2013 LOUISIANA NIGHTTIME

ADULT SEAT BELT OBSERVATION SURVEY RESULTS

-FINAL REPORT-

LHSC Project No. 2014-20-06

STATE OF LOUISIANA
Bobby Jindal, Governor

LOUISIANA HIGHWAY SAFETY COMMISSION
John A. LeBlanc, Executive Director

January 2014

-FINAL REPORT-

2013 LOUISIANA NIGHTTIME

ADULT SEAT BELT OBSERVATION SURVEY RESULTS

LHSC Project No. 2014-20-06

Prepared for:

LOUISIANA HIGHWAY SAFETY COMMISSION
John A. LeBlanc, Executive Director
Post Office Box 66336
Baton Rouge, Louisiana 70896

by:

PREUSSER RESEARCH GROUP, INC.
Robert H.B. Chaffe, Research Associate
1104 Van Buren Avenue
Oxford, MS 38655

January 2014

TABLE OF CONTENTS

INTRODUCTION

Approximately one-quarter (26%) of traffic related fatalities across the United States occur between the hours of 10 P.M. and 4 A.M. This window of time represents 25% of the 24 hour day but only 10% of daily traffic occurs during this time. A contributing factor to increased fatalities at night is lower seat belt usage at nighttime. NHTSA's Fatality Analysis Reporting System (FARS) indicates **unbelted** fatalities are much more likely at night. That is true in Louisiana where the seat belt use rate among Louisiana fatalities is 39% on average, but from the hours of 6 P.M. through 5 A.M., belt usage is much lower than average (Figure 1).

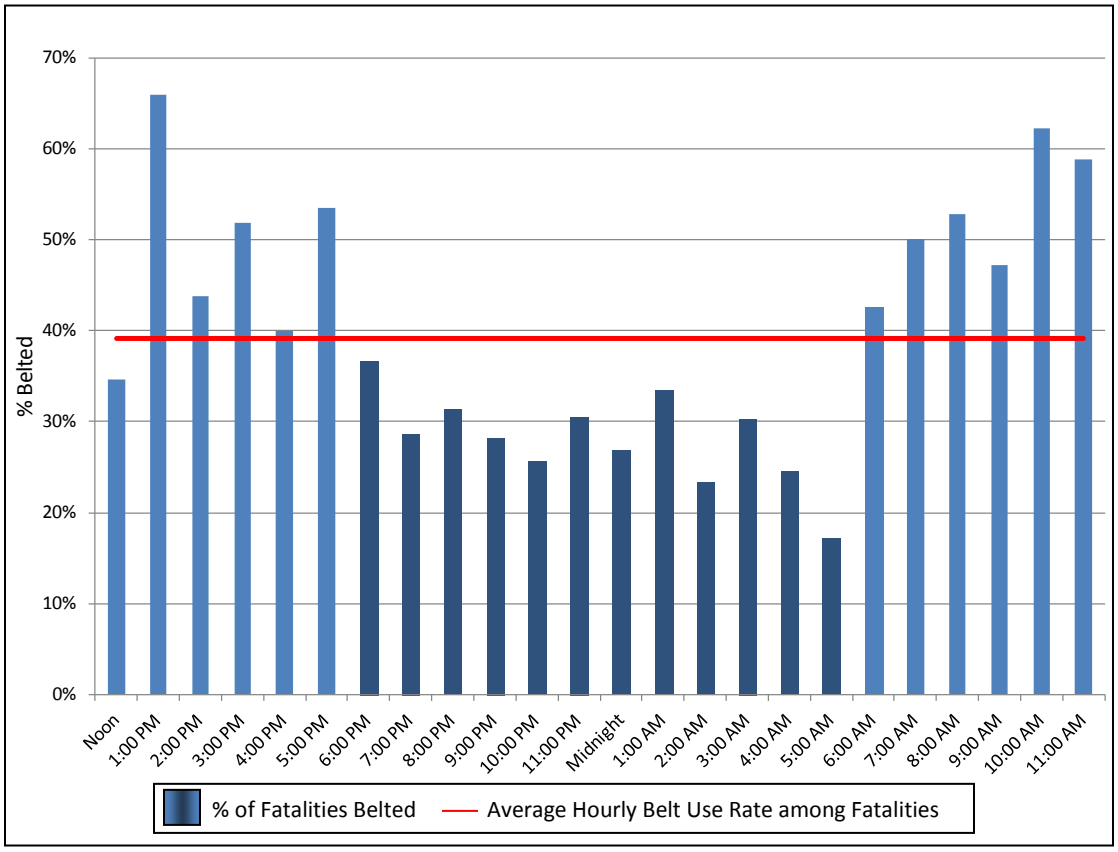

Figure 1: Percent of Louisiana Fatalities Wearing a Seat Belt by Hour;
Passenger Vehicle Deaths 2009-2011

Preusser Research Group (PRG), under contract with the State of Louisiana, developed and conducted a nighttime seat belt survey during the month of November 2012. This was the first nighttime survey of seat belt use in Louisiana. The survey involved the collection of seat belt use information at a subsample of the sites used in the annual statewide daytime seat belt survey, also conducted by PRG for the State of Louisiana. The nighttime sample was stratified to provide representation for eight different geographic regions in the State. Ultimately, a 10% sample of the sites visited for the daytime survey was used for nighttime observation and analyses. PRG replicated this nighttime seat belt survey for the State in November 2013. The results of the 2013 survey are presented in this document.

METHODOLOGY

Nighttime Survey Site Selection

Forty nighttime observation sites were randomly selected from the list of observation sites used in Louisiana's annual daytime statewide survey. The nighttime sites were selected from a subset of the daytime survey sites that included only Interstate roadways and State Roads. Smaller local roads were not eligible for the sample because they would likely result in too few vehicles at night for the analyses. Specifically, eight Parishes, one from each region of the State, were randomly selected (Figure 2). Eligible Parishes had to have at least five Interstate and State Road sites, at which there were at least 30 vehicles recorded during the daytime observations. The goal of this step was to help ensure that there would be at least five vehicles per site at night to observe.

The Parishes selected for night observations were: Caddo, Calcasieu, East Baton Rouge, Lafayette, Jefferson, Ouachita, Rapides, and St. Charles.

Five sites were randomly selected per Parish, for a total of 40 sites overall. In general, PRG selected two Interstate ramp sites and three State/US routes. When there were more than two Interstates or more than three State/US routes eligible for inclusion, these sites were randomly selected (Appendix A).

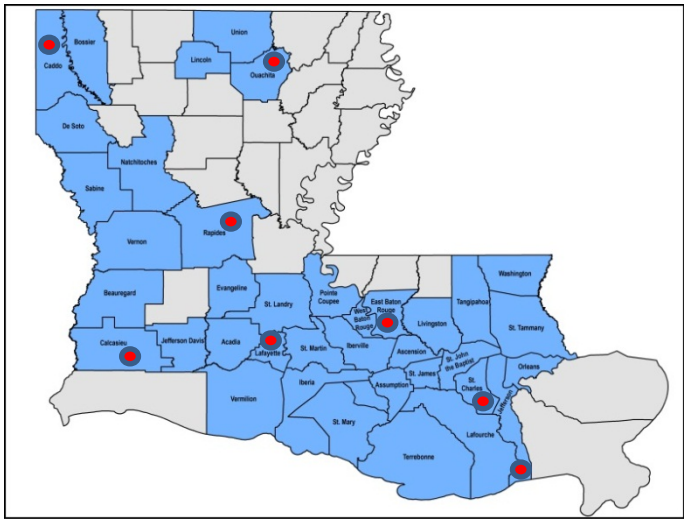

Figure 2: Parishes included In the Nighttime Survey

Nighttime Survey Scheduling

PRG assigned a single survey team to each Parish. The survey team completed observations in the Parish in a single night. Two Parishes (25% of the total sites) were selected for Friday night measurements, in order to have both weeknight and weekend nights fairly represented. The other Parishes were assigned a Tuesday, Wednesday, or Thursday night. PRG scheduled the nighttime observations to take place between the hours of 8:00 P.M. and 3:00 A.M. Each observation period lasted one hour.

Observers were given an observation schedule and a pre-mapped route for travelling from site-to-site in each Parish. Site order was determined by following the previous year's schedule. PRG also provided the survey teams a reference diagram for each observation site (these diagrams were used in previous surveys). Site diagrams provided information on exactly where the surveyor team should stand, the direction of traffic flow to observe, and prominent landmarks (names of intersecting roadways, traffic lights, nearby buildings, etc.). The survey teams used this information as a guide to make every attempt to approximate the previous year's collection methods.

A number of alternate sites were selected and mapped in the event any site was compromised due to construction or re-routing of traffic.[1]

Nighttime Survey Observers

PRG used two trained observers and two data recorders. Both observers had previous experience conducting seat belt observations, including work on substantial parts of the Louisiana daytime survey. Additionally, all four surveyors had extensive experience observing at night, and utilizing night vision technology when necessary.

Night Vision Goggles

Night vision goggles were used in tandem with infrared spotlights to provide adequate illumination of the vehicle occupants without adversely affecting them. PRG survey teams are trained to use this technology only when sufficient ambient lighting is not available to see inside the vehicles.

Infrared Spot Light

Survey teams wore high-visibility reflective vests and positioned themselves safely away from the normal flow of traffic. Each observer also carried a letter of identification authorized by the Louisiana Highway Safety Commission, which indicated the purpose of the survey and the data collection schedule.

Data Collection Procedures

Passenger vehicles with a gross vehicle weight up to 10,000 pounds were included in the survey. Drivers, right front seat passengers (excluding children in child safety seats), rear seat occupants, as well as motorcycle operators and passengers, were observed for seat belt use or helmet use. Observers recorded vehicle type (Car, Truck, SUV, Van, Motorcycle), and gender and race (white, black, Hispanic, other) of drivers and passengers on the data collection form. A copy of the data collection form can be found in Appendix B.

Observers recorded pertinent site information on the data collection form, including site number and exact roadway location, date, day of week, time, weather condition, and direction of traffic flow. Each one-page form included space to record information on 25 vehicles, the driver of that vehicle, and the outboard, front seat passenger, if any. When more than 25 observations were made at a site, additional sheets were used and all sheets for the observation site-period were fastened together.

[1] Observers went to 40 sites and completed 40 hours of observations. After all of the observations were completed, one site was dropped for consistency with the 2013 collection for a total of 39 sites included in the survey.

Survey teams recorded vehicle type, occupant gender, and occupant race, in addition to belt or helmet use for the passing vehicles.

Building a Data Set

Observation data were keypunched by Preusser Research Group, Inc. staff into the Statistical Package for the Social Sciences (SPSS) software. A thorough check of the nighttime survey data yielded minimal keypunch errors, all of which were corrected pre-analysis.

Data Analysis

PRG used the nighttime survey data to calculate overall seat belt use rates, both raw and weighted. PRG also calculated results for differences in region, occupant type, gender, race, vehicle type and road type. PRG made specific comparisons between the nighttime survey results and results from the daytime survey completed earlier in the year.

RESULTS

Data collectors observed **nighttime** seat belt use at 40 sites across eight Louisiana Parishes between November 12th and November 15th, 2013. One site was dropped in 2012 due to an insufficient vehicle count, and while data was collected at that site for 2013 (five vehicles), we removed it from the sample for the sake of consistency for a total of 39 sites. PRG observed daytime seat belt use at the same 39 sites between June 1st and June 26th, 2013. Table 1 displays the number of front seat occupants observed per Parish, at nighttime and daytime, across the 39 observation sites. PRG observed considerably fewer vehicles and occupants travelling during the nighttime compared to daytime. Due to the very low occurrence, coupled with desired comparability to the previous survey, rear seat occupants and motorcycle operators are not included in the counts or results that follow – for both night and daytime.

TABLE 1. Number Occupants Observed at Nighttime & Daytime

Parish	Drivers Observed	Passengers Observed	Total Occupants Observed
Jefferson			
Nighttime	411	93	504
Daytime	1,154	226	1,380
East Baton Rouge			
Nighttime	453	89	542
Daytime	1,385	298	1,683
St. Charles			
Nighttime	681	181	862
Daytime	1,227	258	1,485
Lafayette			
Nighttime	486	127	613
Daytime	785	147	932
Calcasieu			
Nighttime	805	357	1,162
Daytime	906	278	1,184
Rapides			
Nighttime	225	64	289
Daytime	796	157	953
Caddo			
Nighttime	431	86	517
Daytime	1,060	296	1,356
Ouachita			
Nighttime	332	57	389
Daytime	1,308	254	1,562
Night Total	**3,824**	**1,054**	**4,878**
Day Total	**8,621**	**1,914**	**10,535**

PRG recorded data on 4,878 front seat occupants (3,824 drivers and 1,054 passengers). The number of occupants observed ranged from 289 (Rapides Parish) to 1,162 (Calcasieu Parish). The number of drivers ranged from 225 (Rapides Parish) to 805 (Calcasieu Parish) and the number of passengers ranged from 57 (Ouachita Parish) to 357 (Calcasieu Parish).

PRG recorded data on 10,535 front seat occupants (8,621 drivers and 1,914 passengers) across same the 39 sites **at daytime**. The number of occupants observed ranged from 932 (Lafayette Parish) to 1,683 (East Baton Rouge Parish). The number of drivers ranged from 785 (Lafayette Parish) to 1,385 (East Baton Rouge Parish) and the number of passengers ranged from 147 (Lafayette Parish) to 298 (East Baton Rouge Parish).

Table 2 displays nighttime and daytime sample characteristics. Notable similarities between the nighttime and daytime samples included a higher percentage of male occupants (55% on average) observed on the road compared to female occupants (45% on average); a higher percentage of white-occupants than non-white (70% vs. 30%); and a higher ratio of occupants observed on State Roads than on Interstate Ramps (roughly 2 to 1). Differences between the night and day samples included a greater percentage of passengers observed at nighttime than at daytime (22% vs. 18%); a smaller percentage of pickup trucks observed at nighttime than at daytime (22% vs. 27%); and a greater proportion of passenger cars observed at nighttime compared to daytime (51% vs. 41%).

TABLE 2.
Sample Characteristics across 39 Survey Sites*

	Nighttime Survey % (n)	Daytime Survey % (n)
Occupant Type		
Driver	78% (3,824)	82% (8,621)
Passenger	22% (1,054)	18% (1,914)
	100%	100%
Gender		
Male	56% (2,731)	54% (5,671)
Female	44% (2,143)	46% (4,854)
	100%	100%
Race		
White	70% (3,383)	70% (7,353)
Black	24% (1,141)	24% (2,498)
Hispanic	3% (160)	4% (477)
Other	3% (127)	2% (161)
	100%	100%
Vehicle Type		
Pickup Truck	22% (1,078)	27% (2,796)
Passenger Car	51% (2,506)	41% (4,338)
SUV	22% (1,069)	26% (2,766)
Van	5% (225)	6% (635)
	100%	100%
Road Type		
Interstate Ramp	35% (1,725)	38% (3,975)
State Road	65% (3,153)	62% (6,560)
	100%	100%

*for known belt use occupants

Table 3 and Figure 3 display the results of the nighttime and daytime surveys. The nighttime seat belt observations indicated an 84.4% use rate, based on raw data counts. The daytime use rate, also based on raw data counts, was 88.0%. Because the number of observed occupants varied among the survey sites, PRG averaged the use rates for all 39 observation sites to control for disproportionate weighting of some sites over others. Equally weighting the sites (1:1) estimated the nighttime use rate at 81.9%. Weighting the daytime survey data (1:1) indicated an 87.7% use rate across these same observation sites during daylight hours.

TABLE 3.
2013 Seat Belt Use Rate at Nighttime and Daytime[1]

	Night	Day
Use Rate - Raw	84.4% (4,878)	88.0% (10,535)
Use Rate – (Averaged 1:1)	81.9%	87.7%

[1] Data collected at 39 observation sites; not statewide.

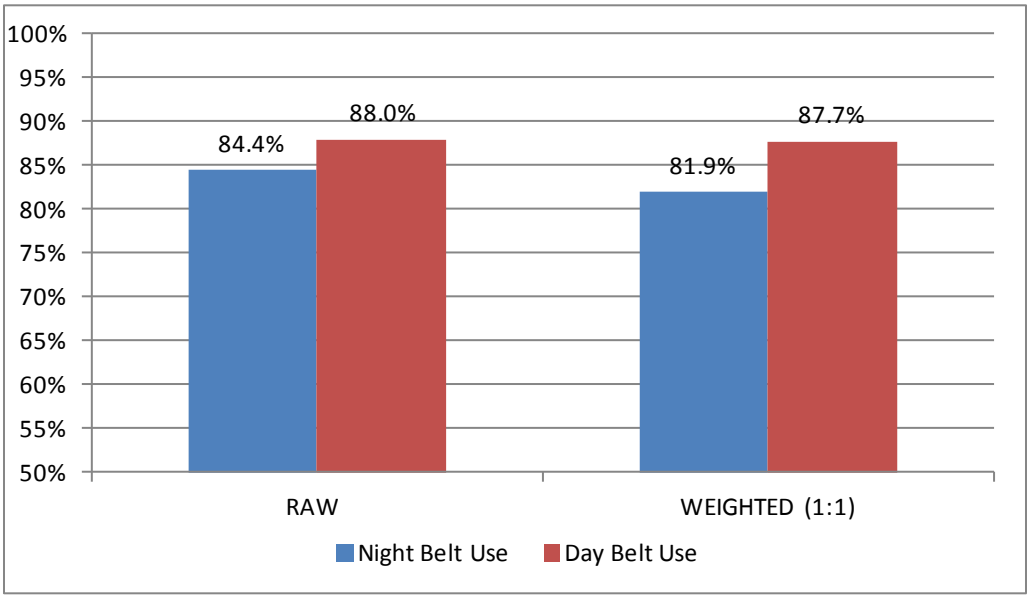

Figure 3: Seat Belt Use at Night & Day across 39 Observation Sites in Louisiana

Figure 4 shows seat belt use rates at night and at day by Parish (raw data). The data in this Figure do not represent Parish-wide use rates. PRG did **not** design the nighttime survey to give Parish-wide use rates. The data presented here are used to show that belt use was lower at night than at day in all eight Parishes. The difference between night and day was least in St. Charles Parish (1.1 percentage points) The difference between night and day was greatest in Caddo (7.9 points), which also measured lowest in both daytime and nighttime belt use across the five observation sites in this Parish.

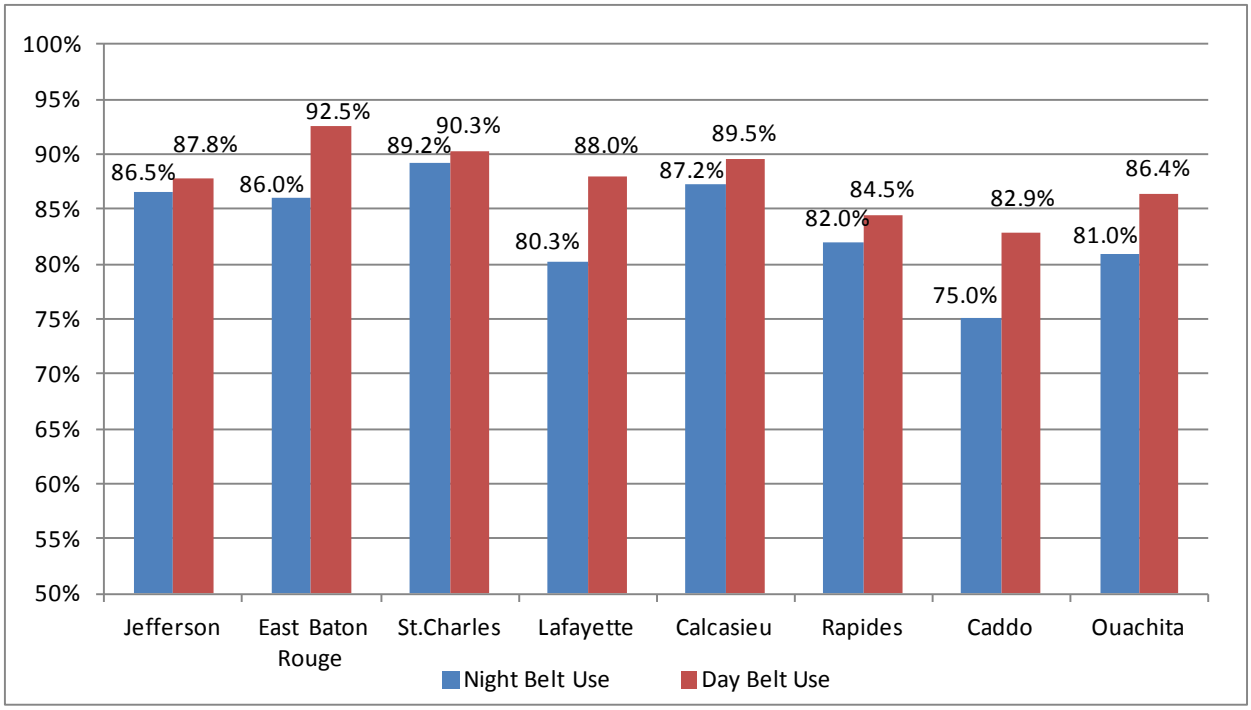

Figure 4: Difference in Seat Belt Use at Night & Day by Survey Parish

Figure 5 shows driver and passenger belt use rates separately at nighttime and at daytime. Driver belt use at nighttime was clearly lower than driver use at daytime (83.6% vs. 88.4%). However, front seat passenger belt use measured slightly higher at night than at day (87.5% vs. 85.8%).

Driver belt use measured higher than passenger belt use during the day. The reverse was true at night when passenger belt use was higher than driver belt use. This was due, in-part, to a greater percentage of female (vs. male) passengers in the nighttime vs. daytime sample (65% vs. 57%).

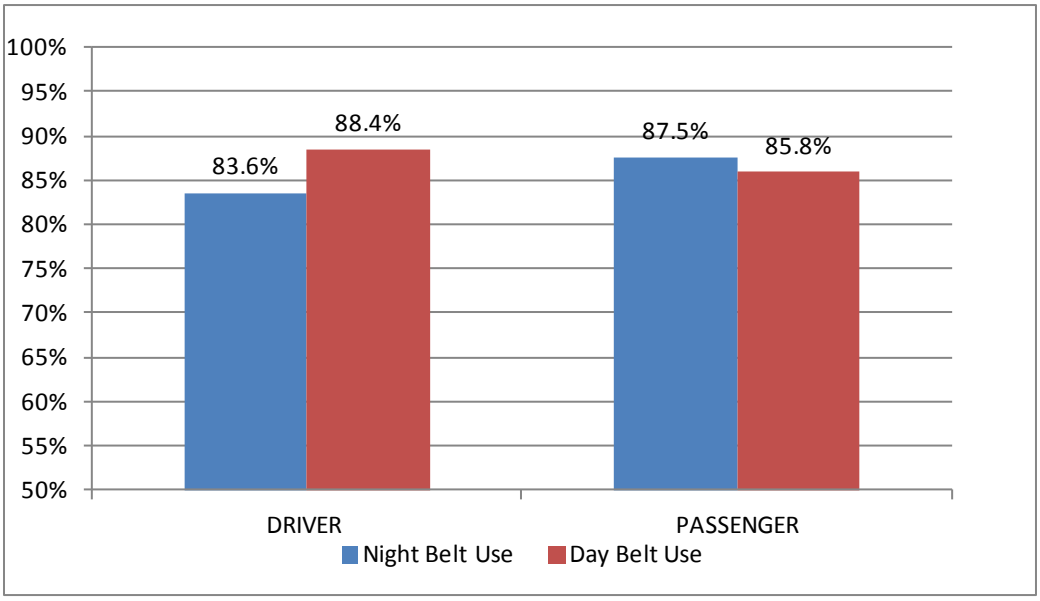

Figure 5: Difference in Seat Belt Use at Night & Day by Occupant Type

Observation data indicated that female occupants wear their seat belt more often than male occupants and that was true at night and day (Figure 6). Belt usage at nighttime was lower for both genders with a greater disparity among male occupants (5.4 percentage points) than for the female occupants (1 point).

Occupants of all races were also observed using their seat belt less often at nighttime compared to daytime (Figure 7). The survey data indicated that Black occupants used seat belts least often during the night and day.

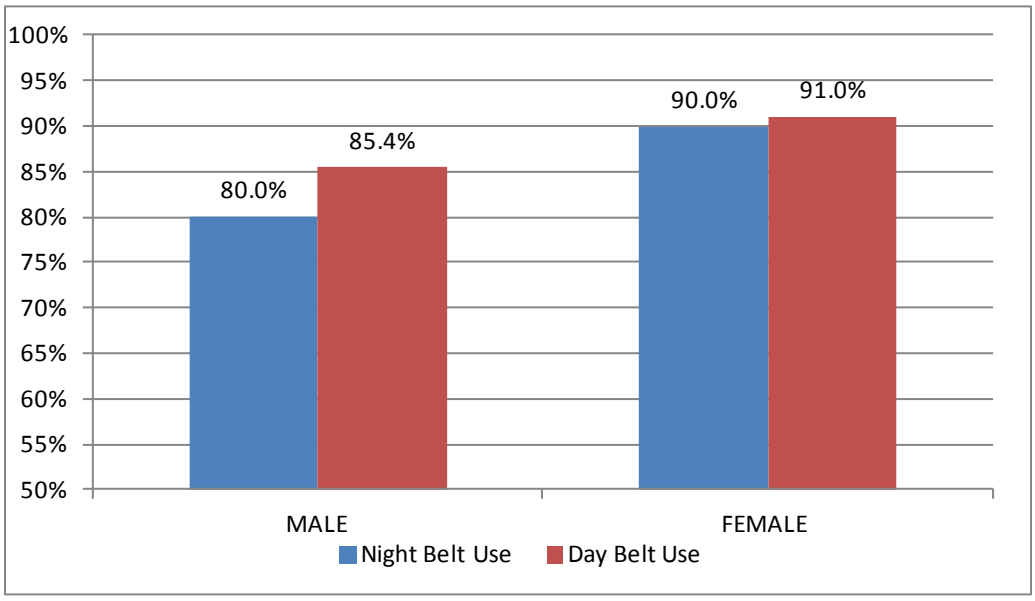

Figure 6: Difference in Seat Belt Use at Night & Day by Occupant Gender

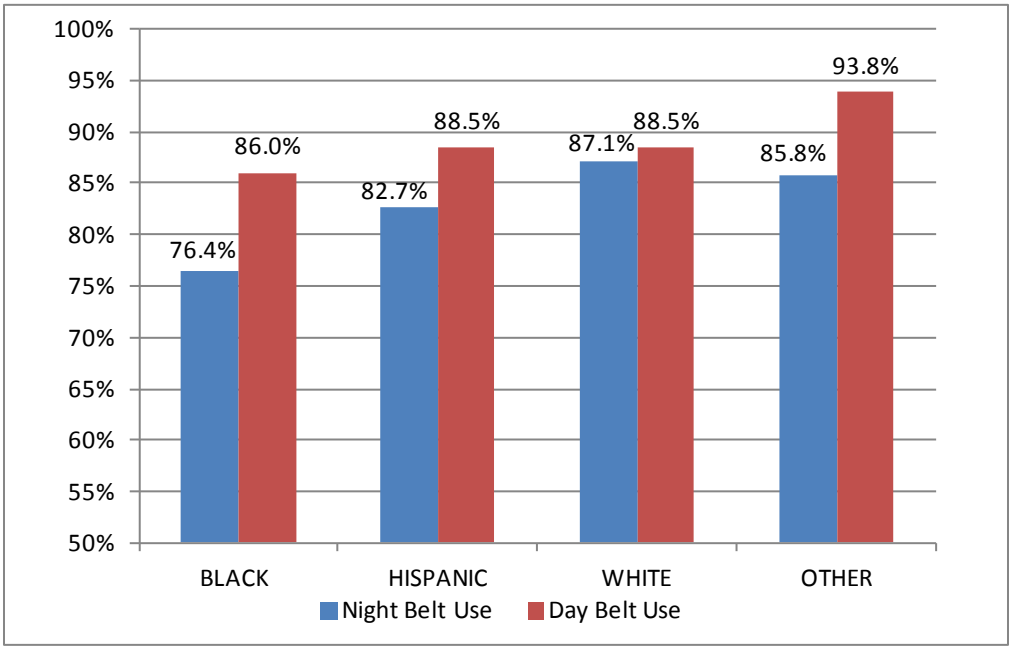

Figure 7: Difference in Seat Belt Use at Night & Day by Occupant Race

Figure 8 shows the seat belt use rate among pickup truck occupants compared to all other vehicle types[2]. Observations found seat belt use was lower at night among occupants in all types of vehicles. Belt use measured particularly low among occupants in pickup trucks at nighttime (76.5%).

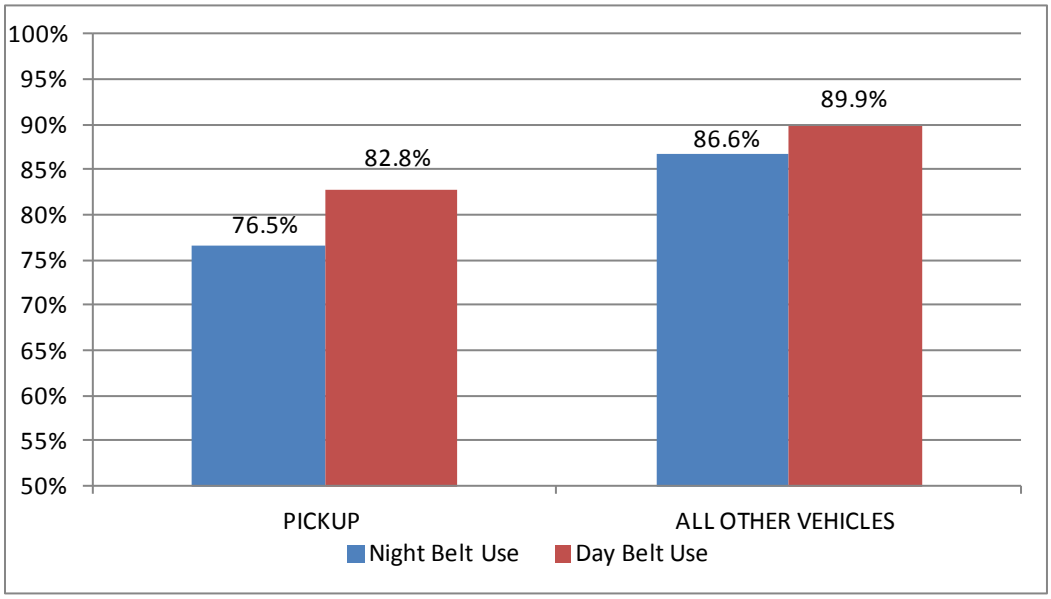

Figure 8: Difference in Seat Belt Use at Night & Day for Occupants in Pickup Trucks

Seat belt use measured lower at night than day on both roadway types used in the nighttime survey. Survey data also indicated nearly identical belt use rates on Interstate off-ramp locations compared to State Routes/Highways at both nighttime and daytime.

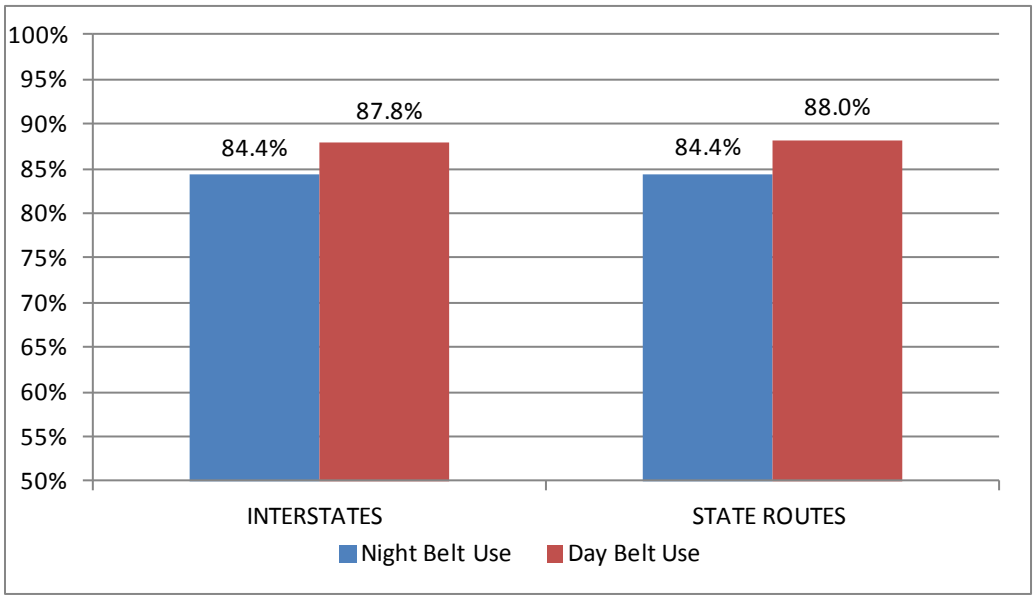

Figure 9: Difference in Seat Belt Use at Night & Day by Road Type

[2] Excludes Motorcycles (helmet use)

CONCLUSION

Louisiana's nighttime seat belt survey provided clear and direct evidence that seat belts are worn less often at night than day on Louisiana roadways. This was true in all regions of the State where measured. The same held true across all characteristics measured in the survey data.

Patterns in seat belt use, normally seen at daytime were also evident at night. Male belt use is lower than female belt use; occupants in pickup trucks use seat belts less than occupants in other vehicle types; and Black occupants use seat belts less than occupants of other races.

The nighttime survey design presented here can be used for direct comparison with daytime survey data. Future surveys following the same design can provide an indication of where change is happening in the State of Louisiana and in regards to whom. Results from this survey should be used to motivate and educate highway safety practitioners to the problem of lower seat belt use at nighttime.

Appendix A

Nighttime Seat Belt Survey Observation Site Locations

Site Number	Parish	Highway Type	Road Name	Road Section Length	Latitude	Longitude
126101	Jefferson	Interstates	10	1.71	29.999180	90.183870
126102	Jefferson	Interstates	10	1.15	30.008680	90.227120
126201	Jefferson	US&State	48	0.98	29.938290	90.212440
126204	Jefferson	US&State	61	1.34	29.975980	90.187390
126206	Jefferson	US&State	90	0.82	29.958960	90.173270
217102	E. Baton Rouge	Interstates	10	3.40	30.382980	91.066850
217105	E. Baton Rouge	Interstates	10	0.40	30.424670	91.154560
217203	E. Baton Rouge	US&State	1248	0.70	30.388570	91.093060
217208	E. Baton Rouge	US&State	3246	0.44	30.384480	91.064850
217215	E. Baton Rouge	US&State	1248	1.32	30.337710	91.116100
345102	St. Charles	Interstates	310	2.11	29.937430	90.376850
345103	St. Charles	Interstates	310	3.87	29.975260	90.319040
345201	St. Charles	US&State	90	0.79	29.875980	90.437830
345202	St. Charles	US&State	3127	8.71	29.993590	90.499950
345203	St. Charles	US&State	90	1.69	29.882560	90.427070
428101	Lafayette	Interstates	10	0.45	30.268280	91.993890
428102	Lafayette	Interstates	10	1.67	30.247080	92.066450
428203	Lafayette	US&State	3073	2.04	30.176710	92.072840
428205	Lafayette	US&State	182	0.96	30.188430	92.014000
428208	Lafayette	US&State	726	0.33	30.321740	92.038560
510102	Calcasieu	Interstates	10	1.20	30.227110	93.304230
510104	Calcasieu	Interstates	210	0.77	30.196710	93.274320
510203	Calcasieu	US&State	171	0.20	30.246670	93.180550
510205	Calcasieu	US&State	171	1.27	30.311600	93.195600
510207	Calcasieu	US&State	385	1.81	30.176210	93.218530
640102	Rapides	Interstates	49	6.71	31.070860	92.433210
640202	Rapides	US&State	165	4.26	31.170530	92.502840
640204	Rapides	US&State	71	0.27	31.276150	92.470210
640205	Rapides	US&State	167	0.34	31.303840	92.446540
709101	Caddo	Interstates	220	2.86	32.520220	93.808840
709104	Caddo	Interstates	49	1.67	32.420290	93.749560
709204	Caddo	US&State	1	1.43	32.479980	93.722270
709205	Caddo	US&State	3132	3.69	32.456080	93.844330
709209	Caddo	US&State	80	0.42	32.452390	93.858530
837103	Ouachita	Interstates	20	1.62	32.510810	92.193530
837104	Ouachita	Interstates	20	1.26	32.498490	92.075950
837204	Ouachita	US&State	546	4.74	32.460550	92.294180
837205	Ouachita	US&State	165	2.56	32.647500	92.057230
837207	Ouachita	US&State	143	1.42	32.547240	92.149330

Appendix B

Seat Belt/Helmet Use Observation Data Form

	VEHICLE	DRIVER			PASSENGER		
Veh. #	**Veh. Type** C=Car T=Truck S=SUV V=Van M=Motorcycle	**Sex** M=Male F=Female U=Unsure	**Race** W=White B=Black H=Hispanic O=Other U=Unsure	**Belt/ Helmet Use** Y = Yes N = No U=Unsure	**Sex** M=Male F=Female U=Unsure	**Race** W=White B=Black H=Hispanic O=Other U=Unsure	**Belt/ Helmet Use** Y = Yes N = No U=Unsure
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

Pg:_____ of _____

Seat Belt Observation Data Form (back)

Location:_____

(Street) **(Cross Street or other landmark)**

Site #: _____

Notes:

_____

_____

Diagram: