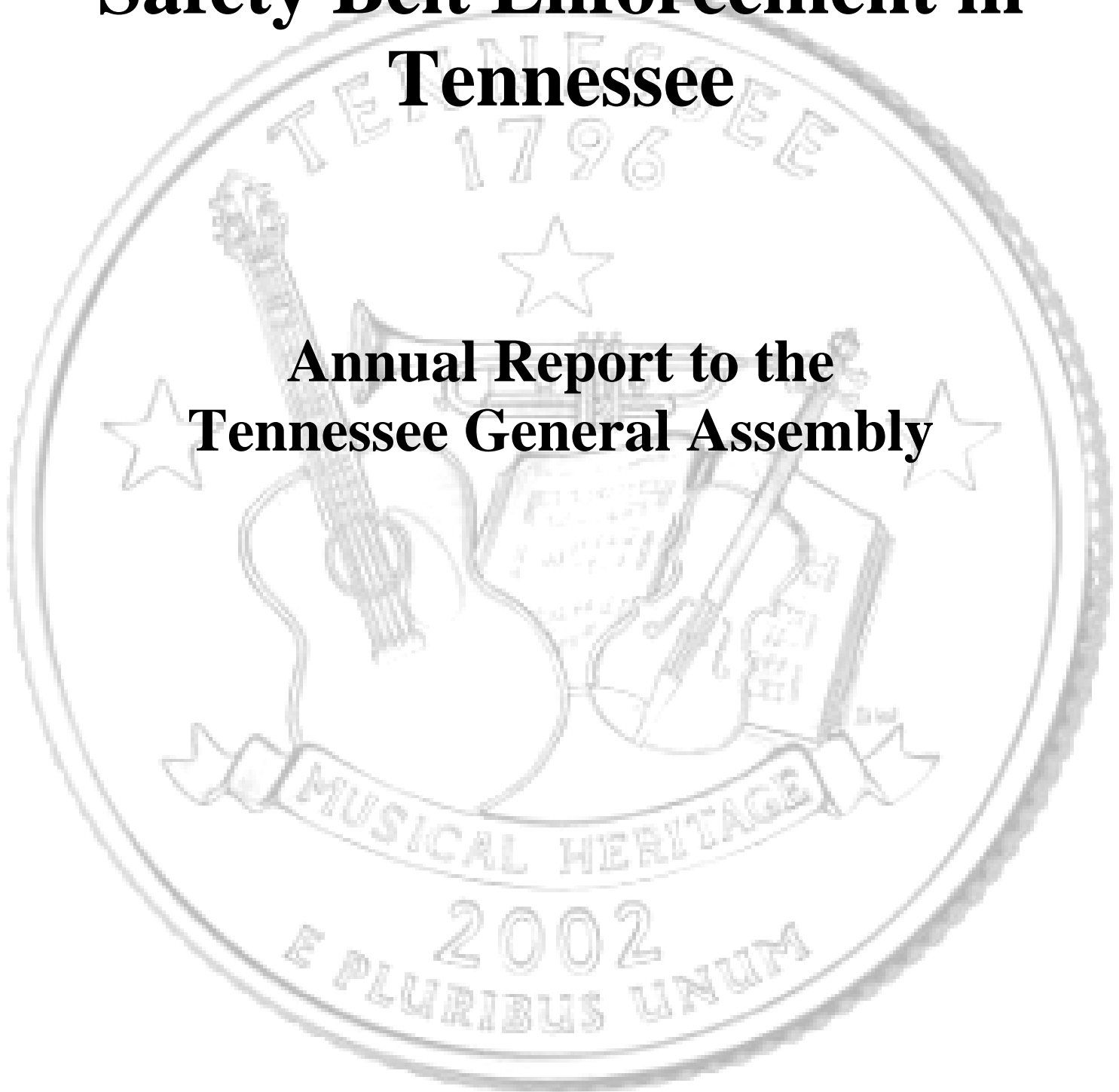


# **Safety Belt Enforcement in Tennessee**

## **Annual Report to the Tennessee General Assembly**



**Tennessee Department of Safety  
Dave Mitchell, Commissioner  
July 2010**



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# **Introduction**



# **Safety Belt Enforcement in Tennessee Annual Report to the Tennessee General Assembly in Compliance with Tennessee Code Annotated § 55-9-603**

## **Executive Summary**

This report contains a study conducted for the Tennessee General Assembly in compliance with Tennessee Code Annotated § 55-9-603 (k), to supply data collected for the previous five (5) years relating to violations of the Safety Belt Usage law. Chapter 893 of the “Public Acts of 2004” changed Tennessee’s law relating to safety belt usage in passenger vehicles, from a “secondary” to a “primary” use law effective July 1, 2004. Included in the Public Act was a requirement for the Tennessee Department of Safety to file an annual report by March 1 of each year to the 104th, 105th, and 106th sessions of the General Assembly. The report is to “include the number of persons cited for violations of this section, their race, ethnicity, sex, age, and any other information the department deems relevant.”

In compliance with this legislative directive, the Tennessee Department of Safety’s Research, Planning & Development Division reviewed various data from the Driver History, Trooper Ticket, and Crash Analysis Reporting System databases. Since Tennessee does not have a statutory uniform citation law, statewide data is not available on the number of citations issued by all law enforcement agencies for traffic violations.

A review was conducted of all convictions reported to the Department’s Financial Responsibility Division by court clerks, for fiscal years 2004-2005 through 2008-2009. Due to delays in reporting convictions to the Department, and posting convictions to the Driver History file, the data is more complete utilizing fiscal year (FY) information, rather than calendar year (CY) information for both statewide convictions and Tennessee Highway Patrol-issued citations. However, the safety belt convictions contained in the Driver History file include only those convictions reported to the Department of Safety by the court clerks.

Statewide safety belt convictions reported to the Department of Safety (all agencies) increased from 32,145 in FY 04-05 to 76,653 in FY 08-09, a 138.5% increase. In FY 08-09, those between the ages of 25-34 represented approximately 30.3% of all drivers convicted. White males were the most frequently convicted in all five years, and represented 56.3% of all drivers convicted and 78.6% of male drivers convicted in FY 08-09. After white males, black males received the most convictions, representing 11.9% of all drivers convicted and 16.5% of male drivers convicted in FY 08-09.

Of all drivers, males were the prominent sex convicted, accounting for 71.7% in FY 08-09 compared to 28.3% for females. White drivers were also the most often convicted of female drivers, representing 79.2% of female drivers convicted in FY 08-09. The next highest group was black females, representing 17.4% of female drivers convicted.

In FY 08-09, passengers convicted of safety belt violations represented only 3.9% of all safety belt convictions reported to the department. Generally over the five-year period, adult passengers followed nearly the same percentage distributions for sex and race.

Citations issued by commissioned officers of the Tennessee Highway Patrol were analyzed for fiscal years 2004-2005 through 2008-2009. Tennessee Highway Patrol citations issued for safety belt violations increased from 48,620 in FY 04-05 to 51,655 in FY 05-06, a 6% increase. This was followed by three decreasing years. From FY 04-04 to FY 08-09, Trooper citations issued for these violations decreased from 48,620 to 32,520, representing a 33% decrease. Approximately 28.1% of ticketed drivers were between the ages of 25-34 representing the most frequently ticketed group throughout the five-year period.

In FY 08-09, of all male drivers, white males received 88.1% of Trooper safety belt citations. White males received 66.5% of the citations issued to all drivers. Black males were the next most frequently ticketed receiving 7.9% of citations issued to male drivers and 5.9% of citations issued to all drivers. Hispanic males received 3.0% of THP-issued citations for male drivers and 2.2% of citations for all drivers.

Convictions involving child restraint device (CRD) violations were also analyzed for this report. After increasing from 3,434 in FY 04-05 to 5,536 in FY 05-06, CRD convictions decreased to 4,803 in FY 07-08, and then increased to 5,672 in FY 08-09.

Unlike safety belt convictions reported, the majority of CRD convictions (58.0%) were received by females. White females were the predominant race and gender for both convictions involving children 3 and under, as well as those involving children ages 4-15. In FY 08-09, white females accounted for 31.0% of all CRD convictions. Black females received the next most convictions accounting for 24.4% of all convictions. White males were most frequently convicted among men, representing 21.6% of all convictions, with black males coming in second at 11.2%.

Citations issued by THP for CRD violations showed a steady decrease over the five-year period. These citations shrank from a five-year high of 5,724 in FY 04-05 to 3,471 in FY 08-09. This represents a 39.4% decrease since FY 04-05. Those between the ages of 20-29 were the most frequently ticketed group, accounting for 41.4% of all CRD citations since FY 04-05.

As was the case with CRD convictions, females received the majority of CRD citations, ranging from a low of 55.2% in FY 05-06 to a high of 56.2% in FY 06-07. White females were 74.5% of the females ticketed during the five-year period. White males made up 73.4% of male drivers ticketed from FY 04-05 to FY 08-09.

The National Highway Traffic Safety Administration (NHTSA) funds Safety Restraint Usage Surveys each year in every State and U.S. Territory, through the various Governors' Highway Safety Offices. The results are analyzed and published by the National Center for Statistics and Analysis (NCSA). The NCSA established uniform survey criteria, and data analysis methodologies to ensure each state and territory's data were comparable.



In the October 2009 *Survey of Safety Belt And Motorcycle Helmet Usage In Tennessee* published by the University of Tennessee Center for Transportation Research, Tennessee's survey results indicated an overall decrease of 0.9% from 2008 to 2009 (81.5% to 80.6%). Despite this decline, usage rates are expected to continue to increase as a result of targeted enforcement efforts and the implementation of the primary enforcement provision of the current law.

Ultimately, laws governing the use of seat belts are intended to help reduce fatalities and injuries on Tennessee roads. Therefore, traffic crash data has also been examined and submitted in this report. Caution must be used when reviewing crash data, since FY 08-09 data are not complete and considered preliminary due to delays in the receipt and processing of crash data. However, one fact is known: between July 1, 2004 and June 30, 2009, over 52% of vehicle occupants fatally injured in Tennessee traffic crashes, were still not restrained!

During the five-year period, police reported safety restraint usage by vehicle occupants in traffic crashes improved. In FY 04-05, police reported that 3.9% of vehicle occupants involved in traffic crashes were not restrained. This percentage decreased continually to 3.0% in FY 08-09. When comparing FY 04-05 to FY 08-09, the numbers indicate a reduction in the percentage of unrestrained motorists for most injury categories: No Injury = 2.6% to 1.7%; Possible Injury = 5.8% to 4.9%; Incapacitating Injury = 23.9% to 22.8%; and, Fatal Injury = 52.0% to 45.6%. The percentage of persons sustaining a non-incapacitating injury who failed to properly use their safety equipment increased during the same period from 13.2% to 13.5%.

Safety equipment usage surveys by the University of Tennessee reveal that safety restraint usage has risen significantly over the past five years, by approximately 6.2 percentage points, as the number of statewide convictions has also risen steadily. THP-issued citations have steadily decreased. In conviction and Trooper citation data, age, race, and sex appear to maintain stability in the proportion of each across the study period. There does not appear to be any signs of profiling in the enforcement of this law, based upon age, race, or sex.

## **Background**

The Tennessee General Assembly passed Chapter 893 of the "Public Acts of 2004" that among other things, changed Tennessee's safety belt usage law from a "secondary" to a "primary" enforcement law. This change was effective July 1, 2004, and now allows law enforcement officers to stop a vehicle and issue a safety belt ticket to a driver or passenger in a passenger vehicle (up to 8,500 pounds gross vehicle weight rating). Previously, a vehicle had to be stopped and a citation issued for another offense before an officer could issue a ticket for a safety belt violation.

Also included in Chapter 893 was an addition to *Tennessee Code Annotated* § 55-9-603, known as subsection (k), that requires the Tennessee Department of Safety to file an annual report that contains safety belt ticket data for the previous five years. This report must contain safety belt ticket data that includes the age, race, sex, and other information on persons receiving such tickets.

The study and report presented here complies with this requirement, but extends beyond the basic information and data analysis. We also reviewed data from the National Highway Traffic Safety Administration's National Center for Statistics and Analysis, and Tennessee traffic crash data for the previous five years. Moreover, this report contains a section that examines convictions and citations for child restraint devices (CRDs) for the previous five years.

## **Scope and Approach**

Tennessee does not have a statutorily mandated Uniform Traffic Citation program. This means that traffic tickets issued by local law enforcement officers are not reported to a central state database. The only statewide ticket information available is that of citations issued by the Tennessee Highway Patrol. The Trooper Ticket database contains information on each citation issued by State Troopers. Overall THP citation data for both seat belt and child restraint devices, including data involving age, race, and sex will be included for the five-year period as required in Chapter 893.

Due to the lack of a mandated Uniform Traffic Citation, the best source of data on convictions for safety belt violations comes from the Driver History database. It includes convictions, which originate from citations issued by all law enforcement agencies. When drivers are convicted of traffic offenses, court clerks are required to report convictions to the Department of Safety for posting on a driver's record.

The General Assembly authorized TDOS to include any other information deemed relevant to safety belt violations; therefore, this report will examine several other data sources. Information on surveys of safety belt usage rates as reported by NHTSA's National Center for Statistics and Analysis is included, allowing comparison of usage in Tennessee as compared to other states. Usage of safety belts by occupants of vehicles involved in traffic crashes as reported by law enforcement officers throughout the state is also included as is data on violations involving child restraint devices. Finally, all information contained in the report has been updated and revised with the most recent data available as of March 2010.

# Convictions

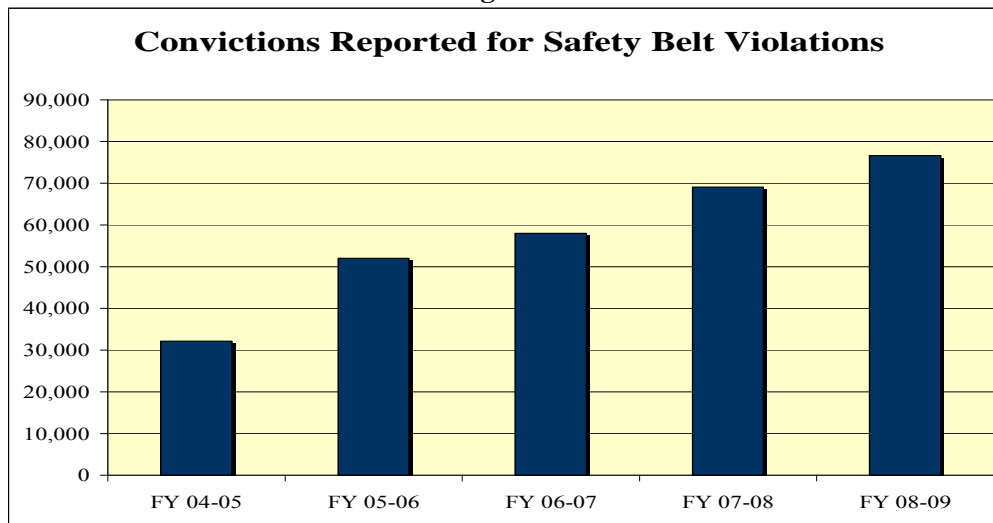


# Convictions Reported by Court Clerks to Tennessee Department of Safety

## Safety Belt Convictions

Safety belt convictions reported by court clerks to the Department of Safety were analyzed to determine the numbers and percentages by occupant type, age, race, and sex.

Figure 1



### *Person Type*

For the purpose of this report, the assumption was made that drivers were ticketed at rates comparable to the convictions. Between the fiscal years FY 04-05 and FY 08-09, 95.3% (274,222) of the 287,874 seat belt convictions reported to the Driver History database were for drivers, an overwhelming majority. For this period, each year the seat belt convictions increased at the rate of 18,415 (26.9%) for drivers and 387 (11.3%) for passengers. However, the percentage of driver convictions fluctuated marginally between 95.5% in FY 04-05 to 96.1% in FY 08-09, but passenger convictions depicted a wider fluctuation, from 4.5% in FY 04-05 to 7.9% in FY 05-06, then to 3.9% in FY 08-09 (Table 1).

## Age

The distribution of driver convictions for seat belt violations by age over the five-year period is relatively normal (Fig. 2) with the mean age of conviction within the age group of 25-34 years. The distribution shows convictions falling within one standard deviation of the mean were in the age range of 21 - 44 years and two standard deviation of the mean in the age range 19 – 64 years. There was an increase in the percentage of drivers convicted within the age range 21-44 from 62.8% in FY 04-05 to 66.3% in FY 08-09. Furthermore, drivers under age 25 saw a significant decrease in the percentage of convictions, from 40.5% in FY 04-05 to 26.9% in FY 08-09; while drivers 45 and over increased from 15.3% to 22.8% of drivers convicted within the same period. Of drivers convicted, those between ages 25 and 34 accounted for the largest percentage (28.5%) during the five-year period.

For the fiscal year 2008-2009, the modal age group for conviction was 25-34 years comprising of 28.5% of all convictions, and 80.3% of all convictions were under the age of 45 years.

Figure 2

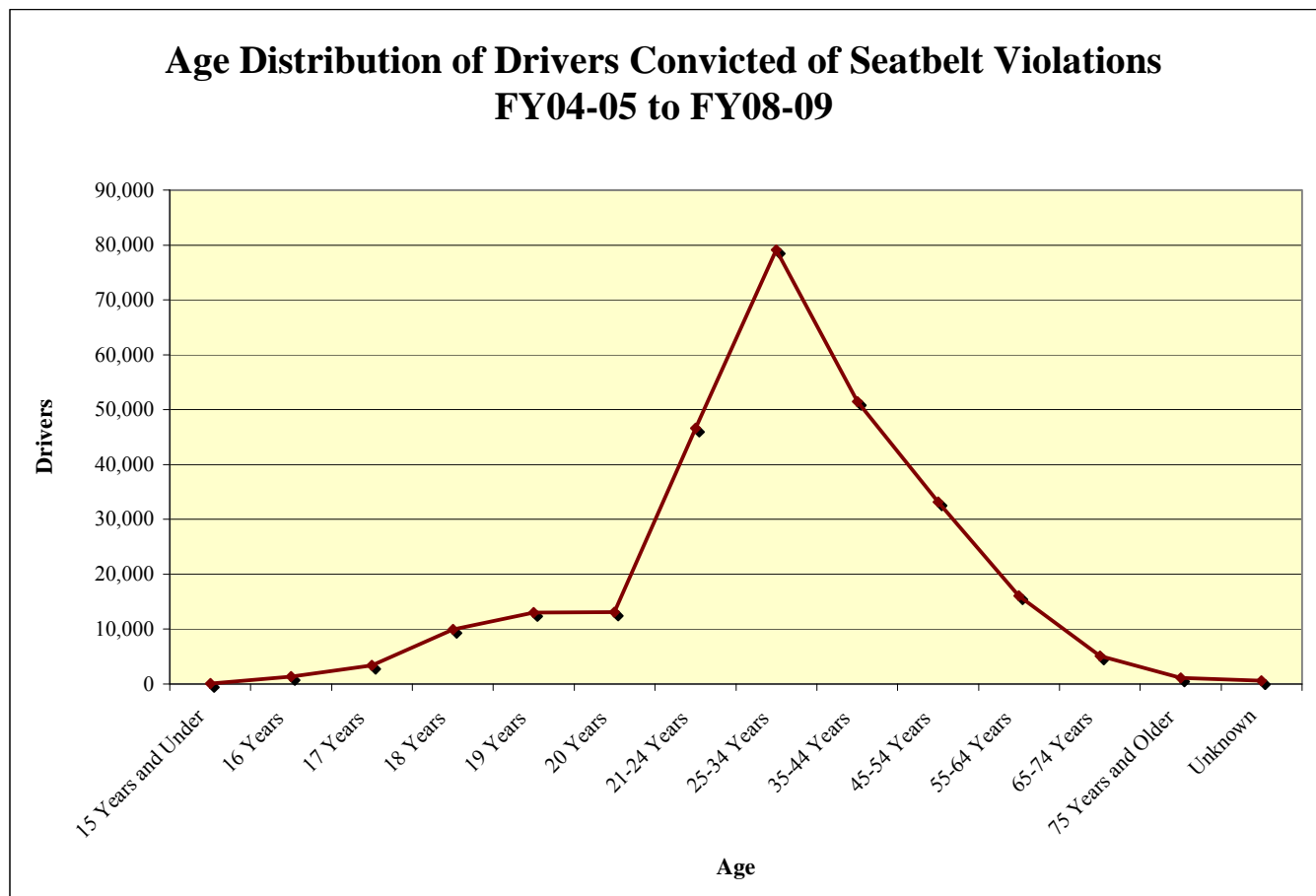


Figure 3

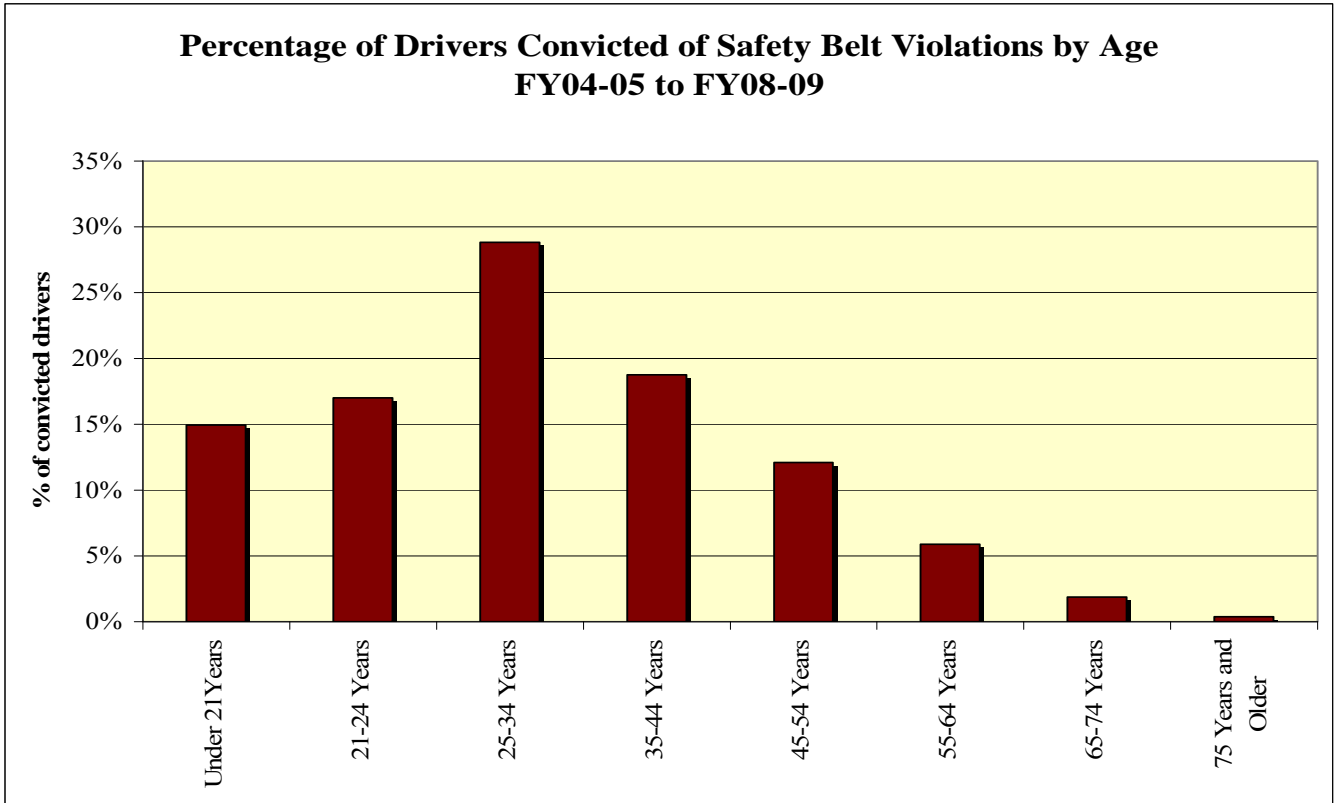
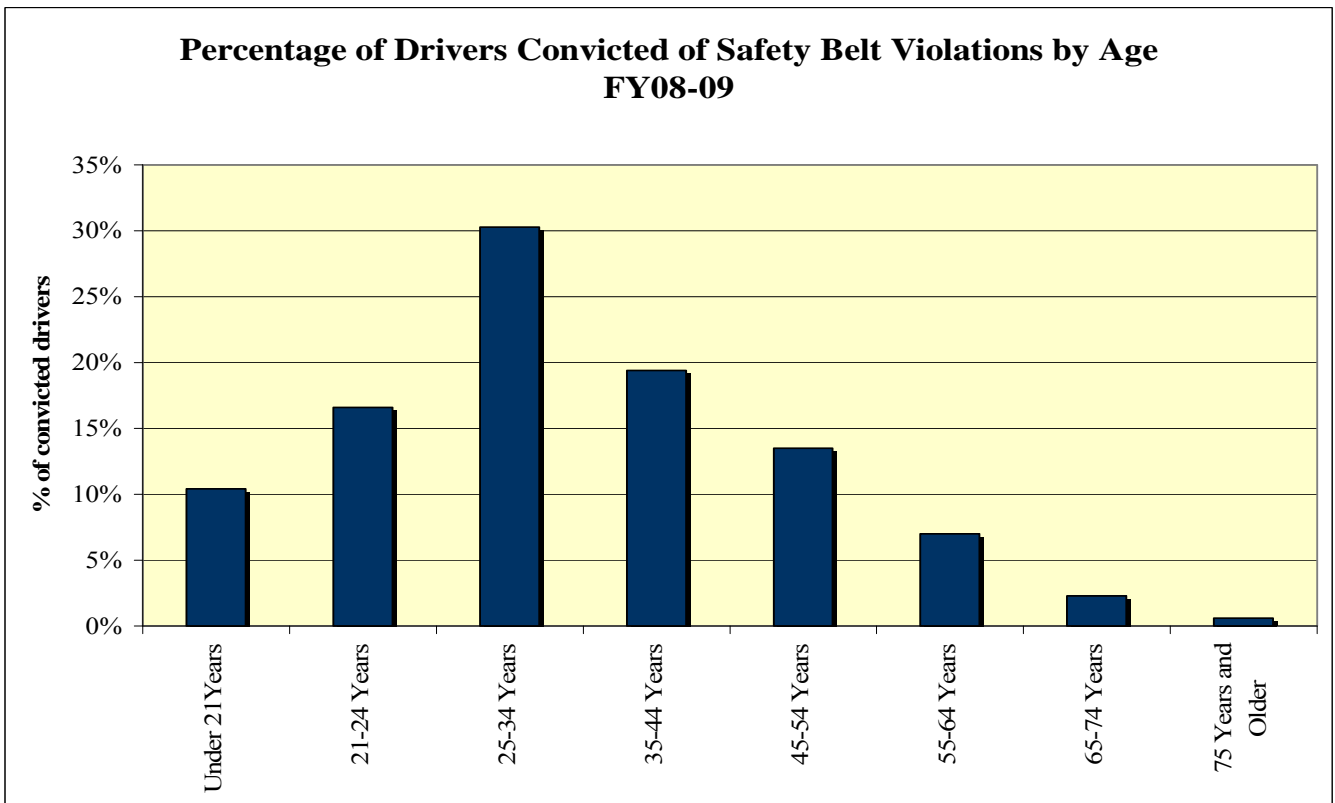


Figure 4



## Convictions Reported for Safety Belt Violations by Person Type and Age

### Table 1

	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>Driver</b>										
<i>15 Years and Under</i>	16	0.1%	41	0.1%	17	0.0%	10	0.0%	2	0.0%
<i>16 Years</i>	382	1.2%	399	0.8%	239	0.4%	289	0.4%	41	0.1%
<i>17 Years</i>	671	2.2%	848	1.8%	714	1.3%	747	1.1%	436	0.6%
<i>18 Years</i>	1,853	6.0%	2,365	4.9%	1,931	3.5%	2,690	4.1%	1,075	1.5%
<i>19 Years</i>	1,928	6.3%	2,462	5.1%	2,769	5.0%	3,055	4.6%	2,812	3.8%
<i>20 Years</i>	1,785	5.8%	2,348	4.9%	2,715	4.9%	3,069	4.6%	3,222	4.4%
<i>21-24 Years</i>	5,805	18.9%	7,973	16.6%	9,638	17.3%	11,012	16.6%	12,205	16.6%
<i>25-34 Years</i>	8,221	26.8%	13,454	28.1%	16,133	28.9%	18,949	28.6%	22,321	30.3%
<i>35-44 Years</i>	5,244	17.1%	9,219	19.2%	10,480	18.8%	12,228	18.5%	14,285	19.4%
<i>45-54 Years</i>	3,002	9.8%	5,207	10.9%	6,725	12.1%	8,329	12.6%	9,924	13.5%
<i>55-64 Years</i>	1,307	4.3%	2,423	5.1%	3,154	5.7%	4,063	6.1%	5,173	7.0%
<i>65-74 Years</i>	374	1.2%	669	1.4%	993	1.8%	1,412	2.1%	1,696	2.3%
<i>75 Years and Older</i>	1	0.0%	345	0.7%	80	0.1%	176	0.3%	469	0.6%
<i>Unknown</i>	110	0.4%	148	0.3%	183	0.3%	161	0.2%	0	0.0%
<b>Total</b>	<b>30,699</b>	<b>95.5%</b>	<b>47,901</b>	<b>92.1%</b>	<b>55,771</b>	<b>96.1%</b>	<b>66,190</b>	<b>95.8%</b>	<b>73,661</b>	<b>96.1%</b>
<b>Passenger</b>										
<i>15 Years and Under</i>	6	0.4%	61	1.5%	4	0.2%	7	0.2%	1	0.0%
<i>16 Years</i>	112	7.7%	632	15.4%	112	5.0%	235	8.2%	30	1.0%
<i>17 Years</i>	171	11.8%	954	23.3%	275	12.3%	396	13.8%	195	6.5%
<i>18 Years</i>	112	7.7%	239	5.8%	284	12.7%	212	7.4%	312	10.4%
<i>19 Years</i>	105	7.3%	199	4.9%	144	6.4%	167	5.8%	212	7.1%
<i>20 Years</i>	82	5.7%	185	4.5%	121	5.4%	146	5.1%	223	7.5%
<i>21-24 Years</i>	253	17.5%	497	12.1%	370	16.6%	408	14.2%	520	17.4%
<i>25-34 Years</i>	297	20.5%	648	15.8%	424	19.0%	630	21.9%	740	24.7%
<i>35-44 Years</i>	174	12.0%	372	9.1%	284	12.7%	378	13.1%	398	13.3%
<i>45-54 Years</i>	93	6.4%	194	4.7%	146	6.5%	192	6.7%	231	7.7%
<i>55-64 Years</i>	34	2.4%	65	1.6%	50	2.2%	71	2.5%	85	2.8%
<i>65-74 Years</i>	6	0.4%	31	0.8%	17	0.8%	31	1.1%	35	1.2%
<i>75 Years and Older</i>	0	0.0%	10	0.2%	1	0.0%	3	0.1%	10	0.3%
<i>Unknown</i>	1	0.1%	15	0.4%	2	0.1%	2	0.1%	0	0.0%
<b>Total</b>	<b>1,446</b>	<b>4.5%</b>	<b>4,102</b>	<b>7.9%</b>	<b>2,234</b>	<b>3.9%</b>	<b>2,878</b>	<b>4.2%</b>	<b>2,992</b>	<b>3.9%</b>
<b>Overall Total</b>	<b>32,145</b>		<b>52,003</b>		<b>58,005</b>		<b>69,068</b>		<b>76,653</b>	

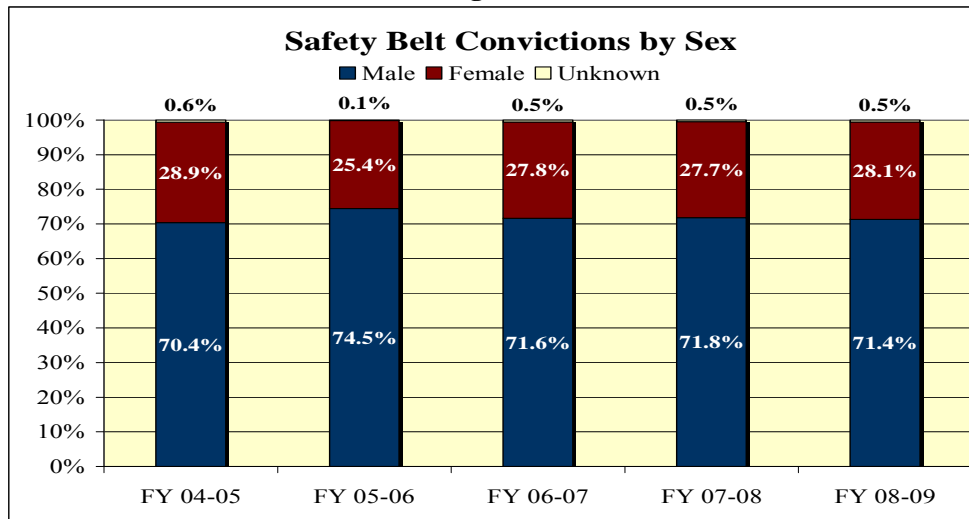
Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 03 Mar 2010.



## Sex and Race

The majority of all convictions reported to Department of Safety were males. On average in the five fiscal years, males were convicted for restraint violations nearly two and half times more than the females. In FY 08-09, males represented 72.0% of the drivers convicted, and 64.0% of the passengers. The chart below illustrates the percentage of males versus females for all convictions reported, both drivers and passengers. Conviction data indicating driver and passenger ethnicity and gender can be found in Table 2

Figure 5



White males were the predominant sex and race of both drivers and passengers convicted, and convicted females were also predominately white. Black males represented 14.9% of the male drivers convicted between FY 04-05 and FY 08-09, varying from 14.9% in FY 04-05 to 8.8% in FY 05-06, and 17.2% in FY 07-08 to 16.5% in FY 08-09. Hispanic drivers represented 3.5% of male drivers convicted in the same period.

White female drivers represented 82.4% of all female drivers convicted over the last five fiscal years, and black females, 15.0%, five and a half times the number of white female drivers convicted. The percentages of white, black, and Hispanic females convicted of safety belt violations all remained relatively consistent for the five-year period.

Figure 6

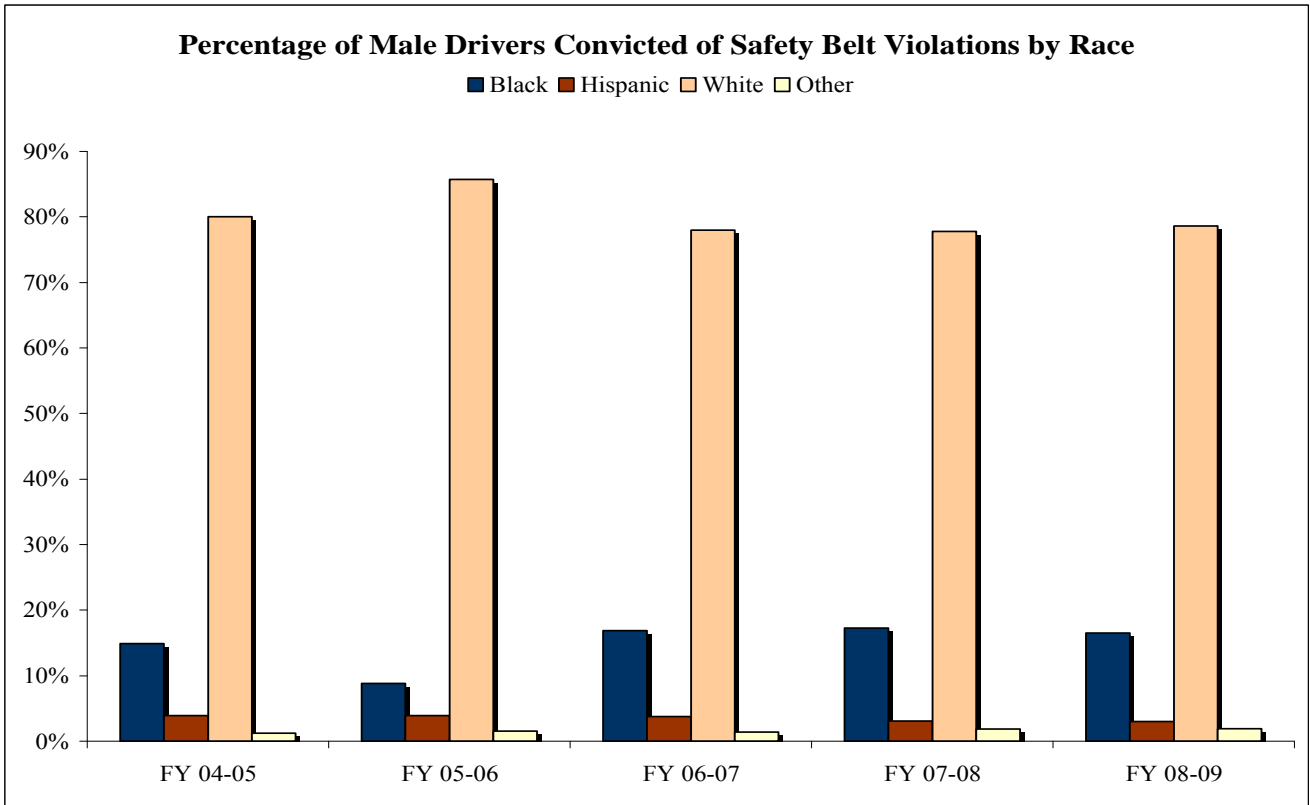
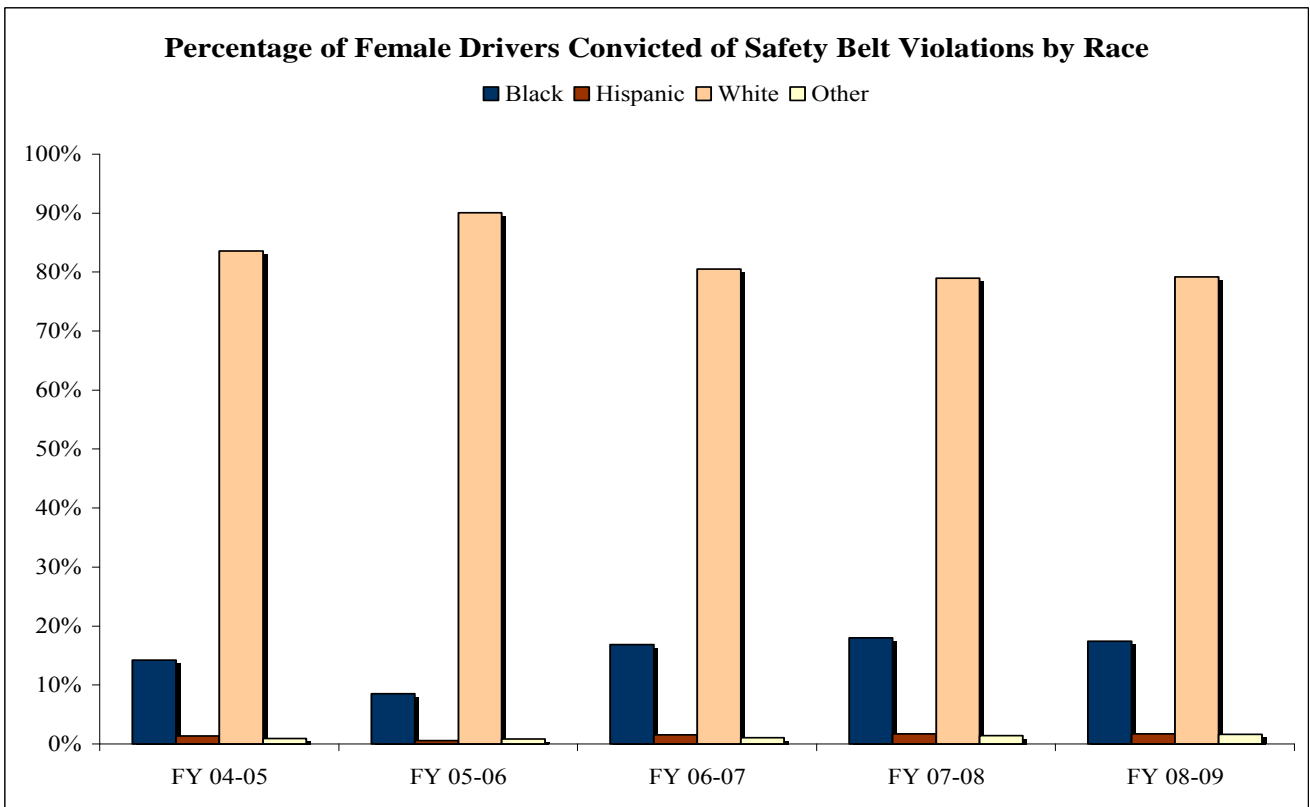


Figure 7



## Safety Belt Convictions By Type, Sex, and Race

**Table 2**

	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>Drivers</b>										
<b>Female</b>	<b>8,816</b>	<b>28.7%</b>	<b>11,927</b>	<b>24.9%</b>	<b>15,353</b>	<b>27.5%</b>	<b>18,151</b>	<b>27.4%</b>	<b>20,480</b>	<b>27.8%</b>
Asian	26	0.3%	7	0.1%	46	0.3%	80	0.4%	101	0.5%
Black	1,253	14.2%	1,017	8.5%	2,590	16.9%	3,260	18.0%	3,572	17.4%
Hispanic	118	1.3%	68	0.6%	240	1.6%	305	1.7%	354	1.7%
Indian	13	0.1%	1	0.0%	24	0.2%	37	0.2%	50	0.2%
White	7,366	83.6%	10,737	90.0%	12,361	80.5%	14,333	79.0%	16,221	79.2%
Other	40	0.5%	97	0.8%	92	0.6%	136	0.7%	182	0.9%
<b>Male</b>	<b>21,691</b>	<b>70.7%</b>	<b>35,910</b>	<b>75.0%</b>	<b>40,139</b>	<b>72.0%</b>	<b>47,742</b>	<b>72.1%</b>	<b>52,794</b>	<b>71.7%</b>
Asian	118	0.5%	67	0.2%	209	0.5%	342	0.7%	380	0.7%
Black	3,227	14.9%	3,163	8.8%	6,766	16.9%	8,232	17.2%	8,735	16.5%
Hispanic	845	3.9%	1,409	3.9%	1,516	3.8%	1,478	3.1%	1,601	3.0%
Indian	43	0.2%	15	0.0%	68	0.2%	96	0.2%	95	0.2%
White	17,362	80.0%	30,777	85.7%	31,297	78.0%	37,137	77.8%	41,481	78.6%
Other	96	0.4%	479	1.3%	283	0.7%	457	1.0%	502	1.0%
Unknown Sex	192	0.6%	64	0.1%	279	0.5%	297	0.4%	387	0.5%
<b>Total Drivers</b>	<b>30,699</b>	<b>95.5%</b>	<b>47,901</b>	<b>92.1%</b>	<b>55,771</b>	<b>96.1%</b>	<b>66,190</b>	<b>95.8%</b>	<b>73,661</b>	<b>96.1%</b>
<b>Passengers</b>										
<b>Female</b>	<b>486</b>	<b>33.6%</b>	<b>1,288</b>	<b>31.4%</b>	<b>794</b>	<b>35.5%</b>	<b>1,008</b>	<b>35.0%</b>	<b>1,071</b>	<b>35.8%</b>
Asian	6	1.2%	1	0.1%	3	0.4%	6	0.6%	6	0.6%
Black	53	10.9%	91	7.1%	67	8.4%	75	7.4%	97	9.1%
Hispanic	4	0.8%	13	1.0%	9	1.1%	15	1.5%	12	1.1%
Indian	1	0.2%	0	0.0%	1	0.1%	2	0.2%	3	0.3%
White	419	86.2%	1,168	90.7%	713	89.8%	906	89.9%	949	88.6%
Other	3	0.6%	15	1.2%	1	0.1%	4	0.4%	4	0.4%
<b>Male</b>	<b>948</b>	<b>65.6%</b>	<b>2,810</b>	<b>68.5%</b>	<b>1,418</b>	<b>63.5%</b>	<b>1,856</b>	<b>64.5%</b>	<b>1,906</b>	<b>63.7%</b>
Asian	7	0.7%	3	0.1%	7	0.5%	3	0.2%	6	0.3%
Black	118	12.4%	202	7.2%	140	9.9%	183	9.9%	184	9.7%
Hispanic	54	5.7%	111	4.0%	45	3.2%	32	1.7%	53	2.8%
Indian	1	0.1%	0	0.0%	4	0.3%	2	0.1%	2	0.1%
White	761	80.3%	2,450	87.2%	1,209	85.3%	1,628	87.7%	1,655	86.8%
Other	7	0.7%	44	1.6%	13	0.9%	8	0.4%	6	0.3%
Unknown Sex	12	0.8%	4	0.1%	22	1.0%	14	0.5%	15	0.5%
<b>Total Pass</b>	<b>1,446</b>	<b>4.5%</b>	<b>4,102</b>	<b>7.9%</b>	<b>2,234</b>	<b>3.9%</b>	<b>2,878</b>	<b>4.2%</b>	<b>2,992</b>	<b>3.9%</b>
<b>Total Convictions</b>	<b>32,145</b>		<b>52,003</b>		<b>58,005</b>		<b>69,068</b>		<b>76,653</b>	

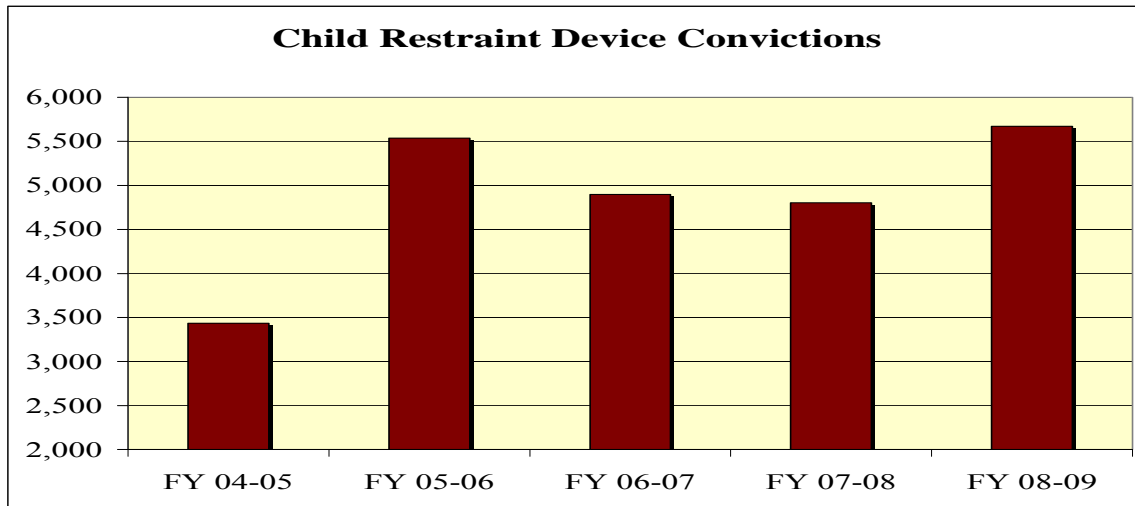
Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 22 Feb 2010.



## Child Restraint Convictions

Child restraint device (CRD) convictions reported by the court clerks to the Department of Safety were also analyzed to determine the numbers and percentages by age, race, and sex. Figure 8 shows the distribution of child restraint violations over five fiscal years, FY04-05 to FY 08-09. The average number of convictions was 4,868, ranging from 3,434 in FY 04-05 to 5,672 in FY 08-09.

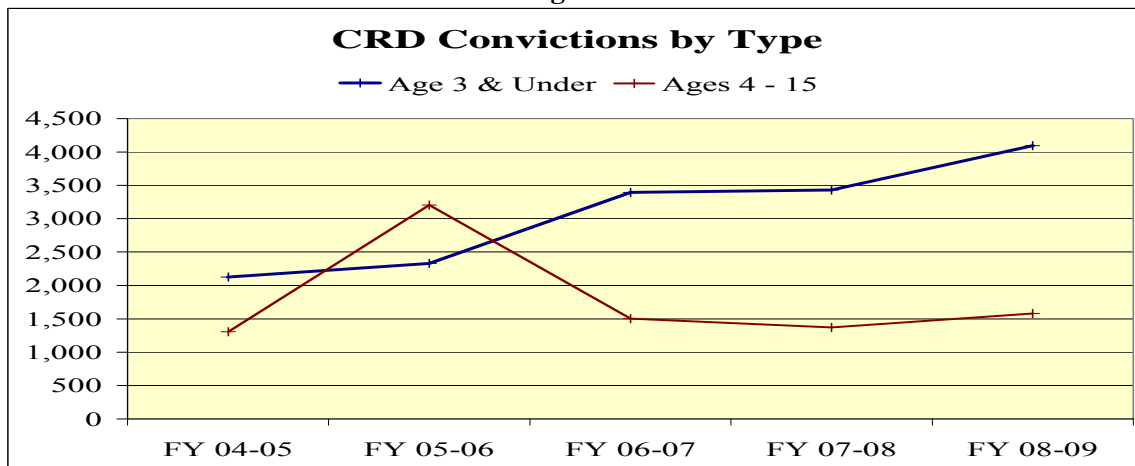
Figure 8



### *Type*

Violations of CRD law (TCA § 55-9-602), effective July 1, 2005, are divided into two categories: (1) violations involving children three years of age and younger, and (2) violations involving children ages four through fifteen. Most years, more convictions were reported for violations involving children three years of age and younger, with the percentage of violations of this type increasing from 61.9% in FY 04-05 to 72.2% in FY 08-09. Comparing CRD violations trends for ages 4 through 15 and ages 3 and under, the former has a trend that fluctuated in the first three years and thereafter remained stable, but the latter has a consistently rising trend. CRD increased from 1,307 and 3,434 in FY 04-05 to 1,578 and 5,672 in FY 08-09 respectively.

Figure 9



## Age

In the past five fiscal years, 69.3% of drivers convicted for CRD violations – ages 4 through 15 were between the ages 20 and 39, and 75.0% of drivers convicted for CRD violations – ages 3 and under also fell into this age group.

For drivers between the ages 20-39, convictions for CRD violations rose from 72.8% in FY 04-05 to 73.4% in FY 08-09. However, during this period, as percentage of all drivers convicted of CRD violations, 20 to 39 year old drivers remain stable at nearly 73.0%. It is not surprising that these age groups represent the majority of convictions for CRD convictions; since these are the ages most adults begin families, and would therefore be transporting children.

Figure 10

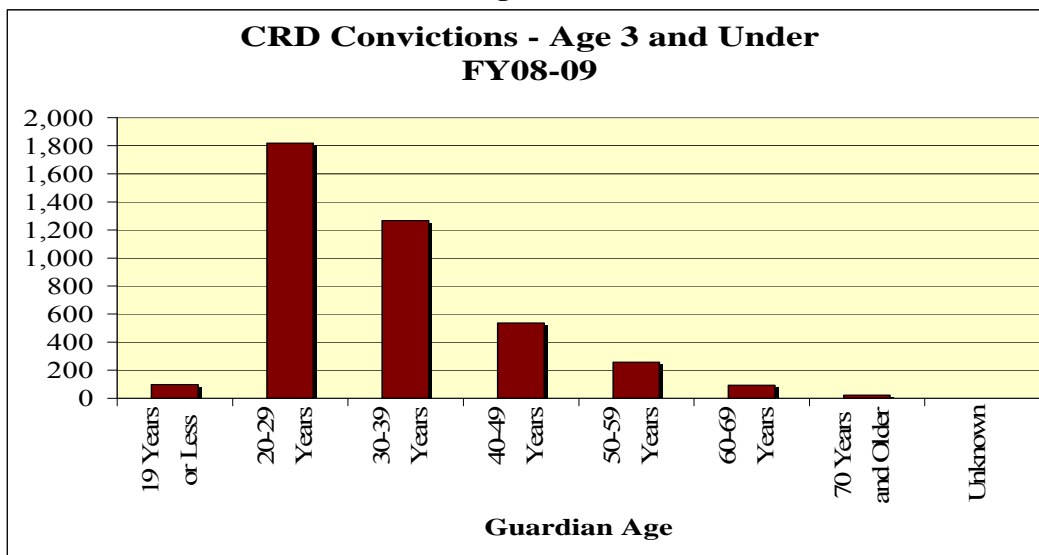
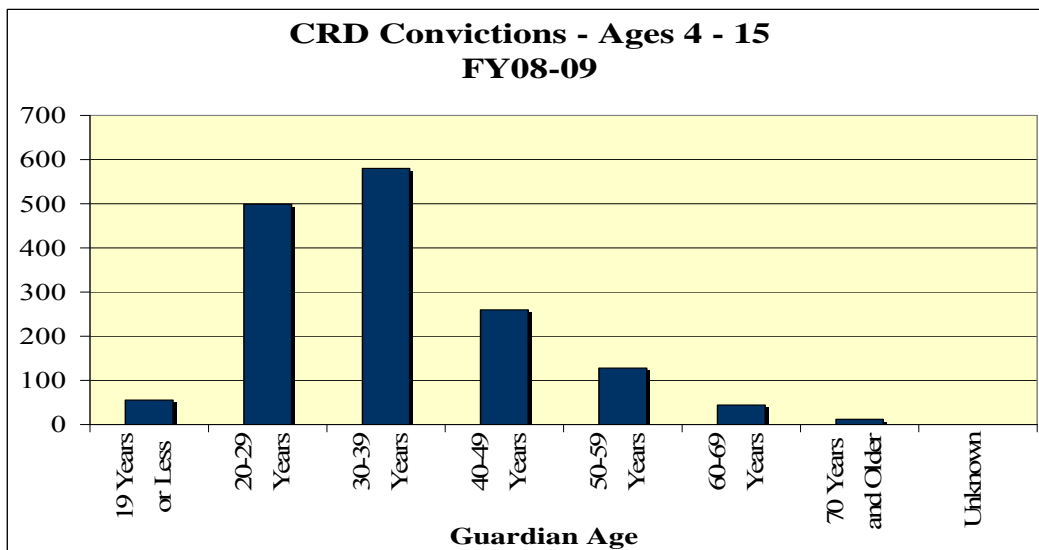


Figure 11



**Child Restraint Device Convictions By Driver Age**  
**Table 3**

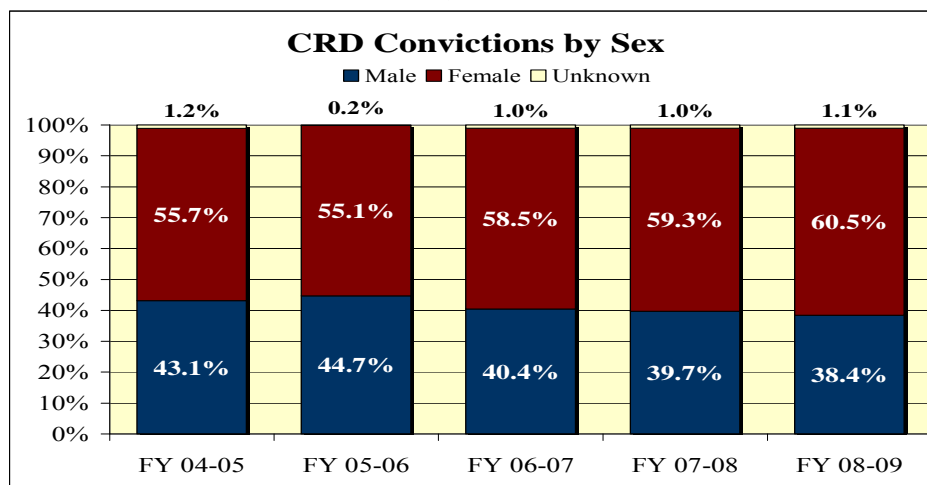
	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>CRD Convictions - Ages 4 through 15</b>										
19 Years or Less	99	7.6%	286	8.9%	85	5.7%	90	6.6%	55	3.5%
20-29 Years	465	35.6%	1,169	36.5%	623	41.5%	471	34.3%	499	31.6%
30-39 Years	443	33.9%	1,067	33.3%	462	30.8%	440	32.1%	580	36.8%
40-49 Years	195	14.9%	436	13.6%	211	14.0%	223	16.3%	260	16.5%
50-59 Years	68	5.2%	162	5.1%	80	5.3%	98	7.1%	128	8.1%
60-69 Years	30	2.3%	58	1.8%	35	2.3%	42	3.1%	44	2.8%
70+ Years	5	0.4%	19	0.6%	5	0.3%	7	0.5%	12	0.8%
Unknown	2	0.2%	8	0.2%	1	0.1%	1	0.1%	0	0.0%
<b>Total</b>	<b>1,307</b>	<b>38.1%</b>	<b>3,205</b>	<b>57.9%</b>	<b>1,502</b>	<b>30.7%</b>	<b>1,372</b>	<b>28.6%</b>	<b>1,578</b>	<b>27.8%</b>
<b>CRD Convictions - Age 3 and Under</b>										
19 Years or Less	149	7.0%	170	7.3%	263	7.7%	167	4.9%	98	2.4%
20-29 Years	1,031	48.5%	1,164	49.9%	1,729	50.9%	1,642	47.9%	1818	44.4%
30-39 Years	562	26.4%	560	24.0%	810	23.9%	967	28.2%	1267	30.9%
40-49 Years	260	12.2%	270	11.6%	388	11.4%	394	11.5%	538	13.1%
50-59 Years	91	4.3%	113	4.8%	133	3.9%	175	5.1%	258	6.3%
60-69 Years	27	1.3%	38	1.6%	59	1.7%	67	2.0%	93	2.3%
70+ Years	3	0.1%	8	0.3%	12	0.4%	16	0.5%	22	0.5%
Unknown	4	0.2%	8	0.3%	2	0.1%	3	0.1%	0	0.0%
<b>Total</b>	<b>2,127</b>	<b>61.9%</b>	<b>2,331</b>	<b>42.1%</b>	<b>3,396</b>	<b>69.3%</b>	<b>3,431</b>	<b>71.4%</b>	<b>4,094</b>	<b>72.2%</b>
<b>FY Total</b>	<b>3,434</b>		<b>5,536</b>		<b>4,898</b>		<b>4,803</b>		<b>5,672</b>	

Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 22 Feb 2010.

### Sex and Race

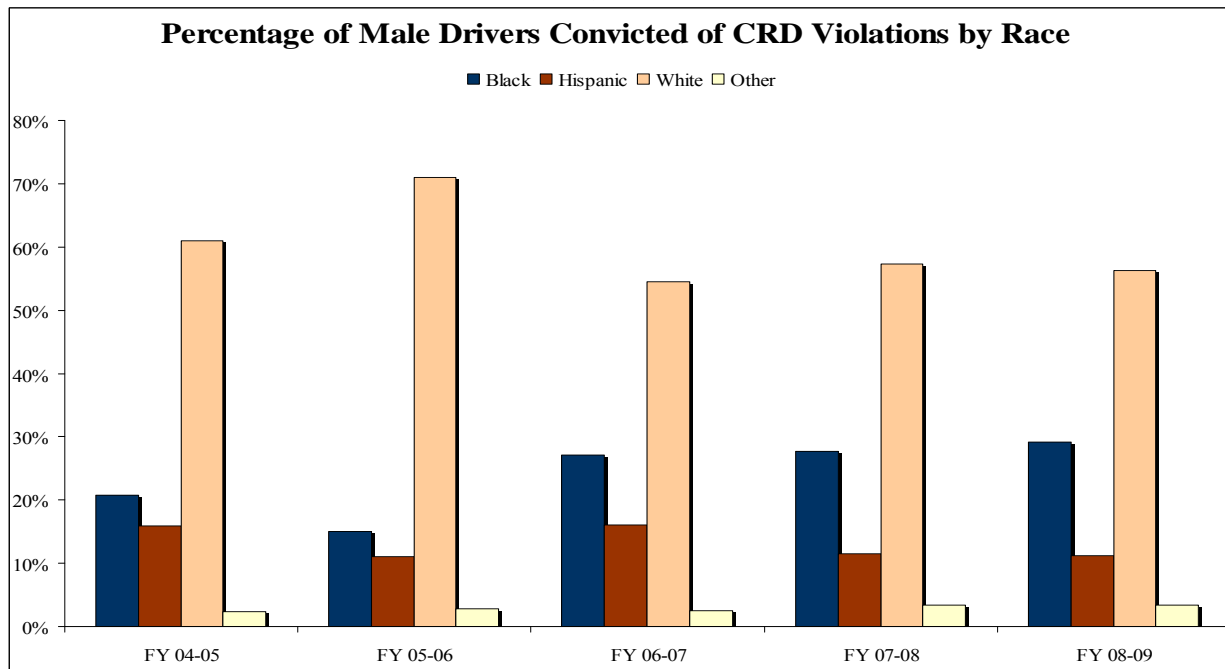
Unlike safety belt convictions, the majority of all CRD convictions reported to the Department of Safety were females. The number of female convictions rose steadily from 55.1% in FY 05-06 to 60.5% in FY 08-09. The chart below illustrates the percentage of males versus females for all convictions reported.

**Figure 12**

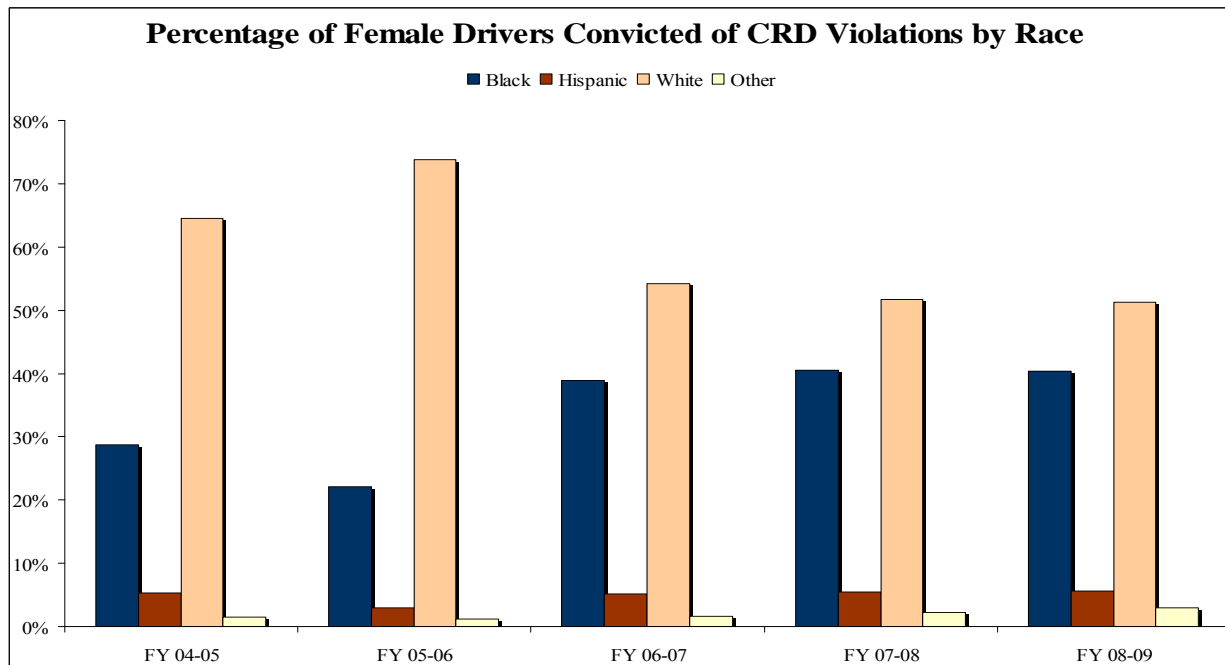


As with safety belt convictions, both male and female violators of the CRD laws were predominately white. However, the percentage of white and Hispanic CRD violations decreased from 61.0% and 15.9% in FY 04-05 to 56.0% and 11.2% in FY 08-09 respectively, but the percentage of black and other violators increased from 20.8% and 2.3% in FY 04-05 to 29.2% and 3.4% in FY 08-09 respectively.

**Figure 13**



**Figure 14**





**CRD Convictions Reported By Type, Sex, and Race**  
**Table 4**

	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>CRD Convictions - Ages 4 through 15</b>										
<b>Female</b>	<b>713</b>	<b>54.6%</b>	<b>1,719</b>	<b>53.6%</b>	<b>828</b>	<b>55.1%</b>	<b>777</b>	<b>56.6%</b>	<b>883</b>	<b>56.0%</b>
<i>Black</i>	157	22.0%	320	18.6%	236	28.5%	207	26.6%	246	27.9%
<i>Hispanic</i>	29	4.1%	40	2.3%	45	5.4%	29	3.7%	39	4.4%
<i>White</i>	516	72.4%	1,346	78.3%	529	63.9%	534	68.7%	577	65.3%
<i>Other</i>	11	1.5%	13	0.8%	18	2.2%	7	0.9%	21	2.4%
<b>Male</b>	<b>581</b>	<b>44.5%</b>	<b>1,480</b>	<b>46.2%</b>	<b>664</b>	<b>44.2%</b>	<b>584</b>	<b>42.6%</b>	<b>684</b>	<b>43.3%</b>
<i>Black</i>	95	16.4%	179	12.1%	122	18.4%	108	18.5%	135	19.7%
<i>Hispanic</i>	61	10.5%	130	8.8%	103	15.5%	32	5.5%	46	6.7%
<i>White</i>	408	70.2%	1,127	76.1%	426	64.2%	430	73.6%	484	70.8%
<i>Other</i>	17	2.9%	44	3.0%	13	2.0%	14	2.4%	19	2.8%
Unknown Sex	13	1.0%	6	0.2%	10	0.7%	11	0.8%	11	0.7%
<b>Total</b>	<b>1,307</b>	<b>38.1%</b>	<b>3,205</b>	<b>57.9%</b>	<b>1,502</b>	<b>30.7%</b>	<b>1,372</b>	<b>28.6%</b>	<b>1,578</b>	<b>27.8%</b>
<b>CRD Convictions - Age 3 and Under</b>										
<b>Female</b>	<b>1,200</b>	<b>56.4%</b>	<b>1,330</b>	<b>57.1%</b>	<b>2,039</b>	<b>60.0%</b>	<b>2,070</b>	<b>60.3%</b>	<b>2,549</b>	<b>62.3%</b>
<i>Black</i>	392	32.7%	353	26.5%	879	43.1%	948	45.8%	1,137	44.6%
<i>Hispanic</i>	73	6.1%	51	3.8%	104	5.1%	125	6.0%	152	6.0%
<i>White</i>	718	59.8%	907	68.2%	1,025	50.3%	940	45.4%	1,182	46.4%
<i>Other</i>	17	1.4%	19	1.4%	31	1.5%	57	2.8%	78	3.1%
<b>Male</b>	<b>900</b>	<b>42.3%</b>	<b>994</b>	<b>42.6%</b>	<b>1,317</b>	<b>38.8%</b>	<b>1,323</b>	<b>38.6%</b>	<b>1,495</b>	<b>36.5%</b>
<i>Black</i>	213	23.7%	193	19.4%	414	31.4%	421	31.8%	501	33.5%
<i>Hispanic</i>	174	19.3%	143	14.4%	214	16.2%	187	14.1%	197	13.2%
<i>White</i>	496	55.1%	631	63.5%	653	49.6%	664	50.2%	743	49.7%
<i>Other</i>	17	1.9%	27	2.7%	36	2.7%	51	3.9%	54	3.6%
Unknown Sex	27	1.3%	7	0.3%	40	1.2%	38	1.1%	50	1.2%
<b>Total</b>	<b>2,127</b>	<b>61.9%</b>	<b>2,331</b>	<b>42.1%</b>	<b>3,396</b>	<b>69.3%</b>	<b>3,431</b>	<b>71.4%</b>	<b>4,094</b>	<b>72.2%</b>
<b>Grand Total</b>	<b>3,434</b>		<b>5,536</b>		<b>4,898</b>		<b>4,803</b>		<b>5,672</b>	

Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 22 Feb 2010.



# Citations

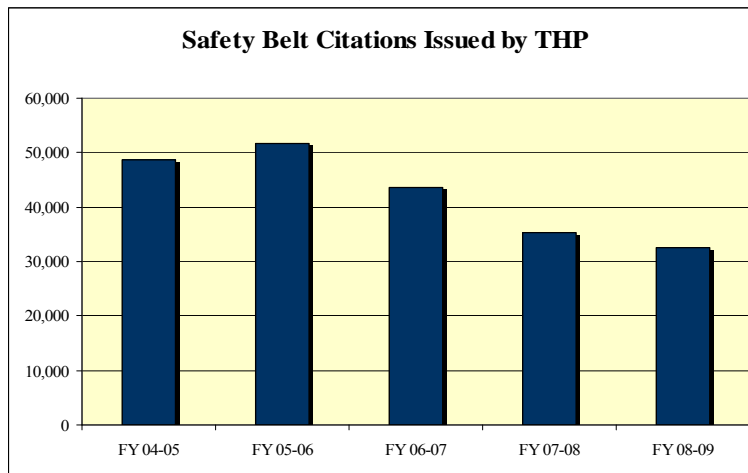


# Citations Issued by the Tennessee Highway Patrol (THP)

## THP-Issued Citations for Safety Belt Violations

The chart below illustrates the number of safety belt citations issued by the THP over the last five years. Over the last four fiscal years, there was a steady decrease in the number of safety belt citations issued.

Figure 15



THP Citations Issued for Safety Belt Violations By Person Type and Age

Table 5

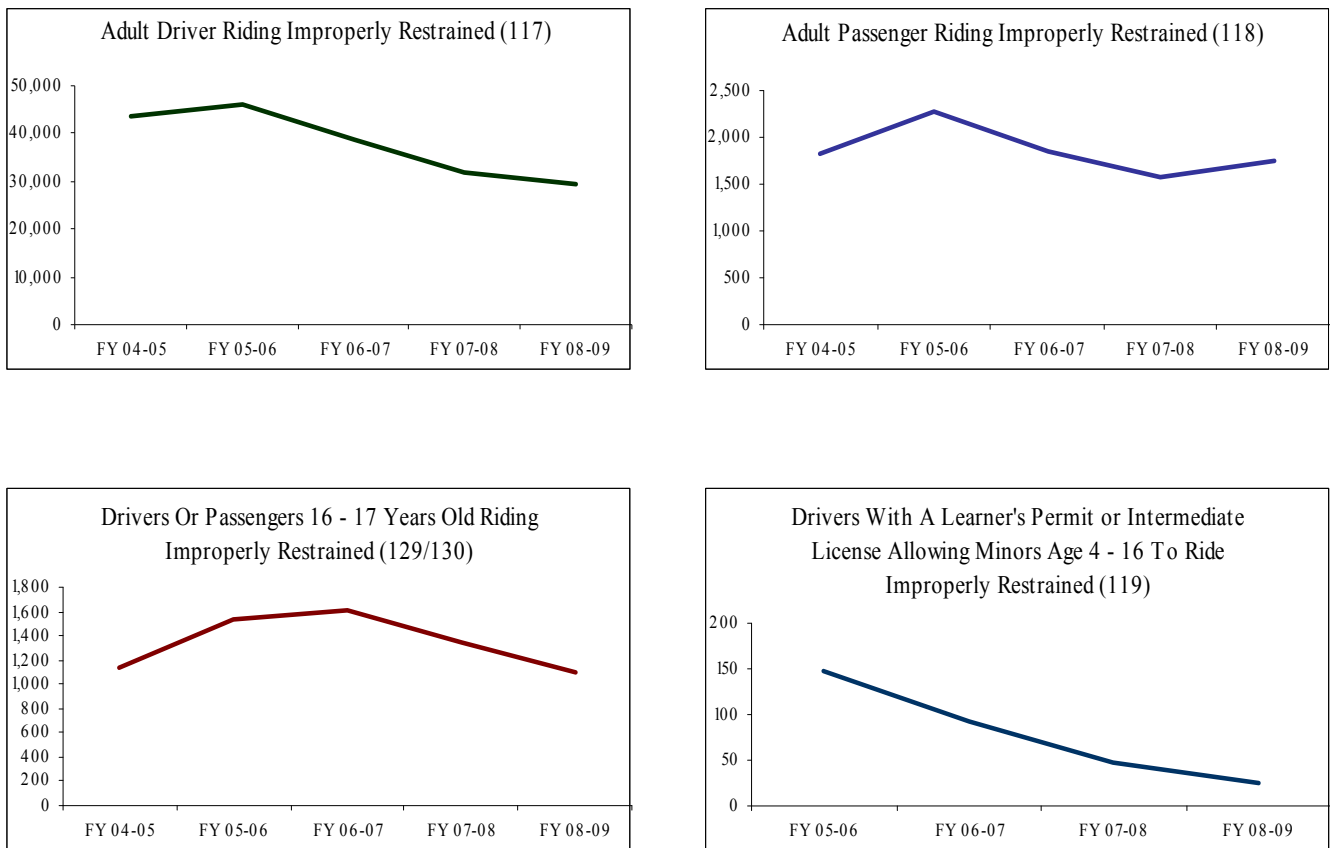
	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>Driver</b>										
15 Years and Under	80	0.2%	40	0.1%	29	0.1%	20	0.1%	18	0.1%
16 Years	554	1.2%	426	0.9%	342	0.9%	172	0.5%	155	0.5%
17 Years	1,106	2.4%	882	1.8%	619	1.5%	361	1.1%	301	1.0%
18 Years	2,366	5.2%	2,356	4.9%	1,946	4.9%	1,586	4.9%	1,372	4.6%
19 Years	2,529	5.6%	2,433	5.1%	2,069	5.2%	1,637	5.1%	1,475	5.0%
20 Years	2,223	4.9%	2,336	4.9%	1,893	4.7%	1,459	4.5%	1,318	4.4%
21-24 Years	7,907	17.4%	7,940	16.6%	6,503	16.3%	5,291	16.3%	4,621	15.6%
25-34 Years	12,689	27.9%	13,364	28.0%	11,217	28.1%	9,161	28.3%	8,403	28.3%
35-44 Years	8,217	18.1%	9,159	19.2%	7,654	19.1%	6,213	19.2%	5,846	19.7%
45-54 Years	4,742	10.4%	5,181	10.9%	4,718	11.8%	3,947	12.2%	3,642	12.3%
55-64 Years	1,974	4.3%	2,414	5.1%	2,069	5.2%	1,778	5.5%	1,812	6.1%
65-74 Years	612	1.3%	666	1.4%	592	1.5%	585	1.8%	526	1.8%
75 Years and Older	225	0.5%	276	0.6%	239	0.6%	165	0.5%	155	0.5%
Unknown	240	0.5%	219	0.5%	96	0.2%	35	0.1%	35	0.1%
<b>Total</b>	<b>45,464</b>	<b>93.5%</b>	<b>47,692</b>	<b>92.3%</b>	<b>39,986</b>	<b>91.9%</b>	<b>32,410</b>	<b>91.5%</b>	<b>29,679</b>	<b>91.3%</b>
<b>Passenger</b>										
15 Years and Under	53	1.7%	56	1.4%	65	1.8%	51	1.7%	47	1.7%
16 Years	503	15.9%	595	15.0%	636	18.0%	535	17.9%	432	15.2%
17 Years	651	20.6%	900	22.7%	891	25.2%	779	26.0%	641	22.6%
18 Years	217	6.9%	238	6.0%	190	5.4%	149	5.0%	137	4.8%
19 Years	148	4.7%	200	5.0%	146	4.1%	131	4.4%	125	4.4%
20 Years	152	4.8%	182	4.6%	115	3.2%	123	4.1%	115	4.0%
21-24 Years	398	12.6%	484	12.2%	389	11.0%	295	9.8%	324	11.4%
25-34 Years	468	14.8%	633	16.0%	523	14.8%	464	15.5%	481	16.9%
35-44 Years	299	9.5%	362	9.1%	329	9.3%	259	8.6%	281	9.9%
45-54 Years	168	5.3%	192	4.8%	159	4.5%	147	4.9%	171	6.0%
55-64 Years	58	1.8%	67	1.7%	55	1.6%	37	1.2%	55	1.9%
65-74 Years	13	0.4%	30	0.8%	22	0.6%	18	0.6%	19	0.7%
75 Years and Older	2	0.1%	4	0.1%	13	0.4%	8	0.3%	9	0.3%
Unknown	26	0.8%	20	0.5%	6	0.2%	0	0.0%	4	0.1%
<b>Total</b>	<b>3,156</b>	<b>6.5%</b>	<b>3,963</b>	<b>7.7%</b>	<b>3,539</b>	<b>8.1%</b>	<b>2,996</b>	<b>8.5%</b>	<b>2,841</b>	<b>8.7%</b>
<b>Overall Total</b>	<b>48,620</b>		<b>51,655</b>		<b>43,525</b>		<b>35,406</b>		<b>32,520</b>	

Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 18 Feb 2010

## Person Type

THP citations followed the statewide conviction pattern with the overwhelming majority issued to drivers. Over the five year period, drivers received over 91% of all THP citations issued. However, during the period from FY 04-05 through FY 08-09, the percentage of citations issued to passengers continually increased, from 6.5% to 8.7%. The graphs below illustrate the trends for citations issued by THP over the past five years based on the type of safety belt violation.

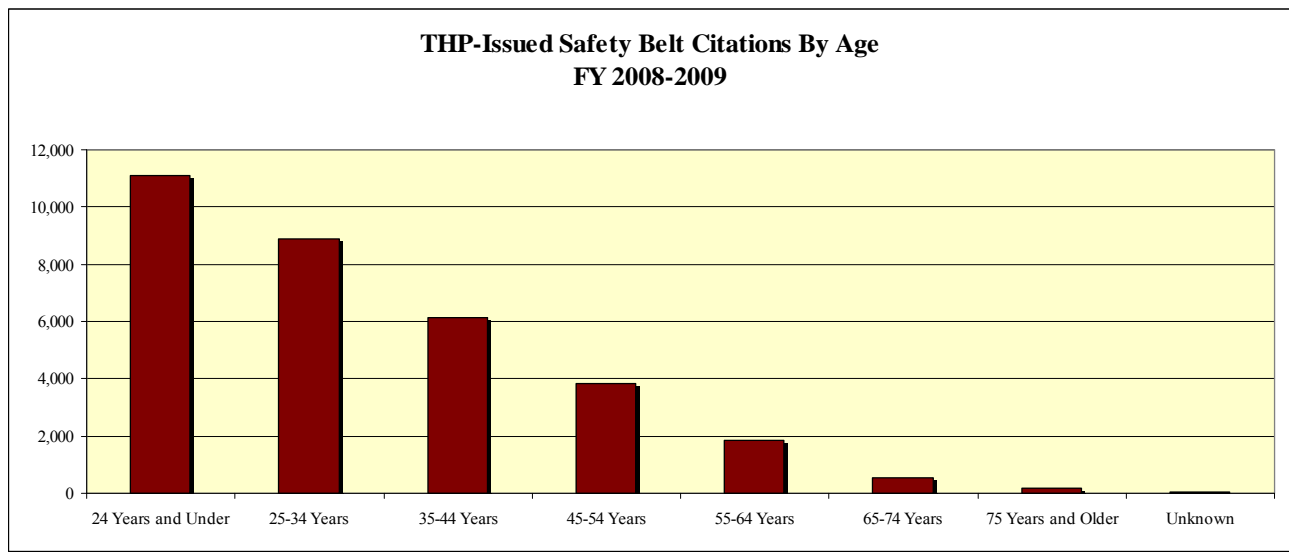
**Figure 16**



## Age

Similar to the pattern of convictions in each of the last five years, over 63% of the drivers issued safety belt citations in FY 08-09 by THP were between the ages of 21 and 44. Drivers under the age of 24 saw a 12% decrease in the number of citations issued by THP from 10,526 in FY 07-08 to 9,260 in FY 08-09, but remained the most cited group. Drivers between ages 25-34, the second most frequently ticketed age group, were issued over 28% of the citations during the fiscal year.

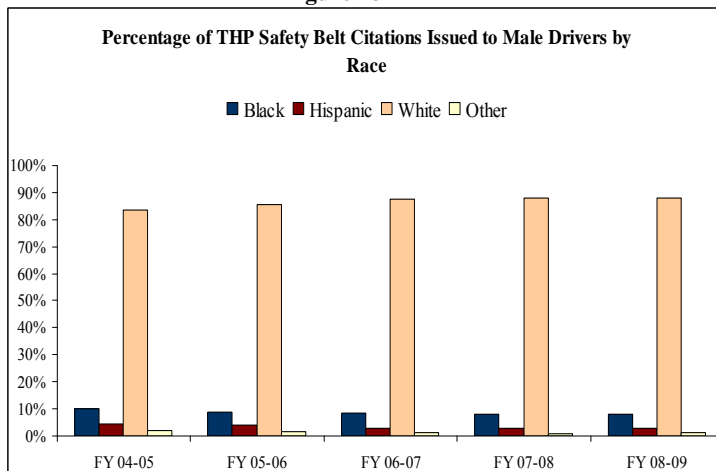
**Figure 17**



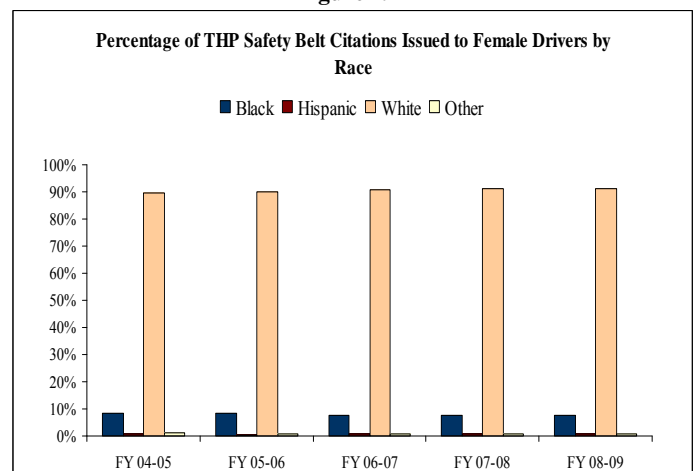
## Sex and Race

Males accounted for 75.5% of the drivers ticketed during FY 08-09, which is virtually unchanged from the previous five years. Table 6 on the next page shows the numbers and percentages of THP citations for safety belt violations by type, sex, and race. Of the male drivers receiving citations from Troopers, white males received over 86% during the five-year period, black males received 8.8%, and Hispanic males received 3.5%. Of the female drivers receiving citations from Troopers, white females received 90.4% over the five-year period, black females received 8%, and Hispanic females received 0.7%.

**Figure 18**



**Figure 19**



**THP-Issued Safety Belt Citations By Type, Sex, and Race**  
**Table 6**

	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>Drivers</b>										
<b>Female</b>	<b>11,162</b>	<b>24.6%</b>	<b>11,863</b>	<b>24.6%</b>	<b>9,938</b>	<b>24.9%</b>	<b>7,740</b>	<b>23.9%</b>	<b>7,238</b>	<b>24.4%</b>
<i>Asian</i>	9	0.1%	7	0.1%	8	0.1%	6	0.1%	8	0.1%
<i>Black</i>	944	8.5%	1,015	8.5%	757	8.6%	576	7.4%	551	7.6%
<i>Hispanic</i>	76	0.7%	65	0.7%	75	0.5%	59	0.8%	47	0.6%
<i>Indian</i>	3	0.0%	1	0.0%	1	0.0%	4	0.1%	0	0.0%
<i>White</i>	9,994	89.5%	10,679	89.5%	9,021	90.0%	7,044	91.0%	6,596	91.1%
<i>Other</i>	136	1.2%	96	1.2%	76	0.8%	51	0.7%	36	0.5%
<b>Male</b>	<b>34,268</b>	<b>75.4%</b>	<b>35,768</b>	<b>75.4%</b>	<b>30,016</b>	<b>75.0%</b>	<b>24,638</b>	<b>76.0%</b>	<b>22,403</b>	<b>75.5%</b>
<i>Asian</i>	51	0.1%	67	0.1%	36	0.2%	38	0.2%	38	0.2%
<i>Black</i>	3,486	10.2%	3,153	10.2%	2,514	8.8%	1,990	8.1%	1,762	7.9%
<i>Hispanic</i>	1,448	4.2%	1,393	4.2%	866	3.9%	715	2.9%	662	3.0%
<i>Indian</i>	12	0.0%	15	0.0%	10	0.0%	14	0.1%	2	0.0%
<i>White</i>	28,615	83.5%	30,663	83.5%	26,320	85.7%	21,696	88.1%	19,728	88.1%
<i>Other</i>	656	1.9%	477	1.9%	270	1.3%	185	0.8%	211	0.9%
Unknown Sex	34		61		32		32		38	
<b>Total Drivers</b>	<b>45,464</b>		<b>47,692</b>		<b>39,986</b>		<b>32,410</b>		<b>29,679</b>	
<b>Passengers</b>										
<b>Female</b>	<b>1,015</b>	<b>32.2%</b>	<b>1,252</b>	<b>32.2%</b>	<b>1,055</b>	<b>31.6%</b>	<b>885</b>	<b>29.5%</b>	<b>894</b>	<b>31.5%</b>
<i>Asian</i>	2	0.2%	1	0.2%	0	0.1%	0	0.0%	0	0.0%
<i>Black</i>	85	8.4%	87	8.4%	60	6.9%	33	3.7%	53	5.9%
<i>Hispanic</i>	10	1.0%	11	1.0%	6	0.9%	5	0.6%	13	1.5%
<i>Indian</i>	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
<i>White</i>	898	88.5%	1,138	88.5%	980	90.9%	840	94.9%	825	92.3%
<i>Other</i>	20	2.0%	15	2.0%	9	1.2%	7	0.8%	3	0.3%
<b>Male</b>	<b>2,137</b>	<b>67.7%</b>	<b>2,707</b>	<b>67.7%</b>	<b>2,481</b>	<b>68.3%</b>	<b>2,108</b>	<b>70.4%</b>	<b>1,947</b>	<b>68.5%</b>
<i>Asian</i>	7	0.3%	3	0.3%	3	0.1%	1	0.0%	3	0.2%
<i>Black</i>	216	10.1%	197	10.1%	168	7.3%	118	5.6%	95	4.9%
<i>Hispanic</i>	110	5.1%	108	5.1%	82	4.0%	39	1.9%	73	3.7%
<i>Indian</i>	0	0.0%	0	0.0%	0	0.0%	1	0.0%	0	0.0%
<i>White</i>	1,755	82.1%	2,356	82.1%	2,207	87.0%	1,937	91.9%	1,757	90.2%
<i>Other</i>	49	2.3%	43	2.3%	21	1.6%	12	0.6%	19	1.0%
Unknown Sex	4		4		3		3		0	
<b>Total Passengers</b>	<b>3,156</b>		<b>3,963</b>		<b>3,539</b>		<b>2,996</b>		<b>2,841</b>	
<b>Total Citations</b>	<b>48,620</b>		<b>51,655</b>		<b>43,525</b>		<b>35,406</b>		<b>32,520</b>	

Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 18 Feb 2010



## THP-Issued Citations for Child Restraint Device (CRD) Violations

The graph below illustrates the number of CRD citations issued by the THP over the last five years. The graph shows that CRD citations issued by THP have decreased each year since FY 04-05.

Figure 20

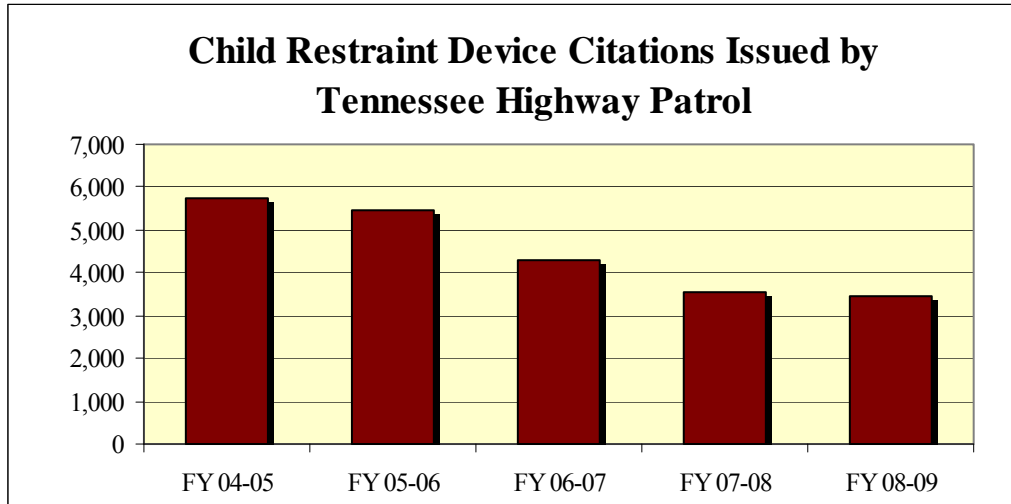


Table 7 shows the number of THP citations issued by type (3 years of age and under/4-15 years of age) and guardian age.

**THP-Issued Child Restraint Device Citations By Age**  
Table 7

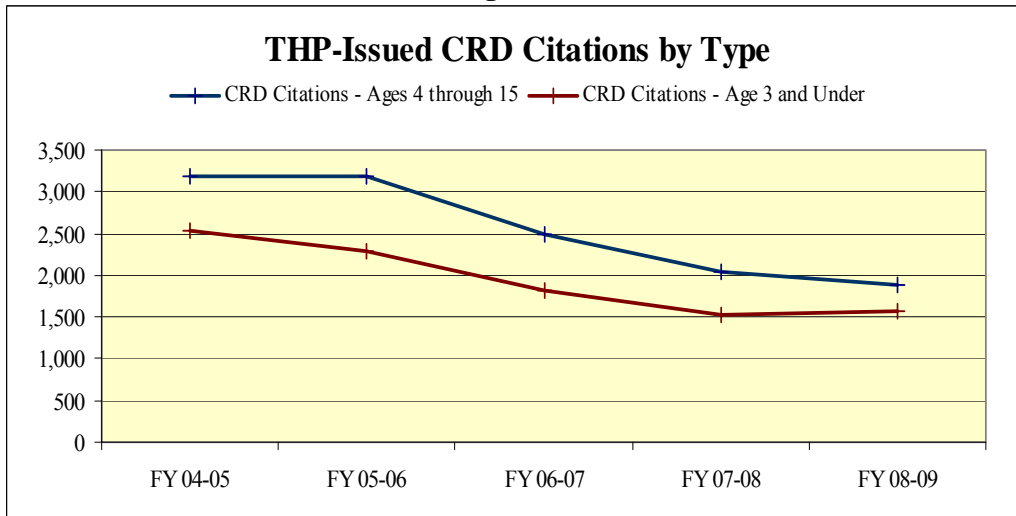
	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>CRD Citations - Ages 4 through 15</b>										
≤15-19 Years	304	9.5%	286	9.0%	216	8.7%	143	7.0%	120	6.3%
20-29 Years	1,120	35.0%	1,154	36.3%	858	34.6%	730	35.9%	665	35.1%
30-39 Years	1,085	33.9%	1,067	33.6%	830	33.5%	699	34.3%	676	35.7%
40-49 Years	438	13.7%	427	13.4%	350	14.1%	274	13.5%	270	14.3%
50-59 Years	157	4.9%	158	5.0%	137	5.5%	125	6.1%	104	5.5%
60-69 Years	66	2.1%	58	1.8%	70	2.8%	49	2.4%	45	2.4%
70 Years and	24	0.8%	17	0.5%	19	0.8%	14	0.7%	8	0.4%
Unknown	3	0.1%	8	0.3%	1	0.0%	1	0.0%	5	0.3%
<b>Total</b>	<b>3,197</b>	<b>55.9%</b>	<b>3,175</b>	<b>58.1%</b>	<b>2,481</b>	<b>57.7%</b>	<b>2,035</b>	<b>57.2%</b>	<b>1,893</b>	<b>54.5%</b>
<b>CRD Citations - Age 3 and Under</b>										
≤15-19 Years	174	6.9%	166	7.3%	151	8.3%	76	5.0%	87	5.5%
20-29 Years	1,227	48.6%	1,136	49.7%	896	49.2%	768	50.5%	768	48.7%
30-39 Years	670	26.5%	552	24.1%	471	25.9%	414	27.2%	418	26.5%
40-49 Years	311	12.3%	268	11.7%	197	10.8%	150	9.9%	172	10.9%
50-59 Years	88	3.5%	112	4.9%	74	4.1%	73	4.8%	84	5.3%
60-69 Years	22	0.9%	38	1.7%	16	0.9%	25	1.6%	35	2.2%
70 Years and	28	1.1%	8	0.3%	16	0.9%	12	0.8%	12	0.8%
Unknown	7	0.3%	8	0.3%	1	0.1%	2	0.1%	2	0.1%
<b>Total</b>	<b>2,527</b>	<b>44.1%</b>	<b>2,288</b>	<b>41.9%</b>	<b>1,822</b>	<b>42.3%</b>	<b>1,520</b>	<b>42.8%</b>	<b>1,578</b>	<b>45.5%</b>
<b>FY Total</b>	<b>5,724</b>		<b>5,463</b>		<b>4,303</b>		<b>3,555</b>		<b>3,471</b>	

Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 18 Feb 2010

## Type

Unlike convictions reported by court clerks, CRD citations issued by THP were nearly split in half by type, with citations involving children ages 4-15 as a slight majority of the citations issued in FY 08-09. The graph below illustrates the trends for citations issued by THP over the past five years based on the type of CRD violation.

**Figure 21**

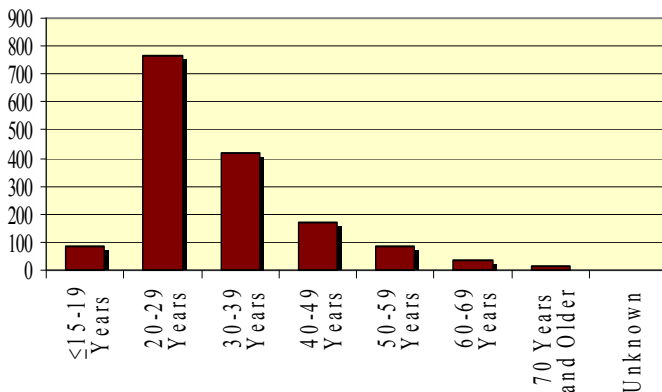


## Age

Similar to the pattern of convictions, over the last five years, 72% of the drivers issued CRD citations by THP were between the ages of 20-39. This is plausible, as this age group is the most likely to have children of an age to require use of child restraint devices. During the same period, drivers age 20-29 comprised slightly fewer than half of the citations issued involving children age 3 and under.

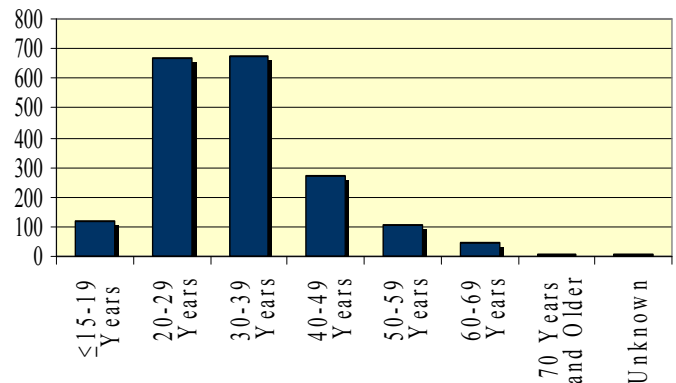
**Figure 22**

**CRD Citations - Age 3 and Under  
FY 2008-2009**



**Figure 23**

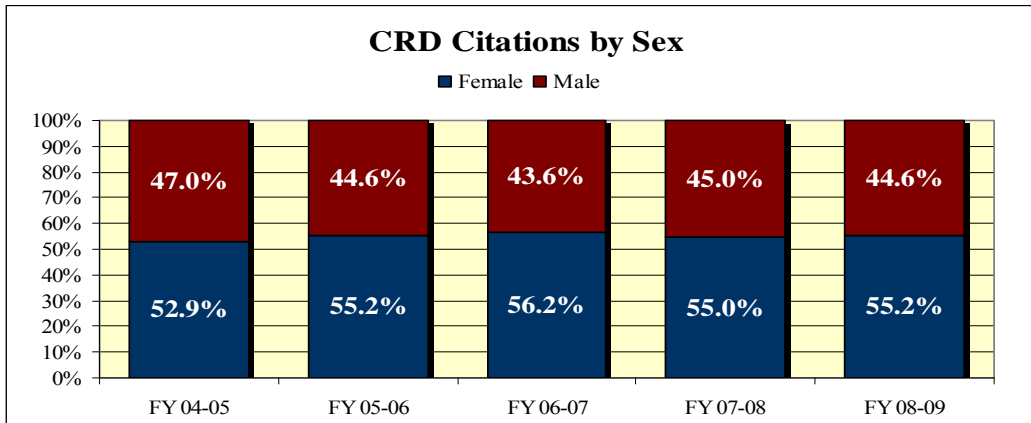
**CRD Citations - Ages 4 - 15  
FY 2008-2009**



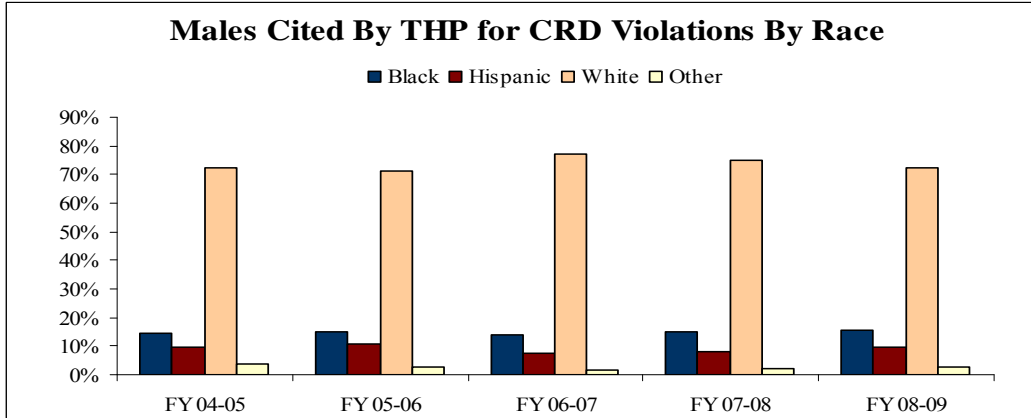
## Sex and Race

Following a pattern similar to CRD convictions, THP issued slightly more citations to females than males for violations involving child restraints. In FY 08-09, females represented 55.2% of all CRD citations issued. The first graph below illustrates the percentage of males versus females for all citations issued. Of females ticketed, white females accounted for 74.5% over the five-year period, black females about 21.2%, and Hispanic females 3.0%. The percentages of drivers cited for CRD violations has remained relatively constant among racial and gender categories. Table 8 on the next page shows citations issued by type, sex, and race.

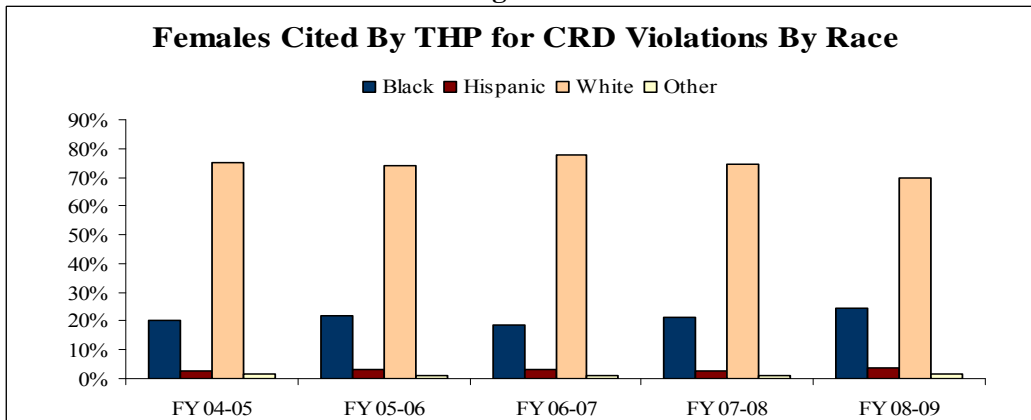
**Figure 23**



**Figure 24**



**Figure 25**



**THP-Issued CRD Citations By Type, Sex, and Race**  
**Table 8**

	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09	
<b>CRD Citations - Ages 4 through 15</b>										
<b>Female</b>	<b>1,713</b>	<b>53.6%</b>	<b>1,709</b>	<b>53.8%</b>	<b>1,363</b>	<b>54.9%</b>	<b>1,109</b>	<b>54.5%</b>	<b>1,024</b>	<b>54.1%</b>
<i>Asian</i>	2	0.1%	3	0.2%	2	0.1%	2	0.2%	0	0.0%
<i>Black</i>	262	15.3%	316	18.5%	222	16.3%	180	16.2%	207	20.2%
<i>Hispanic</i>	34	2.0%	41	2.4%	34	2.5%	29	2.6%	34	3.3%
<i>Indian</i>	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.1%
<i>White</i>	1,392	81.3%	1,339	78.3%	1,093	80.2%	885	79.8%	768	75.0%
<i>Other</i>	23	1.3%	10	0.6%	12	0.9%	13	1.2%	14	1.4%
<b>Male</b>	<b>1,482</b>	<b>46.4%</b>	<b>1,460</b>	<b>46.0%</b>	<b>1,117</b>	<b>45.0%</b>	<b>924</b>	<b>45.4%</b>	<b>866</b>	<b>45.7%</b>
<i>Asian</i>	4	0.3%	9	0.6%	2	0.2%	8	0.9%	5	0.6%
<i>Black</i>	186	12.6%	172	11.8%	124	11.1%	97	10.5%	111	12.8%
<i>Hispanic</i>	97	6.5%	130	8.9%	63	5.6%	60	6.5%	55	6.4%
<i>Indian</i>	0	0.0%	0	0.0%	1	0.1%	0	0.0%	1	0.1%
<i>White</i>	1,149	77.5%	1,116	76.4%	912	81.6%	750	81.2%	676	78.1%
<i>Other</i>	46	3.1%	33	2.3%	15	1.3%	9	1.0%	18	2.1%
Unknown Sex	2	0.1%	6	0.2%	1	0.0%	2	0.1%	3	0.1%
<b>Total</b>	<b>3,197</b>	<b>55.9%</b>	<b>3,175</b>	<b>55.5%</b>	<b>2,481</b>	<b>43.3%</b>	<b>2,035</b>		<b>1,893</b>	<b>33.1%</b>
<b>CRD Citations - Age 3 and Under</b>										
<b>Female</b>	<b>1,314</b>	<b>52.0%</b>	<b>1,309</b>	<b>57.2%</b>	<b>1,057</b>	<b>58.0%</b>	<b>845</b>	<b>55.6%</b>	<b>891</b>	<b>56.5%</b>
<i>Asian</i>	0	0.0%	1	0.1%	1	0.1%	3	0.4%	1	0.1%
<i>Black</i>	357	27.2%	345	26.4%	231	21.9%	233	27.6%	262	29.4%
<i>Hispanic</i>	44	3.3%	51	3.9%	37	3.5%	25	3.0%	39	4.4%
<i>Indian</i>	1	0.1%	1	0.1%	0	0.0%	0	0.0%	0	0.0%
<i>White</i>	885	67.4%	891	68.1%	783	74.1%	577	68.3%	572	64.2%
<i>Other</i>	27	2.1%	20	1.5%	5	0.5%	7	0.8%	17	1.9%
<b>Male</b>	<b>1,211</b>	<b>47.9%</b>	<b>976</b>	<b>42.7%</b>	<b>761</b>	<b>41.8%</b>	<b>674</b>	<b>44.3%</b>	<b>683</b>	<b>43.3%</b>
<i>Asian</i>	5	0.4%	4	0.4%	1	0.1%	3	0.4%	2	0.3%
<i>Black</i>	198	16.4%	189	19.4%	135	17.7%	139	20.6%	129	18.9%
<i>Hispanic</i>	165	13.6%	134	13.7%	79	10.4%	65	9.6%	91	13.3%
<i>Indian</i>	1	0.1%	0	0.0%	1	0.1%	0	0.0%	0	0.0%
<i>White</i>	795	65.6%	626	64.1%	537	70.6%	451	66.9%	445	65.2%
<i>Other</i>	47	3.9%	23	2.4%	8	1.1%	16	2.4%	16	2.3%
Unknown Sex	2	0.1%	3	0.1%	4	0.2%	1	0.0%	4	0.2%
<b>Total</b>	<b>2,527</b>	<b>44.1%</b>	<b>2,288</b>	<b>40.0%</b>	<b>1,822</b>	<b>31.8%</b>	<b>1,520</b>	<b>26.6%</b>	<b>1,578</b>	<b>27.6%</b>
<b>Grand Total</b>	<b>5,724</b>		<b>5,463</b>		<b>4,303</b>		<b>3,555</b>		<b>3,471</b>	

Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 19 Feb 2010

# **Supplemental Information**

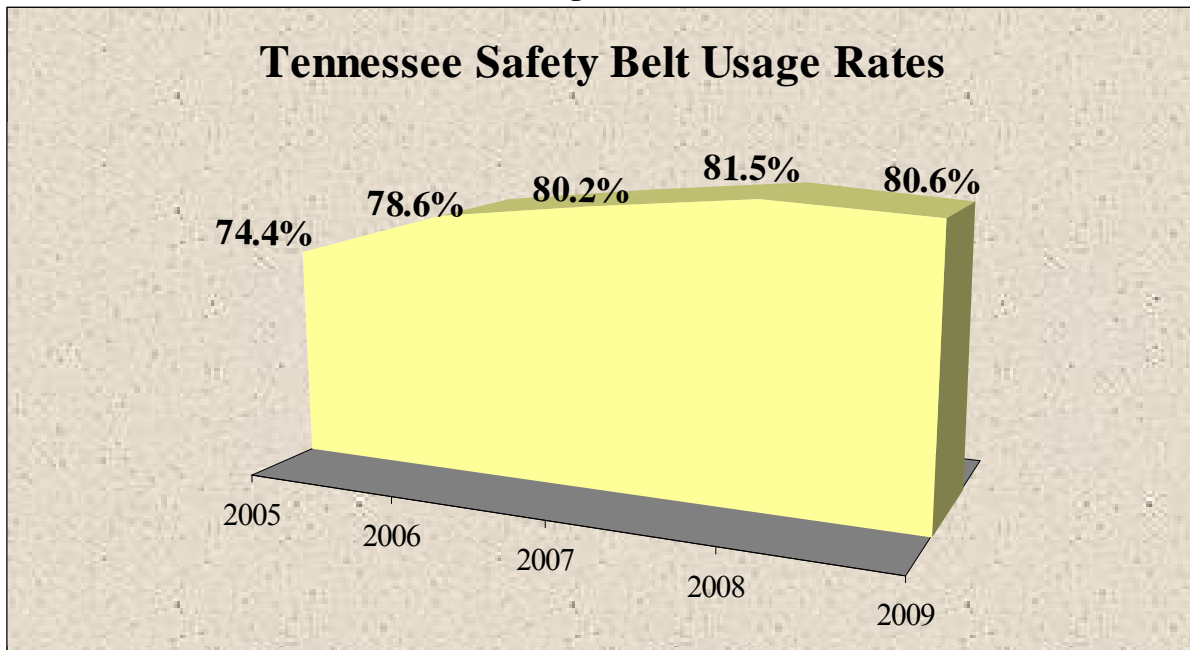


## Safety Belt Surveys

The National Highway Traffic Safety Administration commissions and funds standardized safety belt usage surveys each year in every State and U.S. Territory through the various Governors' Highway Safety Offices. In Tennessee, the University of Tennessee's Center for Transportation Research conducts the survey and publishes its findings in *Survey of Safety Belt and Motorcycle Helmet Usage in Tennessee*. Results of the surveys are analyzed by the National Center for Statistics and Analysis, and then published in the U.S. Department of Transportation's "Traffic Safety Facts – Crash Stats."

The chart below shows the survey results for Tennessee for calendar years 2005 through 2009. As a result of the primary enforcement provision that went into effect July 1, 2004, there has been an increase in the usage rate from 74.4% in 2005 to 80.6% in 2009, although the trend has flattened in the past three years. Copies of the above-referenced publications can be found as attachments.

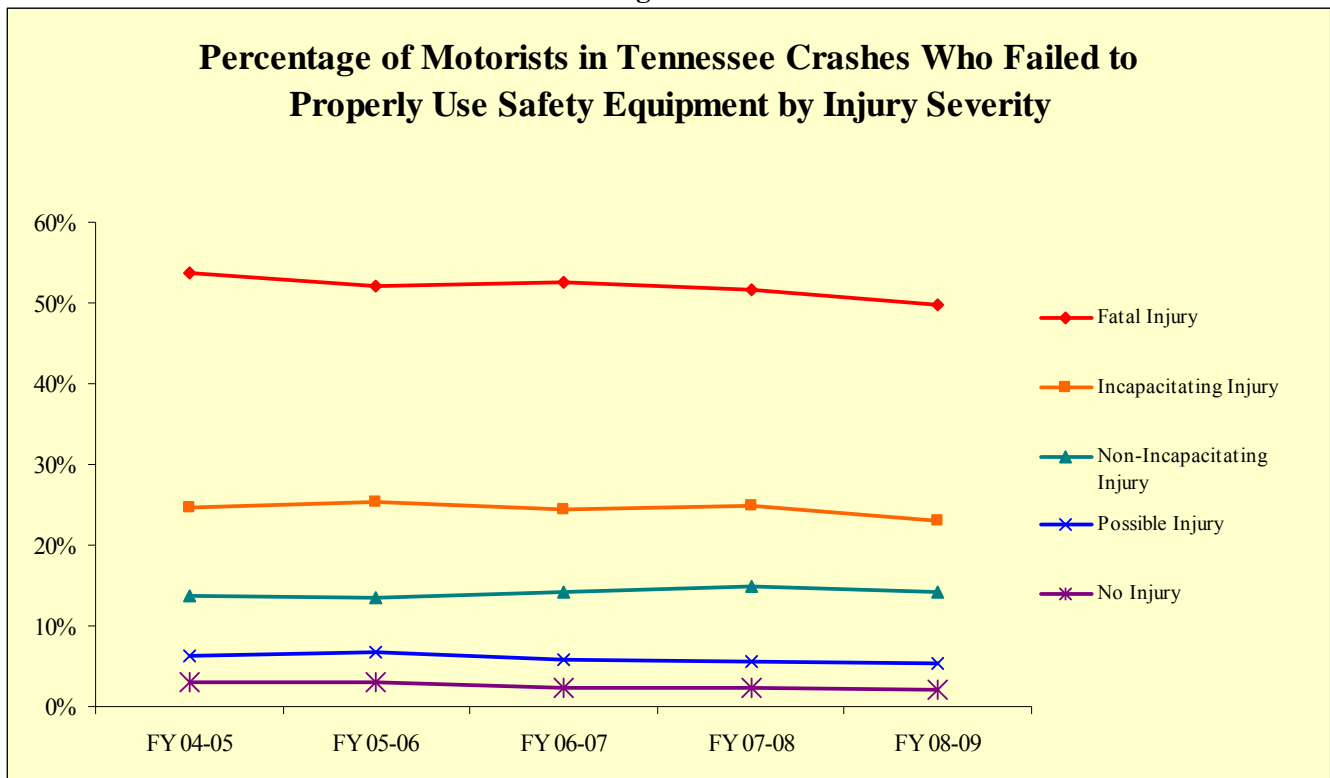
Figure 26



## Tennessee Traffic Crashes

During the five-year period, police reported safety restraint usage by vehicle occupants in traffic crashes increased. In FY 04-05, police reported that 4.3% of vehicle occupants involved in traffic crashes were not restrained. This percentage decreased significantly over the years to 3.3% in FY 08-09. When comparing FY 04-05 to FY 08-09, the numbers indicate a significant reduction in most injury categories for the percentage of unrestrained drivers: No Injury = 3.1% to 2.1%; Possible Injury = 6.3% to 5.4%; Incapacitating Injury = 24.6% to 23.0%; and, Fatal Injury = 53.8% to 49.8%. The percentage of persons sustaining a non-incapacitating injury who failed to properly use their safety equipment increased during the same period from 13.8% to 14.2%. Overall, the past five years' statistics show a continuing increase in safety restraint usage by vehicle occupants involved in traffic crashes (Table 9).

Figure 27





# Safety Equipment Usage by Motorists in Tennessee Traffic Crashes by Injury Severity<sup>1, 2</sup>

**Table 9**

Safety Equipment Used? <sup>3</sup>	FY 04-05		FY 05-06		FY 06-07		FY 07-08		FY 08-09		Total	
	<b>No Injury</b>											
<i>No</i>	11,874	3.1%	10,836	2.9%	8,635	2.3%	8,198	2.3%	6,841	2.1%	46,384	2.5%
<i>Yes</i>	345,606	91.0%	337,992	90.8%	340,387	90.4%	324,613	90.2%	300,601	90.6%	1,649,199	90.6%
<b>Possible Injury</b>												
<i>No</i>	2,998	6.3%	3,087	6.7%	2,566	5.7%	2,415	5.6%	2,162	5.4%	13,228	6.0%
<i>Yes</i>	41,008	86.8%	40,182	87.1%	39,630	88.1%	38,592	89.5%	36,071	89.8%	195,483	88.2%
<b>Non-Incapacitating Injury</b>												
<i>No</i>	3,093	13.8%	2,883	13.6%	2,834	14.1%	2,794	14.9%	2,378	14.2%	13,982	14.1%
<i>Yes</i>	17,316	77.1%	16,592	78.3%	15,815	78.5%	14,857	79.2%	13,436	80.2%	78,016	78.6%
<b>Incapacitating Injury</b>												
<i>No</i>	1,668	24.6%	1,628	25.3%	1,543	24.4%	1,476	24.9%	1,389	23.0%	7,704	24.4%
<i>Yes</i>	4,149	61.1%	3,994	62.0%	4,075	64.4%	3,946	66.5%	4,247	70.3%	20,411	64.7%
<b>Fatal Injury</b>												
<i>No</i>	653	53.8%	610	52.0%	620	52.6%	541	51.7%	472	49.8%	2,896	52.1%
<i>Yes</i>	472	38.9%	490	41.8%	488	41.4%	445	42.5%	408	43.1%	2,303	41.4%
<b>All Motor Vehicle Occupants</b>												
<i>No</i>	20,431	4.3%	19,195	4.2%	16,352	3.6%	15,470	3.6%	13,296	3.3%	84,744	3.8%
<i>Yes</i>	411,802	87.3%	402,004	87.0%	401,466	87.5%	383,320	88.7%	355,455	88.8%	1,954,047	87.8%

<sup>1</sup>"Safety Equipment" includes motorcycle helmets.

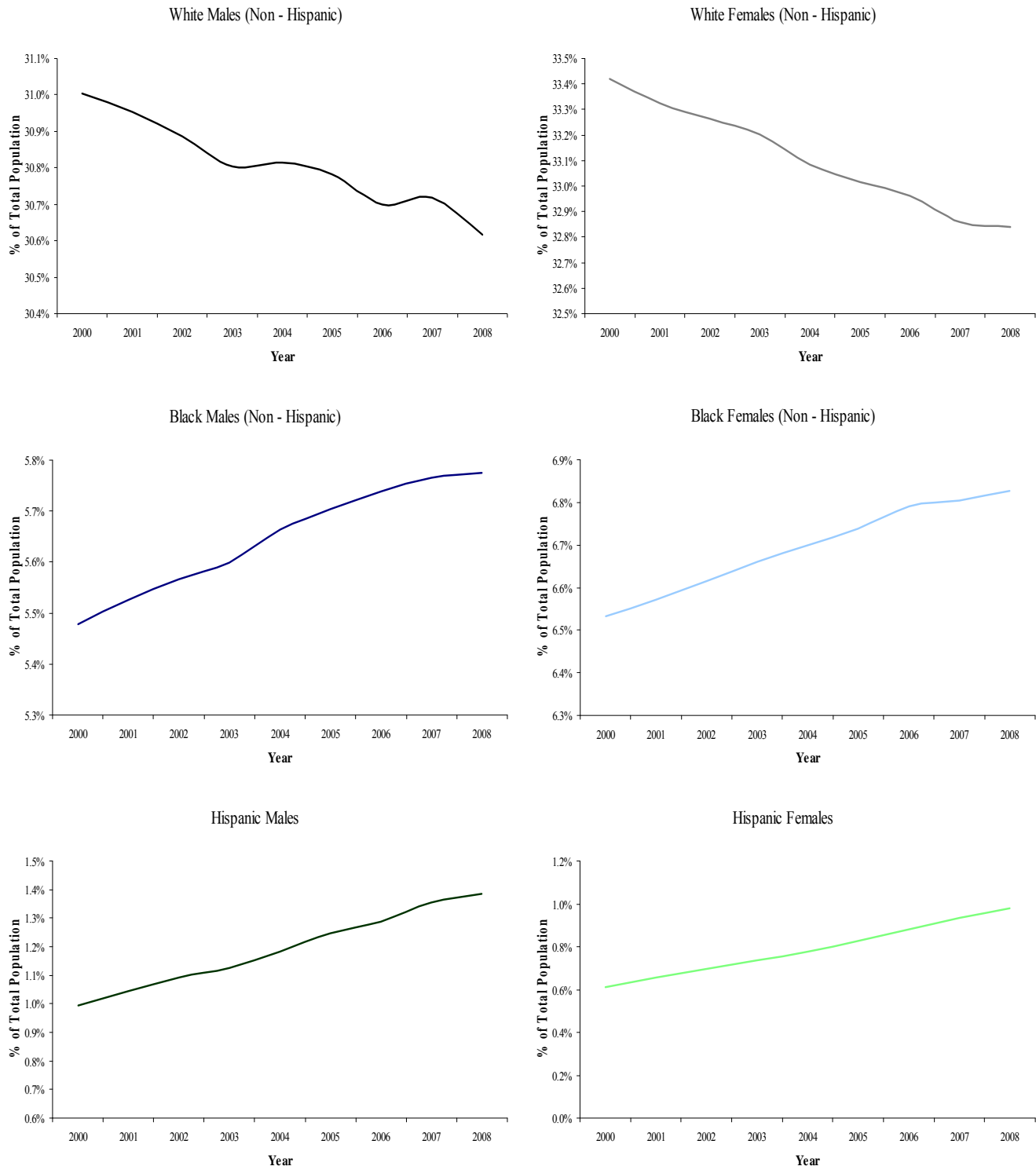
<sup>2</sup>Occupants whose safety equipment use was unknown are not included in the counts, but are included in the denominators of the percentages.

<sup>3</sup>"No" includes vehicle occupants whose safety equipment was not used or was used improperly.

Source: TN Dept of Safety, Office of Research, Statistics, and Analysis, 19 Feb 2010.

The statistics presented in this report may reflect the growing number of Hispanic and black persons of driving age (15 years old and over) in Tennessee. Population projections from the U. S. Census Bureau show that these two groups are rising as a percentage of the population, while the percentage of white persons is decreasing.

**Figure 28**



# Attachments



**Attachment 1**

**Tennessee Code Annotated § 55-9-602**



## **Child Passenger Restraint Systems—Violations—Penalties**

(a) (1) Any person transporting any child, under one (1) year of age, or any child, weighing twenty pounds (20 lbs.) or less, in a motor vehicle upon a road, street or highway of Tennessee is responsible for the protection of the child and properly using a child passenger restraint system in a rear facing position, meeting federal motor vehicle safety standards in the rear seat if available or according to the child safety restraint system or vehicle manufacturer's instructions.

(2) Notwithstanding the provisions of § 55-9-603, any person transporting any child, one (1) through three (3) years of age weighing greater than twenty pounds (20 lbs.), in a motor vehicle upon a road, street or highway of Tennessee is responsible for the protection of the child and properly using a child passenger restraint system in a forward facing position, meeting federal motor vehicle safety standards in the rear seat if available or according to the child safety restraint system or vehicle manufacturer's instructions.

(3) Notwithstanding the provisions of § 55-9-603, any person transporting any child, four (4) through eight (8) years of age and measuring less than four feet, nine inches (4' 9") in height, in a passenger motor vehicle upon a road, street or highway of Tennessee is responsible for the protection of the child and properly using a belt positioning booster seat system, meeting federal motor vehicle safety standards in the rear seat if available or according to the child safety restraint system or vehicle manufacturer's instructions.

(4) (A) If a child is not capable of being safely transported in a conventional child passenger restraint system as provided for in this subsection (a), a specially modified, professionally manufactured restraint system meeting the intent of this subsection (a) shall be in use; provided, however, that the provisions of this subdivision (a)(4) shall not be satisfied by use of the vehicle's standard lap or shoulder safety belts independent of any other child passenger restraint system. A motor vehicle operator who is transporting a child in a specially modified, professionally manufactured child passenger restraint system shall possess a copy of the physician's signed prescription that authorizes the professional manufacture of the specially modified child passenger restraint system.

(B) A person shall not be charged with a violation of this subsection (a) if such person presents a copy of the physician's prescription in compliance with the provisions of this subdivision (a)(4) to the arresting officer at the time of the alleged violation.

(C) A person charged with a violation of this subsection (a) may, on or before the court date, submit a copy of the physician's prescription and evidence of possession of a specially modified, professionally manufactured child passenger restraint system to the court. If the court is satisfied that compliance was in effect at the time of the violation, the charge for violating the provisions of this subsection (a) may be dismissed.

(b) All passenger vehicle rental agencies doing business in the state of Tennessee shall make available at a reasonable rate to those renting such vehicles an approved restraint as described in subsection (a).

(c) (1) A violation of this section is a Class C misdemeanor.

(2) In addition to or in lieu of the penalty imposed under subdivision (c)(1), persons found guilty of a first offense of violating this section may be required to attend a court approved offenders' class designed to educate offenders on the hazards of not properly transporting children in motor vehicles. A fee may be charged for such classes sufficient to defray all costs of providing such classes.

(d) Any incorporated municipality may by ordinance adopt by reference any of the provisions of this section, it being the legislative intent to promote the protection of children wherever and whenever possible.

(e) Prior to the initial discharge of any newborn child from a health care institution offering obstetrical services, such institution shall inform the parent that use of a child passenger restraint system is required by law. Further, the health care institution shall distribute to the parent related information provided by the department of safety.

(f) (1) There is established within the general fund a revolving special account to be known as the child safety fund, hereinafter referred to as the "fund."

(2) All fines imposed by this section shall be sent by the clerk of the court to the state treasurer for deposit in the fund.

(3) Any unencumbered funds and any unexpended balance of this fund remaining at the end of any fiscal year shall not revert to the general fund, but shall be carried forward until expended in accordance with the provisions of this section and § 55-9-610.

(4) Interest accruing on investments and deposits of the fund shall be returned to the fund and remain a part of the fund.

(5) Disbursements from, investments of and deposits to the fund shall be administered and invested pursuant to the provisions of title 9, chapter 4, part 5.

(6) The state treasurer may deduct reasonable service charges from the fund pursuant to procedures established by the state treasurer and the commissioner of finance and administration.

(7) The department of health is authorized, pursuant to duly promulgated rules and regulations, to determine equitable distribution of the moneys in the fund to those entities that are best suited for child passenger safety system distribution. Funds distributed pursuant to the provisions of this section shall only be used for the purchase of child passenger safety systems to be loaned or given to the parent or guardian.

(g) (1) (A) Notwithstanding the provisions of § 55-9-603, any person transporting any child, nine (9) through twelve (12) years of age, or any child through twelve (12) years of age, measuring four feet, nine inches (4' 9") or more in height, in a passenger motor vehicle upon a road, street or highway of Tennessee is responsible for the protection of the child and properly using a seat belt system meeting federal motor vehicle safety standards. It is recommended that any such child be placed in the rear seat if available.



(B) Notwithstanding the provisions of § 55-9-603, any person transporting any child, thirteen

(13) through fifteen (15) years of age, in a passenger motor vehicle upon a road, street or highway of Tennessee is responsible for the protection of the child and properly using a passenger restraint system, including safety belts, meeting federal motor vehicle safety standards.

(2) A person charged with a violation of this subsection (g) may, in lieu of appearance in court, submit a fine of fifty dollars (\$50.00) to the clerk of the court which has jurisdiction of such offense within the county in which the offense charged is alleged to have been committed.

(3) No litigation tax levied pursuant to the provisions of title 67, chapter 4, part 6, shall be imposed or assessed against anyone convicted of a violation of this subsection (g), nor shall any clerk's fee or court costs, including but not limited to any statutory fees of officers, be imposed or assessed against anyone convicted of a violation of this subsection (g).

(4) (A) Notwithstanding any provision of subsection (f) to the contrary, the revenue generated by ten dollars (\$10.00) of the fifty dollar (\$50.00) fine under subdivision (g)(2) for a person's first conviction under this subsection (g), shall be deposited in the state general fund without being designated for any specific purpose. The remaining forty dollars (\$40.00) of such fifty dollar (\$50.00) fine for a person's first conviction under this subsection (g) shall be deposited to the child safety fund in accordance with subsection (f).

(B) The revenue generated from such person's second or subsequent conviction under this subsection (g) shall be deposited to the child safety fund in accordance with subsection (f).

(5) Notwithstanding any provision of law to the contrary, no more than one (1) citation may be issued for a violation of this subsection (g) per vehicle per occasion. If the driver is neither a parent nor legal guardian of the child and the child's parent or legal guardian is present in the vehicle, the parent or legal guardian is responsible for ensuring that the provisions of this subsection (g) are complied with. If no parent or legal guardian is present at the time of the violation, the driver is solely responsible for compliance with this subsection (g).

(h) As used in this section, unless specified otherwise, "passenger motor vehicle" means any motor vehicle with a manufacturer's gross vehicle weight rating of ten thousand pounds (10,000 lbs.) or less, that is not used as a public or livery conveyance for passengers. "Passenger motor vehicle" does not apply to motor vehicles which are not required by federal law to be equipped with safety belts.

(i) A person who has successfully met the minimum required training standards for installation of child restraint devices established by the national highway traffic safety administration of the United States department of transportation, who in good faith installs or inspects the installation of a child restraint device shall not be liable for any damages resulting from any act or omission related to such installation or inspection unless such act or omission was the result of the person's gross negligence or willful misconduct.

(j) Notwithstanding any provisions of this part to the contrary, for any child transported by child care agencies licensed by the department of human services pursuant to title 71, chapter 3, part 5 and transported pursuant to the rules and regulations of such department, such rules and regulations shall remain effective until the department amends such rules and regulations; provided, however, that the department shall either promulgate rules consistent with the provisions of this part or promulgate rules exceeding, based on applicable federal regulations or standards, the provisions of this part no later than January 1, 2007.

(k) (1) The failure to use a child restraint system shall not be admissible into evidence in a civil action; provided, however, that evidence of a failure to use a child restraint system, as required by this section, may be admitted in a civil action as to the causal relationship between noncompliance and the injuries alleged, if the following conditions have been satisfied:

(A) The plaintiff has filed a products liability claim;

(B) The defendant alleging noncompliance with this section shall raise this defense in its answer or timely amendment thereto in accordance with the rules of civil procedure; and

(C) Each defendant seeking to offer evidence alleging noncompliance with this section has the burden of proving noncompliance with this section, that compliance with this section would have reduced injuries and the extent of the reduction of such injuries.

(2) Upon request of any party, the trial judge shall hold a hearing out of the presence of the jury as to the admissibility of such evidence in accordance with the provisions of this subsection (k) and the Tennessee Rules of Evidence.

(3) Notwithstanding any provision of this subsection (k) to the contrary, if a party to the civil action is not the parent or legal guardian, then evidence of a failure to use a child restraint system, as required by this section, may be admitted in such action as to the causal relationship between noncompliance and the injuries alleged.

[Acts 1963, ch. 102, §§ 1, 2; 1977, ch. 114, §§ 1, 2; T.C.A., § 59-930; Acts 1981, ch. 86, §§ 1, 2; 1985, ch. 183, § 1; T.C.A., § 55-9-214; Acts 1986, ch. 866, §§ 2, 3; 1989, ch. 564, §§ 2-6, 9; 1989, ch. 591, § 113; 1995, ch. 112, §§ 1, 2; 2000, ch. 945, § 1; 2001, ch. 463, §§ 1, 2; 2003, ch. 299, §§ 1-9; 2004, ch. 809, § 1; 2005, ch. 55, §§ 1, 2.]

**Attachment 2**

**Tennessee Code Annotated § 55-9-603**



## **Use of Safety Belts In Passenger Vehicles—Violations—Penalties**

(a) (1) No person shall operate a passenger motor vehicle on any highway, as defined § 55-8-101(22), in this state unless such person and all passengers four (4) years of age or older are restrained by a safety belt at all times the vehicle is in forward motion.

(2) No person four (4) years of age or older shall be a passenger in a passenger motor vehicle on any highway, as defined in § 55-8-101(22), in this state, unless such person is restrained by a safety belt at all times the vehicle is in forward motion.

(b) (1) The provisions of this section shall apply only to the operator and all passengers occupying the front seat of a passenger motor vehicle.

(2) If the vehicle is equipped with a rear seat which is capable of folding, the provisions of this section shall only apply to front seat passengers and the operator if the back seat is in the fold down position.

(c) As used in this section, unless specified otherwise, “passenger car” or “passenger motor vehicle” means any motor vehicle with a manufacturer's gross vehicle weight rating of eight thousand five hundred pounds (8,500 lbs.) or less, that is not used as a public or livery conveyance for passengers. “Passenger car” or “passenger motor vehicle” does not apply to motor vehicles which are not required by federal law to be equipped with safety belts.

(d) (1) A violation of this section is a Class C misdemeanor. All proceeds from the fines imposed by this subsection (d) shall be deposited in the state general fund and designated for the exclusive use of the division of vocational rehabilitation to assist eligible handicapped individuals as defined in § 49-11-602

(3) who have been severely injured in motor vehicle accidents.

(2) A person charged with a violation of this section may, in lieu of appearance in court, submit a fine of ten dollars (\$10.00) for a first violation, and twenty dollars (\$20.00) on second and subsequent violations to the clerk of the court which has jurisdiction of such offense within the county in which the offense charged is alleged to have been committed.

(3) (A) Notwithstanding subdivision (d)(2) to the contrary, a person charged with a violation of subsection (i) may, in lieu of appearance in court, submit a fine of twenty dollars (\$20.00) to the clerk of the court which has jurisdiction of such offense within the county in which the offense charged is alleged to have been committed.

(B) Notwithstanding any provision of subdivision (d)(1) to the contrary, the revenue generated by ten dollars (\$10.00) of the twenty dollar (\$20.00) fine under subdivision (d)(3)(A) for a person's first conviction under subsection (i) shall be deposited in the state general fund without being designated for any specific purpose. The remaining ten dollars (\$10.00) of such twenty dollar (\$20.00) fine for such person's first conviction under subsection (i) shall be deposited in the state general fund and designated for the exclusive use of the division of vocational rehabilitation in accordance with subdivision (d)(1).

(C) The revenue generated from such person's second or subsequent conviction under subsection

(i) shall be deposited in the state general fund and designated for the exclusive use of the division of vocational rehabilitation in accordance with subdivision (d)(1).

(e) No clerk's fee nor court costs, including, but not limited to, any statutory fees of officers, shall be imposed or assessed against anyone convicted of a violation of this section. No litigation tax levied pursuant to the provisions of title 67, chapter 4, part 6, shall be imposed or assessed against anyone convicted of a violation of this section.

(f) (1) A law enforcement officer observing a violation of this section shall issue a citation to the violator, but shall not arrest or take into custody any person solely for a violation of this section.

(2) The department of safety shall not report any convictions under this section except for law enforcement or governmental purposes.

(g) In no event shall a violation of this section be assigned a point value for suspension or revocation of a license by the department of safety, nor shall such violation be construed as any other offense under the provisions of this title.

(h) This section does not apply to:

(1) A passenger or operator with a physically disabling condition whose physical disability would prevent appropriate restraint in such safety seat or safety belt; provided, that such condition is duly certified in writing by a physician who shall state the nature of the handicap, as well as the reason such restraint is inappropriate;

(2) A passenger motor vehicle operated by a rural letter carrier of the United States postal service while performing the duties of a rural letter carrier;

(3) Salespersons or mechanics employed by an automobile dealer who, in the course of their employment, test-drive a motor vehicle, if such dealership customarily test-drives fifty (50) or more motor vehicles a day, and if such test-drives occur within one (1) mile of the location of the dealership;

(4) Utility workers, water, gas and electric meter readers in the course of their employment;

(5) A newspaper delivery motor carrier service while performing the duties of a newspaper delivery motor carrier service; provided, that this exemption shall only apply from the time of the actual first delivery to the customer until the last actual delivery to the customer;

(6) A vehicle in use in a parade if operated at less than fifteen miles per hour (15 mph);

(7) A vehicle in use in a hayride if operated at less than fifteen miles per hour (15 mph); or

(8) A vehicle crossing a highway from one field to another if operated at less than fifteen miles per hour (15 mph).

(i) (1) Notwithstanding any provision of this section to the contrary, no person between sixteen (16) years of age and up to and through the age of seventeen (17) years of age, shall operate a passenger motor vehicle, or be a passenger therein, unless such person is restrained by a safety belt at all times the vehicle is in forward motion.

(2) Notwithstanding subdivision (b)(1), the provisions of this subsection (i) shall apply to all occupants between sixteen (16) years of age and eighteen (18) years of age occupying any seat in a passenger motor vehicle.

(3) Notwithstanding subdivision (f)(1), a law enforcement officer observing a violation of this subsection (i) shall issue a citation to the violator, but shall not arrest or take into custody any person solely for a violation of this subsection (i).

(j) Notwithstanding the provisions of subsection (b), no person with a learner permit or an intermediate driver license shall operate a passenger motor vehicle in this state unless such person and all passengers between the ages of four (4) and seventeen (17) years of age are restrained by a safety belt at all times the vehicle is in forward motion.

(k) The department of safety shall file a report by March 1 of each year to the 104th, 105th, and 106th general assembly on data collected for the prior five (5) years by the department relating to violations of this section. Such data shall include the number of persons cited for violations of this section, their race, ethnicity, sex, age, and any other information the department deems relevant.

[Acts 1986, ch. 866, §§ 3, 4, 7, 8, 11; 1989, ch. 591, § 113; 1994, ch. 661, §§ 2, 4; 2000, ch. 700, § 3; 2000, ch. 945, §§ 2-4; 2004, ch. 893, §§ 1-5.]





**Attachment 3**

**Traffic Safety Facts:  
Crash Stats  
April 2009**



# Traffic Safety Facts

## Crash • Stats

DOT HS 811 106

A Brief Statistical Summary

April 2009

# Seat Belt Use in 2008—Use Rates in the States and Territories

In 2008, seat belt use in the United States ranged from 55.7 percent in American Samoa to 97.2 percent in Michigan. These results are from probability-based observational surveys conducted by 50 States, the District of Columbia, and U.S. Territories in accordance with criteria established by the National Highway Traffic Safety Administration to ensure reliable results. Compliance with the criteria is verified annually by NHTSA's National Center for Statistics and Analysis.

The 2008 State and Territory surveys also found the following:

- Sixteen States and Territories achieved use rates of 90 percent or higher—Michigan, Hawaii, Washington, Oregon, California, Maryland, Iowa, Puerto Rico, New Jersey, Delaware, Indiana, Texas, Nevada, New Mexico, Illinois, and District of Columbia.
- Jurisdictions with stronger belt enforcement laws continue to exhibit generally higher use rates than those with weaker laws. Maine's primary enforcement seat belt law took effect on September 17, 2007, but citations were issued beginning April 1, 2008. This State saw an increase in use from 79.8 percent in 2007 to 83.0 percent in 2008.

Seat belt use rates in the States, U.S. Territories, the District of Columbia, and nationwide from 2001-2008 are listed in the following table. Rates in jurisdictions with primary belt enforcement during the calendar year of the survey are shaded in the table. However, the law might not have taken effect when the survey was conducted.

### National Seat Belt Use Rate

Seat belt use nationwide was 83 percent in 2008, as measured by NHTSA's National Occupant Protection Use Survey (NOPUS). NOPUS provides NHTSA's official measure of nationwide use because it is the only probability-based observational survey of seat belt use in the United States. Additionally, NOPUS does not employ sampling frame exemptions allowed of the States and Territories in 23 CFR Part 1340 (namely, the omission of up to 15 percent of low-population areas and the permission to observe data solely in vehicles stopped at stop signs or stoplights), and so provides a more accurate measure of nationwide use than would be obtained by combining the use rates from the States and Territories.

**Table: Seat Belt Use in States, U.S. Territories, and Nationwide, 2001-2008**

State or U.S. Territory	2001	2002	2003	2004	2005	2006	2007	2008	2007-2008 Change
Alabama	79.4%	78.7%	77.4%	80.0%	81.8%	82.9%	82.3%	86.1%	3.8%
Alaska	62.6%	65.8%	78.9%	76.7%	78.4%	83.2%	82.4%	84.9%	2.5%
Arizona	74.4%	73.7%	86.2%	95.3%	94.2%	78.9%	80.9%	79.9%	-1.0%
Arkansas	54.5%	63.7%	62.8%	64.2%	68.3%	69.3%	69.9%	70.4%	0.5%
California	91.1%	91.1%	91.2%	90.4%	92.5%	93.4%	94.6%	95.7%	1.1%
Colorado	72.1%	73.2%	77.7%	79.3%	79.2%	80.3%	81.1%	81.7%	0.6%
Connecticut	78.0%	78.0%	78.0%	82.9%	81.6%	83.5%	85.8%	88.0%	2.2%
Delaware	67.3%	71.2%	74.9%	82.3%	83.8%	86.1%	86.6%	91.3%	4.7%
Dist. Of Columbia	83.6%	84.6%	84.9%	87.1%	88.8%	85.4%	87.1%	90.0%	2.9%
Florida	69.5%	75.1%	72.6%	76.3%	73.9%	80.7%	79.1%	81.7%	2.6%
Georgia	79.0%	77.0%	84.5%	86.7%	89.9%	90.0%	89.0%	89.6%	0.6%
Hawaii	82.5%	90.4%	91.8%	95.1%	95.3%	92.5%	97.6%	97.0%	-0.6%
Idaho	60.4%	62.9%	71.7%	74.0%	76.0%	79.8%	78.5%	76.9%	-1.6%
Illinois	71.4%	73.8%	80.1%	83.0%	86.0%	87.8%	90.1%	90.5%	0.4%
Indiana	67.4%	72.2%	82.3%	83.4%	81.2%	84.3%	87.9%	91.2%	3.3%
Iowa	80.9%	82.4%	86.8%	86.4%	87.1%	89.6%	91.3%	92.9%	1.6%

*Table continues on next page*

**Table: Seat Belt Use in States, U.S. Territories, and Nationwide, 2001-2008 (Continued)**

State or U.S. Territory	2001	2002	2003	2004	2005	2006	2007	2008	2007-2008 Change
Kansas	60.8%	61.3%	63.6%	68.3%	69.0%	73.5%	75.0%	77.4%	2.4%
Kentucky	61.9%	62.0%	65.5%	66.0%	66.7%	67.2%	71.8%	73.3%	1.5%
Louisiana	68.1%	68.6%	73.8%	75.0%	77.7%	74.8%	75.2%	75.5%	0.3%
Maine	NA	NA	NA	72.3%	75.8%	77.2%	79.8%	83.0%	3.2%
Maryland	82.9%	85.8%	87.9%	89.0%	91.1%	91.1%	93.1%	93.3%	0.2%
Massachusetts	56.0%	51.0%	61.7%	63.3%	64.8%	66.9%	68.7%	66.8%	-1.9%
Michigan	82.3%	82.9%	84.8%	90.5%	92.9%	94.3%	93.7%	97.2%	3.5%
Minnesota	73.9%	80.1%	79.4%	82.1%	83.9%	83.3%	87.8%	86.7%	-1.1%
Mississippi	61.6%	62.0%	62.2%	63.2%	60.8%	73.6%	71.8%	71.3%	-0.5%
Missouri	67.9%	69.4%	72.9%	75.9%	77.4%	75.2%	77.2%	75.8%	-1.4%
Montana	76.3%	78.4%	79.5%	80.9%	80.0%	79.0%	79.6%	79.3%	-0.3%
Nebraska	70.2%	69.7%	76.1%	79.2%	79.2%	76.0%	78.7%	82.6%	3.9%
Nevada	74.5%	74.9%	78.7%	86.6%	94.8%	91.2%	92.2%	90.9%	-1.3%
New Hampshire	NA	NA	49.6%*	NA	NA	63.5%	63.8%	69.2%	5.4%
New Jersey	77.6%	80.5%	81.2%	82.0%	86.0%	90.0%	91.4%	91.8%	0.4%
New Mexico	87.8%	87.6%	87.2%	89.7%	89.5%	89.6%	91.5%	91.1%	-0.4%
New York	80.3%	82.8%	84.6%	85.0%	85.0%	83.0%	83.5%	89.1%	5.6%
North Carolina	82.7%	84.1%	86.1%	86.1%	86.7%	88.5%	88.8%	89.8%	1.0%
North Dakota	57.9%	63.4%	63.7%	67.4%	76.3%	79.0%	82.2%	81.6%	-0.6%
Ohio	66.9%	70.3%	74.7%	74.1%	78.7%	81.7%	81.6%	82.7%	1.1%
Oklahoma	67.9%	70.1%	76.7%	80.3%	83.1%	83.7%	83.1%	84.3%	1.2%
Oregon	87.5%	88.2%	90.4%	92.6%	93.3%	94.1%	95.3%	96.3%	1.0%
Pennsylvania	70.5%	75.7%	79.0%	81.8%	83.3%	86.3%	86.7%	85.1%	-1.6%
Rhode Island	63.2%	70.8%	74.2%	76.2%	74.7%	74.0%	79.1%	72.0%	-7.1%
South Carolina	69.6%	66.3%	72.8%	65.7%	69.7%	72.5%	74.5%	79.0%	4.5%
South Dakota	63.3%	64.0%	69.9%	69.4%	68.8%	71.3%	73.0%	71.8%	-1.2%
Tennessee	68.3%	66.7%	68.5%	72.0%	74.4%	78.6%	80.2%	81.5%	1.3%
Texas	76.1%	81.1%	84.3%	83.2%	89.9%	90.4%	91.8%	91.2%	-0.6%
Utah	77.8%	80.1%	85.2%	85.7%	86.9%	88.6%	86.8%	86.0%	-0.8%
Vermont	67.4%	84.9%	82.4%	79.9%	84.7%	82.4%	87.1%	87.3%	0.2%
Virginia	72.3%	70.4%	74.6%	79.9%	80.4%	78.7%	79.9%	80.6%	0.7%
Washington	82.6%	92.6%	94.8%	94.2%	95.2%	96.3%	96.4%	96.5%	0.1%
West Virginia	52.3%	71.6%	73.6%	75.8%	84.9%	88.5%	89.6%	89.5%	-0.1%
Wisconsin	68.7%	66.1%	69.8%	72.4%	73.3%	75.4%	75.3%	74.2%	-1.1%
Wyoming	NA	66.6%	NA	70.1%	NA	63.5%	72.2%	68.6%	-3.6%
Nationwide	73%	75%	79%	80%	82%	81%	82%	83%	1%
Puerto Rico	83.1%	90.5%	87.1%	90.1%	92.5%	92.7%	92.1%	92.8%	0.7%
American Samoa	NA	NA	NA	NA	NA	NA	NA	55.7%	
Guam	NA	NA	NA	NA	NA	NA	81%	85.0%	4%
Northern Mariana Islands	NA	NA	NA	NA	NA	NA	80%	89.8%	9.8%
U.S. Virgin Island	NA	NA	NA	NA	NA	80.2%	NA	82.3%	

**Note 1:** Rates in jurisdictions with primary belt enforcement during the calendar year of the survey are shaded for the 50 States and District of Columbia. The four U.S. Territories in the last four rows of the table all had primary belt use laws in effect for the survey year of 2008; however, since we have no data about which year their primary laws began to take effect, the shading scheme is NOT applicable to the four territories.

**Note 2:** Arkansas passed the primary seat belt law in March 2009 and the law will take effect on June 30, 2009.

\* The 2003 rate for New Hampshire was not reported by the State. It was obtained from an independent source.

NA: No rate reported.



For questions regarding the above reported data, contact Yuan Yan Chen at 202-493-0241, or Tony Jianqiang Ye at 202-366-3603. This issue of Crash•Stats and other general information on highway traffic safety may be accessed online at <http://www-nrd.nhtsa.dot.gov/CMSWeb/index.aspx>

**Attachment 4**

**Survey of Safety Belt and Motorcycle Helmet Usage In  
Tennessee  
September 2009**





THE UNIVERSITY of TENNESSEE   
Center for Transportation Research

# Survey of Safety Belt and Motorcycle Helmet Usage in Tennessee

## Fiscal Year 2009 Final Report

Prepared by:

Matthew A. Cate, P.E.

Research Associate III

September 24, 2009



## Introduction

Since 1986, the University of Tennessee Center for Transportation Research has conducted a statewide survey once each year during which both safety belt and motorcycle helmet use data are gathered simultaneously. The sample design, data collection techniques, and estimation procedures for the surveys were developed in accordance with the National Highway Traffic Safety Administration's (NHTSA's) "Guidelines for State Observational Surveys of Safety Belt and Motorcycle Helmet Use," published in the June 29, 1992, Federal Register with the guideline revisions agreed upon at the June 1998 Region IV Workshop on Safety Belt Use Surveys held in Atlanta. Detailed information on the sample design (including site selection), survey conduct (including data collection), and statistical procedures for estimation can be found in the August 2008 report "Documentation of Tennessee Observational Surveys of Safety Belt and Motorcycle Helmet Use" and are summarized below.

The 2009 observational survey is the second to utilize a revised survey methodology approved by NHTSA in 2008. For the first time in recent memory, the survey returned to the same observation sites in the same counties in consecutive years. This revised approach eliminates the random effects of roadway conditions, driver populations, and law enforcement techniques introduced by selecting different counties and observation sites each year. A complete description of Tennessee's safety belt survey methodology may be seen in Appendix 1.

## Survey Design

A multi-stage area probability sampling approach is utilized for the survey. In the first stage, an appropriate number of primary sampling units is randomly selected. The primary sampling unit for the Tennessee survey is the "county," and 16 counties are selected for inclusion in the survey.

In the second stage, sampling of individual route segments in each of the counties is performed. All route segments in a county identified in the Tennessee Roadway Information Management System (TRIMS) data files, excluding the rare local road segments included in the database, make up the target population. The qualifying route segments from each of the survey counties are stratified into four groupings using TRIMS functional classification data. For each county, segments are randomly chosen from each of these four strata, with probability of selection proportional to the segment's annual Vehicle Miles Traveled (VMT). At the same time, the direction of travel for belt use observations is also randomly determined. The number of segments chosen from each stratum is generally proportional to the county's estimated annual VMT in each stratum. This assures that the final sample is representative of the traffic mix in the county across the roadway functional types.

A total of 160 roadway segments comprise the sample. This number is large enough to provide a broad sampling of State road conditions and has been shown in other States





to provide belt use estimates well within NHTSA's required level of precision. Forty percent of these sample sites are allocated to the state's four largest counties (64 sites, 16 per county). The remaining 60 percent are evenly divided among the 12 smaller counties in the survey (96 sites, 8 per county).

An observation site is a homogeneous segment of roadway, generally between 0.5 to 5 miles in length. A typical segment is about 1 mile in length. Observers record the belt use/nonuse of outboard front-seat occupants of all passenger vehicles in the travel direction of record for a period of 45 minutes. Data are collected during all daylight hours, generally from 8:00 am to 6:00 pm, and on all days of the week. Vehicles counted include all passenger cars, pickup trucks, vans, and sport utility vehicles. Since motorcycle traffic volumes are relatively low, all motorcycle traffic visible from the observation site, regardless of direction or lane of travel, is counted for the motorcycle helmet use survey. The helmet use/nonuse of both motorcycle drivers and passengers is recorded.

The percentages of belt use and helmet use at each site, based on the number using belts or helmets divided by the total number of observed occupants or riders, is computed and reported. These percentages then are combined using weighting formulas to yield statewide estimates of safety belt and motorcycle helmet use. Estimates of one standard error are calculated for the estimated statewide usage rates, and these statistics are used to construct a 95 percent confidence interval for the belt use estimate and helmet use estimate, respectively. A complete description of the methods used in this survey of seatbelt usage may be seen in Appendix 1 of this report.

## **2009 Tennessee Seatbelt Survey Results**

In 2009, the Tennessee highway safety community has continued several important vehicle occupant protection initiatives. The Tennessee Governor's Highway Safety Office (GHSO) continues its partnerships with the National Highway Traffic Safety Administration (NHTSA), the Tennessee Department of Safety (TDOS), local law enforcement agencies, and numerous other public and private entities to promote increased seatbelt usage across the state of Tennessee. Chief among these initiatives is the ninth consecutive year of the Click It or Ticket program. This high visibility education and enforcement campaign, combined with the 2004 enactment of a statewide primary enforcement seatbelt law, has produced an increase in Tennessee's observed seatbelt usage rate in seven of nine years since its implementation in 2001. Other safety campaigns such as Booze It and Lose It, Buckle Up in Your Truck, Hands Across the Border, and 100 Days of Summer Heat have also contributed to continuing progress in safety belt usage. GHSO is also partnering with NHTSA to deliver a focused safety belt camp media and enforcement campaign to roadway users in rural areas. This effort is active in Tennessee, Georgia, and Florida.

For 2009, the final statistically adjusted statewide seatbelt usage rate is 80.64% ( $\pm 0.78\%$ ). By comparison, the final usage rate for 2008 was 81.49% ( $\pm 0.72\%$ ). While



marks the first annual decrease in observed usage rates since 2002, it should be noted that the 2009 rate is still the second highest observed in the State of Tennessee. Also, the difference between the 2008 and 2009 rates is not statistically significant as there is overlap between the 95% confidence intervals. Despite this slight decrease, many historical trends continue. Pickup trucks continue to have the lowest usage rate of any vehicle type. For 2009, pickup trucks occupants were observed to have a seatbelt usage rate of 73.47%, down from 75.15% in 2008. The next lowest rate by vehicle type was 81.77% for passenger cars. Sport utility vehicles and vans returned usage rates of 84.66% and 82.76%, respectively. Table 1 shows the final adjusted usage rates by vehicle type and county, as well as the final statewide usage rate of 80.64% ( $\pm 0.78\%$ ) for all vehicle types. The observed statewide motorcycle helmet usage in 2009 was 100.00%. Table 2 shows the motorcycle helmet usage by county. To further illustrate the recent progress brought about in increasing seatbelt usage across the state of Tennessee by both the Click-It-Or-Ticket campaign and passage of a primary seatbelt enforcement law, Table 3 shows annual usage rates for all vehicles, passenger cars, pickup trucks, vans, and sport utility vehicles since 2000.

### **Looking Forward**

The year between the 2008 and 2009 safety belt observations was one of great change for both Tennessee and the nation as a whole. The United States experienced the most severe economic recession in decades. This recession, combined with average fuel prices exceeding \$4.00 per gallon in the fall of 2008, led to the first recorded annual decrease in vehicle miles of travel on the nation's roadways. At the same time, traffic fatalities are down substantially across much of the country. In Tennessee, traffic fatalities have decreased from 1,339 in 2004 to 1,035 in 2008. If current trends continue, traffic fatalities will fall below 1,000 in 2009. It is difficult to quantify the effects of these influences on safety belt usage, but they certainly play a part in this year's decreased usage rate.

For the third consecutive year, Tennessee's 2010 seatbelt survey will return to the same sites and counties used in the previous year. GHSO will continue its partnership with NHTSA on the Region Four Rural Seat Belt Project. Post-campaign data will be collected in November 2009 and June 2010. While data collected in the rural program counties is not directly incorporated into the statewide observational survey, it will allow GHSO to monitor usage rates in the state's smaller communities and refine its safety belt strategy accordingly.

**Table 1: Final Summary of June 2009 Tennessee Safety Belt Use  
Statewide Observational Survey Results**

County	Adjusted Usage Rates											
	No. of Passenger			Cars +			Vans +			Pickup		All
	Sites	Cars	Vans	SUVs	SUVs	SUVs	Trucks	Vehicles				
Davidson	16	88.10%	80.03%	87.44%	86.72%	78.91%	85.23%					
Hamilton	16	87.42%	77.21%	86.06%	85.59%	77.62%	84.02%					
Knox	16	87.62%	84.59%	88.07%	87.12%	75.91%	84.45%					
Shelby	16	79.25%	88.69%	82.61%	80.99%	73.38%	79.59%					
Blount	8	84.59%	83.32%	84.64%	84.30%	73.98%	81.98%					
Bradley	8	88.53%	87.74%	87.83%	88.50%	74.44%	85.13%					
Fayette	8	73.73%	81.03%	81.88%	76.93%	66.42%	73.61%					
Franklin	8	81.17%	82.52%	82.00%	81.91%	65.45%	77.52%					
Jefferson	8	85.99%	85.41%	90.45%	88.69%	78.24%	86.71%					
Montgomery	8	74.08%	78.96%	80.53%	76.87%	67.32%	74.20%					
Rutherford	8	71.49%	83.39%	80.38%	76.21%	67.71%	74.28%					
Sevier	8	82.79%	78.36%	85.32%	82.79%	75.29%	81.01%					
Sullivan	8	82.49%	78.63%	80.97%	81.45%	70.36%	78.88%					
Tipton	8	74.62%	60.14%	81.68%	76.46%	60.54%	70.02%					
Williamson	8	74.30%	85.11%	82.56%	78.71%	76.07%	78.10%					
Wilson	8	80.19%	89.79%	84.30%	83.25%	73.46%	80.64%					
<b>Statewide Totals</b>	<b>160</b>	<b>81.77%</b>	<b>82.76%</b>	<b>84.66%</b>	<b>82.89%</b>	<b>73.47%</b>	<b>80.64%</b>					





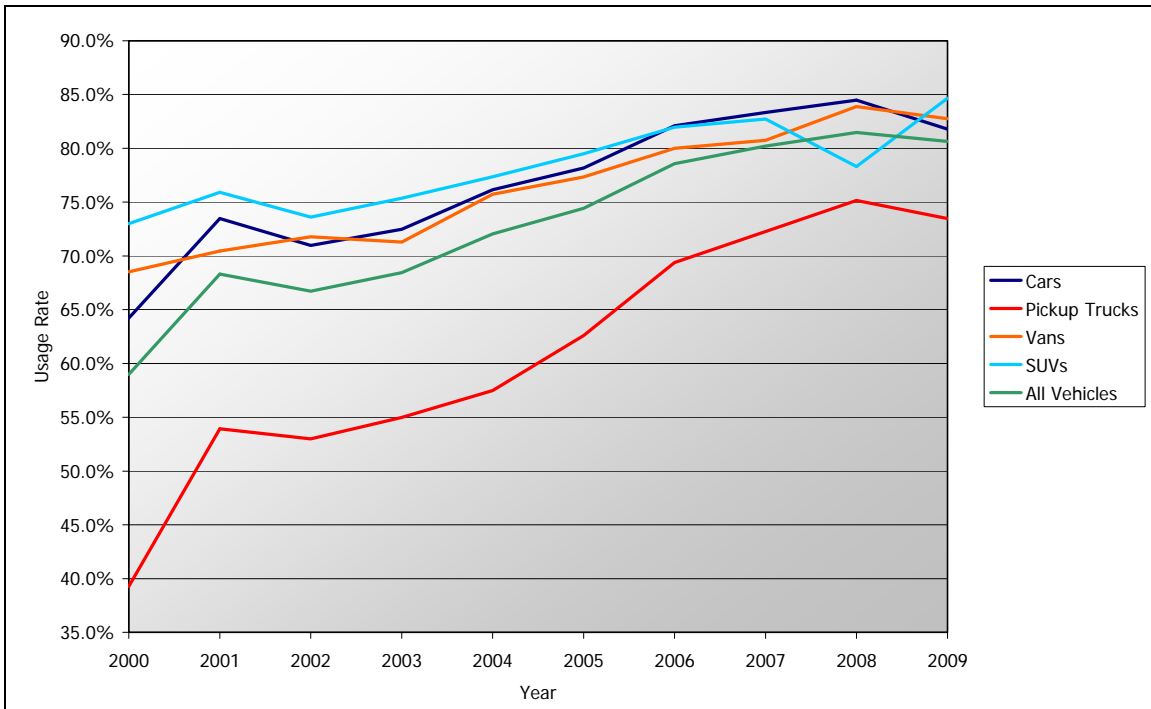
**Table 2: Final Summary of June 2009 Tennessee Motorcycle Helmet Use Statewide Observational Survey Results**

<b>County</b>	<b>No. of Sites</b>	<b>Helmeted Riders</b>	<b>Total Riders Observed</b>	<b>% Helmet Use</b>
Davidson	16	13	13	100.00%
Hamilton	16	52	52	100.00%
Knox	16	70	70	100.00%
Shelby	16	17	17	100.00%
Blount	8	24	24	100.00%
Bradley	8	81	81	100.00%
Fayette	8	8	8	100.00%
Franklin	8	18	18	100.00%
Jefferson	8	17	17	100.00%
Montgomery	8	34	34	100.00%
Rutherford	8	35	35	100.00%
Sevier	8	98	98	100.00%
Sullivan	8	30	30	100.00%
Tipton	8	9	9	100.00%
Williamson	8	40	40	100.00%
Wilson	8	48	48	100.00%
<b>Statewide Totals</b>	<b>160</b>	<b>594</b>	<b>594</b>	<b>100.00%</b>



**Table 3: Tennessee Seatbelt Usage, 2000-2008**

Survey Year	Passenger Cars	Pickup Trucks	Vans	Sport Utility Vehicles	All Vehicles
2000	64.2%	39.3%	68.5%	73.0%	59.0%
2001	73.5%	53.9%	70.4%	75.9%	68.3%
2002	71.0%	53.0%	71.8%	73.6%	66.7%
2003	72.5%	55.0%	71.3%	75.4%	68.4%
2004	76.1%	57.5%	75.7%	77.3%	72.0%
2005	78.2%	62.6%	77.3%	79.5%	74.4%
2006	82.1%	69.4%	80.0%	82.0%	78.6%
2007	83.3%	72.3%	80.8%	82.7%	80.2%
2008	84.5%	75.1%	83.9%	78.3%	81.5%
2009	81.8%	73.5%	82.8%	84.7%	80.6%



**Figure 1: Tennessee Seatbelt Usage, 2000-2008**



## Appendix 1: Survey Methodology

# **DOCUMENTATION OF TENNESSEE OBSERVATIONAL SURVEYS OF SAFETY BELT AND MOTORCYCLE HELMET USE**

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The University of Tennessee

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**Approved by NHTSA:**

August 26, 2008

## **Executive Summary**

The University of Tennessee Center for Transportation Research conducts a statewide survey once each year in early summer, at which time both safety belt and motorcycle helmet use data are gathered simultaneously. In recent years, the survey followed a sample design, data collection techniques, and estimation procedures developed in accordance with NHTSA “Guidelines for State Observational Surveys of Safety Belt and Motorcycle Helmet Use,” published in the June 29, 1992, Federal Register with revisions agreed upon at the June 1998 Region IV Workshop on Safety Belt Use Surveys held in Atlanta. To begin with 2008 surveys, a new design is proposed. It follows the basic elements of the previous approach but proposes to meet NHTSA performance criteria with a smaller sample of observation sites, 160 rather than 440.

A multi-stage area probability sampling approach is proposed for the survey. In the first stage, an appropriate number of primary sampling units is randomly selected. The primary sampling unit for the Tennessee survey is the “county,” and 16 counties are selected for inclusion in the survey.

In the second stage, sampling of individual route segments in each of the counties is performed. All route segments in a county identified in the Tennessee Roadway Information Management System (TRIMS) data files, excluding the rare local road segments included in the database, make up the target population. The qualifying route segments from each of the survey counties are stratified into four groupings using TRIMS functional classification data. For each county, segments will be randomly chosen from each of these four strata, with probability of selection proportional to the segment’s annual Vehicle Miles Traveled (VMT). At the same time, the direction of travel for belt use observations will also be randomly determined. The number of segments chosen from each stratum will be generally proportional to the county’s estimated annual VMT in each stratum. This will assure that the final sample is representative of the traffic mix in the county across the roadway functional types.

A total of 160 roadway segments will comprise the sample. This number is large enough to provide a broad sampling of State road conditions and has been shown in other States to provide belt use estimates well within NHTSA’s required level of precision (should the measured precision fail to meet requirements, we will modify the overall design or sampling procedures as needed and as approved by NHTSA). Forty percent of these sample sites will be allocated to the state’s four largest counties (64 sites, 16 per county). The remaining 60 percent will be evenly divided among the 12 smaller counties in the survey (96 sites, 8 per county).

An observation site is a homogeneous segment of roadway, generally between 0.5 to 5 miles in length. A typical segment is about 1 mile in length. Observers record the belt use/nonuse of outboard front-seat occupants of all passenger vehicles in the travel direction of record for a period of 45 minutes. Data are collected during all daylight hours, generally from 8:00 am to 6:00 pm, and on all days of the week. Vehicles to be counted include all passenger cars, pickup trucks, vans, and sport utility vehicles. Since motorcycle traffic volumes are relatively low, all motorcycle traffic visible from the observation site, regardless of direction or lane of travel, will



be counted for the motorcycle helmet use survey. The helmet use/nonuse of both motorcycle drivers and passengers is recorded.

The percentages of belt use and helmet use at each site, based on the number using belts or helmets divided by the total number of observed occupants or riders, will be computed and reported. These percentages then will be combined using weighting formulas to yield statewide estimates of safety belt and motorcycle helmet use. Estimates of one standard error are calculated for the estimated statewide usage rates, and these statistics are used to construct a 95 percent confidence interval for the belt use estimate and helmet use estimate, respectively.

## **Introduction**

Following is a detailed description of the methodology proposed for use for 2008 and subsequent years in the State of Tennessee observational surveys of safety belt and motorcycle helmet use. The sample design, data collection techniques, and estimation procedures for the surveys have been developed in accordance with NHTSA “Guidelines for State Observational Surveys of Safety Belt and Motorcycle Helmet Use,” published in the June 29, 1992, Federal Register and revised at the June 1998 Region IV Workshop on Safety Belt Use Surveys held in Atlanta. The number of sites in this proposed plan has been reduced from the previous plan based on experiences in other States, which has shown that belt use estimates based on approximately 120-150 sites can be well within NHTSA’s required level of precision. Under the Tennessee plan, a statewide survey is conducted once each year in the summer, at which time both safety belt and motorcycle helmet use data are gathered simultaneously. This annual survey is designed and is currently administered, analyzed, and documented by the University of Tennessee Center for Transportation Research. The primary contact person at the Center is Mr. Matthew Cate (865/974-5255, [mcate@utk.edu](mailto:mcate@utk.edu)).

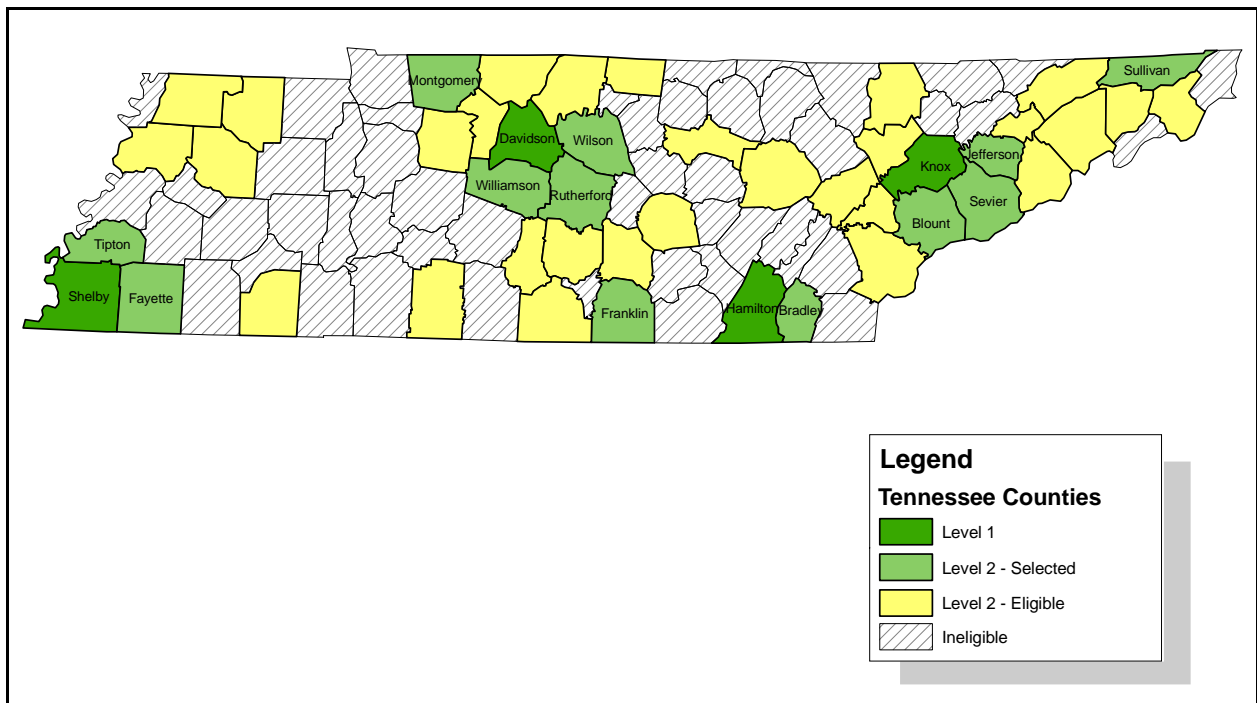
The sampling procedures described herein utilize current data from the Tennessee Roadway Information Management System (TRIMS) compiled by the Tennessee Department of Transportation (TDOT), and the U.S. Census Bureau. The TRIMS files include estimates of Average Daily Traffic (ADT) and Vehicle Miles of Travel (VMT) for each road segment and by road class and county, and the Census Bureau provides current population estimates by county.

The TRIMS files also provide a “population” of observation sites for the surveys. TRIMS contains data on the entire 91,000-mile road system in Tennessee, including Interstate Highways and Expressways, Principal and Minor Arterials, Major and Minor Collectors, and a small sample of Local Roads. As part of these data, each roadway is broken down into several “control-sections,” or segments, which vary from less than a mile to a few miles in length. These route segments tend to be homogeneous with regard to traffic volumes, land use, function, speeds, etc. Segment beginning and ending termini, road functional classification, location of intersecting roadways, and an ADT estimate are recorded in the TRIMS files for each control-section.

## **Sample Design**

A multi-stage area probability sampling approach is proposed for the survey. In the first stage, an appropriate number of primary sampling units is randomly selected. The primary sampling unit for the Tennessee survey is the county. Tennessee has a total of 95 counties; however, the least populated counties which collectively comprise approximately 15 percent of the State’s population are excluded from the sampling process (county population is the measure of sampling unit size for the purpose of defining the initial set of sampling units to be considered). Table 1 shows a listing of Tennessee’s 95 counties ranked using July 1, 2006, U.S. Census Bureau estimates, the most recent available, from most to least populated. The 45 counties which have been included in the sampling population as per the above criterion are identified in Table 1, as well as the 50 least populated counties which have been excluded from the sampling population.

From the sampling population, a sample of 16 counties will be selected. The number of counties (16) in the survey sample is based on the fact that Tennessee has a total of 45 counties in its sampling unit population. According to NHTSA guidelines to this number of sampling units, 16 is an appropriate number to achieve the desired level of accuracy in belt use estimation. The 16-county sample is chosen using a two-step procedure. First, the four largest counties (Shelby, Davidson, Knox and Hamilton), which comprise approximately 37 percent of the state’s population, are automatically placed into the 16-county sample. Then, 12 additional counties are selected from the remaining 41 counties to complete the survey sample, with probability for selection proportional to the population of the county. “Population weighting” is used together with random number generation to select the 12 smaller counties into the 16-county sample; the selection is done without replacement. The population values used for selection are Census estimates for July 1, 2006, the most current ones available. A random sample selected using this methodology and proposed for use in the new survey design is shown in Table 1 with the 16 counties in bold type. Additionally, these 16 counties are shown on a map of Tennessee in Figure 1.



**Figure 1:** Tennessee Counties Selected for Inclusion in 2008 Safety Belt Observational Survey

Once the 16 survey counties have been chosen, second stage sampling of individual route segments in each of the counties will be performed. The qualifying route segments comprising the sampling population are identified from the TRIMS files. All route segments except the very small number of local roads in the TRIMS files are eligible for selection (of the 22,401 segments in the files, just 206 are local road segments, less than 1% of all segments; they contribute less

**Table 1: 2006 Census Population**

County	Population	% Total	Cumulative % Total
<b>Shelby</b>	<b>911,438</b>	<b>15.09%</b>	<b>15.09%</b>
<b>Davidson</b>	<b>578,698</b>	<b>9.58%</b>	<b>24.68%</b>
<b>Knox</b>	<b>411,967</b>	<b>6.82%</b>	<b>31.50%</b>
<b>Hamilton</b>	<b>312,905</b>	<b>5.18%</b>	<b>36.68%</b>
<b>Rutherford</b>	<b>228,829</b>	<b>3.79%</b>	<b>40.47%</b>
<b>Williamson</b>	<b>160,781</b>	<b>2.66%</b>	<b>43.13%</b>
<b>Sullivan</b>	<b>153,239</b>	<b>2.54%</b>	<b>45.67%</b>
Sumner	149,416	2.47%	48.14%
<b>Montgomery</b>	<b>147,114</b>	<b>2.44%</b>	<b>50.58%</b>
<b>Blount</b>	<b>118,186</b>	<b>1.96%</b>	<b>52.54%</b>
Washington	114,316	1.89%	54.43%
<b>Wilson</b>	<b>104,035</b>	<b>1.72%</b>	<b>56.15%</b>
Marshall	95,894	1.59%	57.74%
<b>Bradley</b>	<b>93,538</b>	<b>1.55%</b>	<b>59.29%</b>
<b>Sevier</b>	<b>81,382</b>	<b>1.35%</b>	<b>60.64%</b>
Mcnairy	78,309	1.30%	61.93%
Anderson	73,579	1.22%	63.15%
Putnam	68,284	1.13%	64.28%
Greene	65,945	1.09%	65.37%
Robertson	62,187	1.03%	66.40%
Hamblen	61,026	1.01%	67.42%
Carter	59,157	0.98%	68.39%
<b>Tipton</b>	<b>57,380</b>	<b>0.95%</b>	<b>69.34%</b>
Hawkins	56,850	0.94%	70.29%
Roane	53,293	0.88%	71.17%
Cumberland	52,344	0.87%	72.04%
Macon	52,020	0.86%	72.90%
Coffee	51,625	0.85%	73.75%
<b>Jefferson</b>	<b>49,372</b>	<b>0.82%</b>	<b>74.57%</b>
Gibson	48,461	0.80%	75.37%
Dickson	46,583	0.77%	76.14%
Loudon	44,566	0.74%	76.88%
Monroe	44,163	0.73%	77.61%
Bedford	43,413	0.72%	78.33%
<b>Franklin</b>	<b>41,319</b>	<b>0.68%</b>	<b>79.02%</b>
Lawrence	40,934	0.68%	79.69%
Campbell	40,848	0.68%	80.37%
Warren	40,016	0.66%	81.03%
Cheatham	39,018	0.65%	81.68%
Dyer	37,886	0.63%	82.31%
<b>Fayette</b>	<b>36,102</b>	<b>0.60%</b>	<b>82.90%</b>
Cocke	35,220	0.58%	83.49%
Weakley	33,357	0.55%	84.04%
Lincoln	32,728	0.54%	84.58%
Obion	32,184	0.53%	85.11%
Henry	31,837	0.53%	85.64%
Claiborne	31,347	0.52%	86.16%
Rhea	30,347	0.50%	86.66%

**Table 1 Continued: 2006 Census Population**

County	Population	% Total	Cumulative % Total
Giles	29,269	0.48%	87.15%
Carroll	29,096	0.48%	87.63%
Mcminn	28,884	0.48%	88.11%
Hardeman	28,176	0.47%	88.57%
Maury	27,942	0.46%	89.04%
Henderson	26,750	0.44%	89.48%
Lauderdale	26,732	0.44%	89.92%
Hardin	26,089	0.43%	90.36%
Madison	25,722	0.43%	90.78%
White	24,482	0.41%	91.19%
Hickman	23,812	0.39%	91.58%
Grainger	22,453	0.37%	91.95%
Scott	21,926	0.36%	92.32%
Marion	21,726	0.36%	92.68%
Overton	20,740	0.34%	93.02%
Morgan	20,108	0.33%	93.35%
Haywood	19,405	0.32%	93.67%
Union	19,086	0.32%	93.99%
Smith	18,753	0.31%	94.30%
Humphreys	18,394	0.30%	94.60%
Dekalb	18,360	0.30%	94.91%
Johnson	18,043	0.30%	95.21%
Unicoi	17,663	0.29%	95.50%
Fentress	17,480	0.29%	95.79%
Wayne	16,828	0.28%	96.07%
Benton	16,378	0.27%	96.34%
Chester	16,043	0.27%	96.60%
Polk	15,939	0.26%	96.87%
Grundy	14,499	0.24%	97.11%
Crockett	14,392	0.24%	97.35%
Cannon	13,448	0.22%	97.57%
Bledsoe	13,030	0.22%	97.79%
Sequatchie	13,002	0.22%	98.00%
Stewart	12,998	0.22%	98.22%
Meigs	11,698	0.19%	98.41%
Lewis	11,588	0.19%	98.60%
Decatur	11,426	0.19%	98.79%
Jackson	10,918	0.18%	98.97%
Houston	8,076	0.13%	99.11%
Clay	8,055	0.13%	99.24%
Trousdale	7,811	0.13%	99.37%
Perry	7,653	0.13%	99.50%
Lake	7,406	0.12%	99.62%
Hancock	6,713	0.11%	99.73%
Moore	6,070	0.10%	99.83%
Van Buren	5,448	0.09%	99.92%
Pickett	4,855	0.08%	100.00%
<b>Tennessee</b>	<b>6,038,803</b>		

than 0.3% of the total VMT). The qualifying route segments from the 16 counties collectively constitute the set of observation sites from which the survey sites are then selected. The qualifying route segments from the 45 counties collectively will constitute the “target population” of observation sites.

The qualifying route segments from each of the survey counties are stratified into the following four groupings using TRIMS functional classification data:

1. All Interstates, Freeways or Expressways;
2. Other Principal Arterials;
3. Minor Arterials; and,
4. Collectors.

For a given county, segments will be randomly chosen from each of these four strata. The number of segments chosen from each stratum will be generally proportional to the county’s estimated annual VMT in each stratum though providing a minimum of two sites in each stratum-county. The proportional allocation of the segments across the various roadway groupings assures that the final sample is representative of the urban and rural mix in the county, as well as the mix of roadway functional types. The proposed allocation of sites, for the 16 counties identified in Table 1, is shown in Table 2.

In order to achieve the required level of precision, a total of 160 roadway segments will comprise the sample. In safety belt observation designs for other States, this number has yielded results well within NHTSA’s reliability requirement of 5% relative error. Should the measurement for safety belt use not meet this standard, however, additional observations will be conducted as recommended by NHTSA in order to achieve the necessary reliability.

Forty percent of these sample sites (64 sites) will be allocated to the state’s four largest counties, with each of these counties receiving one-fourth of this total number, or 16 sites. The remaining 60 percent (96 sites) will evenly divided among the 12 smaller counties in the survey, i.e., eight sample sites per county. In addition, one alternate site per county per roadway classification will be identified (this represents an additional 80 sites which can be used as substitute sites in the event that a primary site is unusable, e.g., closed for road work). The sample sites within each stratum are to be selected without replacement.

**Table 2: Proposed Site Allocation by County and Road Class Stratum**

County	Sites Allocated	County VMT (excl. local)	Road Class Stratum	Road Class VMT	Number of Sites if Allocated by VMT	Adjusted Number of Sites
Shelby	16	21,707,688	1	7,411,421	5.46	6
			2	6,110,646	4.50	4
			3	6,441,313	4.75	4
			4	1,744,308	1.29	2
Davidson	16	18,528,430	1	10,249,296	8.85	6
			2	3,581,238	3.09	4
			3	3,616,214	3.12	4
			4	1,081,682	0.93	2
Knox	16	11,318,599	1	5,584,194	7.89	6
			2	2,721,922	3.85	4
			3	1,872,610	2.65	4
			4	1,139,873	1.61	2
Hamilton	16	8,930,615	1	3,984,258	7.14	6
			2	2,088,215	3.74	4
			3	2,333,200	4.18	4
			4	524,942	0.94	2
Rutherford	8	6,231,299	1	2,381,636	3.06	2
			2	1,632,711	2.10	2
			3	1,330,927	1.71	2
			4	886,025	1.14	2
Williamson	8	4,849,437	1	1,858,847	3.07	2
			2	1,017,887	1.68	2
			3	1,177,728	1.94	2
			4	794,975	1.31	2
Sullivan	8	3,816,581	1	1,152,546	2.42	2
			2	1,338,460	2.81	2
			3	960,607	2.01	2
			4	364,968	0.77	2
Montgomery	8	3,189,595	1	725,244	1.82	2
			2	1,073,206	2.69	2
			3	998,797	2.51	2
			4	392,348	0.98	2
Blount	8	2,375,406	1	85,741	0.29	2
			2	1,269,771	4.28	2
			3	520,081	1.75	2
			4	499,813	1.68	2
Wilson	8	3,663,739	1	1,620,422	3.54	2
			2	882,859	1.93	2
			3	619,552	1.35	2
			4	540,906	1.18	2
Bradley	8	2,504,115	1	1,061,431	3.39	2
			2	566,935	1.81	2
			3	560,284	1.79	2
			4	315,465	1.01	2
Sevier	8	2,709,465	1	305,523	0.90	2
			2	1,175,787	3.47	2
			3	673,271	1.99	2
			4	554,884	1.64	2
Tipton	8	981,522	1	0	0.00	0
			2	478,988	3.90	3
			3	214,826	1.75	2
			4	287,708	2.34	3
Jefferson	8	2,137,837	1	1,204,100	4.51	2
			2	171,320	0.64	2
			3	418,907	1.57	2
			4	343,510	1.29	2
Franklin	8	834,019	1	0	0.00	0
			2	379,252	3.64	3
			3	163,419	1.57	2
			4	291,348	2.79	3
Fayette	8	1,543,165	1	565,778	2.93	2
			2	409,204	2.12	2
			3	306,157	1.59	2
			4	262,026	1.36	2
<b>Totals</b>	<b>160</b>	<b>95,321,512</b>	1	38,190,437	55.26	44
			2	24,898,401	46.25	42
			3	22,207,893	36.22	40
			4	10,024,781	22.26	34

## Data Collection

An observation site is a homogeneous segment of roadway, generally ranging in length from 0.5 to 5 miles. A typical segment is approximately 1 mile in length (the longer segments tend to be in rural areas where there are few intersections or driveways). For each observation site, at the time the site is initially selected a direction of travel will be randomly selected to be the travel direction of record. Proceeding in this direction from the beginning point of the segment, the observer is instructed to position himself or herself at the first intersection (preferably the first controlled intersection) within the segment.

The observer is to find a safe spot to stand just beyond the edge of the roadway at or very near the intersection. From this vantage point the observer records the belt use/nonuse of occupants of all passenger vehicles in the travel direction of record. If there are multiple through lanes in the travel direction of record, the first preference is to record all vehicles in all through lanes. If traffic is too heavy, then observers will split the observation time into a number of periods equal to the number of through lanes and then record belt use for one through lane at a time, beginning with the outermost lane. In the rare event that traffic is too heavy to count every vehicle in the survey lane, observers are instructed to identify a point down the road such that, when they complete recording data for the current vehicle, they can look up and select the next vehicle passing the point in that lane as the next one for observing.

Vehicles included in the survey data shall include all passenger cars, pickup trucks, vans, and sport utility vehicles. The shoulder belt use/nonuse of all front seat, outboard occupants of passenger vehicles is recorded. Children in child restraint seats are not counted, but children not in such devices are counted, and if they are wearing a shoulder belt, they are counted as “belted.” Since motorcycle traffic volumes are relatively low, all motorcycle traffic visible from the observation site, regardless of direction or lane of travel, is counted for the motorcycle helmet use survey. The helmet use and nonuse of both motorcycle drivers and any passengers are recorded.

The observation period at each site is 45 minutes. There are eight observation periods per day, scheduled to begin at the following times: 8:00 am; 9:15 am; 10:30 am; 11:45 am; 1:00 pm; 2:15 pm; 3:30 pm; and 4:45 pm. Actual observation time periods will begin at these times or as close as practical to these times, i.e., as soon the observer can get positioned at the site. Observers are instructed to commence counting with the first vehicle which arrives at the site after the time period begins, and to cease counting at the precise end of the 45-minute time period.

Data are collected during all daylight hours from 8:00 am to 6:00 pm and on all days of the week. When observation time periods are assigned to individual sites, the sites are first clustered according to travel time proximity. Those sites within a reasonable driving range, i.e., approximately 25 minutes, are grouped together. A cluster is then randomly assigned to a day or days of the week. Then, the sites within the cluster are randomly assigned to the consecutive observation time periods within that day or days, balancing within and between clusters time of day for sites by road functional class strata. It is expected that the sites within a county will make up a cluster (or two clusters, for the certain-selection counties). Clusters will be assigned days of the week to balance the type of county (e.g., urban/rural, part of the state) across weekdays and weekends.

If an observation site cannot be surveyed because of construction activities, safety concerns, or another legitimate reason, the site is abandoned. The observer is instructed to travel to the next alternative site of the same function-class stratum, observe at that site as quickly as possible, then go to the next assigned site and resume the survey as scheduled, staying as close as possible to the scheduled order and time of sites. As noted previously, alternate sites are selected during the initial sampling process.

The surveys will continue during mild inclement weather. In the event of severe inclement weather, the surveys are discontinued until such time as the weather eases. Then, the surveys are resumed according to the original schedule. After the remaining sites in a cluster have been surveyed, the observer returns to the missed site(s), and he/she surveys the site(s) beginning in the next consecutive time period.



## Estimation

### Calculation of Overall Safety Belt Usage Rate

Safety belt use rates will be calculated using formulas based on the proportion of the state's total VMT (excluding local-road VMT) "represented" by the site. Safety belt use rate calculations will follow a four-step process.

First, estimated rates will be calculated for each of the road strata within each county. Observed use rates for all of the sites within each stratum-county combination will be combined by simple averaging, as shown in formula (1). (Since the sites' original probability of inclusion in the sample was proportional to their VMT, averaging their use rates makes use of that sampling probability to reflect their different VMTs.)

$$P_{i(j)k} = \frac{\sum_{l=1}^{n_{i(j)k}} p_{i(j)kl}}{n_{i(j)k}} \quad (1)$$

where  $i(j)$  = county  $i$  within category  $j$  (where category 1 = the 4 certain-selection counties and category 2 = the 12 random-selection counties),  $k$  = road functional category stratum,  $l$  = site within stratum and county,  $n_{i(j)k}$  = number of sites within the stratum-county combination, and  $p_{i(j)kl}$  = the observed safety belt use rate at site  $i(j)kl = B_{i(j)kl}/O_{i(j)kl}$ , where  $B_{i(j)kl}$  = total number of belted occupants (drivers and outboard front-seat passengers) observed at the site and  $O_{i(j)kl}$  = total number of occupants whose belt use was observed at the site.

Second, a county-by-county safety belt use rate,  $p_{i(j)}$ , will be obtained by combining county-stratum safety belt use rates across strata within counties, weighted by the class's relative contribution to total county VMT:

$$P_{i(j)} = \frac{\sum_k VMT_{i(j)k} P_{i(j)k}}{\sum_k VMT_{i(j)k}} \quad (2)$$

where  $VMT_{i(j)k}$  = VMT of all roads in stratum  $k$  in county  $i(j)$ , and  $p_{i(j)k}$  = safety belt use rate for stratum  $k$  in county  $i(j)$ .

In the third step, category-weighted safety belt use rates will be obtained by combining and weighting the rates from the sampled counties in each category by their VMT values and probabilities of being selected:

$$P_j = \frac{\sum_i VMT_{i(j)} W_{i(j)} P_{i(j)}}{\sum_i VMT_{i(j)} W_{i(j)}} \quad (3)$$

where  $VMT_{i(j)}$  = total VMT for county  $i$  in region  $j$  and  $W_{i(j)}$  = the inverse of the probability of the county's selection:  $W_{i(1)} = 1$  for the certainty counties and  $W_{i(2)} = \frac{\sum_{l=1}^{41} Pop_{l(2)}}{12 * Pop_{i(2)}}$  where 41 = the

number of high population counties in category 2, 12 = the number of those counties to be selected, and  $Pop_{l(2)}$  are 2006 Census county population estimates.

Finally, the statewide belt use proportion will be calculated by combining the category proportions weighted by their proportion of statewide (45-county) VMT:

$$p = \frac{\sum_{j=1}^2 VMT_j p_j}{\sum_{j=1}^2 VMT_j} \quad (4)$$

The result will be a weighted combination of the individual site safety belt use rates. Estimates of subgroups of occupants, such as male drivers, female passengers, male drivers of pickup trucks, etc., will be calculated in the same way.

#### *Calculation of the Standard Error of the Overall Safety Belt Use Rate*

Standard error of estimate values will be estimated through a jackknife approach, based on the general formula:

$$\hat{\sigma}_{\hat{p}} = \left[ \frac{n-1}{n} \sum_{i=1}^n (\hat{p}_i - \hat{p})^2 \right]^{1/2} \quad (5)$$

where  $\hat{\sigma}_{\hat{p}}$  = standard deviation (standard error) of the estimated statewide safety belt use proportion  $\hat{p}$  (equivalent to  $p$  in the notation of formulas 1-4),  $n$  = the number of sites, i.e., 160, and  $\hat{p}_i$  = the estimated statewide belt use proportion with site  $i$  excluded from the calculation.

The relative error rate, i.e.,  $\hat{\sigma}_{\hat{p}} / \hat{p}$ , will also be calculated, as will the 95% confidence interval, i.e.,  $\hat{p} \pm 1.96\hat{\sigma}_{\hat{p}}$ . These values will be reported for the overall statewide seatbelt use rate. Should the calculated relative error rate fail to meet NHTSA's 5% criterion, additional data observations, or other remedies agreeable to NHTSA, will be undertaken to achieve the necessary reliability.

#### *Calculation of Overall Motorcycle Helmet Usage Rate and Standard Error of the Usage Rate*

Motorcycle helmet use rates will be calculated using a three-step process. The process proposed is different than that to be used for safety belt use calculations because one of the two weighting factors, VMT, is primarily a passenger vehicle and truck measure. Because there is no comparable motorcycle VMT measure, we propose using simple averages up to the level of county helmet use. County values will then be combined using the population factors used for calculating safety belt use rates.

First, a county-by-county helmet use rate,  $m_{i(j)}$ , will be obtained by dividing the number of helmet-wearing riders observed across all sites in the county by the total number of riders observed:

$$m_{i(j)} = \sum_{k,l} H_{i(j)kl} / \sum_{k,l} R_{i(j)kl} \quad (M1)$$

where  $H_{i(j)kl}$  = the number of helmeted riders observed at site  $l$  in stratum  $k$  in county  $i(j)$ , and  $R_{i(j)kl}$  = the total number of riders observed at site  $l$  in stratum  $k$  in county  $i(j)$ .

In the second step, category-weighted helmet use rates will be obtained by combining the rates from the sampled counties in each category by their probabilities of being selected:

$$m_j = \frac{\sum_i U_{i(j)} m_{i(j)}}{\sum_i U_{i(j)}} \quad (M2)$$

where  $U_{i(j)}$  = the inverse of the probability of the county's selection:  $U_{i(1)} = 1$  for the certainty counties and  $U_{i(2)} = \frac{\sum_{l=1}^{41} Pop_{l(2)}}{12 * Pop_{i(2)}}$  where 41 = the number of high population counties in category 2 and 12 = the number of those counties selected.

Finally, the statewide helmet proportion will be calculated by combining the category proportions weighted by their proportion of statewide population:

$$m = \frac{\sum_{j=1}^2 U_j m_j}{\sum_{j=1}^2 U_j} \quad (M3)$$

where  $U_j$  = the proportion of the State's population in category  $j$ . Estimates of subgroups of riders, such as male drivers, female passengers, etc., will be calculated in the same way.

Standard error of estimate values will be calculated using a jackknife procedure analogous to that used in the safety belt use calculations, as will relative error rates.



**Attachment 5**

**Tennessee Department of Health Population Projections**



Population Projections,  
Tennessee Counties and the State,  
2010-2020

Tennessee  
RACE/SEX- Total

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	408,513	411,693	414,938	418,263	421,610	424,975	428,224	431,512	434,870	438,221	441,619
5 to 9	403,411	405,722	408,066	410,497	412,922	415,354	418,394	421,459	424,576	427,716	430,864
10 to 14	402,598	406,325	410,141	414,106	418,132	422,322	424,543	426,790	429,082	431,393	433,702
15 to 19	434,389	433,461	432,643	431,978	431,439	431,057	434,780	438,652	442,596	446,638	450,815
20 to 24	419,842	423,456	427,190	431,038	435,030	439,156	438,301	437,618	437,033	436,578	436,252
25 to 29	414,658	416,286	418,113	420,104	422,292	424,692	428,136	431,700	435,341	439,130	443,045
30 to 34	409,320	412,232	415,309	418,638	422,189	426,021	427,048	428,294	429,714	431,333	433,113
35 to 39	425,240	423,364	421,642	420,125	418,734	417,522	420,091	422,864	425,890	429,100	432,565
40 to 44	427,349	427,738	428,266	428,925	429,744	430,697	428,641	426,751	425,050	423,506	422,173
45 to 49	469,225	461,710	454,446	447,402	440,602	434,049	434,568	435,251	436,037	436,976	438,062
50 to 54	459,483	461,103	462,838	464,710	466,702	468,830	461,295	454,010	446,915	440,131	433,546
55 to 59	407,442	414,503	421,782	429,309	437,119	445,159	446,759	448,465	450,297	452,240	454,300
60 to 64	353,277	360,080	367,200	374,615	382,355	390,467	397,311	404,409	411,751	419,295	427,101
65 to 69	266,258	277,841	290,055	302,911	316,394	330,617	337,013	343,726	350,712	357,999	365,641
70 to 74	197,538	204,258	211,324	218,660	226,269	234,239	244,628	255,599	267,127	279,263	292,042
75 to 79	147,925	150,696	153,603	156,608	159,688	162,916	168,716	174,793	181,136	187,737	194,638
80 to 84	108,420	108,824	109,299	109,840	110,381	111,008	113,363	115,835	118,392	121,030	123,774
85 plus	109,766	111,942	114,215	116,568	118,944	121,378	123,354	125,386	127,542	129,668	131,848

ALL AGES 6,264,654 6,311,234 6,361,070 6,414,297 6,470,546 6,530,459 6,575,165 6,623,114 6,674,061 6,727,954 6,785,100

Tennessee  
RACE/SEX- White Male

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	158,710	159,858	161,040	162,232	163,449	164,658	166,007	167,367	168,750	170,147	171,558
5 to 9	157,351	158,027	158,720	159,406	160,111	160,811	161,912	163,026	164,143	165,273	166,400
10 to 14	158,249	159,660	161,090	162,512	163,974	165,459	166,095	166,727	167,374	168,019	168,656
15 to 19	173,005	172,616	172,246	171,891	171,575	171,264	172,707	174,181	175,659	177,156	178,666
20 to 24	167,637	168,740	169,872	171,035	172,229	173,450	173,114	172,814	172,529	172,253	172,000
25 to 29	167,784	167,931	168,129	168,390	168,703	169,087	170,127	171,187	172,282	173,406	174,562
30 to 34	167,036	167,982	169,004	170,120	171,345	172,647	172,433	172,281	172,176	172,149	172,156
35 to 39	175,156	174,129	173,160	172,250	171,383	170,584	171,349	172,190	173,137	174,151	175,264
40 to 44	177,706	177,666	177,652	177,674	177,739	177,820	176,749	175,742	174,781	173,889	173,063
45 to 49	190,942	188,232	185,585	182,990	180,469	177,998	177,999	178,039	178,111	178,216	178,340
50 to 54	185,357	186,147	186,975	187,845	188,751	189,678	186,979	184,345	181,769	179,264	176,816
55 to 59	165,788	168,322	170,923	173,591	176,340	179,152	179,945	180,758	181,599	182,477	183,389
60 to 64	147,676	149,458	151,280	153,159	155,080	157,066	159,520	162,041	164,644	167,289	170,011
65 to 69	111,502	116,093	120,901	125,953	131,221	136,742	138,472	140,253	142,071	143,928	145,866
70 to 74	79,716	82,572	85,561	88,656	91,882	95,238	99,283	103,521	107,963	112,620	117,499
75 to 79	55,388	56,721	58,100	59,521	60,985	62,506	64,887	67,373	69,980	72,694	75,520
80 to 84	36,133	36,471	36,807	37,172	37,545	37,945	38,997	40,103	41,242	42,415	43,638
85 plus	26,763	27,482	28,243	29,001	29,800	30,621	31,319	32,036	32,781	33,543	34,322

ALL AGES 2,501,899 2,518,107 2,535,288 2,553,398 2,572,581 2,592,726 2,607,894 2,623,984 2,640,991 2,658,889 2,677,726

Population Projections,  
Tennessee Counties and the State,  
2010-2020

Tennessee  
RACE/SEX- White Female

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	149,686	150,768	151,869	152,979	154,104	155,247	156,512	157,790	159,069	160,372	161,698
5 to 9	148,178	148,812	149,440	150,093	150,739	151,392	152,425	153,454	154,481	155,533	156,608
10 to 14	149,401	150,695	152,010	153,360	154,704	156,065	156,657	157,256	157,846	158,466	159,083
15 to 19	162,959	163,218	163,495	163,788	164,110	164,444	165,800	167,197	168,583	169,983	171,410
20 to 24	161,486	162,728	164,010	165,301	166,650	168,028	168,253	168,491	168,746	169,030	169,325
25 to 29	161,221	161,864	162,577	163,356	164,206	165,133	166,336	167,567	168,797	170,090	171,400
30 to 34	160,294	161,401	162,566	163,807	165,141	166,580	167,095	167,668	168,318	169,027	169,783
35 to 39	170,201	168,947	167,722	166,563	165,452	164,379	165,383	166,463	167,621	168,857	170,163
40 to 44	173,964	173,706	173,466	173,244	173,059	172,897	171,553	170,232	168,995	167,780	166,652
45 to 49	193,295	189,384	185,581	181,886	178,275	174,782	174,491	174,223	173,972	173,755	173,558
50 to 54	190,808	191,312	191,846	192,421	193,039	193,696	189,744	185,900	182,143	178,506	174,957
55 to 59	174,392	176,906	179,483	182,130	184,872	187,682	188,162	188,672	189,215	189,792	190,401
60 to 64	157,225	159,441	161,738	164,086	166,496	168,969	171,405	173,922	176,503	179,149	181,864
65 to 69	123,939	128,891	134,067	139,474	145,116	151,020	153,184	155,420	157,714	160,071	162,484
70 to 74	95,557	98,641	101,861	105,199	108,643	112,232	116,783	121,543	126,503	131,687	137,114
75 to 79	76,950	78,151	79,384	80,665	81,966	83,324	86,115	89,020	92,017	95,152	98,403
80 to 84	61,651	61,639	61,653	61,698	61,755	61,838	62,940	64,069	65,232	66,436	67,674
85 plus	71,512	72,802	74,132	75,481	76,871	78,277	79,354	80,445	81,564	82,702	83,869

ALL AGES 2,582,719 2,599,306 2,616,900 2,635,531 2,655,198 2,675,985 2,692,192 2,709,332 2,727,319 2,746,388 2,766,446

Tennessee  
RACE/SEX- Black Male

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	45,383	45,765	46,143	46,550	46,937	47,337	47,564	47,787	48,019	48,242	48,471
5 to 9	44,366	44,741	45,125	45,516	45,911	46,304	46,672	47,041	47,436	47,814	48,196
10 to 14	43,610	43,908	44,210	44,550	44,886	45,260	45,629	46,007	46,385	46,768	47,158
15 to 19	45,794	45,153	44,535	43,948	43,388	42,861	43,111	43,380	43,664	43,966	44,279
20 to 24	39,879	40,419	40,972	41,553	42,140	42,762	42,162	41,604	41,062	40,541	40,042
25 to 29	35,411	35,874	36,352	36,844	37,369	37,913	38,414	38,948	39,479	40,037	40,611
30 to 34	32,785	33,196	33,613	34,054	34,509	34,992	35,444	35,925	36,417	36,929	37,465
35 to 39	32,045	32,101	32,180	32,272	32,373	32,501	32,896	33,311	33,745	34,194	34,675
40 to 44	30,335	30,567	30,824	31,093	31,377	31,672	31,733	31,812	31,911	32,019	32,143
45 to 49	34,713	34,188	33,681	33,196	32,733	32,278	32,557	32,857	33,160	33,485	33,823
50 to 54	34,328	34,425	34,523	34,634	34,755	34,883	34,372	33,869	33,398	32,940	32,500
55 to 59	27,218	27,979	28,767	29,589	30,438	31,327	31,425	31,539	31,665	31,800	31,939
60 to 64	19,206	20,303	21,465	22,699	24,018	25,414	26,148	26,914	27,716	28,538	29,403
65 to 69	11,893	12,716	13,616	14,584	15,617	16,747	17,714	18,749	19,850	21,025	22,274
70 to 74	8,176	8,477	8,800	9,147	9,502	9,879	10,579	11,338	12,160	13,047	14,012
75 to 79	5,324	5,413	5,512	5,615	5,723	5,831	6,064	6,306	6,565	6,841	7,132
80 to 84	3,254	3,274	3,295	3,324	3,343	3,374	3,440	3,509	3,592	3,668	3,749
85 plus	2,651	2,677	2,705	2,742	2,773	2,805	2,846	2,888	2,934	2,976	3,017

ALL AGES 496,371 501,176 506,318 511,910 517,792 524,140 528,770 533,784 539,158 544,830 550,889



Population Projections,  
Tennessee Counties and the State,  
2010-2020

Tennessee  
RACE/SEX- Black Female

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	44,533	44,907	45,283	45,669	46,066	46,459	46,676	46,890	47,121	47,334	47,556
5 to 9	43,557	43,931	44,313	44,701	45,098	45,497	45,859	46,225	46,606	46,990	47,366
10 to 14	42,411	42,780	43,158	43,565	43,980	44,409	44,779	45,155	45,542	45,927	46,315
15 to 19	44,817	44,291	43,779	43,298	42,836	42,404	42,729	43,076	43,442	43,830	44,224
20 to 24	42,084	42,633	43,198	43,790	44,404	45,035	44,480	43,969	43,459	42,988	42,538
25 to 29	39,188	39,708	40,258	40,824	41,415	42,023	42,567	43,122	43,698	44,291	44,905
30 to 34	37,851	38,067	38,278	38,517	38,753	39,011	39,510	40,046	40,599	41,180	41,778
35 to 39	36,130	36,377	36,644	36,935	37,240	37,564	37,770	37,979	38,197	38,423	38,669
40 to 44	35,323	35,349	35,392	35,457	35,526	35,623	35,868	36,122	36,410	36,705	37,022
45 to 49	40,804	40,127	39,469	38,829	38,217	37,626	37,690	37,775	37,868	37,966	38,093
50 to 54	40,632	40,605	40,589	40,585	40,587	40,603	39,932	39,288	38,643	38,048	37,459
55 to 59	33,104	34,083	35,099	36,152	37,259	38,400	38,381	38,375	38,380	38,403	38,429
60 to 64	23,801	25,220	26,733	28,341	30,048	31,871	32,828	33,828	34,866	35,940	37,062
65 to 69	15,553	16,513	17,535	18,627	19,795	21,041	22,313	23,674	25,123	26,666	28,313
70 to 74	11,953	12,276	12,624	12,973	13,340	13,723	14,586	15,511	16,502	17,567	18,696
75 to 79	9,124	9,206	9,293	9,385	9,477	9,582	9,863	10,158	10,465	10,783	11,114
80 to 84	6,780	6,809	6,854	6,898	6,950	7,000	7,083	7,174	7,265	7,365	7,464
85 plus	8,461	8,586	8,712	8,851	8,983	9,123	9,257	9,396	9,539	9,682	9,828
ALL AGES	556,106	561,468	567,211	573,397	579,974	586,994	592,171	597,763	603,725	610,088	616,831

Tennessee  
RACE/SEX- Other Male

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	5,229	5,325	5,433	5,551	5,665	5,780	5,875	5,984	6,106	6,215	6,325
5 to 9	5,031	5,172	5,319	5,490	5,651	5,812	5,902	5,997	6,093	6,198	6,295
10 to 14	4,409	4,602	4,818	5,059	5,310	5,598	5,743	5,891	6,051	6,211	6,371
15 to 19	4,050	4,210	4,378	4,576	4,770	5,005	5,205	5,420	5,652	5,906	6,193
20 to 24	4,446	4,559	4,687	4,820	4,970	5,127	5,300	5,476	5,681	5,900	6,134
25 to 29	5,587	5,502	5,430	5,367	5,308	5,263	5,370	5,489	5,622	5,758	5,911
30 to 34	5,663	5,773	5,903	6,042	6,182	6,351	6,227	6,113	6,015	5,928	5,859
35 to 39	5,819	5,871	5,930	6,002	6,092	6,196	6,293	6,402	6,525	6,670	6,823
40 to 44	4,975	5,189	5,426	5,684	5,971	6,283	6,312	6,361	6,409	6,486	6,582
45 to 49	4,654	4,812	4,993	5,180	5,388	5,624	5,844	6,108	6,374	6,685	7,023
50 to 54	3,866	4,041	4,235	4,442	4,674	4,931	5,084	5,260	5,444	5,653	5,883
55 to 59	3,130	3,277	3,439	3,612	3,804	4,007	4,181	4,370	4,577	4,807	5,054
60 to 64	2,457	2,568	2,704	2,836	2,985	3,163	3,298	3,458	3,623	3,810	4,010
65 to 69	1,601	1,702	1,819	1,953	2,093	2,257	2,359	2,477	2,597	2,736	2,890
70 to 74	989	1,064	1,150	1,250	1,349	1,472	1,558	1,666	1,789	1,917	2,059
75 to 79	431	465	520	576	636	703	750	819	893	964	1,047
80 to 84	214	224	243	263	276	296	321	357	396	441	490
85 plus	113	117	124	148	154	164	171	181	220	230	241
ALL AGES	62,664	64,473	66,551	68,851	71,278	74,032	75,793	77,829	80,067	82,515	85,190

Tennessee  
RACE/SEX- Other Female

Population Projections,  
Tennessee Counties and the State,  
2010-2020

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	4,972	5,070	5,170	5,282	5,389	5,494	5,590	5,694	5,805	5,911	6,011
5 to 9	4,928	5,039	5,149	5,291	5,412	5,538	5,624	5,716	5,817	5,908	5,999
10 to 14	4,518	4,680	4,855	5,060	5,278	5,531	5,640	5,754	5,884	6,002	6,119
15 to 19	3,764	3,973	4,210	4,477	4,760	5,079	5,228	5,398	5,596	5,797	6,043
20 to 24	4,310	4,377	4,451	4,539	4,637	4,754	4,992	5,264	5,556	5,866	6,213
25 to 29	5,467	5,407	5,367	5,323	5,291	5,273	5,322	5,387	5,463	5,548	5,656
30 to 34	5,691	5,813	5,945	6,098	6,259	6,440	6,339	6,261	6,189	6,120	6,072
35 to 39	5,889	5,939	6,006	6,103	6,194	6,298	6,400	6,519	6,665	6,805	6,971
40 to 44	5,046	5,261	5,506	5,773	6,072	6,402	6,426	6,482	6,544	6,627	6,711
45 to 49	4,817	4,967	5,137	5,321	5,520	5,741	5,987	6,249	6,552	6,869	7,225
50 to 54	4,492	4,573	4,670	4,783	4,896	5,039	5,184	5,348	5,518	5,720	5,931
55 to 59	3,810	3,936	4,071	4,235	4,406	4,591	4,665	4,751	4,861	4,961	5,088
60 to 64	2,912	3,090	3,280	3,494	3,728	3,984	4,112	4,246	4,399	4,569	4,751
65 to 69	1,770	1,926	2,117	2,320	2,552	2,810	2,971	3,153	3,357	3,573	3,814
70 to 74	1,147	1,228	1,328	1,435	1,553	1,695	1,839	2,020	2,210	2,425	2,662
75 to 79	708	740	794	846	901	970	1,037	1,117	1,216	1,303	1,422
80 to 84	388	407	447	485	512	555	582	623	665	705	759
85 plus	266	278	299	345	363	388	407	440	504	535	571
ALL AGES	64,895	66,704	68,802	71,210	73,723	76,582	78,345	80,422	82,801	85,244	88,018

Hispanic Population Projections,  
Tennessee Counties and the State,  
2010-2020

Tennessee  
SEX- Total

AGE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0 to 4	22,606	23,222	23,859	24,511	25,198	25,899	26,796	27,727	28,689	29,684	30,727
5 to 9	22,870	23,421	24,000	24,593	25,207	25,808	26,341	26,900	27,466	28,037	28,619
10 to 14	20,512	21,379	22,323	23,366	24,505	25,741	26,262	26,793	27,346	27,915	28,476
15 to 19	16,537	17,435	18,445	19,570	20,824	22,192	23,003	23,894	24,880	25,958	27,142
20 to 24	17,555	18,181	18,858	19,586	20,396	21,254	22,367	23,579	24,910	26,356	27,950
25 to 29	24,712	23,851	23,075	22,364	21,726	21,168	21,797	22,472	23,215	24,022	24,893
30 to 34	29,633	29,323	29,077	28,875	28,769	28,727	27,421	26,238	25,170	24,194	23,334
35 to 39	22,659	24,308	26,119	28,143	30,347	32,793	32,281	31,858	31,500	31,222	31,045
40 to 44	15,641	17,063	18,619	20,350	22,287	24,445	26,136	27,985	30,042	32,284	34,745
45 to 49	11,813	12,714	13,692	14,780	15,970	17,299	18,804	20,463	22,317	24,362	26,638
50 to 54	8,524	9,152	9,843	10,613	11,463	12,413	13,321	14,321	15,417	16,622	17,965
55 to 59	5,693	6,146	6,665	7,243	7,896	8,630	9,243	9,913	10,674	11,513	12,443
60 to 64	3,809	4,082	4,397	4,756	5,165	5,644	6,086	6,589	7,147	7,789	8,503
65 to 69	2,286	2,466	2,695	2,968	3,264	3,619	3,877	4,176	4,520	4,909	5,361
70 to 74	1,417	1,500	1,616	1,754	1,893	2,084	2,247	2,461	2,708	2,976	3,297
75 to 79	860	894	961	1,040	1,111	1,206	1,276	1,378	1,496	1,626	1,790
80 to 84	546	551	570	607	614	645	668	727	792	842	919
85 PLUS	409	418	440	479	493	513	526	558	587	608	636
ALL AGES	228,082	236,106	245,254	255,598	267,128	280,080	288,452	298,032	308,876	320,919	334,483

Sources:

TN Dept of Health, "Tennessee Population Projections, 2010-2020," online at [http://health.state.tn.us/statistics/PdfFiles/PopProj2010\\_2020Full.pdf](http://health.state.tn.us/statistics/PdfFiles/PopProj2010_2020Full.pdf), accessed 23 Mar 2010.

TN Dept of Health, "Tennessee Hispanic Population Projections, 2010-2020," online at [http://health.state.tn.us/statistics/PdfFiles/HispanicPopProj20\\_0307Tables.pdf](http://health.state.tn.us/statistics/PdfFiles/HispanicPopProj20_0307Tables.pdf), accessed 23 Mar 2010.



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