

STATEWIDE CHILD RESTRAINT SURVEY

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EXECUTIVE SUMMARY

This report compares the use of child restraints (car seats and safety belts) in passenger vehicles in Oklahoma over six observation periods: July/August 2003, May 2004, May 2005, June 2006, July 2007, and July 2008. 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 six 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

	2003	2004	2005	2006	2007	2008
Combined	75.7	80.6	82.7	86.7	85.4	85.0
Infants (less than 1 year)	73.8	65.8	73.4	78.4	82.5	68.8
Children (1-6 years)	75.9	83.0	84.1	87.6	85.7	87.3

Overall, the combined percentage of children who were properly restrained increased from 75.7% in 2003 to 85.0% in 2008. Over this six-year period, the protection rate for infants decreased from 73.8% to 68.8%. However, the properly restrained rate for infants was unusually low in 2008 compared to recent years. The percentage of small children who were properly restrained increased from 75.9% to 87.3%. The rates for Oklahoma infants and small children using any type of restraint (car seat, booster seat, seat belt) compare very favorably with the national data. Of those observed in the 2008 Oklahoma study, 95.7% of the infants and 87.3% of the small children were restrained in some way with an overall rate of 88.3%. Data presented in the National Occupant Protection Use Survey for 2007 (Glassbrenner, 2008) indicates that 98.0% of infants, 96.0% of children age 1-3, and 85.0% of 4-7 year olds were restrained in some type of restraint. Nationally the overall restraint rate was 89.0%.

The National Highway Traffic Safety Administration's (NHTSA) State Data System Analysis published in November 2003 (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 (Glassbrenner, 2008). Oklahoma observations during 2008 support the NHTSA findings. Oklahoma infants and small children are less likely to be restrained in the front seat than in the back seat (24.0% to 8.5%).

A comparison to the 2007 survey results shows an decrease in the protection rate for infants from 82.5% to 68.8%, while the protection rate for small children increased from 85.7% in 2007 to

87.3% in 2008. The difference in the properly restrained rate for white infants and small children compared to non-whites continued to decrease. In 2008, the rates are virtually the same—85.0 % for white infants and small children combined and 85.1% for non-white and infants and small children. Children in vehicles observed within urban areas compared to those in non-urban areas were restrained at a substantially higher rate (89.8% to 78.7%). The safety of infants and small children riding in vans was highest with 86.8% properly restrained, followed by 87.4% in automobiles, and 69.7% in pickup trucks.

Substantial differences in restraint rates exist across the regions of the state. Oklahoma City’s surrounding metropolitan area (94.2%) and the Tulsa metro area (92.6%) had the highest percentage of infants and small children properly restrained. The Southeast and Southwest Regions had the lowest restraint rates (77.4% and 77.3%, respectively).

Regional Restraint Rates - 2008

Region	Percent Properly Restrained
Oklahoma City Metro	94.2
Tulsa Metro	92.6
Oklahoma City Proper	88.4
Tulsa Proper	88.3
Northwest	87.4
Northeast	83.8
Southeast	77.4
Southwest	77.3

The greatest variation in use of child restraints was found when considering whether or not the driver was belted. Infants and small children are much more likely to be restrained properly when the driver is wearing a seatbelt (91.0%) than when the driver is not belted (54.9%). Infants and children are 1.7 times more likely to be properly restrained when riding in a vehicle with a belted driver compared to those riding with an unbelted driver. NHTSA reviewed data collected from 1991 through 2001 on fatal crashes and found the probability of a child being restrained is 2.1 times greater when the child is with a restrained driver versus being with an unrestrained driver (Starnes, 2003). Similarly, Glassbrenner’s (2008) recent report on child restraint use notes that 92% of birth to seven year old children driven by buckled drivers were restrained, compared to 61% for children riding with unbelted drivers.

Percent Properly Restrained by Driver Belted or Not

	Driver Belted	Driver Not Belted
Combined	91.0	54.9
Infants (less than 1 year)	69.5	62.9
Children (1-6 years)	94.2	54.1

The benefits of child restraint use continue to be substantial. The National Highway Traffic Safety Administration notes that over the period 1975 through 2006, an estimated 8,325 lives were saved by child restraints. Among children under the age of five, an estimated 425 lives were saved in 2006 by child restraint use. An estimated 521 lives could have been saved in 2006 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, 2007).

The 2008 Oklahoma child restraint study shows a very strong connection between drivers' seat belt use and the use of child passenger restraints, reconfirming 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).

Although there was a very slight decrease (0.4) in the properly restrained rate from 2007 to 2008, it is not statistically significant and, for all intents and purposes, there is no differences in the 2007 and 2008 rates. Generally, the proportion of infants and small children who are properly restrained continues to increase across the state. In light of the data collected in the 2008 study, our recommendations mirror those of recent years:

- ◆ Continue to encourage and support vigorous enforcement of the Child Passenger Restraint Systems 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 the protection rates for any other kind of vehicle;

- ◆ Continue to develop and expand statewide public education and awareness programs using NHTSA guidelines – including the use of booster seats, the safety gains realized from putting infants and children in the back seat of vehicles, and the elimination of exemptions;
- ◆ Expand child restraint loaner programs, especially for those living in the rural areas of Oklahoma and drivers of pickup trucks – groups that historically have a below average rate of use. This outreach should not be to the exclusion of other groups or areas, since recent gains in usage should be encouraged to continue.
- ◆ Promote the use of child restraints within day care centers, doctor offices, hospitals, and faith-based organizations. Proper instruction for parents, grandparents, older siblings, and other care givers of infants and children is especially important.

STATEWIDE CHILD RESTRAINT OBSERVATION STUDY: 2008

INTRODUCTION

This report is the 22th statewide observation study of the use of child restraints by infants (birth to one year) and small children (one to six years of age) in Oklahoma. The study was conducted by the Institute for Public Affairs, University of Oklahoma, under contract with the Oklahoma Highway Safety Office (OHSO). Observations occurred during July 2008.

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, race of child, use or non-use of child restraint devices, position child is facing in the vehicle, location of the child in the vehicle, vehicle type, gender of driver, and the driver's use or non-use of a seat belt.

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 that children at least six 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.

The procedure used to select sites in Oklahoma yielded a sample in which non-whites appear to be somewhat under represented. The 2008 sample of 2,500 children contains a racial composition of 79.2% white and 20.8% non-white (Table 1). Observers were instructed to code racial/ethnic groups such as Native Americans, Hispanics, and Asians as "white." Of the total population, 60.8% resided in a Metropolitan Statistical Area (excluding the Ft. Smith, Arkansas MSA) at the time of the 2005 census update. In the 2008 sample, 57% of the observations were drawn from an MSA, including the Oklahoma City metropolitan area, the Tulsa metropolitan area, Lawton and its surrounding communities, and the Enid area.

Table 1 also provides the frequency distributions for other sample characteristics from the 2003 to 2008 surveys. The proportion of infants observed relative to small children is up slightly compared to the previous two years. As in past years, the preponderance of vehicles observed were automobiles (73.4%). Of the drivers, 83.5% were belted.

TABLE 1
Frequency Distribution of Sample Characteristics, 2003-2008

CHARACTERISTIC	2003	2004	2005	2006	2007	2008
<u>Race (N=2,451)</u>						
White	83.8	79.9	77.3	76.8	80.6	79.2
Non-white	16.2	20.1	22.7	23.2	19.4	20.8
<u>Age (N=2,500)</u>						
Infants (Birth - 1 year)	8.8	14.2	13.1	9.4	11.0	12.2
Children (1-6 years)	91.2	85.8	86.9	90.6	89.0	87.8
<u>Type of Restraint (N=2,500)</u>						
Car Seat	41.6	52.1	39.6	43.2	38.1	41.8
Seat Belt	35.9	32.8	46.0	45.2	49.1	46.5
No Restraint	22.5	15.2	14.3	11.6	12.8	11.7
<u>Type of Vehicle (N=2,500)</u>						
Automobile*	67.7	71.3	69.8	71.8	74.0	73.4
Pickup	11.8	12.0	11.4	11.4	12.6	12.7
Van	20.6	16.7	18.7	16.8	13.3	14.0
<u>Driver (N=2,500)</u>						
Belted	75.2	80.1	80.4	87.5	84.9	83.5
Not Belted	24.8	19.9	19.6	12.5	15.1	16.5

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

ANALYSIS OF STATEWIDE CHILD RESTRAINT USE

The analysis in this section presents child restraint use for the state as a whole for both infants (birth to one year) and small children (from one to six years of age), then separately for infants and small children during six separate time periods (from 2003 to 2008). The remainder of the data are presented as combined ages to permit easier comparisons by regions within the state and to facilitate comparisons of Oklahoma data with national usage rates.

As indicated in Table 2, the proportion of children observed in 2008 who were restrained properly and improperly (88.3%) increased somewhat and those who were properly restrained (85.0%) decreased slightly compared to 2007 (+1.2 and -.4 percentage points, respectively). Of those infants and children restrained in either a car seat or belt (proper and improper), 96.3% were restrained properly. Data presented in the National Occupant Protection Use Survey for 2007 (Glassbrenner, 2008) indicates that 98% of infants, 96% of children age 1-3, and 85% of 4-7 year olds were restrained in some type of restraint. Nationally the overall restraint rate was 89%. Of those observed in the 2008 Oklahoma study, 95.7% of the infants and 87.3% of the small children were restrained (properly and improperly). The rates for Oklahoma compare vary favorably with the national data.

Proper restraint rates across categories are better understood from a long-term perspective rather than a simple comparison to the previous year. As shown in Table 2, the rate of infants and small children who were properly restrained generally have increased since 2003. However, the properly restrained rate for infants dipped sharply in 2008. This likely to be an anomaly and likely will rebound in the near future. The rate for small children continued its upward trend and 87.3% were properly restrained in 2008, compared to 75.9% in 2003.

Generally, small children have been more likely to be properly restrained than infants and the same pattern is evident in 2008 with 87.3% of small children properly restrained compared to 68.8% of infants. Overall, 85.0% of the total sampled infants and children in 2008 were properly restrained as compared with 75.7% in 2003, an overall increase of 9.3 percentage points.

When considering race, white infants and children combined experienced a slight decrease (1.0 percentage points) in the properly restrained rate, while the rate for non-white infants and children combined increased by 2.5 percentage points. The past six years have seen a continuation of the general decline in the difference in the properly restrained rates for white and non-white infants and children. The rates for 2008 are virtually the same (85.0% for whites and 85.1% for non-whites). The protection rates for white and non-white children have increased by 8.3 and 14.7 percentage points, respectively, from 2003 to 2008.

TABLE 2

Child Restraint Use, 2003-2008

<u>Percent Restrained</u>							
<u>Restrained (N=2,500)</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>Change 2007-2008</u>
Restrained (proper and improper)	77.5	84.8	85.7	88.4	87.2	88.3	+1.1
Properly Restrained	75.7	80.6	82.7	86.7	85.4	85.0	-0.4
Properly Restrained as a Percent of Restrained (proper and improper)	97.7	95.0	96.5	97.6	97.9	96.3	-1.3
Not Restrained	22.5	15.2	14.3	11.6	12.8	11.7	-1.1
<u>Percent Properly Restrained</u>							
	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>Change 2007-2008</u>
<u>Infants/Children</u>							
Infants	73.8	65.8*	73.4*	78.4*	82.5	68.8* (N=304)	-13.7
Children	75.9	83.0*	84.1*	87.6*	85.7	87.3* (N=2,196)	+1.6
Combined	75.7	80.6	82.7	86.7	85.4	85.0 (N=2,216)	-0.4
<u>Race</u>							
White	76.7*	82.1*	84.9*	87.3	86.0*	85.0 (N=1,651)	-1.0
Non-white	70.4*	74.0*	74.5*	84.7	82.6*	85.1 (N=433)	+2.5
<u>Metropolitan Area</u>							
Metropolitan**	75.7	82.9*	85.4*	89.4*	84.8	89.8* (N=1,280)	+5.0
Non-metropolitan	75.6	77.5*	79.1*	83.2*	86.1	78.7* (N=846)	-7.4

*Differences are statistically significant at the .05 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 white and non-white children for 2008 are statistically significant at the .05 level.

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

The 2008 study once again indicated a difference in child protection when observations at the 100 sites were analyzed by comparing those observed in Metropolitan Statistical Areas (MSAs) (89.8% protected) to those in non-MSAs (78.7%). According to the census bureau, 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 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, and Lawton including the surrounding area of Comanche County. The MSA protection rate was higher in 2008 and reversed the decrease experienced in 2007 (89.8% compared to 84.8%). Since 2003, the overall protection rate for infants and small children residing in an MSA increased 14.1 percentage points. The protection rate in non-MSAs also improved over the last six years (3.1 percentage points), but not as much. The long-term change was reduced negatively affected by the drop of 7.4 percentage points from 2007 to 2008.

As noted previously, of the 2500 drivers observed, 83.5% were belted. Table 3 shows the dramatic difference in child restraint use when the driver of the vehicle is using a safety belt, compared to when the driver is not belted. Overall, 91.0% of the infants and children riding with a belted driver were properly restrained with only 54.9% of the infants and children properly restrained when riding with a driver who was not using a safety belt. When infants and children are combined, there has been an increase of 6.0 percentage points between 2003-2008 when riding with a belted driver. The percentage of properly restrained infants (with a belted driver) has decreased substantially (78.3% in 2003 to 69.5% in 2008). However, the percentage of infants restrained properly declined by 13.7 percentage points from 2007 to 2008. The proper restraint rate for small children has increased by 8.4 percentage points since 2003. When the driver was not belted, 54.1% of small children were properly restrained in 2008 (a 7.0 percentage point increase since 2003), and 62.9% of infants were properly restrained (an increase of 11.5 percentage points since 2003). The combined proper restraint rate when the driver was not belted was 54.9% in 2008, an increase of 7.6 percentage points since 2003.

In comparison to the 2007 results, the 2008 survey reflects an overall decrease of 2.6 percentage points (93.6% to 91.0%) for properly restrained infants and small children in vehicles in which a driver was using a safety belt. Infants were properly restrained at a substantially lower rate in 2008 compared to 2007 (69.5% and 83.2%, respectively). The percentage of small children who were protected decreased only slightly, from 95.0% in 2007 to 94.2% in 2008.

When the driver was not belted, there was a substantial overall increase in proper restraint use of 15.7 percentage points (39.2% to 54.9%) from 2007 among all children observed. The percentage of small children who were properly restrained increased from 2007 to 2008 by 17.4 percentage points (36.7% to 54.1%), while protected infants experienced a decrease (12.1 percentage points – 75.0% to 62.9%). However, it should be noted that the restrained rate for infants and children in vehicles with an unbelted driver was very low in 2007 and only 22 infants were observed with unbelted drivers. 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. *If the driver is buckled up, children are 1.7 times more likely to be protected as compared to children riding with unbelted drivers (91.0% versus 54.9%).*

TABLE 3

Child Restraint Use By Whether or Not the Driver is Belted, 2003-2008

<u>Driver Belted</u>	<u>Percent Properly Restrained</u>						<u>Change</u>
	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2007-2008</u>
Infants	78.3	68.6*	80.4*	79.8*	83.2*	69.5*	-13.7
Children	85.8	94.8*	96.2*	93.6*	95.0*	94.2*	-0.8
Combined	85.0	90.8	94.1	92.2	93.6	91.0	-2.6
						(N=1,900)	
<u>Driver Not Belted</u>							
Infants	51.4	49.0*	37.3	61.1	75.0*	62.9	-12.1
Children	47.1	38.3*	36.3	47.5	36.7*	54.1	+17.4
Combined	47.3	39.4	36.4	48.2	39.2	54.9	+15.7
						(N=226)	

*Differences are statistically significant at the .05 level using a two-tailed chi-square test. The tests of significance are calculated within each observation period, not across periods. For example, the difference between infants and small children riding with belted drivers for 2008 is statistically significant at the .05 level.

As in the past, the 2008 study recorded the type of vehicle observed. Vehicles were categorized as automobiles (73.4% of the observations), pickup trucks (12.7%), or vans (14.0%). 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 the highest for vans. Infants and children riding in vans had a combined properly restrained rate of 86.8% (a 10.1 percentage point increase from 2003), while 87.4% of infants and children riding in automobiles were properly restrained (a 10.6 percentage point increase from 2003). Combined protection rates in pickup trucks continued to be the lowest at 69.7% (a 2.4 percentage point increase from 2003).

In comparison to the 2007 results, the combined rate of proper restraint increased for automobiles but decreased for pickups and vans. The percentage of those riding in automobiles who were properly restrained increased from 85.8% to 87.4% (1.3 percentage points). Infants and children properly restrained decreased when riding in pickup trucks (77.2% to 69.7%) and vans (90.4% to 86.8) by 7.5 and 3.6 percentage points, respectively.

TABLE 4
Child Restraint Use By Type of Vehicle, 2003-2008

<u>Percent Properly Restrained</u>							
<u>Automobiles</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>Change 2007-2008</u>
Infants	75.9	66.1*	78.4*	75.9*	85.4	68.7* (N=181)	-16.7
Children	76.9	83.0*	86.4*	87.3*	85.9	89.8* (N=1,455)	+3.9
Combined	76.8	80.4*	85.3	86.2	85.8	87.4 (N=1,602)	+1.3
<u>Pickup Trucks</u>							
Infants	52.9	58.8*	58.8	79.2	45.8*	45.5* (N=10)	-0.3
Children	68.2	73.6*	65.9	80.5	79.8*	71.5* (N=211)	-8.3
Combined	67.3	71.9	65.0	80.4	77.2	69.7 (N=221)	-7.5
<u>Vans</u>							
Infants	73.9	69.8*	61.4*	86.0*	89.5	76.5* (N=52)	-13.0
Children	76.9	89.6*	86.9*	94.1*	90.5	89.3* (N=251)	-1.2
Combined	76.7	87.6	83.8	93.1	90.4	86.8 (N=303)	-3.6

*Differences are statistically significant at the .05 level using a two-tailed chi-square test. The tests of significance are calculated within each observation period, not across periods. In this table, comparisons are within the categories "automobiles" (includes SUVs and Jeeps), "pickup trucks," and "vans." For example, the difference between infants and small children riding in pickup trucks is significant at the .05 level.

When infants alone are considered, those riding in automobiles often lead the way. However, this year (as in 2006 and 2007), infants riding in vans had the highest properly restrained rate (76.5%), a 2.6 percentage point increase from 2003 but a 13.0 percentage point decrease from 2007. The protection rate of infants riding in pickup trucks decreased very slightly to 45.5%. This was a decrease of .3 percentage points from 2007 and followed a 33.4 point decrease from 2006 to 2007. The infants riding in automobiles had properly restrained rate 68.7%, a decrease from 2002 of 7.2 percentage points and a substantial 16.7 percentage point decrease over 2007.

Of the small children observed in 2008, 89.35% of those in vans were properly restrained; a 12.4 percentage point increase since 2003 and a 1.2 point decrease compared to 2007. There was a 12.9 percentage point increase among small children properly restrained in automobiles compared to 2003 (76.9% to 89.8%) and an increase of 3.9 percentage points compared to the previous year. This is the highest properly restrained rate ever for small children in automobiles and the fourth increase in the last five years. The number of small children properly restrained in pickup trucks has increased by 3.3 percentage points since 2003 (from 68.2% to 71.5%) but decreased by 8.3 points from 2007. Although the use of child restraint systems in pickup trucks has increased, it still remains lower than restraint use in automobiles and especially, vans.

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 and 6 include four other comparisons – Oklahoma City proper, the metropolitan area surrounding Oklahoma City, Tulsa proper, and the metropolitan area around Tulsa.

Table 5 displays child restraint use by region from 2003 to 2008. In the current study, the highest rate of child restraint use was found in the Oklahoma City metropolitan area (94.2%), an increase of 8.4 percentage points over the 2007 rate. The second highest protection rate was observed in Tulsa metropolitan area (92.6%), a 3.4 percentage point decrease from 2007. Oklahoma City proper was next with 88.4%, followed very closely by Tulsa proper (88.3%), the Northwest Region (87.4%), the Northeast Region (83.8%), the Southeast Region (74.4%), and finally, the Southwest Region (74.3%).

Statewide the percentage of properly restrained children decreased very slightly (0.4 percentage points) from 2007 to 2008 (85.4% to 85.0%). Five of the eight geographic regions decreased the rate of those properly restrained in 2008, led by a 10.4 percentage point decrease in the Southwest Region and an 7.2 point decrease in Tulsa proper. Somewhat smaller decreases in child restraint usage were noted in Northeast, Southwest, and the Tulsa metro area (6.6, 5.4, and 3.4 percentage point decreases, respectively). However, even after the decreases, the restraint rates in most of these areas remain relatively high.

When considering changes in statewide child protection rates from 2003 to 2008, the percentage of infants and small children combined who were properly restrained has increased by 9.3 percentage points. Only the Southwest Region experienced a decline in the properly restrained rate from 2003 to 2008 (80.3% to 74.3%) The Oklahoma City metro area rate in 2008 (94.2%) was only 1.8 percentage points higher than the rate in 2003 (92.41%), but rate in 2003 already was quite high. The Tulsa metro and Tulsa proper have seen the greatest overall increase in proper restraint use since 2003 (24.6 and 24.0 percentage points, respectively). The remaining areas had increased restraint usage ranging from 5.1 to 13.1 percentage points.

TABLE 5
Child Restraint Use By Region (Combined Ages), 2003-2008

<u>Region</u>	<u>Percent Properly Restrained</u>						<u>Change</u>
	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2007-2008</u>
Statewide, Combined Areas	75.7	80.6	82.7	86.7	85.4	85.0	-0.4
Oklahoma City	75.3	85.6	79.3	92.0	73.8	88.4	+14.6
Oklahoma City Metro	92.4	84.0	90.9	94.5	85.8	94.2	+8.4
Tulsa	64.3	83.7	88.5	86.1	95.5	88.3	-7.2
Tulsa Metro	68.0	76.6	89.7	87.4	96.0	92.6	-3.4
Northeast Region	78.7	87.3	83.3	81.8	90.4	83.8	-6.6
Northwest Region	76.6	77.1	77.1	85.7	81.1	87.4	+6.3
Southeast Region	68.0	64.0	71.6	86.4	84.8	74.4	-10.4
Southwest Region	80.3	74.9	80.6	81.1	79.7	74.3	-5.4
Total Oklahoma City, OKC Metro, Tulsa, and Tulsa Metro	74.7	83.5	86.0	90.2	85.8	90.2	+4.4

Although it is useful to compare data from year to year and across several years, as shown in Table 5, there are some problems with this type of analysis. Specifically, it gives weight to year-to-year fluctuations in the data (which can be substantial). For example, the child restraint usage in Oklahoma City for 2003 was 75.3%, restraint increased in 2004 to 85.6%, decreased again in 2005 to 79.3%, increased in 2006 to 92.0%, decreased substantially to 73.8% last year, and then increased substantially in 2008 to 88.4%. Other areas exhibit swings back and forth from year-to-year with positive and negative changes in rates compared to previous years. In order to help compensate for year-to-year swings in the data, an analysis was conducted using three-year rolling averages from 2002-2004 to 2005-2007 (Table 6). Averaging data over several years helps smooth out the inter-annual fluctuations.

TABLE 6

Child Restraint Use By Region (Rolling Averages), 2003-2005 to 2006-2008

<u>Areas Observed</u>	<u>2003- 2005</u>	<u>2004- 2006</u>	<u>2005- 2007</u>	<u>2006- 2008</u>	<u>Change 2003-2005 to 2006-2008</u>
Statewide, Combined Areas	79.7	83.6	84.9	85.7	+6.0
Oklahoma City	80.1	85.6	81.7	87.7	+4.6
Oklahoma City Metro	89.1	89.8	90.4	91.5	+2.4
Tulsa	78.8	86.1	90.0	90.0	+11.2
Tulsa Metro	78.1	84.6	91.0	92.0	+13.9
Northeast Region	83.1	84.1	85.2	85.3	+2.2
Northwest Region	76.9	80.0	81.3	84.7	+7.8
Southeast Region	67.9	74.0	80.9	81.9	+14.0
Southwest Region	78.6	78.9	80.5	78.4	-0.2
Total Oklahoma City, OKC Metro, Tulsa, and Tulsa Metro areas	81.4	86.6	87.3	88.7	+7.3

Based on the rolling averages, the statewide rate of properly restrained infants and small children has increased 6.0 percentage points from 2003-2005 to 2006-2008 (79.7% to 85.7%). Furthermore, the rates of those properly restrained have increased in all of the geographic areas except one over this six-year period when using the rolling averages. The Southwest Region experienced a decrease of 0.2 percentage points; the regions was very stable of the time period. The largest increases have taken place in the Southeast Region (19.3 percentage points last year and 14.0 in 2008), the Tulsa metro area (15.8 percentage points in 2007 and 13.9 in 2008), and Tulsa proper (10.4 percentage points in 2007 and 11.2 in this year). The other areas had increase ranging from 2.2 percentage points to 7.8 points.

SUMMARY AND RECOMMENDATIONS

The results of the 2008 survey can be summarized as follows:

- ◆ The combined (infants and small children from birth to age 6) statewide rate for proper child restraint use was 85.0%. This is down very slightly (0.4 percentage points) from 2007 and up 9.3 percentage points since 2003. The decrease from last year is not statistically significant. For all intents and purposes, there is no difference in the 2007 and 2008 rates.
- ◆ The percentage of infants and small children not restrained at all in 2008 was 11.7% (down from 12.1% in 2007 and down from 22.5% in 2003).
- ◆ Infants (birth to one year) were properly restrained at a rate of 68.8% (down from 82.5% in 2007 and down 5.0 percentage points since 2003).
- ◆ Small children (age 1-6 years) were properly restrained at a rate of 87.3% (up from 85.7% in 2007 and up 11.4 percentage points since 2003).
- ◆ Restraint use among infants and children observed in MSAs (89.8%) was substantially higher than those observed in non-MSAs (78.9%).
- ◆ The difference in the properly restrained rate for white infants and small children compared to non-whites are virtually the same—85.0 % for white infants and small children combined and 85.1% for non-white and infants and small children.
- ◆ Infants and small children traveling in vans and automobiles were more likely to be properly restrained (86.8% and 87.4%, respectively) than those riding in pickup trucks (69.7%).
- ◆ 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 (91.0% of children properly restrained) and when the driver was not belted (54.9% of children properly restrained)—a 36.1 percentage point difference.
- ◆ When comparing geographic regions from 2003 to 2008, the Tulsa metro area, Tulsa proper, Oklahoma City proper, and the Northwest Region have experienced the highest increase of child restraint use (24.6, 24.0, 13.1, and 10.8 percentage point increases, respectively).
- ◆ When examining three-year rolling averages from 2003-2005 to 2006-2008, seven of the eight geographic areas have seen an increase in the rate of proper restraint. The largest increases have been in the Southeast Region (14.0 percentage points), the Tulsa metro (13.9 percentage points), and Tulsa proper (11.2 points). The Southwest Region has been stable during this time period and experienced a very small 0.2 percentage point decrease.

The benefits of child restraint use continue to be substantial. The National Highway Traffic Safety Administration notes that over the period 1975 through 2006, an estimated 8,325 lives were saved by child restraints. Among children under the age of five, an estimated 425 lives were saved in 2006 by child restraint use. An estimated 521 lives could have been saved in 2006 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, 2007).

The Oklahoma Department of Public Safety's Highway Safety Office (2007) notes in its *Children Age 1-8 in 2006 Crashes Fact Sheet* report there were 1,582 child passengers in passenger vehicles and pickup trucks that were killed or injured in 2006. Of these, there were 23 fatalities among children age one through eight. Four of the fatalities (17.4%) were not restrained.

Overall, the proportion of infants and small children who are properly restrained continues to increase across the state. In light of the data collected in the 2008 study, our recommendations mirror those of recent years:

- ◆ 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;
- ◆ Expand child car seat loaner programs and car seat checkpoints, especially for those living in the rural areas of Oklahoma and drivers of pickup trucks – groups that historically have a below average rate of use. This outreach should not be to the exclusion of other groups or areas, since recent gains in usage should be encouraged to continue; and
- ◆ 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.

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APPENDIX A

Oklahoma Child Restraint Observation Form, July 2008

Oklahoma Child Restraint Observation Form

Observer: _____

Location: _____

Observation Date: _____

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 # of the observation in which you relocated.

Site ID#: _____

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

Start Time: _____ **End Time** _____

NOTES: _____

INFANT OR CHILD						DRIVER		
#	Child's Age I=Infant (up to 1yr.) C=Child (+1-6 yrs. old)	Child's Race W=White N=Non-white U=Unsure	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 S=SUV/Jeep V=Van	Gender M=Male F=Female U=Unsure	Belted? Y=Yes N=No
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

INFANT OR CHILD						DRIVER		
	Age I=Infant (up to 1year) C=Child (+1-6 yrs. old)	Child's Race W=White N=Non-white U=Unsure	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 S=SUV/Jeep V=Van	Gender M=Male F=Female U=Unsure	Belted? Y=Yes N=No
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

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 arterials 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 total of 100 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:

<u>Site</u>	<u>Oklahoma City (18)</u>
1.	McDonald's (NW 122 nd at Penn)
2.	Babies R' Us (Penn at NW 50th)
3.	Crossroads Mall (I-35 at Crossroads Blvd.)
4.	McDonald's (NW 23 rd at Penn)
5.	Economy Square Mall (SW 29 th at May)
6.	Target (SW 44 th at Western)
7.	WalMart Supercenter (I-240 at Santa Fe)
8.	WalMart (NW 23 rd at MacArthur)
9.	Hobby Lobby (7012 NW Expressway)
10.	Carl's Jr. (NE 36 th at Lincoln Blvd.)
11.	Hometown Markets (NE 23rd at Martin Luther King Blvd.)
12.	McDonald's (6700 N. May)
13.	McDonald's (N. May at Hefner Rd.)
14.	McDonald's (5812 NW Expressway)
15.	McDonald's (6012 S. Penn)
16.	McDonald's (I-240 at S. Western)
17.	Oklahoma City Zoo (NE 50 th at Martin Luther King Blvd.)
18.	Braum's (436 SW 59th)
<u>Site</u>	<u>Oklahoma City Metro (11)</u>
19.	Edmond: Albertsons (15 th St. at Broadway)
20.	Edmond: Super Target (1200 E. 2 nd St.)
21.	Norman: Sooner Fashion Mall (Main at I-35)
22.	Norman: McDonald's (Lindsey at McGee)
23.	Norman: WalMart Supercenter (Main at NE 12 th Street)
24.	Midwest City: Heritage Park Mall (Reno at Air Depot)
25.	Midwest City: WalMart (Midwest Blvd. at Reno)
26.	Moore: WalMart (S.E. 19 th at I-35)
27.	Mustang: WalMart (200 N. Mustang Road)
28.	Yukon: Snyder's Food Mart (10 W. Main)
29.	Bethany: Albertsons (NW 23 rd at Rockwell)
<u>Site</u>	<u>Tulsa (15)</u>
30.	Woodland Hills Mall (7021 S. Memorial)
31.	WalMart (81 st at Lewis)
32.	Albertson's (51 st at Memorial)
33.	Toys R' Us (Eastland Plaza 14002 E. 21st)
34.	Tulsa Promenade Mall (41 st Street at Yale)
35.	Braum's (1308 S. Garnett Rd.)
36.	McDonald's (4003 E. 11th)
37.	Big Splash Water Park/Centennial Plaza (21 st Street at Yale)
38.	WalMart (5310 S. Elm Place)
39.	Braum's (5048 S. 33 rd West Ave.)
40.	McDonald's (5151 S. Harvard)
41.	McDonald's (7315 S. Memorial Dr.)
42.	McDonald's (4249 S. Yale)
43.	Jenks: Jenks Municipal Park (Elm Street at Main Street)
44.	Wendy's across the street from Utica Square (21 st at Utica)

<u>Site</u>	<u>Tulsa Metro (7)</u>
45.	Broken Arrow: WalMart (2300 East Kenosha)
46.	Broken Arrow: McDonald's (3800 S. Elm Place)
47.	Broken Arrow: McDonald's (Kenosha at Elm)
48.	Bristow: WalMart (Main at SH16)
49.	Owasso: Reasor's (86 th St. North at 117 th Street)
50.	Sand Springs: Wendy's (Adams Road at Charles Page Blvd.)
51.	Sapulpa: WalMart (Hwy. 117 at US 66)
<u>Site</u>	<u>Enid (2)</u>
52.	McDonald's (Maine at Van Buren)
53.	Oakwood Mall (O.K.Garriott at Oakwood)
<u>Site</u>	<u>Northeast (18)</u>
54.	Bartlesville: Braum's (2539 SE Washington)
56.	Bartlesville: WalMart (3901 Adams Road)
57.	Muskogee: Braum's (2909 Old Shawnee Road)
58.	Muskogee: McDonald's (101 S. 32 nd Street)
59.	Muskogee: Arrowhead Mall (Denison Avenue at Main - downtown)
60.	Stillwater: McDonald's (920 W. 6 th)
61.	Stillwater: WalMart (Virginia at Perkins Rd.)
62.	Stillwater: Bradford Plaza (Hall of Fame at Washington)
63.	Vinita: WalMart (S. US 66)
64.	Henryetta: WalMart (E. Main St.)
65.	Ponca City: Walmart Supercenter (Prospect Ave.)
66.	Ponca City: McDonald's (N. 14th)
67.	Miami: WalMart (2015 N. Main)
68.	Miami: Walgreens (N. Main)
69.	Tahlequah: WalMart (Cherokee Hills Shopping Center)
70.	Okmulgee: WalMart (Hwy. 75 South)
71.	Okmulgee: Dairy Queen (W. 56 Hwy.)
<u>Site</u>	<u>Lawton (4)</u>
72.	Central Mall (2 nd at C Streets)
73.	McDonald's (Lee at 11 th)
74.	Hobby Lobby/Ross/Goody's (strip mall: Sheridan at Gore)
75.	WalMart Supercenter (NW 38 th at Cache Road)
<u>Site</u>	<u>Southeast (10)</u>
76.	McAlester: WalMart (Hwy. 69 at Comanche)
77.	McAlester: McDonald's (1758 E. Carl Albert Pkwy)
78.	Ada: Braum's (830 N. Country Club Drive)
79.	Ada: Walmart Supercenter (E. Lonnie Abbott Drive at Country Club Dr.)
80.	Ardmore: WalMart (601 N. Commerce)
81.	Ardmore: Burger King (Broadway at I-35)
82.	Durant: WalMart (2418 W. Main)
83.	Hugo: WalMart (US 70)
84.	Pauls Valley: WalMart Supercenter (I-35 exit toward downtown)
85.	Idabel: WalMart (901 SE Washington)

<u>Site</u>	<u>Northwest (5)</u>
86.	Woodward: WalMart (Downs at 8 th Street)
87.	Woodward: Braum's (West Oklahoma)
88.	Woodward: McDonald's (2720 W. Oklahoma)
89.	Alva: WalMart (Murray Plaza Shopping Center)
90.	Guymon: WalMart (US 64 N.)

<u>Site</u>	<u>Southwest (10)</u>
91.	Duncan: Braum's (US 81 N.)
92.	Duncan: Fun Park (US 81 N.)
93.	Duncan: WalMart (US 81 N.)
94.	Chickasha: Braum's (4 th Street at Grand)
95.	Altus: WalMart (US 62 at US 283 to Main/Sequoyah)
96.	Altus: McDonald's (Broadway at US 62)
97.	Elk City: WalMart (W. of City on Business-40)
98.	Clinton: K-Mart (Gary Blvd.)
99.	Chickasha: WalMart (2030 S. 4 th)
100.	Weatherford: WalMart (I-40 exit towards town)

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

To assure greater control and coordination, a decision was made to employ a small number of graduate assistants utilizing teams of two people whenever possible and requiring at least one of the two observers to have experience in installing a car seat or other child restraint device. 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 (2005). 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. Six people were selected as observers.

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) Ignore any obvious out-of-state car;
- 2) Record the date, day of week, and time of observations;
- 3) Record the exact location of each site;
- 4) Record the age (infant or small child) and race (white or non-white) of the child;
- 5) Record whether or not the child was restrained, the type of restraint, and the direction the child was facing in the vehicle;
- 6) Record the type of vehicle (automobile, SUV/Jeep, pickup, or van); and,
- 7) 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 one week period between the hours of 7:00 a.m. and 7:00 p.m.