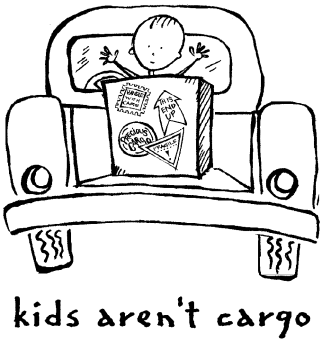
STATEWIDE CHILD RESTRAINT SURVEY

July 2006



Thomas E. James, Ph.D., Director
Kathy Hall, Assistant Director
Matt Krimmer, Graduate Research Assistant

Institute for Public Affairs
University of Oklahoma
455 W. Lindsey Street, Room 304
Norman, OK 73019-2002

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 Institute for Public Affairs 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

LIST OF TABLES

EXECUTIVE SUMMARY

This report compares the use of child restraints (car seats and safety belts) in passenger vehicles in Oklahoma over six observation periods: June 2001, July/August 2002, July/August 2003, May 2004, May 2005 and June 2006. 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

	2001	2002	2003	2004	2005	2006
Combined	66.0	77.4	75.7	80.6	82.7	86.7
Infants (less than 1 year)	72.3	67.3	73.8	65.8	73.4	78.4
Children (1-6 years)	64.9	79.0	75.9	83.0	84.1	87.6

Overall, the combined percentage of children who were properly restrained increased from 66.0% in 2001 to 86.7% in 2006. Over this six year period, the protection rate for infants increased from 72.3% to 78.4%, while the percentage of small children who were properly restrained increased from 64.9% to 87.6%. 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 2006 Oklahoma study, 97.6% of the infants and 87.6% of the small children were restrained in some way with an overall rate of 88.4%. Data presented in the National Occupant Protection Use Survey for 2004 (Glassbrenner, 2005) indicates that 98% of infants and 79.6% of children ages 1-7 were restrained in some type of restraint. Nationally the overall restraint rate was 82%.

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, that analysis also showed infants and toddlers placed in the front seat of vehicles are left unrestrained at a greater rate than their counterparts in the back seat. Oklahoma observations during 2006 support the NHTSA findings with regard to infants as front seat passengers.

A comparison to the 2005 survey results shows an increase in the protection rate for infants from 73.4% to 78.4%, while the protection rate for small children increased from 84.1% in 2005 to 87.6% in 2006. As in previous years, white children were more likely than non-white children to be

properly restrained in 2006 (87.3% to 84.7%). However, the difference is much smaller compared to previous years. Children in vehicles observed within urban areas compared to those in non-urban areas were restrained at a somewhat higher rate (89.4% to 83.2%). The safety of infants and small children riding in vans was highest with 93.1% properly restrained, followed by 86.2% in automobiles, and 80.4% in pickup trucks.

Substantial differences in restraint rates exist across the regions of the state. Oklahoma City's surrounding metropolitan area (94.5%) and Oklahoma City proper (92.0%) had the highest percentage of infants and small children properly restrained. The Northeast and Southwest Regions had the lowest restraint rates (81.8% and 81.1%, respectively).

Regional Restraint Rates - 2006

Region	Percent Properly Restrained
Oklahoma City Metro	94.5
Oklahoma City	92.0
Tulsa Metro	87.4
Southeast	86.4
Tulsa	86.1
Northwest	85.7
Northeast	81.8
Southwest	81.1

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 (92.2%) than when the driver is not belted (48.2%). Infants and children are almost two 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, in her report on child restraint use in 2004, Glassbrenner (2005) notes that 86% of birth to seven year old children driven by buckled drivers were restrained, compared to 50% for children riding with unbelted drivers.

Percent Properly Restrained by Driver Belted or Not

	Driver Belted	Driver Not Belted
Combined	92.2	48.2
Infants (less than 1 year)	79.8	61.1
Children (1-6 years)	93.6	47.5

The benefits of child restraint use continue to be substantial. The National Highway Traffic Safety Administration notes that over the period 1975 through 2003, an estimated 7,020 lives were saved by child restraints. In 2003, the lives of an estimated 446 children under five years of age were saved by child restraint use (NHTSA, 2004a). In 2002, there were 459 fatalities among children under five years of age and of those child passenger deaths, almost 40% were completely unrestrained (NHTSA, nd).

The 2006 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).

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 2006 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;
- Special attention (enforcement and education efforts) should continue to be directed 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: 2006

INTRODUCTION

This report is the 20th 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 June 2006.

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 Conducing 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 over-represented. The 2006 sample of 2,500 children contains a racial composition of 23.2% non-white and 76.8% white (Table 1). Observers were instructed to code racial/ethnic groups such as Native Americans, Hispanics, and Asians as "white." The 2000 census reported 7.6% of Oklahoma's population as "non-white." The proportion of those observed who were white has declined slowly but steadily since 1999 (90.6%). Of the total population, 60.8% resided in a Metropolitan Statistical Area (excluding the Ft. Smith, Arkansas MSA) at the time of the 2000 census. In the 2006 sample, 57.0% 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 distribution of other sample characteristics from the 2001 to 2006 surveys. The proportion of infants observed relative to small children is down slightly compared to most of the previous five years. As in past years, the preponderance of vehicles observed were automobiles (71.8%). Of the drivers, 87.5% were belted.

TABLE 1

Frequency Distribution of Sample Characteristics, 2001-2006

CHARACTERISTIC						
Race (N=2,500)	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
White	89.7	86.6	83.8	79.9	77.3	76.8
Non-white	10.3	13.4	16.2	20.1	22.7	23.2
Age (N=2,500)						
Infants (Birth - 1 year)	14.6	14.0	8.8	14.2	13.1	9.4
Children (1-6 years)	85.4	86.0	91.2	85.8	86.9	90.6
Type of Restraint (N=2,500)						
Car Seat	41.4	52.4	41.6	52.1	39.6	43.2
Seat Belt	28.5	29.0	35.9	32.8	46.0	45.2
No Restraint	30.1	18.5	22.5	15.2	14.3	11.6
Type of Vehicle (N=2,500)						
Automobile*	71.4	69.1	67.7	71.3	69.8	71.8
Pickup	14.4	12.0	11.8	12.0	11.4	11.4
Van	14.2	18.9	20.6	16.7	18.7	16.8
Driver (N=2,500)						
Belted	67.8	71.6	75.2	80.1	80.4	87.5
Not Belted	32.2	28.4	24.8	19.9	19.6	12.5

*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 2001 to 2006). 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 2006 who were restrained properly and improperly (88.4%) and those who were properly restrained (86.7%) increased compared to 2005 (2.7 and 4.0 percentage points, respectively). These are the highest rates in the past six years. Of those children restrained in either a car seat or belt (proper and improper), 97.6% were restrained properly. Data presented in the National Occupant Protection Use Survey for 2004 (Glassbrenner, 2005) indicates that 98% of infants and 79.6% of children ages 1-7 were restrained in some type of restraint. Of those observed in the 2006 Oklahoma study, 97.6% of the infants and 87.6% of the small children were restrained (properly and improperly). The rates for Oklahoma compare very favorably with the national data.

Proper restraint rates across categories are better understood from a long-term perspective than a simple comparison to the previous year. As shown in Table 2, the rate of infants and small children who were properly restrained increased substantially from 2001 to 2006. Specifically, 86.7% of the total sampled children in 2006 were properly restrained as compared with 66.0% in 2001, an overall increase of 20.7 percentage points. However, the percent properly restrained was unusually low in 2001 and was down six percentage points from the previous year.

Generally, small children have been more likely to be properly restrained than infants and the same pattern is evident in 2006 with 87.6% of small children properly restrained compared to 78.4% of infants. Over the past six years, the protection rate of small children has increased by 22.7 percentage points, while the protection rate of infants has increased by 6.1 percentage points.

Although the percent properly restrained increased for all children combined, during 2006 white children again were more likely to be properly restrained than non-white children. However, this gap has narrowed. As Table 2 indicates, white children were restrained at a rate of 87.3%, while non-white children were protected 84.7% of the time. The protection rate for non-white and white children has increased by 26.2 and 20.5 percentage points, respectively, from 2001 to 2006.

TABLE 2

Child Restraint Use, 2001-2006

Percent Restrained

Restrained (N=2,500)	2001	2002	2003	2004	2005	2006	Change 2005-2006
Restrained (proper and improper)	69.9	81.5	77.5	84.8	85.7	88.4	+2.7
Properly Restrained	66.0	77.4	75.7	80.6	82.7	86.7	+4.0
Properly Restrained as a Percent of Restrained (proper and improper)	94.4	94.9	97.7	95.0	96.5	97.6	+1.1
Not Restrained	30.1	18.5	22.5	15.2	14.3	11.6	-2.7

Percent Properly Restrained

	2001	2002	2003	2004	2005	2006	Change 2005-2006
Infants/Children							
Infants	72.3*	67.3*	73.8	65.8*	73.4*	78.4* (N=185)	+5.0
Children	64.9*	79.0*	75.9	83.0*	84.1*	87.6* (N=1983)	+3.5
Combined	66.0	77.4	75.7	80.6	82.7	86.7 (N=2168)	+4.0
Race							
White	66.8*	78.0	76.7*	82.1*	84.9*	87.3 (N=1665)	+2.4
Non-white	58.5*	73.4	70.4*	74.0*	74.5*	84.7 (N=488)	+10.2
Metropolitan Area							
Metropolitan**	70.7*	84.6*	75.7	82.9*	85.4*	89.4* (N=1274)	+4.0
Non-metropolitan	59.6*	67.7*	75.6	77.5*	79.1*	83.2* (N=894)	+4.1

*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 differences between infants and small children for 2006 are statistically significant at the .05 level.

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

The 2006 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) (89.4% protected) to those in non-MSAs (83.2%). 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 for 2006 was greater than the protection rate in 2005, resulting in an increase of 4.0 percentage points. Since 2001, the overall increase in protection rates of children residing in an MSA is 18.7 percentage points. The protection rate in non-MSAs also has improved substantially over the last six years from (23.6 percentage points), including a 4.1 percentage point improvement from 2005 to 2006.

As noted previously, of the 2500 drivers observed, 87.5% were belted. Table 3 shows the dramatic difference in child restraint use when the driver of the vehicle is using a safety belt. Overall, 92.2% of the infants and children riding with a belted driver were properly restrained with only 48.2% 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 8.0 percentage points between 2001-2006 when riding with a belted driver. The percentage of properly restrained infants (with a belted driver) has remained virtually the same (79.6% in 2001 and 79.8% in 2006), while proper restraint rates of small children have increased by 8.4 percentage points. When the driver was not belted, 47.5% of small children were properly restrained in 2006 (a 21.7 percentage point increase since 2001), and 61.1% of infants were properly restrained (an increase of 17.1 percentage points since 2001). The combined proper restraint rate when the driver was not belted was 48.2% in 2006, which is an increase of 20.7 percentage points since 2001.

In comparison to the 2005 results, the 2006 survey reflects an slight overall decrease of 1.9 percentage points (94.1% to 92.2%) for properly restrained infants and small children in vehicles in which a driver was using a safety belt. Infants were properly restrained at virtually the same rate in 2005 and 2006 (80.4% and 79.8%, respectively). The percentage of small children who were protected decreased from 96.2% in 2005 to 93.6% in 2006. However, the percentage protected is very high even with the slight decrease.

When the driver was not belted, there was an increase in proper restraint use of 11.8 percentage points (36.4% to 48.2%) from 2005 among all children observed. The percentage of small children who were properly restrained increased from 2005 to 2006 by 11.2 percentage points (36.3% to 47.5%), while protected infants experienced the largest increase (23.8 percentage points–37.3% to 61.1%). However, it should be noted that the restrained rate for infants and children in vehicles with an unbelted driver was very low in 2005 and only 11 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 **1.9 times more likely to be protected** as compared to children riding with unbelted drivers (92.2% versus 48.2%).*

TABLE 3

Child Restraint Use By Whether or Not the Driver is Belted, 2001-2006

	Percent Properly Restrained						
Driver Belted	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**Change 2005-2006**
Infants	79.6*	68.1*	78.3	68.6*	80.4*	79.8* (N=174)	-0.6
Children	85.2*	92.6*	85.8	94.8*	96.2*	93.6* (N=1843)	-2.6
Combined	84.2	88.8	85.0	90.8	94.1	92.2 (N=2017)	-1.9
Driver Not Belted							
Infants	44.0*	64.2*	51.4	49.0*	37.3	61.1 (N=11)	+23.8
Children	25.8*	47.0*	47.1	38.3*	36.3	47.5 (N=140)	+11.2
Combined	27.5	48.7	47.3	39.4	36.4	48.2 (N=151)	+11.8

*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 differences between infants and small children riding with belted drivers for 2005 are statistically significant at the .05 level.

As in the past, the 2006 study recorded the type of vehicle observed. Vehicles were categorized as automobiles (71.8% of the observations), pickup trucks (11.4%), or vans (16.8%). Table 4 profiles the differences between the protection rate of infants and small children based on the type of vehicle driven. Like most previous years, the combined rate for children properly restrained was the highest for vans. Infants and children riding in vans had a combined properly restrained rate of 93.1% (a 14.7 percentage point increase from 2001), while 86.2% of infants and children riding in automobiles were properly restrained (a 18.2 percentage point increase from 2001). Combined protection rates in pickup trucks continued to be the lowest but increased dramatically to 80.4% (a 36.9 percentage point increase from 2001).

In comparison to the 2005 results, the combined rate of proper restraint increased for all types of vehicles. The percentage of those riding in automobiles who were properly restrained experienced a very small increase from 85.3% to 86.2% (0.9 percentage points). Infants and children properly restrained increased when riding in pickup trucks (65.0% to 80.4%) and vans (83.8% to 93.1%) by 15.4 and 9.3 percentage points, respectively.

TABLE 4

Child Restraint Use By Type of Vehicle, 2001-2006

Percent Properly Restrained

Automobiles	2001	2002	2003	2004	2005	2006	Change 2005-2006
Infants	74.8*	69.0*	75.9	66.1*	78.4*	75.9* (N=123)	-2.5
Children	66.7*	79.6*	76.9	83.0*	86.4*	87.3* (N=1424)	+0.9
Combined	68.0	78.0	76.8	80.4*	85.3	86.2 (N=1547)	+0.9
Pickup Trucks							
Infants	57.1*	65.0	52.9	58.8*	58.8	79.2 (N=19)	+20.4
Children	42.0*	62.6	68.2	73.6*	65.9	80.5 (N=211)	+14.6
Combined	43.5	62.8	67.3	71.9	65.0	80.4 (N=230)	+15.4
Vans							
Infants	68.1*	62.0*	73.9	69.8*	61.4*	86.0* (N=43)	+24.6
Children	79.9*	88.3*	76.9	89.6*	86.9*	94.1* (N=348)	+7.2
Combined	78.4	84.3	76.7	87.6	83.8	93.1 (N=391)	+9.3

*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 automobiles is significant at the .05 level.

When infants alone are considered, those riding in automobiles typically lead the way. However, this year, infants riding in vans had the highest properly restrained rate (86.0%), a 17.9 percentage point increase from 2001 and a 24.6 percentage point increase over 2005. The protection rate of infants riding in pickup trucks increased substantially to 79.2%. This was an increase of 22.1 percentage points from 2001 and a 20.4 point increase over 2005. The infants riding in automobiles had the lowest properly restrained rate at 75.9%, a small increase from 2001 (1.1 percentage points) and a decrease from 2005 of 2.5 percentage points.

Of the small children observed in 2006, 94.1% of those in vans were properly restrained; a 14.2 percentage point increase since 2001 and a 7.2 point increase compared to 2005. There was a 20.6 percentage point increase among small children properly restrained in automobiles compared to 2001 (66.7% to 87.3%) and a slight increase of 0.9 percentage points compared to the previous year. The number of small children properly restrained in pickup trucks has increased by 38.5 percentage points since 2001 (from 42.0% to 80.5%) and by 14.6 points from 2005. Although the use of child restraint systems in pickup trucks has increased significantly, 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 2001 to 2006. In the current study, the highest rate of child restraint use was found in Oklahoma City metropolitan area (94.5%), an increase of 3.6 percentage points over the 2005 rate. The second highest protection rate was observed in Oklahoma City proper (92.0%), a 12.7 percentage point increase from 2005. The Tulsa metro area was next with 87.4%, followed by the Southeast Region (86.4%), Tulsa proper (86.1%), the Northwest Region (85.7%), the Northeast Region (81.8%), and finally, the Southwest Region (81.1%).

Statewide the percentage of properly restrained children increased by 4.0 percentage points from 2005 to 2006 (82.7% to 86.7%). Most of the geographic regions (five of the eight) increased the rate of those properly restrained in 2006, led by a 14.8 percentage point increase in the Southeast Region. Small decreases in child restraint usage were noted in Tulsa proper, the Tulsa metro area, and the Northeast Region (2.4, 2.3, and 1.5 percentage point decreases, respectively). However, even after the decreases, the restraint rates in these areas remain relatively high.

When considering changes in statewide child protection rate from 2001 to 2006, the percentage of both infants and small children properly restrained has increased by 20.7 percentage points. All of the areas have experienced substantial increases in the rate of child restraint usage. The Northwest, Southeast, and Oklahoma City metro have seen the greatest overall increase in proper restraint use since 2001 (33.7, 29.2, and 26.9 percentage points, respectively). The remaining areas had increased restraint usage ranging from 14.9 to 19.4 percentage points.

TABLE 5

Child Restraint Use By Region (Combined Ages), 2001-2006

Region	Percent Properly Restrained						Change 2005-2006
	2001	2002	2003	2004	2005	2006	
Statewide, Combined Areas	66.0	77.4	75.7	80.6	82.7	86.7	+4.0
Oklahoma City	77.1	81.1	75.3	85.6	79.3	92.0	+12.7
Oklahoma City Metro	67.6	85.1	92.4	84.0	90.9	94.5	+3.6
Tulsa	66.7	90.9	64.3	83.7	88.5	86.1	-2.4
Tulsa Metro	72.0	81.1	68.0	76.6	89.7	87.4	-2.3
Northeast Region	62.7	76.7	78.7	87.3	83.3	81.8	-1.5
Northwest Region	52.0	69.1	76.6	77.1	77.1	85.7	+8.6
Southeast Region	57.2	52.8	68.0	64.0	71.6	86.4	+14.8
Southwest Region	64.0	72.6	80.3	74.9	80.6	81.1	+0.5
Total Oklahoma City, OKC Metro, Tulsa, and Tulsa Metro areas	70.7	84.8	74.7	83.5	86.0	90.2	+4.2

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. For example, the child restraint usage in Oklahoma City for 2004 was 85.6%, decreased in 2005 to 79.3% (down 6.3 points), and increased this year to 92.0% (an increase of 14.9 percentage points from 2001). The Southwest Region provides another example. The use rate in 1998 was 57.4% as reported in the Oklahoma Seat Belt Observation Study: Summer 2003 (James and Hall, 2003). In 1999, the Southwest Region use rate decreased substantially to 39.4% and in 2000 it increased substantially to 60.9%. From 2000 through 2003, the Southwest Region experienced an increase each year in the percent properly restrained rate. In 2004, the percentage rate declined from the previous year by 5.4 points to 74.9% and then increased again to 80.6% in 2005. In 2006, the rate remained about the same at 81.1% . Other areas swing 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 2001-2003 to 2004-2006 (Table 6). Averaging data over several years helps smooth out the inter-annual fluctuations.

TABLE 6

Child Restraint Use By Region (Rolling Averages), 2001-2003 to 2004-2006

Areas Observed	2001-2003	2002-2004	2003-2005	2004-2006	Change 2001-2003 to 2004-2006
Statewide, Combined Areas	73.0	77.9	79.7	83.6	+10.6
Oklahoma City	77.8	80.7	80.1	85.6	+7.8
Oklahoma City Metro	81.7	87.2	89.1	89.8	+8.1
Tulsa	73.9	79.6	78.8	86.1	+12.2
Tulsa Metro	73.7	75.2	78.1	84.6	+10.9
Northeast Region	72.7	80.9	83.1	84.1	+11.4
Northwest Region	65.9	74.3	76.9	80.0	+14.1
Southeast Region	59.3	61.6	67.9	74.0	+14.7
Southwest Region	72.2	75.9	78.6	78.9	+6.7
Total Oklahoma City, OKC Metro, Tulsa, and Tulsa Metro areas	76.7	81.0	81.4	86.6	+9.9

Based on the rolling averages, the statewide rate of properly restrained infants and small children has increased 10.6 percentage points from 2001-2003 to 2004-2006 (73.0% to 83.6%). Furthermore, the rates of those properly restrained have increased in all of the geographic areas over this six-year period when using the rolling averages. The largest increases have taken place in the Southeast Region (14.7 percentage points) and in the Northwest Region (14.1 percentage points). Tulsa proper (12.2 percentage points), the Northeast Region (11.4 percentage points), and the Tulsa Metro (10.9 percentage points) all had substantial increases.

CONCLUSIONS AND RECOMMENDATIONS

The results of the 2006 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 86.7% (up 4.0 percentage points from 2005 and up 20.7 percentage points since 2001).

- The percentage of infants and small children not restrained at all in 2006 was 11.6% (down from 14.3% in 2005 and 30.1% in 2001).

- Infants (birth to one year) were properly restrained at a rate of 78.4% (up from 73.4% in 2005 and up 6.1 percentage points since 2001).

- Small children (aged 1-6 years) were properly restrained at a rate of 87.6% (up from 84.1% in 2005 and up 22.7 percentage points since 2001).

- Restraint use among infants and children observed in MSAs (89.4%) was somewhat higher than those observed in non-MSAs (83.2%).

- White infants and small children continued to experience a somewhat greater rate of protection (87.3%) than non-white children (84.7%). However, the difference is smaller compared to previous years.

- Infants and small children traveling in vans and automobiles were more likely to be properly restrained (93.1% and 86.2%, respectively) than those riding in pickup trucks (80.4%).

- 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 (92.2% of children properly restrained) and the safety of infants and small children in vehicles when the driver was not belted (48.2% of children properly restrained)–a 44 percentage point difference. As in previous years, the more likely a driver is to buckle up, the greater the likelihood that any child passenger also will be restrained.

- When compared by geographic region, since 2001 the Northwest Region, Southeast Region, and Oklahoma City Metro have experienced the highest increase of child restraint use (a 33.7, a 29.2, and a 26.9 percentage point increase, respectively).

- When examining three-year rolling averages from 2001-2003 to 2004-2006, all geographic areas have seen an increase in the rate of proper restraint. The largest increases have been in the Southeast Region (14.7 percentage points), the Northwest Region (14.1 points), and Tulsa proper (12.2 percentage points).

The benefits of child restraint use continue to be substantial. The National Highway Traffic Safety Administration notes that over the period 1975 through 2003, an estimated 7,020 lives were saved by child restraints. In 2003, the lives of an estimated 446 children under five years of age were saved by child restraint use (NHTSA, 2004a). In 2002, there were 459 fatalities among children under 5 years of age. Of those child passenger deaths, almost 40% were completely unrestrained (NHTSA, nd).

The Oklahoma Highway Safety Office notes in its *2003 Oklahoma Crash Facts* report that there were fourteen fatalities of children age 6 and under in passenger vehicles and pickup trucks. Of the 12 cases where the status of child restraint use was reported, 11 (91.6%) of the children who died were not in a child restraint system. Of the 1,251 vehicle crash injuries that occurred to children age six and under during 2003, 15.2% were completely unrestrained (ODPS, 2004).

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 2006 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;

- Special attention (enforcement and education efforts) should continue to be directed 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;

- 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.

REFERENCES

Glassbrenner, Donna. 2005. *Child Restraint Use in 2004 – Overall Results.* DOT HS 809 845. Washington, D.C.: National Highway Traffic Safety Administration, National Center for Statistics and Analysis.

James, Thomas E. and Kathy Hall. 2003. *Oklahoma Seat Belt Observation Study: Summer 2003.* Prepared for the Oklahoma Highway Safety Office. Norman, OK: University of Oklahoma, Institute for Public Affairs.

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, United States Department of Transportation. 1983. *Guidelines for Conducting A Survey of the Use of Safety Belts and Child Safety Seats*. Washington, D.C.: National Center for Statistics and Analysis.

_____. 2000. *Are YOU Using It Right?* Washington, D.C.: National Center for Statistics and Analysis. IP0040.

_____. 2000. *Child Transportation Safety Tips*. Washington, D.C.: National Center for Statistics and Analysis. IP0835.

_____. 2004a. *Traffic Safety Facts 2003 - Occupant Protection*. DOT HS 809 765. Washington, D.C.: National Center for Statistics and Analysis.

_____. 2004b. *Safety Belt Use in 2003 - Demographic Characteristics*. DOT HS 809 729. Washington, D.C.: National Center for Statistics and Analysis.

_____. nd. *Motor Vehicle Occupant Protection FACTS*. Washington, D.C. accessed July 7, 2005 at http://www.nhtsa.dot.gov/people/injury/airbags/OccupantProtectionFacts/index.htm.

Oklahoma Department of Public Safety, Oklahoma Highway Safety Office. 2004. *2003 Oklahoma Crash Facts* at <http://spss.dps.state.ok.us.

Starnes, Marc. 2003. *The Relationship Between Driver and Child Passenger Restraint Use Among Infants and Toddlers.* DOT HS 809 559. Washington, D.C.: National Center for Statistics and Analysis.

APPENDIX A

Oklahoma Child Restraint Observation Form, June 2006

Oklahoma Child Restraint Observation Form

Observer: _____ **Location: _____**

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.

Observation Date: _____

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	43
	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	Oklahoma City (18)
1.	McDonald's (NW 122nd at Penn)
2.	Babies R' Us (Penn at NW 50th)
3.	Crossroads Mall (I-35 at Crossroads Blvd.)
4.	McDonald's (NW 23rd at Penn)
5.	Economy Square Mall (SW 29th at May)
6.	Target (SW 44th at Western)
7.	WalMart Supercenter (I-240 at Santa Fe)
8.	WalMart (NW 23rd at MacArthur)
9.	Hobby Lobby (7012 NW Expressway)
10.	Carl's Jr. (NE 36th 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 50th at Martin Luther King Blvd.)
18.	Braum's (436 SW 59th)

Site	Oklahoma City Metro (11)
19.	Edmond: Albertsons (15th St. at Broadway)
20.	Edmond: Super Target (1200 E. 2nd St.)
21.	Norman: Sooner Fashion Mall (Main at I-35)
22.	Norman: McDonald's (Lindsey at McGee)
23.	Norman: WalMart Supercenter (Main at NE 12th Street)
24.	Midwest City: Heritage Park Mall (Reno at Air Depot)
25.	Midwest City: WalMart (Midwest Blvd. at Reno)
26.	Moore: WalMart (S.E. 19th at I-35)
27.	Mustang: WalMart (200 N. Mustang Road)
28.	Yukon: Snyder's Food Mart (10 W. Main)
29.	Bethany: Albertsons (NW 23rd at Rockwell)

Site	Tulsa (15)
30.	Woodland Hills Mall (7021 S. Memorial)
31.	WalMart (81st at Lewis)
32.	Albertson's (51st at Memorial)
33.	Toys R' Us (Eastland Plaza 14002 E. 21st)
34.	Tulsa Promenade Mall (41st Street at Yale)
35.	Braum's (1308 S. Garnett Rd.)
36.	McDonald's (4003 E. 11th)
37.	Big Splash Water Park/Centennial Plaza (21st Street at Yale)
38.	WalMart (5310 S. Elm Place)
39.	Braum's (5048 S. 33rd 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 (21st at Utica)

Site	Tulsa Metro (7)
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 (86th St. North at 117th Street)
50.	Sand Springs: Wendy's (Adams Road at Charles Page Blvd.)
51.	Sapulpa: WalMart (Hwy. 117 at US 66)
Site	Enid (2)
52.	McDonald's (Maine at Van Buren)
53.	Oakwood Mall (O.K.Garriott at Oakwood)
Site	Northeast (18)
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. 32nd Street)
59.	Muskogee: Arrowhead Mall (Denison Avenue at Main - downtown)
60.	Stillwater: McDonald's (920 W. 6th)
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.)
Site	Lawton (4)
72.	Central Mall (2nd at C Streets)
73.	McDonald's (Lee at 11th)
74.	Hobby Lobby/Ross/Goody's (strip mall: Sheridan at Gore)
75.	WalMart Supercenter (NW 38th at Cache Road)
Site	Southeast (10)
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 (I-35 exit towards town)
85.	Idabel: WalMart (901 SE Washington)

Site	Northwest (5)
86.	Woodward: WalMart (Downs at 8th 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.)
Site	Southwest (10)
91.	Duncan: Braum's (US 81 N.)
92.	Duncan: Fun Park (US 81 N.)
93.	Duncan: WalMart (US 81 N.)
94.	Chickasha: Braum's (4th 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. 4th)
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.