Transportation Research Center

Nevada State Seat Belt Use Survey 2016

Author:

Sergio Contreras

contre47@unlv.nevada.edu, 702-557-4901

Student M.S. Electrical Engineering, and M.S. Mathematics

University of Nevada, Las Vegas

Principal Investigator:

Dr. Pushkin Kachroo, P.E.

http://faculty.unlv.edu/pushkin, pushkin@unlv.edu, 540-588-3142

Transportation Research Center

University of Nevada, Las Vegas

Statistician:

Dr. Amei Amei, Ph.D.

Assistant Professor, Department of Mathematical Sciences

University of Nevada, Las Vegas

Prepared for:

Department of Public Safety, Office of Traffic Safety

555 Wright Way, Carson City, NV 89711-0999

September 15, 2016

Contents

List of Figures

List of Tables

Executive Summary

Introduction

The Nevada Department of Public Safety (DPS) Office of Traffic Safety (OTS) contracted the Transportation Research Center (TRC) at the University of Nevada, Las Vegas (UNLV) to design the Statewide Seatbelt Use Survey Methodology for Nevada. According to the Part 1340 - Uniform Criteria for State Observational Surveys of Seat Belt Use provided by National Highway Traffic Safety Administration (NHTSA), average fatality distribution across the counties was to be used as a parameter for the first stage sampling. This is done to remove the unintended bias in seat belt use rates introduced due to the population based criterion. Moreover, this would enable the states to focus more on areas with traffic safety concerns.

According to the Pre-CIOT Mobilization survey held in April/May 2016, the statewide average for seatbelt usage in Nevada is 86.81%, based on the weighted usage rate. The weighted seatbelt usage rate increased during the Post-CIOT mobilization survey, held during June 2016, to 89.41% percent. These percentages were estimated by conducting these surveys at 117 locations across the state of Nevada.

- *Observations:* Only front seat occupants were observed in both the surveys. Total vehicles observed during the two surveys are shown below.
  - *Pre-Mobilization:* 10,075 vehicles.
  - *Post-Mobilization:* 11,387 vehicles.

- *State of Registration:* In both the surveys, the majority of the vehicles were registered in Nevada. The vehicle distribution according to the state of registration is shown below.
  - *Pre-Mobilization:*
    - Nevada: 80.69% (8130)
    - California: 7.36% (742)
    - Other: 11.94% (1203)
  - *Post-Mobilization:*
    - Nevada: 77.55% (8831)
    - California: 8.78% (1000)
    - Other: 13.66% (1556)
- *Occupants(General vehicle registration):* The unweighted statewide seatbelt usages for the two surveys separately are shown below.
  - *Pre-Mobilization:* Unweighted statewide estimate - 88.83% (88.10% belted drivers and 92.19% belted passengers).
  - *Post-Mobilization:* Unweighted statewide estimate - 90.74% (90.07% belted drivers and 93.29% belted passengers).
- *Occupants(Nevada vehicle registration):* The seatbelt usage for the front seat occupants in Nevada registered vehicles are shown below.
  - *Pre-Mobilization:* Unweighted statewide estimate - 87.84% (87.24% belted drivers and 90.99% belted passengers).
  - *Post-Mobilization:* Unweighted statewide estimate - 89.52% (88.97% belted drivers and 91.91% belted passengers).
- *Gender(General Vehicle Registration):* The seatbelt usage rates distributed over the gender category for all the vehicles without considering their state of registration is shown below.
  - *Pre-Mobilization:*

    - Occupants: Male- 87.37%, Female - 91.21%
    - Drivers: Male- 87.29%, Female - 89.86%
    - Passengers: Male- 88.11%, Female - 94.01%
  - *Post-Mobilization:*
    - Occupants: Male- 89.06%, Female - 93.43%
    - Drivers: Male- 88.91%, Female - 92.71%
    - Passengers: Male- 90.32%, Female - 94.63%

- *Gender(Nevada Vehicle Registration):* The seatbelt usage rates distributed over the gender category for all the Nevada registered vehicles is shown below.
  - *Pre-Mobilization:*
    - *Occupants:* Male - 86.44%, Female - 90.09%
    - *Drivers:* Male - 86.31% , Female - 89.13%
    - *Passengers:* Male - 87.78%, Female - 92.65%
  - *Post-Mobilization:*
    - *Occupants:* Male - 87.66%, Female - 92.51%
    - *Drivers:* Male - 87.48% , Female - 92.17%
    - *Passengers:* Male - 89.32%, Female - 93.20%

- *Age:* Occupants were divided into four age categories (<15, 15-19, 20-60 and > 60). Seatbelt usage rates for the different age groups are shown below.
  - *Pre-Mobilization:*
    - <15: 92.59%
    - 15-19: 90.00%
    - 20-60: 88.73%
    - >60: 89.93%
  - *Post-Mobilization:*
    - <15: 68.75%

    - 15-19: 93.10%
    - 20-60: 90.44%
    - >60: 94.18%

- *Vehicle type (no consideration of the State of registration):* The least seatbelt usage was observed in Pickup trucks. Vans/SUVs showed the highest seatbelt usage.
  - *Pre-Mobilization:*
    - Sedans: 89.52%
    - Vans/SUVs: 91.51%
    - Trucks: 84.36%
  - *Post-Mobilization:*
    - Sedans: 91.66%
    - Vans/SUVs: 93.25%
    - Trucks: 85.57%

- *Ethnicity:* All ethnic groups improved seat belt usage rate for the post campaign.
  - *Pre-Mobilization:*
    - Caucasian: 89.67%
    - Hispanic: 80.55%
    - African American: 83.38%
    - Other: 91.34%
  - *Post-Mobilization:*
    - Caucasian: 91.06%
    - Hispanic: 86.70%
    - African American: 88.48%
    - Other: 93.36%

- *Functional Classification over roadway categories:* The roadway categories were divided into three major groups which are:-
  - S1100 (Primary Roads):
  - S1200 (Secondary Roads):
  - S1400 (Local Neighborhood roads, rural roads and city street):
  - *Pre-Mobilization:*
    - S1100: 93.79%
    - S1200: 88.63%
    - S1400: 86.97%
  - *Post-Mobilization:*
    - S1100: 94.35%
    - S1200: 89.63%
    - S1400: 90.17%
- *County:* The seat belt usage rate observed for each county is shown below.
  - *Pre-Mobilization:*
    - Clark: 88.71%
    - Nye: 89.48%
    - Washoe: 88.74%
    - Lyon: 87.51%
    - Elko: 90.26%
  - *Post-Mobilization:*
    - Clark: 91.48%
    - Nye: 91.67%
    - Washoe: 91.93%
    - Lyon: 89.10%
    - Elko: 89.87%

Introduction

The Nevada Department of Public Safety (DPS), Office of Traffic Safety (OTS) contracted the Transportation Research Center (TRC) at the University of Nevada, Las Vegas (UNLV) to conduct the Statewide Seatbelt Usage Surveys for the year 2016. These surveys were done to estimate the seatbelt usage rate during 2015. Additionally, the observed results might also help in assessing the effectiveness of the Click It or Ticket mobilization (CIOT held during May 23-June 5, 2016) throughout the State of Nevada.

The survey was conducted in five counties in Nevada. Namely, the counties were Clark, Washoe, Nye, Lyon and Elko, with 117 observation locations spread across these counties. As mentioned, in order to estimate the effect of CIOT mobilization campaign, the survey was conducted in two stages, i.e. the pre-mobilization stage, and the post-mobilization stage. To have the maximum correlation between both the stages, the observation schedule, time and duration was strictly kept the same during pre-mobilization and post-mobilization surveys. This report documents the comparative results of the Pre-CIOT mobilization and Post-CIOT Mobilization seatbelt usage surveys conducted in April/May 2016 and June 2016 respectively.

The detailed sampling strategy followed to select the locations for the survey is described in Sampling Design. Since the survey design approved by NHTSA for the year 2012 was not altered, the same design was used for the years 2013, 2014, 2015, and again for 2016. Data collection was done using software on PDAs/iPods, and the

observers were given a thorough training before starting the data collection. From the data collected, over both the stages, basic statistics involving the percentage seatbelt usage with respect to various categories is reported. Moreover, a detailed weighted statistical analysis has also been performed on the data to calculate the weighted seatbelt usage across Nevada.

Sampling Design

The Nevada Department of Public Safety (DPS) Office of Traffic Safety (OTS) contracted the Transportation Research Center (TRC) at the University of Nevada, Las Vegas (UNLV) to design the Statewide Seat Belt Use Survey Methodology for Nevada. According to the Part 1340 - Uniform Criteria for State Observational Surveys of Seat Belt Use provided by National Highway Traffic Safety Administration (NHTSA), average fatality distribution across the counties is used as a parameter for the first stage sampling. This is done to remove the unintended bias in seat belt use rates introduced due to the population based criterion. Moreover, this enables the states to focus more on areas with traffic safety concerns. This document explains in detail various steps taken, following the guidelines from NHTSA for selecting the suitable observation sites for the Seat Belt Use Survey. Again, since the survey design approved by NSTSA for 2012 was not altered, the same design was used for the year 2016. The following explanation of the survey design was submitted and approved for 2012.

Sample Design

A stratified multistage design, in which counties are PSUs, road segments are SSUs, followed by time segment, road direction, lane, and vehicles selection are used to select the observation site. All passenger vehicles with a gross vehicle weight up to 10,000 pounds are included in the survey. This includes small commercial vehicles. The target population of this methodology includes all drivers and right-front pas-

sengers of all passenger vehicles that travel on all roads within the state boundary from 7 a.m. to 6 p.m. in all days of the calendar year.

County Sampling Frame

According to the Uniform Criterion 1340 [2] average fatality index in the state is considered as a factor for inclusion or exclusion of counties. States have the option to use either last 3, 4, or 5 years of the average fatality data provided by NHTSA. This data is available through NHTSA's Fatality Analysis Reporting System (FARS) [1]. Table 1 lists the 5-year average fatality counts based on FARS data for the counties in Nevada.

Table 1: List of Counties in Nevada by Fatality (Source: NHTSA [5])

County	Average Fatality Count	Fatality %	Cumulative %
Clark	228	63.2%	**63.2%**
Washoe	33	9.1%	**72.3%**
Nye	20.4	5.7%	**78.0%**
Elko	16.8	4.7%	**82.7%**
Lyon	8.8	2.4%	**85.1%**
Douglas	8.4	2.3%	87.4%
Humboldt	8.4	2.3%	89.7%
Churchill	6.2	1.7%	91.4%
White Pine	6.2	1.7%	93.1%
Lincoln	5.6	1.6%	94.7%
Carson City	5	1.4%	96.1%
Pershing	3.4	0.9%	97.0%
Esmeralda	2.8	0.8%	97.8%
Lander	2.6	0.7%	98.5%

continued on next page

continued from previous page

County	Average Fatality Count	Fatality %	Cumulative %
Mineral	2	0.6%	99.1%
Storey	2	0.6%	99.7%
Eureka	1.3	0.3%	100%

Under Criterion 1340.5.a.1, a state may exclude counties comprising up to 15 percent of their passenger vehicle occupant fatalities. A state may select any combination of counties while employing this exclusion. Thus the state of Nevada chooses the top five counties in table 1 accounting for 85 percent of total passenger motor vehicle fatality to form the county sampling frame. The counties included in the sampling frame are Clark, Washoe, Nye, Elko, and Lyon counties.

In Table 2, the most recent Annual Vehicle Miles Travelled (AVMT) data for the year 2009 obtained from Nevada DOT has been given. Table 2 shows that Clark, Washoe, Nye, Elko, and Lyon accounts for about 88 percent of annual vehicle miles of travel in Nevada. Since the selected five counties, Clark, Washoe, Nye, Elko, and Lyon also satisfy the 85 percent of total fatality criterion, no further stage 1 sampling is required.

Table 2: List of Counties in Nevada with AVMT in 2009 [7]

County	AVMT(millions)	Change from 2008-09	AVMT %	Cumulative %
Clark	13,678	-0.9%	65.40%	**65.40%**
Washoe	3,220	-0.98%	15.40%	**80.80%**
Nye	378	0.8%	1.81%	**82.61%**
Elko	656	-0.61%	3.14%	**85.75%**
Lyon	485	1.25%	2.32%	**88.07%**
Douglas	513	-1.1%	2.45%	90.52%
Carson City	358	-.72%	1.71%	92.23%

continued on next page

continued from previous page				
County	AVMT(millions)	Change from 2008-09	AVMT %	Cumulative %
Churchill	295	1.71%	1.41%	93.64%
Humboldt	313	2.62%	1.5%	95.14%
White Pine	158	3.27%	0.76%	95.90%
Pershing	252	6.8%	1.2%	97.10%
Lander	123	3.36%	0.59%	97.69%
Mineral	111	0.1%	0.53%	98.22%
Storey	28	1.51%	0.14%	98.35%
Lincoln	124	4.2%	0.59%	98.95%
Eureka	126	3.3%	0.6%	99.55
Esmeralda	89	2.3%	0.43%	99.98
Total	20,914	-0.51%	**100%**	-

PSU Sample Selection

In the previous subsection a sampling frame of counties has been prepared accounting for 85 percent of the total passenger motor vehicle fatalities. Now after the exclusion based on historical fatality counts only five counties are retained in the sampling frame. In such a scenario NHTSA has provided with an alternative design where all the sampled counties are selected with certainty. The procedure to calculate the sample size for the number of roadway segments in each selected county is shown in the next subsection.

Sample Size Determination

The sample size at all the stages of the sampling is dependent on the seat belt use rate estimator and the variance constraint from criterion 1340.5.d. To optimally allocate sample sizes at all stages and all strata we will need the total variance formula of the seat-belt use rate estimator. The current sample design has six stages of

sample selection: county, road segment, time segment, direction, lane and vehicle. The sample size at time segment, road direction and lane stages are determined by operation constraints. So we will only consider sample allocation at county, road segment and vehicle stages. Firstly, we will use a simplified variance model to allocate an average sample size to each stage and then allocate sample sizes to strata at each stage.

We first assume the population has $\boldsymbol{N}$ PSUs (counties), each PSU has $\boldsymbol{M}$ secondary sampling units (SSUs, road segments), and each SSU has $\boldsymbol{K}$ third-stage units (TSUs, vehicles). A sample is selected in three stages: selecting n counties out of total $\boldsymbol{N}$ counties at first stage, selecting $\boldsymbol{m}$ road segments out of total $\boldsymbol{M}$ road segments at second stage, and selecting $\boldsymbol{k}$ vehicles out of total $\boldsymbol{K}$ vehicles at third stage.

The only difference to the above described strategy is that we have already selected all the PSUs at the first stage in the frame, i.e.,

$$\text{n} = \text{N}$$

Now under this model, if y_{ijk} is the driver's seat belt status, the belt use rate can be estimated by the sample mean $\bar{\bar{\bar{y}}} = \sum_{i=1}^{n}\sum_{j=1}^{m}\sum_{u=1}^{k} y_{iju}/nmk$ and the variance model is:

$$V(\bar{\bar{\bar{y}}}) = \frac{1-f_1}{n}S_1^2 + \frac{1-f_2}{nm}S_2^2 + \frac{1-f_3}{nmk}S_3^2 \tag{1}$$

Here $f_1 = n/N, f_2 = m/M, f_3 = k/K$ are sampling fractions at each stage. And because n=N, therefore 1 - $f_1 = 0$. So the total variance reduces to

$$V(\bar{\bar{\bar{y}}}) = \frac{1-f_2}{nm}S_2^2 + \frac{1-f_3}{nmk}S_3^2 \tag{2}$$

Notice the actual second-stage sample is stratified by road type - both considered to be correlated with belt use rate. Therefore we believe at the second stage, the actual design is more efficient than this simplified model. But at the third stage this model may underestimate the actual variance because of the dropped stages. To make this model more conservative, we notice $1 - f_i < 1 (i = 2, 3)$, therefore

$$V(\bar{\bar{\bar{y}}}) < \frac{1-f_2}{nm}S_2^2 + \frac{1-f_3}{nmk}S_3^2 \tag{3}$$

With this simplified variance model, the sample allocation becomes the following optimization problem:

$$Min : c_1 n + c_2 nm + c_3 nmk$$

$$st : \frac{1}{nm} S_2^2 + \frac{1}{nmk} S_3^2 = (2.5\%)^2 \tag{4}$$

Here c_1 is the cost for adding one PSU to the sample such as travel to the selected county; c_2 is the cost for adding one road segment to the sample such as travel among the selected road segments and set up time at each site; c_3 is the cost for adding one vehicle to the sample, i.e. the time to wait, observe and record a vehicle. All costs are measured by or converted to the same unit such as time so they are comparable.

Now as we have $n = N$, so minimizing $c_1 n + c_2 nm + c_3 nmk$ is the same as minimizing $c_2 m + c_3 mk$. Therefore the above optimization problem reduces to:

$$Min : c_2 m + c_3 mk$$

$$st : \frac{1}{m} S_2^2 + \frac{1}{mk} S_3^2 = n * (2.5\%)^2 \tag{5}$$

In the variance model, S_3^2 is the population variance of the driver's belt use status y_{iju} around the road segment and is estimated by historical data:

$$s_3^2 = \frac{1}{n'm'(k'-1)} \sum_{i=1}^{n'} \sum_{j=1}^{m'} \sum_{u=1}^{k'} (y_{iju} - \hat{p}_{ij})^2 \tag{6}$$

Here n', m', k' are historical data sample sizes. $\hat{p}_{ij}$ are road segment driver's belt use rates estimated from historical data. S_2^2 is the population variance of the road segment belt use rates around county belt use rate. Ignoring the finite population correction f_i, S_2^2 can be estimated by:

$$\hat{S}_2^2 = s_2^2 - \frac{s_3^2}{k'} \tag{7}$$

here

$$s_2^2 = \frac{1}{n'(m'-1)} \sum_{i=1}^{n'} \sum_{j=1}^{m'} (\hat{p}_{ij} - \hat{p}_i)^2$$

$\hat{p}_i$ is county i driver's belt use rate estimated from historical data.
Using this notation, the solution to the optimization problem is:

$$k = \sqrt{\frac{c_2}{c_3} \frac{S_3^2}{S_2^2}}$$

$$m = \frac{S_2^2 + \frac{1}{k} S_3^2}{n*(2.5\%)^2}$$

Here $n = N$ is the known number of all counties remain in the county frame after the county exclusion based on fatality counts.
According to the historical data, the estimated variance $S_2^2 = 0.0447$ and $S_3^2 = 2.0995$. Using the above formulas the value for m, i.e. the number of road segments in each county was found out to be 22. The calculated value for k was found out to be 88, i.e. the total number of vehicles to be observed at a site is 88. However, the observation time at each site has been decided as 45 minutes at each site.

The number of vehicles expected to be observed per site (k) is 88 and the total expected sample size (n*m*k) is 9680.

Roadway Sampling Frame

For each selected county, we shall form a sampling frame of roadways by applying the restriction allowed in Criterion 1340.5.a to the roads in Nevada. A comprehensive and up-to-date database of the roadways in the above mentioned sampled counties was obtained from U.S. Census Bureau [3]. The roadway database strictly comprises only of the road segments as allowed in Criterion 1340.5.a. The rural local roads in counties that are not included in U.S. Census Metropolitan Statistical Area (MSA) are excluded from the design. A roadway segment database was requested from NHTSA with size of roadway segments less than 5 miles. The Nevada's roadway

database is primarily divided in 15 divisions of roadway segments out of which only three are included in the criterion namely S1100, S1200 and S1400. These three road types are described below:

S1100 - Primary Road

Primary roads are generally divided, limited-access highways within the interstate highway system or under state management, and are distinguished by the presence of interchanges. These highways are accessible by ramps and may include some toll highways.

S1200 - Secondary Road

Secondary roads are main arteries, usually in the U.S. Highway, State Highway or County Highway system. These roads have one or more lanes of traffic in each direction, may or may not be divided, and usually have at-grade intersections with many other roads and driveways. They often have both a local name and a route number.

S1400 - Local Neighborhood Road, Rural Road, City Street

These are generally paved non-arterial streets, roads, or byways that usually have a single lane of traffic in each direction. Roads in this feature class may be privately or publicly maintained. Scenic park roads would be included in this feature class, as would (depending on the region of the country) some unpaved roads.
The sampled counties are further subdivided in the above discussed categories of road types, where the length of the road types is the measure of size (MOS).

Also, functional classification maps [6] are provided by Nevada DOT for roadway segments falling in rural and urban areas for Clark, Washoe, Nye, Elko and Lyon counties. This can be seen in Figures 1, 2, 3, 4, 5.

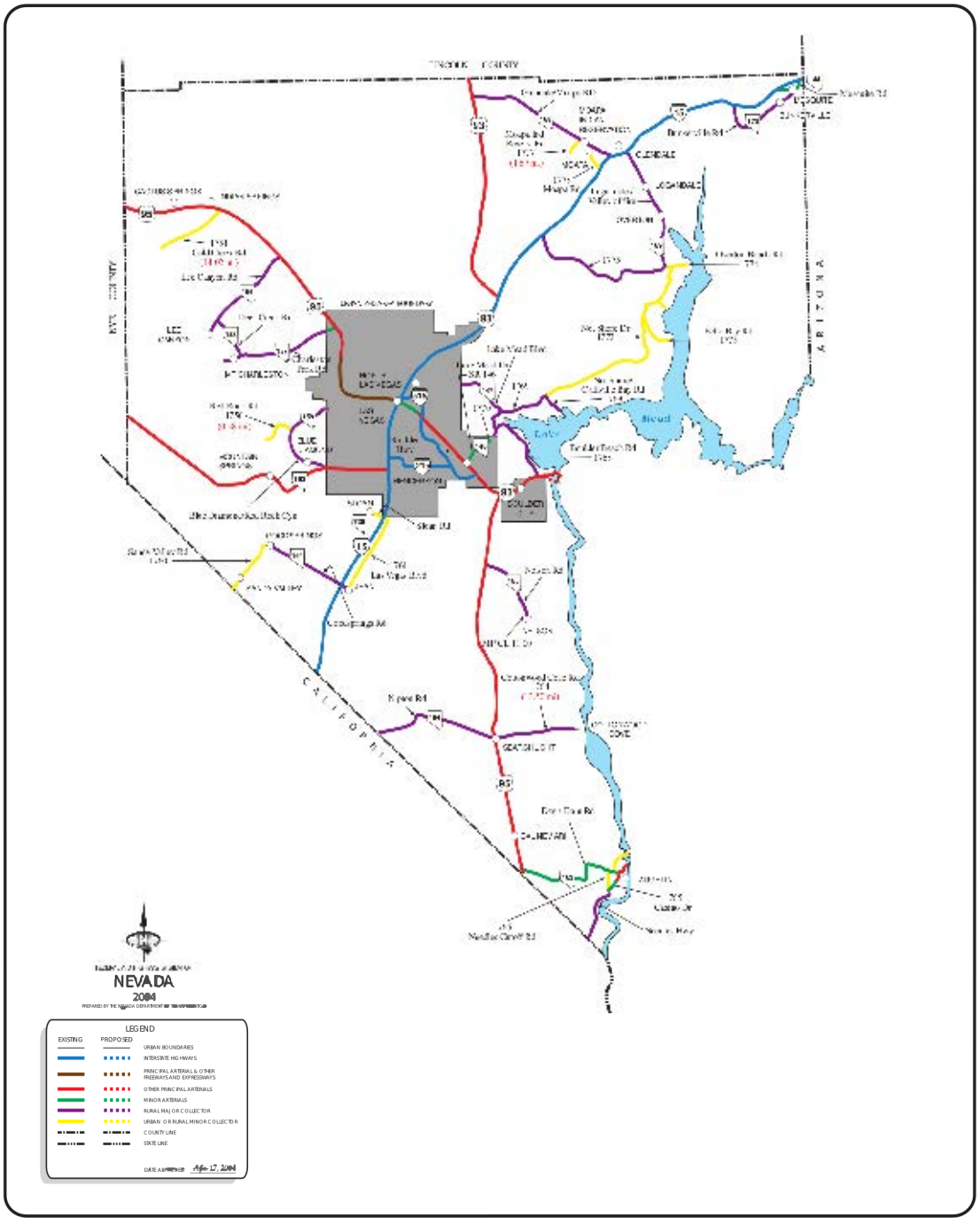


Figure 1: Roadway Functional Classification - Clark County

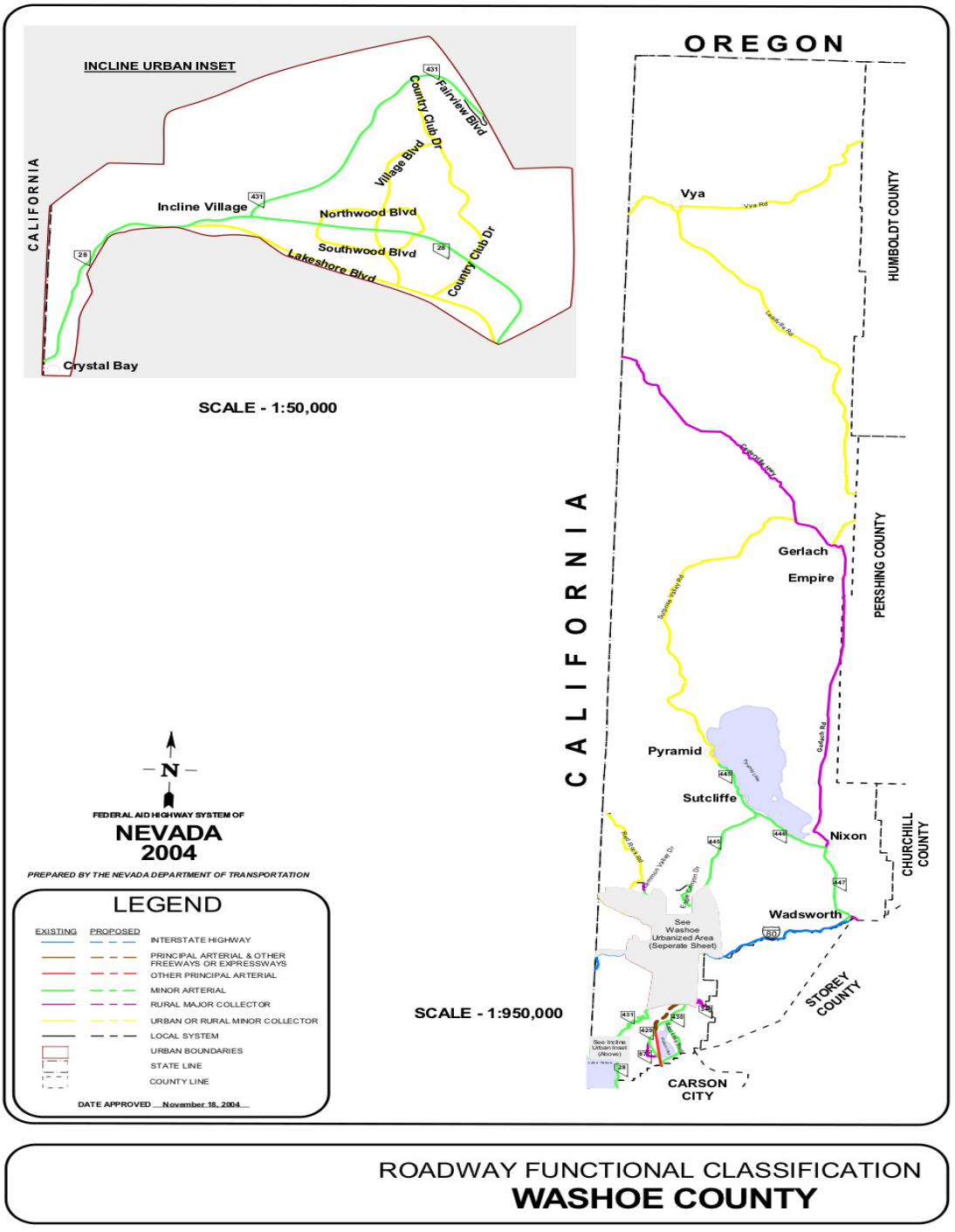


Figure 2: Roadway Functional Classification - Washoe County

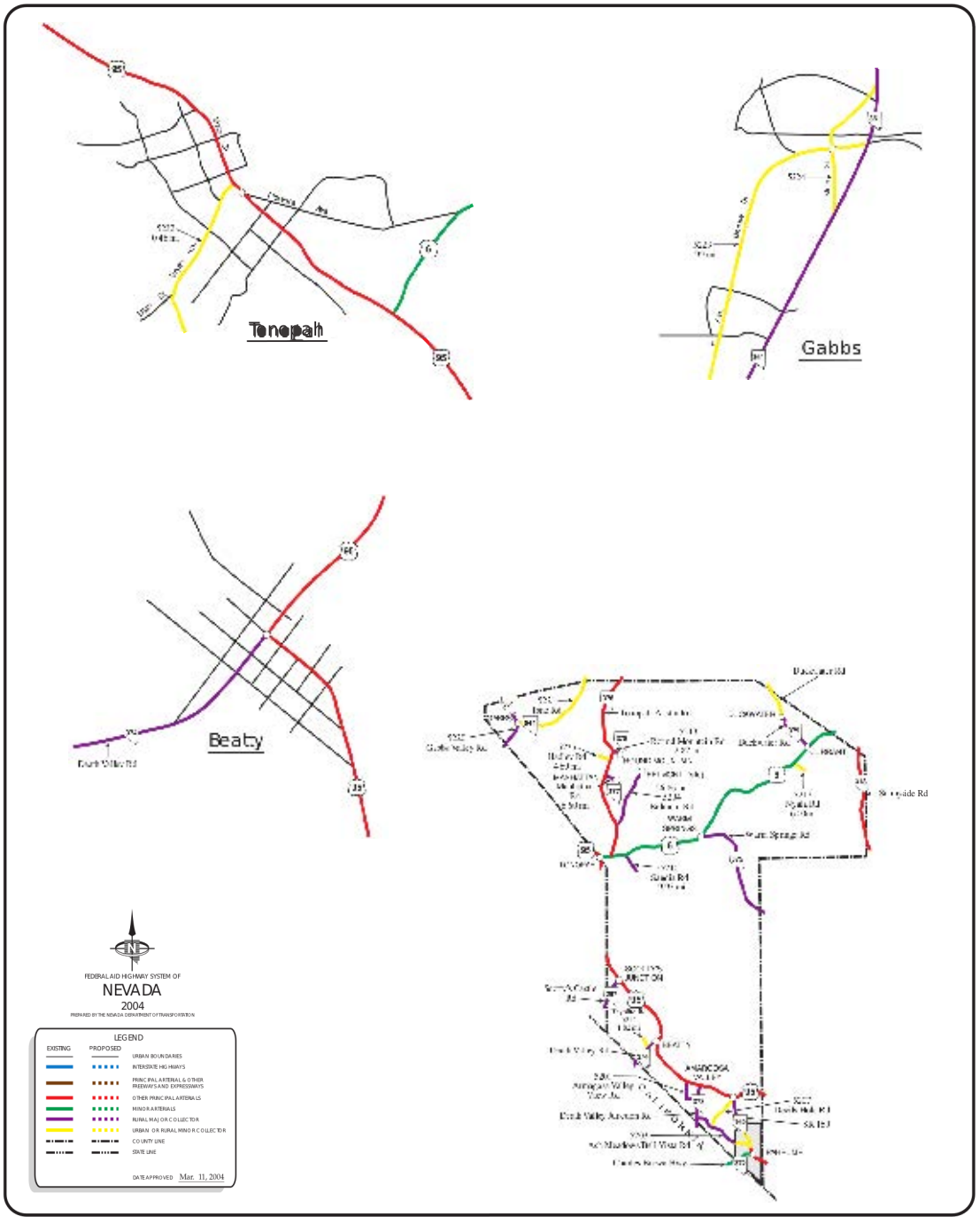


Figure 3: Roadway Functional Classification - Nye County

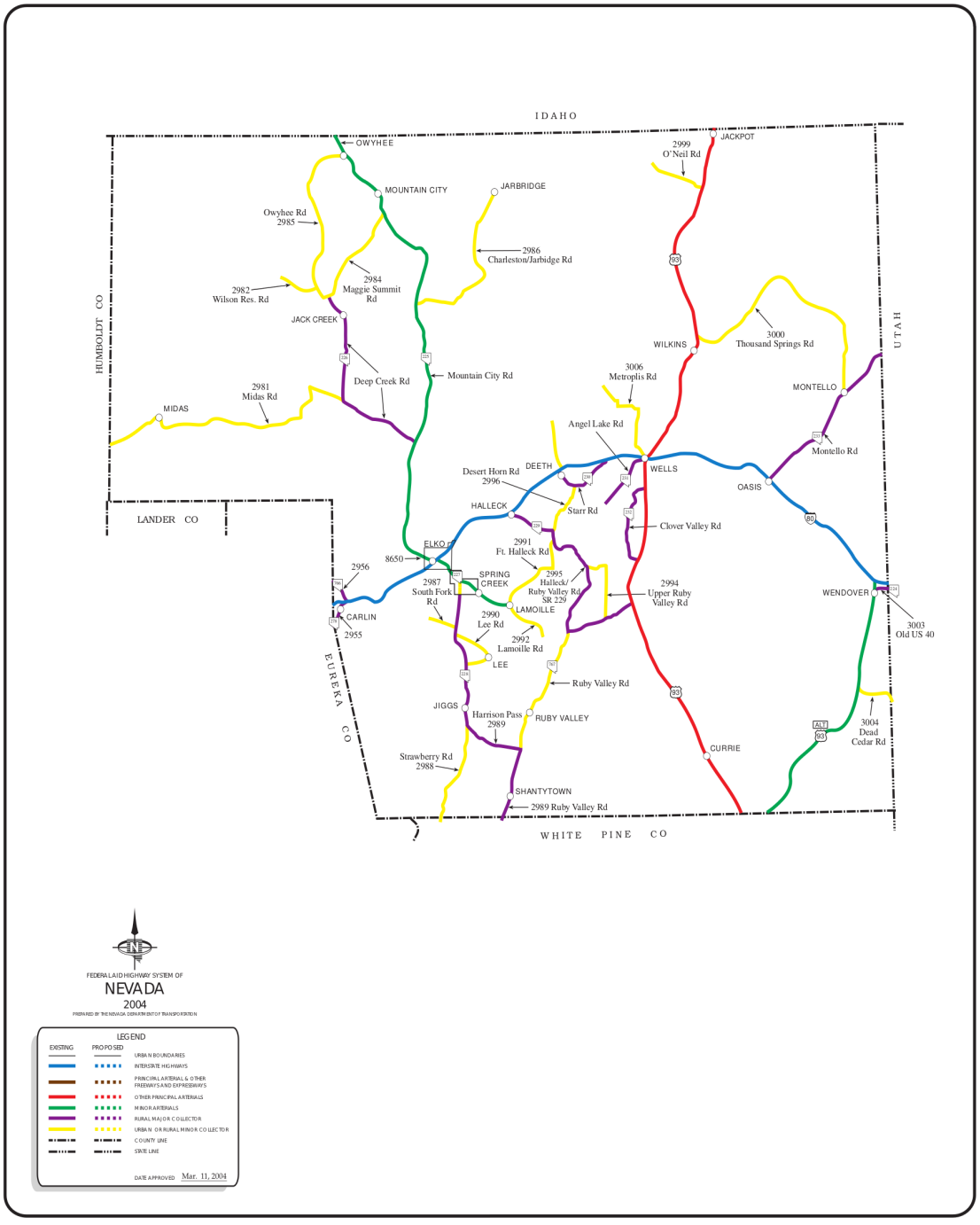


Figure 4: Roadway Functional Classification - Elko County

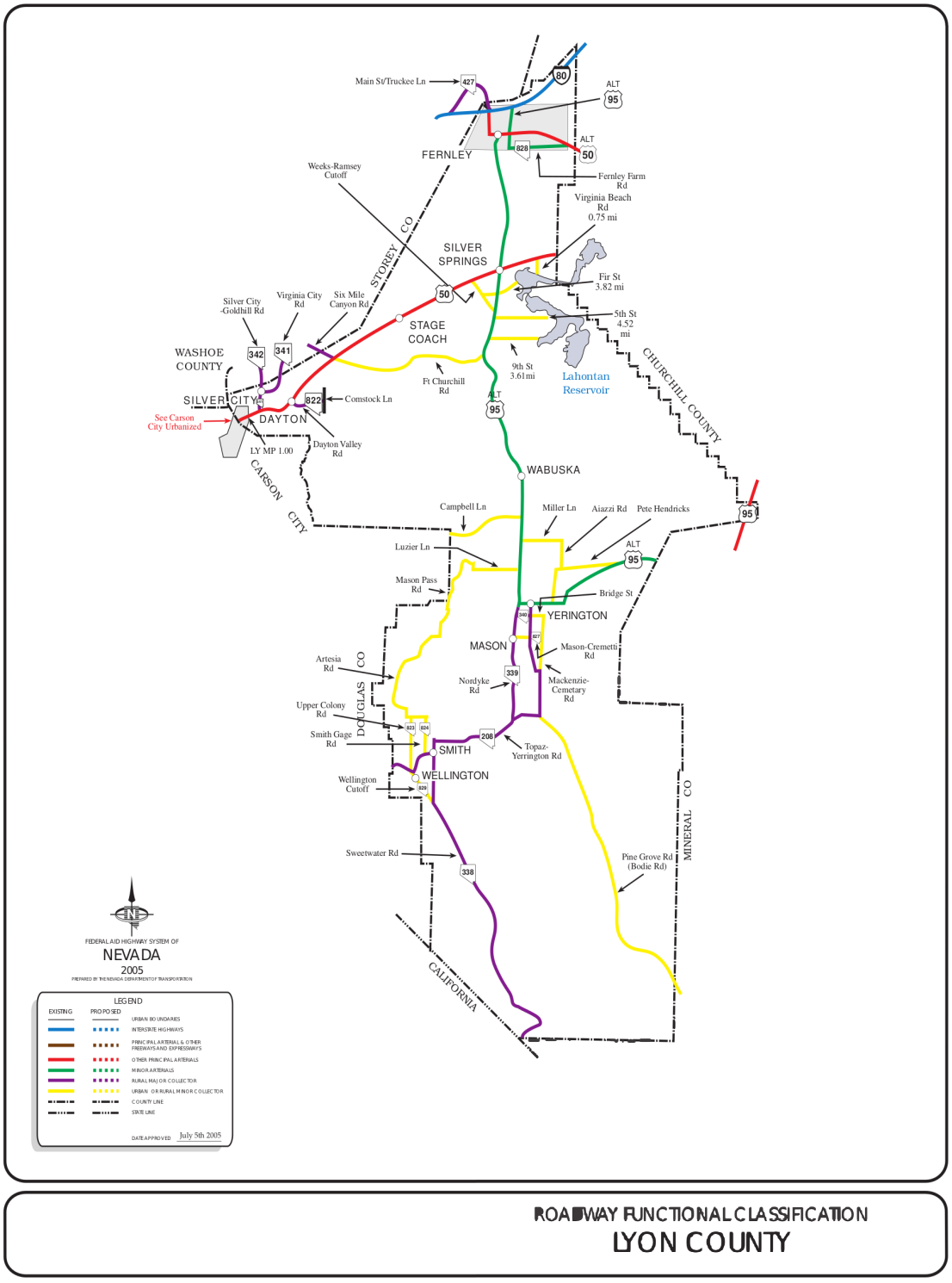


Figure 5: Roadway Functional Classification - Lyon County

Selection of Road Segments

Now the number of roadway segments to be selected from each stratum in a county is known, the roadway segment can be selected from the roadway segment database provided by NHTSA. The sampling method being used to select the roadway segment is based on selecting segments with probability proportional to size (PPS) where the length of roadway segment (in miles) is the measure of size (MOS).

Suppose r represents total number of roadway segments to be selected in a county c, r_{ch} represents total roadway segments to be selected from a stratum h in a given county c and M_{ch} is the total length of roadway segments in a stratum h of a county c. Then:

$$r_{ch} = r\frac{M_{ch}}{\sum M_{ch}} \tag{8}$$

Table 3 shows the number of roadway segments after applying the above division criteria from Stage 2. As shown in the table that the calculated values are fractions, rounding off the fraction to the next integer gives the number of roadway segments in each stratum.

Within each road-type stratum h, each selected road segment receives a selection probability given by $\pi_{hi|c}$ as:

$$\pi_{hi|c} = r_{ch}\frac{M_{chi}}{\sum M_{chi}} \tag{9}$$

Here M_{chi} is the measure of size (length) for roadway segment i.

Table 3: Number of roadway segments after Stage 2

County	Road-type	M_{ch}	r_{ch}
Clark	S1100	461.07	1.23
	S1200	511.65	1.37
	S1400	7258.81	19.40
Washoe	S1100	85.21	0.55
	S1200	324.91	2.09
	S1400	3014.71	19.37
Nye	S1100	0.67	0.0195
	S1200	752.98	21.9805
	S1400	0	0
Elko	S1100	254.07	6.95
	S1200	550.41	15.05
	S1400	0	0
Lyon	S1100	29.79	2.37
	S1200	246.34	19.63
	S1400	0	0

Table 4: Distribution of sites

Strata	Clark	Washoe	Nye	Elko	Lyon
S1100	2	1	1	7	3
S1200	2	3	22	16	20
S1400	20	20	0	0	0
Total Sites	**24**	**24**	**23**	**23**	**23**

The locations of 117 selected road segments for the survey is being shown in the Table 5, 6, 7, 8 and 9 along with their latitudes and longitudes. The table also displays the length of the road segment and the probability for its selection. These roadway segments are selected from the database obtained by NHTSA. Length of the roadway segments (in miles) was used a measure of size, due to the unavailability

of VMT data of the roadway segments in Nevada.

The roadway segments were sorted by segment length in ascending order and cumulative of the length was also generated for each county. After all certainty road segments were identified, a sampling interval (I) was calculated as the total length across all remaining road segments within the county divided by the number of road segments to select within each county. A random start (RS) was selected (using Microsoft Excel function RANDBETWEEN) between 0 and the calculated I, which determined the first road segment selected. Subsequent road segments selected were determined by adding multiples of I to the RS until the desired number of road segments was selected and/or the end of the sorted list was reached.

Table 5: Selected Road Segments: Clark County

Type	Location	Latitude	Longitude	Length	$\pi_{hi\|c}$
S1100	Summerlin Pkwy	-115.275875	36.177731	0.250014	0.001084495
	I - 15	-114.254226	36.777953	1.214737	0.005269209
S1200	W Charleston Blvd	-115.289165	36.159027	0.236655	0.000925066
	Northshore Rd	-114.513784	36.244201	1.352207	0.005285672
S1400	W Eldorado Ln	-115.212255	36.053229	0.012612	3.47495E-05
	W Sycamore Grove Ct	-115.230465	36.049584	0.030576	8.42452E-05
	Powder Brook Dr	-114.948202	36.007741	0.040135	0.000110583
	S Walnut Rd	-115.087658	36.148747	0.046446	0.000127971
	Parkhurst St	-115.094212	36.178273	0.050263	0.000138488
	E Lariat Dr	-115.08137	36.117488	0.057629	0.000158784
	Warbonnet Way	-115.265906	36.149015	0.066125	0.000182192
	N Golden Harmony St	-115.190195	36.270594	0.076543	0.000210897
	Prosser Creek Pl	-114.946672	36.005334	0.08725	0.000240398
	Mount Vernon Ave	-115.09515	36.121974	0.098101	0.000270295
	S Redwood St	-115.238439	36.056743	0.111403	0.000306946
	Winchester Dr	-114.970828	36.011925	0.119536	0.000329354
	Eula St	-115.312862	36.121612	0.126336	0.00034809
	W Alomar Ave	-115.23212	36.099335	0.13911	0.000383286
	Mantis Way	-115.095919	36.179164	0.16142	0.000444756
	W Winley Chase Ave	-115.141214	36.236277	0.189507	0.000522143
	Longridge Ave	-115.214587	36.156308	0.231223	0.000637082
	Redwood St	-115.238925	36.153535	0.258574	0.000712442
	E Magnasite Rd	-114.442044	36.517746	0.421842	0.00116229
	Gas Pipeline Rd	-114.909987	35.510734	1.079108	0.002973237

Table 6: Selected Road Segments: Washoe County

Type	Location	Latitude	Longitude	Length	$\pi_{hi\|c}$
S1100	I - 80	-119.92891	39.513164	0.352682	0.004138974
S1200	US Hwy 395	-119.995865	39.667676	0.063194	0.000583491
	Pyramid Hwy	-119.698095	39.706401	0.302983	0.002797541
	Sutcliffe Hwy	-119.529366	39.898536	0.851009	0.007857644
S1400	Welsh Dr	-119.853788	39.638191	0.022327	0.00014812
	Goldeneye Pkwy	-119.719417	39.660737	0.039327	0.000260901
	Sun Chaser Ct	-119.804788	39.409398	0.05013	0.000332569
	N Arlington Ave	-119.817331	39.526614	0.061085	0.000405246
	Centennial Mill Way	-119.947662	39.523685	0.070779	0.000469558
	H St	-119.769563	39.540693	0.082767	0.000549088
	W Pyramid Rd	-119.365285	39.825284	0.09582	0.000635683
	Celese Cir	-119.778549	39.428262	0.111354	0.000738738
	Schell Creek Ranch Rd	-119.382538	40.233633	0.126604	0.000839908
	Gadwall Way	-119.727708	39.657925	0.145391	0.000964544
	Wedge Pkwy	-119.763811	39.400137	0.166753	0.001106262
	S R 445	-119.809043	40.200018	0.192271	0.001275552
	Echo Canyon	-119.463874	40.444785	0.225948	0.00149897
	Gault Way	-119.74575	39.555863	0.26124	0.001733102
	W Riverview Cir	-119.844613	39.515111	0.325307	0.002158131
	Freds Mountain Rd	-119.862187	39.755718	0.411543	0.002730233
	Carat Ave	-119.725031	39.437929	0.539097	0.003576444
	American Flat Rd	-119.854285	39.726168	0.744348	0.004938107
	Buffalo Meadows Rd	-119.79405	40.689376	1.052187	0.006980353
	Burro Mountain Rd	-119.859991	40.537636	2.135227	0.014165389

Table 7: Selected Road Segments: Nye County

Type	Location	Latitude	Longitude	Length	$\pi_{hi\|c}$
S1100	Fieldi Rd	36.518627	-116.199428	0.6682	1
S1200	State Hwy 160	-116.004066	36.24857	0.035834	0.001046971
	State Hwy 160	-115.898216	36.154365	0.104363	0.003049199
	US Hwy 95	-115.968862	36.601174	0.151497	0.004426325
	US Hwy 95	-117.133124	37.37738	0.195873	0.005722869
	State Hwy 89	-117.854586	38.672099	0.23922	0.006989349
	US Hwy 95	-116.644096	36.740359	0.279868	0.008176971
	State Hwy 372	-116.098104	36.169369	0.328804	0.009606747
	State Hwy 844	-117.873962	38.896576	0.376476	0.010999591
	Irene St Exn	-115.918599	36.234813	0.432608	0.012639613
	US Hwy 95	-116.726476	37.00756	0.493261	0.014411727
	US Hwy 95	-117.16341	37.437732	0.545581	0.015940373
	State Hwy 89	-117.83346	38.655391	0.60121	0.017565699
	Grand Army Hwy	-116.745811	38.13019	0.682646	0.019945034
	State Hwy 379	-115.539156	38.795452	0.761149	0.022238676
	US Hwy 95	-116.607438	36.715495	0.836942	0.024453138
	US Hwy 6	-115.693473	38.606341	0.923484	0.026981657
	State Hwy 373	-116.407198	36.60504	1.001428	0.029258966
	State Hwy 89	-117.522103	38.439137	1.158264	0.033841281
	State Hwy 82	-116.776465	38.871012	1.321358	0.038606438
	State Hwy 82	-116.791482	38.837301	1.57858	0.046121756
	State Hwy 82	-116.922978	38.545644	1.895494	0.05538111
	US Hwy 95	-117.153746	37.413224	2.897429	0.084654889

Table 8: Selected Road Segments: Elko County

Type	Location	Latitude	Longitude	Length	$\pi_{hi\|c}$
S1100	I- 80	-115.739407	40.859283	0.129439	0.003566234
	I - 80	-114.487673	41.028123	0.282287	0.00777742
	I - 80	-114.868045	41.10746	0.402429	0.011087507
	I - 80	-115.450381	40.965315	0.583159	0.016066883
	I - 80	-115.908388	40.772556	0.853775	0.02352275
	I - 80	-115.512273	40.951052	1.265661	0.034870811
	I - 80	-115.973066	40.719956	2.020909	0.055678998
S1200	US Hwy 93	-114.793426	41.370712	0.03245	0.000943297
	Lamoille Hwy	-115.602901	40.722526	0.121041	0.00351857
	State Hwy 232	-115.039572	40.901761	0.194728	0.005660595
	State Hwy 226	-116.119963	41.527257	0.259607	0.007546578
	US Hwy 93	-114.990955	40.841913	0.321979	0.009359685
	State Hwy 228	-115.664156	40.559739	0.39221	0.011401246
	US Hwy 93	-114.709709	41.882491	0.459669	0.013362228
	US Hwy 93	-114.82713	41.689163	0.533434	0.015506521
	US Hwy 93	-114.826281	41.662745	0.607458	0.017658342
	Sagecrest Dr	-115.850254	41.138956	0.672545	0.019550372
	State Hwy 226	-116.203885	41.791148	0.755653	0.021966258
	State Hwy 233	-114.164291	41.279497	0.856303	0.024892077
	US Hwy 93	-114.821613	41.31604	0.989071	0.028751542
	US Hwy 93	-114.823498	41.300489	1.165277	0.033873716
	State Hwy 233	-114.259228	41.181007	1.460822	0.042464984
	US Hwy 93 Alt	-114.313201	40.325002	1.922501	0.055885642

Table 9: Selected Road Segments: Lyon County

Type	Location	Latitude	Longitude	Length	$\pi_{hi\|c}$
S1100	I- 80	-119.206331	39.619513	0.296914	0.029900705
	I- 80	-119.147128	39.664842	0.619625	0.062399295
	US Hwy 95	-119.312412	39.332661	1.503468	0.151406647
S1200	US Hwy 50	-119.607063	39.222803	0.055631	0.004516603
	US Hwy 95 Alt	-119.243489	39.284837	0.095889	0.007785094
	US Hwy 95 Alt	-119.238356	39.352713	0.13256	0.010762361
	US Hwy 95 Alt	-119.105558	38.997692	0.174641	0.014178858
	California Emigrant Trl	-119.228888	39.41459	0.214086	0.017381343
	State Hwy 208	-119.162406	38.926893	0.253339	0.020568239
	US Hwy 95 Alt	-119.214803	39.205675	0.294817	0.02393578
	State Hwy 208	-119.155343	38.901037	0.349374	0.028365186
	US Hwy 95 Alt	-119.180949	39.102135	0.418595	0.033985142
	State Hwy 208	-119.150993	38.895998	0.463811	0.037656166
	US Hwy 95 Alt	-119.252127	39.313138	0.50939	0.041356662
	State Hwy 341	-119.644508	39.233167	0.558989	0.045383535
	E Walker Rd	-118.993888	38.697361	0.639186	0.051894617
	State Hwy 208	-119.16346	38.94507	0.752394	0.061085816
	State Hwy 208	-119.229015	38.807725	0.853345	0.069281887
	E Walker Rd	-118.961264	38.553617	0.982719	0.079785581
	US Hwy 50	-119.61907	39.222259	1.153843	0.093678899
	E Walker Rd	-118.997441	38.628485	1.456087	0.118217667
	US Hwy 95 Alt	-119.204743	39.173016	2.230808	0.181116181
	State Hwy 338	-119.293939	38.682475	2.413111	0.195917106

Selection of Time Segments

addcontentslinetocsubsectionSelection of Time Segments To minimize the travel time and the distance required to conduct the surveys, observation sites have been grouped into geographic clusters. After road segments are selected, all selected road segments are mapped and grouped in close geographic proximity. Within each group, road segments are connected by the shortest route of roadways for data collection. Each group of road segments should be equivalent to one day of data collection work. A day of the week to begin data collection is assigned to a cluster (using the Random Function in the software program Microsoft Excel). All days of the week (including Saturday and Sunday) are eligible for selection. For the same, a function in Microsoft Excel would be used (RANDBETWEEN) which would generate random number between 0 and 6. Here 0 corresponds to Sunday and in the same order 6 corresponds to Saturday and so on.

Moreover, within a cluster, first site is randomly selected from the cluster and the remaining follow an operational efficient route, such that the overall travel time within the sites is minimized.

Seven 90-minute blocks of daylight time are identified for observations as follows:

- 7:00 AM - 8:30 AM
- 8:30 AM - 10:00 AM
- 10:00 AM - 11:30 AM
- 12:30 PM - 2:00 PM
- 2:00 PM - 3:30 PM
- 3:30 PM - 5:00 PM
- 5:00 PM - 6:30 PM

One observation time period is 45 minutes within any of the aforementioned time blocks.

The observing time segment at road segment i denoted as t_{chij} was fixed to 45 minutes ($\frac{3}{4}$ hour). The total number of eligible hours in an year is 4,015 hours (365 days multiplied by 11 hours per day). Then the selection probability of time segment j for a roadway segment i in a stratum h of a county c is given by $\pi_{j|chi}$ as:

$$\pi_{h|chi} = \frac{t_{chij}}{4,015} \tag{10}$$

Determination of Site Location on Road Segments

According to Criterion 1340.5.b.1, the specific observation site locations on the sampled road segments may be deterministically selected. The site for road segment i shall be the first intersection or ramp encountered on the selected road segment i when travelling along the shortest route connecting all the selected road segment for the collection day. If there is no intersection or ramp on the road segment, then any point on the road can be selected for observation.

Selection of Vehicle to be Observed

After the road segment sample is selected and the observation site is determined, the subsequent sample selection may be performed by the data collector on site. At the observation site of the selected roadway segment, the data collector will first record how many roadway directions and lanes are on the selected road segment. If there are more than one roadway directions or lanes are present and data collector can observe only one, then the data collector will randomly select one direction or lane. Therefore the direction selection probability is:

$$\pi_{k|chij} = \frac{d_{chij}}{D_{chij}} \tag{11}$$

Here D_{chij} is the total number of directions, d_{chij} is the number of directions to be observed at county c, road type stratum h, road segment i and time segment j.
Then data collector will record total number lanes (L_{chijk}) in the selected directions and decide how many lanes can be observed conveniently (l_{chijk}).Then the lane

selection probability is given by:

$$\pi_{l|chijk} = \frac{l_{chijk}}{L_{chijk}} \tag{12}$$

As the total number of vehicles passing the observation site is unknown before the observation, it is impossible to randomize the selection of vehicles in advance. Therefore, the data collector will observe as many vehicles as possible during the time segment and at the same time to keep a record of total number of vehicles passing the selected lanes during the observation time. Then the vehicle selection probability is:

$$\pi_{m|chijl} = \frac{e_{chijkl}}{E_{chijkl}} \tag{13}$$

Here e_{chijkl} is the number of observed vehicles in the selected lanes and E_{chijkl} is the total number of vehicles passing the selected lanes during the observation time.

Selection of Alternate Sites

Criterion 1340.5.b requires that states propose a protocol for selecting alternate sites. These sites should have a similar characteristics as the site for which they are serving as alternate. The alternate observation sites must be in the same county and the same road classification as the observation site the state is replacing. If an observation site is temporarily available, observers can either return to the observation site on the same day of the week and at the same time of the day. If a site is permanently unavailable then the observers can select an alternate site, by travelling on the road segment until they reach an (different) intersection on the same road, and that intersection shall serve as the alternate site. The data collectors will be trained in this protocol and to exercise it in the data collector training.

For future studies, to replace permanently unworkable sites, alternate sites would be selected probabilistically. To ensure that the alternate is has the same characteristics as the original, it will be selected from the road segments immediately preceding and immediately following the original road segment actually selected, and thus are implicitly stratified by functional classification group and segment length to correspond to the original road segment actually selected. Thus, these are considered

selected with PPS using road segment length as MOS by the same approach as the original site. Thus, for the purposes of data weighting, the reserve road segment inherits all probabilities of selection and weighting components up to and including the road segment stage of selection from the original road segment actually selected. Probabilities and weights for any subsequent stages of selection will be determined by the reserve road segment itself.

Assignment of Observation Times

Criterion 1340.6 requires that all hours between sunrise and sunset be eligible for assignment in data collection. The data collection time has been fixed for 45 minutes at all sites. Table 10 presents a tentative schedule of data collection for two different teams.

Table 10: Observation Schedule

Task	Schedule A	Schedule B
Collect data at the first site	7:00-7:45 a.m.	7:45-8:30a.m.
Travel to second site	7:45-8:30a.m.	8:30-9:15a.m.
Collect data at the second site	8:30-9:15 a.m.	9:15-10:00a.m.
Travel to third site	9:15-10:00a.m.	10:00-10:45a.m.
Collect data at the third site	10:00-10:45 a.m.	10:45-11:30a.m.
Travel to fourth site	10:45-11:30a.m.	11:30a.m.-12:15p.m.
Collect data at the fourth site	11:30a.m.-12:15p.m.	12:15-1:00p.m.
Travel to fifth site	12:15-1:00p.m.	1:00-1:45p.m.
Collect data at the fifth site	1:00-1:45p.m.	1:45-2:30p.m.
Travel to sixth site	1:45-2:30p.m.	2:30-3:15p.m.
Collect data at the sixth site	2:30-3:15p.m.	3:15-4:00p.m.

continued on next page

continued from previous page		
Strata	Schedule A	Schedule B
Travel to seventh site	3:15-4:00p.m.	4:00-4:45p.m.
Collect data at the seventh site	4:00-4:45p.m.	4:45-5:30p.m.
Travel to eighth site	4:45-5:30p.m.	5:30-6:15p.m.
Collect data at the eighth site	5:30-6:15p.m.	6:15-7:00p.m.

Observation Protocols

After deciding about the observation sites and observation time another important aspect of the survey is to record the data. The following subsection explains in detail the variable which will be recorded during the survey. The state will hire 4 data collectors. They will be paired and each team would be send to an observation site. To have the observation uniform and with minimum error same set of data collectors would be used in each county.

Survey Variables

The survey shall record a motorist as "belted" if the data collector recording the data can see or reasonably infer that the shoulder belt is in front of the motorist's shoulder. The survey shall record motorist as "non belted" if the data collector verbalizing the data can see or reasonably infer that the shoulder belt is not in front of the motorist's shoulder. Other cases shall be recorded as belt use "unknown". In case there is no right-front passenger in the vehicle, it will be recorded as "no passenger (NP)" by the data collectors.

Vehicle and Occupant Coverage

The data collectors will observe the driver and right-front passenger of all passenger vehicles up to 10,000 pounds. The data collector will also record the seat-belt

status (Belted/Non belted/Unknown), gender (Male/Female), age group (< 15/15-19/20-60/> 60), ethnicity (Caucasian/African-American/Hispanic/Other), State of registration of vehicle (NV/CA/Other), Vehicle Type (Sedan, SUV/Van, Truck) for both the driver and the right-front passenger. The survey will include right-front passengers who appear to be in booster seats. Although children in safety seats would be excluded. Apart from the observed vehicles, the data collectors will also record the total number of vehicles crossed during the observation period, from the observed lane in the corresponding direction being observed.

Data Collection Environment

Data collectors will wear casual clothing with an orange/green safety vest. Neither police vehicles nor people on law enforcement uniforms shall be visible to motorists at the observation sites. No signage or other communication shall be perceivable to motorists approaching the observation sites that would indicate that a seat belt survey will be conducted. This is to avoid any bias in the data collected. Although to ensure safety of the data collectors a traffic safety cone is encouraged to be kept at the front and back of the vehicle.

Data Collection Software

An iPhone application was developed at Transportation Research Center (TRC), UNLV to be used by the observers during data collection process. The software is shown in Figure 6a and 6b. The seat-belt status of the driver and right front passenger was recorded during the survey. Moreover, driver's age, right front passenger's age, driver's gender, right front passenger's gender, vehicle type, license of registration were also recorded. The data collection software also provides the option to record the name of the observation site, total and observed directions, total and observed lanes in the observed direction, road and weather conditions, date and time of the observation as shown in Figure 6a. The abbreviations used in the data collection software, Figure 6b are as follows:

1. **Seat-belt Status:** As mentioned in the PART 1340Uniform Criteria for State Observational Surveys of Seat-belt Use, that observer should record driver's and right front passenger's seat-belt status as:

    - Belted (B), if the observer can clearly observe a seat-belt over the shoulder
    - Unbelted (NB), if the observer can clearly observe no seat-belt over the shoulder
    - Unknown (U), if the observer cannot clearly observe a seat-belt

2. **License of Registration:** The license of registration of the vehicles was mainly divided into three categories. The data collectors were trained to look at the license plate of the vehicle and identify the state of registration of the vehicle. As obtained from the historic data, that majority of the vehicles were registered in Nevada, this was set as a default in the entry form. In addition to, any license plate not belonging to either Nevada or California was identified as Other.

    - N - Nevada Registered
    - C - California Registered
    - O - Other State Registered (vehicles not registered in Nevada and California)

3. **Type of Vehicle:** To ease the data collection process, vehicles were primarily divided into three major categories. The data collectors were thoroughly trained to identify the type of vehicle by observing the size of the vehicle. Sedan/Station Wagons were set as default in the data entry form to speed up the data collection process. This was done based on the historical data for Nevada.

    - S - Sedan/Station Wagon
    - SV - SUV/Mini Van
    - T - Pickup Truck

4. **Ethnicity:** This category was broadly divided into four sub categories. During the training period the data collectors were trained to identify the ethnicity of people by looking at them.

    - C - Caucasian
    - AA - African American
    - H - Hispanic
    - O - Other (people not belonging to the above ethnic groups)

5. **Age - Gender:** The age and gender were combined and recorded as one observation. The age was sub divided into following four categories, <15, 15-19, 20-60 and >60 years. The observers were trained to predict the best possible estimate for a person's age group depending on the above mentioned categories.

    - M (Men) - Male with 20-60 years of age
    - W (Women) - Female with 20-60 years of age
    - TM (Boys) - Male with 15-19 years of age
    - TF (Girls) - Female with 15-19 years of age
    - EM(Elderly Men) - Male with >60 years of age
    - EF (Elderly Women) - Female with >60 years of age
    - CM (Younger Boys) - Male with <15 years of age
    - CF (Younger Girls) - Female with <15 years of age

The green half of data collection template, as shown in Figure 6b, is for collecting data related to the driver. The pink half of the template is used for collecting data according to the observed passenger. The observers were well trained before the actual data collection on this software. Survey forms in paper were also printed as a backup.

Figure 6: Data Collection Software

Observation Protocols

The exact observation sites, including specific road segments, time of day, day of week and direction of vehicle travel, were determined prior to observers conducting the survey. The observer was not authorized to make any changes to these pre-selected aspects of the survey unless authorized by a supervisor. Observed motor vehicle occupants (either driver or front seat passenger) wearing shoulder belts were only considered as belted occupants, others wearing lap belts or wearing no seat belts were not considered as 'belted'. What follows is a discussion of the methodological protocols for the observations used for this study:

- **The order of observation:** Within the clusters, the order of observation was assigned with the use of a random numbering procedure. For sites outside the clusters, the order was determined by proximity to clustered sites.

- **Traffic direction:** In those cases where the roadway moves in only one direction, no real choice was involved. If a site was situated proximate to a county line, the traffic direction toward the county was associated with the survey. In all other instances involving a decision of direction, a randomization process was employed.

- **Vehicles observed:** All passenger vehicles were observed and classified on the observation form as sedans/station wagons, vans, sport utility vehicles or pickup trucks.

- **Occupants observed:** The drivers and outboard passengers in the passenger vehicles selected were observed for seat belt usage. The gender of these occupants was recorded along with the seat belt usage information. Any occupant who appeared to be younger than 15 years of age was considered as a Younger Boy. We recognize that this is a subjective determination. Observers were provided training to help make consistent judgement in this regard. The observers included right-front passengers who appeared to be in booster seats, although children in safety seats were excluded from the survey.

- **Traffic conditions and data collection problems** Observers were trained to cope with traffic problems. When traffic is heavy and there were too many vehicles to count visually, counting was done as long as possible and then stopped until the observers count could catch up with the observations. Some vehicles, out of necessity, were skipped under these circumstances. When this occurred, counting resumed after no more than a one-minute pause. Once an observers eyes were locked on a vehicle, a count of that vehicle was entered on the observation form.

  - At sites with more than one lane of traffic in the predetermined direction, observations were made from the lane closest to the observer.
  - Field observers were allowed to terminate a pre-selected set of observations if any of the following circumstances arose: 1) extreme weather conditions that would hinder the accuracy of the observations; 2) traffic flow that is heavy enough to endanger the safety of the observer; 3) traffic crashes, traffic conditions, or road construction that would render the observations unfeasible, especially when a detour is involved. If observations at a pre-selected site were to be terminated, the observer was to note the reason and mark the time of termination on the form. The observer was instructed to notify the supervisor about the termination as soon as possible.

- **Site accessibility problems:** If a pre-selected site was not available on the survey date or time, the observer made the following modifications:

  - On mile-posted roads, observations were to be made at a location with a mile point that was one mile higher on the same roadway in the same direction as the assigned traffic flow. If this point was not accessible, more miles were added in one-mile increments, up to three miles. Such changes were noted on the observation form.
  - On non-mile point streets and local roadways, the observer was to proceed in the same direction as the assigned traffic flow in one-quarter mile

increments, not to exceed three-quarters of a mile, until an appropriate observation site was found and so noted on the observation form.

  - In cases of road construction or other road obstruction where traffic was detoured, the observer was required to select a site on the detour as close to the original site as possible, no more than two miles away on mile-pointed roadways and no more than one-half mile on non-mile-pointed roadways. The change in site location and the reason for the change was be noted on the observation form.

- **Observations** Safety belt usage and gender characteristics were recorded for drivers and outboard passengers in the front seat in the four identified vehicle types. In addition to observing and documenting this data, observers recorded other data from which additional information could be acquired. Driver and passenger gender were noted to determine usage rates by gender. In-state and out-of-state registered vehicles were noted to identify the usage rate of Nevada registered vehicle occupants vs. those from out-of-state. Observations occurred from the observers vehicle whenever possible. If an observer was unable to observe from his vehicle, she was allowed to stand off the roadway, and was required to wear a safety vest for visibility.

Quality Control Procedures

According to the new criteria 1340.8.a, to monitor the surveys a Quality Control (QC) Monitor will be employed. The state plans to employ one QC Monitor who will make unannounced random visits to 5 percent of the observation sites. During these visits, the QC Monitor will first evaluate the Data Collectors performance from a distance (if possible), and then work alongside the Data Collector. The schedule for the data collection would be given before hand to the QC monitor with the observation time at each observation site.

The QC Monitor will ensure that the data collector is following all survey protocol including: being on time at assigned sites, completing the cover sheet and obser-

vation forms, and making accurate observations of seat belt use. The QC Monitor will prepare a site visit report highlighting any problems with data collection site locations and Data Collector performance. The quality control monitor also serve as a point of contact during the data collection should the data collectors have a question arising during this time.

The QC Monitor will review the data. If the rate of unknowns exceeds 10% for any site (potentially leading to an overall nonresponse rate of 10% or more), then the data collector will be sent back to that site for an additional observation period.

The state plans to send to two data collectors at each site. Thus two teams comprising of two data collectors each would be formed, to speed up the process of data collection. The data collectors will be thoroughly trained before the survey in each type of scenario, like high/medium/low volume of traffic. Also to ensure safety of the data collectors, they will also be briefed about the common safety procedures to be followed while doing the survey.

Computation of Estimates

Sampling Weights

The following is a summary of the subscripts used in the design.

- c - Subscript for county
- h - Subscript for road segment strata
- i - Subscript for road segment
- j - Subscript for time segment
- k - Subscript for road direction
- l - Subscript for lane
- m - Subscript for vehicle

Under this stratified multistage design, the inclusion probability for each observed vehicle is the product of selection probabilities at all stages: π_c for county, $\pi_{hi|c}$ for road segment, $\pi_{j|chi}$ for time segment, $\pi_{k|chij}$ for direction, $\pi_{l|chij}$ for lane and $\pi_{m|chijl}$ for vehicle. So the overall vehicle inclusion probability is:

$$\pi_{chijklm} = \pi_c \pi_{hi|c} \pi_{j|chi} \pi_{k|chij} \pi_{l|chij} \pi_{m|chijl} \tag{14}$$

The sampling weight for vehicle m is:

$$w_{chijklm} = \frac{1}{\pi_{chijklm}} \tag{15}$$

Nonresponse Adjustment

If eligible vehicles passed an eligible site or an alternate eligible site during the observation time but no usable data was collected for some reason, then this site is considered as a "non-responding site". The weight for a non-responding site should be distributed over other sites in the same road type in the same PSU. However, for PSU's having only one site in the sample, data would be collected again on the same day and same time of the week. Also, if this doesn't works out then an alternate site would be selected and data would be collected on the same day and same time of the week at that site. Let

$$\pi_{chi} = \pi_c \pi_{hi|c} \tag{16}$$

be the road segment selection probability,

$$w_{chi} = \frac{1}{\pi_{chi}} \tag{17}$$

be the road segment weight. Factor

$$f_{ch} = \frac{\sum_{alli} w_{chi}}{\sum_{resdpondingi} w_{chi}} \tag{18}$$

is multiplied to all weights of non-missing road segments in the same road type of the same county and the missing road segments are dropped from the analysis file. However, if there were no vehicle passing the site during the selected observation time (say 45 minutes) then this is simply an empty block at this site and this should not be considered as non-responding site. This site may be dropped for estimation but no adjustment is needed.

Belt Use Rate Estimator

Let the driver/passenger belt use status be:

$$y_{chijklmn} = \begin{cases} 1, & if belted \\ 0, & otherwise \end{cases} \tag{19}$$

The first belt rate estimator to be considered is a ratio estimator given by:

$$p = \frac{\sum_{allchijklm} w_{chijklm} y_{chijklmn}}{\sum_{allchijklm} w_{chijklm}} \tag{20}$$

This estimator does not require the knowledge of VMT data for a state.

Variance Estimation

As the sampling process is divided in multiple stages, direct variance estimation for belt use rate estimator can be complicated, tedious and costly. Hence, a specialized software designed to handle this kind of design and estimator would be used. The ratio procedure in RTI International's SUDAAN software [4] along with the joint PSU selection probability to calculate the seat belt use rate and its variance could be used.

Conclusions

The seat belt usage survey methodology for Nevada was designed by UNLV for the fiscal year 2012. The instructions and guidelines mentioned in the Uniform Criterion and the Complaint example given as an aid by NHTSA were followed completely. The fatality dataset used for sampling the counties comprises of 5 years of average fatality index and has been provided by NHTSA. As after the first stage sampling, only 5 counties were left in the sampling frame, so all 5 have been retained for further sampling stage. This was done after consulting with NHTSA. Moreover, the roadway segment database was also provided by NHTSA which was used for selection of roadway segments in the selected counties. The length of the roadway

segment has been used as a measure of size for selection of roadway segments using probability proportional to size. The name of sites along with their geographical location has been given in Table 5, 6, 7, 8, 9 . On these locations, data collector will decide for a safe spot for data collection, abiding all the rules set for the process. These sites would be grouped together depending on their locations and the schedule for data collection would be developed as given in Table 10.

It is expected there will be a sample size of approximately 88 vehicles per observation site and 9,680 vehicles overall based on historical data with the Nevada's Annual Seat Belt Use Study. Based on this the standard error is expected to be less than 2.5%. In the event there is a standard error greater than 2.5%, more data will be collected from existing sites.

Statewide Summary

Statewide Information

During both the surveys, only front seat occupants were observed. A total of 10,075 vehicles were observed during the Pre-Mobilization survey. Similarly, 11,387 vehicles were observed during the Post-Mobilization survey. The unweighted seatbelt usage rate for front seat occupants was 88.83% for the Pre-Mobilization survey (12,276 front seat occupants) and 90.74% for the Post-Mobilization survey (14,411 front seat occupants). On the other hand, the weighted seatbelt usage rate calculated on the basis of the length of road segment was estimated to be 86.81% with a standard deviation of 0.010345 during the Pre-Mobilization survey, and 89.41% with a standard deviation of 0.012424 during the Post-Mobilization survey. The following sections breakdown the seatbelt usage rate by different classifications such as gender, age, county, etc. Figures are given for the statewide percentages, and tables for sites in detail.

Seatbelt Usage by Driver and Passenger

Including all the sites in the calculation of the seatbelt usage rates, it was found that the seatbelt usage rates for passengers (92.19%) was higher than that of the drivers (88.10%) during the Pre-Mobilization survey. The passengers (93.29%) had a higher seat belt usage rate than the drivers (90.07%) during the Post-Mobilization survey.

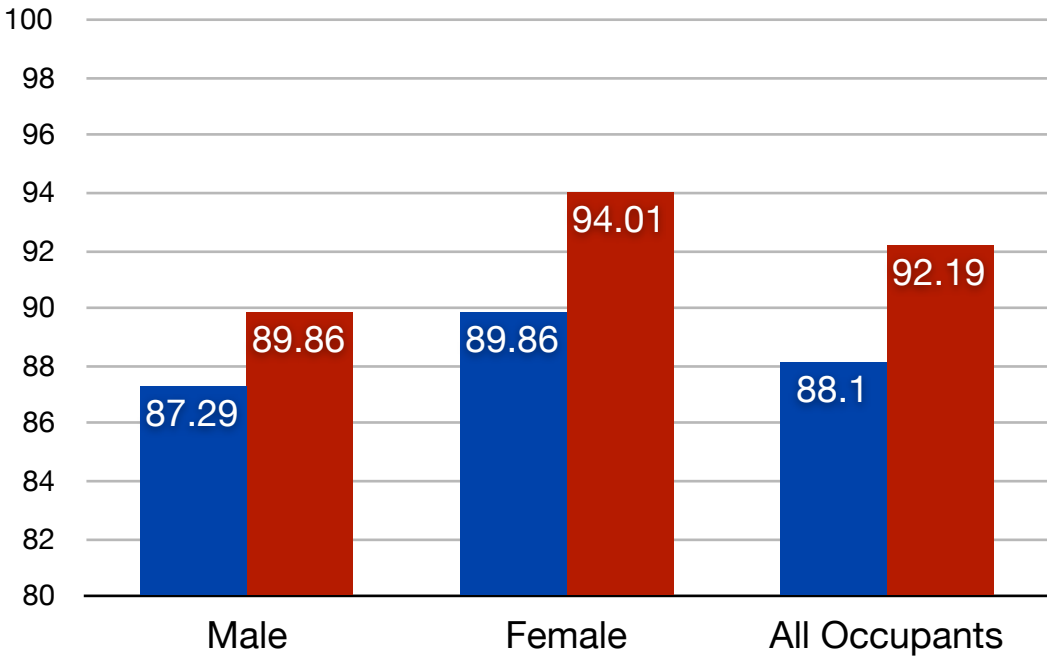
Figure 7 displays the statewide seatbelt usage for drivers, passengers, and front seat occupants combined during Pre-mobilization and Post-mobilization respectively.

Table 11 shows the seatbelt usage in percent by drivers, passengers, and overall occupants, for the Pre-Mobilization survey. Similar information is provided in Table 12 for the Post-Mobilization survey. These tables also provide information about the gender for the drivers and passengers.

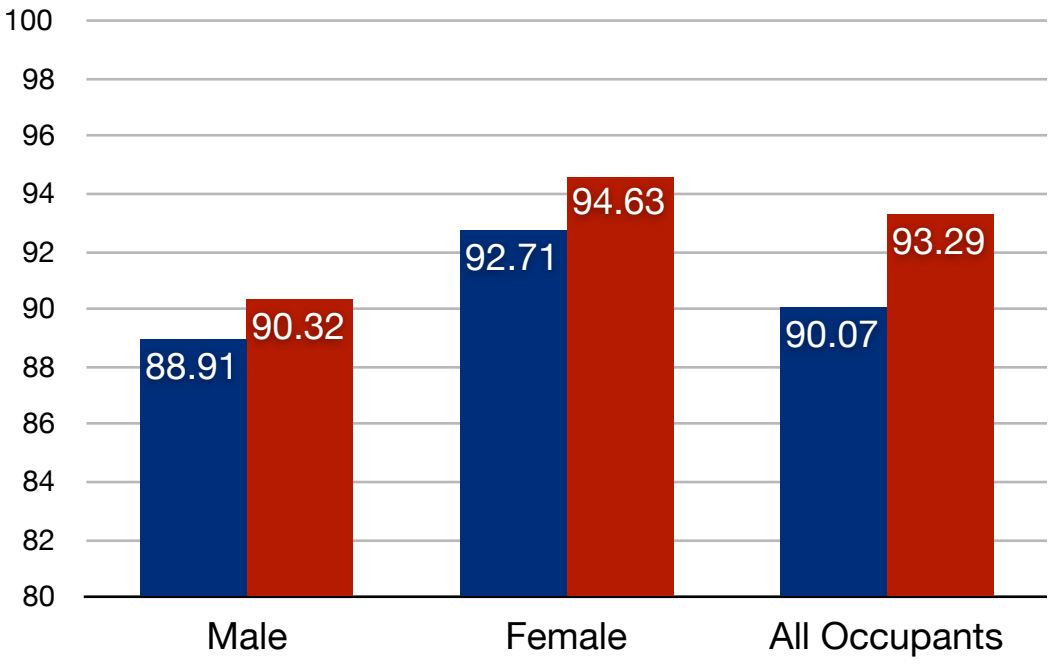
According to Table 11 and 12, it can be observed that Site 25: Fieldi Rd located at Nye county, has no observations in both pre-mobilization and post-mobilization surveys. The site was a rural dirt road without a proper path or a roadway to drive. The observers also looked up for its alternate, but the roadway database provided for Nye county had only one roadway for the particular roadway category and hence, the site was selected with certainty. However, for the weighted analysis this site has been excluded.

Figure 7: Statewide Seatbelt Usage for Drivers and Passengers in Percent

(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Table 11: Statewide Seatbelt Usage in Percent during Pre-Mobilization Survey

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
1	81.16	91.07	85.60	44.44	91.67	71.43	83.56
2	98.85	97.73	98.62	100.00	100.00	100.00	99.02
3	96.39	99.32	97.66	85.71	100.00	95.45	97.41
4	78.26	100.00	83.87	100.00	93.33	95.24	88.46
5	85.61	83.33	84.80	100.00	90.00	92.31	85.65
6	91.67	81.63	88.28	100.00	91.67	93.33	89.14
7	81.36	96.55	86.36	100.00	100.00	100.00	88.00
8	72.50	71.05	71.79	71.43	90.00	82.35	73.68
9	94.74	89.47	92.98	40.00	100.00	76.92	90.00
10	77.14	82.93	79.68	85.00	76.19	80.49	79.82
11	89.80	93.48	91.58	0.00	100.00	85.71	91.18
12	84.26	91.01	87.31	88.24	94.44	91.43	87.93
13	84.21	95.45	88.33	100.00	87.50	92.31	89.04
14	85.11	85.96	85.43	90.91	88.89	89.47	86.24
15	88.77	91.21	89.57	91.67	100.00	98.00	90.85
16	95.24	96.72	95.78	100.00	91.67	95.24	95.72
17	80.00	93.75	85.06	100.00	80.00	88.89	85.42
18	75.61	75.00	75.51	50.00	100.00	75.00	75.44
19	61.54	72.73	64.86	100.00	100.00	100.00	71.74
20	77.42	88.73	81.54	89.47	96.00	93.18	83.68
21	86.30	85.11	85.83	50.00	75.00	66.67	84.92
22	87.96	87.30	87.72	80.00	100.00	90.00	87.85
23	80.39	78.57	80.00	71.43	96.00	90.63	83.51
24	93.67	91.30	93.14	90.91	100.00	97.78	94.56

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	76.92	94.12	81.16	88.89	100.00	94.74	82.80
27	81.90	86.11	82.98	92.31	94.44	93.88	85.79
28	98.39	92.31	97.33	(0/0)	100.00	100.00	97.70
29	81.90	86.11	82.98	92.31	94.44	93.88	85.79
30	100.00	(0/0)	100.00	100.00	(0/0)	100.00	100.00
31	87.76	92.31	88.71	88.89	90.91	90.32	89.25
32	95.35	92.31	94.64	100.00	100.00	100.00	96.20
33	100.00	100.00	100.00	(0/0)	100.00	100.00	100.00
34	77.05	92.00	81.40	66.67	85.71	82.35	81.55
35	88.37	81.25	86.44	100.00	93.75	94.44	88.31
36	88.89	100.00	90.63	100.00	100.00	100.00	92.31
37	97.26	93.75	96.63	75.00	92.31	90.00	94.96
38	94.74	100.00	95.00	100.00	100.00	100.00	96.00
39	85.71	100.00	90.91	100.00	100.00	100.00	94.12
40	90.16	95.00	91.36	80.00	100.00	96.43	92.66
41	80.00	(0/0)	80.00	(0/0)	(0/0)	100.00	83.33
42	94.12	100.00	95.00	100.00	100.00	100.00	96.67
43	89.09	90.91	89.39	100.00	100.00	100.00	90.54
44	100.00	100.00	100.00	100.00	100.00	100.00	100.00
45	90.00	100.00	92.31	100.00	100.00	100.00	93.75
46	45.45	100.00	57.14	(0/0)	25.00	25.00	50.00
47	90.91	100.00	92.66	100.00	91.89	92.86	92.72
48	92.86	94.00	93.18	100.00	100.00	100.00	93.48
49	93.65	95.83	94.00	100.00	100.00	100.00	95.31
50	91.89	96.77	93.33	100.00	100.00	100.00	93.86
51	72.73	60.00	68.75	(0/0)	100.00	100.00	78.26

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
52	77.33	88.57	79.46	87.50	100.00	93.75	80.60
53	78.57	83.33	80.77	100.00	100.00	100.00	83.87
54	88.73	97.26	93.06	100.00	100.00	100.00	93.98
55	85.48	90.76	88.07	(0/0)	0.00	(0/0)	88.07
56	96.97	95.83	96.49	100.00	100.00	100.00	96.77
57	83.33	0.00	71.43	(0/0)	100.00	100.00	77.78
58	80.00	100.00	82.35	100.00	100.00	100.00	87.50
59	84.09	94.00	89.36	100.00	91.67	94.44	90.18
60	60.00	27.27	51.22	33.33	27.27	28.57	45.45
61	100.00	93.55	96.00	76.92	100.00	86.96	93.15
62	93.00	88.98	90.83	80.00	92.31	88.89	90.68
63	86.67	84.62	85.71	100.00	100.00	100.00	89.19
64	75.00	60.00	69.23	100.00	100.00	100.00	77.78
65	78.00	88.00	83.00	100.00	100.00	100.00	84.55
66	88.24	87.50	87.88	(0/0)	100.00	100.00	88.89
67	81.48	60.00	75.68	100.00	100.00	100.00	79.55
68	90.91	96.61	93.38	60.00	91.67	82.35	92.16
69	82.76	88.89	84.21	100.00	100.00	100.00	86.05
70	90.00	100.00	93.75	100.00	100.00	100.00	95.24
71	93.33	100.00	94.44	100.00	100.00	100.00	95.83
72	87.50	94.74	89.01	(0/0)	100.00	100.00	89.36
73	87.80	90.00	88.24	100.00	95.00	95.45	89.52
74	92.48	96.43	94.01	100.00	100.00	100.00	94.42
75	94.00	89.58	92.57	92.31	96.00	94.74	93.01
76	92.23	86.11	90.65	100.00	91.18	92.11	90.96
77	80.77	86.15	82.84	100.00	94.29	95.92	85.78
78	73.61	86.67	77.45	100.00	75.00	83.33	78.57

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
79	91.20	92.98	91.76	87.50	91.30	89.74	91.40
80	62.86	55.56	61.36	40.00	100.00	75.00	64.29
81	97.65	97.06	97.48	100.00	96.00	97.30	97.44
82	73.33	100.00	77.78	80.00	100.00	85.71	80.00
83	89.02	81.25	87.76	81.82	90.48	87.50	87.69
84	57.89	60.00	58.33	100.00	100.00	100.00	66.67
85	81.18	97.06	85.71	72.73	88.24	82.14	85.03
86	85.71	100.00	90.16	100.00	75.00	88.89	90.00
87	71.43	80.00	73.68	100.00	100.00	100.00	76.19
88	60.00	75.00	63.16	42.86	100.00	66.67	63.77
89	85.37	85.71	85.45	100.00	90.00	91.67	86.57
90	100.00	66.67	90.00	(0/0)	100.00	100.00	91.67
91	86.02	91.89	87.69	71.43	76.19	74.29	84.85
92	66.67	33.33	55.56	0.00	75.00	60.00	57.14
93	92.21	90.00	91.75	90.00	100.00	96.15	92.68
94	71.43	87.50	80.00	0.00	100.00	66.67	77.78
95	86.30	80.00	85.54	100.00	94.74	96.43	88.29
96	95.95	90.91	95.29	100.00	100.00	100.00	96.46
97	88.57	91.67	89.36	100.00	93.33	95.83	91.55
98	98.81	95.45	98.11	100.00	100.00	100.00	98.50
99	94.57	92.86	94.27	100.00	100.00	100.00	95.57
100	94.32	92.31	94.06	100.00	100.00	100.00	95.28
101	92.22	97.22	93.65	100.00	92.31	96.00	94.04
102	86.21	77.78	82.98	100.00	92.31	94.74	86.36
103	79.29	84.00	80.53	83.33	85.71	84.62	80.79
104	100.00	100.00	100.00	100.00	0.00	100.00	100.00
105	100.00	50.00	83.33	(0/0)	100.00	100.00	85.71

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
106	82.35	55.56	76.74	100.00	92.31	94.12	81.67
107	71.88	68.00	70.18	60.00	90.91	76.19	71.79
108	94.44	100.00	95.52	90.91	95.83	94.29	95.10
109	95.00	100.00	95.65	83.33	94.12	92.50	94.70
110	85.71	86.96	86.08	100.00	93.33	94.87	88.98
111	88.00	71.43	84.38	66.67	66.67	66.67	81.58
112	100.00	100.00	100.00	100.00	100.00	100.00	100.00
113	100.00	100.00	100.00	66.67	100.00	77.78	90.00
114	96.88	94.12	95.92	85.71	100.00	94.44	95.52
115	91.23	96.00	92.68	(0/0)	91.67	91.67	92.55
116	36.36	100.00	41.67	0.00	100.00	50.00	43.75
117	79.31	40.00	73.53	100.00	80.00	83.33	75.00
Total	87.29	89.86	88.10	88.11	94.01	92.19	88.83

Table 12: Statewide Seatbelt Usage in Percent during Post-Mobilization Survey

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
1	96.26	100.00	96.46	100.00	100.00	100.00	96.57
2	96.06	100.00	96.95	95.00	98.59	97.80	97.25
3	93.93	93.80	93.88	95.24	96.23	95.95	94.24
4	94.44	100.00	95.00	100.00	83.33	87.50	92.86
5	92.47	89.89	91.49	90.00	95.83	94.12	91.82
6	87.34	97.44	90.68	100.00	100.00	100.00	92.03
7	92.19	95.00	92.86	100.00	100.00	100.00	94.44
8	76.60	85.71	80.00	87.50	86.67	86.96	81.63
9	69.57	61.54	66.67	66.67	100.00	80.00	68.29
10	83.33	88.24	85.37	83.33	95.83	91.67	86.79
11	88.57	93.88	90.76	100.00	100.00	100.00	91.67
12	84.21	90.00	86.76	100.00	85.71	91.43	87.45
13	84.72	97.14	88.79	83.33	100.00	94.44	89.60
14	72.62	92.50	79.03	84.62	85.19	85.00	80.49
15	95.51	98.35	96.75	94.74	100.00	98.33	97.03
16	91.45	97.50	93.91	57.14	100.00	89.29	93.33
17	79.59	87.72	83.96	100.00	100.00	100.00	85.09
18	68.75	93.33	80.65	100.00	100.00	100.00	83.33
19	58.82	66.67	60.00	100.00	50.00	66.67	60.87
20	89.94	92.94	90.98	89.47	95.45	92.68	91.23
21	89.29	96.88	92.05	100.00	93.75	95.45	92.73
22	88.24	92.73	90.00	77.78	93.75	88.00	89.70
23	81.48	85.71	82.35	75.00	100.00	87.50	83.33
24	98.39	100.00	98.56	100.00	100.00	100.00	98.88

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	93.26	87.50	91.24	80.00	94.44	87.88	90.59
27	90.57	92.16	91.08	100.00	100.00	100.00	92.67
28	100.00	100.00	100.00	100.00	100.00	100.00	100.00
29	96.26	96.67	96.35	100.00	100.00	100.00	97.02
30	83.33	100.00	85.71	100.00	50.00	75.00	81.82
31	94.00	90.91	93.06	100.00	100.00	100.00	94.57
32	89.47	88.89	89.29	(0/0)	75.00	75.00	87.50
33	80.00	(0/0)	80.00	(0/0)	(0/0)	(0/0)	80.00
34	96.10	97.06	96.40	87.50	90.63	90.00	94.70
35	92.16	95.00	92.96	100.00	100.00	100.00	94.95
36	96.70	95.00	96.18	88.89	97.14	95.45	96.00
37	87.50	81.82	85.19	100.00	100.00	100.00	87.50
38	92.31	88.89	90.91	100.00	100.00	100.00	93.10
39	87.50	80.00	84.62	100.00	100.00	100.00	89.47
40	94.12	75.00	89.55	100.00	100.00	100.00	90.14
41	57.14	75.00	61.11	(0/0)	100.00	100.00	68.18
42	87.50	83.33	85.71	100.00	100.00	100.00	90.00
43	71.72	81.82	74.24	100.00	76.00	82.86	76.05
44	82.35	100.00	88.89	100.00	100.00	100.00	90.63
45	85.71	88.89	86.49	80.00	0.00	80.00	85.71
46	84.21	100.00	88.00	50.00	100.00	80.00	86.67
47	95.74	96.43	95.90	100.00	96.55	97.37	96.25
48	97.25	100.00	98.21	100.00	100.00	100.00	98.55
49	94.03	97.37	94.77	100.00	95.56	96.49	95.20
50	93.75	100.00	95.38	100.00	100.00	100.00	96.23
51	84.62	75.00	82.35	50.00	80.00	71.43	79.17

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
52	81.88	72.73	79.07	93.33	85.00	88.57	80.40
53	89.66	100.00	93.18	66.67	83.33	77.78	90.57
54	95.83	100.00	97.89	94.44	100.00	96.88	97.77
55	94.87	98.80	96.50	100.00	100.00	100.00	96.90
56	96.15	88.46	93.59	100.00	100.00	100.00	95.15
57	91.67	100.00	92.31	(0/0)	100.00	100.00	93.33
58	85.71	75.00	81.82	(0/0)	100.00	100.00	85.71
59	94.81	94.00	94.49	71.43	100.00	88.24	93.17
60	43.75	25.00	40.00	83.33	25.00	60.00	44.00
61	82.14	91.30	86.27	100.00	100.00	100.00	88.52
62	93.69	99.04	96.28	87.50	100.00	96.15	96.27
63	93.75	88.89	92.00	100.00	100.00	100.00	94.44
64	90.91	100.00	92.31	100.00	100.00	100.00	94.12
65	88.24	100.00	93.55	100.00	100.00	100.00	94.29
66	92.31	96.00	94.74	0.00	85.71	75.00	91.30
67	70.59	93.33	77.55	0.00	50.00	33.33	72.73
68	88.46	98.33	92.75	90.91	100.00	96.00	93.25
69	82.76	95.00	87.76	100.00	90.00	92.31	88.71
70	11.11	33.33	16.67	0.00	0.00	0.00	13.33
71	90.00	100.00	94.12	66.67	100.00	83.33	91.30
72	91.11	97.83	92.82	91.30	96.61	95.12	93.54
73	95.74	100.00	97.01	93.33	100.00	98.31	97.41
74	91.30	97.22	93.13	96.00	97.96	97.30	94.14
75	95.12	98.57	96.37	87.50	92.86	90.91	94.98
76	87.63	88.46	87.80	91.67	90.91	91.18	88.54
77	84.47	75.51	82.38	93.75	84.62	87.27	83.40
78	81.01	80.00	80.73	100.00	88.46	90.32	82.86

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
79	91.82	95.56	92.90	78.95	88.57	85.19	90.91
80	84.78	92.86	86.67	83.33	83.33	83.33	85.90
81	91.67	92.86	91.91	93.33	91.30	92.11	91.95
82	60.00	100.00	75.00	80.00	87.50	84.62	78.38
83	84.78	84.00	84.62	93.33	84.00	87.50	85.35
84	76.19	100.00	78.26	100.00	100.00	100.00	84.85
85	84.40	76.00	82.84	80.00	88.89	86.49	83.63
86	96.43	100.00	97.92	100.00	100.00	100.00	98.36
87	66.67	100.00	80.00	100.00	33.33	50.00	71.43
88	71.88	84.62	74.03	57.14	66.67	60.87	71.00
89	69.81	78.26	72.37	75.00	90.00	85.71	74.44
90	80.00	100.00	85.71	100.00	75.00	85.71	85.71
91	94.29	94.37	94.32	86.96	95.45	92.54	93.83
92	78.57	100.00	83.33	66.67	100.00	83.33	83.33
93	86.59	91.30	87.62	100.00	90.48	93.94	89.13
94	87.50	75.00	84.38	(0/0)	100.00	100.00	87.18
95	78.57	85.19	80.00	75.00	100.00	93.33	81.43
96	93.41	89.47	92.73	100.00	100.00	100.00	94.52
97	94.38	92.86	94.17	80.00	95.00	92.00	93.46
98	86.78	90.91	87.12	80.00	96.55	94.12	89.50
99	94.83	97.06	95.33	92.00	100.00	96.97	95.83
100	74.58	100.00	78.87	100.00	93.33	95.00	82.42
101	95.09	96.72	95.54	100.00	100.00	100.00	96.56
102	94.38	96.00	94.74	100.00	98.31	98.51	96.13
103	86.19	82.35	85.34	100.00	100.00	100.00	86.56
104	75.00	66.67	71.43	50.00	0.00	50.00	66.67
105	83.33	(0/0)	83.33	(0/0)	(0/0)	100.00	85.71

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
106	82.93	100.00	87.27	100.00	100.00	100.00	90.54
107	72.29	79.41	74.36	75.00	54.55	65.22	72.86
108	92.68	94.74	93.07	100.00	97.73	97.96	94.67
109	85.53	93.33	87.74	85.71	100.00	96.23	90.57
110	94.44	100.00	96.08	94.12	96.88	95.92	96.03
111	87.10	80.00	86.11	100.00	100.00	100.00	89.58
112	62.50	100.00	66.67	100.00	0.00	66.67	66.67
113	69.23	60.00	66.67	100.00	100.00	100.00	76.92
114	96.15	100.00	97.09	100.00	100.00	100.00	98.01
115	89.77	95.00	90.74	100.00	97.78	98.11	93.17
116	55.00	50.00	54.17	50.00	75.00	66.67	56.67
117	57.14	75.00	62.07	66.67	50.00	58.82	61.33
Total	88.91	92.71	90.07	90.32	94.63	93.29	90.74

From Tables 11 and 12, it can be concluded that the females occupants were properly restrained at a higher rate than the male occupants. During the Pre-Mobilization survey, 89.86% of female drivers were restrained in comparison with 87.29% of male drivers. Similarly, 94.01% of female passengers were restrained in comparison with the 88.11% of male passengers. Overall, 92.19% of female occupants were restrained during the Pre-Mobilization survey in comparison with 88.10% of male occupants. The same pattern is recognized for the Post-Mobilization survey. 92.71% of female drivers were restrained in comparison with 88.91% of male drivers. Similarly, 94.63% of female passengers were restrained in comparison with the 90.32% of male passengers. Overall, 93.29% of female occupants were restrained during the Post-Mobilization survey in comparison with 90.32% of male occupants.

Seatbelt Usage by Age Groups

Tables 11 and 12 show the seatbelt usage distribution of the front seat occupants on all the 117 sites during Pre-Mobilization and Post-Mobilization survey when distributed on the basis of gender. Thus, the front seat occupants could be divided into two gender based categories: Male and Female. Furthermore, the front seat occupants could also be divided into 4 age based categories: <15, 15-19, 20-60 and >60. Combining the age and gender categories, the drivers and passengers could be divided into 8 categories (Male/Female and <15/15-19/20-60/>60). Overall, the combination of age and gender categories is shown in Table 13.

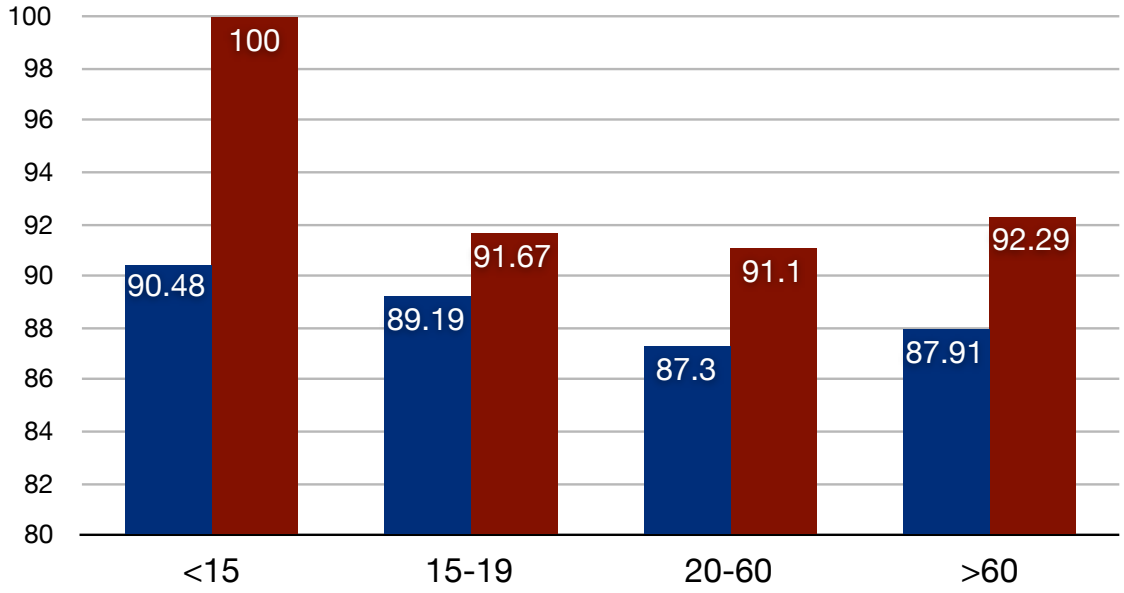
Table 13: Age-Gender categories

Gender	**Age**			
	<15	15-19	20-60	>60
Male	Younger Boy	Boy	Man	Elderly Man
Female	Younger Girl	Girl	Woman	Elderly Woman

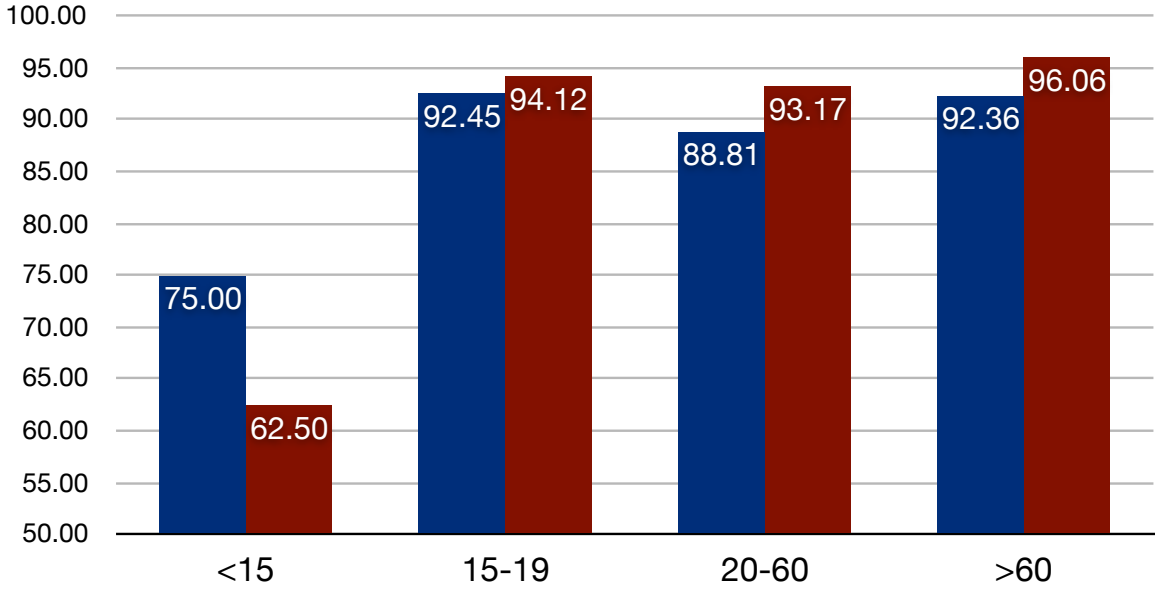
Thus, the gender and age based categories distributed the front seat occupants into 8 categories. The seatbelt usage for the front seat occupants (drivers and passengers) on the basis of the aforementioned combined distribution of age and gender is shown in Table 14 during Pre-Mobilization survey and 15 during Post-Mobilization survey. Figure 8 shows the statewide seatbelt usage of front seat occupants distributed across the age and gender of the occupants during the pre-mobilization and post-mobilization surveys respectively.

Figure 8: Statewide Seatbelt Usage by Age Group

(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Table 14: Seatbelt Usage by Age Group during Pre-Mobilization Survey

Site	<15			15-19			20-60			>60		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
1	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	76.92	91.18	83.56	(0/0)	(0/0)	(0/0)
2	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	98.83	99.03	98.91	100.00	100.00	100.00
3	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	95.67	99.44	97.41	(0/0)	(0/0)	(0/0)
4	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	83.33	100.00	90.70	66.67	75.00	71.43
5	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	85.71	84.09	85.05	88.89	100.00	92.31
6	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	92.71	84.13	89.31	75.00	50.00	66.67
7	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	81.97	96.97	87.23	100.00	100.00	100.00
8	(0/0)	(0/0)	(0/0)	0.00	(0/0)	0.00	76.74	77.78	77.27	50.00	33.33	40.00
9	(0/0)	(0/0)	(0/0)	75.00	100.00	80.00	89.47	92.00	90.48	100.00	100.00	100.00
10	(0/0)	(0/0)	(0/0)	90.91	72.73	81.82	76.19	84.34	79.79	88.89	66.67	77.78
11	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.00	94.23	91.18	(0/0)	(0/0)	(0/0)
12	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	84.68	92.39	88.18	80.00	85.71	83.33
13	100.00	(0/0)	100.00	100.00	(0/0)	100.00	82.35	88.24	84.31	100.00	100.00	100.00
14	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	84.95	85.51	85.19	88.89	92.31	90.91
15	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	88.48	93.44	90.42	100.00	100.00	100.00
16	100.00	(0/0)	100.00	100.00	100.00	100.00	95.28	95.65	95.43	100.00	100.00	100.00
17	(0/0)	100.00	100.00	(0/0)	(0/0)	(0/0)	80.85	93.33	85.71	83.33	83.33	83.33
18	(0/0)	(0/0)	(0/0)	50.00	(0/0)	50.00	73.17	83.33	75.47	100.00	(0/0)	100.00
19	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	58.33	88.24	70.73	100.00	0.00	50.00
20	50.00	(0/0)	50.00	100.00	(0/0)	100.00	78.36	90.22	83.19	100.00	100.00	100.00
21	(0/0)	100.00	100.00	(0/0)	(0/0)	(0/0)	85.33	84.00	84.80	(0/0)	(0/0)	(0/0)
22	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.61	88.24	87.85	(0/0)	(0/0)	(0/0)
23	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	81.13	89.19	84.44	60.00	100.00	71.43
24	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	95.00	95.92	95.35	80.00	100.00	88.24
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	77.27	100.00	83.61	80.00	80.00	80.00
27	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	81.82	89.66	84.71	88.89	92.86	90.63
28	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	98.11	100.00	98.51	100.00	90.91	95.00
29	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	81.82	89.66	84.71	88.89	92.86	90.63
30	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)
31	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.04	90.00	88.10	100.00	100.00	100.00
32	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	94.12	95.45	94.64	100.00	100.00	100.00
33	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)
34	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	80.65	94.74	86.00	72.73	85.00	77.36
35	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	86.11	88.46	87.10	100.00	83.33	93.33
36	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	89.04	100.00	92.08	90.91	100.00	93.75
37	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	96.10	92.86	94.96	(0/0)	(0/0)	(0/0)
38	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	95.24	100.00	96.00	(0/0)	(0/0)	(0/0)
39	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	90.00	100.00	94.12	(0/0)	(0/0)	(0/0)
40	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.46	96.30	91.14	92.86	100.00	96.67
41	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	80.00	100.00	83.33	(0/0)	(0/0)	(0/0)
42	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.74	100.00	96.15	100.00	100.00	100.00
43	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	89.29	94.44	90.54	(0/0)	(0/0)	(0/0)
44	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)
45	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	91.67	100.00	93.75	(0/0)	(0/0)	(0/0)
46	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	45.45	57.14	50.00	(0/0)	(0/0)	(0/0)
47	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.52	95.35	94.83	80.00	93.33	85.71
48	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	92.97	94.64	93.48	(0/0)	(0/0)	(0/0)
49	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.03	98.11	95.19	100.00	100.00	100.00
50	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	92.41	97.14	93.86	(0/0)	(0/0)	(0/0)
51	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	72.73	81.82	77.27	(0/0)	(0/0)	(0/0)

continued on next page

continued from previous page

Site	<15			15-19			20-60			>60		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
52	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	77.33	90.48	80.21	87.50	100.00	88.89
53	(0/0)	(0/0)	(0/0)	0.00	(0/0)	0.00	85.71	87.50	86.67	(0/0)	(0/0)	(0/0)
54	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	89.74	97.73	93.98	(0/0)	(0/0)	(0/0)
55	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	85.37	90.83	87.93	100.00	90.00	90.91
56	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	97.06	96.43	96.77	(0/0)	(0/0)	(0/0)
57	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	83.33	66.67	77.78	(0/0)	(0/0)	(0/0)
58	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	82.35	100.00	86.36	100.00	100.00	100.00
59	(0/0)	100.00	100.00	(0/0)	(0/0)	(0/0)	86.00	93.44	90.09	(0/0)	(0/0)	(0/0)
60	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	57.58	27.27	45.45	(0/0)	(0/0)	(0/0)
61	100.00	100.00	100.00	77.78	100.00	85.71	94.44	94.29	94.34	(0/0)	(0/0)	(0/0)
62	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	92.00	89.08	90.41	100.00	91.67	93.33
63	(0/0)	100.00	100.00	(0/0)	(0/0)	(0/0)	88.89	88.89	88.89	(0/0)	(0/0)	(0/0)
64	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	77.78	71.43	75.00	(0/0)	(0/0)	(0/0)
65	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	78.85	89.66	84.55	(0/0)	(0/0)	(0/0)
66	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.24	88.89	88.57	(0/0)	100.00	100.00
67	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	82.14	71.43	78.57	100.00	100.00	100.00
68	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	89.02	95.71	92.11	(0/0)	100.00	100.00
69	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	82.76	90.00	84.62	100.00	100.00	100.00
70	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	91.67	100.00	95.24	(0/0)	(0/0)	(0/0)
71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.12	100.00	95.83	(0/0)	(0/0)	(0/0)
72	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.50	95.45	89.36	(0/0)	(0/0)	(0/0)
73	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	89.16	94.74	90.91	0.00	50.00	33.33
74	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	92.86	96.74	94.40	(0/0)	(0/0)	(0/0)
75	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	93.75	91.67	92.93	(0/0)	(0/0)	(0/0)
76	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	93.88	87.10	91.25	77.78	100.00	88.24
77	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	82.11	85.71	83.72	85.71	100.00	93.02
78	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	75.00	78.38	76.15	87.50	100.00	94.12
79	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	90.78	92.50	91.40	(0/0)	(0/0)	(0/0)
80	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	52.94	69.23	57.45	100.00	100.00	100.00
81	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	97.78	96.15	97.18	100.00	100.00	100.00
82	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	75.00	100.00	80.00	(0/0)	(0/0)	(0/0)
83	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.50	90.32	88.29	92.31	66.67	84.21
84	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	66.67	66.67	66.67	0.00	100.00	66.67
85	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	78.82	92.11	82.93	90.00	100.00	95.65
86	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.23	95.65	90.00	(0/0)	(0/0)	(0/0)
87	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	66.67	50.00	64.29	100.00	100.00	100.00
88	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	53.33	78.57	59.32	85.71	100.00	90.00
89	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	82.35	86.36	83.93	100.00	100.00	100.00
90	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	66.67	85.71	100.00	100.00	100.00
91	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	83.65	86.21	84.57	(0/0)	(0/0)	(0/0)
92	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	40.00	66.67	54.55	100.00	0.00	66.67
93	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	93.33	91.67	92.93	83.33	100.00	91.67
94	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	57.14	90.00	76.47	100.00	(0/0)	100.00
95	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	88.61	92.86	89.72	50.00	0.00	33.33
96	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	95.45	100.00	96.70	100.00	88.89	95.45
97	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	90.70	92.00	91.18	(0/0)	100.00	100.00
98	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	98.88	97.37	98.43	100.00	100.00	100.00
99	100.00	(0/0)	100.00	100.00	(0/0)	100.00	95.48	95.45	95.48	(0/0)	100.00	100.00
100	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.74	96.43	95.12	100.00	100.00	100.00
101	100.00	(0/0)	100.00	100.00	(0/0)	100.00	92.93	95.83	93.88	100.00	100.00	100.00
102	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.57	83.33	86.15	(0/0)	100.00	100.00
103	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	79.02	83.93	80.40	100.00	100.00	100.00
104	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	100.00	(0/0)	100.00
105	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	66.67	85.71	(0/0)	(0/0)	(0/0)
106	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	83.33	75.00	80.36	100.00	100.00	100.00
107	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	69.23	73.53	71.23	66.67	100.00	80.00

continued on next page

continued from previous page

Site	<15			15-19			20-60			>60		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
108	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	93.65	97.30	95.00	(0/0)	(0/0)	(0/0)
109	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.19	95.65	94.70	(0/0)	(0/0)	(0/0)
110	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.69	90.57	88.98	(0/0)	(0/0)	(0/0)
111	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	85.71	70.00	81.58	(0/0)	(0/0)	(0/0)
112	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)
113	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.50	100.00	90.00	(0/0)	(0/0)	(0/0)
114	66.67	(0/0)	66.67	100.00	(0/0)	100.00	97.14	96.43	96.83	(0/0)	(0/0)	(0/0)
115	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	91.23	94.59	92.55	(0/0)	(0/0)	(0/0)
116	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	33.33	100.00	42.86	0.00	(0/0)	0.00
117	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	79.31	55.56	73.68	100.00	100.00	100.00
Total	90.48	100.00	92.59	89.19	91.67	90.00	87.30	91.10	88.73	87.91	92.29	89.93

Table 15: Seatbelt Usage by Age Group during Post-Mobilization Survey

Site	<15			15-19			20-60			>60		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
1	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	96.30	100.00	96.57	(0/0)	(0/0)	(0/0)
2	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	95.71	98.96	97.03	100.00	100.00	100.00
3	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	93.84	93.75	93.80	95.83	100.00	97.83
4	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.44	85.71	92.00	100.00	100.00	100.00
5	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	92.05	90.91	91.57	100.00	100.00	100.00
6	100.00	(0/0)	100.00	100.00	100.00	100.00	87.34	98.00	91.47	100.00	100.00	100.00
7	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	92.42	96.88	93.88	100.00	100.00	100.00
8	100.00	(0/0)	100.00	100.00	50.00	75.00	76.47	87.80	81.52	(0/0)	(0/0)	(0/0)
9	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	66.67	64.29	65.79	100.00	100.00	100.00
10	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	81.82	90.00	85.71	100.00	100.00	100.00
11	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	88.06	94.74	90.48	100.00	94.44	96.00
12	(0/0)	100.00	100.00	100.00	(0/0)	100.00	84.87	87.88	86.24	100.00	100.00	100.00
13	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	84.00	97.78	89.17	100.00	100.00	100.00
14	100.00	(0/0)	100.00	(0/0)	100.00	100.00	73.81	89.29	80.00	75.00	90.00	81.82
15	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	95.24	98.73	96.93	100.00	100.00	100.00
16	(0/0)	(0/0)	(0/0)	0.00	100.00	50.00	89.74	97.73	93.17	100.00	100.00	100.00
17	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	81.40	86.00	83.87	75.00	100.00	90.48
18	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	77.78	90.91	82.76	50.00	100.00	85.71
19	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	61.11	60.00	60.87	(0/0)	(0/0)	(0/0)
20	(0/0)	100.00	100.00	100.00	(0/0)	100.00	89.82	92.93	90.98	90.00	100.00	94.12
21	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	89.83	95.56	92.31	100.00	100.00	100.00
22	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	88.64	92.19	90.13	66.67	100.00	81.82
23	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	79.31	88.89	81.58	100.00	100.00	100.00
24	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	98.51	100.00	98.81	100.00	100.00	100.00
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	91.35	89.39	90.59	(0/0)	(0/0)	(0/0)
27	(0/0)	100.00	100.00	100.00	(0/0)	100.00	91.23	94.67	92.59	(0/0)	(0/0)	(0/0)
28	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)
29	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	96.40	98.25	97.02	(0/0)	(0/0)	(0/0)
30	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.50	66.67	81.82	(0/0)	(0/0)	(0/0)
31	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.74	94.29	94.57	(0/0)	(0/0)	(0/0)
32	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	89.47	84.62	87.50	(0/0)	(0/0)	(0/0)
33	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	80.00	(0/0)	80.00	(0/0)	(0/0)	(0/0)
34	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	95.24	93.94	94.67	(0/0)	(0/0)	(0/0)
35	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	93.10	97.56	94.95	(0/0)	(0/0)	(0/0)
36	(0/0)	50.00	50.00	(0/0)	(0/0)	(0/0)	96.00	97.26	96.53	(0/0)	(0/0)	(0/0)
37	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.89	85.71	87.50	(0/0)	(0/0)	(0/0)
38	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.12	91.67	93.10	(0/0)	(0/0)	(0/0)
39	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	90.91	87.50	89.47	(0/0)	(0/0)	(0/0)
40	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.34	77.78	90.14	(0/0)	(0/0)	(0/0)
41	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	57.14	87.50	68.18	(0/0)	(0/0)	(0/0)
42	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	91.67	87.50	90.00	(0/0)	(0/0)	(0/0)
43	(0/0)	0.00	0.00	(0/0)	(0/0)	(0/0)	74.31	80.70	76.51	(0/0)	(0/0)	(0/0)
44	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	82.35	100.00	90.32	(0/0)	(0/0)	(0/0)
45	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	84.85	88.89	85.71	(0/0)	(0/0)	(0/0)
46	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	80.95	100.00	86.67	(0/0)	(0/0)	(0/0)
47	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	96.12	96.49	96.25	(0/0)	(0/0)	(0/0)
48	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	97.33	100.00	98.45	100.00	100.00	100.00
49	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	94.16	97.14	95.17	100.00	92.31	95.24
50	(0/0)	100.00	100.00	100.00	(0/0)	100.00	94.32	100.00	96.24	92.86	100.00	95.83
51	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	80.00	77.78	79.17	(0/0)	(0/0)	(0/0)

continued on next page

continued from previous page

Site	<15			15-19			20-60			>60		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
52	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	83.01	75.61	80.43	81.82	66.67	78.57
53	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	82.61	92.86	86.49	100.00	100.00	100.00
54	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	95.04	100.00	97.42	100.00	100.00	100.00
55	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	95.76	98.94	97.17	80.00	100.00	92.86
56	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.74	92.86	93.94	100.00	94.74	97.30
57	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	90.00	100.00	91.67	100.00	100.00	100.00
58	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	85.71	100.00	92.31	(0/0)	0.00	0.00
59	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	90.41	95.74	92.50	94.12	95.00	94.59
60	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	52.78	25.00	45.83	0.00	(0/0)	0.00
61	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	85.19	89.47	86.96	80.00	100.00	93.33
62	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	92.38	99.04	95.69	100.00	100.00	100.00
63	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.44	93.75	94.12	100.00	(0/0)	100.00
64	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	50.00	(0/0)	50.00
65	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.50	100.00	92.31	100.00	100.00	100.00
66	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.89	96.15	94.29	80.00	83.33	81.82
67	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	65.71	85.71	71.43	100.00	80.00	83.33
68	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	90.12	98.46	93.84	75.00	100.00	87.50
69	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	83.33	93.33	88.33	100.00	(0/0)	100.00
70	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	11.11	25.00	15.38	0.00	0.00	0.00
71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	84.62	100.00	91.30	(0/0)	(0/0)	(0/0)
72	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	90.58	98.82	93.72	94.74	89.47	92.11
73	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	94.57	100.00	96.89	100.00	100.00	100.00
74	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	91.57	97.98	93.96	94.74	95.45	95.12
75	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	94.07	97.00	95.32	90.00	90.00	90.00
76	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.42	90.24	88.97	85.71	85.71	85.71
77	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	85.09	80.25	83.47	85.71	71.43	80.95
78	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	82.14	83.93	82.86	(0/0)	(0/0)	(0/0)
79	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	88.50	90.16	89.08	100.00	100.00	100.00
80	0.00	(0/0)	0.00	(0/0)	(0/0)	(0/0)	85.96	90.00	87.01	(0/0)	(0/0)	(0/0)
81	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	92.04	91.30	91.82	88.89	100.00	92.86
82	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	65.00	94.12	78.38	(0/0)	(0/0)	(0/0)
83	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	86.17	83.72	85.40	84.62	85.71	85.00
84	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	80.77	100.00	84.85	(0/0)	(0/0)	(0/0)
85	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	83.33	81.63	82.82	100.00	100.00	100.00
86	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	96.77	100.00	98.18	100.00	100.00	100.00
87	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	71.43	71.43	71.43	(0/0)	(0/0)	(0/0)
88	0.00	(0/0)	0.00	(0/0)	(0/0)	(0/0)	70.13	77.27	71.72	(0/0)	(0/0)	(0/0)
89	(0/0)	0.00	0.00	100.00	(0/0)	100.00	69.64	84.38	75.00	(0/0)	(0/0)	(0/0)
90	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	84.62	87.50	85.71	(0/0)	(0/0)	(0/0)
91	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	92.44	95.15	93.69	100.00	90.91	95.00
92	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	76.47	100.00	83.33	(0/0)	(0/0)	(0/0)
93	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	88.46	87.50	88.18	87.50	100.00	92.31
94	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	86.96	86.67	86.84	(0/0)	(0/0)	(0/0)
95	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	78.79	89.19	81.62	66.67	100.00	75.00
96	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	94.12	94.74	94.29	100.00	100.00	100.00
97	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	93.26	95.83	94.16	87.50	83.33	85.71
98	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	85.60	95.24	88.83	100.00	100.00	100.00
99	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	94.74	98.39	95.90	87.50	100.00	95.24
100	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	76.19	96.00	81.82	100.00	100.00	100.00
101	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	95.86	97.37	96.33	95.65	100.00	97.83
102	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	95.24	97.06	96.05	92.31	100.00	96.43
103	(0/0)	(0/0)	(0/0)	0.00	100.00	50.00	87.03	86.15	86.80	100.00	(0/0)	100.00
104	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	66.67	66.67	66.67	(0/0)	(0/0)	(0/0)
105	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	83.33	100.00	85.71	(0/0)	(0/0)	(0/0)
106	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	83.33	100.00	90.28	100.00	(0/0)	100.00
107	(0/0)	(0/0)	(0/0)	75.00	(0/0)	75.00	71.76	71.05	71.54	83.33	85.71	84.62

continued on next page

continued from previous page

Site	<15			15-19			20-60			>60		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
108	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	91.18	97.78	93.81	100.00	94.44	97.30
109	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	82.86	96.08	88.43	94.44	100.00	97.22
110	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	92.65	97.92	94.83	100.00	100.00	100.00
111	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	87.88	90.91	88.64	100.00	100.00	100.00
112	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	70.00	50.00	66.67	(0/0)	(0/0)	(0/0)
113	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	75.00	77.78	76.00	(0/0)	(0/0)	(0/0)
114	(0/0)	(0/0)	(0/0)	50.00	(0/0)	50.00	97.14	100.00	98.40	100.00	100.00	100.00
115	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	91.01	96.49	93.15	85.71	100.00	93.33
116	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	55.00	62.50	57.14	50.00	(0/0)	50.00
117	(0/0)	(0/0)	(0/0)	(0/0)	50.00	50.00	60.42	70.00	63.24	33.33	50.00	40.00
Total	75.00	62.50	68.75	92.45	94.12	93.10	88.81	93.17	90.44	92.36	96.06	94.18

Table 14, displaying the age-gender distribution during the Pre-Mobilization survey for both front seat occupants, shows that as an age group, Children (<15) at 92.59% were restrained at the highest rate, Teenagers (15-19) at 90.00%, followed by Elderly occupants (>60) at 89.93%, then Adults (20-60) at 88.73%. Divided further according to gender, Girls (<15) had a 100.00% seat belt usage rate, Elderly Women (>60) at 92.29%, followed by female Teenagers (15-19) at 91.67%, Women (20-60) at 91.10%, Boys (<15) at 90.48%, male Teenagers (15-19) at 83.27%, Elderly Men (>60) at 87.91%, and finally Men (20-60) at 87.30%. Amongst the males, Boys (<15) showed the highest seatbelt usage while Men (20-60) showed the least. For females, Girls (<15) were found to wear seat belts the most, while the least seatbelt usage was recorded for Women (20-60). Men (20-60) also showed the least seatbelt usage over all the age groups.

Furthermore, Table 15, displaying the age-gender distribution during the Post-Mobilization survey for both front seat occupants, shows that as an age group, Elderly occupants (>60) at 94.18% were restrained at the highest rate, followed by Teenagers (15-19) at 91.32%, then Adults (20-60) at 92.77%, and finally Children (<15) at 68.75%. Divided further according to gender, Elderly Women (>60) at 96.06% were restrained at the highest rate, followed by female Teenagers (15-19) at 94.12%, Women (20-60) at 94.03%, male Teenagers (15-19) at 92.45%, Elderly Men (>60) at 92.36%, Men (20-60) at 88.81%, at 75.00%, and finally Girls (<15) at 62.50%. Amongst the males, male Teenagers (15-19) were restrained at the highest rate, and Boys (<15) showed the least. Similarly, for females, the Elderly Females (>60) group was found to be wearing seat belts the most, while the least seatbelt

usage was recorded for the Girls (<15) age group.

Seatbelt Usage for Nevada Registered Vehicles

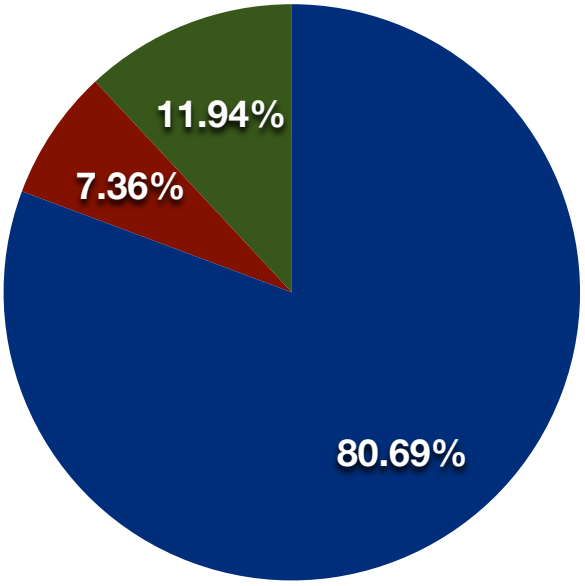
In addition to the use of seatbelt, the state registration, and type of vehicle were recorded. 10,075 vehicles were observed during Pre-Mobilization and 11,387 vehicles during the Post-Mobilization survey process. During Pre-Mobilization, 80.69% (8,130) of the vehicles were registered in Nevada, 7.36% (742) in California, and 11.94% (1203) registered in states other than Nevada and California. Similarly, during Post-Mobilization survey, 77.55% (8,831) of the vehicles were registered in Nevada, 8.78% (1000) in California, and 13.66% (1556) registered in states other than Nevada and California. Thus, over 77% of the vehicles during both the surveys were registered in Nevada. This distribution has been shown in Figure 9.

Since vehicles registered in Nevada cover the majority of the observed vehicles, seat belt usages for these vehicles are analyzed in detail.

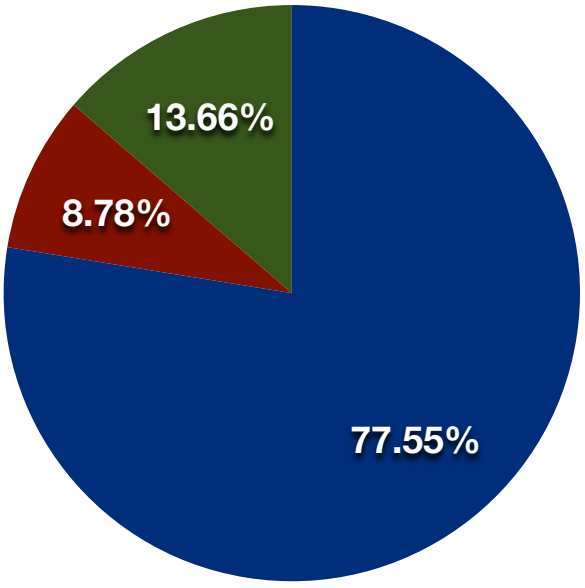
For Nevada registered vehicles, 86.31% of male drivers and 89.13% of female drivers were restrained during Pre-Mobilization survey. Similarly, 87.78% of male passengers and 92.65% of female passengers were belted. However, during the Post-Mobilization, these percentages increased up to 87.48% for male drivers and 92.17% for female drivers. Furthermore, 89.32% of male passengers and 93.20% of female passengers were restrained during Post-Mobilization survey process. These seatbelt use percentages are lower than all the vehicles considered together (with California and other states other than Nevada). Thus, the vehicles from California and states other than Nevada helped increase the seatbelt usage rate of all vehicles in the state of Nevada. Tables 16 and 17 show the number and percent of belted drivers during Pre-Mobilization and Post-Mobilization respectively, who drove Nevada registered vehicles based on gender.

Figure 9: States of Registration

(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Table 16: Seatbelt Usage among Nevada Registered Vehicles by Gender during Pre-Mobilization Survey

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
1	82.09	90.57	85.83	50.00	88.89	70.59	83.94
2	98.63	100.00	98.91	100.00	100.00	100.00	99.24
3	96.35	99.31	97.63	85.71	100.00	95.24	97.36
4	86.67	100.00	90.00	100.00	100.00	100.00	93.33
5	85.60	84.06	85.05	100.00	89.47	92.00	85.84
6	91.40	80.85	87.86	100.00	91.67	93.33	88.82
7	80.36	96.30	85.54	100.00	100.00	100.00	87.37
8	74.36	72.22	73.33	71.43	88.89	81.25	74.73
9	94.74	89.47	92.98	40.00	100.00	76.92	90.00
10	77.45	82.93	79.89	85.00	76.19	80.49	80.00
11	89.58	93.33	91.40	0.00	100.00	83.33	90.91
12	83.17	92.05	87.30	88.24	94.44	91.43	87.95
13	83.78	94.74	87.50	100.00	85.71	91.67	88.24
14	85.56	86.79	86.01	100.00	88.00	91.43	87.08
15	88.14	90.59	88.93	91.67	100.00	97.96	90.35
16	94.85	96.61	95.51	100.00	90.91	94.12	95.38
17	80.77	93.75	85.71	100.00	75.00	87.50	85.87
18	75.61	75.00	75.51	50.00	100.00	75.00	75.44
19	61.54	72.73	64.86	100.00	100.00	100.00	71.74
20	76.58	87.88	80.79	88.24	95.24	92.11	82.79
21	85.71	84.78	85.34	50.00	75.00	66.67	84.43
22	90.10	89.66	89.94	80.00	100.00	90.00	89.94
23	84.62	70.00	80.56	66.67	100.00	86.67	82.35

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
24	96.00	100.00	96.97	100.00	100.00	100.00	97.73
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	72.29	96.30	78.18	85.71	100.00	90.00	79.17
27	82.43	81.48	82.18	100.00	89.47	93.10	84.62
28	97.22	85.71	95.35	(0/0)	100.00	100.00	95.92
29	82.43	81.48	82.18	100.00	89.47	93.10	84.62
30	100.00	(0/0)	100.00	100.00	(0/0)	100.00	100.00
31	95.24	100.00	95.65	100.00	100.00	100.00	96.97
32	93.33	85.71	91.89	100.00	100.00	100.00	94.44
33	100.00	(0/0)	100.00	(0/0)	(0/0)	100.00	100.00
34	77.97	92.00	82.14	66.67	85.71	82.35	82.18
35	90.00	77.78	87.18	100.00	91.67	92.86	88.68
36	87.50	100.00	88.89	100.00	100.00	100.00	91.30
37	100.00	90.00	97.96	100.00	91.67	93.33	96.88
38	100.00	(0/0)	100.00	(0/0)	(0/0)	100.00	100.00
39	100.00	100.00	100.00	100.00	100.00	100.00	100.00
40	90.63	88.89	90.24	100.00	100.00	100.00	92.73
41	66.67	(0/0)	66.67	(0/0)	(0/0)	(0/0)	66.67
42	100.00	100.00	100.00	100.00	100.00	100.00	100.00
43	93.10	80.00	91.18	(0/0)	100.00	100.00	91.43
44	100.00	100.00	100.00	(0/0)	100.00	100.00	100.00
45	87.50	100.00	90.91	100.00	0.00	100.00	92.31
46	44.44	100.00	58.33	(0/0)	33.33	33.33	53.33
47	92.73	100.00	93.85	100.00	95.65	95.83	94.38
48	93.02	91.43	92.56	100.00	100.00	100.00	92.86
49	91.67	100.00	92.50	100.00	100.00	100.00	94.12
50	91.67	96.77	93.20	100.00	100.00	100.00	93.75

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
51	72.73	60.00	68.75	(0/0)	100.00	100.00	78.26
52	77.08	88.57	79.33	100.00	100.00	100.00	80.93
53	78.57	83.33	80.77	100.00	100.00	100.00	83.87
54	88.57	98.57	93.57	100.00	100.00	100.00	94.41
55	85.05	90.18	87.67	(0/0)	0.00	(0/0)	87.67
56	96.88	95.83	96.43	100.00	100.00	100.00	96.72
57	80.00	0.00	66.67	(0/0)	100.00	100.00	71.43
58	80.00	100.00	82.35	100.00	100.00	100.00	87.50
59	84.09	94.00	89.36	100.00	91.67	94.44	90.18
60	60.00	27.27	51.22	33.33	27.27	28.57	45.45
61	100.00	93.55	96.00	76.92	100.00	86.96	93.15
62	92.71	88.70	90.52	80.00	92.31	88.89	90.39
63	85.71	84.62	85.19	100.00	100.00	100.00	88.89
64	75.00	60.00	69.23	100.00	100.00	100.00	77.78
65	77.55	88.00	82.83	100.00	100.00	100.00	84.40
66	88.24	86.67	87.50	(0/0)	100.00	100.00	88.57
67	81.48	60.00	75.68	100.00	100.00	100.00	79.55
68	92.11	96.49	93.98	60.00	91.67	82.35	92.67
69	82.76	88.89	84.21	100.00	100.00	100.00	86.05
70	100.00	100.00	100.00	100.00	100.00	100.00	100.00
71	91.67	100.00	93.33	100.00	100.00	100.00	95.00
72	86.36	90.00	87.50	(0/0)	0.00	(0/0)	87.50
73	86.67	100.00	89.74	(0/0)	100.00	100.00	90.70
74	93.22	96.20	94.42	100.00	100.00	100.00	94.79
75	93.48	89.36	92.09	90.91	96.00	94.44	92.57
76	93.48	85.29	91.27	100.00	90.32	91.18	91.25
77	79.59	85.48	81.88	100.00	93.75	95.56	84.88

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
78	71.67	85.19	75.86	100.00	73.33	81.82	77.06
79	90.57	92.45	91.19	84.62	94.44	90.32	91.05
80	61.76	55.56	60.47	40.00	100.00	72.73	62.96
81	97.26	96.55	97.06	100.00	95.45	96.88	97.01
82	75.00	100.00	80.00	75.00	100.00	83.33	80.95
83	88.06	75.00	86.08	77.78	86.67	83.33	85.44
84	57.89	50.00	56.52	100.00	100.00	100.00	65.52
85	80.26	96.55	84.76	70.00	85.71	79.17	83.72
86	82.35	100.00	88.68	100.00	50.00	85.71	88.33
87	76.92	100.00	82.35	100.00	100.00	100.00	84.21
88	58.14	70.00	60.38	33.33	100.00	63.64	60.94
89	84.21	83.33	84.00	100.00	100.00	100.00	86.89
90	100.00	66.67	90.00	(0/0)	100.00	100.00	91.67
91	86.05	91.43	87.60	83.33	75.00	78.13	85.62
92	66.67	50.00	62.50	0.00	75.00	60.00	61.54
93	92.86	90.00	92.22	90.00	100.00	95.45	92.86
94	60.00	100.00	83.33	0.00	100.00	66.67	80.00
95	83.33	66.67	81.67	100.00	100.00	100.00	85.53
96	90.48	66.67	87.50	100.00	100.00	100.00	90.00
97	92.31	87.50	90.48	100.00	83.33	91.67	90.91
98	100.00	88.89	98.25	100.00	100.00	100.00	98.63
99	94.23	93.75	94.17	100.00	100.00	100.00	95.48
100	96.08	85.71	94.83	100.00	100.00	100.00	95.83
101	89.83	96.00	91.67	100.00	80.00	92.31	91.75
102	84.62	62.50	76.19	100.00	66.67	80.00	76.92
103	78.74	81.40	79.41	75.00	85.71	81.82	79.56
104	100.00	100.00	100.00	100.00	0.00	100.00	100.00

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
105	100.00	50.00	83.33	(0/0)	100.00	100.00	85.71
106	80.00	55.56	73.53	100.00	100.00	100.00	80.43
107	73.33	69.57	71.70	62.50	90.91	78.95	73.61
108	100.00	100.00	100.00	(0/0)	66.67	66.67	94.12
109	95.24	100.00	95.65	100.00	83.33	85.71	93.33
110	76.47	100.00	80.00	100.00	80.00	85.71	81.48
111	85.00	66.67	80.77	66.67	50.00	60.00	77.42
112	100.00	100.00	100.00	100.00	100.00	100.00	100.00
113	(0/0)	100.00	100.00	0.00	0.00	0.00	50.00
114	93.33	83.33	90.48	75.00	100.00	85.71	89.29
115	90.00	100.00	93.10	(0/0)	100.00	100.00	93.94
116	40.00	(0/0)	40.00	0.00	(0/0)	50.00	42.86
117	72.22	25.00	63.64	(0/0)	66.67	66.67	64.00
Total	86.31	89.13	87.24	87.78	92.65	90.99	87.84

Table 17: Seatbelt Usage among Nevada Registered Vehicles by Gender during Post-Mobilization Survey

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
1	96.17	100.00	96.36	100.00	100.00	100.00	96.48
2	94.92	100.00	95.89	87.50	100.00	97.22	96.33
3	93.47	93.22	93.38	94.74	95.83	95.52	93.75
4	90.91	100.00	91.67	100.00	75.00	80.00	88.24
5	92.25	90.48	91.59	88.89	95.65	93.75	91.86
6	86.30	97.37	90.09	100.00	100.00	100.00	91.54
7	92.06	95.00	92.77	100.00	100.00	100.00	94.34
8	76.09	88.00	80.28	87.50	85.71	86.36	81.72
9	68.18	58.33	64.71	66.67	100.00	80.00	66.67
10	83.33	88.00	85.25	83.33	95.83	91.67	86.71
11	89.55	93.48	91.15	100.00	100.00	100.00	92.00
12	83.93	90.00	86.63	100.00	85.71	91.43	87.34
13	84.72	97.06	88.68	83.33	100.00	94.44	89.52
14	72.50	92.11	78.81	84.62	85.19	85.00	80.38
15	95.42	98.32	96.69	94.74	100.00	98.33	96.99
16	91.67	97.50	94.15	50.00	100.00	86.36	93.33
17	79.59	87.72	83.96	100.00	100.00	100.00	85.09
18	68.75	93.33	80.65	100.00	100.00	100.00	83.33
19	58.82	66.67	60.00	100.00	50.00	66.67	60.87
20	89.44	92.77	90.67	89.47	95.45	92.68	90.98
21	89.09	96.88	91.95	100.00	93.33	95.24	92.59
22	87.50	92.45	89.47	75.00	100.00	91.30	89.74
23	76.19	83.33	77.78	50.00	100.00	66.67	76.67

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
24	97.44	100.00	97.73	100.00	100.00	100.00	98.20
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	91.43	85.00	89.09	78.57	100.00	85.71	88.55
27	90.36	95.35	92.06	100.00	100.00	100.00	93.29
28	100.00	100.00	100.00	100.00	100.00	100.00	100.00
29	96.00	92.86	95.31	100.00	100.00	100.00	96.15
30	80.00	100.00	83.33	100.00	50.00	75.00	80.00
31	96.00	85.71	93.75	100.00	100.00	100.00	94.87
32	83.33	83.33	83.33	(0/0)	50.00	50.00	78.57
33	66.67	(0/0)	66.67	(0/0)	(0/0)	(0/0)	66.67
34	96.77	96.88	96.81	75.00	88.00	86.21	94.31
35	86.21	90.91	87.50	100.00	100.00	100.00	91.07
36	97.44	90.91	95.08	100.00	100.00	100.00	96.05
37	92.31	71.43	85.00	100.00	100.00	100.00	87.50
38	100.00	50.00	80.00	100.00	0.00	100.00	83.33
39	75.00	(0/0)	75.00	(0/0)	(0/0)	100.00	83.33
40	92.50	66.67	87.76	100.00	100.00	100.00	88.68
41	28.57	66.67	40.00	(0/0)	0.00	(0/0)	40.00
42	100.00	66.67	85.71	100.00	100.00	100.00	90.00
43	64.86	78.57	68.63	100.00	75.00	78.26	70.40
44	84.62	100.00	90.91	100.00	100.00	100.00	92.59
45	81.82	100.00	85.71	66.67	0.00	66.67	83.87
46	81.25	100.00	84.21	0.00	100.00	66.67	81.82
47	93.18	93.75	93.33	100.00	91.67	92.86	93.24
48	95.69	100.00	97.18	100.00	100.00	100.00	97.71
49	91.67	100.00	93.18	100.00	100.00	100.00	95.00
50	92.86	100.00	94.83	100.00	100.00	100.00	95.71

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
51	83.33	75.00	81.25	50.00	75.00	66.67	77.27
52	81.06	70.97	77.84	92.31	89.47	90.63	79.65
53	89.66	100.00	93.02	66.67	83.33	77.78	90.38
54	95.73	100.00	97.84	94.44	100.00	96.88	97.73
55	94.29	98.73	96.20	100.00	100.00	100.00	96.60
56	96.15	88.46	93.59	100.00	100.00	100.00	95.15
57	91.67	100.00	92.31	(0/0)	100.00	100.00	93.33
58	85.71	75.00	81.82	(0/0)	100.00	100.00	85.71
59	94.74	94.00	94.44	71.43	100.00	88.24	93.13
60	43.75	25.00	40.00	83.33	25.00	60.00	44.00
61	82.14	91.30	86.27	100.00	100.00	100.00	88.52
62	93.00	98.92	95.85	83.33	100.00	95.45	95.81
63	92.31	88.89	90.91	100.00	100.00	100.00	93.55
64	90.91	100.00	92.31	100.00	100.00	100.00	94.12
65	88.24	100.00	93.55	100.00	100.00	100.00	94.29
66	91.67	96.00	94.59	0.00	85.71	75.00	91.11
67	69.23	92.31	76.92	0.00	50.00	33.33	73.81
68	88.16	98.31	92.59	90.91	100.00	95.83	93.08
69	83.33	94.44	88.89	100.00	87.50	90.91	89.36
70	12.50	33.33	18.18	0.00	0.00	0.00	14.29
71	90.00	100.00	93.75	50.00	100.00	80.00	90.48
72	92.45	100.00	93.85	87.50	100.00	96.15	94.51
73	95.65	100.00	97.01	100.00	100.00	100.00	97.78
74	90.30	98.36	92.82	95.45	97.30	96.61	93.70
75	94.59	98.33	95.91	85.71	92.11	89.83	94.35
76	85.00	88.00	85.71	88.89	90.91	90.32	86.76
77	82.27	75.00	80.42	92.31	80.65	84.09	81.12

continued on next page

continued from previous page

Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
78	77.05	80.77	78.16	100.00	86.36	88.46	80.53
79	90.11	97.14	92.06	75.00	90.32	86.05	90.53
80	83.33	92.31	85.45	80.00	80.00	80.00	84.29
81	91.40	92.00	91.53	92.86	90.91	91.67	91.56
82	61.54	100.00	77.27	75.00	87.50	83.33	79.41
83	85.00	90.00	86.00	92.31	90.48	91.18	87.31
84	73.68	100.00	76.19	100.00	100.00	100.00	83.33
85	82.42	75.00	80.87	77.78	85.71	83.33	81.38
86	96.30	100.00	97.78	100.00	100.00	100.00	98.25
87	80.00	100.00	88.89	100.00	33.33	50.00	76.92
88	70.18	81.82	72.06	63.64	71.43	66.67	70.93
89	73.33	70.59	72.58	66.67	85.71	80.00	73.61
90	77.78	100.00	83.33	100.00	75.00	83.33	83.33
91	94.32	96.55	95.21	86.96	94.12	91.23	94.09
92	72.73	100.00	75.00	50.00	100.00	75.00	75.00
93	86.11	88.24	86.52	100.00	87.50	92.31	87.83
94	84.21	60.00	79.17	(0/0)	100.00	100.00	82.76
95	72.60	84.21	75.00	66.67	100.00	85.71	75.76
96	83.33	100.00	85.00	100.00	100.00	100.00	88.00
97	96.77	85.71	94.74	80.00	90.91	87.50	92.59
98	86.00	100.00	87.04	100.00	95.00	95.83	89.74
99	95.08	90.91	94.44	100.00	100.00	100.00	95.96
100	70.00	100.00	72.73	100.00	83.33	90.00	76.74
101	94.02	94.44	94.12	100.00	100.00	100.00	95.36
102	95.65	100.00	96.67	100.00	100.00	100.00	97.78
103	85.55	85.71	85.59	100.00	100.00	100.00	86.83
104	66.67	100.00	80.00	100.00	0.00	100.00	83.33

continued on next page

continued from previous page

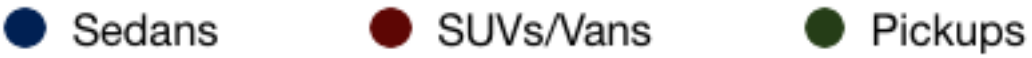
Site	Driver			Passenger			All Occupants
	Male	Female	Total	Male	Female	Total	
105	83.33	(0/0)	83.33	(0/0)	(0/0)	100.00	85.71
106	53.85	100.00	66.67	(0/0)	100.00	100.00	71.43
107	72.50	78.79	74.34	72.73	54.55	63.64	72.59
108	93.33	90.00	92.50	100.00	100.00	100.00	94.64
109	83.33	92.31	86.05	100.00	100.00	100.00	90.48
110	88.89	100.00	93.10	100.00	88.89	90.91	92.50
111	88.89	75.00	86.36	100.00	100.00	100.00	90.00
112	62.50	100.00	66.67	100.00	0.00	66.67	66.67
113	100.00	100.00	100.00	100.00	100.00	100.00	100.00
114	94.12	100.00	94.87	100.00	100.00	100.00	96.30
115	83.87	100.00	85.71	100.00	93.33	94.74	88.89
116	50.00	33.33	46.15	100.00	50.00	66.67	50.00
117	50.00	90.91	63.64	80.00	40.00	60.00	62.79
Total	87.48	92.17	88.97	89.32	93.20	91.91	89.52

Seatbelt Usage Rates Based on Vehicle Type

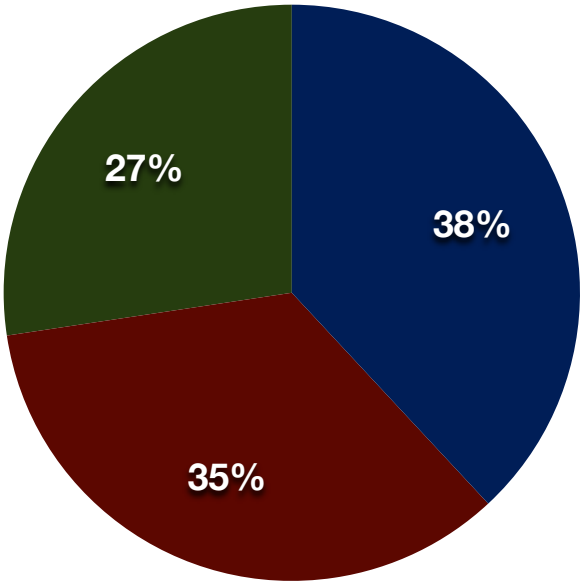
Three major categories of vehicles were observed for this study. They were: Sedans/Station Wagons, Pickups, and Vans/Sport Utility Vehicles (SUVs). Figure 10 shows the distribution of these vehicle types observed during this data collection effort. The overall seatbelt usage for the front seat occupants (both drivers and passengers) in different vehicle categories can be found in Tables 18 and 19.

From Tables 18 and 19, it can be concluded that the drivers of pickups showed the lowest rate of seatbelt usage during both Pre-Mobilization (83.39%) and Post-Mobilization surveys (84.93%). On the other hand, the drivers of Vans/SUVs showed the highest percent of seatbelt usage during both Pre-Mobilization (90.90%) and Post-Mobilization surveys (92.51%). The seatbelt usage rate for the drivers of sedan/station wagons was found to be 88.94% during Pre-Mobilization and 91.18% during Post-Mobilization surveys. The overall seatbelt usage for occupants in pick-ups was found to be the lowest (84.36% during Pre-Mobilization and 85.57% during Post-Mobilization), with sedans/station wagons (88.94% during Pre-Mobilization and 91.66% during Post-Mobilization) in the middle, and Vans/SUVS (91.51% during Pre-Mobilization and 93.25% during Post-Mobilization) with the highest seatbelt usage.

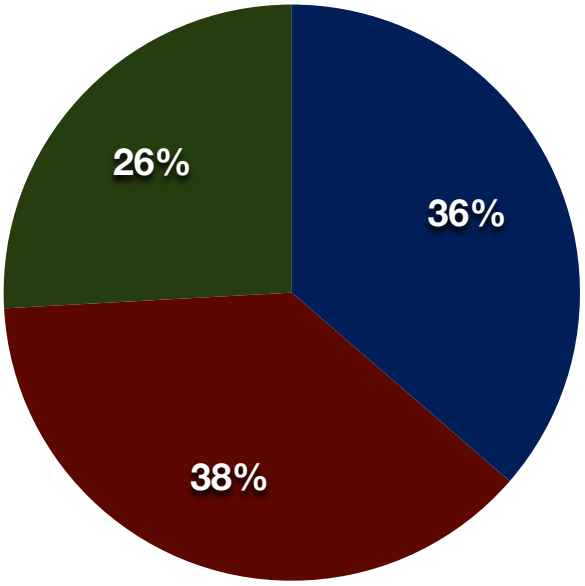
Figure 10: Distribution of Vehicles



(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Table 18: Seatbelt Usage based on Vehicle Type during Pre-Mobilization Survey

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
1	84.34	71.43	82.47	87.50	66.67	84.21	90.00	100.00	90.91
2	100.00	100.00	100.00	96.59	100.00	97.66	100.00	100.00	100.00
3	97.96	96.43	97.77	99.20	100.00	99.28	85.71	66.67	83.33
4	88.89	100.00	93.33	92.31	100.00	95.45	66.67	83.33	73.33
5	83.76	83.33	83.72	88.52	100.00	90.41	80.77	100.00	82.14
6	91.30	100.00	92.86	89.66	92.31	90.14	72.22	50.00	70.00
7	86.49	100.00	87.80	79.31	100.00	82.86	95.45	100.00	95.83
8	73.08	85.71	75.76	82.76	100.00	85.71	56.52	50.00	55.56
9	90.00	57.14	83.78	95.00	100.00	95.83	100.00	100.00	100.00
10	75.61	100.00	78.26	85.71	72.00	82.35	75.00	83.33	76.47
11	92.45	50.00	90.91	86.67	100.00	88.24	100.00	100.00	100.00
12	85.15	86.67	85.34	86.30	93.75	87.64	100.00	100.00	100.00
13	93.33	87.50	92.11	86.67	100.00	88.24	80.00	100.00	83.33
14	83.82	93.75	85.71	88.24	85.71	87.69	84.38	87.50	85.00
15	91.97	96.00	92.59	92.86	100.00	94.02	74.42	100.00	77.55
16	96.00	100.00	96.34	98.33	90.00	97.14	90.32	100.00	91.43
17	84.21	80.00	83.72	82.93	100.00	84.44	100.00	(0/0)	100.00
18	77.27	75.00	76.92	71.43	50.00	68.75	76.92	100.00	80.00
19	60.00	100.00	66.67	84.62	100.00	88.89	25.00	(0/0)	25.00
20	80.20	90.48	81.97	85.25	93.75	87.01	78.79	100.00	82.50
21	85.53	60.00	83.95	96.30	100.00	96.43	70.59	(0/0)	70.59
22	90.08	100.00	90.77	89.66	(0/0)	89.66	71.43	0.00	68.18
23	85.71	100.00	90.00	80.00	87.50	82.93	73.68	85.71	76.92
24	94.29	100.00	96.00	94.59	94.74	94.64	90.00	100.00	92.68

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	87.23	100.00	88.89	84.62	100.00	86.89	69.23	66.67	69.05
27	82.98	86.67	83.87	82.09	96.15	86.02	85.19	100.00	88.57
28	95.83	100.00	96.55	100.00	100.00	100.00	94.44	100.00	95.00
29	82.98	86.67	83.87	82.09	96.15	86.02	85.19	100.00	88.57
30	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	100.00	100.00	100.00
31	83.33	87.50	84.62	100.00	100.00	100.00	77.78	71.43	76.00
32	100.00	100.00	100.00	100.00	100.00	100.00	76.92	100.00	81.25
33	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
34	85.71	100.00	87.18	80.00	71.43	77.78	77.42	83.33	78.38
35	89.47	75.00	86.96	87.50	100.00	90.91	83.33	100.00	87.50
36	86.96	100.00	88.89	93.10	100.00	94.74	90.91	100.00	92.31
37	94.74	90.91	93.88	96.43	90.91	94.87	100.00	87.50	96.77
38	100.00	100.00	100.00	85.71	100.00	88.89	100.00	100.00	100.00
39	100.00	100.00	100.00	100.00	100.00	100.00	83.33	100.00	88.89
40	88.46	100.00	90.32	100.00	100.00	100.00	86.21	93.33	88.64
41	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	66.67	(0/0)	66.67
42	100.00	100.00	100.00	85.71	100.00	90.00	100.00	100.00	100.00
43	93.33	100.00	94.29	86.67	100.00	87.50	85.71	100.00	86.96
44	100.00	100.00	100.00	100.00	(0/0)	100.00	100.00	100.00	100.00
45	80.00	100.00	83.33	100.00	100.00	100.00	100.00	100.00	100.00
46	40.00	(0/0)	40.00	50.00	0.00	33.33	71.43	33.33	60.00
47	92.86	100.00	94.87	92.68	95.00	93.44	92.50	81.82	90.20
48	97.10	100.00	97.26	91.53	100.00	91.67	89.58	100.00	90.20
49	88.64	100.00	91.07	100.00	100.00	100.00	93.33	100.00	94.59
50	100.00	100.00	100.00	82.61	100.00	85.19	94.74	100.00	95.08
51	80.00	100.00	85.71	75.00	100.00	85.71	57.14	100.00	66.67

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
52	86.36	100.00	87.32	84.06	85.71	84.21	64.00	100.00	66.67
53	88.89	100.00	90.91	70.00	100.00	72.73	85.71	100.00	88.89
54	90.70	100.00	91.67	95.89	100.00	96.34	89.29	100.00	91.67
55	87.63	(0/0)	87.63	92.38	(0/0)	92.38	78.05	(0/0)	78.05
56	100.00	100.00	100.00	100.00	100.00	100.00	81.82	100.00	83.33
57	50.00	100.00	66.67	75.00	100.00	80.00	100.00	(0/0)	100.00
58	66.67	(0/0)	66.67	100.00	100.00	100.00	77.78	100.00	83.33
59	92.86	100.00	93.75	93.75	100.00	94.92	72.22	66.67	71.43
60	47.37	28.57	42.31	55.56	33.33	50.00	53.85	25.00	47.06
61	89.47	83.33	87.10	100.00	80.00	96.00	100.00	100.00	100.00
62	87.50	(0/0)	87.50	92.86	92.31	92.80	90.48	80.00	89.36
63	83.33	100.00	84.62	100.00	100.00	100.00	71.43	100.00	81.82
64	87.50	100.00	91.67	33.33	100.00	50.00	50.00	(0/0)	50.00
65	80.49	100.00	82.22	94.12	100.00	94.87	72.00	100.00	73.08
66	83.33	(0/0)	83.33	92.86	100.00	94.12	85.71	(0/0)	85.71
67	85.71	100.00	88.89	82.35	100.00	85.00	61.54	100.00	66.67
68	92.50	80.00	91.11	98.15	100.00	98.33	88.10	66.67	85.42
69	92.31	100.00	93.33	75.00	100.00	77.78	88.89	100.00	90.00
70	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	87.50
71	100.00	100.00	100.00	50.00	100.00	66.67	100.00	100.00	100.00
72	92.86	100.00	93.10	92.11	100.00	92.50	80.00	(0/0)	80.00
73	88.57	100.00	90.91	86.67	87.50	86.84	89.19	100.00	90.48
74	96.00	100.00	96.30	98.70	100.00	98.82	86.15	100.00	86.57
75	90.38	100.00	91.53	96.30	90.00	94.59	90.48	100.00	92.45
76	84.91	85.71	85.07	93.48	94.12	93.65	95.00	100.00	95.74
77	85.25	100.00	87.84	87.27	100.00	91.03	75.47	84.62	77.27
78	86.67	100.00	87.10	78.57	83.33	80.00	70.45	81.82	72.73

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
79	97.01	100.00	97.44	91.53	88.24	90.79	85.71	81.82	85.07
80	66.67	100.00	75.00	90.00	100.00	93.33	48.00	25.00	44.83
81	96.67	100.00	97.37	100.00	100.00	100.00	95.24	92.86	94.64
82	66.67	100.00	80.00	(0/0)	(0/0)	(0/0)	80.00	80.00	80.00
83	96.43	100.00	97.22	93.75	92.31	93.33	76.32	72.73	75.51
84	80.00	100.00	83.33	60.00	100.00	66.67	50.00	100.00	61.11
85	95.24	90.00	94.23	88.37	77.78	86.54	70.59	77.78	72.09
86	81.25	66.67	78.95	96.55	100.00	96.97	87.50	100.00	88.89
87	80.00	(0/0)	80.00	80.00	100.00	83.33	66.67	100.00	70.00
88	75.00	100.00	80.00	69.23	100.00	75.00	58.33	42.86	55.81
89	100.00	83.33	95.00	83.33	100.00	86.36	78.26	100.00	80.00
90	100.00	100.00	100.00	100.00	(0/0)	100.00	75.00	100.00	80.00
91	84.75	50.00	79.71	92.11	81.25	88.89	87.88	88.89	88.10
92	100.00	(0/0)	100.00	75.00	75.00	75.00	25.00	0.00	20.00
93	96.77	90.00	95.12	100.00	100.00	100.00	81.58	100.00	84.78
94	75.00	(0/0)	75.00	100.00	100.00	100.00	60.00	0.00	50.00
95	81.48	100.00	85.29	87.10	92.86	88.89	88.00	100.00	90.63
96	96.97	100.00	97.73	100.00	100.00	100.00	88.46	100.00	90.32
97	85.71	83.33	85.00	100.00	100.00	100.00	84.21	100.00	88.46
98	100.00	100.00	100.00	100.00	100.00	100.00	95.35	100.00	96.08
99	86.21	100.00	88.89	100.00	100.00	100.00	94.95	100.00	96.00
100	91.67	100.00	93.62	96.88	100.00	97.67	93.94	100.00	94.59
101	92.31	90.00	91.67	97.50	100.00	97.83	91.67	100.00	92.75
102	80.00	100.00	85.71	80.77	90.91	83.78	90.91	100.00	93.33
103	83.64	100.00	84.48	80.85	100.00	82.69	78.41	60.00	77.42
104	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
105	100.00	(0/0)	100.00	75.00	(0/0)	75.00	100.00	100.00	100.00

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
106	70.00	100.00	78.57	76.47	90.00	81.48	81.25	100.00	84.21
107	77.78	80.00	78.57	71.43	75.00	72.41	66.67	75.00	68.57
108	92.59	92.31	92.50	100.00	100.00	100.00	94.74	90.91	93.33
109	97.14	90.91	95.65	96.00	92.31	94.74	93.75	93.75	93.75
110	90.00	100.00	92.86	93.55	100.00	95.83	66.67	80.00	71.43
111	100.00	100.00	100.00	90.00	100.00	92.31	73.33	0.00	64.71
112	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
113	(0/0)	(0/0)	(0/0)	100.00	71.43	86.67	100.00	100.00	100.00
114	100.00	100.00	100.00	94.12	85.71	91.67	94.44	100.00	96.00
115	95.24	100.00	95.65	95.45	100.00	96.00	89.74	85.71	89.13
116	50.00	(0/0)	50.00	50.00	100.00	66.67	37.50	33.33	36.36
117	73.33	100.00	77.78	70.00	100.00	72.73	77.78	50.00	72.73
Total	88.94	92.57	89.52	90.90	93.89	91.51	83.39	89.02	84.36

Table 19: Seatbelt Usage based on Vehicle Type during Post-Mobilization Survey

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
1	98.06	100.00	98.13	94.83	(0/0)	94.83	95.38	100.00	95.59
2	97.10	97.37	97.20	96.83	97.14	96.94	96.88	100.00	98.00
3	94.61	96.43	94.87	95.35	97.06	95.71	87.23	91.67	88.14
4	100.00	100.00	100.00	100.00	100.00	100.00	85.71	66.67	80.00
5	91.94	100.00	92.75	90.36	93.75	90.91	92.86	75.00	90.63
6	91.67	100.00	92.96	91.11	100.00	92.16	84.62	100.00	87.50
7	93.75	100.00	95.45	92.00	100.00	93.94	92.59	100.00	93.55
8	78.57	50.00	75.00	93.33	100.00	95.83	58.82	0.00	55.56
9	77.78	100.00	80.00	60.00	100.00	63.64	50.00	50.00	50.00
10	91.43	94.74	92.13	82.86	86.67	84.00	66.67	100.00	70.00
11	90.20	100.00	90.57	92.31	100.00	93.55	87.50	100.00	88.24
12	87.39	84.62	87.10	89.71	94.44	90.70	76.00	100.00	79.31
13	93.88	100.00	95.00	89.66	66.67	87.50	79.31	100.00	81.82
14	85.96	78.95	84.21	78.72	89.47	81.82	60.00	100.00	63.64
15	97.18	96.43	97.06	97.35	100.00	97.86	90.91	100.00	92.59
16	93.41	92.31	93.27	96.72	100.00	97.22	91.11	50.00	87.76
17	84.91	100.00	86.21	83.72	100.00	84.78	80.00	(0/0)	80.00
18	81.25	100.00	84.21	90.00	100.00	91.67	60.00	(0/0)	60.00
19	87.50	0.00	77.78	33.33	100.00	50.00	50.00	(0/0)	50.00
20	93.50	95.45	93.79	89.61	100.00	91.11	86.36	66.67	84.00
21	90.91	100.00	92.45	92.86	100.00	94.44	93.75	80.00	90.48
22	91.55	83.33	90.91	89.13	92.86	90.00	86.96	80.00	85.71
23	92.86	100.00	93.75	90.91	100.00	93.75	55.56	0.00	50.00
24	97.73	100.00	98.25	100.00	100.00	100.00	97.62	100.00	97.92

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	88.46	87.50	88.33	95.74	92.31	95.00	89.47	83.33	88.00
27	89.71	100.00	91.36	91.49	100.00	93.33	92.86	100.00	94.00
28	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
29	95.65	100.00	96.49	96.88	100.00	97.56	96.30	100.00	96.55
30	(0/0)	(0/0)	(0/0)	80.00	50.00	71.43	100.00	100.00	100.00
31	96.43	100.00	97.30	90.91	100.00	93.02	90.91	100.00	91.67
32	88.89	(0/0)	88.89	86.67	75.00	84.21	100.00	(0/0)	100.00
33	100.00	(0/0)	100.00	100.00	(0/0)	100.00	66.67	(0/0)	66.67
34	97.92	85.71	95.16	94.59	95.00	94.74	96.15	83.33	93.75
35	89.29	100.00	92.68	100.00	100.00	100.00	81.82	100.00	84.62
36	98.15	94.12	97.18	95.83	94.12	95.38	93.10	100.00	94.87
37	83.33	(0/0)	83.33	84.62	100.00	87.50	87.50	100.00	90.00
38	83.33	100.00	87.50	91.67	100.00	93.75	100.00	100.00	100.00
39	100.00	100.00	100.00	80.00	100.00	88.89	83.33	100.00	85.71
40	90.32	100.00	91.18	90.48	100.00	90.91	86.67	(0/0)	86.67
41	66.67	100.00	80.00	100.00	100.00	100.00	33.33	(0/0)	33.33
42	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	66.67
43	76.60	76.47	76.56	76.19	100.00	79.59	69.77	81.82	72.22
44	100.00	100.00	100.00	100.00	100.00	100.00	50.00	(0/0)	50.00
45	90.00	100.00	90.91	87.50	(0/0)	87.50	84.21	75.00	82.61
46	100.00	100.00	100.00	100.00	100.00	100.00	72.73	0.00	66.67
47	98.04	94.12	97.06	98.04	100.00	98.55	85.00	100.00	86.96
48	98.86	100.00	99.06	100.00	100.00	100.00	93.55	100.00	94.29
49	96.67	93.33	96.00	97.47	97.30	97.41	84.85	100.00	86.84
50	96.88	100.00	97.67	100.00	100.00	100.00	90.74	100.00	92.19
51	80.00	100.00	85.71	71.43	50.00	66.67	100.00	66.67	87.50

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
52	82.76	87.50	83.50	76.84	85.71	77.98	75.76	100.00	78.95
53	100.00	(0/0)	100.00	100.00	83.33	96.00	82.35	66.67	80.00
54	97.14	100.00	97.47	100.00	100.00	100.00	93.33	88.89	92.59
55	97.56	100.00	97.83	96.43	100.00	96.94	94.12	100.00	94.44
56	95.24	100.00	96.30	97.62	100.00	98.31	80.00	100.00	82.35
57	100.00	(0/0)	100.00	100.00	100.00	100.00	75.00	(0/0)	75.00
58	83.33	100.00	85.71	100.00	(0/0)	100.00	75.00	100.00	83.33
59	96.43	100.00	97.14	96.92	100.00	97.47	88.24	69.23	82.98
60	27.78	0.00	23.81	60.00	100.00	69.23	41.67	75.00	50.00
61	83.33	100.00	86.67	90.91	100.00	91.67	82.35	100.00	86.36
62	98.39	100.00	98.65	97.06	100.00	97.30	92.16	80.00	91.07
63	71.43	100.00	75.00	100.00	100.00	100.00	100.00	100.00	100.00
64	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	83.33
65	90.00	100.00	92.31	93.75	100.00	94.12	100.00	(0/0)	100.00
66	95.24	75.00	92.00	92.31	100.00	93.75	100.00	0.00	80.00
67	69.23	50.00	66.67	86.36	0.00	79.17	71.43	50.00	68.75
68	92.16	100.00	93.10	93.75	91.67	93.42	91.30	100.00	93.10
69	100.00	100.00	100.00	89.66	87.50	89.19	76.92	100.00	81.25
70	16.67	0.00	14.29	25.00	0.00	20.00	0.00	0.00	0.00
71	100.00	66.67	88.89	100.00	100.00	100.00	80.00	100.00	83.33
72	93.10	94.44	93.42	95.52	97.50	96.26	89.29	91.67	90.00
73	100.00	100.00	100.00	98.00	96.15	97.37	93.02	100.00	94.92
74	96.74	100.00	97.48	94.03	96.15	94.62	87.84	95.24	89.47
75	96.49	88.89	94.67	96.47	93.75	95.73	96.08	87.50	94.03
76	83.87	100.00	85.29	88.46	90.00	88.89	90.00	90.91	90.20
77	78.26	76.47	77.91	87.65	100.00	90.29	80.00	81.25	80.26
78	76.47	80.00	77.27	90.00	100.00	92.45	74.29	87.50	76.74

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
79	93.10	93.33	93.15	95.92	90.00	94.20	89.58	73.68	85.07
80	90.00	83.33	88.46	89.47	87.50	88.89	80.95	75.00	80.00
81	95.45	94.44	95.16	97.78	100.00	98.21	82.98	77.78	82.14
82	83.33	100.00	88.89	77.78	66.67	73.33	66.67	100.00	76.92
83	77.78	100.00	83.78	91.67	84.21	89.55	80.95	81.82	81.13
84	100.00	100.00	100.00	75.00	100.00	85.71	69.23	100.00	75.00
85	80.39	70.00	78.69	80.95	100.00	85.45	87.80	85.71	87.27
86	100.00	100.00	100.00	100.00	100.00	100.00	87.50	100.00	90.00
87	75.00	100.00	83.33	75.00	0.00	50.00	100.00	(0/0)	100.00
88	77.27	60.00	74.07	78.57	70.00	76.32	66.67	50.00	62.86
89	84.21	100.00	85.71	74.07	87.50	77.14	63.33	75.00	64.71
90	100.00	100.00	100.00	100.00	100.00	100.00	60.00	75.00	66.67
91	100.00	100.00	100.00	89.55	89.66	89.58	93.62	85.71	91.80
92	100.00	100.00	100.00	100.00	100.00	100.00	57.14	50.00	55.56
93	86.67	80.00	85.00	93.02	100.00	95.16	81.25	100.00	83.33
94	87.50	100.00	90.91	78.57	100.00	81.25	90.00	100.00	91.67
95	70.73	66.67	70.45	88.46	100.00	90.16	78.13	100.00	80.00
96	97.06	100.00	97.67	93.62	100.00	95.59	86.21	100.00	88.57
97	100.00	100.00	100.00	93.55	100.00	95.83	87.10	75.00	82.98
98	82.86	100.00	86.36	93.55	95.00	94.12	80.00	89.47	83.33
99	97.50	100.00	98.25	96.49	92.86	95.29	92.45	100.00	94.59
100	63.16	100.00	66.67	87.18	100.00	90.57	76.92	75.00	76.47
101	92.68	100.00	94.12	96.15	100.00	97.40	96.18	100.00	96.93
102	97.56	100.00	98.44	95.00	100.00	96.97	90.91	94.44	92.16
103	77.36	100.00	79.31	90.32	100.00	91.30	86.32	100.00	87.30
104	100.00	(0/0)	100.00	100.00	100.00	100.00	50.00	0.00	40.00
105	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	83.33	100.00	85.71

continued on next page

continued from previous page

Site	**Sedan/SW(%)**			**Van/SUV(%)**			**Pickup(%)**		
	Driver	Pass.	**Total**	Driver	Pass.	**Total**	Driver	Pass.	**Total**
106	88.24	100.00	91.30	92.86	100.00	94.87	70.00	100.00	75.00
107	86.67	100.00	88.89	83.33	72.73	81.13	65.00	44.44	62.32
108	88.46	100.00	91.43	95.35	96.00	95.59	93.75	100.00	95.74
109	88.57	87.50	88.37	92.50	96.55	94.20	80.65	100.00	87.23
110	100.00	100.00	100.00	95.35	96.00	95.59	94.29	91.67	93.62
111	100.00	100.00	100.00	100.00	100.00	100.00	77.27	100.00	82.76
112	0.00	(0/0)	0.00	100.00	100.00	100.00	33.33	0.00	25.00
113	75.00	100.00	83.33	87.50	100.00	91.67	33.33	100.00	50.00
114	96.88	100.00	97.83	97.56	100.00	98.53	96.67	100.00	97.30
115	91.18	90.91	91.11	94.87	100.00	96.88	85.71	100.00	90.38
116	75.00	100.00	80.00	66.67	100.00	72.73	36.36	33.33	35.71
117	43.75	25.00	40.00	86.96	75.00	83.87	47.37	60.00	50.00
Total	91.18	93.70	91.66	92.51	95.55	93.25	84.93	88.29	85.57

Seatbelt Usage Based on Ethnicity

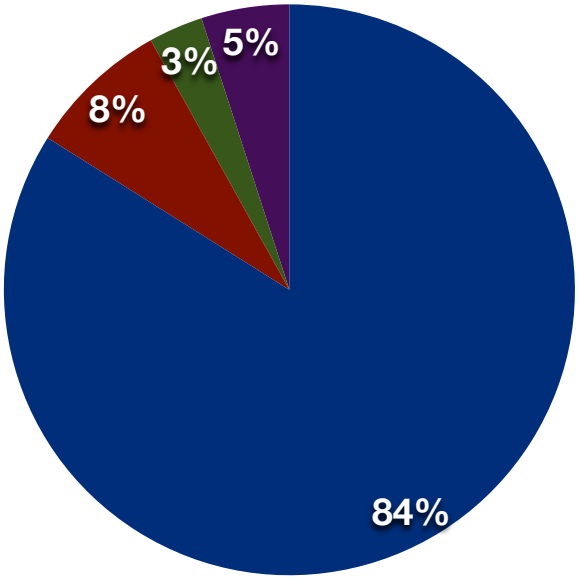
The ethnicity of the occupants was also recorded during the field observations. The observers had past experience/training in performing similar observations based on ethnicity. The ethnicity was recorded as African-American, Hispanic, Caucasian, and Other. The Other category is comprised of drivers and passengers who were not African-American, Hispanic, or Caucasian. Figure 11 shows the breakdown of drivers based on ethnicity.

According to Table 20, based on Pre-Mobilization survey, it can be seen that the seatbelt usage rate was lowest among Hispanic drivers (79.72%). The highest seatbelt usage was observed among the Others category drivers (91.10%). The seatbelt usage rate for the Caucasian drivers was found to be 88.91%, for the African American drivers was 83.38%. As far as the passengers were concerned, the highest seatbelt usage was observed for the Caucasian category (93.24%), while the least seatbelt usage was witnessed for the Hispanic passengers (83.84%). The Other category passengers showed the seat usage rates of 92.25%, while the usage rates for the African-American category passengers was found to be 87.27%.

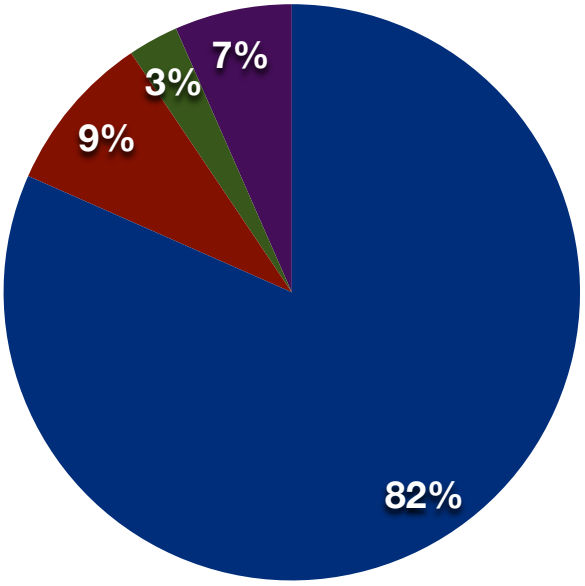
Similarly, according to Table 21, based on Post-Mobilization survey, the lowest seat belt usage was observed among the Hispanic drivers (86.58%). The seatbelt usage rate for African-American drivers (87.76%) and Caucasian drivers (90.30%) were below the Other drivers (92.97%), which was the highest. Considering the passengers, the highest seatbelt usage was observed for the Other category (94.87%) while the least seatbelt usage was witnessed for the Hispanic passengers (87.11%). The Caucasian passengers showed the seatbelt usage rates of 93.90%, while the usage rates for African-American passengers was found to be 92.31%.

Figure 11: Seatbelt Usage by Ethnicity

(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Table 20: Seatbelt Usage based on Ethnicity during Pre-Mobilization Survey

Site	Caucasian			Hispanic			Afr-American			Other		
	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total
1	88.89	71.43	86.54	100.00	100.00	100.00	50.00	0.00	44.44	100.00	100.00	100.00
2	98.48	100.00	98.92	100.00	100.00	100.00	100.00	(0/0)	100.00	100.00	100.00	100.00
3	97.60	97.30	97.57	96.00	83.33	93.55	100.00	100.00	100.00	100.00	(0/0)	100.00
4	81.48	94.74	86.96	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
5	83.65	100.00	84.55	84.21	66.67	80.00	80.95	100.00	82.61	88.33	100.00	90.28
6	85.48	100.00	88.31	77.27	75.00	76.92	92.86	100.00	94.12	95.74	87.50	94.55
7	84.62	100.00	86.84	85.71	100.00	87.50	88.89	(0/0)	88.89	100.00	(0/0)	100.00
8	75.00	75.00	75.00	71.15	83.33	73.44	0.00	(0/0)	0.00	80.00	100.00	83.33
9	91.67	100.00	92.31	91.67	57.14	83.87	100.00	100.00	100.00	100.00	100.00	100.00
10	76.70	76.47	76.67	77.78	76.92	77.59	84.62	100.00	90.00	92.31	75.00	90.00
11	92.86	85.71	92.31	60.00	(0/0)	60.00	100.00	(0/0)	100.00	100.00	(0/0)	100.00
12	87.39	88.24	87.50	78.57	88.89	81.08	87.50	100.00	88.57	96.15	100.00	96.88
13	84.44	90.91	85.71	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
14	82.67	94.74	85.11	82.98	76.92	81.67	91.67	100.00	92.31	100.00	100.00	100.00
15	91.18	96.15	91.98	75.00	100.00	78.33	84.21	100.00	86.36	98.59	100.00	98.81
16	95.80	94.44	95.65	90.00	100.00	90.91	100.00	100.00	100.00	100.00	(0/0)	100.00
17	84.00	75.00	83.33	77.78	100.00	80.00	83.33	(0/0)	83.33	90.91	100.00	92.31
18	71.43	100.00	73.33	70.37	60.00	68.75	100.00	(0/0)	100.00	100.00	100.00	100.00
19	69.23	100.00	73.33	66.67	100.00	73.91	40.00	100.00	50.00	100.00	100.00	100.00
20	84.81	100.00	86.96	85.71	100.00	89.19	73.85	81.25	75.31	86.96	100.00	89.66
21	92.31	75.00	91.30	78.38	100.00	78.95	75.00	0.00	70.59	100.00	(0/0)	100.00
22	87.07	85.71	86.99	91.67	100.00	92.31	80.00	(0/0)	80.00	100.00	(0/0)	100.00
23	80.70	92.31	84.34	33.33	0.00	25.00	100.00	100.00	100.00	100.00	100.00	100.00
24	92.59	97.22	94.02	92.86	100.00	95.24	100.00	(0/0)	100.00	100.00	100.00	100.00
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	81.08	90.91	81.97	64.29	100.00	68.75	100.00	100.00	100.00	100.00	100.00	100.00
27	81.10	95.00	84.43	100.00	75.00	90.00	100.00	100.00	100.00	100.00	100.00	100.00
28	97.18	100.00	97.59	100.00	(0/0)	100.00	100.00	(0/0)	100.00	100.00	(0/0)	100.00
29	81.10	95.00	84.43	100.00	75.00	90.00	100.00	100.00	100.00	100.00	100.00	100.00
30	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
31	87.50	87.50	87.50	100.00	100.00	100.00	50.00	100.00	66.67	100.00	100.00	100.00
32	95.83	100.00	97.06	100.00	100.00	100.00	50.00	(0/0)	50.00	100.00	(0/0)	100.00
33	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
34	78.95	85.71	80.00	100.00	50.00	88.89	100.00	(0/0)	100.00	100.00	100.00	100.00
35	86.54	92.86	87.88	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	66.67	100.00	80.00
36	91.95	100.00	93.40	50.00	100.00	66.67	100.00	(0/0)	100.00	100.00	(0/0)	100.00
37	96.59	90.00	94.92	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)
38	95.00	100.00	96.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
39	90.91	100.00	94.12	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
40	90.79	96.15	92.16	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
41	80.00	100.00	83.33	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
42	94.44	100.00	96.30	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
43	89.39	100.00	90.54	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
44	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
45	92.31	100.00	93.75	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
46	57.14	25.00	50.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
47	92.38	92.50	92.41	100.00	(0/0)	100.00	100.00	(0/0)	100.00	100.00	100.00	100.00
48	93.18	100.00	93.48	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
49	93.43	100.00	94.89	100.00	100.00	100.00	100.00	(0/0)	100.00	100.00	(0/0)	100.00
50	93.33	100.00	93.86	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
51	80.00	100.00	86.67	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	50.00	100.00	62.50

continued on next page

continued from previous page

Site	Caucasian			Hispanic			Afr-American			Other		
	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total
52	79.02	90.00	79.74	73.08	100.00	75.86	100.00	(0/0)	100.00	90.91	100.00	92.86
53	80.77	100.00	83.87	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
54	93.06	100.00	93.98	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
55	88.07	(0/0)	88.07	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
56	96.49	100.00	96.77	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
57	71.43	100.00	77.78	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
58	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	66.67	100.00	72.73
59	89.36	94.44	90.18	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
60	63.64	50.00	60.71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	36.84	12.50	29.63
61	96.00	86.96	93.15	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
62	90.83	88.89	90.68	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
63	85.19	100.00	88.89	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
64	66.67	100.00	75.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	71.43	100.00	80.00
65	83.00	100.00	84.55	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
66	87.88	100.00	88.89	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
67	72.41	100.00	76.47	85.71	100.00	88.89	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
68	93.89	85.71	93.10	75.00	66.67	71.43	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
69	83.78	100.00	85.71	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
70	93.75	100.00	95.24	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
71	94.44	100.00	95.83	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
72	89.01	100.00	89.36	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
73	88.24	95.45	89.52	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
74	94.01	100.00	94.42	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
75	92.57	94.74	93.01	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
76	90.70	93.75	91.30	88.89	100.00	92.86	(0/0)	(0/0)	(0/0)	100.00	0.00	50.00
77	83.65	95.65	86.34	71.43	100.00	80.00	0.00	(0/0)	0.00	100.00	(0/0)	100.00
78	76.60	82.61	77.78	85.71	100.00	87.50	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
79	91.76	88.89	91.28	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	(0/0)	(0/0)	(0/0)
80	64.71	88.89	69.77	44.44	33.33	41.67	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)
81	97.30	97.06	97.24	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
82	85.71	50.00	77.78	72.73	100.00	81.25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
83	89.25	93.33	90.24	60.00	0.00	42.86	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
84	83.33	100.00	85.71	33.33	100.00	50.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
85	86.24	82.61	85.61	75.00	80.00	76.92	100.00	(0/0)	100.00	100.00	(0/0)	100.00
86	90.16	88.89	90.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
87	76.47	100.00	78.95	50.00	(0/0)	50.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
88	65.00	75.00	66.67	58.82	66.67	60.00	(0/0)	0.00	0.00	(0/0)	(0/0)	(0/0)
89	86.96	88.89	87.27	66.67	100.00	71.43	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
90	88.89	100.00	90.91	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
91	87.69	74.29	84.85	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
92	62.50	75.00	66.67	0.00	0.00	0.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
93	92.31	95.83	93.04	83.33	100.00	87.50	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
94	84.62	66.67	81.25	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	0.00	(0/0)	0.00
95	85.90	96.15	88.46	66.67	100.00	75.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
96	94.87	100.00	96.15	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
97	89.36	95.83	91.55	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
98	98.04	100.00	98.44	100.00	100.00	100.00	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)
99	94.27	100.00	95.57	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
100	93.88	100.00	95.12	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
101	93.65	96.00	94.04	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
102	82.98	94.74	86.36	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
103	80.65	90.91	81.22	75.00	50.00	66.67	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
104	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
105	83.33	100.00	85.71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
106	80.49	94.12	84.48	0.00	(0/0)	0.00	(0/0)	(0/0)	(0/0)	0.00	(0/0)	0.00
107	68.52	73.68	69.86	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00

continued on next page

continued from previous page

Site	Caucasian			Hispanic			Afr-American			Other		
	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total
108	95.52	94.29	95.10	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
109	95.65	92.50	94.70	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
110	86.08	94.87	88.98	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
111	84.38	66.67	81.58	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
112	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
113	100.00	71.43	87.50	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
114	95.92	94.44	95.52	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
115	92.68	91.67	92.55	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
116	40.00	66.67	46.15	50.00	0.00	33.33	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
117	68.18	80.00	70.37	71.43	(0/0)	71.43	100.00	(0/0)	100.00	100.00	100.00	100.00
Total	88.91	93.24	89.67	79.72	83.84	80.55	82.72	87.27	83.38	91.10	92.25	91.34

Table 21: Seatbelt Usage based on Ethnicity during Post-Mobilization Survey

Site	Caucasian			Hispanic			Afr-American			Other		
	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total
1	96.62	100.00	96.71	91.67	100.00	92.31	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)
2	96.35	97.37	96.71	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
3	93.33	96.30	93.88	92.59	85.71	91.18	93.10	100.00	93.33	97.87	100.00	98.31
4	94.12	87.50	92.00	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
5	92.39	91.67	92.31	100.00	100.00	100.00	78.13	100.00	81.08	93.48	93.75	93.52
6	90.16	100.00	91.18	80.95	100.00	84.62	100.00	100.00	100.00	96.77	100.00	97.30
7	92.06	100.00	93.90	91.67	100.00	93.33	100.00	(0/0)	100.00	100.00	100.00	100.00
8	58.33	100.00	61.54	82.69	88.24	84.06	88.89	75.00	84.62	100.00	100.00	100.00
9	66.67	100.00	70.00	65.38	75.00	66.67	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
10	86.25	90.48	87.13	81.82	88.89	83.87	66.67	100.00	75.00	93.33	100.00	94.74
11	90.48	100.00	91.49	84.62	100.00	85.71	91.67	100.00	92.31	100.00	100.00	100.00
12	87.07	92.59	87.93	90.91	100.00	92.86	80.00	75.00	79.41	93.75	100.00	94.12
13	85.53	91.67	86.36	92.86	100.00	94.44	100.00	(0/0)	100.00	100.00	100.00	100.00
14	78.13	88.89	80.49	72.22	73.33	72.55	86.67	100.00	89.47	100.00	100.00	100.00
15	96.46	96.30	96.43	95.83	100.00	96.55	90.91	100.00	92.31	97.67	100.00	98.06
16	93.71	95.00	93.87	90.91	66.67	85.71	100.00	100.00	100.00	95.45	100.00	95.65
17	80.00	100.00	81.18	100.00	100.00	100.00	91.67	(0/0)	91.67	100.00	100.00	100.00
18	78.57	100.00	80.00	75.00	100.00	80.00	100.00	(0/0)	100.00	100.00	100.00	100.00
19	100.00	(0/0)	100.00	60.00	50.00	58.82	33.33	100.00	50.00	(0/0)	(0/0)	(0/0)
20	92.48	100.00	93.46	80.00	40.00	72.00	89.55	100.00	91.25	95.83	100.00	96.30
21	91.30	90.00	91.07	95.65	100.00	96.67	80.00	100.00	84.62	100.00	100.00	100.00
22	90.36	83.33	89.11	90.00	100.00	90.48	82.35	100.00	85.00	95.00	100.00	95.65
23	81.25	85.71	82.05	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00	100.00	100.00	100.00
24	99.11	100.00	99.31	93.33	100.00	94.74	100.00	100.00	100.00	100.00	100.00	100.00
25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
26	91.24	90.63	91.12	(0/0)	(0/0)	(0/0)	(0/0)	0.00	0.00	(0/0)	(0/0)	(0/0)
27	91.08	100.00	92.67	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
28	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
29	96.35	100.00	97.02	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
30	85.71	75.00	81.82	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
31	93.06	100.00	94.57	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
32	89.29	75.00	87.50	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
33	80.00	(0/0)	80.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
34	96.40	92.31	95.33	(0/0)	(0/0)	(0/0)	(0/0)	0.00	0.00	(0/0)	(0/0)	(0/0)
35	92.96	100.00	94.90	(0/0)	(0/0)	(0/0)	(0/0)	100.00	100.00	(0/0)	(0/0)	(0/0)
36	96.18	95.45	96.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
37	85.19	100.00	87.50	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
38	90.91	100.00	93.10	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
39	84.62	100.00	89.47	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
40	89.55	100.00	90.14	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
41	61.11	100.00	68.18	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
42	85.71	100.00	90.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
43	74.24	82.86	76.05	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
44	88.89	100.00	90.63	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
45	88.89	80.00	87.80	(0/0)	(0/0)	(0/0)	0.00	(0/0)	0.00	(0/0)	(0/0)	(0/0)
46	88.00	80.00	86.67	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
47	95.90	97.37	96.25	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
48	97.85	100.00	98.28	100.00	100.00	100.00	100.00	(0/0)	100.00	100.00	100.00	100.00
49	94.67	96.30	95.07	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
50	95.45	100.00	96.26	92.86	100.00	94.29	100.00	100.00	100.00	100.00	100.00	100.00
51	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	78.57	71.43	76.19

continued on next page

continued from previous page

Site	Caucasian			Hispanic			Afr-American			Other		
	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total
52	78.65	87.88	80.00	80.00	100.00	80.95	100.00	100.00	100.00	100.00	(0/0)	100.00
53	97.22	87.50	95.45	75.00	0.00	66.67	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
54	98.99	100.00	99.10	90.00	85.71	89.19	100.00	(0/0)	100.00	100.00	100.00	100.00
55	96.86	100.00	97.21	91.30	100.00	92.31	100.00	100.00	100.00	100.00	100.00	100.00
56	94.44	100.00	95.83	75.00	(0/0)	75.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
57	83.33	100.00	85.71	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
58	80.00	100.00	85.71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	83.33	100.00	85.71
59	95.58	92.31	94.96	84.62	75.00	80.95	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
60	44.44	50.00	45.45	(0/0)	100.00	100.00	(0/0)	(0/0)	(0/0)	38.71	57.14	42.11
61	96.77	100.00	97.22	73.68	100.00	79.17	0.00	(0/0)	0.00	(0/0)	(0/0)	(0/0)
62	96.39	100.00	96.77	90.91	50.00	84.62	100.00	(0/0)	100.00	100.00	100.00	100.00
63	95.24	100.00	96.77	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	75.00	100.00	80.00
64	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	87.50	100.00	90.91
65	96.00	100.00	96.43	83.33	100.00	85.71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
66	94.12	85.71	92.68	100.00	0.00	75.00	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)
67	84.21	40.00	79.07	54.55	0.00	50.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
68	92.44	95.45	92.91	92.31	100.00	93.33	100.00	100.00	100.00	100.00	(0/0)	100.00
69	88.37	91.67	89.09	83.33	100.00	85.71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
70	50.00	(0/0)	50.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	10.00	0.00	7.69
71	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	90.00	75.00	85.71
72	92.44	94.94	93.23	100.00	100.00	100.00	100.00	(0/0)	100.00	100.00	100.00	100.00
73	97.52	98.08	97.69	85.71	100.00	90.91	100.00	100.00	100.00	100.00	100.00	100.00
74	92.23	96.88	93.39	97.06	100.00	97.62	100.00	100.00	100.00	100.00	100.00	100.00
75	95.78	90.74	94.55	100.00	90.91	96.43	100.00	(0/0)	100.00	100.00	100.00	100.00
76	88.24	91.18	88.89	75.00	(0/0)	75.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
77	81.35	86.27	82.38	92.86	100.00	93.33	100.00	(0/0)	100.00	100.00	100.00	100.00
78	80.73	90.32	82.86	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
79	93.39	84.44	90.96	90.63	88.89	90.24	100.00	(0/0)	100.00	100.00	(0/0)	100.00
80	86.67	83.33	85.90	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
81	92.17	93.10	92.36	88.89	87.50	88.46	100.00	100.00	100.00	100.00	(0/0)	100.00
82	75.00	84.62	78.38	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
83	85.11	89.66	86.18	80.95	75.00	79.31	100.00	100.00	100.00	(0/0)	100.00	100.00
84	78.26	100.00	84.85	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
85	82.03	86.49	83.03	100.00	(0/0)	100.00	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)
86	97.73	100.00	98.18	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
87	80.00	50.00	71.43	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
88	74.03	63.64	71.72	(0/0)	(0/0)	(0/0)	(0/0)	0.00	0.00	(0/0)	(0/0)	(0/0)
89	72.37	85.71	74.44	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
90	85.71	85.71	85.71	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
91	94.70	94.23	94.57	89.29	77.78	86.49	100.00	100.00	100.00	100.00	100.00	100.00
92	83.33	83.33	83.33	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
93	88.54	93.55	89.76	75.00	100.00	80.00	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
94	84.38	100.00	87.18	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
95	79.84	93.33	81.29	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
96	92.16	100.00	94.07	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
97	94.03	96.97	95.00	90.48	72.73	84.38	100.00	(0/0)	100.00	100.00	100.00	100.00
98	87.02	93.94	89.34	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00	(0/0)	100.00	100.00
99	95.07	96.88	95.63	100.00	100.00	100.00	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)
100	82.35	95.00	85.23	0.00	(0/0)	0.00	0.00	(0/0)	0.00	(0/0)	(0/0)	(0/0)
101	96.24	100.00	97.12	85.71	100.00	88.89	66.67	(0/0)	66.67	100.00	(0/0)	100.00
102	94.51	98.00	95.74	90.00	100.00	94.12	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
103	85.09	100.00	86.35	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
104	60.00	50.00	57.14	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
105	80.00	100.00	83.33	100.00	(0/0)	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
106	87.76	100.00	90.63	75.00	100.00	83.33	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
107	75.00	65.22	73.38	0.00	(0/0)	0.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)

continued on next page

continued from previous page

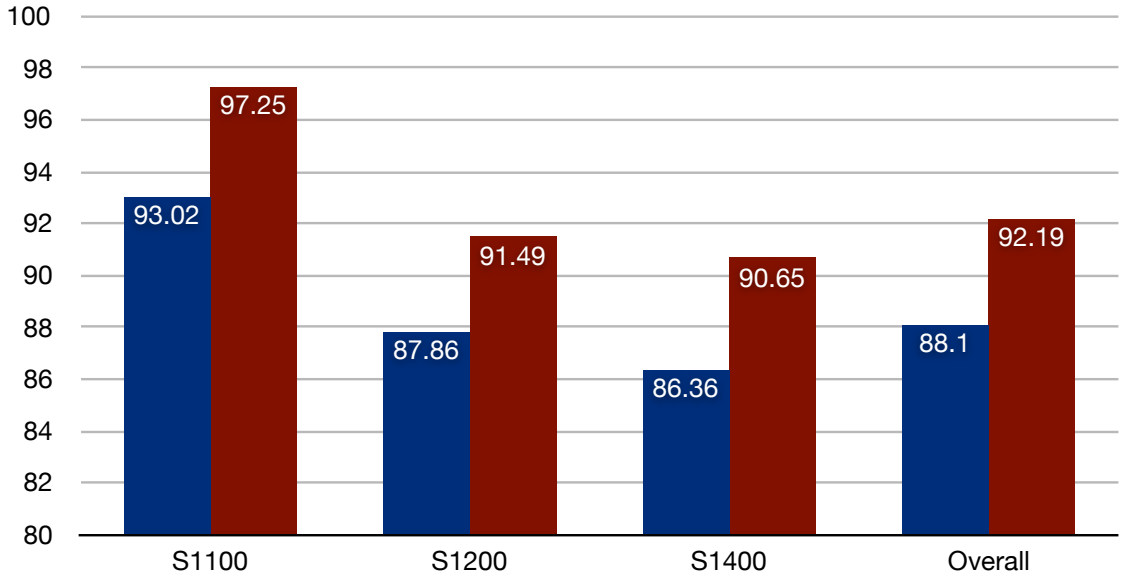
Site	Caucasian			Hispanic			Afr-American			Other		
	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total	Driver	Pass.	Total
108	95.95	97.22	96.36	72.73	100.00	80.00	100.00	(0/0)	100.00	93.33	100.00	95.83
109	88.76	95.65	91.11	77.78	100.00	84.62	50.00	(0/0)	50.00	100.00	100.00	100.00
110	96.15	97.22	96.49	90.00	75.00	85.71	100.00	100.00	100.00	100.00	100.00	100.00
111	84.38	100.00	87.80	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
112	62.50	50.00	60.00	100.00	100.00	100.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
113	73.33	100.00	81.82	33.33	100.00	50.00	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
114	96.20	100.00	97.39	100.00	100.00	100.00	100.00	(0/0)	100.00	100.00	100.00	100.00
115	92.47	97.78	94.20	70.00	100.00	82.35	(0/0)	(0/0)	(0/0)	100.00	100.00	100.00
116	52.38	80.00	57.69	50.00	0.00	33.33	(0/0)	(0/0)	(0/0)	100.00	(0/0)	100.00
117	50.00	63.64	53.19	85.71	50.00	77.78	(0/0)	(0/0)	(0/0)	0.00	(0/0)	0.00
Total	90.30	93.90	91.06	86.58	87.11	86.70	87.76	92.31	88.48	92.97	94.87	93.36

Seatbelt Usage by Functional Classification of Streets

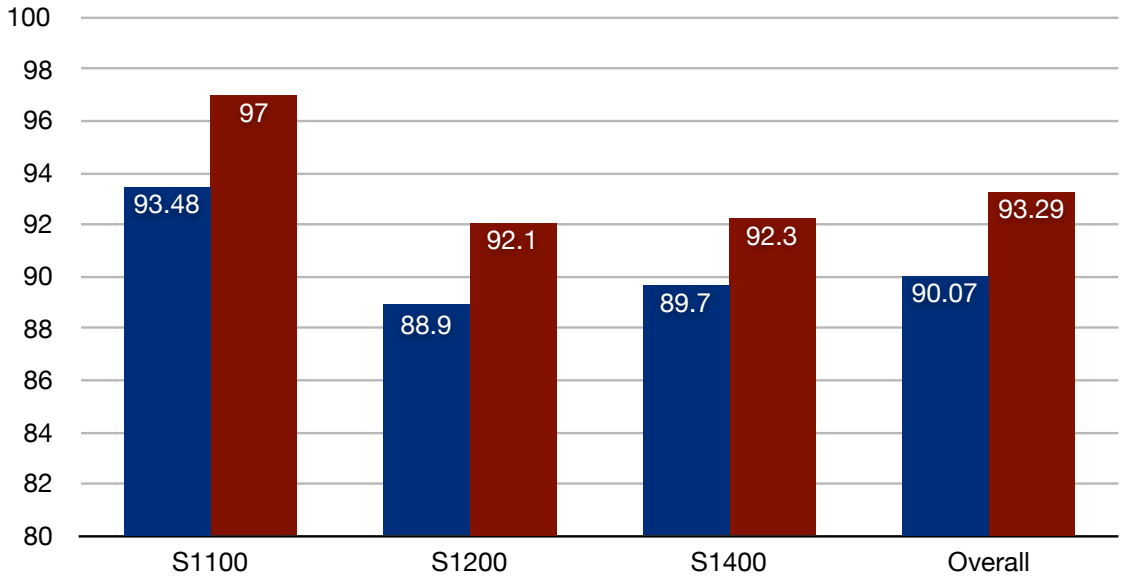
The seatbelt observation sites are divided into three classes: S1100 (Primary roads), S1200 (Secondary roads), and S1400 (Local neighborhood roads and rural streets). Seatbelt usage on all these three categories of streets for drivers and passengers during Pre-Mobilization and Post-Mobilization are shown in Figure 12. The detailed information about the seatbelt usage by drivers and passengers according to the functional classification of streets is given in Tables 22 and 23.

Figure 12: Seatbelt Usage by Functional Classification

(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Table 22: Seatbelt Usage by Functional Classification during Pre-Mobilization Survey

Functional Classification	Drivers			Passengers	All Occupants
	Male	Female	Combined		
S1100	92.68	94.07	93.02	97.25	93.79
S1200	87.02	90.18	87.86	91.49	88.63
S1400	84.97	88.54	86.36	90.65	86.97
Overall	87.29	89.86	88.10	92.19	88.83

Table 23: Seatbelt Usage by Functional Classification during Post-Mobilization survey

Functional Classification	Drivers			Passengers	All Occupants
	Male	Female	Combined		
S1100	92.42	97.10	93.48	97.00	94.35
S1200	88.19	90.79	88.90	92.10	89.63
S1400	87.70	93.08	89.77	92.30	90.17
Overall	88.91	92.71	90.07	93.29	90.74

From Table 22 and 23, it can be noted that the S1100 category has the highest rate of seat belt usage for all front seat occupants in Pre-Mobilization (93.79%), and Post-mobilization (94.35%). On the other hand, the lowest seatbelt usage was observed over the S1400 category during during Pre-Mobilization (86.97%), and S1200 during Post-Mobilization (89.63%).

Tables 22 and 23, along with Figure 12 provide a comparison for the rate of restrained drivers and passengers over the functional classification of streets for both the surveys. S1100 showed the highest percentage of seatbelt usage for drivers (93.02%) during Pre-Mobilization and Post-Mobilization (93.48%). S1100 had the highest rate of restrained passengers (97.25%) during Pre-Mobilization and Post-Mobilization (97.00%). Correspondingly, S1400 showed the lowest rate of seatbelt usage for the passengers (92.19%) during Pre-Mobilization, and S1200 showed the lowest rate of seatbelt usage for the passengers (92.10%) during Post-Mobilization.

Seatbelt Usage Based on County

Tables 24 and 25 display the seatbelt usage rates for different road types for each county.

Table 24: Seatbelt Usage for Different Road Types during Pre-Mobilization Survey

Functional Classification		Drivers			Passengers	All Occupants
County	Road-type	Male	Female	Combined		
Clark	S1100	93.83	94.00	93.88	94.55	94.04
	S1200	94.47	99.36	96.51	95.38	96.35
	S1400	85.07	87.66	86.02	90.99	86.79
Washoe	S1100	92.86	94.00	93.18	100.00	93.48
	S1200	91.94	93.33	92.25	100.00	93.62
	S1400	84.78	89.80	86.94	89.85	87.28
Nye	S1100	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
	S1200	87.13	92.10	88.23	93.77	89.48
Lyon	S1100	89.90	95.12	91.46	97.56	92.02
	S1200	85.05	88.43	86.01	88.46	86.51
Elko	S1100	93.54	93.18	93.48	98.53	94.61
	S1200	86.20	83.80	85.58	90.04	86.61

Table 25: Seatbelt Usage for Different Road Types during Post-Mobilization Survey

Functional Classification		**Drivers**			Passengers	All Occupants
County	Road-type	Male	Female	Combined		
Clark	S1100	96.19	100.00	96.67	97.96	96.93
	S1200	93.97	93.89	93.94	95.12	94.16
	S1400	87.70	92.75	89.56	93.43	90.19
Washoe	S1100	97.25	100.00	98.21	100.00	98.55
	S1200	93.42	97.37	94.36	95.70	94.66
	S1400	87.70	93.56	90.08	90.41	90.13
Nye	S1100	(0/0)	(0/0)	(0/0)	(0/0)	(0/0)
	S1200	90.83	91.41	91.00	94.29	91.67
Lyon	S1100	92.31	98.10	93.98	96.74	94.76
	S1200	86.12	89.45	87.01	88.25	87.30
Elko	S1100	89.55	93.82	90.38	96.27	91.92
	S1200	85.45	89.01	86.29	93.97	88.32

Tables 26 and 27 display the seatbelt usage rates for each county for the Pre-mobilization and Post-mobilization surveys. These tables emphasized the seatbelt usage rates for the driver and passenger, with more details for the driver.

Table 26: Seatbelt Usage by County during Pre-Mobilization survey

County	Drivers			Passengers	All Occupants
	Male	Female	Combined		
Clark	87.09	89.75	88.05	92.04	88.71
Washoe	86.90	90.36	88.24	92.40	88.74
Nye	87.13	92.10	88.23	93.77	89.48
Lyon	86.01	89.85	87.11	89.28	87.51
Elko	89.74	87.36	89.20	93.85	90.26
Overall	87.29	89.86	88.10	92.19	88.83

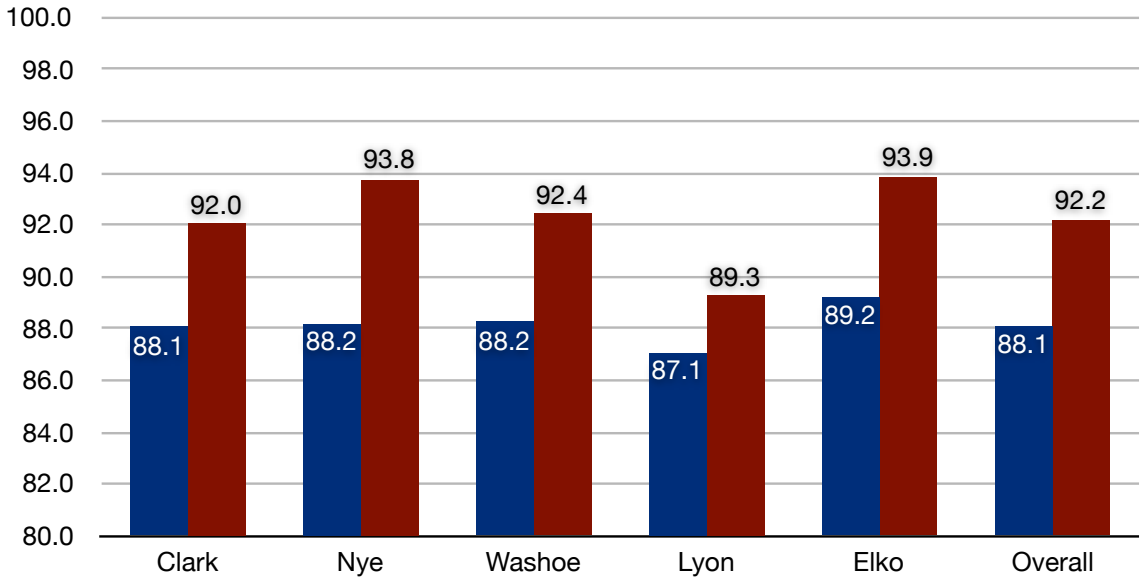
Table 27: Seatbelt Usage by County during Post-Mobilization Survey

County	Drivers			Passengers	All Occupants
	Male	Female	Combined		
Clark	89.72	93.21	90.90	94.30	91.48
Washoe	89.97	94.67	91.73	92.90	91.93
Nye	90.83	91.41	91.00	94.29	91.67
Lyon	87.51	91.55	88.61	90.57	89.10
Elko	87.28	90.87	88.06	94.95	89.87
Overall	88.91	92.71	90.07	93.29	90.74

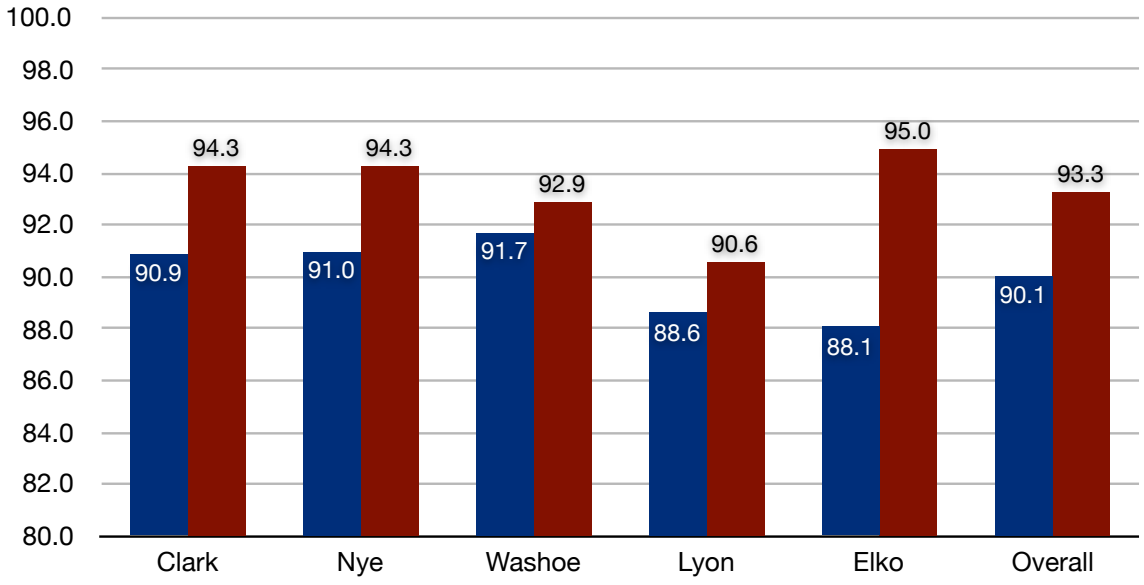
Figure 13 displays the seatbelt usage rates for each county for the Pre-mobilization and Post-mobilization surveys.

Figure 13: Seatbelt Use By Different Counties

(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Tables 26 and 27 show that the lowest rate of seatbelt usage was observed in Lyon county (87.51%) during the Pre-Mobilization survey and Elko County (89.10%) during the Post-Mobilization survey. Additionally, the highest seatbelt usage was observed in Elko (90.26%) during Pre-Mobilization, and Washoe (91.93%) during Post-Mobilization.

Quality Control

To monitor the survey proceedings a quality control monitor was employed. The quality control monitor made unannounced random visits to 5 percent of the survey sites across Nevada. During the observation period, quality control monitor evaluated the performance of the data collectors and ensured that the survey protocol was strictly followed. The survey protocol included punctuality of the observers to be present on the survey time at the scheduled time, completing the cover sheet of data collection form, and making accurate observations of seatbelt usage. A day-to-day data collectors schedule along with the time of observation at respective site was given to the quality control monitor to aid in making random visits. The data was reviewed by the quality control monitor to ensure the rate of unknown does not exceed 10% for any site.

Weighted Analysis

Calculating the Weighted Data

The analysis of the safety belt usage data in Nevada has taken the form of aggregate calculations of overall county and state weighted estimates using a spreadsheet design that incorporates mathematical formulas. This is done in a three-step calculation process. The first step calculates the safety belt usage rates for the sites within each county. Those estimates are then used to derive the estimates for each of the counties. Finally, the county estimates are used to derive the overall estimate of safety belt usage for the state as a whole. Because the observation sites are selected with a probability proportional to the length of each site, the formula for estimating the safety belt usage rates for the sample sites is given in Equation 21.

$$\widehat{y}_{ij} = \frac{\sum_{k=1}^{n_{ij}} W_{ijk} l_{ijk} B_{ijk} / O_{ijk}}{\sum_{k=1}^{n_{ij}} W_{ijk} l_{ijk}} \tag{21}$$

where, $\widehat{y}_{ij}$ represents the estimate of seatbelt use for the j^{th} stratum in the i^{th} county, i represents county ranging from 1 to number of counties in sample, j represents stratum of road segments, k represents the designated sample site ranging from 1 to n_{ij}, W_{ijk} represents the sampling weight of each site within each stratum of each county, B_{ijk} represents the total number of belted drivers and passengers for the sample site in the stratum and O_{ijk} represents the total number of observed drivers and passengers for the sample site in the stratum.

For each $1 \leq i \leq 5$, $1 \leq j \leq 3$ and $1 \leq k \leq n_{ij}$, W_{ijk} can be computed by the

following equation,

$$W_{chijklm} = \frac{1}{\pi_{chijklm}} \tag{22}$$

$$\pi_{chijklm} = \pi_c \pi_{hi|c} \pi_{j|chi} \pi_{k|chij} \pi_{l|chij} \pi_{m|chijl} \tag{23}$$

where, π_c for county, $\pi_{hi|c}$ for road segment, $\pi_{j|chi}$ for time segment, $\pi_{k|chij}$ for direction, $\pi_{l|chij}$ for lane and $\pi_{m|chijl}$ for vehicle.

The estimates $\widehat{y}_{ij}$ for the sites are then used to create the estimates for the counties. Note that B_{ijk} and O_{ijk} will include all of the data collected.

$$\widehat{y} = \frac{\sum_{i=1}^{2} W_i \widehat{y}_i}{\sum_{i=1}^{2} W_i} \tag{24}$$

Finally, the statewide estimate of safety belt use will be calculated according to the Equation 24.

The whole collected data is processed in MYSQL database server and queried through scripts written in PHP programming language. PHPMyAdmin IDE is used to make the PHP queries to the MYSQL server which makes the data processing very easy and efficient. The queries produced the output in a comma separated value (CSV) format which contained the following fields: Site-name, B_{ijk}, O_{ijk}. These fields were later concatenated with the weights W_{ijk} obtained according to the Equation 22. The concatenation of the weights and further processing to calculate the weighted seatbelt usage results and the bootstrap results were done in 'R', a statistical software package. Tables 28 and 29 summarize these calculations for both the surveys.

Table 28: Weighted Seatbelt Usage Rate Analysis during Pre-Mobilization Survey

Class	**Site**	**Belted / Total**	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
C S1100	1	122/146	1.08E-03	1.87E-04	0.5	0.5	1.78E-02	0.8620	
	2	304/307	5.27E-03	1.87E-04	0.5	0.5	3.66E-03		
C S1200	3	376/386	9.25E-04	1.87E-04	0.5	0.5	2.08E-02	0.9703	
	4	46/52	5.29E-03	1.87E-04	1	1	9.11E-04		
C S1400	5	197/230	3.47E-05	1.87E-04	1	1	1.39E-01	0.8696	0.8697
	6	156/175	8.42E-05	1.87E-04	1	0.5	1.14E-01		
	7	88/100	1.11E-04	1.87E-04	1	1	4.36E-02		
	8	70/95	1.28E-04	1.87E-04	1	1	3.76E-02		
	9	63/70	1.38E-04	1.87E-04	1	1	3.48E-02		
	10	182/228	1.59E-04	1.87E-04	1	1	3.03E-02		
	11	93/102	1.82E-04	1.87E-04	1	1	2.64E-02		
	12	204/232	2.11E-04	1.87E-04	1	1	2.28E-02		
	13	65/73	2.40E-04	1.87E-04	0.5	1	4.01E-02		
	14	163/189	2.70E-04	1.87E-04	1	1	1.78E-02		
	15	298/328	3.07E-04	1.87E-04	0.5	0.75	4.18E-02		
	16	179/187	3.29E-04	1.87E-04	0.5	0.5	5.85E-02		
	17	82/96	3.48E-04	1.87E-04	0.5	1	2.77E-02		
	18	43/57	3.83E-04	1.87E-04	1	1	1.26E-02		
	19	33/46	4.45E-04	1.87E-04	1	1	1.08E-02		
	20	200/239	5.22E-04	1.87E-04	0.5	1	1.84E-02		
	21	107/126	6.37E-04	1.87E-04	1	1	7.56E-03		
	22	159/181	7.12E-04	1.87E-04	1	0.5	1.35E-02		
	23	81/97	1.16E-03	1.87E-04	1	1	4.14E-03		
	24	139/147	2.97E-03	1.87E-04	0.5	0.5	6.48E-03		
N S1100	25	0/0	1.00E+00	1.87E-04	1	1	4.82E-06		
N S1200	26	130/157	1.05E-03	1.87E-04	0.5	1	9.20E-03		
	27	163/190	3.05E-03	1.87E-04	0.5	1	3.16E-03		
	28	85/87	4.43E-03	1.87E-04	0.5	1	2.18E-03		
	29	163/190	5.72E-03	1.87E-04	1	1	8.42E-04		
	30	9/9	6.99E-03	1.87E-04	1	1	6.89E-04		

continued on next page

continued from previous page

Class	**Site**	**Belted / Total**	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
N S1200	31	83/93	8.18E-03	1.87E-04	1	1	5.89E-04	0.8741	0.8741
	32	76/79	9.61E-03	1.87E-04	1	1	5.01E-04		
	33	12/12	1.10E-02	1.87E-04	1	1	4.38E-04		
	34	84/103	1.26E-02	1.87E-04	1	1	3.81E-04		
	35	68/77	1.44E-02	1.87E-04	1	1	3.34E-04		
	36	108/117	1.59E-02	1.87E-04	1	1	3.02E-04		
	37	113/119	1.76E-02	1.87E-04	1	1	2.74E-04		
	38	24/25	1.99E-02	1.87E-04	1	1	2.41E-04		
	39	16/17	2.22E-02	1.87E-04	1	1	2.17E-04		
	40	101/109	2.45E-02	1.87E-04	1	1	1.97E-04		
	41	5/6	2.70E-02	1.87E-04	1	1	1.78E-04		
	42	29/30	2.93E-02	1.87E-04	1	1	1.65E-04		
	43	67/74	3.38E-02	1.87E-04	1	1	1.42E-04		
	44	23/23	3.86E-02	1.87E-04	1	1	1.25E-04		
	45	15/16	4.61E-02	1.87E-04	1	1	1.04E-04		
	46	9/18	5.54E-02	1.87E-04	1	1	8.70E-05		
	47	140/151	8.47E-02	1.87E-04	1	1	5.69E-05		
W S1100	48	172/184	4.14E-03	1.87E-04	0.5	0.5	4.65E-03	0.9348	0.8600
W S1200	49	183/192	5.83E-04	1.87E-04	0.5	0.75	2.20E-02	0.9476	
	50	107/114	2.80E-03	1.87E-04	1	0.75	2.30E-03		
	51	18/23	7.86E-03	1.87E-04	1	1	6.13E-04		
W S1400	52	162/201	1.48E-04	1.87E-04	1	1	3.25E-02	0.8581	
	53	26/31	2.61E-04	1.87E-04	1	1	1.85E-02		
	54	156/166	3.33E-04	1.87E-04	0.5	1	2.90E-02		
	55	214/243	4.05E-04	1.87E-04	0.5	1	2.38E-02		
	56	60/62	4.70E-04	1.87E-04	1	1	1.03E-02		
	57	7/9	5.49E-04	1.87E-04	1	1	8.77E-03		
	58	21/24	6.36E-04	1.87E-04	1	1	7.58E-03		
	59	101/112	7.39E-04	1.87E-04	1	1	6.52E-03		
	60	25/55	8.40E-04	1.87E-04	1	1	5.73E-03		
	61	68/73	9.65E-04	1.87E-04	1	1	4.99E-03		
	62	214/236	1.11E-03	1.87E-04	1	0.75	5.80E-03		
	63	33/37	1.28E-03	1.87E-04	1	1	3.78E-03		

continued on next page

continued from previous page

Class	**Site**	**Belted / Total**	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
W S1400	64	14/18	1.50E-03	1.87E-04	1	1	3.21E-03		
	65	93/110	1.73E-03	1.87E-04	1	1	2.78E-03		
	66	32/36	2.16E-03	1.87E-04	1	1	2.23E-03		
	67	35/44	2.73E-03	1.87E-04	1	1	1.76E-03		
	68	141/153	3.58E-03	1.87E-04	1	1	1.35E-03		
	69	37/43	4.94E-03	1.87E-04	1	1	9.75E-04		
	70	20/21	6.98E-03	1.87E-04	1	1	6.90E-04		
	71	23/24	1.42E-02	1.87E-04	1	1	3.40E-04		
L S1100	72	84/94	2.99E-02	1.87E-04	0.5	0.5	6.44E-04		0.8894
	73	111/124	6.24E-02	1.87E-04	0.5	0.5	3.09E-04	0.8957	
	74	220/233	1.51E-01	1.87E-04	1	1	3.18E-05		
L S1200	75	173/186	4.52E-03	1.87E-04	0.5	0.5	4.27E-03		
	76	161/177	7.79E-03	1.87E-04	1	1	6.19E-04		
	77	187/218	1.08E-02	1.87E-04	1	1	4.47E-04		
	78	99/126	1.42E-02	1.87E-04	1	1	3.40E-04		
	79	202/221	1.74E-02	1.87E-04	1	1	2.77E-04		
	80	36/56	2.06E-02	1.87E-04	1	1	2.34E-04		
	81	152/156	2.39E-02	1.87E-04	1	1	2.01E-04		
	82	20/25	2.84E-02	1.87E-04	1	1	1.70E-04		
	83	114/130	3.40E-02	1.87E-04	1	1	1.42E-04		
	84	20/30	3.77E-02	1.87E-04	1	1	1.28E-04		
	85	125/147	4.14E-02	1.87E-04	1	1	1.16E-04	0.8893	
	86	63/70	4.54E-02	1.87E-04	1	1	1.06E-04		
	87	16/21	5.19E-02	1.87E-04	1	1	9.28E-05		
	88	44/69	6.11E-02	1.87E-04	1	1	7.88E-05		
	89	58/67	6.93E-02	1.87E-04	1	1	6.95E-05		
	90	11/12	7.98E-02	1.87E-04	1	1	6.04E-05		
	91	140/165	9.37E-02	1.87E-04	0.5	0.5	2.06E-04		
	92	8/14	1.18E-01	1.87E-04	1	1	4.07E-05		
	93	114/123	1.81E-01	1.87E-04	1	1	2.66E-05		
	94	14/18	1.96E-01	1.87E-04	1	1	2.46E-05		
E S1100	95	98/111	3.57E-03	1.87E-04	0.5	1	2.70E-03		
	96	109/113	7.78E-03	1.87E-04	0.5	1	1.24E-03		

continued on next page

continued from previous page

Class	**Site**	$\frac{\textbf{Belted}}{\textbf{Total}}$	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
E S1100	97	65/71	1.11E-02	1.87E-04	0.5	0.5	1.74E-03	0.9219	0.8748
	98	131/133	1.61E-02	1.87E-04	0.5	1	6.00E-04		
	99	194/203	2.35E-02	1.87E-04	0.5	1	4.09E-04		
	100	121/127	3.49E-02	1.87E-04	0.5	1	2.76E-04		
	101	142/151	5.57E-02	1.87E-04	0.5	1	1.73E-04		
E S1200	102	57/66	9.43E-04	1.87E-04	1	1	5.11E-03	0.8600	
	103	164/203	3.52E-03	1.87E-04	0.5	1	2.74E-03		
	104	8/8	5.66E-03	1.87E-04	1	1	8.51E-04		
	105	6/7	7.55E-03	1.87E-04	1	1	6.38E-04		
	106	49/60	9.36E-03	1.87E-04	1	1	5.15E-04		
	107	56/78	1.14E-02	1.87E-04	1	1	4.22E-04		
	108	97/102	1.34E-02	1.87E-04	1	1	3.60E-04		
	109	125/132	1.55E-02	1.87E-04	1	1	3.11E-04		
	110	105/118	1.77E-02	1.87E-04	1	1	2.73E-04		
	111	31/38	1.96E-02	1.87E-04	1	1	2.46E-04		
	112	34/34	2.20E-02	1.87E-04	1	1	2.19E-04		
	113	18/20	2.49E-02	1.87E-04	1	1	1.93E-04		
	114	64/67	2.88E-02	1.87E-04	0.5	1	3.35E-04		
	115	87/94	3.39E-02	1.87E-04	0.5	1	2.84E-04		
	116	7/16	4.25E-02	1.87E-04	1	1	1.13E-04		
	117	30/40	5.59E-02	1.87E-04	1	1	8.62E-05		

Table 29: Weighted Seatbelt Usage Rate Analysis during Post-Mobilization Survey

Class	**Site**	**Belted / Total**	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
C S1100	1	225/233	1.08E-03	1.87E-04	0.5	0.333	2.49E-02	0.9665	
	2	248/255	5.27E-03	1.87E-04	0.5	0.5	3.42E-03		
C S1200	3	393/417	9.25E-04	1.87E-04	0.5	0.333	2.92E-02	0.9421	
	4	26/28	5.29E-03	1.87E-04	1	1	8.52E-04		
C S1400	5	247/269	3.47E-05	1.87E-04	1	0.75	1.73E-01	0.8932	0.8933
	6	127/138	8.42E-05	1.87E-04	1	0.5	1.07E-01		
	7	102/108	1.11E-04	1.87E-04	1	0.667	6.11E-02		
	8	80/98	1.28E-04	1.87E-04	1	1	3.52E-02		
	9	28/41	1.38E-04	1.87E-04	1	1	3.25E-02		
	10	138/159	1.59E-04	1.87E-04	1	1	2.84E-02		
	11	121/132	1.82E-04	1.87E-04	1	1	2.47E-02		
	12	209/239	2.11E-04	1.87E-04	1	0.75	2.85E-02		
	13	112/125	2.40E-04	1.87E-04	1	0.5	3.75E-02		
	14	132/164	2.70E-04	1.87E-04	1	1	1.67E-02		
	15	327/337	3.07E-04	1.87E-04	0.5	0.75	3.91E-02		
	16	210/225	3.29E-04	1.87E-04	0.5	0.5	5.47E-02		
	17	97/114	3.48E-04	1.87E-04	0.5	1	2.59E-02		
	18	30/36	3.83E-04	1.87E-04	1	1	1.17E-02		
	19	14/23	4.45E-04	1.87E-04	1	1	1.01E-02		
	20	260/285	5.22E-04	1.87E-04	1	0.75	1.15E-02		
	21	102/110	6.37E-04	1.87E-04	1	1	7.07E-03		
	22	148/165	7.12E-04	1.87E-04	0.5	1	1.26E-02		
	23	35/42	1.16E-03	1.87E-04	1	1	3.87E-03		
	24	176/178	2.97E-03	1.87E-04	0.5	0.75	4.04E-03		
N S1100	25	0/0	1.00E+00	1.87E-04	1	1	4.50E-06		
N S1200	26	154/170	1.05E-03	1.87E-04	0.5	1	8.60E-03		
	27	177/191	3.05E-03	1.87E-04	0.5	1	2.95E-03		
	28	83/83	4.43E-03	1.87E-04	0.5	1	2.03E-03		
	29	163/168	5.72E-03	1.87E-04	1	1	7.87E-04		
	30	9/11	6.99E-03	1.87E-04	1	1	6.44E-04		

continued on next page

continued from previous page

Class	**Site**	**Belted / Total**	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
N S1200	31	87/92	8.18E-03	1.87E-04	1	1	5.51E-04	0.9166	0.9166
	32	28/32	9.61E-03	1.87E-04	1	1	4.69E-04		
	33	4/5	1.10E-02	1.87E-04	1	1	4.09E-04		
	34	143/151	1.26E-02	1.87E-04	0.5	1	7.12E-04		
	35	94/99	1.44E-02	1.87E-04	0.5	1	6.25E-04		
	36	168/175	1.59E-02	1.87E-04	1	1	2.82E-04		
	37	28/32	1.76E-02	1.87E-04	1	1	2.56E-04		
	38	27/29	1.99E-02	1.87E-04	1	1	2.26E-04		
	39	17/19	2.22E-02	1.87E-04	1	1	2.02E-04		
	40	64/71	2.45E-02	1.87E-04	0.5	1	3.68E-04		
	41	15/22	2.70E-02	1.87E-04	1	1	1.67E-04		
	42	18/20	2.93E-02	1.87E-04	1	1	1.54E-04		
	43	127/167	3.38E-02	1.87E-04	1	1	1.33E-04		
	44	29/32	3.86E-02	1.87E-04	1	1	1.17E-04		
	45	36/42	4.61E-02	1.87E-04	1	1	9.76E-05		
	46	26/30	5.54E-02	1.87E-04	1	1	8.13E-05		
	47	154/160	8.47E-02	1.87E-04	1	1	5.32E-05		
W S1100	48	340/345	4.14E-03	1.87E-04	0.5	0.75	2.90E-03	0.9855	0.8951
W S1200	49	218/229	5.83E-04	1.87E-04	0.5	0.75	2.06E-02	0.9490	
	50	153/159	2.80E-03	1.87E-04	1	0.75	2.15E-03		
	51	19/24	7.86E-03	1.87E-04	1	1	5.73E-04		
W S1400	52	201/250	1.48E-04	1.87E-04	1	1	3.04E-02	0.8937	
	53	48/53	2.61E-04	1.87E-04	1	1	1.73E-02		
	54	263/269	3.33E-04	1.87E-04	1	1	1.35E-02		
	55	219/226	4.05E-04	1.87E-04	1	0.5	2.22E-02		
	56	98/103	4.70E-04	1.87E-04	1	1	9.59E-03		
	57	14/15	5.49E-04	1.87E-04	1	1	8.20E-03		
	58	12/14	6.36E-04	1.87E-04	1	1	7.08E-03		
	59	150/161	7.39E-04	1.87E-04	1	1	6.09E-03		
	60	22/50	8.40E-04	1.87E-04	1	1	5.36E-03		
	61	54/61	9.65E-04	1.87E-04	1	1	4.67E-03		
	62	232/241	1.11E-03	1.87E-04	1	0.75	5.43E-03		
	63	34/36	1.28E-03	1.87E-04	1	1	3.53E-03		

continued on next page

continued from previous page

Class	**Site**	**Belted / Total**	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
W S1400	64	16/17	1.50E-03	1.87E-04	1	1	3.00E-03		
	65	33/35	1.73E-03	1.87E-04	1	1	2.60E-03		
	66	42/46	2.16E-03	1.87E-04	1	1	2.09E-03		
	67	40/55	2.73E-03	1.87E-04	1	1	1.65E-03		
	68	152/163	3.58E-03	1.87E-04	1	1	1.26E-03		
	69	55/62	4.94E-03	1.87E-04	1	1	9.12E-04		
	70	2/15	6.98E-03	1.87E-04	1	1	6.45E-04		
	71	21/23	1.42E-02	1.87E-04	1	1	3.18E-04		
L S1100	72	246/263	2.99E-02	1.87E-04	0.5	1	3.01E-04		0.9094
	73	188/193	6.24E-02	1.87E-04	0.5	1	1.44E-04	0.9475	
	74	289/307	1.51E-01	1.87E-04	1	1	2.97E-05		
L S1200	75	246/259	4.52E-03	1.87E-04	0.5	0.5	3.99E-03		
	76	139/157	7.79E-03	1.87E-04	1	1	5.78E-04		
	77	221/265	1.08E-02	1.87E-04	1	1	4.18E-04		
	78	116/140	1.42E-02	1.87E-04	1	1	3.18E-04		
	79	190/209	1.74E-02	1.87E-04	1	1	2.59E-04		
	80	67/78	2.06E-02	1.87E-04	1	1	2.19E-04		
	81	160/174	2.39E-02	1.87E-04	1	1	1.88E-04		
	82	29/37	2.84E-02	1.87E-04	1	1	1.59E-04		
	83	134/157	3.40E-02	1.87E-04	1	1	1.32E-04		
	84	28/33	3.77E-02	1.87E-04	1	1	1.20E-04	0.9092	
	85	143/171	4.14E-02	1.87E-04	1	1	1.09E-04		
	86	60/61	4.54E-02	1.87E-04	1	1	9.92E-05		
	87	10/14	5.19E-02	1.87E-04	1	1	8.68E-05		
	88	71/100	6.11E-02	1.87E-04	1	1	7.37E-05		
	89	67/90	6.93E-02	1.87E-04	1	1	6.50E-05		
	90	18/21	7.98E-02	1.87E-04	1	1	5.64E-05		
	91	228/243	9.37E-02	1.87E-04	0.5	1	9.61E-05		
	92	20/24	1.18E-01	1.87E-04	1	1	3.81E-05		
	93	123/138	1.81E-01	1.87E-04	1	1	2.49E-05		
	94	34/39	1.96E-01	1.87E-04	1	1	2.30E-05		
E S1100	95	114/140	3.57E-03	1.87E-04	0.5	1	2.52E-03		
	96	138/146	7.78E-03	1.87E-04	0.5	1	1.16E-03		

continued on next page

continued from previous page

Class	**Site**	**Belted / Total**	$\pi_{hi\|c}$	$\pi_{j\|chi}$	$\pi_{k\|chij}$	$\pi_{l\|chij}$	$\frac{W_{ijk}}{\sum W_{ijk}}$	Y_{ij}	Y_i
E S1100	97	143/153	1.11E-02	1.87E-04	0.5	1	8.12E-04	0.8786	0.8851
	98	179/200	1.61E-02	1.87E-04	0.5	1	5.60E-04		
	99	207/216	2.35E-02	1.87E-04	0.5	1	3.83E-04		
	100	75/91	3.49E-02	1.87E-04	0.5	1	2.58E-04		
	101	281/291	5.57E-02	1.87E-04	0.5	1	1.62E-04		
E S1200	102	174/181	9.43E-04	1.87E-04	1	1	4.77E-03	0.8868	
	103	219/253	3.52E-03	1.87E-04	0.5	1	2.56E-03		
	104	6/9	5.66E-03	1.87E-04	1	1	7.95E-04		
	105	6/7	7.55E-03	1.87E-04	1	1	5.97E-04		
	106	67/74	9.36E-03	1.87E-04	1	1	4.81E-04		
	107	102/140	1.14E-02	1.87E-04	1	1	3.95E-04		
	108	142/150	1.34E-02	1.87E-04	1	1	3.37E-04		
	109	144/159	1.55E-02	1.87E-04	1	1	2.90E-04		
	110	145/151	1.77E-02	1.87E-04	1	1	2.55E-04		
	111	43/48	1.96E-02	1.87E-04	1	1	2.30E-04		
	112	8/12	2.20E-02	1.87E-04	1	1	2.05E-04		
	113	20/26	2.49E-02	1.87E-04	1	1	1.81E-04		
	114	148/151	2.88E-02	1.87E-04	1	1	1.57E-04		
	115	150/161	3.39E-02	1.87E-04	1	1	1.33E-04		
	116	17/30	4.25E-02	1.87E-04	1	1	1.06E-04		
	117	46/75	5.59E-02	1.87E-04	1	1	8.06E-05		

Sampling Error

As discussed in the previous sections, data were collected from roads falling in 12 strata:

- Clark - S1100: 1-2
- Clark - S1200: 3-4
- Clark - S1400: 5-24
- Nye - S1100: 25

- Nye - S1200: 26-47
- Washoe - S1100: 48
- Washoe - S1200: 49-51
- Washoe - S1400: 52-71
- Lyon - S1100: 72-74
- Lyon - S1200: 75-94
- Elko - S1100: 95-101
- Elko - S1200: 102-117

Since the number of sites in some of the strata are very small, and since we must use non-parametric bootstrap involving sampling with replacement, we had to classify the 117 sites into the following three strata based on the road-type:

- S1100 (14 sites)
- S1200 (63 sites)
- S1400 (40 sites)

The non-parametric bootstrap procedure used in this report is briefly described below:

1. Input data is read.
2. For each of the three strata, bootstrap sampling (sampling with replacement) was used to select the original number of sites; e.g., 14 sites were selected with replacement for S1100 stratum.
3. The statewide rate of seatbelt usage was calculated using the formula for the stratified estimate.

4. Steps 1-3 are repeated 1000 times, which will yield 1000 values of combined $\widehat{y}_{ij}$ the estimated statewide rate of seatbelt usage.

5. The standard deviation (sd) of the 1000 $\widehat{p}$ values from Step 4 is calculated. This sd is the standard deviation of the statewide rate of seatbelt usage.

6. An approximate 95% confidence interval of the statewide rate of seatbelt usage can be calculated from the following formula:

$$\widehat{p}_{combined} \pm 1.96 \times sd(\widehat{p}_{combined})$$

A program in the language R was written for the bootstrap method outlined above. As mentioned before, the input to the program contained 3 fields from Table 28 and 29 namely Site, Belted and Total. Rest of the fields were calculated as shown in Equations 21, 22 and 24.
The code was run 3 times, with 1000 bootstrap simulations in each run. The following results were obtained:

1. Standard deviation in First Run: 0.010228 (Pre-Mobilization) and 0.012588 (Post-Mobilization)

2. Standard deviation in Second Run: 0.010567 (Pre-Mobilization) and 0.012301 (Post-Mobilization)

3. Standard deviation in Third Run: 0.010190 (Pre-Mobilization) and 0.012424 (Post-Mobilization)

An approximate 95% confidence interval from the data for statewide rate of seatbelt usage is (84.78%, 88.84%) during the Pre-Mobilization and (86.97%, 91.85%) during Post-Mobilization. The overall results, showing a comparison of weighted vs. unweighted analysis, wherever applicable, have been shown in Tables 30 and 31.

Table 30: Weighted-Unweighted Analysis during Pre-Mobilization survey

Category	Weighted Analysis	Unweighted analysis
$\widehat{p}_{combined}$	0.868129	–
$sd(\widehat{p}_{combined})$	0.010345	–
sd_{Run1}	0.010279	–
sd_{Run2}	0.010567	–
sd_{Run3}	0.010190	–
Seat-belt Usage (Statewide)	86.81%	88.88%
95% confidence interval	(84.78%,88.84%)	–
SeatbeltUsage (Road-type - S1100)	88.52%	93.79%
SeatbeltUsage (Road-type - S1200)	91.83%	88.63%
SeatbeltUsage (Road-type - S1400)	86.74%	86.97%

Table 31: Weighted-Unweighted Analysis during Post-Mobilization survey

Category	Weighted Analysis	Unweighted analysis
$\widehat{p}_{combined}$	0.894092	–
$sd(\widehat{p}_{combined})$	0.012438	–
sd_{Run1}	0.012588	–
sd_{Run2}	0.012301	–
sd_{Run3}	0.012424	–
Seat-belt Usage (Statewide)	89.41%	90.74%
95% confidence interval	(86.97%,91.85%)	–
SeatbeltUsage (Road-type - S1100)	95.39%	94.35%
SeatbeltUsage (Road-type - S1200)	92.88%	89.63%
SeatbeltUsage (Road-type - S1400)	89.32%	90.17%

Weighted Analysis

The 95% confidence intervals for the weighted seatbelt usage percentages for the State of Nevada are given below:

- Pre-Mobilization: (84.78%, 88.84%)
- Post-Mobilization: (86.97%, 91.85%)

Comparison of Seatbelt Usage Rate for 2012-2016

This section is devoted to comparing the seatbelt usage rate for the years 2012, 2013, 2014, 2015, and 2016. These five years are included because the survey methodology for these years is the same. The survey methodology is different for years prior to 2012.

The following tables include the seatbelt usage rate for the following categories:

- Occupants- This is all occupants observed. (Drivers and Front Passengers)
- Drivers- Only the Drivers. (Male and Female)
- Drivers M- Only male Drivers.
- Drivers F- Only female Drivers.
- Passengers- Only Passengers. (Male and Female)
- NV- Only occupants observed in a Nevada registered vehicle.
- non-NV- Only occupants observed in vehicles registered in a state other than Nevada.

Figures 14 to 22 show the seatbelt usage rate for the years 2012-2016. Figures 14 to 18 show the seatbelt usage rates for the different counties where the survey was performed. Figures 19 to 21 show the seatbelt usage rates for different road classifications. Finally, Figure 22 shows the seatbelt usage rates for all of Nevada.

Specific trends for Clark County are shown in Figure 14. For the Pre-mobilization, the categories of male drivers, female drivers, Nevada occupants, non-Nevada occupants, and occupants overall had a lower rate for seatbelt usage for 2016 than in both 2014 and 2015. For the Post-mobilization, all categories except non-Nevada occupants had lower rate of seatbelt usage in 2016 than at least two other years.

The details for Nye County are shown in Figure 15. For Pre-mobilization surveys, the categories of all drivers, male drivers, Nevada occupants, non-Nevada occupants, and occupants overall had a lower rate for seatbelt usage for 2016 than in both 2014 and 2015. For the Post-mobilization surveys, all categories had lower rate of seatbelt usage in 2016 than at least three other years.

Specific trends for Washoe County are shown in Figure 16. For the Pre-mobilization survey, all categories except all passengers and Non-Nevada occupants had lower rate of seatbelt usage in 2016 than at least three other years. For the Post-mobilization survey, all categories had lower rate of seatbelt usage in 2016 than at least two other years.

The details for Lyon County are shown in Figure 17. For the Pre-mobilization survey, all categories except all passengers had lower rate of seatbelt usage in 2016 than at least two other years. For the Post-mobilization survey, all categories had lower rate of seatbelt usage in 2016 than all other years.

Specific trends for Elko County are shown in Figure 18. For the Pre-mobilization survey, all categories except female drivers showed the highest rate of seatbelt usage in 2016 compared to all previous years. For the Post-mobilization survey, all categories except passengers and non-NV drivers showed the lowest rate of seatbelt usage in 2016 compared to all previous years.

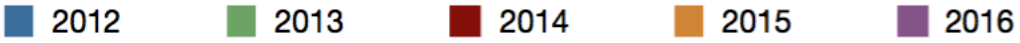
Specific trends for S1100 are shown in Figure 19. For the Pre-mobilization survey, all categories except female drivers showed the highest rate of seatbelt usage in 2016 compared to the previous years. For the Post-mobilization survey, all categories except passengers had lower rate of seatbelt usage in 2016 than at least two other years.

The details for S1200 are shown in Figure 20. For the Pre-mobilization survey, all categories except for the categories of female drivers and Non-Nevada occupants showed the second highest rate of seatbelt usage rate in 2016 compared to the previous years. For the Post-mobilization survey, all categories in 2016 showed the lowest rates of seatbelt usage compared to the previous years.

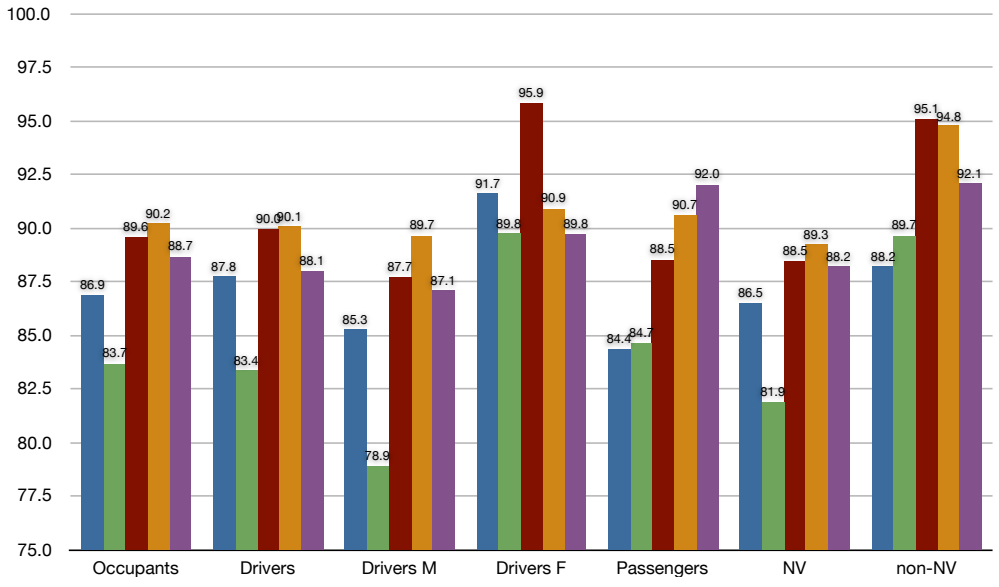
Specific trends for S1400 are shown in Figure 21. For the Pre-mobilization survey, all categories showed lower rates of seatbelt usage in 2016 compared to at least 2 other previous years. For the Post-mobilization survey, all categories in 2016 had the fourth highest rate of seatbelt usage compared to the previous years.

Statewide trends are shown in Figure 22. For the Pre-mobilization survey, the categories for 2016 of all occupants, all drivers, male drivers, and Nevada occupants and non-Nevada occupants had the second or third highest rate for seatbelt usage compared to all previous years. All passengers in 2016 had a higher rate for seatbelt usage compared to all previous years. Female drivers in 2016 had a lower rate for seatbelt usage compared to all previous years. For the Post-mobilization survey, all categories for 2016 except non-Nevada occupants had the lowest rate for seatbelt usage compared to all previous years.

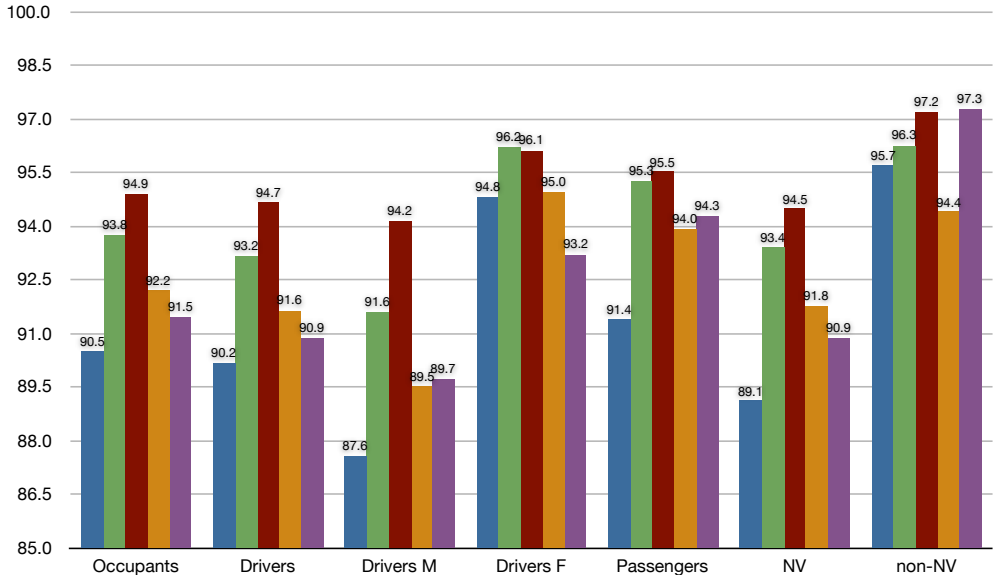
Figure 14: Seatbelt Usage Comparison for Clark County 2012-2016



(a) Legend

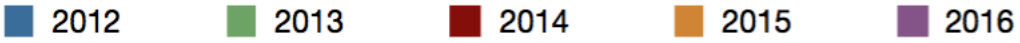


(b) Pre-mobilization

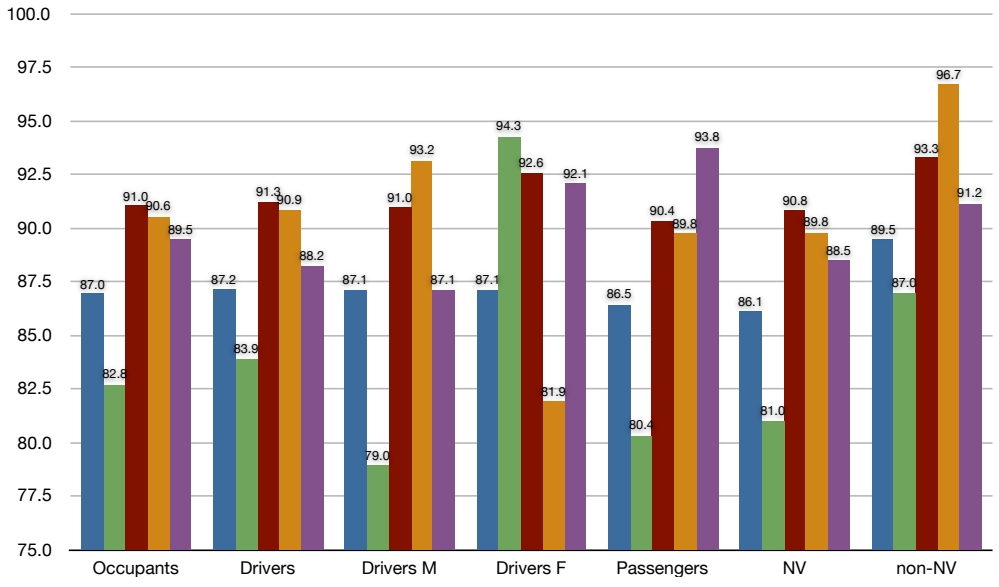


(c) Post-mobilization

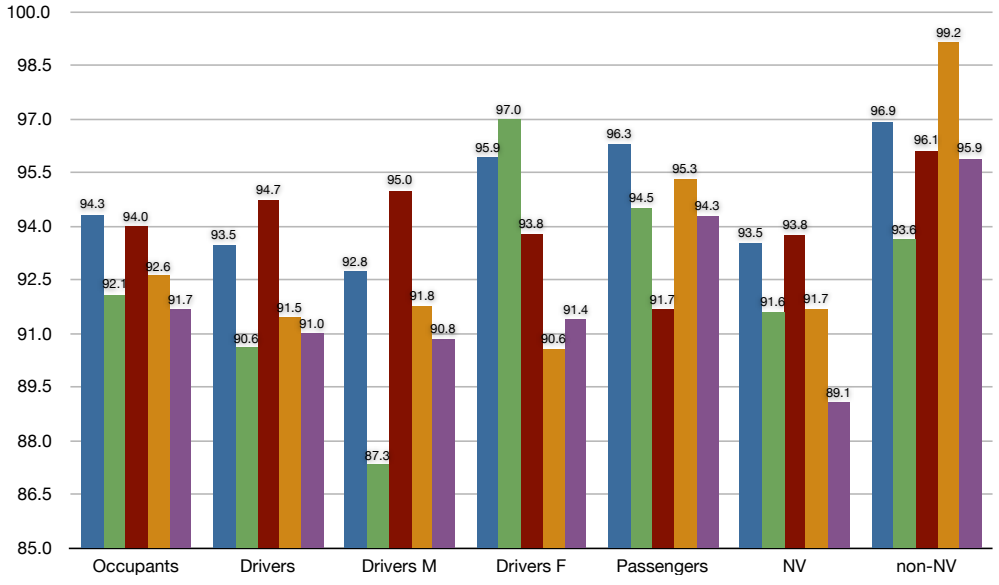
Figure 15: Seatbelt Usage Comparison for Nye County 2012-2016



(a) Legend

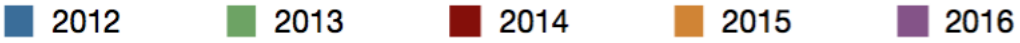


(b) Pre-mobilization

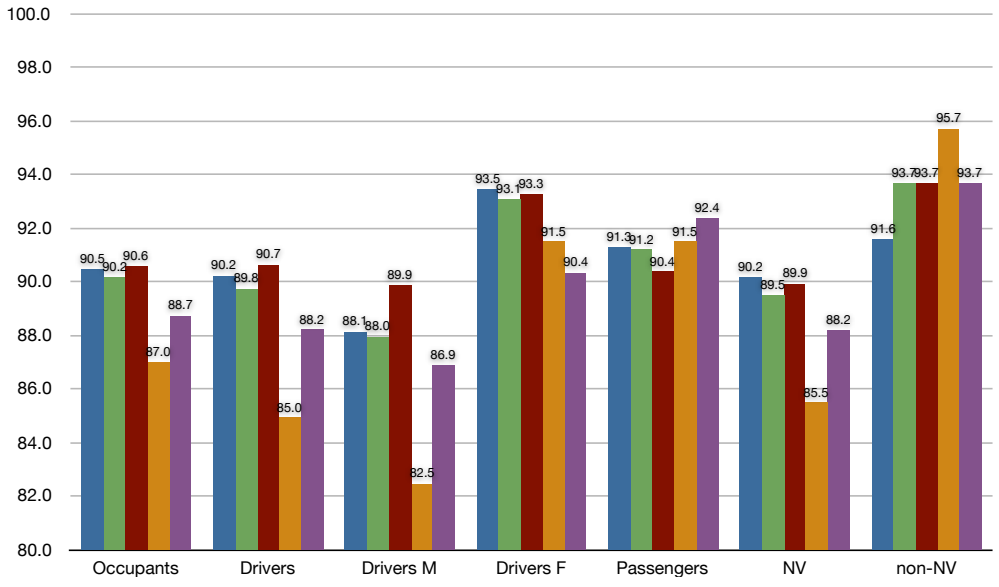


(c) Post-mobilization

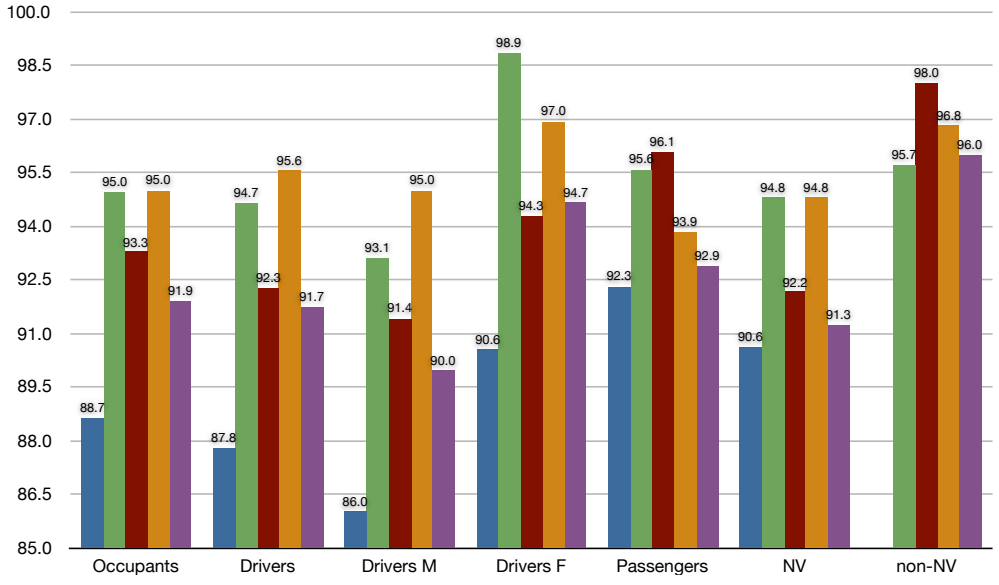
Figure 16: Seatbelt Usage Comparison for Washoe County 2012-2016



(a) Legend

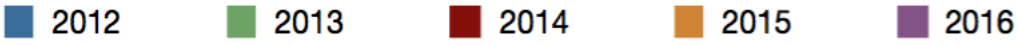


(b) Pre-mobilization

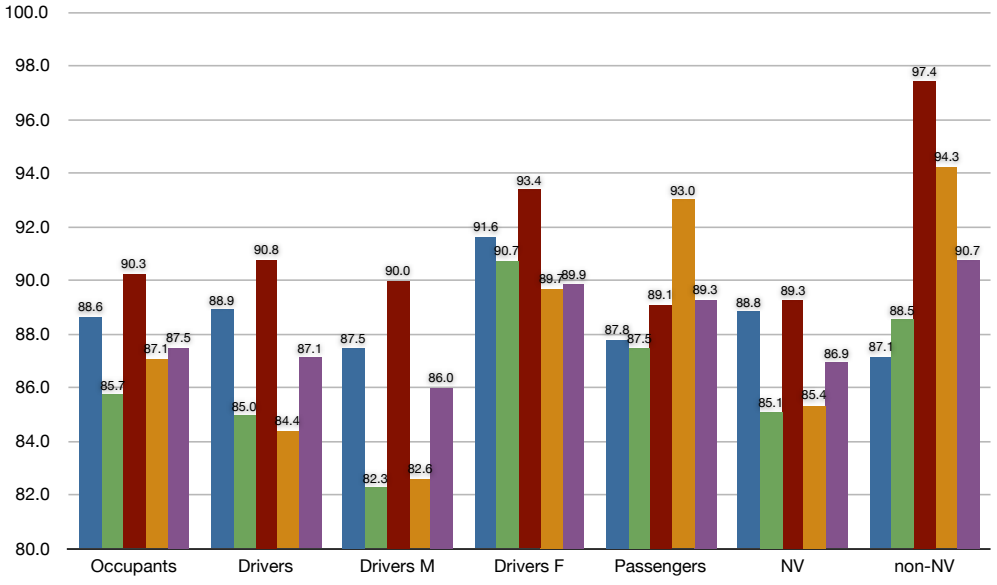


(c) Post-mobilization

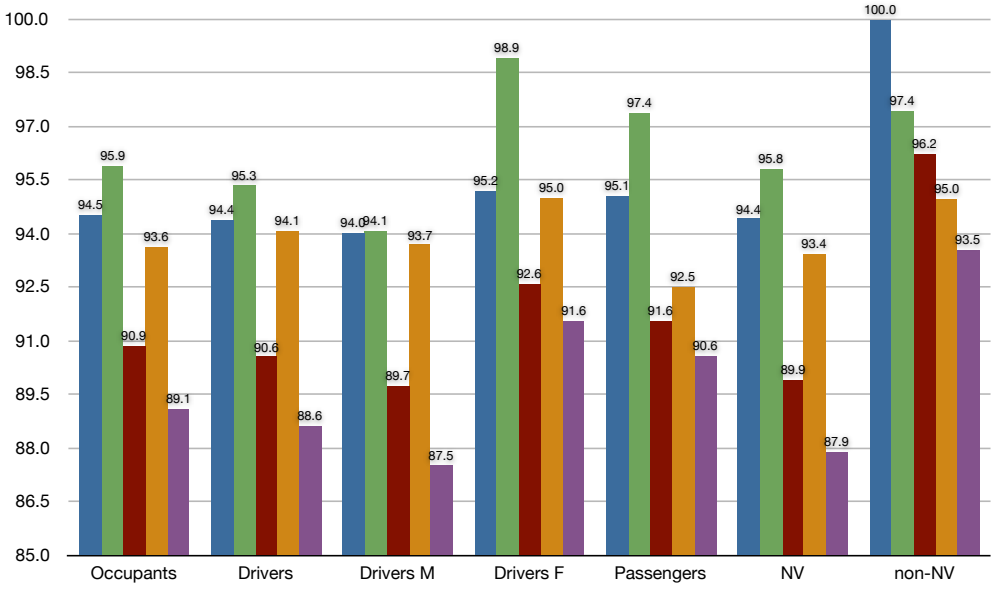
Figure 17: Seatbelt Usage Comparison for Lyon County 2012-2016



(a) Legend

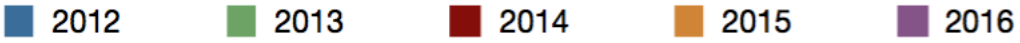


(b) Pre-mobilization

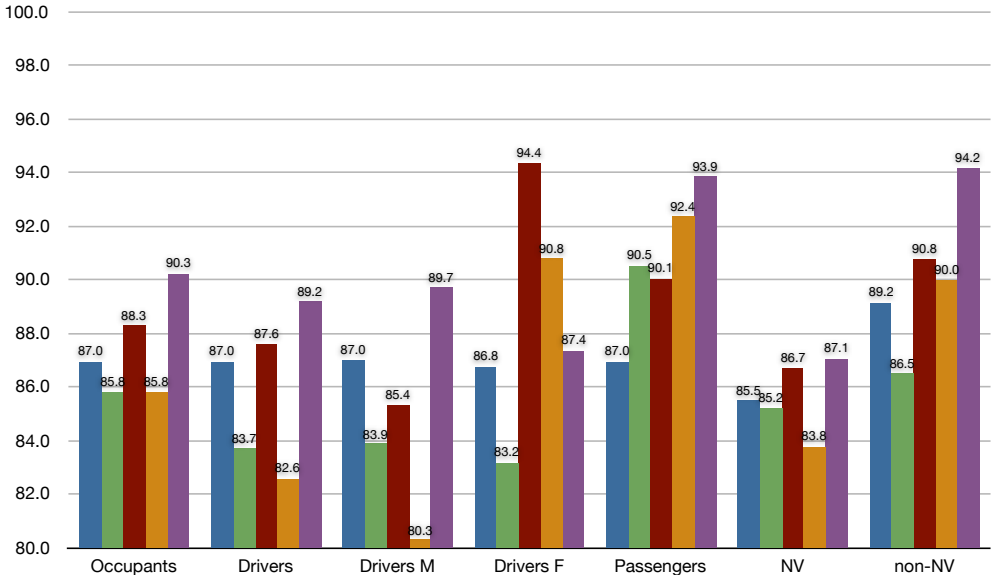


(c) Post-mobilization

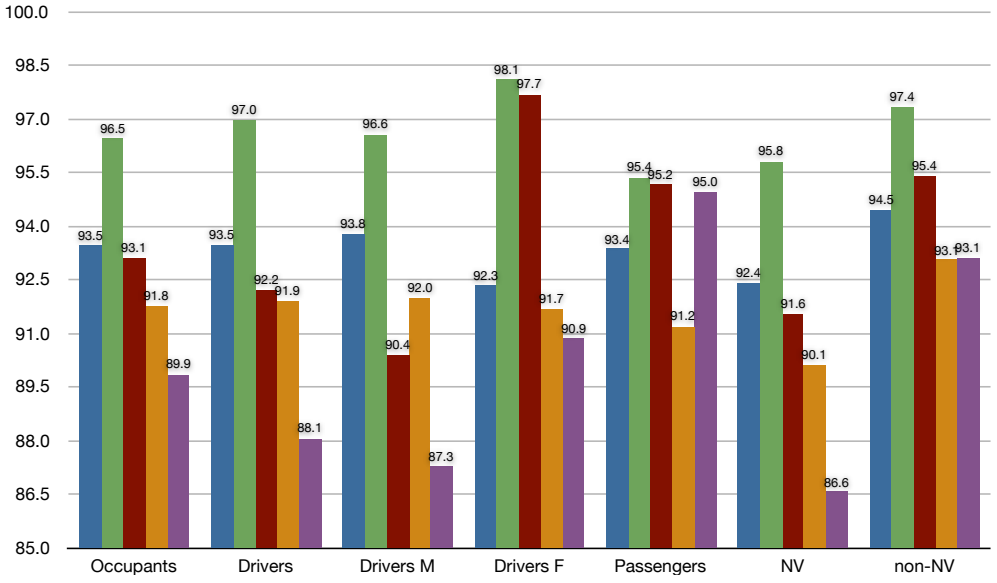
Figure 18: Seatbelt Usage Comparison for Elko County 2012-2016



(a) Legend

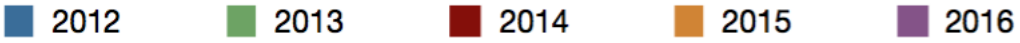


(b) Pre-mobilization

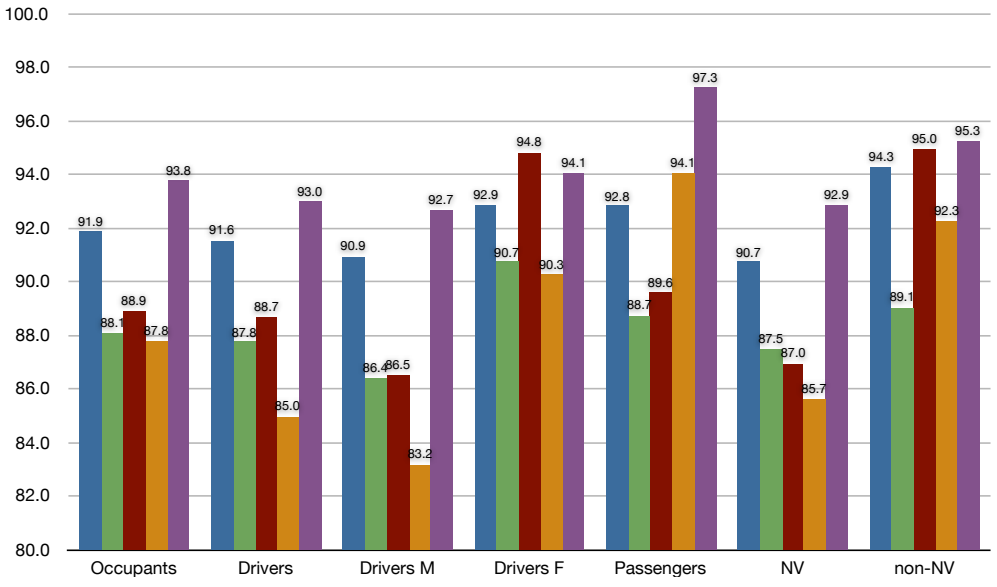


(c) Post-mobilization

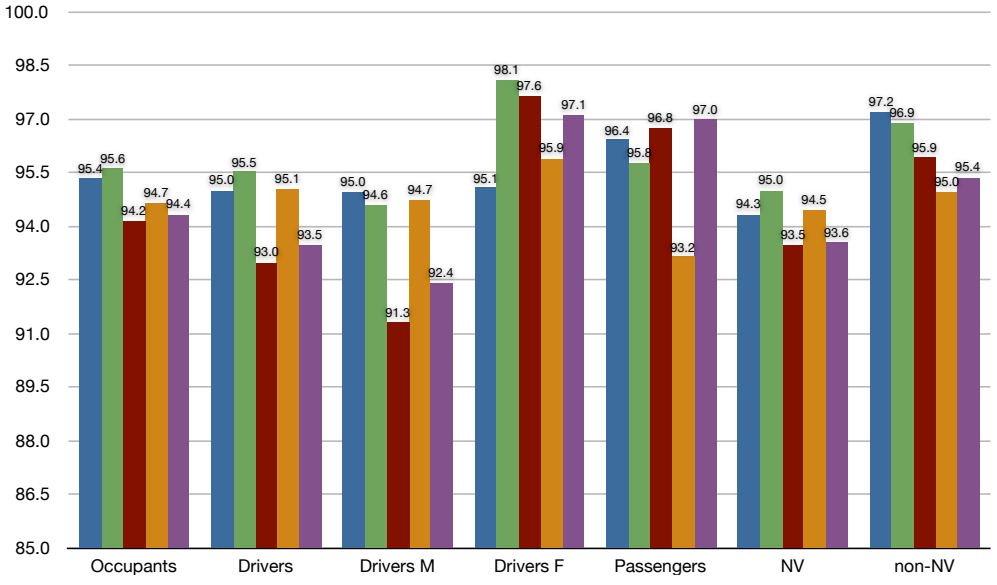
Figure 19: Seatbelt Usage Comparison for S1100 2012-2016



(a) Legend

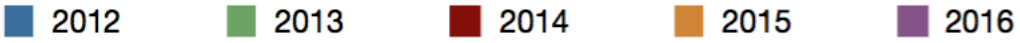


(b) Pre-mobilization

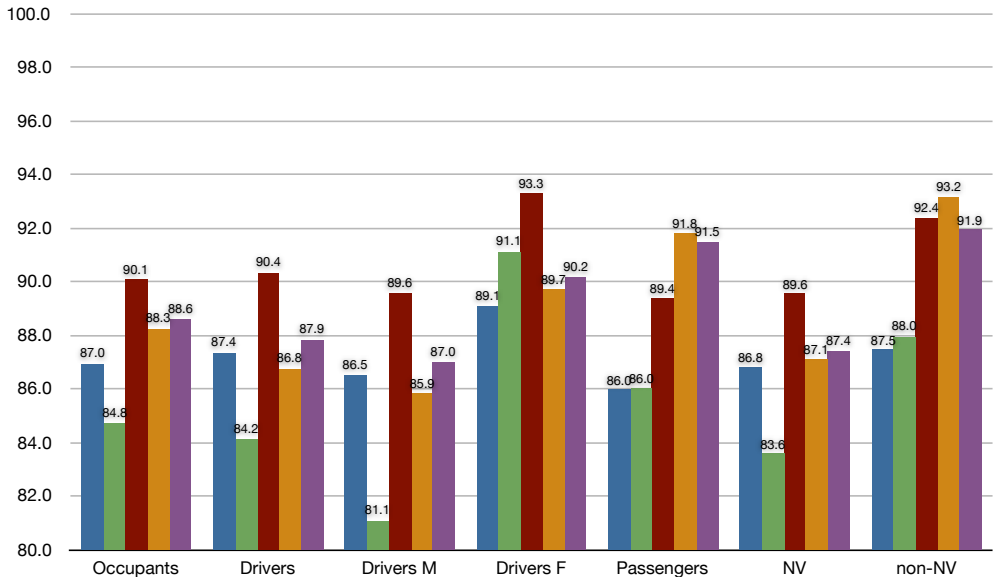


(c) Post-mobilization

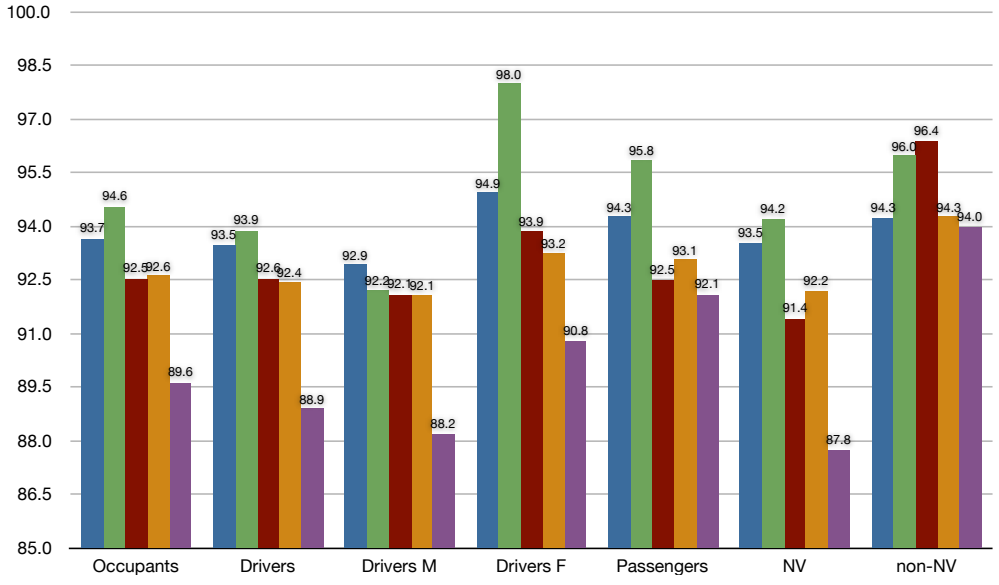
Figure 20: Seatbelt Usage Comparison for S1200 2012-2016



(a) Legend

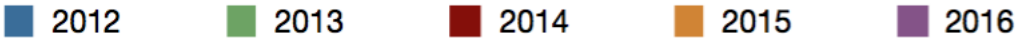


(b) Pre-mobilization

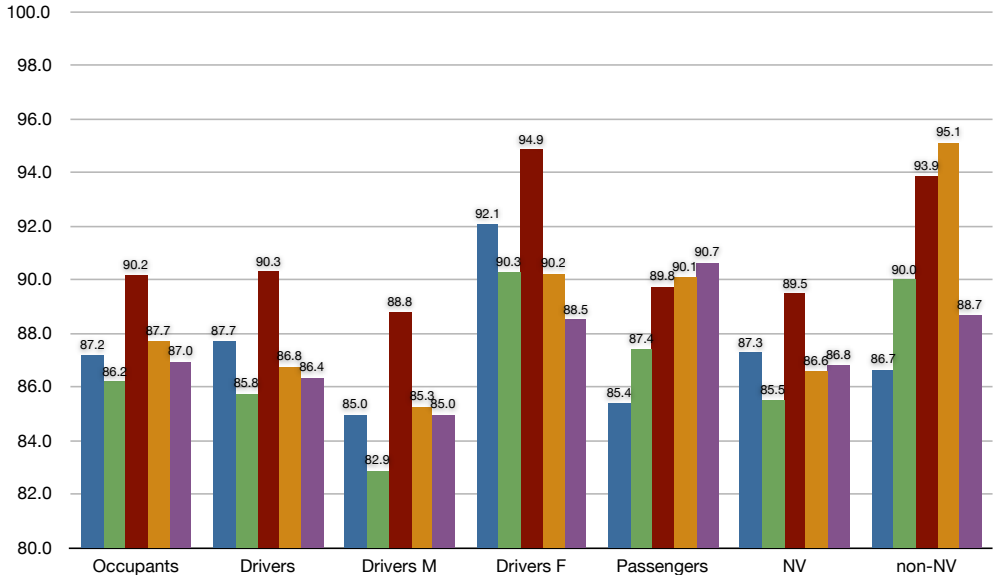


(c) Post-mobilization

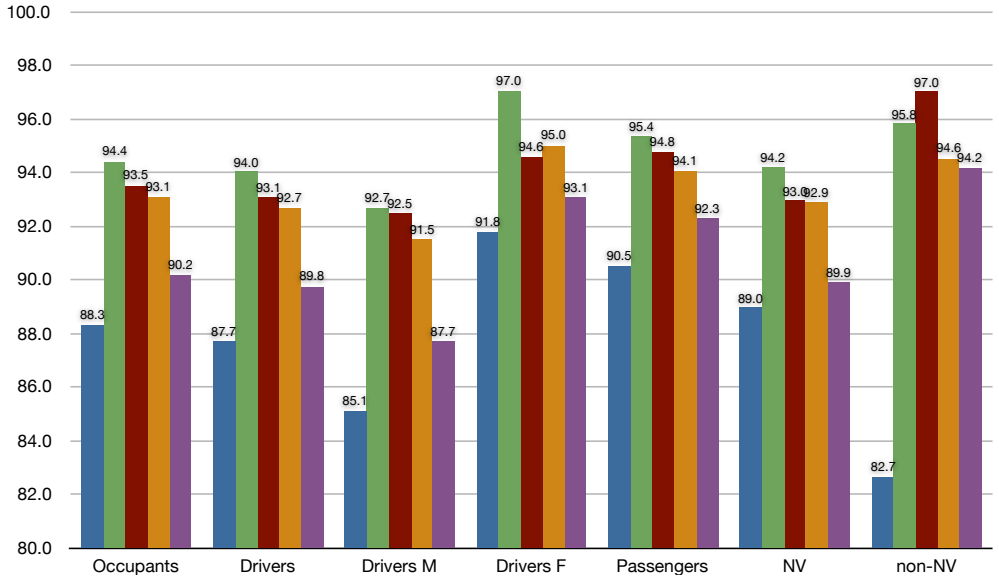
Figure 21: Seatbelt Usage Comparison for S1400 2012-2016



(a) Legend

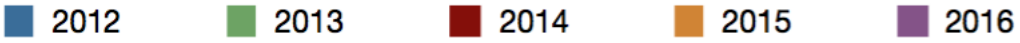


(b) Pre-mobilization

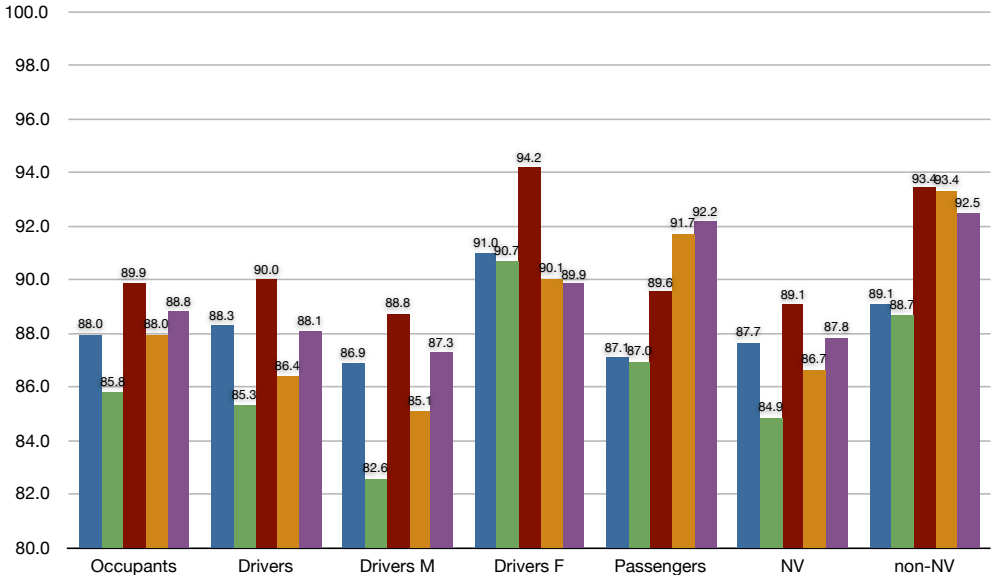


(c) Post-mobilization

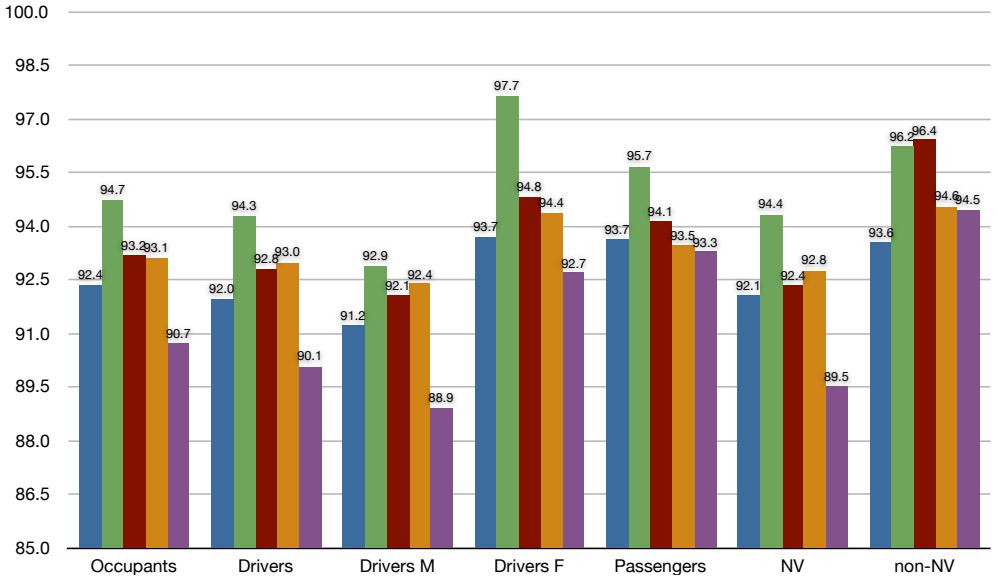
Figure 22: Seatbelt Usage Comparison for Nevada 2012-2016



(a) Legend



(b) Pre-mobilization



(c) Post-mobilization

Conclusion

Two seat belt usage surveys for 117 sites across the State of Nevada were conducted in the months of April/May and June 2016. The collected data was analyzed statewide, based on gender, ethnicity, type of vehicles, and vehicle registration. The overall weighted seatbelt usage rate of the state of Nevada is 86.81% during the Pre-Mobilization and 89.41% during the Post-Mobilization survey. The data showed that the unweighted estimate of statewide seat belt usage rate for 2016 is 88.83% during the Pre-Mobilization and 90.74% during the Post-Mobilization. Male occupants were found to have a lower rate of being restrained than the female occupants in both the surveys. The seatbelt usage was the lowest among Hispanics in the both the Pre-Mobilization and Post-Mobilization surveys. Furthermore, the rate of seatbelt usage was observed to be lowest in Pickup trucks and the highest in Vans/SUVs for both surveys. The data was analyzed based on functional classification of streets. For all the front seat occupants combined, data showed that for the S1100, S1200, and S1400 road types, the rate of seatbelt usage increased from the Pre-Mobilization survey to the Post-Mobilization survey. All counties had increased seatbelt usage during the Post-Mobilization as compared to the Pre-Mobilization. Moreover, from table 32 and 33, the number of observations for unknown seatbelt usage was less than 10% on each site for both pre-mobilization and post-mobilization surveys.

APPENDIX A

STATE SEAT BELT USE SURVEY REPORTING FORM

PART A: To be completed by the Governor's Highway Safety Representative (GR) or if applicable, the Coordinator of the State Highway Safety Office.

State: Nevada Calendar Year of Survey: 2016 State

Safety Belt Use Rate: 89.4 %

I hereby certify that:

- Jim Wright has been designated by the Governor as the State's Highway Safety Representative (GR), and if applicable, the GR has delegated authority to sign the certification in writing to Amy Davey, the Administrator of the State Highway Safety Office.
- The reported Statewide seat belt use rate is based on a survey design that was approved by NHTSA, in writing, as conforming to the Uniform Criteria for State Observational Surveys of Seat Belt Use, 23 CFR Part 1340.
- The survey design has remain unchanged since the survey was approved by NHTSA.
- Dr. Amei Amei , a qualified survey statistician, has reviewed the seat belt use rate reported above and information reported in Part B and has determined that they meet the Uniform Criteria for State Observational Surveys of Seat Belt Use, 23 CFR Part 1340.

Signature	December 2, 2016 Date
Amy Davey, Administrator The Office of Traffic Safety	

Part B - DATA COLLECTED AT OBSERVATION SITES

Table 32: Statewide Summary - Pre-Mobilization Survey

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
1	Original	04/27/16	56	125	21	122	24	0
2	Original	04/24/16	274	218	89	304	3	0
3	Original	04/27/16	48	342	44	376	10	0
4	Original	04/24/16	1097	31	21	46	3	3
5	Original	04/28/16	7	204	26	197	26	7
6	Original	04/28/16	9	145	30	156	12	7
7	Original	04/25/16	23	88	12	88	8	4
8	Original	04/26/16	27	78	17	70	24	1
9	Original	04/26/16	29	57	13	63	7	0
10	Original	04/26/16	33	187	41	182	40	6
11	Original	04/27/16	38	95	7	93	9	0
12	Original	04/24/16	44	197	35	204	27	1
13	Original	04/25/16	25	60	13	65	4	4
14	Original	04/26/16	56	151	38	163	19	7
15	Original	04/28/16	24	278	50	298	18	12
16	Original	04/25/16	17	166	21	179	6	2
17	Original	04/28/16	36	87	9	82	12	2
18	Original	04/28/16	80	49	8	43	12	2
19	Original	04/26/16	92	37	9	33	13	0
20	Original	04/24/16	54	195	44	200	34	5
21	Original	04/26/16	132	120	6	107	19	0
22	Original	04/26/16	74	171	10	159	22	0
23	Original	04/24/16	241	65	32	81	16	0
24	Original	04/28/16	154	102	45	139	5	3
25	Original	04/30/16	207635	0	0	0	0	0
26	Original	04/30/16	109	138	19	130	23	4
27	Original	04/30/16	317	141	49	163	21	6
28	Original	05/01/16	460	75	12	85	1	1
29	Original	05/01/16	1188	141	49	163	21	6
30	Original	04/30/16	1451	6	3	9	0	0
31	Original	04/30/16	1698	62	31	83	4	6
32	Original	04/30/16	1995	56	23	76	3	0
33	Original	04/30/16	2284	9	3	12	0	0

continued on next page

continued from previous page

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
34	Original	04/30/16	2624	86	17	84	18	1
35	Original	04/30/16	2992	59	18	68	7	2
36	Original	05/01/16	3310	96	21	108	3	6
37	Original	04/30/16	3647	89	30	113	6	0
38	Original	05/01/16	4141	20	5	24	1	0
39	Original	05/01/16	4618	11	6	16	1	0
40	Original	04/30/16	5077	81	28	101	5	3
41	Original	05/01/16	5602	5	1	5	1	0
42	Original	04/30/16	6075	20	10	29	1	0
43	Original	04/30/16	7027	66	8	67	7	0
44	Original	04/30/16	8016	20	3	23	0	0
45	Original	04/30/16	9577	13	3	15	1	0
46	Original	04/30/16	11499	14	4	9	9	0
47	Original	05/01/16	17577	109	42	140	8	3
48	Original	05/17/16	215	176	8	172	12	0
49	Original	05/18/16	45	150	42	183	8	1
50	Original	05/18/16	436	105	9	107	7	0
51	Original	05/18/16	1632	16	7	18	5	0
52	Original	05/18/16	31	185	16	162	34	5
53	Original	05/18/16	54	26	5	26	5	0
54	Original	05/17/16	35	144	22	156	10	0
55	Original	05/17/16	42	243	0	214	29	0
56	Original	05/17/16	97	57	5	60	2	0
57	Original	05/18/16	114	7	2	7	2	0
58	Original	05/18/16	132	17	7	21	1	2
59	Original	05/17/16	153	94	18	101	11	0
60	Original	05/18/16	174	41	14	25	30	0
61	Original	05/18/16	200	50	23	68	5	0
62	Original	05/17/16	172	218	18	214	22	0
63	Original	05/18/16	265	28	9	33	4	0
64	Original	05/18/16	311	13	5	14	2	2
65	Original	05/18/16	360	100	10	93	17	0
66	Original	05/17/16	448	33	3	32	4	0
67	Original	05/18/16	567	37	7	35	7	2
68	Original	05/17/16	743	136	17	141	12	0
69	Original	05/18/16	1025	38	5	37	3	3
70	Original	05/18/16	1449	16	5	20	1	0
71	Original	05/18/16	2941	18	6	23	1	0

continued on next page

continued from previous page

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
72	Original	05/16/16	1552	91	3	84	10	0
73	Original	05/16/16	3239	102	22	111	13	0
74	Original	05/16/16	31437	217	16	220	13	0
75	Original	05/16/16	234	148	38	173	13	0
76	Original	05/17/16	1616	139	38	161	12	4
77	Original	05/17/16	2235	169	49	187	25	6
78	Original	05/17/16	2944	102	24	99	25	2
79	Original	05/16/16	3609	182	39	202	19	0
80	Original	05/16/16	4271	44	12	36	18	2
81	Original	05/17/16	4970	119	37	152	3	1
82	Original	05/16/16	5890	18	7	20	4	1
83	Original	05/17/16	7057	98	32	114	14	2
84	Original	05/16/16	7819	24	6	20	9	1
85	Original	05/17/16	8587	119	28	125	20	2
86	Original	05/16/16	9423	61	9	63	7	0
87	Original	05/16/16	10775	19	2	16	3	2
88	Original	05/17/16	12684	57	12	44	21	4
89	Original	05/16/16	14385	55	12	58	7	2
90	Original	05/16/16	16566	10	2	11	0	1
91	Original	05/16/16	4863	130	35	140	25	0
92	Original	05/16/16	24546	9	5	8	6	0
93	Original	05/17/16	37606	97	26	114	6	3
94	Original	05/16/16	40679	15	3	14	3	1
95	Original	05/19/16	370	83	28	98	11	2
96	Original	05/20/16	807	85	28	109	4	0
97	Original	05/20/16	576	47	24	65	6	0
98	Original	05/20/16	1668	106	27	131	2	0
99	Original	05/19/16	2442	157	46	194	9	0
100	Original	05/20/16	3620	101	26	121	5	1
101	Original	05/19/16	5780	126	25	142	9	0
102	Original	05/20/16	196	47	19	57	9	0
103	Original	05/19/16	365	190	13	164	30	9
104	Original	05/20/16	1175	6	2	8	0	0
105	Original	05/19/16	1567	6	1	6	1	0
106	Original	05/20/16	1943	43	17	49	8	3
107	Original	05/18/16	2367	57	21	56	19	3
108	Original	05/20/16	2774	67	35	97	5	0
109	Original	05/20/16	3220	92	40	125	7	0

continued on next page

continued from previous page

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
110	Original	05/20/16	3666	79	39	105	13	0
111	Original	05/19/16	4059	32	6	31	7	0
112	Original	05/19/16	4561	25	9	34	0	0
113	Original	05/20/16	5168	11	9	18	2	0
114	Original	05/20/16	2985	49	18	64	3	0
115	Original	05/20/16	3517	82	12	87	7	0
116	Original	05/20/16	8817	12	4	7	8	1
117	Original	05/20/16	11604	34	6	30	8	2
Overall				10075	2201	10905	1197	174

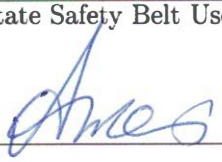
Standard Error of Statewide Belt Use Rate (Pre-mobilization): 0.010345

Nonresponse Rate, as provided in §1340.9(f)

Nonresponse rate for the survey variable seatbelt use (Pre-mobilization): 0.01417

Amei Amei

Printed Name of State Safety Belt Use Survey Statistician

Signature: 

Address: Department of Mathematical Sciences

University of Nevada, Las Vegas

Las Vegas, NV 89154

Email: amei.amei@unlv.edu

Phone: (702) 895-5159

Table 33: Statewide Summary - Post-mobilization Survey

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
1	Original	06/08/16	40	226	7	225	8	0
2	Original	06/08/16	293	164	91	248	7	0
3	Original	06/08/16	34	343	74	393	20	4
4	Original	06/08/16	1174	20	8	26	2	0
5	Original	06/07/16	6	235	34	247	19	3
6	Original	06/07/16	9	118	20	127	9	2
7	Original	06/08/16	16	84	24	102	3	3
8	Original	06/07/16	28	75	23	80	17	1
9	Original	06/06/16	31	36	5	28	11	2
10	Original	06/06/16	35	123	36	138	18	3
11	Original	06/06/16	40	119	13	121	9	2
12	Original	06/07/16	35	204	35	209	26	4
13	Original	06/08/16	27	107	18	112	13	0
14	Original	06/07/16	60	124	40	132	31	1
15	Original	06/07/16	26	277	60	327	7	3
16	Original	06/08/16	18	197	28	210	15	0
17	Original	06/06/16	39	106	8	97	16	1
18	Original	06/07/16	85	31	5	30	5	1
19	Original	06/06/16	99	20	3	14	8	1
20	Original	06/07/16	87	244	41	260	24	1
21	Original	06/06/16	141	88	22	102	8	0
22	Original	06/06/16	79	140	25	148	17	0
23	Original	06/08/16	258	34	8	35	7	0
24	Original	06/08/16	248	139	39	176	2	0
25	Original	06/09/16	222106	0	0	0	0	0
26	Original	06/09/16	116	137	33	154	16	0
27	Original	06/09/16	339	157	34	177	14	0
28	Original	06/09/16	492	73	10	83	0	0
29	Original	06/10/16	1271	137	31	163	5	0
30	Original	06/11/16	1552	7	4	9	2	0
31	Original	06/10/16	1816	72	20	87	5	0
32	Original	06/09/16	2134	28	4	28	4	0
33	Original	06/11/16	2443	5	0	4	1	0
34	Original	06/09/16	1404	111	40	143	8	0
35	Original	06/10/16	1600	71	28	94	5	0

continued on next page

continued from previous page

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
36	Original	06/10/16	3540	131	44	168	7	0
37	Original	06/11/16	3901	27	5	28	4	0
38	Original	06/11/16	4430	22	7	27	2	0
39	Original	06/11/16	4939	13	6	17	2	0
40	Original	06/09/16	2716	67	4	64	7	0
41	Original	06/11/16	5993	18	4	15	7	0
42	Original	06/09/16	6499	14	6	18	2	0
43	Original	06/10/16	7516	132	35	127	40	0
44	Original	06/10/16	8575	27	5	29	3	0
45	Original	06/10/16	10244	37	5	36	6	0
46	Original	06/10/16	12300	25	5	26	4	0
47	Original	06/10/16	18802	122	38	154	6	0
48	Original	06/14/16	345	279	66	340	5	0
49	Original	06/15/16	49	172	57	218	11	0
50	Original	06/15/16	466	130	29	153	5	1
51	Original	06/15/16	1745	17	7	19	5	0
52	Original	06/15/16	33	215	35	201	49	0
53	Original	06/15/16	58	44	9	48	5	0
54	Original	06/14/16	74	237	32	263	6	0
55	Original	06/14/16	45	200	26	219	7	0
56	Original	06/14/16	104	78	25	98	5	0
57	Original	06/15/16	122	13	2	14	1	0
58	Original	06/15/16	141	11	3	12	2	0
59	Original	06/14/16	164	127	34	150	11	0
60	Original	06/15/16	187	40	10	22	27	1
61	Original	06/15/16	214	51	10	54	7	0
62	Original	06/14/16	184	215	26	232	8	1
63	Original	06/15/16	283	25	11	34	2	0
64	Original	06/15/16	333	13	4	16	1	0
65	Original	06/15/16	385	31	4	33	1	1
66	Original	06/14/16	479	38	8	42	4	0
67	Original	06/15/16	606	49	6	40	15	0
68	Original	06/14/16	794	138	25	152	8	3
69	Original	06/15/16	1097	49	13	55	7	0
70	Original	06/15/16	1550	12	3	2	13	0
71	Original	06/15/16	3146	17	6	21	2	0
72	Original	06/13/16	3321	181	82	246	8	9
73	Original	06/13/16	6930	134	59	188	4	1

continued on next page

continued from previous page

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
74	Original	06/13/16	33628	233	74	289	17	1
75	Original	06/13/16	251	193	66	246	12	1
76	Original	06/14/16	1729	123	34	139	18	0
77	Original	06/14/16	2390	210	55	221	44	0
78	Original	06/12/16	3149	109	31	116	24	0
79	Original	06/13/16	3861	155	54	190	16	3
80	Original	06/12/16	4568	60	18	67	11	0
81	Original	06/14/16	5316	136	38	160	14	0
82	Original	06/12/16	6300	24	13	29	8	0
83	Original	06/14/16	7548	117	40	134	22	1
84	Original	06/12/16	8364	23	10	28	5	0
85	Original	06/14/16	9186	134	37	143	28	0
86	Original	06/13/16	10080	48	13	60	1	0
87	Original	06/12/16	11526	10	4	10	4	0
88	Original	06/12/16	13568	77	23	71	29	0
89	Original	06/13/16	15388	76	14	67	23	0
90	Original	06/13/16	17721	14	7	18	3	0
91	Original	06/13/16	10403	176	67	228	14	1
92	Original	06/12/16	26257	18	6	20	4	0
93	Original	06/14/16	40227	105	33	123	15	0
94	Original	06/13/16	43514	32	7	34	5	0
95	Original	06/16/16	396	125	15	114	26	0
96	Original	06/17/16	864	110	36	138	8	0
97	Original	06/17/16	1231	103	50	143	10	0
98	Original	06/17/16	1784	132	68	179	21	0
99	Original	06/18/16	2612	150	66	207	9	0
100	Original	06/16/16	3873	71	20	75	16	0
101	Original	06/16/16	6183	224	67	281	6	4
102	Original	06/17/16	210	114	67	174	6	1
103	Original	06/16/16	391	232	21	219	34	0
104	Original	06/17/16	1257	7	2	6	3	0
105	Original	06/16/16	1676	6	1	6	1	0
106	Original	06/17/16	2079	55	19	67	7	0
107	Original	06/16/16	2532	117	23	102	38	0
108	Original	06/17/16	2968	101	49	142	8	0
109	Original	06/17/16	3444	106	53	144	15	0
110	Original	06/17/16	3922	102	49	145	5	1
111	Original	06/16/16	4342	36	12	43	4	1

continued on next page

continued from previous page

Site ID	Site type	Date observed	Sample weight	Number of drivers	Number of front passengers	Number of occupants belted	Number of occupants unbelted	Number of occupants with unknown belt use
112	Original	06/17/16	4879	9	3	8	4	0
113	Original	06/17/16	5529	18	8	20	6	0
114	Original	06/17/16	6386	103	48	148	3	0
115	Original	06/17/16	7524	108	53	150	9	2
116	Original	06/17/16	9432	24	6	17	13	0
117	Original	06/08/16	12413	58	17	46	29	0
Overall				11387	3024	13077	1269	65

Standard Error of Statewide Belt Use Rate (Post-mobilization): 0.012438

Nonresponse Rate, as provided in §1340.9(f)

Nonresponse rate for the survey variable seatbelt use (Post-mobilization): 0.00451

Amei Amei

Printed Name of State Safety Belt Use Survey Statistician

Signature: _____

Address: Department of Mathematical Sciences
University of Nevada, Las Vegas
Las Vegas, NV 89154

Email: amei.amei@unlv.edu

Phone: (702) 895-5159

Bibliography

[1] National Highway Traffic Safety Administration. Fatality Analysis Reporting System. http://www.nhtsa.gov/FARS, 2011.

[2] National Highway Traffic Safety Administration. Part 1340 - Uniform Criteria for State Observational Surveys of Seat Belt Use. http://law.justia.com/us/cfr/title23/23cfr1340_main_02.html, 2011.

[3] U.S. Census Bureau. Tiger Shape Files. http://www.census.gov/geo/www/tiger/tgrshp2010/documentation.html, 2010.

[4] RTI International. RTI International SUDAAN Software. http://http://www.rti.org/sudaan/.

[5] NHTSA. National Highway Traffic Safety Administration. http://www.nhtsa.gov/, 2010.

[6] Nevada Department of Transportation. Functional Classification Maps. http://www.nevadadot.com/reports_pubs/class_maps/, 2004.

[7] Nevada Department of Transportation. Annual Vehicles Miles Travelled. http://www.nevadadot.com/uploadedFiles/NDOT/About_NDOT/NDOT_Divisions/Planning/Roadway_Systems/2009_AVMT.pdf, 2010.