

Missouri Commercial Motor Vehicle Safety Belt Survey Final Report



Conducted for the Traffic & Highway Safety Division of the
Missouri Department of Transportation
by the
Missouri Safety Center
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Executive Summary

In August of 2016, the Missouri Safety Center in conjunction with the Traffic and Highway Safety Division of MoDOT's conducted the Commercial Motor Vehicle (CMV) driver's safety belt use survey. The methodology for this year's survey was identical to the established methodology for the 2004 survey. The survey was conducted at 250 locations in 76 Missouri counties. Survey sites were located throughout the nine Missouri State Highway Patrol (MSHP) Troop areas.

The number of sites per MSHP Troop continues to be assigned proportionally to four roadway types; freeway, expressway, two-lane and other (super 2 lane, 5-lane section, 3-lane section, multi-lane section, and one way) based upon CMV DVMT on each roadway type.

Shoulder belt usage in Class 7 (six to nine tires) and Class 8 (10 or more tires) trucks for the CMV driver was observed at each selected site. Observations were collected over a one week period (August 15-21, 2016) and each observation was 40 minutes in length. Sixteen percent of the vehicles observed were Type 7 vehicles and the remaining 84.0 percent were Type 8. A total of 17,589 observations were collected in the 76 counties at 250 observational sites.

The following is a list of the major findings.

- The overall safety belt usage rate for commercial motor vehicle drivers observed was 82.8 percent. This is an increase of 1.8 percent over the 81.0 percent usage rate observed in 2014.
- The MSHP Troop I region had the highest safety belt usage rate and Troop A region had the lowest with 96.0 and 69.6 percent respectively.
- CMV drivers observed on the "Freeway" roadway type had the highest safety belt usage rate of 84.5 percent and drivers on "Other" roadways had the lowest usage rate of 66.4 percent.
- There were ten counties that had a safety belt usage rates between 30 and 60 percent: they were Platte, Cass, St. Clair, Taney, Dallas, Audrain, Howell, Oregon, Gentry and DeKalb.
- Thirty-three counties: Lafayette, Johnson, Ray, Pettis, Schuyler, Ste. Genevieve, Franklin, Lincoln, Pike, Warren, St. Charles, Vernon, Barton, McDonald, Newton, Greene, Christian, Webster, Scott, New Madrid, Mississippi, Pemiscot, Cape Girardeau, Cooper, Boone, Camden, Miller, Gasconade, Texas, Harrison, Daviess, Buchanan, and Clinton had safety belt usage rates between 80 and 90 percent.
- The safety belt usage rate was 90 percent or above in twelve counties, Henry, Saline, Perry, Jasper, Polk, Callaway, Montgomery, Cole, Crawford, Laclede, Pulaski, and Phelps.
- Commercial motor vehicle drivers of vehicles displaying hazardous material placards had a safety belt usage rate 89.1 percent

Historic Commercial Vehicle Drivers Safety Belt Usage Rate By MSHP Troop (Data for Restrained Driver Only)

MSHP	Freq 2004	% Belted	Freq 2005	% Belted	% of Change 04/05	Freq 2006	% Belted	% of Change 05/06	Freq 2007	% Belted	% of Change 06/07	Freq 2008	% Belted	% of Change 07/08	Freq 2010	% Belted	% of Change 08/10	Freq 2012	% Belted	% of Change 10/12
A	1,707	55.97	1,583	60.35	+4.38	1,976	66.82	+6.47	2,464	62.9	-3.9	2,275	72.0	+9.1	3,135	79.0	+7.0	3,385	86.7	+7.7
B	132	59.73	132	60.27	+0.54	105	68.63	+6.36	146	78.1	+9.5	147	73.5	-4.6	199	80.6	+7.1	196	75.4	-5.2
C	2,215	52.08	2,599	67.30	+15.22	3,300	63.83	-3.48	6,066	68.8	+5.0	6,848	74.8	+6.0	5,332	84.4	+9.6	3,953	80.3	-4.1
D	1,266	71.97	1,309	72.88	+0.91	1,437	72.72	-0.16	1,364	76.8	+4.6	1,404	77.0	+0.2	1,473	82.8	+5.8	1,792	83.2	+0.4
E	773	49.17	775	51.43	+2.26	854	57.94	+6.51	934	59.5	+1.6	1,051	68.3	+8.8	1,092	72.0	+3.7	1,145	74.5	+2.5
F	1,459	72.12	1,061	74.56	+2.44	961	75.31	+0.75	1,276	72.1	-3.2	1,373	70.3	-1.8	1,529	77.0	+6.7	1,623	90.9	+13.9
G	78	60.47	123	74.55	+14.08	161	62.16	-12.39	257	71.0	+8.8	303	79.5	+8.5	145	79.8	+0.3	141	62.7	-17.1
H	656	59.42	613	56.86	-2.56	804	63.96	+7.10	745	62.2	-1.8	608	61.4	-0.8	720	63.8	+2.4	849	74.0	+10.2
I	794	59.56	1,035	75.55	+15.99	888	61.07	-14.48	1,350	66.5	+5.4	1,656	77.8	+11.3	1,589	90.9	+13.1	1,164	74.2	-16.7
Total	9,080	58.79	9,230	65.73	+6.94	10,486	65.64	-0.09	14,602	67.5	+1.9	16,165	73.4	+5.9	15,214	80.6	+7.2	14,548	81.5	+0.9

MSHP	Freq 2014	% Belted	% of Change 12/14	Freq 2016	% Belted	% of Change 14/16
A	3,195	84.1	-2.6	2,109	69.6	-14.5
B	160	68.1	-7.3	201	70.8	+2.7
C	5,270	83.5	+3.2	4,293	82.8	-0.7
D	1,562	72.9	-10.3	1,837	84.3	+11.4
E	1,260	79.2	+4.7	1,304	83.2	+4.0
F	1,544	86.8	-4.1	1,774	90.1	+3.3
G	108	70.6	+7.9	122	70.9	+0.3
H	962	74.1	-0.1	1,143	85.2	+11.1
I	1,152	78.5	+4.3	1,785	96.0	+17.5
Total	15,213	81.0	-0.5	14,568	82.8	1.8

Introduction

In November of 2003, the Federal Motor Carrier Safety Administration released a national study, "Safety Belt Usage by Commercial Motor Vehicle Drivers." A total of 3,909 observations were conducted in 12 states which resulted in an overall commercial vehicle safety belt use of 48 percent. Missouri was selected as one of the sample states for this survey. Surveys were conducted at seven locations in Missouri (Boone, Callaway, Cole, Cooper, Johnson, Lafayette, and Saline counties) which resulted in 329 truck observations. Based upon this limited sample, Missouri's commercial vehicle safety belt usage rate was 50.0 percent.

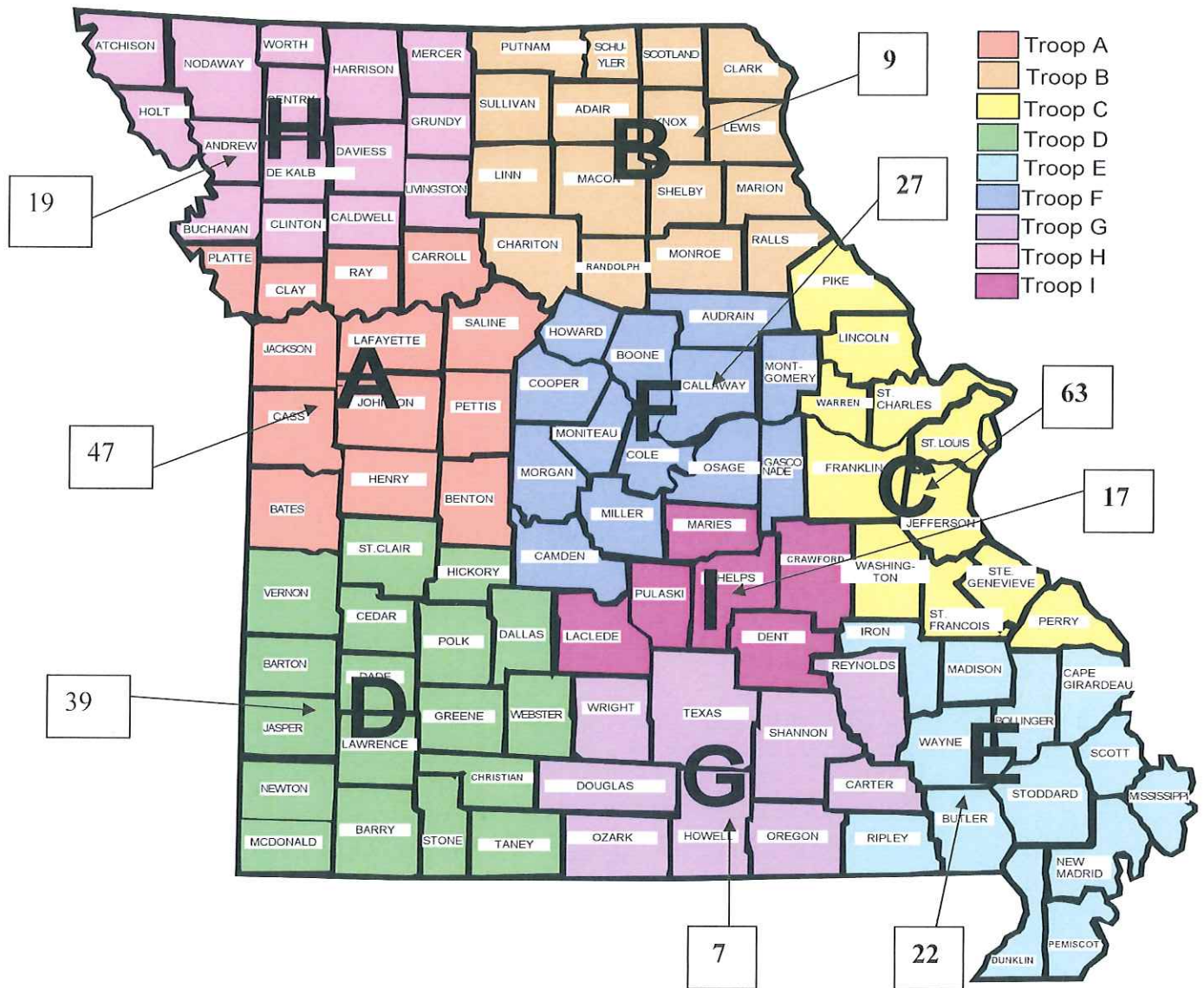
In 2004, the Missouri Safety Center was requested by the Highway Safety Division of the Missouri Department of Transportation to conduct a Commercial Vehicle Safety Belt Observational Survey. In preparation for the survey, meetings were held to outline the survey parameters, guiding principles, and sampling procedures.

Five guiding principles identified through these collaborative meetings served as the underlying basis for the sampling plan used in this study.

- The individual observation site would be the basic sample unit at which safety belt usage observations would be made.
- The safety belt usage rates of commercial vehicle drivers would be computed for each of the nine Missouri State Highway Patrol (MSHP) Troops.
- The number of sites selected from each of the Missouri State Highway Patrol troops would be in proportion to the commercial motor vehicle (CMV) daily vehicle miles of travel (DVMT) that troop has in comparison to the state total of 18,100,711 CMV DVMT.
- The location for each site in the nine MSHP Troops would be selected in proportion to the number of CMV DVMT for each of four roadway types; Freeway, Expressway, Two-lane and Other (Super 2 Lane, 5-Lane Section, 3-Lane Section, Multi-Lane, and One Way) that each troop has in comparison to the state total CMV DVMT of Freeway (10,216,308), Expressway (2,795,514), Two-lane (3,493,485) and Other (159,703).
- The sites within each troop would be selected in their descending order of CMV DVMT by roadway type to maximize the number of commercial vehicle drivers from each MSHP Troop.

The sampling procedure involved the development of a list of CMV DVMT by MSHP troop. Table 1 shows the total CMV DVMT by troop in descending order and the proportion that each troop has in comparison to the state-total of 18,100,711 CMV DVMT. The proportion of CMV DVMT that each troop has was then divided into 250 which is the total number of sites selected for the survey. Troop C had the highest number of sites, 67 and Troop G had the lowest, 7. The state of Missouri map shows the number of observation sites in the nine MSHP Troops.

For the 2016 survey, all the 2004 methodology was carried forward and used as the base line for future data collections.



**Number of Observation Sites
By MSHP Troops**

Methodology

The specific number of observation sites from each MSHP troop was computed by multiplying the troop's percentages of the states CMV DVMT by the total number of observation sites. This information is depicted in Table 1.

Table 1
Percent of CMV DVMT by MSHP Troop
by Number of Observation Sites

<i>MSHP TROOP</i>	<i>CMV DVMT Total</i>	<i>Percentage of Total CMV DVMT</i>	<i>Total Number of Observation Sites</i>
<i>C</i>	4,666,704	25.55%	63
<i>A</i>	3,510,976	19.28%	47
<i>D</i>	2,735,803	15.66%	39
<i>F</i>	1,848,753	10.27%	27
<i>E</i>	1,605,545	8.80%	22
<i>H</i>	1,391,631	7.63%	19
<i>I</i>	1,216,495	6.65%	17
<i>B</i>	623,664	3.41%	9
<i>G</i>	501,141	2.75%	7
<i>Total</i>	18,100,711	100%	250

Methodology

To identify the specific number of observation sites by roadway type for each troop, the number of observations for each troop was multiplied by the percentage of each roadway types CMV DVMT in that troop. Tables 2-5 depicts the number of observation sites by troop for freeway, expressway, two-lane, and other (Super 2 Lane, 5-Lane Section, 3-Lane Section, Multi-Lane, and One Way) roadway types.

Table 2
Percent of Observation Sites by MSHP Troop
by Freeway Roadway Type

MSHP TROOP	Total Number of Observation Sites	Total Number of Freeway CMV DVMT	Percent of Freeway CMV DVMT	Total Number of Freeway Sites
A	47	1,938,788	55%	26
B	9	3,171	0.005%	0
C	63	3,207,418	69%	43
D	39	1,288,821	47%	18
E	22	919,341	57%	12
F	27	956,412	52%	15
G	7	0	0%	0
H	19	945,203	68%	13
I	17	957,154	79%	14
Total	250	10,216,308	100.00%	141

Table 3
Percent of Observation Sites by Troop
by Expressway Roadway Type

MSHP TROOP	Total Number of Observation Sites	Total Number of Expressway CMV DVMT	Percent of Expressway CMV DVMT	Total Number of Expressway Sites
A	47	845,887	24%	11
B	9	193,188	31%	3
C	63	491,889	11%	7
D	39	472,208	17%	7
E	22	137,776	9%	2
F	27	366,351	20%	5
G	7	127,503	25%	2
H	19	150,946	11%	2
I	17	9,466	1%	0
Total	250	2,795,214	100.00%	39

Methodology

Table 4
Percent of Observation Sites by Troop
by Two-Lane Roadway Type

MSHP TROOP	Total Number of Observation Sites	Total Number of Two-Lane CMV DVMT	Percent of Two-Lane CMV DVMT	Total Number of Two-Lane Sites
A	47	556,958	16%	8
B	9	410,297	66%	6
C	63	546,597	12%	8
D	39	588,871	22%	9
E	22	405,617	25%	6
F	27	388,411	21%	6
G	7	185,281	37%	2
H	19	249,582	18%	3
I	17	161,871	13%	2
Total	250	3,493,485	100.00%	50

Table 5
Percent of Observation Sites by Troop
by Other Roadway Type

MSHP TROOP	Total Number of Observation Sites	Total Number of Other CMV DVMT	Percent of Other CMV DVMT	Total Number of Other Sites
A	47	169,344	5%	2
B	9	17,007	3%	0
C	63	420,800	9%	5
D	39	385,902	14%	5
E	22	142,809	8%	1
F	27	137,580	7%	2
G	7	188,357	38%	3
H	19	45,900	3%	1
I	17	88,004	7%	1
Total	250	1,595,703	100.00%	20

Methodology

The specific observational sites selected from each MSHP troop were determined by reviewing a state map that showed the total number of CMV DVMT on each state system roadway. In addition, MSHP Troop maps color-coded by roadway type; i.e. freeway, expressway, two-lane, and other, were also used in the selection process, see Attachment B. Observation sites for each troop were selected based upon the highest descending order of CMV DVMT on each roadway for each roadway type. The number of observation sites by troop, county, and roadway type is shown in Table 6.

Table 6
Observation Sites
by Troop, County and Roadway Type

County	Total # of Sites	Roadway Type			
		Freeway	Expressway	2 Lane	Other
MSHP Troop A					
Bates	2	0	2	0	0
Cass	3	0	3	0	0
Clay	7	7	0	0	0
Henry	2	0	1	1	0
Jackson	10	9	1	0	0
Johnson	2	0	1	1	0
Lafayette	7	3	3	0	1
Pettis	2	0	2	0	0
Platte	5	5	0	0	0
Ray	2	0	0	2	0
Saline	5	2	0	3	0
Total 11 Counties	47	26	13	7	1
MSHP Troop B					
Linn	3	0	1	2	0
Ralls	2	0	1	1	0
Randolph	3	0	1	2	0
Schuyler	1	0	1	0	0
Total 4 Counties	9	0	4	5	0

Methodology

Table 6
Observation Sites by Troop, County and Roadway Type
Continued

County	Total # of Sites	Roadway Type			
		Freeway	Expressway	2 Lane	Other
MSHP Troop C					
Franklin	11	9	0	2	0
Jefferson	8	3	1	2	2
Lincoln	3	0	2	1	0
Perry	4	3	0	1	0
Pike	3	0	0	3	0
St. Charles	4	4	0	0	0
St. Francois	1	0	1	0	0
St. Louis	21	17	1	0	3
Ste. Genevieve	4	3	0	1	0
Warren	4	4	0	0	0
Total 10 Counties	63	43	5	10	5
MSHP Troop D					
Barry	1	0	0	1	0
Barton	1	0	1	0	0
Christian	3	1	1	0	1
Dallas	2	0	2	0	0
Greene	7	2	3	1	1
Jasper	4	2	2	0	0
Lawrence	6	2	1	2	1
McDonald	1	0	1	0	0
Newton	4	2	2	0	0
Polk	3	0	0	3	0
St. Clair	1	0	1	0	0
Taney	1	1	0	0	0
Vernon	1	1	0	0	0
Webster	4	2	1	1	0
Total 14 Counties	39	13	15	8	3

Methodology

Table 6
Observation Sites by Troop, County and Roadway Type
Continued

County	Total # of Sites	Roadway Type			
		Freeway	Expressway	2 Lane	Other
MSHP Troop E					
Bollinger	1	0	0	1	0
Butler	1	0	1	0	0
Cape Girardeau	4	2	0	2	0
Dunklin	1	0	0	1	0
Mississippi	2	2	0	0	0
New Madrid	3	3	0	0	0
Pemiscot	3	3	0	0	0
Scott	4	2	0	1	1
Stoddard	2	0	1	1	0
Total 9 Counties	21	12	2	6	1
MSHP Troop F					
Audrain	2	0	1	1	0
Boone	7	4	1	1	1
Callaway	5	4	1	0	0
Camden	1	0	1	0	0
Cole	4	3	0	1	0
Cooper	2	2	0	0	0
Gasconade	1	0	0	1	0
Miller	1	0	1	0	0
Moniteau	1	0	0	1	0
Montgomery	2	2	0	0	0
Osage	1	0	0	0	1
Total 11 Counties	27	15	5	5	2
MSHP Troop G					
Howell	3	0	1	1	1
Oregon	2	0	0	1	1
Texas	2	0	1	0	1
Total 3 Counties	7	0	2	2	3

Methodology

Table 6
Observation Sites by Troop, County and Roadway Type
Continued

County	Total # of Sites	Roadway Type			
		Freeway	Expressway	2 Lane	Other
MSHP Troop H					
Andrew	1	0	1	0	0
Atchison	2	2	0	0	0
Buchanan	5	3	1	0	1
Clinton	2	2	0	0	0
Daviess	2	2	0	0	0
DeKalb	1	0	0	1	0
Gentry	1	0	0	1	0
Harrison	2	2	0	0	0
Holt	2	2	0	0	0
Nodaway	1	0	0	1	0
Total 10 Counties	19	13	2	3	1
MSHP Troop I					
Crawford	4	3	0	1	0
Laclede	6	4	0	1	1
Phelps	4	3	0	1	0
Pulaski	3	3	0	0	0
Total 4 Counties	17	13	0	3	1

Key Findings

Two instruments were used to collect these data; Site Summary Form and a Vehicle/Driver Form (See Attachment C). The Site Summary Form identified the MSHP troop, county, site number, roadway type, day of week, direction of traffic flow, road condition, and time of day. Data elements on the Vehicle/Driver Form included Vehicle Type 7 – Straight Frame (van, tanker, dump truck, flat bed, bus and other, i.e. fire truck), Vehicle Type 8- Combination Vehicle (box trailer, single tanker, double trailer, flat trailer, car hauler, bobtail, dump and other i.e. large cement truck), drivers restraint status, and if the vehicle was carrying hazardous materials.

The observations were held Monday, August 15 through Sunday, August 21, 2016. One-hundred percent of the surveyors were experienced and had previously participated in safety belt observational surveys. The majority of the observations, 83.4%, were conducted in dry weather. Twenty-nine percent of the observations were of the east direction of traffic flow, 26.0% from the west, with 23.0% and 22.0% from the north and south respectively. The observation period is 40 minutes in length with the percentage of observations by the time being: 8:00 am (10.6%), 9:00 am (16.0%), 10:00 am (18.7%), 11:00 am (13.2%), 12:00 noon (7.3%), 1:00 pm (16.0%), 2:00 pm (12.6%), and 3:00 pm (5.6%).

There were a total of 17,589 commercial vehicles observed. The frequency and percent of observations by Troop are located in Table 7.

Table 7
Frequency and Percent of Observations
By Troop

MSHP TROOP	Frequency of Observations	Percent of Observations
Troop A	3,029	17.2
Troop B	284	1.6
Troop C	5,186	29.5
Troop D	2,180	12.4
Troop E	1,567	8.9
Troop F	1,970	11.2
Troop G	172	1.0
Troop H	1,341	7.6
Troop I	1,860	10.6
TOTAL	17,589	100.0

Figure 1 shows the 2016 safety belt use rate for CMV drivers was 82.8 percent; this is 1.8 percent higher when compared to the statewide survey finding for all drivers (81.0%) of qualified vehicles which include: passenger cars, van/minivans, sport utility/crossover vehicles, and pickup trucks.

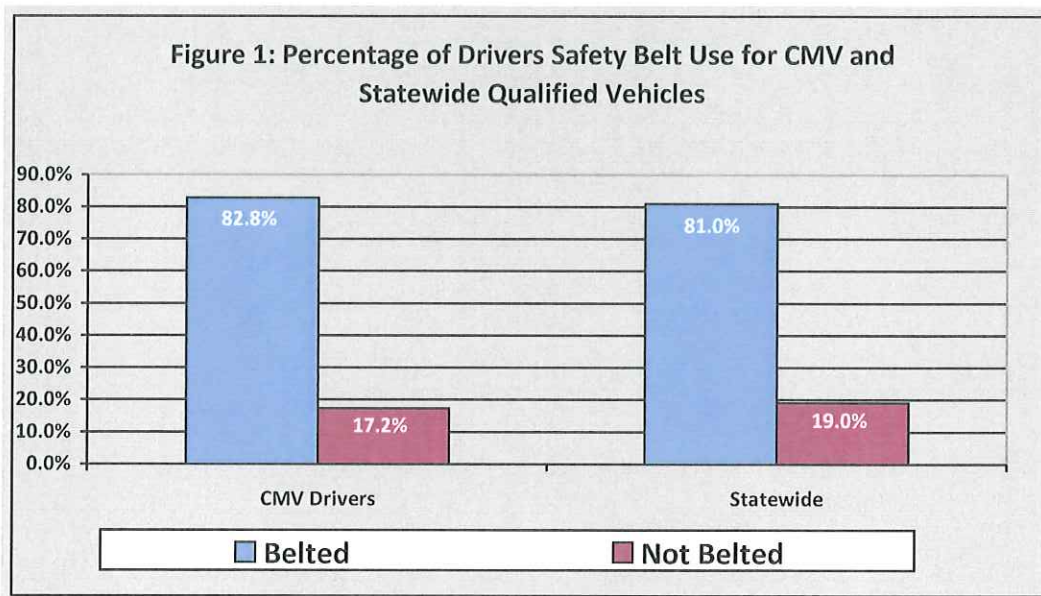


Figure 1: Percentage of Drivers Safety Belt Use for CMV and Statewide Qualified Vehicles

There were 250 observation sites located in 76 counties in the nine MSHP Troops. The commercial vehicle drivers' safety belt use by MSHP Troop is depicted in Table 8. MSHP Troops F and I had the highest safety belt usage rates of 90.1 and 96.0 respectively. The lowest safety belt usage rates were in Troops A and B with 69.6 and 70.8 percent respectively.

Table 8
Commercial Vehicle Drivers Safety Belt Use
By MSHP Troop

MSHP TROOP	Restrained		Not Restrained	
	Frequency	Percent	Frequency	Percent
A	2,109	69.6	902	30.4
B	201	70.8	83	29.2
C	4,293	82.8	893	17.2
D	1,837	84.3	343	15.7
E	1,304	83.2	263	16.8
F	1,774	90.1	196	9.9
G	122	70.9	50	29.1
H	1,143	85.2	198	14.8
I	1,785	96.0	75	4.0
TOTAL	14,568	82.8	3,021	17.2

In Troop A the safety belt usage rate ranged from 96.2 to 56.3 percent, Troop B from 87.5 to 63.6 percent, Troop C from 92.5 to 77.1 percent, Troop D from 95.2 to 40.0 percent, Troop E from 86.3 to 76.2 percent, Troop F from 94.4 to 53.3 percent, Troop G from 81.8 to 59.5 percent, Troop H from 89.4 to 42.9 percent, and Troop I from 96.9 to 95.3 percent. The commercial vehicle driver's safety belt use rate by Troop and county is located in Table 9.

Table 9
Commercial Vehicle Drivers Safety Belt Use
by MSHP Troop by County

County	Restrained		Not Restrained	
	Frequency	Percent	Frequency	Percent
Troop A				
Bates	74	62.2	45	37.8
Cass	135	56.3	105	43.7
Clay	338	65.1	181	34.9
Henry	25	96.2	1	3.8
Jackson	652	66.1	335	33.9
Johnson	8	88.9	1	11.1
Lafayette	294	89.6	34	10.4
Pettis	9	81.8	2	18.2
Platte	252	56.9	191	43.1
Ray	14	82.4	3	17.6
Saline	308	93.3	22	6.7
Troop B				
Linn	51	63.8	29	36.2
Ralls	91	72.2	35	27.8
Randolph	52	74.3	18	25.7
Schuyler	7	87.5	1	12.5
Troop C				
Franklin	781	82.2	169	17.8
Jefferson	279	77.1	83	22.9
Lincoln	91	86.7	14	13.3
Perry	344	92.5	28	7.5
Pike	74	85.1	13	14.9
St. Charles	547	87.1	81	12.9
St. Francois	57	78.1	16	21.9
St. Louis	1,502	79.8	380	20.2
Ste. Genevieve	279	84.8	50	15.2
Warren	339	85.2	59	14.8

Table 9, Continued

County	Restrained		Not Restrained	
	Frequency	Percent	Frequency	Percent
Troop D				
Barry	11	68.8	5	31.2
Barton	44	84.6	8	15.4
Christian	100	89.3	12	10.7
Dallas	20	40.0	30	60.0
Greene	339	82.7	71	17.3
Jasper	236	90.1	26	9.9
Lawrence	254	79.4	66	20.6
McDonald	36	83.7	7	16.3
Newton	363	87.5	52	12.5
Polk	139	95.2	7	4.8
St. Clair	3	60.0	2	40.0
Taney	3	42.9	4	57.1
Vernon	32	86.5	5	13.5
Webster	257	84.3	48	15.7
Troop E				
Bollinger	10	76.9	3	23.1
Butler	32	76.2	10	23.8
Cape Girardeau	196	82.7	41	17.3
Dunklin	7	77.8	2	22.2
Mississippi	171	83.4	34	16.6
New Madrid	319	83.5	63	16.5
Pemiscot	339	86.3	54	13.7
Scott	209	80.7	50	19.3
Stoddard	21	77.8	6	22.2
Troop F				
Audrain	16	53.3	14	46.7
Boone	539	88.8	68	11.2
Callaway	551	94.4	33	5.6
Camden	14	87.5	2	12.5
Cole	88	92.6	7	7.4
Cooper	282	87.3	41	12.7
Gasconade	8	88.9	1	11.1
Miller	24	88.9	3	11.1
Moniteau	7	70.0	3	30.0
Montgomery	235	92.2	20	7.8
Osage	10	71.4	4	28.6

Table 9, Continued

County	Restrained		Not Restrained	
	Frequency	Percent	Frequency	Percent
Troop G				
Howell	44	59.5	30	40.5
Oregon	6	60.0	4	40.0
Texas	72	81.8	16	18.2
Troop H				
Andrew	22	78.6	6	21.4
Atchison	92	78.6	25	21.4
Buchanan	403	89.4	48	10.6
Clinton	236	89.4	28	10.6
Daviess	157	84.4	29	15.6
DeKalb	3	60.0	2	40.0
Gentry	3	42.9	4	57.1
Harrison	102	81.0	24	19.0
Holt	110	79.7	28	20.3
Nodaway	15	79.0	4	21.0
Troop I				
Crawford	339	96.9	11	3.1
Laclede	547	96.0	23	4.0
Phelps	456	96.0	19	4.0
Pulaski	443	95.3	22	4.7
Total 76 Counties	14,568	82.8	3,021	17.2

Figure 2 shows the Commercial Vehicle Drivers safety belt use by roadway type. The “Freeway” roadway type had the highest usage at 84.5 percent, whereas drivers on the “Other” roadways had the lowest at 66.4 percent.

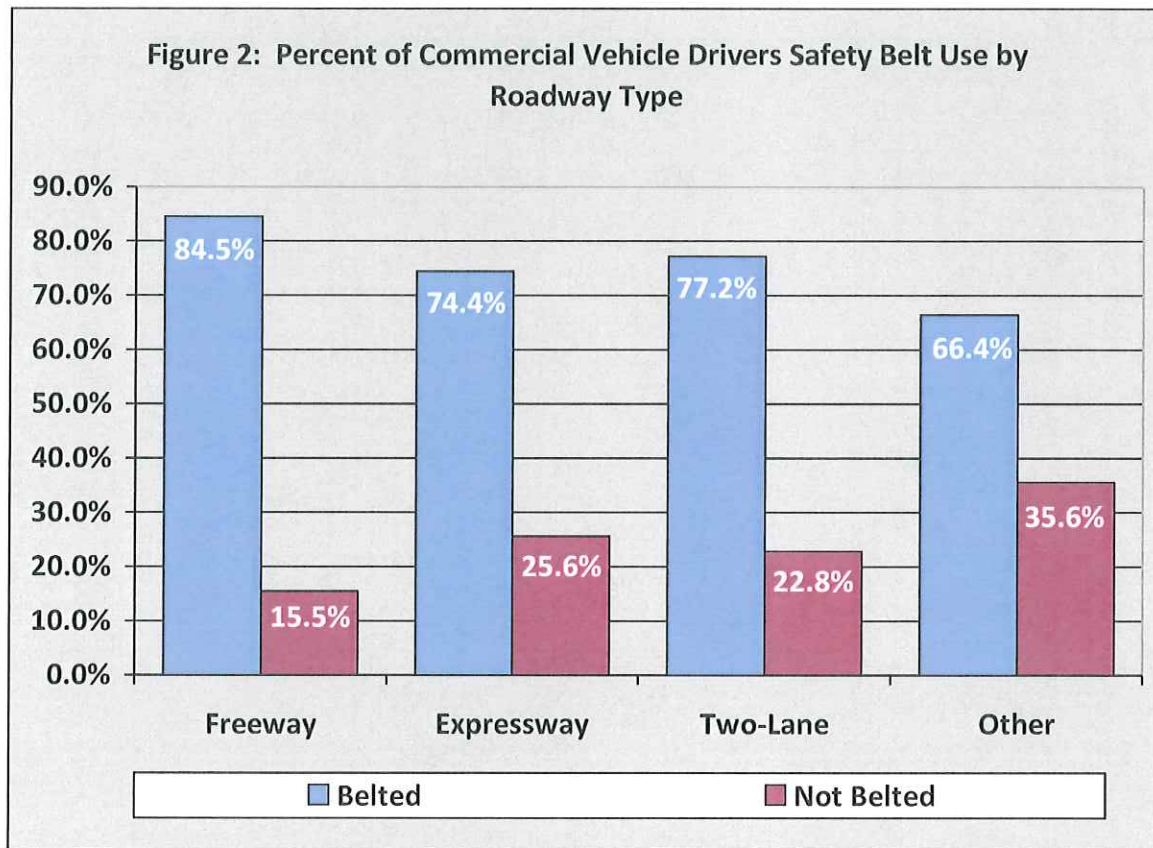


Figure 2: Percent of Commercial Vehicle Drivers Safety Belt Use by Roadway Type

Table 10 shows the frequency of restrained and not restrained commercial motor vehicle drivers and their corresponding safety belt usage rate for MSHP Troop by county and roadway type. Of the 250 observational sites, 83.9 percent were on "Freeways", 10.3 percent were on "Expressways", 4.1 percent were on "Two-lane" roadways, and 1.7 percent were on "Other" roadways.

Table 10
Commercial Vehicle Drivers Safety Belt Use
by MSHP Troop by County by Roadway Type

County	Freeway				Expressway				Two-Lane				Other			
	Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Troop A																
Bates	0	0	0	0	74	62.2	45	37.8	0	0	0	0	0	0	0	0
Cass	0	0	0	0	135	56.3	105	43.7	0	0	0	0	0	0	0	0
Clay	338	65.1	181	34.9	0	0	0	0	0	0	0	0	0	0	0	0
Henry	0	0	0	0	22	95.7	1	4.3	3	100.0	0	0	0	0	0	0
Jackson	618	65.7	323	34.3	34	73.9	12	26.1	0	0	0	0	0	0	0	0
Johnson	0	0	0	0	8	100.0	0	0	0	0	1	100.0	0	0	0	0
Lafayette	261	91.9	23	8.1	28	80.0	7	20.0	0	0	0	0	5	55.6	4	44.4
Pettis	0	0	0	0	9	81.8	2	18.2	0	0	0	0	0	0	0	0
Platte	252	56.9	191	43.1	0	0	0	0	0	0	0	0	0	0	0	0
Ray	0	0	0	0	0	0	0	0	14	82.4	3	17.6	0	0	0	0
Saline	260	94.9	14	5.1	0	0	0	0	48	85.7	8	14.3	0	0	0	0
Troop B																
Linn	0	0	0	0	44	69.8	19	30.2	7	41.2	10	58.8	0	0	0	0
Ralls	0	0	0	0	43	68.3	20	31.7	48	76.2	15	23.8	0	0	0	0
Randolph	0	0	0	0	18	78.3	5	21.7	34	72.3	13	27.7	0	0	0	0
Schuyler	0	0	0	0	7	87.5	1	12.5	0	0	0	0	0	0	0	0

Table 10, continued

County	Freeway				Expressway				Two-Lane				Other			
	Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Troop C																
Franklin	781	82.4	167	17.6	0	0	0	0	0	0	2	100.0	0	0	0	0
Jefferson	253	80.1	63	19.9	11	55.0	9	45.0	5	50.0	5	50.0	10	62.5	6	37.5
Lincoln	0	0	0	0	88	86.3	14	13.7	3	100.0	0	0	0	0	0	0
Perry	325	94.8	18	5.2	0	0	0	0	19	65.5	10	34.5	0	0	0	0
Pike	0	0	0	0	0	0	0	0	74	85.1	13	14.9	0	0	0	0
St. Charles	547	87.1	81	12.9	0	0	0	0	0	0	0	0	0	0	0	0
St. Francois	0	0	0	0	57	78.1	16	21.9	0	0	0	0	0	0	0	0
St. Louis	1,438	80.8	341	19.2	10	83.3	2	16.7	0	0	0	0	54	59.3	37	40.7
Ste. Genevieve	268	86.2	43	13.8	0	0	0	0	11	61.1	7	38.9	0	0	0	0
Warren	339	85.2	59	14.8	0	0	0	0	0	0	0	0	0	0	0	0
Troop D																
Barry	0	0	0	0	0	0	0	0	11	68.8	5	31.3	0	0	0	0
Barton	0	0	0	0	44	84.6	8	15.4	0	0	0	0	0	0	0	0
Christian	53	88.3	7	11.7	38	90.5	4	9.5	0	0	0	0	9	90.0	1	10.0
Dallas	0	0	0	0	20	40.0	30	60.0	0	0	0	0	0	0	0	0
Greene	191	90.1	21	9.9	133	77.3	39	22.7	13	56.5	10	43.5	2	66.7	1	33.3
Jasper	176	89.3	21	10.7	60	92.3	5	7.7	0	0	0	0	0	0	0	0
Lawrence	219	84.2	41	15.8	12	60.0	8	40.0	10	71.4	4	28.6	13	50.0	13	50.0
McDonald	0	0	0	0	36	83.7	7	16.3	0	0	0	0	0	0	0	0
Newton	239	86.0	39	14.0	124	90.5	13	9.5	0	0	0	0	0	0	0	0
Polk	0	0	0	0	0	0	0	0	139	95.2	7	4.8	0	0	0	0
St. Clair	0	0	0	0	3	60.0	2	40.0	0	0	0	0	0	0	0	0
Taney	3	42.9	4	57.1	0	0	0	0	0	0	0	0	0	0	0	0
Vernon	32	86.5	5	13.5	0	0	0	0	0	0	0	0	0	0	0	0
Webster	225	88.2	30	11.8	30	75.0	10	25.0	2	20.0	8	80.0	0	0	0	0

Table 10, continued

County	Freeway				Expressway				Two-Lane				Other			
	Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Troop E																
Bollinger	0	0	0	0	0	0	0	0	10	76.9	3	23.1	0	0	0	0
Butler	0	0	0	0	32	76.2	10	23.8	0	0	0	0	0	0	0	0
Cape Girardeau	185	84.5	34	15.5	0	0	0	0	11	61.1	7	38.9	0	0	0	0
Dunklin	0	0	0	0	0	0	0	0	7	77.8	2	22.2	0	0	0	0
Mississippi	171	83.4	34	16.6	0	0	0	0	0	0	0	0	0	0	0	0
New Madrid	319	83.5	63	16.5	0	0	0	0	0	0	0	0	0	0	0	0
Pemiscot	339	86.3	54	13.7	0	0	0	0	0	0	0	0	0	0	0	0
Scott	182	81.3	42	18.7	0	0	0	0	5	83.3	1	16.7	22	75.9	7	24.1
Stoddard	0	0	0	0	10	76.9	3	23.1	11	78.6	3	21.4	0	0	0	0
Troop F																
Audrain	0	0	0	0	7	43.8	9	56.2	9	64.3	5	35.7	0	0	0	0
Boone	508	91.5	47	8.5	21	56.8	16	43.2	4	57.1	3	42.9	6	75.0	2	25.0
Callaway	521	94.0	33	6.0	30	100.0	0	0	0	0	0	0	0	0	0	0
Camden	0	0	0	0	14	87.5	2	12.5	0	0	0	0	0	0	0	0
Cole	88	92.6	7	7.4	0	0	0	0	0	0	0	0	0	0	0	0
Cooper	282	87.3	41	12.7	0	0	0	0	0	0	0	0	0	0	0	0
Gasconade	0	0	0	0	0	0	0	0	8	88.9	1	11.1	0	0	0	0
Miller	0	0	0	0	24	88.9	3	11.1	0	0	0	0	0	0	0	0
Moniteau	0	0	0	0	0	0	0	0	7	70.0	3	30.0	0	0	0	0
Montgomery	235	92.2	20	7.8	0	0	0	0	0	0	0	0	0	0	0	0
Osage	0	0	0	0	0	0	0	0	0	0	0	0	10	71.4	4	28.6

Table 10, continued

County	Freeway				Expressway				Two-Lane				Other			
	Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained		Restrained		Not Restrained	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Troop G																
Howell	0	0	0	0	20	54.1	17	45.9	4	66.7	2	33.3	20	64.5	11	35.5
Oregon	0	0	0	0	0	0	0	0	3	100.0	0	0	3	42.9	4	57.1
Texas	0	0	0	0	49	84.5	9	15.5	0	0	0	0	23	76.7	7	23.3
Troop H																
Andrew	0	0	0	0	22	78.6	6	21.4	0	0	0	0	0	0	0	0
Atchison	92	78.6	25	21.4	0	0	0	0	0	0	0	0	0	0	0	0
Buchanan	355	90.1	39	9.9	35	83.3	7	16.7	0	0	0	0	13	86.7	2	13.3
Clinton	236	89.4	28	10.6	0	0	0	0	0	0	0	0	0	0	0	0
Davies	157	84.4	29	15.6	0	0	0	0	0	0	0	0	0	0	0	0
DeKalb	0	0	0	0	0	0	0	0	3	60.0	2	40.0	0	0	0	0
Gentry	0	0	0	0	0	0	0	0	3	42.9	4	57.1	0	0	0	0
Harrison	102	81.0	24	19.0	0	0	0	0	0	0	0	0	0	0	0	0
Holt	110	79.7	28	20.3	0	0	0	0	0	0	0	0	0	0	0	0
Nodaway	0	0	0	0	0	0	0	0	15	79.0	4	21.0	0	0	0	0
Troop I																
Crawford	329	96.8	11	3.2	0	0	0	0	10	100.0	0	0	0	0	0	0
Laclede	541	95.9	23	4.1	0	0	0	0	0	0	0	0	6	100.0	0	0
Phelps	445	96.4	17	3.6	0	0	0	0	1	33.3	2	66.7	0	0	0	0
Pulaski	443	95.3	22	4.7	0	0	0	0	0	0	0	0	0	0	0	0
Total 76 Counties	12,468	84.5	2,293	15.5	1,352	74.4	466	25.6	552	77.2	163	22.8	196	66.4	99	33.6

Table 11 and 12 depicts the commercial vehicle driver's safety belt use by type of vehicle. Type 7 vehicles generally had six or more tires and a straight frame and Type 8 vehicles had 10 or more tires and were combination vehicles. The commercial vehicle driver's safety belt use was lower for the Type 7 vehicles (72.3%) than for Type 8 vehicles (84.9%). Among the Type 7 vehicles, bus drivers usage was the highest at 85.6 percent, whereas, flat bed drivers had the lowest at 58.8 percent. The Type 8 double trailer drivers' safety belt use was 92.4 percent while the Type 8 dump drivers had only a 59.3 percent safety belt usage rate.

Table 11
CMV Driver's Safety Belt Use
By Vehicle – Type 7

Vehicle Type 7 Straight Frame	Restrained		Not Restrained	
	Frequency	Percent	Frequency	Percent
Van	1,035	77.4	303	22.6
Tanker	74	74.0	26	26.0
Dump	122	61.3	77	38.7
Flat Bed	290	58.8	203	41.2
Bus	249	85.6	42	14.4
Other	307	67.8	146	32.2
Total	2,077	72.3	797	27.7

Table 12
CMV Driver's Safety Belt Use
By Vehicle – Type 8

Vehicle Type 8 Combination Vehicle	Restrained		Not Restrained	
	Frequency	Percent	Frequency	Percent
Box Trailer	8,644	87.5	1,238	12.5
Single Tanker	885	85.8	147	14.2
Double Trailer	581	92.4	48	7.6
Flat Trailer	1,395	80.8	332	19.2
Car Hauler	213	87.7	30	12.3
Bobtail	190	73.6	68	26.4
Dump	443	59.3	304	40.7
Other	140	71.1	57	28.9
Total	12,491	84.9	2,224	15.1

There were 776 vehicles with hazardous material placards. Of those commercial vehicle drivers 691 (89.1%) were wearing safety belts. These results are displayed in Figure 3.

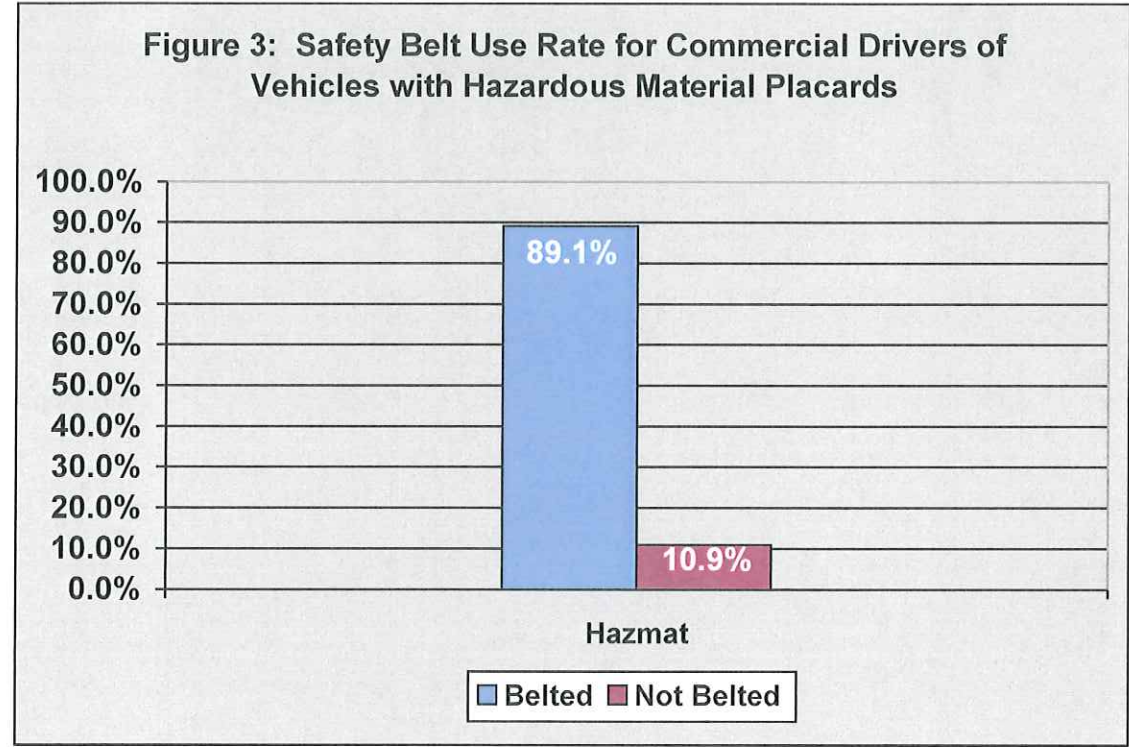
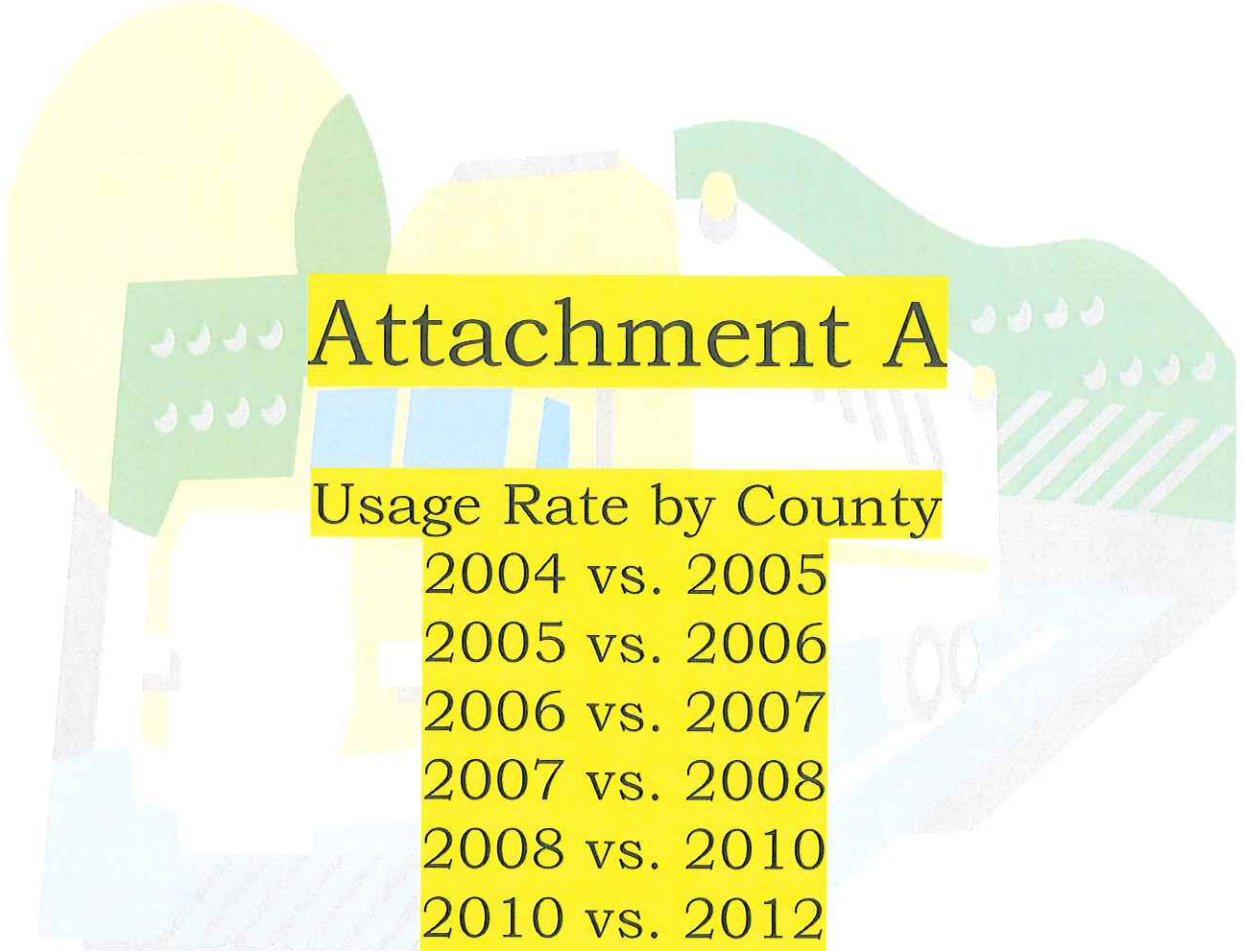


Figure 3: Safety Belt Use Rate for Commercial Drivers of Vehicles with Hazardous Material Placards



Attachment A

Usage Rate by County

2004 vs. 2005

2005 vs. 2006

2006 vs. 2007

2007 vs. 2008

2008 vs. 2010

2010 vs. 2012

2012 vs. 2014

2014 vs. 2016

Attachment A

Please note the percentage change between 2005, 2006, 2007, 2008, 2010, 2012, 2014 and 2016 may be somewhat misleading in counties where the sampling was small. Data collections from larger frequency bases are more reflective of indicated change.

Commercial Vehicle Drivers Safety Belt Usage Rate By MSHP Troop by County by Year of Survey

County	Restrained 2004		Restrained 2005		% Change		Restrained 2006		% Change		Restrained 2007		% Change		Restrained 2008		% Change		Restrained 2010		% Change		Restrained 2012		% Change	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Troop A																										
Bates	31	46.3	42	55.3		+9.0	46	61.3		+6.1	72	69.2		+7.9	63	75.9		+6.7	93	83.0		+7.1	188	93.1		+10.1
Cass	81	72.3	82	56.5		-15.8	119	76.8		+20.3	115	73.7		-3.1	110	76.4		+2.7	128	83.1		+6.7	293	88.0		+4.9
Clay	494	50.8	472	61.2		+10.4	415	58.7		-2.5	505	66.7		+8.0	498	71.2		+4.5	532	71.3		+0.1	626	80.2		+8.9
Henry	35	62.5	22	84.6		+22.1	23	76.7		-7.9	26	70.3		-6.4	33	86.8		+16.5	34	85.0		-1.8	34	91.9		+6.9
Jackson	355	52.7	337	52.7		0	446	65.0		+12.3	523	61.1		-3.9	696	68.7		+7.6	887	85.1		+16.4	1,149	93.6		+8.5
Johnson	28	63.6	6	66.7		+3.1	9	60.0		-6.7	20	80.0		+20.0	25	78.1		-1.9	17	58.6		-19.5	16	72.7		+14.1
Lafayette	268	73.6	185	78.7		+5.1	292	81.6		+2.9	350	69.2		-12.4	533	79.3		+10.1	549	87.4		+8.1	564	92.0		+4.6
Pettis	28	59.6	9	90.0		+30.4	18	85.7		-4.3	14	60.9		-24.8	26	86.7		+25.8	26	78.8		-7.9	19	90.5		+11.7
Platte	159	43.0	177	42.7		-0.3	246	52.1		+9.4	514	50.5		-1.6	320	55.7		+5.2	375	62.0		+6.3	409	70.0		+8.0
Ray	11	61.1	9	47.4		-13.7	15	51.7		+4.3	7	43.8		-7.9	16	50.0		+6.2	16	57.1		+7.1	30	83.3		+26.2
Saline	217	66.6	242	87.4		+20.8	347	84.8		-2.6	318	75.5		-9.1	455	84.4		+8.9	478	86.6		+2.2	357	90.4		+3.8
Total	1,707	56.0	1,583	60.4		+4.4	1,976	66.8		+6.4	2,464	62.9		-3.9	2,775	72.0		+9.1	3,135	79.0		+7.0	3,685	86.7		+7.7

County	Restrained 2014		% Change		Restrained 2016		% Change	
	Freq	%	Freq	%	Freq	%	Freq	%
Troop A								
Bates	122	80.3		-12.8	74	62.2		-18.1
Cass	226	93.0		+5.0	135	56.3		-36.7
Clay	735	81.5		+1.3	338	65.1		-16.4
Henry	22	88.0		-3.9	25	96.2		+8.2
Jackson	936	83.5		-10.1	652	66.1		-17.4
Johnson	15	83.3		+10.6	8	88.9		+5.6
Lafayette	352	93.1		+1.1	294	89.6		-3.5
Pettis	14	87.5		-3.0	9	81.8		-5.7
Platte	418	77.1		+7.1	252	56.9		-20.2
Ray	26	83.9		+0.6	14	82.4		-1.5
Saline	329	88.7		-1.7	308	93.3		+4.6
Total	3,195	84.1		-2.6	2,109	69.6		-14.5

County	Restrained 2004		Restrained 2005		% Change	Restrained 2006		% Change	Restrained 2007		% Change	Restrained 2008		% Change	Restrained 2010		% Change	Restrained 2012		% Change		
	Freq	%	Freq	%		Freq	%		Freq	%		Freq	%		Freq	%		Freq	%		Freq	%
Troop B																						
Linn	40	52.6	23	52.3	-0.36	29	82.9	+30.6	28	82.4	-0.5	32	82.1	-0.3	44	84.6	+2.5	21	60.0	-24.6		
Ralls	44	68.8	62	64.6	-4.17	38	67.9	+3.3	61	76.3	+8.4	62	64.6	-11.7	98	81.7	+17.1	111	83.5	+1.8		
Randolph	44	58.7	44	60.3	+1.6	36	63.2	+2.9	56	78.9	+15.7	48	85.7	+6.8	55	77.5	-8.2	51	57.1	-20.4		
Schuyler	4	66.7	3	50.0	-16.7	2	40.0	-10.0	1	50.0	+10.0	5	55.6	+5.6	2	50.0	-5.6	13	81.3	+31.3		
Total	132	59.7	132	60.3	+0.54	105	68.7	+8.4	146	78.1	+9.5	147	73.5	-4.6	199	80.6	+7.1	196	75.4	-5.2		

County	Restrained 2014		% Change	Restrained 2016		% Change
	Freq	%		Freq	%	
Troop B						
Linn	32	68.1	+8.1	51	63.8	-4.3
Ralls	85	76.6	-6.9	91	72.2	-4.4
Randolph	43	56.6	-0.5	52	74.3	+17.7
Schuyler	0	0	-81.3	7	87.5	+6.2
Total	160	68.1	-7.3	201	70.8	+2.7

County	Restrained 2004		Restrained 2005		% Change		Restrained 2006		% Change		Restrained 2007		% Change		Restrained 2008		% Change		Restrained 2010		% Change		Restrained 2012		% Change	
	Freq	%	Freq	%			Freq	%			Freq	%			Freq	%			Freq	%			Freq	%		
Troop C																										
Franklin	183	71.6	254	66.2	-5.3		311	55.8	-10.3		938	66.5	+10.7		1,134	76.4	+9.9		747	85.2	+8.8		825	80.3		-4.9
Jefferson	176	50.3	148	69.8	+19.5		257	64.1	-5.7		482	77.9	+13.8		699	70.3	-7.6		253	72.5	+2.2		380	92.7		+20.2
Lincoln	65	54.6	70	57.9	+3.2		80	55.6	-2.3		236	71.1	+15.5		112	66.3	-4.8		247	80.5	+14.2		124	87.3		+6.8
Perry	148	44.2	197	75.5	+31.3		236	79.2	+3.7		255	83.1	+3.9		285	95.3	+12.2		282	93.1	-2.2		328	80.8		-12.3
Pike	81	45.8	91	47.6	+1.9		112	57.1	+9.5		288	72.2	+15.1		51	73.9	+1.7		116	81.7	+7.8		106	91.4		+9.7
St. Charles	222	60.7	232	52.1	-8.5		390	65.6	+13.4		550	63.9	-1.7		404	64.0	+0.1		834	87.0	+23.0		342	68.7		-18.3
St. Francois	15	32.6	19	51.4	+18.7		29	64.4	+13.1		50	84.8	+20.4		48	87.3	+2.5		35	87.5	+0.2		63	84.0		-3.5
St. Louis	984	47.3	1,194	69.7	+22.4		1,478	63.0	-6.7		2,616	65.5	+2.5		3,571	75.0	+9.5		1,972	83.0	+8.0		1,044	74.2		-8.8
St. Genevieve	190	58.3	212	77.7	+19.4		224	73.2	-4.5		232	87.2	+14.0		304	95.6	+8.4		225	87.9	-7.7		331	86.2		-1.7
Warren	151	75.9	182	80.5	+4.7		183	64.7	-15.9		419	73.6	+8.9		240	63.2	-10.4		621	87.6	+24.4		410	89.9		+2.3
Total	2,215	52.1	2,599	67.3	+15.2		3,300	63.8	-3.5		6,066	68.8	+5.0		6,848	74.7	+5.9		5,332	84.4	+9.7		3,953	80.3		-4.1

County	Restrained 2014		% Change		Restrained 2016		% Change	
	Freq	%			Freq	%		
Troop C								
Franklin	1,216	93.8	+13.5		781	82.2		-11.6
Jefferson	402	79.6	-13.1		279	77.1		-2.5
Lincoln	104	73.8	-13.5		91	86.7		+12.9
Perry	377	92.6	+11.8		344	92.5		-0.1
Pike	71	76.3	-15.1		74	85.1		+8.8
St. Charles	591	74.7	+6.0		547	87.1		+12.4
St. Francois	42	80.8	-3.2		57	78.1		-2.7
St. Louis	1,766	82.4	+8.2		1,502	79.8		-2.6
St. Genevieve	291	86.4	+0.2		279	84.8		-1.6
Warren	410	75.4	-14.4		339	85.2		+9.8
Total	5,270	83.5	+3.2		4,293	82.8		-0.7

County	Restrained 2004		Restrained 2005		% Change		Restrained 2006		% Change		Restrained 2007		% Change		Restrained 2008		% Change		Restrained 2010		% Change		Restrained 2012		% Change	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Troop D																										
Barry	13	52.0	19	63.3		+11.3	17	48.6		-14.8	13	68.4		+19.8	16	51.6		-16.8	17	89.5		+37.9	10	66.7		-22.8
Barton	20	87.0	32	91.4		+4.5	28	93.3		+1.9	20	74.1		-19.2	12	75.0		+0.9	42	100.0		+25.0	33	89.2		-10.8
Christian	42	56.0	34	42.0		-14.0	31	38.8		-3.2	81	75.7		+37.0	54	67.5		-8.2	45	64.3		-3.2	128	92.8		+28.5
Dallas	20	66.7	38	63.3		-3.3	102	85.0		+21.7	24	46.2		-38.8	32	57.1		+10.9	46	79.3		+22.2	58	68.2		-11.1
Greene	287	65.5	258	56.6		-9.0	255	52.2		-4.4	335	72.4		+20.3	282	64.7		-7.7	285	71.3		+6.6	439	88.3		+17.0
Jasper	180	88.7	246	91.5		+2.8	268	91.8		+0.3	143	80.3		-11.5	136	78.6		-1.7	192	83.8		+5.2	201	81.4		-2.4
Lawrence	178	82.8	182	86.3		+3.5	189	87.1		+0.8	184	87.6		+0.5	169	84.5		-3.1	183	87.1		+2.6	248	80.8		-6.3
McDonald	15	79.0	25	83.3		+4.4	36	97.3		+14.0	29	96.7		-0.6	36	85.7		-11.0	27	90.0		+4.3	26	81.3		-8.7
Newton	243	85.0	203	83.8		-1.1	213	87.3		+3.5	229	89.8		+2.5	241	91.6		+1.8	213	97.7		+6.1	257	79.1		-18.6
Polk	54	52.4	71	73.2		+20.8	72	64.9		-8.3	76	71.1		+6.8	57	60.0		-11.1	71	78.0		+18.0	91	81.3		+3.3
St. Clair	3	37.5	2	33.3		-4.2	3	37.5		+4.2	7	35.0		-2.5	1	20.0		-15.0	7	63.6		+43.6	12	80.0		+16.4
Taney	2	50.0	7	77.8		+27.8	1	14.3		-63.5	2	66.7		+52.4	2	33.3		-33.4	4	50.0		+16.7	5	62.5		+12.5
Vernon	23	92.0	27	100.0		+8.0	22	84.6		-15.4	17	73.9		-10.7	16	84.2		+10.3	12	80.0		-4.2	27	87.1		+7.1
Webster	186	61.0	165	67.9		+6.9	200	71.4		+3.5	203	71.7		+0.3	350	87.1		+15.4	329	86.8		-0.3	257	84.5		-2.3
Total	1,266	72.0	1,309	72.9		+0.9	1,437	72.7		-0.2	1,364	76.8		+4.1	1,404	77.0		+0.2	1,473	82.8		+5.8	1,792	83.2		+0.4

County	Restrained 2014		% Change		Restrained 2016		% Change	
	Freq	%	Freq	%	Freq	%	Freq	%
Troop D								
Barry	6	42.9		-23.8	11	68.8		+25.9
Barton	23	63.9		-25.3	44	84.6		+20.7
Christian	58	58.0		-34.8	100	89.3		+31.3
Dallas	28	51.9		-16.3	20	40.0		-11.9
Greene	334	70.9		-17.4	339	82.7		+11.8
Jasper	189	72.1		-9.3	236	90.1		+18.0
Lawrence	245	73.1		-7.7	254	79.4		+6.3
McDonald	36	83.7		+2.4	36	83.7		0.0
Newton	299	77.9		-1.2	363	87.5		+9.6
Polk	110	91.7		+10.4	139	95.2		+3.5
St. Clair	10	83.3		+3.3	3	60.0		-23.3
Taney	4	80.0		+17.5	3	42.9		-37.1
Vernon	26	74.3		-12.8	32	86.5		+12.2
Webster	194	71.6		-12.9	257	84.3		+12.7
Total	1,562	72.9		-10.3	1,837	84.3		+11.4

County	Restrained 2004		Restrained 2005		% Change	Restrained 2006		% Change	Restrained 2007		% Change	Restrained 2008		% Change	Restrained 2010		% Change	Restrained 2012		% Change		
	Freq	%	Freq	%		Freq	%		Freq	%		Freq	%		Freq	%		Freq	%		Freq	%
Troop E																						
Bollinger	7	31.8	4	33.3	+1.5	9	52.9	+19.6	9	50.0	-2.9	8	57.1	+7.1	10	62.5	+5.4	12	63.2	+0.7		
Butler	18	36.0	13	28.3	-7.7	13	36.1	+7.9	20	45.5	+9.4	22	53.7	+8.2	22	56.4	+2.7	26	59.1	+2.7		
Cape Girardeau	124	49.8	106	47.3	-2.5	119	60.1	+12.8	143	56.5	-3.6	181	68.8	+12.3	155	68.3	-0.5	180	74.7	+6.4		
Dunklin	7	36.8	4	28.6	-8.3	2	28.6	0.0	3	27.3	-1.3	1	14.3	-13.0	5	62.5	+48.2	7	58.3	-4.2		
Mississippi New	105	54.7	111	56.9	+2.2	122	64.2	+7.3	116	63.0	-1.2	140	71.8	+8.8	150	75.8	+4.0	150	77.3	+1.5		
Madrid	183	49.9	205	56.6	+6.8	217	60.3	+3.7	222	62.0	+1.7	240	69.0	+7.0	273	72.4	+3.4	265	73.4	+1.0		
Pemiscot	193	55.6	199	57.9	+2.2	209	57.3	-0.6	233	63.0	+5.7	288	73.1	+10.1	286	77.1	+4.0	287	75.3	-1.8		
Scott	121	44.5	119	44.7	+0.3	148	55.9	+11.1	165	57.7	+1.9	156	63.2	+5.5	171	69.0	+5.8	194	78.5	+9.5		
Stoddard	15	27.8	14	31.8	+4.0	15	41.7	+9.9	23	51.1	+9.4	15	51.7	+0.6	20	62.5	+10.8	24	63.2	+0.7		
Total	773	49.2	775	51.4	+2.3	854	57.9	+6.5	934	59.5	+1.6	1,051	68.3	+8.8	1,092	72.0	+3.7	1,145	74.5	+2.5		

County	Restrained 2014		% Change	Restrained 2016		% Change
	Freq	%		Freq	%	
Troop E						
Bollinger	11	78.6	+15.2	10	76.9	-1.7
Butler	25	67.6	+8.5	32	76.2	+8.6
Cape Girardeau	190	78.8	+4.1	196	82.7	+3.9
Dunklin	7	63.6	+5.3	7	77.8	+14.2
Mississippi	172	79.6	+2.3	171	83.4	+3.8
New Madrid	299	78.3	+4.9	319	83.5	+5.2
Pemiscot	328	82.4	+7.1	339	86.3	+3.9
Scott	205	78.5	0.0	209	80.7	+2.2
Stoddard	23	71.9	+8.7	21	77.8	+5.9
Total	1 260	79.2	+4.7	1 304	83.2	+4.0

County	Restrained 2004		Restrained 2005		% Change		Restrained 2006		% Change		Restrained 2007		% Change		Restrained 2008		% Change		Restrained 2010		% Change		Restrained 2012		% Change
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%			
Troop F																									
Audrain	18	37.5	24	52.2	18	41.9	-10.3	21	46.7	+4.8	18	69.2	+22.5	29	56.9	-12.3	27	69.2	+12.3						
Boone	519	80.4	445	85.4	348	85.7	+0.3	451	80.5	-5.2	333	74.3	-6.2	500	83.9	+9.6	541	94.9	+11.0						
Callaway	397	63.5	215	69.4	222	71.2	+1.8	385	70.0	-1.2	460	67.9	-2.1	472	67.9	0.0	487	88.2	+20.3						
Camden	13	28.9	22	38.6	39	52.7	+14.1	22	34.4	-18.3	22	50.0	+15.6	12	60.0	+10.0	23	74.2	+14.2						
Cole	52	41.9	70	59.3	67	55.8	-3.5	81	60.9	+5.1	83	73.5	+12.6	67	69.8	-3.7	81	77.1	+7.3						
Cooper	261	92.2	167	86.5	140	94.6	+8.1	155	77.5	-17.1	224	75.7	-1.8	207	83.5	+7.8	204	96.2	+12.7						
Gasconade	3	60.0	3	50.0	6	60.0	+10.0	2	25.0	-35.0	6	66.7	+41.7	15	88.2	+21.5	6	60.0	-28.2						
Miller	8	25.0	17	65.4	13	34.2	-31.2	8	47.1	+12.9	27	77.1	+30.0	17	77.3	+0.2	27	93.1	+15.8						
Moniteau	5	62.5	6	54.6	8	80.0	+25.5	3	23.1	-56.9	8	61.5	+38.4	9	75.0	+13.5	4	80.0	+5.0						
Montgomery	174	90.2	87	74.4	86	91.5	+17.1	141	83.9	-7.6	180	66.9	-17.0	184	88.0	+21.1	212	96.8	+8.8						
Osage	9	64.3	5	27.8	14	66.7	+38.9	7	58.3	-8.4	12	57.1	-1.2	17	81.0	+23.9	11	84.6	+3.6						
Total	1,459	72.1	1,061	74.6	961	75.3	+0.8	1,276	72.1	-3.2	1,373	70.3	-1.8	1,529	77.0	+6.7	1,623	90.9	+13.9						

County	Restrained 2014			% Change			Restrained 2014			% Change		
	Freq	%		Freq	%		Freq	%		Freq	%	
Troop F												
Audrain	14	30.4		16	53.3		16	53.3		16	53.3	+22.9
Boone	490	88.9		539	88.8		539	88.8		539	88.8	-0.1
Callaway	391	89.1		551	94.4		551	94.4		551	94.4	+5.3
Camden	15	60.0		14	87.5		14	87.5		14	87.5	+27.5
Cole	97	82.2		88	92.6		88	92.6		88	92.6	+10.4
Cooper	272	89.8		282	87.3		282	87.3		282	87.3	-2.5
Gasconade	3	25.0		8	88.9		8	88.9		8	88.9	+63.9
Miller	31	88.6		24	88.9		24	88.9		24	88.9	+0.3
Moniteau	9	56.3		7	70.0		7	70.0		7	70.0	+13.7
Montgomery	213	97.7		235	92.2		235	92.2		235	92.2	-5.5
Osage	9	56.3		10	71.4		10	71.4		10	71.4	+15.1
Total	1,544	86.8		1,774	90.1		1,774	90.1		1,774	90.1	+3.3

County	Restrained 2004		Restrained 2005		% Change	Restrained 2006		% Change	Restrained 2007		% Change	Restrained 2008		% Change	Restrained 2010		% Change	Restrained 2012		% Change		
	Freq	%	Freq	%		Freq	%		Freq	%		Freq	%		Freq	%		Freq	%		Freq	%
Troop G																						
Howell	31	53.6	40	75.5	+22.0	60	57.1	-18.3	129	69.7	+12.6	102	77.3	+7.6	85	81.7	+4.4	57	58.2	-23.5		
Oregon	19	76.0	33	71.7	-4.3	29	55.8	-16.0	11	55.0	-0.8	87	79.1	+24.1	22	73.3	-5.8	9	56.3	-17.0		
Texas	28	60.9	50	75.8	+14.9	72	70.6	-5.2	117	74.5	+3.9	114	82.0	+7.5	38	79.2	-2.8	75	67.8	-11.4		
Total	78	60.5	123	74.6	+14.1	161	62.2	-12.4	257	71.0	+8.8	303	79.5	+8.5	145	79.7	+0.2	141	62.7	-17.0		

County	Restrained 2014		% Change	Restrained 2016		% Change
	Freq	%		Freq	%	
Troop G						
Howell	36	58.1	-0.1	44	59.5	+1.4
Oregon	8	80.0	+23.7	6	60.0	-20.0
Texas	64	79.0	+11.2	72	81.8	+2.8
Total	108	70.6	+7.9	122	70.9	+0.3

County	Restrained 2004		Restrained 2005		% Change	Restrained 2006		% Change		Restrained 2007		% Change		Restrained 2008		% Change		Restrained 2010		% Change		Restrained 2012		% Change
	Freq	%	Freq	%		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%			
Troop H																								
Andrew	4	17.4	13	50.0	+32.6	15	51.7	+1.7	15	51.7	-0.02	8	36.4	-15.3	11	44.0	+7.6	13	59.1	+15.1				
Atchison	85	51.8	72	60.5	+8.7	121	72.9	+12.4	90	62.9	-10.0	64	54.7	-8.2	123	68.3	+13.6	92	68.2	-0.1				
Buchanan	234	66.3	235	58.5	-7.8	235	60.4	+1.9	284	65.4	+5.0	195	58.0	-7.4	205	64.3	+6.3	248	72.5	+8.2				
Clinton	153	71.8	128	59.3	-12.6	138	56.8	-2.5	106	71.1	+14.3	113	64.9	-6.2	136	69.4	+4.5	164	84.1	+14.7				
Daviess	45	51.1	60	50.4	-0.7	113	76.4	+25.6	106	62.4	-14.0	95	71.4	+9.0	61	57.0	-14.4	101	78.9	+21.9				
DeKalb	0	0	4	66.7	+66.7	3	75.0	+8.3	1	20.0	-55.0	0	0.0	+55.0	1	50.0	+50.0	1	50.0	0.0				
Gentry	1	50.0	1	50.0	0	1	50.0	0.0	1	16.7	-33.3	1	33.3	+16.6	6	54.6	+21.3	7	50.0	-4.6				
Harrison	45	67.2	39	45.9	-21.3	87	71.3	+25.5	79	56.8	-14.5	56	62.2	+5.4	61	58.7	-3.5	87	75.0	+16.3				
Holt	85	48.9	53	61.6	+12.8	84	62.7	+1.1	60	53.6	-9.1	70	70.0	+16.4	107	64.1	-5.9	122	70.1	+6.0				
Nodaway	4	26.7	8	47.1	+20.4	7	35.0	-12.1	3	27.3	-7.7	6	40.0	+12.7	9	52.9	+12.9	14	73.7	+20.8				
Total	656	59.4	613	56.9	-2.6	804	64.0	+7.1	745	62.2	-1.8	608	61.4	-0.8	720	63.8	+2.4	849	74.0	+10.2				

County	Restrained 2014		% Change		Restrained 2016		% Change	
	Freq	%	Freq	%	Freq	%	Freq	%
Troop H								
Andrew	13	65.0		+5.9	22	78.6		+13.6
Atchison	139	67.8		-0.4	92	78.6		+10.8
Buchanan	339	79.0		+6.5	403	89.4		+10.4
Clinton	182	78.5		-5.6	236	89.4		+10.9
Daviess	80	72.7		-6.2	157	84.4		+11.7
DeKalb	3	60.0		+10.0	3	60.0		0.0
Gentry	2	50.0		0.0	3	42.9		-7.1
Harrison	56	70.9		-4.1	102	81.0		+10.1
Holt	135	69.6		-0.5	110	79.7		+10.1
Nodaway	13	65.0		-8.7	15	79.0		+14.0
Total	962	74.1		+0.1	1,143	85.2		+11.1

County	Restrained 2004		Restrained 2005		% Change		Restrained 2006		% Change		Restrained 2007		% Change		Restrained 2008		% Change		Restrained 2010		% Change		Restrained 2012		% Change
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Troop I																									
Crawford	180	62.5	229	72.7	250	72.7	250	72.7	0.0	247	63.3	414	82.3	359	93.3	299	77.7	359	93.3	+11.0	299	77.7	361	75.1	-15.6
Laclede	260	60.1	357	77.6	244	47.6	244	47.6	-30.1	552	72.8	482	66.0	464	90.6	361	75.1	464	90.6	+24.6	361	75.1	361	75.1	-15.5
Phelps	189	55.4	239	76.1	197	64.2	197	64.2	-11.9	222	55.1	309	80.1	359	86.7	200	71.4	359	86.7	+6.6	200	71.4	200	71.4	-15.3
Pulaski	165	60.9	210	74.7	197	67.9	197	67.9	-6.8	329	68.5	451	88.6	407	92.9	304	71.9	407	92.9	+4.3	304	71.9	304	71.9	-21.0
Total	794	59.6	1,035	75.6	888	61.1	888	61.1	-14.5	1,350	66.5	1,656	77.8	1,589	90.9	1,164	74.2	1,589	90.9	+13.1	1,164	74.2	1,164	74.2	-16.7
Total 76 Counties	9,080	58.8	9,230	65.7	10,486	65.6	10,486	65.6	-0.1	14,602	67.5	16,165	73.4	15,214	80.6	14,548	81.5	15,214	80.6	+7.2	14,548	81.5	14,548	81.5	+0.9

County	Restrained 2014		% Change		Restrained 2016		% Change	
	Freq	%	Freq	%	Freq	%	Freq	%
Troop I								
Crawford	234	79.1	339	96.9	339	96.9	+17.8	+17.8
Laclede	331	72.3	547	96.0	547	96.0	+23.7	+23.7
Phelps	301	87.5	456	96.0	456	96.0	+8.5	+8.5
Pulaski	286	77.3	443	95.3	443	95.3	+18.0	+18.0
Total	1,152	78.5	1,785	96.0	1,785	96.0	+17.5	+17.5
Total 76 Counties	15,213	81.0	14,568	82.8	14,568	82.8	+1.8	+1.8



Attachment B

MSHP Troop Maps
Color-Coded by
Roadway Type



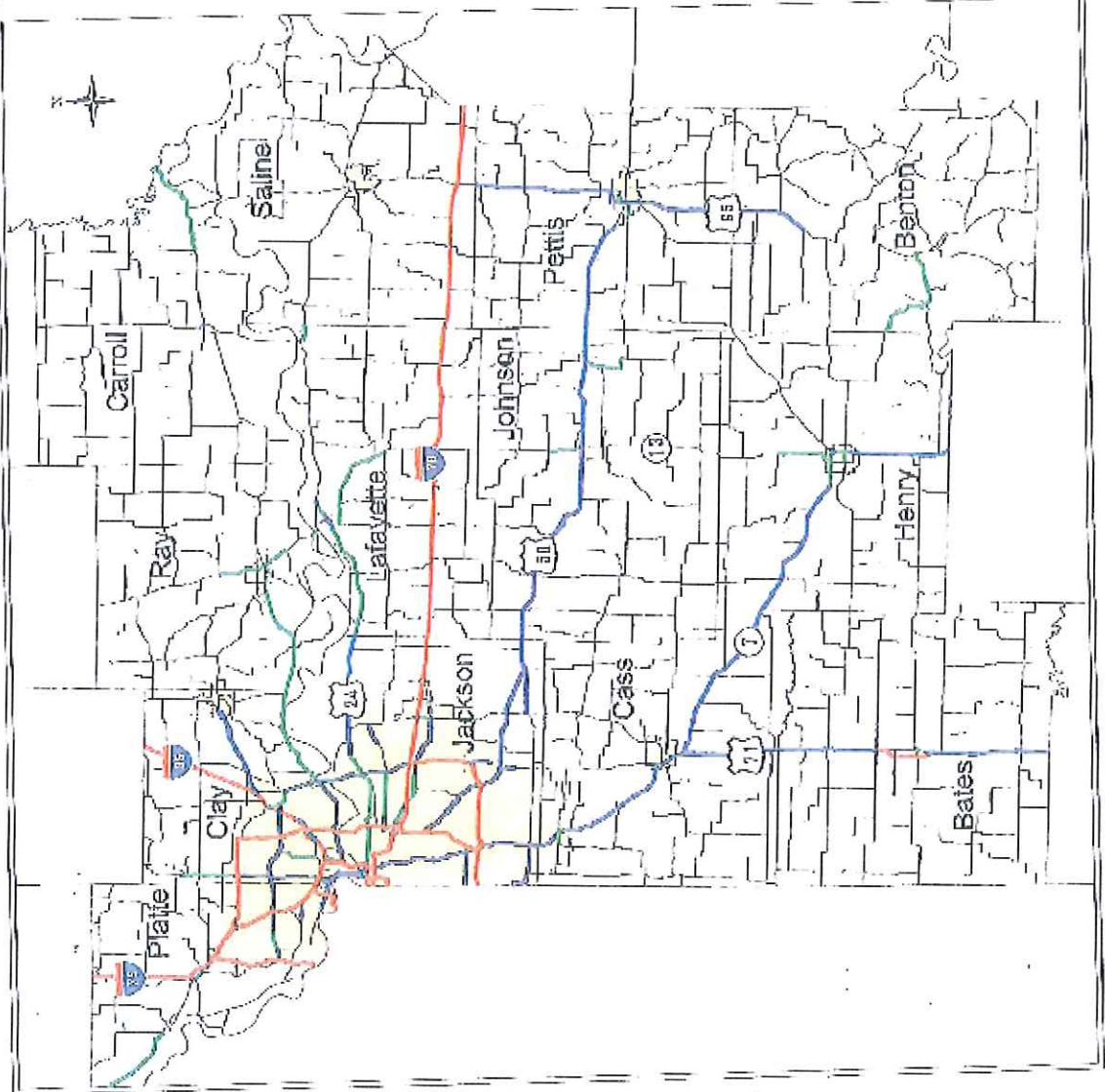
Troop A

Roadway Type
 FREEMAY
 EXPRESSWAY
 TWO-LANE
 3 LANE SECTION
 5 LANE SECTION
 MULTI-LANE
 ONE-WAY
 SUPER 2-LANE



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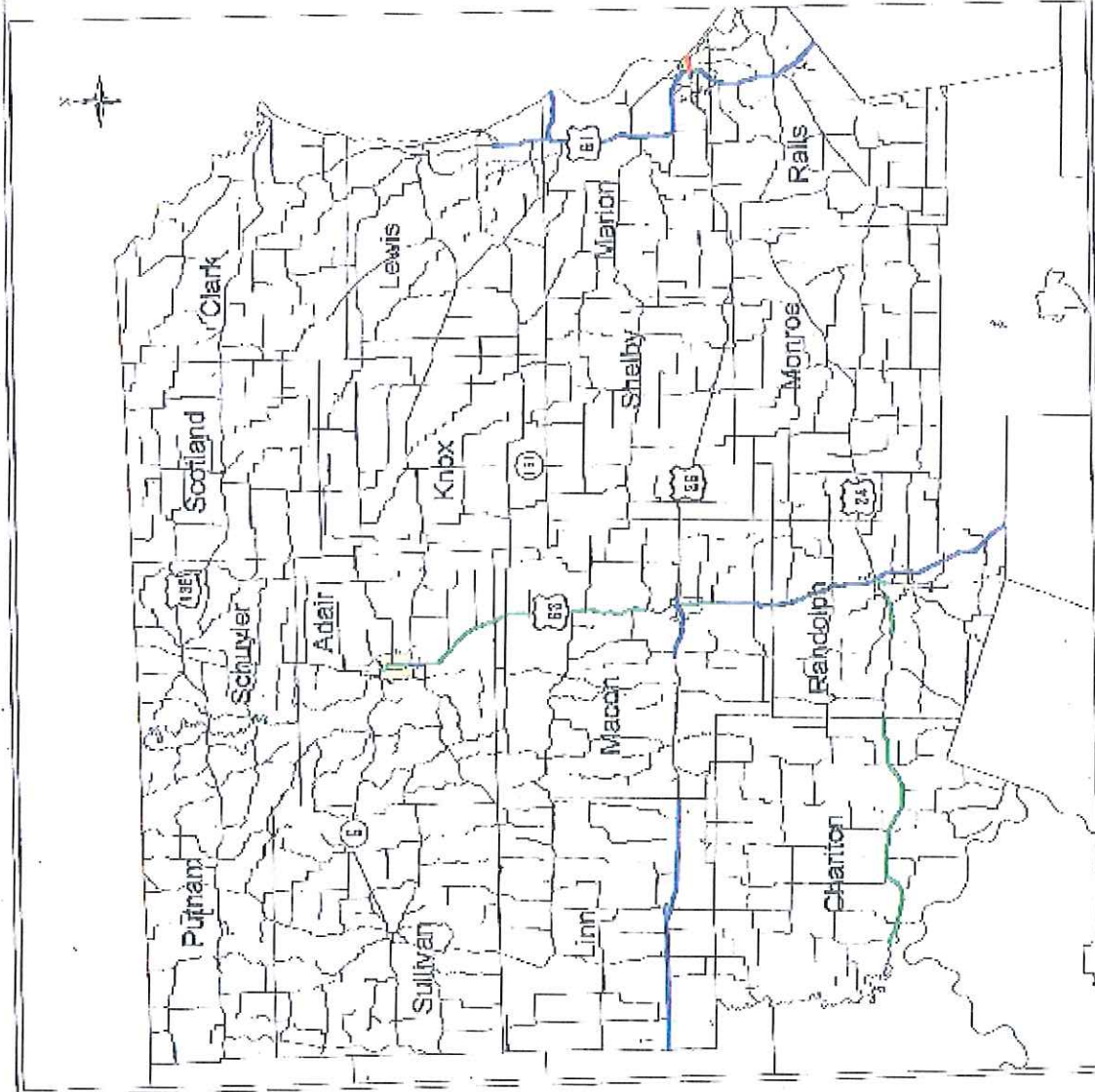
Troop B

Roadway Type
 FREEMWAY
 EXPRESSWAY
 TWO-LANE
 3 LANE SECTION
 5 LANE SECTION
 MULTI-LANE
 SUPER 2-LANE



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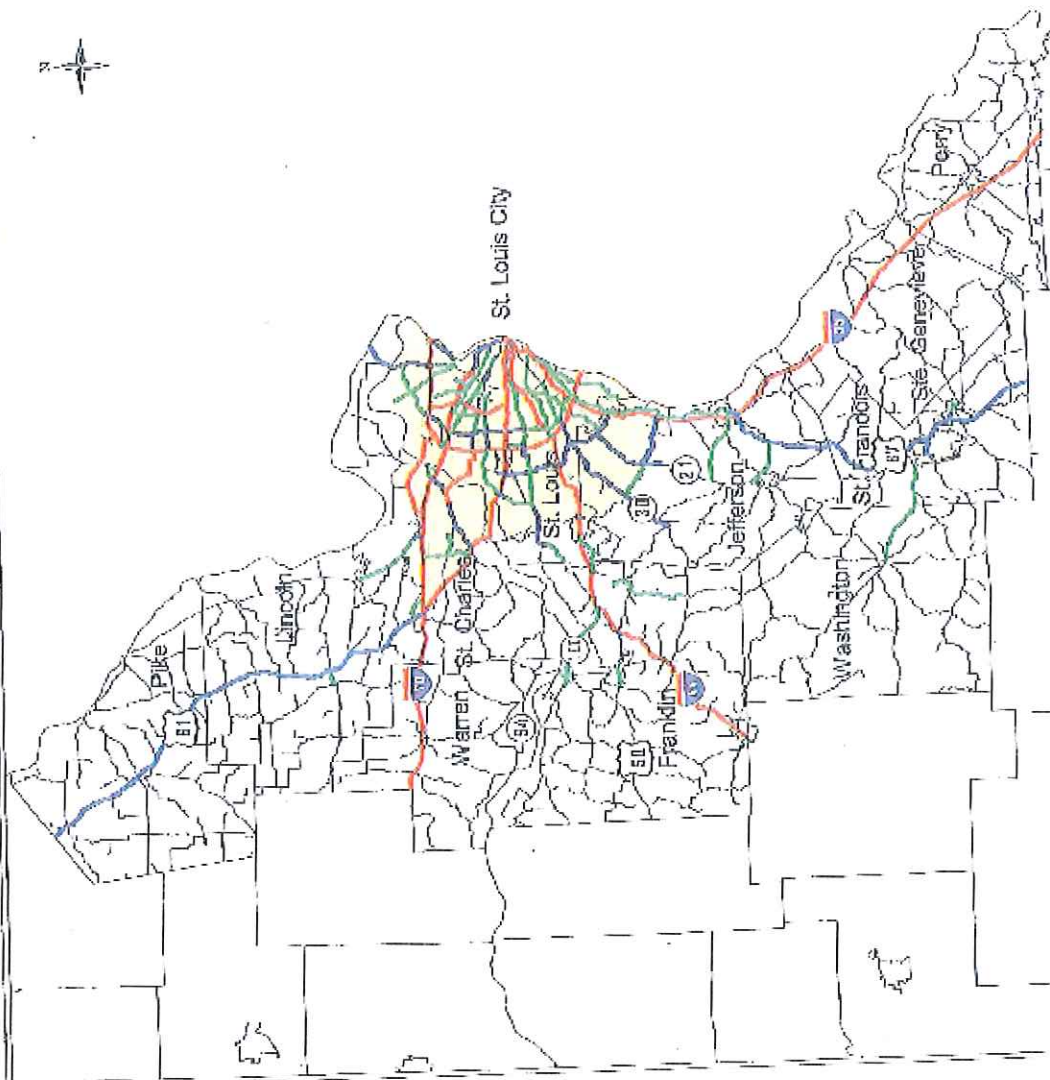




Roadway Type
 FREEWAY
 EXPRESSWAY
 TWO-LANE
 3 LANE SECTION
 5 LANE SECTION
 MULTI-LANE
 ONE-WAY
 SUPER 2-LANE



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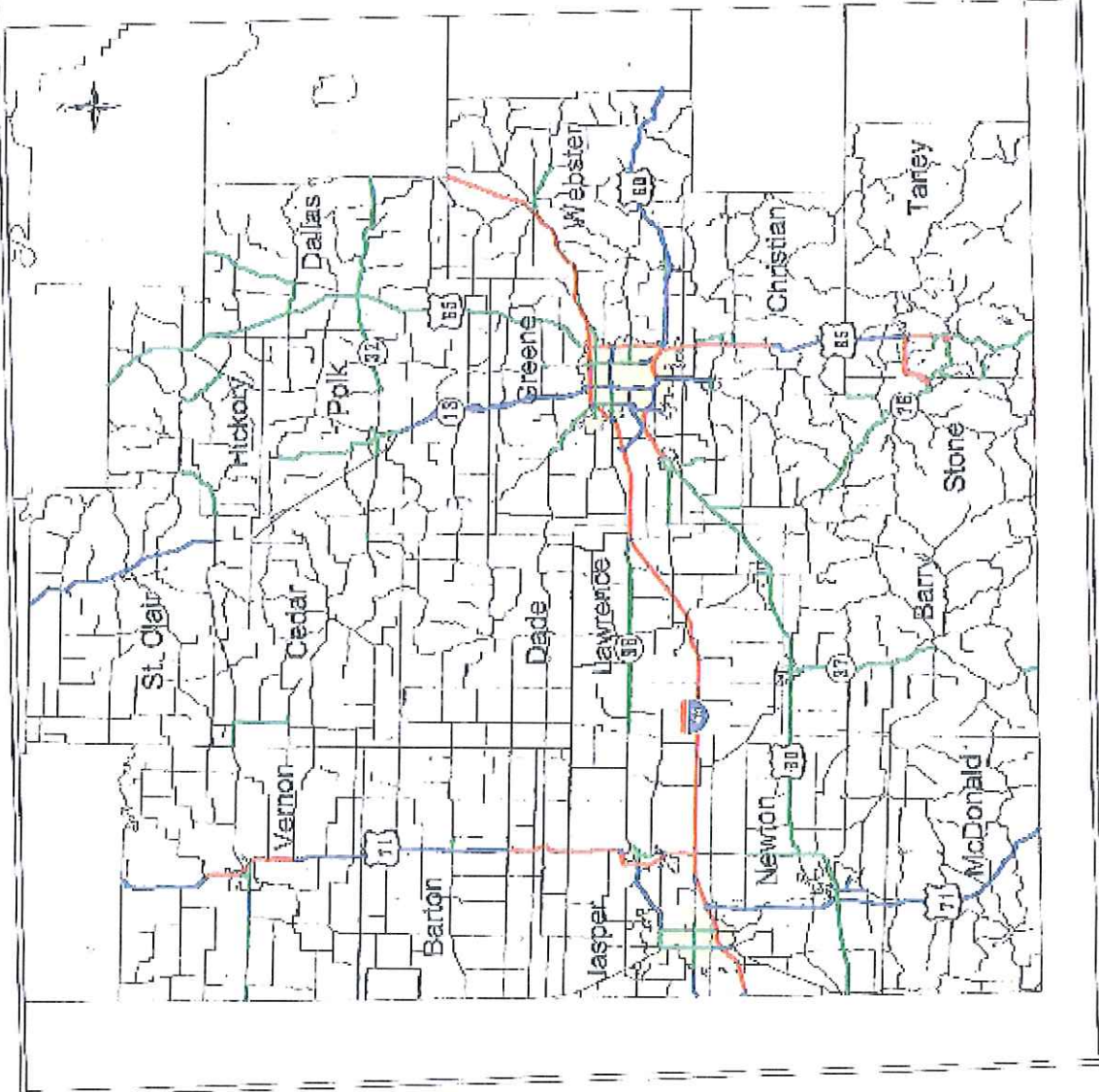
Troop D

Roadway Type
 FREEMWAY
 EXPRESSWAY
 TWO-LANE
 3 LANE SECTION
 5 LANE SECTION
 MULTILANE
 ONEWAY
 SUPER 2-LANE



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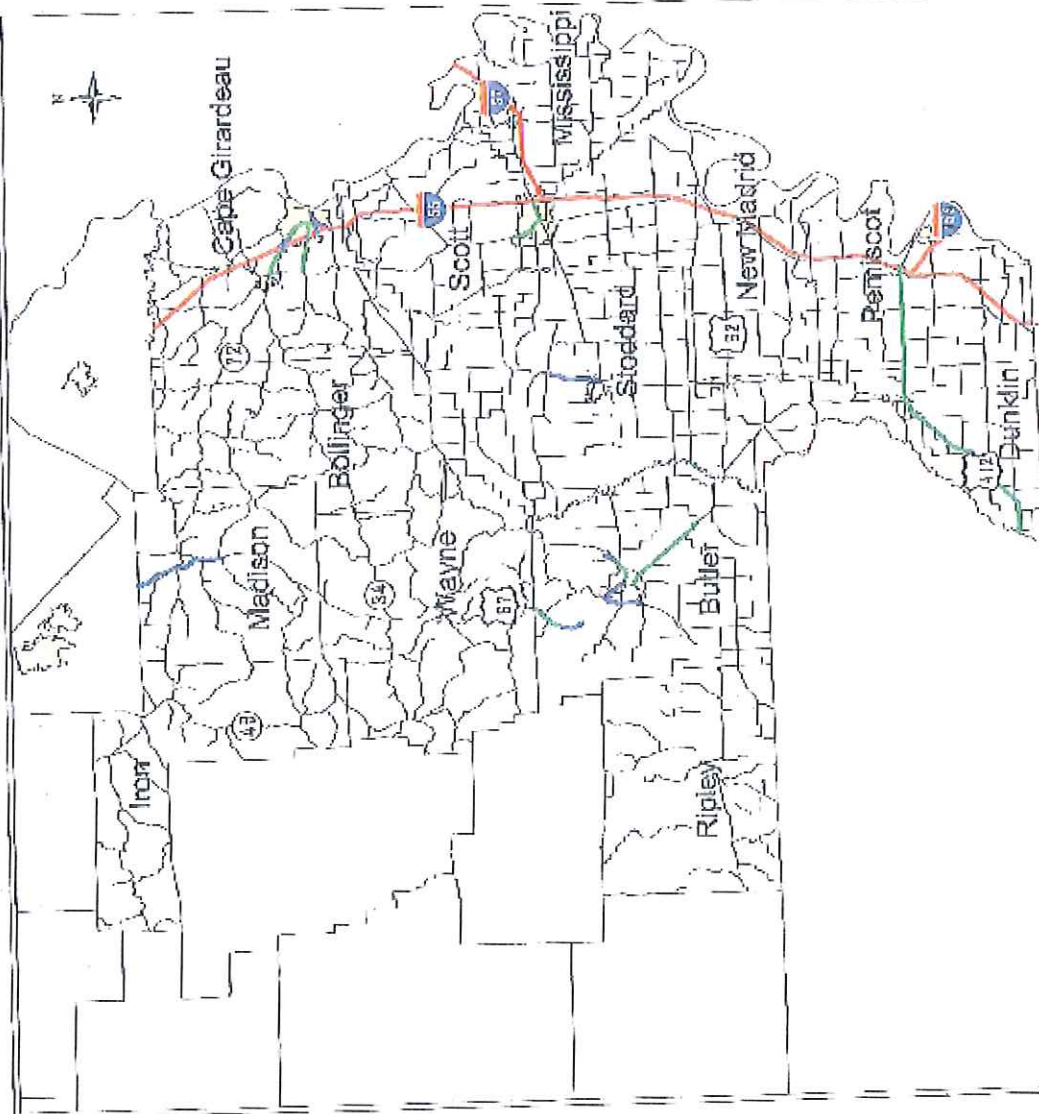
Troop E

Roadway Type
 FREEWAY
 EXPRESSWAY
 TWO-LANE
 3 LANE SECTION
 5 LANE SECTION
 MULTI-LANE
 SUPER 2-LANE



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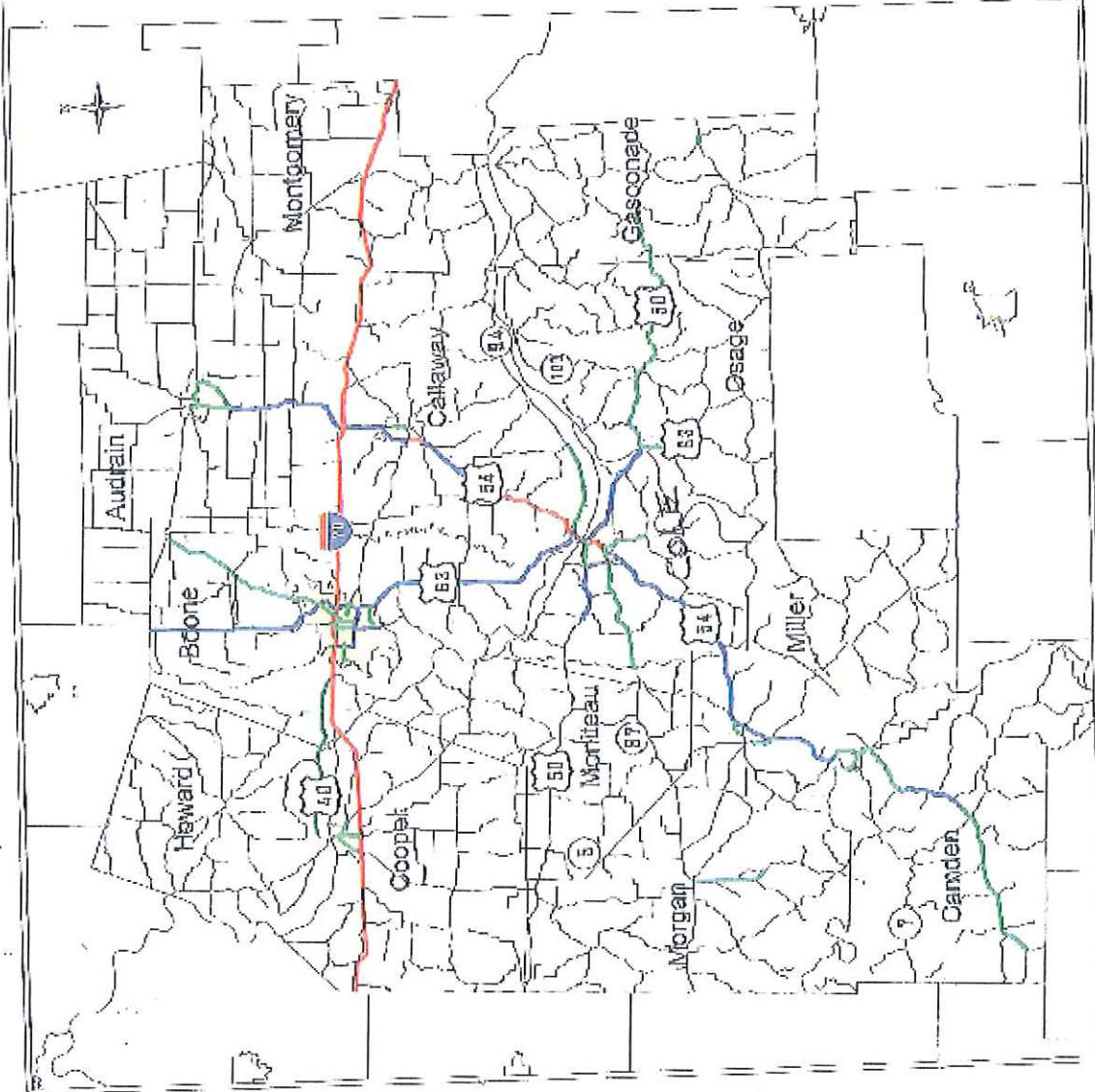
19-Jul-2004





Troop F

Roadway Type
FREEMWAY
EXPRESSWAY
TWO-LANE
3 LANE SECTION
5 LANE SECTION
MULTI-LANE
ONE-WAY
SUPER 2-LANE



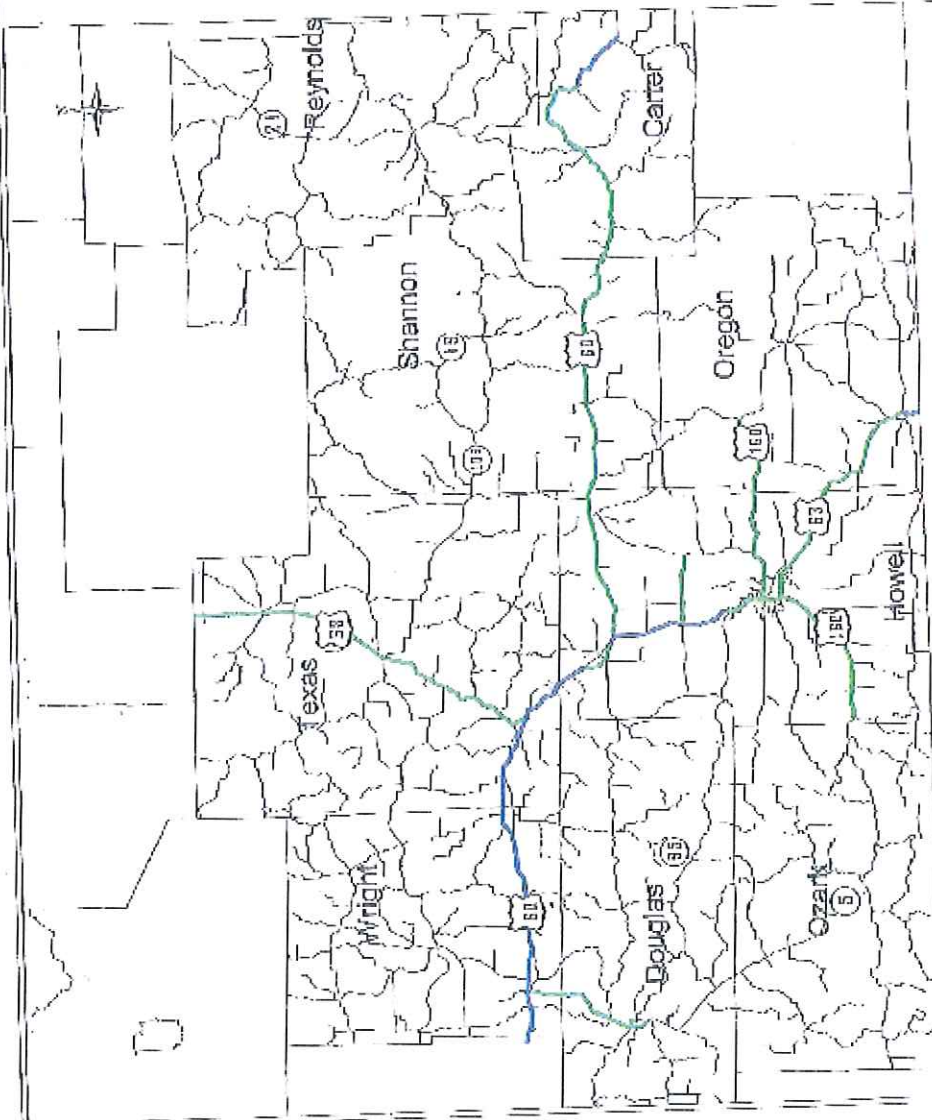
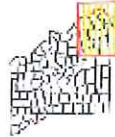
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Troop G

Roadway Type
 EXPRESSWAY
 TWO-LANE
 3 LANE SECTION
 5 LANE SECTION
 MULTI-LANE
 SUPER 2-LANE



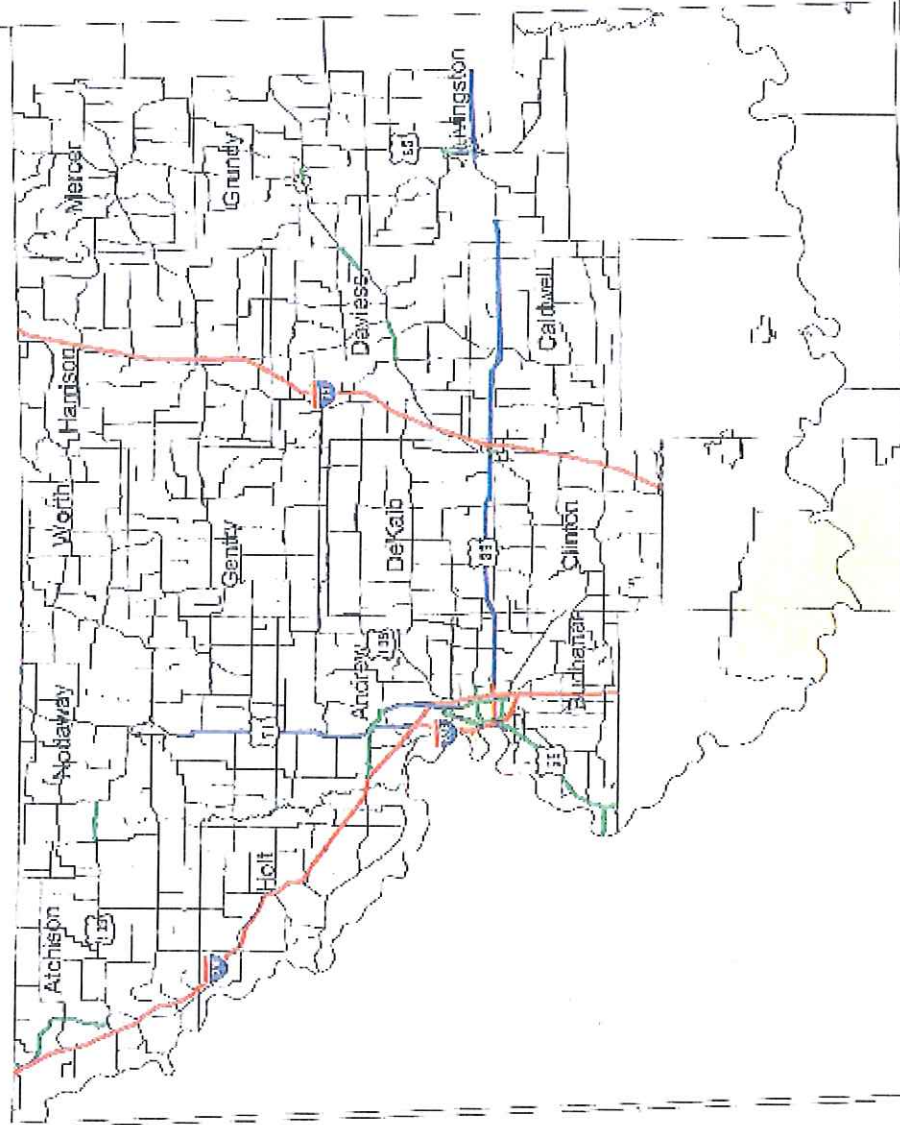
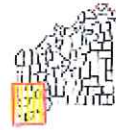
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Troop H

Roadway Type
FREEWAY
EXPRESSWAY
TWO-LANE
3 LANE SECTION
5 LANE SECTION
MULTI-LANE
SUPER 2-LANE



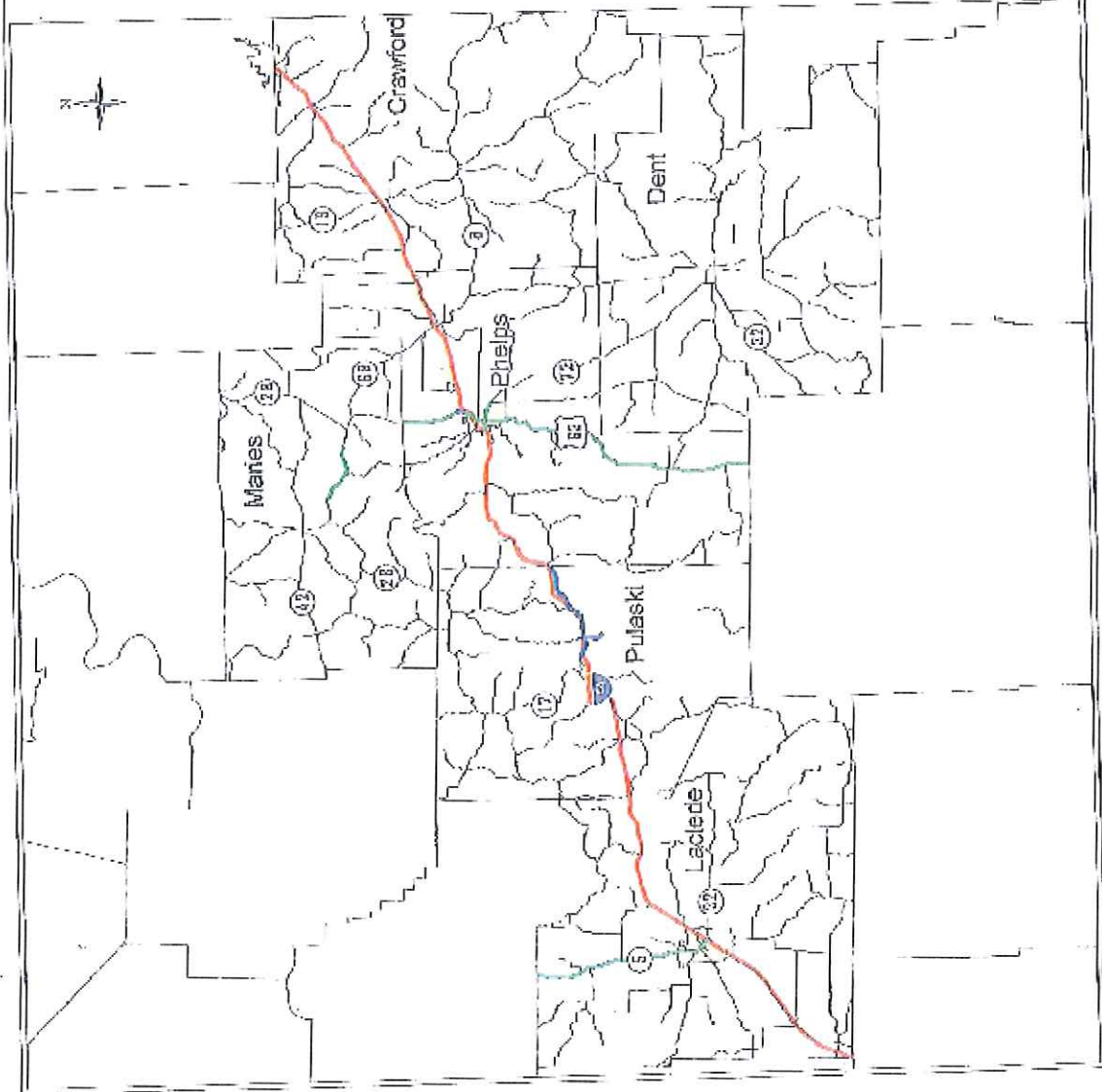
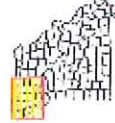
Prepared By
MoDOT TMS Query Application

20-Jul-2004



Troop I

Roadway Type
 FREEWAY
 EXPRESSWAY
 TWO-LANE
 3 LANE SECTION
 5 LANE SECTION
 MULTI-LANE
 SUPER 2-LANE



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Attachment C

Observational Survey Instruments

Commercial Vehicle Safety Belt Survey

Site Summary Form

Observers: _____

Troop: _____

County: _____

Date: _____

Time: Start _____ End _____

Troop:

County:

Site:

Road Type:

☐ A	☐ 0	☐ 0
☐ B	☐ 1	☐ 1
☐ C	☐ 2	☐ 2
☐ D	☐ 3	☐ 3
☐ E	☐ 4	☐ 4
☐ F	☐ 5	☐ 5
☐ G	☐ 6	☐ 6
☐ H	☐ 7	☐ 7
☐ I	☐ 8	☐ 8
	☐ 9	☐ 9

☐ Freeway
☐ Expressway
☐ Two-Lane
☐ Other: _____

Day of the Week:

Traffic Flow:

Road Condition:

☐ Monday
☐ Tuesday
☐ Wednesday
☐ Thursday
☐ Friday
☐ Saturday
☐ Sunday

☐ North
☐ South
☐ East
☐ West

☐ Dry
☐ Wet
☐ Fog
☐ Other: _____

Start Time: ☐ 8:00 ☐ 9:00 ☐ 10:00 ☐ 11:00 ☐ 12:00 ☐ 1:00 ☐ 2:00 ☐ 3:00 ☐ 4:00 ☐ 5:00

Observation Point (be specific): _____

Major Distraction: _____

Troop:	O A	County:	O 0	Site:	O 0
	O B		O 1		O 1
	O C		O 2		O 2
	O D		O 3		O 3
	O E		O 4		O 4
	O F		O 5		O 5
	O G		O 6		O 6
	O H		O 7		O 7
	O I		O 8		O 8
			O 9		O 9

Observers: _____

Page: _____ of _____

Vehicle Type 7-Straight Frame

	Vehicle Type 8-Combination Vehicle						Belted Yes No		Hazmat Yes No	
	Van	Tanker	Dump	Bed	Bus	Other				
1.	O	O	O	O	O	O	O	O	O	O
2.	O	O	O	O	O	O	O	O	O	O
3.	O	O	O	O	O	O	O	O	O	O
4.	O	O	O	O	O	O	O	O	O	O
5.	O	O	O	O	O	O	O	O	O	O

	Vehicle Type 8-Combination Vehicle						Belted Yes No		Hazmat Yes No	
	Box	Single	Double	Flat	Car	Other				
6.	O	O	O	O	O	O	O	O	O	O
7.	O	O	O	O	O	O	O	O	O	O
8.	O	O	O	O	O	O	O	O	O	O
9.	O	O	O	O	O	O	O	O	O	O
10.	O	O	O	O	O	O	O	O	O	O

	Vehicle Type 8-Combination Vehicle						Belted Yes No		Hazmat Yes No	
	Trailer	Tanker	Double	Flat	Car	Other				
11.	O	O	O	O	O	O	O	O	O	O
12.	O	O	O	O	O	O	O	O	O	O
13.	O	O	O	O	O	O	O	O	O	O
14.	O	O	O	O	O	O	O	O	O	O
15.	O	O	O	O	O	O	O	O	O	O