's (1850 N Hwy 81)
- 97 Duncan: McDonald's (1845 N Hwy 81)
- 98 Duncan: Walmart (1845 N Hwy 81)
- 99 Chickasha: Braum's (2030 S 4th Street at Grand)
- 100 Chickasha: Walmart (2030 S. 4th)

Comment on Sampling Procedure

As indicated previously, the procedure followed for selecting locations does not produce a strictly random sample. The design employed for this effort does bear some similarity, however, to a multistage cluster sampling procedure, in which samples are taken of groups of elements (clusters) followed by the selection of elements within each selected cluster. In this case, the initial clusters were MSA/non-MSA. Then a further stratification was employed on the basis of geographical regions of the state. Finally, population size and observation site were incorporated into the final selection process. Strictly speaking, the decision to choose one city or town over another was not completely random; however, the procedure followed in selecting observation locations along with total number of sites and observations collected should, in combination, yield a fairly representative picture of the actual proportion of Oklahoma children covered under the law who may or may not be currently protected by either child safety seats or seat belts. The continued use of the procedure and design employed for the initial survey should permit a reasonably accurate assessment of changes in restraint use over time.

Observer Selection and Training

The observers participated in a classroom seminar session in which the nature of the project was discussed followed by a detailed briefing of data collection procedures based on the previously mentioned NHTSA Guidelines (1983) and the Institute for Public Affairs Training Manual (2010). The second training phase involved a field exercise, which required the actual observation of child restraint use at a particular location simulating actual field conditions and the completion of the forms for recording those observations.

Data Collection Procedures

Observers were told to follow the procedures outlined in the Guidelines and Training Manual. The child safety seat observation form was provided for each site (Appendix A). Observers were instructed to:

- 1) Record the date, day of week, and time of observations;
- 2) Record the exact location of each site;
- 3) Record the age (infant or small child) of the child;
- 4) Record whether or not the child was restrained, the type of restraint, and the direction the child was facing in the vehicle;
- 5) Record the type of vehicle (automobile or pickup); and,
- 6) Record whether or not the driver was belted.

It should be noted that observers use the SUV/Jeep code to minimize observer error but these vehicles are subsequently re-coded as automobiles for analysis. For all sites, the observations were made within a four week period between the hours of 6:00 a.m. and 9:00 p.m.