

**2003 Section 157
Innovative and Discretionary (Year 3)
Evaluation Report
Covering the Period of Performance:
October 1, 2002, through August 31, 2003**

**NHTSA Section 157
Seat Belt Media & Enforcement Campaign Grant
Project Numbers
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I. Executive Summary

This project's objective was to study the effect of enhanced enforcement and media type on seat belt usage. The main findings are:

- *Enhanced enforcement by itself increases seat belt usage.*
- *Enhanced enforcement increases the perception that "police write more tickets" more than media messages do.*
- *Earned media is equally as effective as paid media in increasing awareness of seat belt issues.*
- *Enhancing enforcement is more effective when accompanied with paid media than with earned media.*

II. Program/Project Scope

A. Project Objective

The objective for the "157 Innovative and Discretionary" Projects is to increase seat belt usage for all motor vehicle drivers and front seat passengers. The Louisiana Highway Safety Commission (LHSC) conducted a seat belt program/project from October 2001 to August 2002. The purpose of this project was to evaluate whether media and enforcement efforts would cause an increase in seat belt usage and subsequently a reduction in traffic injuries and fatalities. Agencies of 11 parishes participated in the seat belt program initiative. The following highlights key findings of the study (see Strap In 2002 Evaluation Report Covering the Period of Performance: October 1, 2001, through August 31, 2002): While enforcement was increased by 14%, public awareness of enforcement was increased significantly (by about 5 percentage points), seat belt use was increased by 1.8 percentage points and the injury percentage was

reduced by 0.8 percentage points. The telephone survey also revealed some interesting insights into the “perception” of drivers. Twenty percent more drivers claim they wear seat belts than observational studies show. Also, more than 30% believe that seat belts could harm more than help. This indicates that more public education is necessary. There are only about 3% of all drivers who admit that they rarely or never wear a seat belt. Overall, the project provided sufficient evidence to conclude that public education combined with significant enforcement increases seat belt usage.

Based on the success of the Year Two Project, the 3rd Year Project concentrated on determining whether paid media is more effective than earned media with respect to increasing seat belt use and whether enhanced enforcement is more effective with earned media or with paid media. More specifically, the goal of the Section 157 Discretionary funds was to research three specific hypotheses approved by NHTSA. These hypotheses are displayed in Table 2.1.

Table 2.1: Hypotheses

<i>Hypothesis Number</i>	<i>Hypothesis and Explanation</i>
H ₁	Paid Media is more effective in raising awareness and usage during enhanced enforcement with an enforcement message (Treatment 1 – Shreveport media market) than a combination of earned media with a non-enforcement message and no additional enforcement (Treatment 2 – Alexandria media market).
H ₂	Paid Media is more effective in raising awareness and usage during enhanced enforcement with an enforcement message (Treatment 1 – Shreveport media market) than paid media with a non-enforcement message and no additional enforcement (Treatment 3 – Baton Rouge media market)
H ₃	Paid Media is more effective in raising awareness and usage during enhanced enforcement with an enforcement message (Treatment 1 – Shreveport media market) than an earned media campaign with an enhanced enforcement component (Treatment 4 – Lake Charles).

To carry out the research on the above hypotheses, NHTSA has approved that LHSC evaluate four target areas. Table 2.2 shows the four treatments approved by NHTSA with the three factors (Enforcement Type, Media Type and Media Message). However, as Table 2.2 shows, the “Media Message Type” factor is confounded with the “Enforcement Type” factor. Thus, the effect of “Enforcement” and “Media Message Type” cannot be estimated separately.

Table 2.2: Treatments

	<i>Enforcement</i>	<i>Media</i>	<i>Media Message Type</i>	<i>Treatment</i>
<i>Shreveport Troop G</i>	Enhanced	Paid	Enforcement	#1
<i>Lake Charles Troop D</i>	Enhanced	Earned only	Enforcement	#4
<i>Baton Rouge Troop A</i>	Same as FY 2002	Paid	Non-Enforcement	#3
<i>Alexandria Troop E</i>	Same as FY 2002	Earned only	Non-Enforcement	#2

In addition to the above-mentioned three hypotheses the following hypotheses depicted in Table 2.3 can be tested. Hypotheses 4 and 5 are intuitive; they are called “main effects” of the factors “enforcement type” and “media type”. These hypotheses test whether enhancing enforcement irrespectively of media type increases seat belt use and also whether media type irrespectively of enforcement increases seat belt use.

Table 2.3: Additional Hypotheses

<i>Hypothesis Number</i>	<i>Hypothesis and Explanation</i>
H ₄	Enhanced enforcement with an enforcement message in the media (Treatment 1+Treatment 4) is more effective than no enhanced enforcement with an enforcement message in the media (Treatment 3+Treatment2).
H ₅	Paid media (Treatment 1+Treatment 3) is more effective in raising awareness than earned media. (Treatment 4+Treatment2)
H ₆	There is an interaction effect between enforcement and media type.

Hypothesis 6 needs additional explaining. This hypothesis attempts to determine whether increasing enforcement is more effective if accompanied with paid media than with earned media. To evaluate this hypothesis the difference between Treatment 1 and Treatment 3 is compared with the difference between Treatment 4 and Treatment 2. If the first result is significantly different from the second result then there is an “interaction effect”; this means that the effect of enhancing enforcement cannot be estimated without taking into account the media type.

III. Implementation of the Design

A. Enforcement Effort

The implementation of the project called for enhanced enforcement involving the state police, several sheriff offices and the city police departments during two waves, November 2002 and May 2003. Each LHSC - contracted participating police agency reported their overtime hours and seat belt tickets written during these waves. The following tables show the reported enforcement efforts by agencies. The Louisiana State Police overtime enforcement effort overlapped several of the parishes and is not included in the tables. Table 3.1 depicts the overtime enforcement hours and the seat belt tickets issued for Region 7.

Table 3.1: Enforcement Efforts for Region 7

Agencies Region 7	Bossier PD		Bossier Parish Sheriff's Office		Caddo Parish Sheriff's Office		Claiborne Parish Sheriff's Office		Red River Parish Sheriff's Office		Webster Parish Sheriff's Office		Mansfield PD		S'port PD		Total	
	Nov	May	Nov	May	Nov	May	Nov	May	Nov	May	Nov	May	Nov	May	Nov	May	Nov	May
Enforcement Hours	100	100	100	90	99	105	100	100	90	90	80	DNP	100	100	100	100	769	685
Adult Seat Belt Violation Tickets	178	194	186	162	340	234	190	193	166	180	97	DNP	217	200	204	226	1578	1389
Child Safety Seat Violation Tickets	1	4	15	2	4	4	3	5	16	3	105	DNP	0	0	5	9	149	27
Hourly Ratio/Seat Belt Tickets	1.8	1.9	2.0	1.8	3.5	2.3	1.9	1.9	2.0	2.0	2.5	DNP	2.2	2.0	2.1	2.4	2.2	2.1

DNP == did not participate

Overall, LHSC – contracted police agencies in Region 7 worked 769 overtime hours in November 2002 and issued 1,578 adult seat belt tickets and 149 child safety seat tickets. The ratio was 2.2 OP tickets issued per overtime hour worked. Also, LHSC – contracted police agencies in Region 7 worked 685 overtime hours in May 2003 and issued 1,389 adult seat belt tickets and 27 child safety seat tickets. The ratio was 2.1 OP tickets issued per overtime hour worked.

Table 3.2 shows the overtime enforcement hours and the seat belt tickets issued for Region 5. Overall, LHSC – contracted police agencies in Region 5 worked 391 overtime hours in November 2002 and issued 1,020 adult seat belt tickets and 52 child safety seat tickets. The ratio was 2.74 OP tickets issued per overtime hour worked. Also, LHSC – contracted police agencies in Region 5 worked 427 overtime hours in May 2003 and issued 1,100 adult seat belt tickets and 46 child safety seat tickets. The ratio was 2.86 OP tickets issued per overtime hour worked.

Table 3.2: Enforcement Efforts for Region 5

Agencies Region 5	Calcasieu Parish Sheriff's Office		DeRidder PD		Sulphur PD		Westlake PD		Lake Charles PD		Total November	Total May
	Nov	May	Nov	May	Nov	May	Nov	May	Nov	May	Nov	May
Enforcement Hours	100	90	96	90	95	72	100	85	DNP	90	391	427
Adult Seat Belt Violation Tickets	401	254	192	179	204	277	223	230	DNP	160	1020	1100
Child Safety Seat Violation Tickets	44	30	2	2	3	3	3	9	DNP	2	52	46
Hourly Ratio/Seat Belt Tickets	4.45	3.16	2.02	2.0	2.18	3.92	2.26	2.81	DNP	1.80	2.74	2.86

DNP= did not participate

B. Media/Public Relations Campaign Implementation

The media campaign consisted of paid media in two of the four regions and earned media in the other two regions. Table 3.3 gives an overview of the actual media buy for the television spots and radio messages.

Table 3.3: Media Buy

<i>Type</i>	<i>Region</i>	<i>November</i>	<i>May</i>
Television	Shreveport	3396	3962
Radio		1212	1421
Television	Baton Rouge	1031	751
Radio		1592	693

Table 3.4 highlights distribution of television spots at various TV stations. All spots were 30 to 60 seconds in length. The table shows that the spots ran at a variety of stations and programs including sports and entertainment programs. Overall, the placement of television spots in the Shreveport area seems very effective.

Table 3.4: Shreveport Television Spots Buy Plan

Station	Time	Day	Type of Programming
WB45	Evening	M,TU,W,SA,SU	Comics
NEWS12	Evening	M, W, TH, SA, SU	News
KTBS3	Evening	W, SU, SU	Sports, Entertainment
KTAL6	11am-10:35pm	M-SU	Sports, Entertainment
LIFEWISE	6am-12am	M-SU	ESPN, USA, BET, TNN, MTV
COX	6am-6am	M-SU	ESPN, USA, BET, TNN, NASCAR
FOX33	Evening	M-F	Various

Baton Rouge's television spots media was placed at the four major television stations and cable networks. The programming type included various entertainment programs and news programs. Only cable ran the spots on a sports program, namely ESPN. Overall, the TV spots seem to have been placed less effectively than in Shreveport. Specifically, there was a lack of spots during sports programming.

Radio spots in the Shreveport area ran between Monday and Sunday on eight different radio stations. The Baton Rouge area had spots on 13 radio stations from Monday to Friday. Again, the Shreveport radio spots seem to have been more effectively distributed.

IV. Evaluation of Treatment Effect

Evaluating the treatment effect involves collecting survey data performing statistical analysis including testing the hypotheses relating to the four different treatments. The observational surveys and attitudinal surveys will be compared for the respective regions where the treatments took place. We will also look at traffic crash data to determine if any significant change in fatalities and injuries has occurred in the four regions which may be attributed to the treatments.

The study is based on two enforcement waves and two media campaigns; the first one was in November 2002 and the second one in May 2003. Each of the waves/campaigns was followed by an observational and a telephone survey conducted after the completion of the waves/campaigns. All of the surveys were conducted by Southern Media and Opinion Research.

A. Observational Surveys

The survey for the year 2002 serves as a baseline for the comparison. The surveys of January 2003 and May 2003 are used to assess the treatment effect. We compare the 2002 survey conducted in August of 2002 with the average of two surveys conducted in January of 2003 and May of 2003 to determine if there is an increase in seat belt usage in the four regions. Figure 4.1 shows the percentage of seat belt use in the four treatment groups from 2001 to 2003.

Figure 4.1: Observational Survey Results

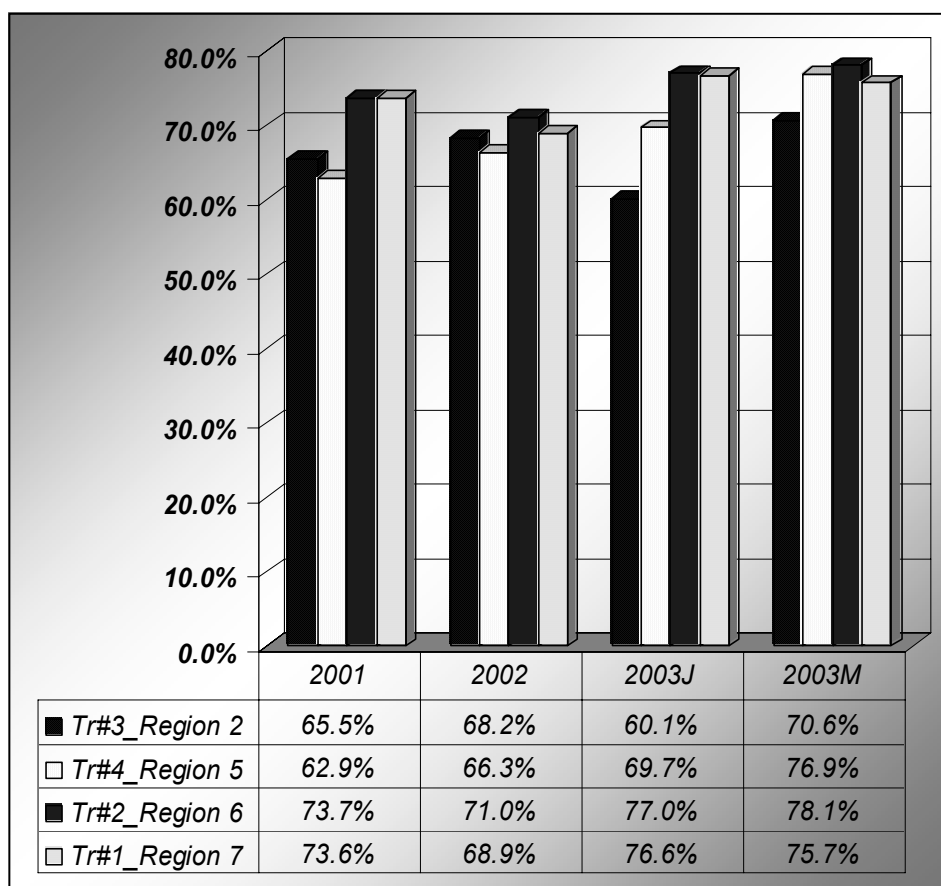


Table 4.1 shows the percentage of seat belt use for each treatment group and the average difference between the percentage seat belt use before and after the campaigns. Note that all estimates were computed using the methodology provided by the Washington Consulting Group in 1995. Because no standard errors were provided for this methodology, a statistical significance test could not be used to assess the significance of the data.

Table 4.1: Observational Surveys

<i>Treatment and Region</i>	2002	2003Jan	2003May	Average Difference	Standard Error
Tr#3_Region 2	68.2%	60.1%	70.6%	-2.9%	NA
Tr#4_Region 5	66.3%	69.7%	76.9%	7.0%	NA
Tr#2_Region 6	71.0%	77.0%	78.1%	6.5%	NA
Tr#1_Region 7	68.9%	76.6%	75.7%	7.3%	NA

An alternative estimator (see Design of Louisiana Safety Belt Use Survey, September 2003) was used which uses the updated vehicle miles traveled (VMT) to obtain the percentage of seat belt use by region. Table 4.2 shows that the new estimator tends to be slightly higher than the old estimator. The average difference is very close to the results in Table 4.1 except for Region 7. The lower estimate for Region 7 is likely because more weight was given to interstates than to local roads in the new estimator and seat belt usage on Interstate 20 dropped in all three parishes (Bossier, Caddo and Webster) from January 2002 to May 2003 with a drop of 8 percentage points in Caddo Parish which has the highest VMT. The last column of Table 4.2 shows the standard error for the estimates.

Table 4.2: Observational Surveys of New Estimator

<i>Treatment and Region</i>	2002	2003Jan	2003May	Average Difference	Standard Error
Tr#3_Region 2	69.5%	63.2%	69.6%	-3.1%	1.4%
Tr#4_Region 5	66.9%	70.6%	77.1%	7.0%	2.0%
Tr#2_Region 6	70.5%	76.4%	78.2%	6.8%	1.0%
Tr#1_Region 7	70.7%	77.0%	74.2%	5.0%	0.9%

The results in Table 4.2 allow the following conclusions:

The observational survey results **do not provide evidence** to support the Hypothesis 1 that Treatment 1 is more effective than Treatment 2 at a 5% level. Thus there is **no** evidence that “Paid Media is more effective in raising awareness and usage during enhanced enforcement with an enforcement message (Treatment 1 – Shreveport media market) than a combination of earned media with a non-enforcement message and no additional enforcement (Treatment 2 – Alexandria media market).”

The survey results **provide evidence** to support Hypothesis 2 that Treatment 1 is more effective than Treatment 3 at a 5% level. Hence there is evidence that “Paid Media is more effective in raising awareness and usage during enhanced enforcement with an enforcement message (Treatment 1 – Shreveport media market) than paid media with

a non-enforcement message and no additional enforcement (Treatment 3 – Baton Rouge media market).”

The survey results **do not provide any evidence** to support Hypothesis 2 that Treatment 1 is more effective than Treatment 4 at a 5% level. Thus, there is **no** evidence that “Paid Media is more effective in raising awareness and usage during enhanced enforcement with an enforcement message (Treatment 1 – Shreveport media market) than an earned media campaign with an enhanced enforcement component (Treatment 4 – Lake Charles).”

Thus, while Hypothesis 2 is supported by the survey data the two other hypotheses are not supported. The result seems somewhat implausible. For instance, the only difference between Hypothesis 1 and Hypothesis 2 is that in Hypothesis 2 paid media rather than earned media was used in combination with non-enhanced enforcement.

To conduct a more comprehensive analysis of the design, main effects and interaction effects were computed. For instance, to study the main effect of the factor “enforcement type”, the average of treatments 1&4 was compared to the average of the treatments 2&3; to study the main effect of media, the average of the treatments 1&3 was compared to the average of the treatments of 2&4. Table 4.3 shows the result.

Table 4.3: Effect of Enforcement and Media

<i>Treatment and Region</i>	Treatments	2002	2003J	2003M	Average Difference	Error
Enforcement						
Enhanced	1&4	69.3%	74.8%	75.3%	5.7%	0.9%
Non Enhanced	2&3	69.8%	66.6%	71.8%	-0.5%	1.1%
Media						
Paid	1&3	70.0%	68.9%	71.5%	0.2%	0.9%
Earned	2&4	68.7%	73.4%	77.7%	6.9%	1.1%

(H₄) Enforcement: Non-Enhanced versus Enhanced

The average difference between “non enhanced” enforcement (2&3) and “enhanced” enforcement (1&4) shows that enhanced enforcement will lead on the average to a 6.3% higher seat belt usage than no enhanced enforcement. The difference is statistically significant at a 5% significance level.

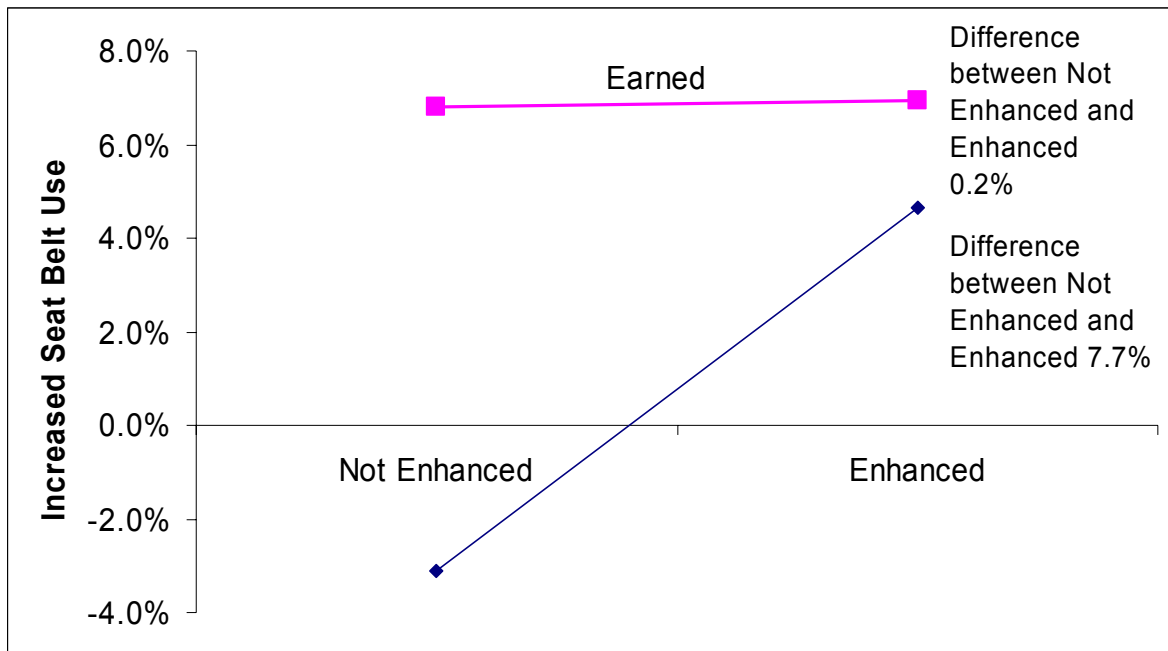
(H₅) Media: Paid versus Earned

The average difference between “paid media” (1&3) and “earned media” (2&4) shows that there is **no** evidence that paid media is more effective with respect to increasing seat belt usage than earned media. On the contrary, the regions with earned media had a higher increase in seat belt usage.

(H₆) Interaction: Enforcement versus Media:

There is an interaction effect of 3.8%. This means enhancing enforcement accompanied with paid media results in a 3.8% higher seat belt use than enhancing enforcement accompanied with earned media. In other words, while H₅ shows that paid media alone does not increase seat belt use more than earned media does, the combination of enhanced enforcement and paid media with an enforcement message was specifically successful. Figure 4.2 shows the interaction effect, namely that when enforcement is increased from non-enhanced to enhanced and media is paid, seat belt usage increases more than when enforcement is enhanced and media is earned.

Figure 4.2: Interaction between Enforcement and Media



There are several cautionary points we would like to raise which may affect the validity of the conclusions.

- Lake Charles had received additional funding for enforcement from NHTSA. Hence the enforcement in that parish was far above the enforcement in Shreveport.

This may explain why Lake Charles had the highest increase in seat belt usage (8.7%) although it was using earned media.

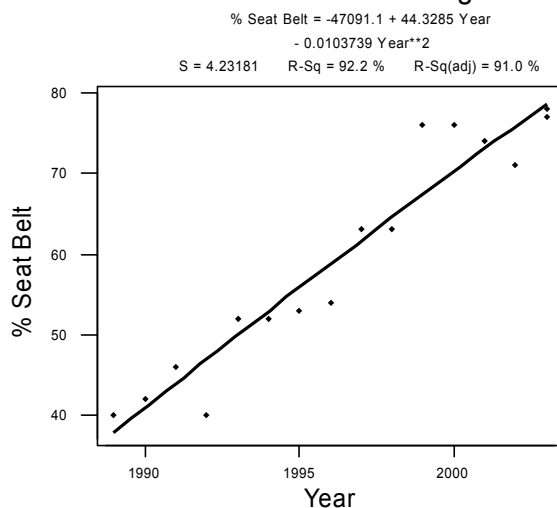
- The design does not allow us to draw conclusions about the effect of the type of “media message” (enforcement message versus non-enforcement message) because the factor “media message” is confounded with the “enforcement” factor. The overall conclusion is that enhanced enforcement along with a media enforcement message (paid or earned) will increase seat belt use.

- Part of the difficulty with analyzing the design is that there is no exact measure of enforcement which would result in a more valid comparison of the four treatments. For example, anecdotal evidence suggests that Baton Rouge (Treatment 3) does not typically enforce seat belt laws while Alexandria (Treatment 2) does traditionally enforce seat belt laws. Both are considered “non-enhanced” enforcement treatments. The same problem occurs with the enhanced treatment group. Lake Charles had a much higher enforcement than Shreveport. Thus the amount of enforcement varied substantially between treatments and it is thus likely that it affected the seat belt usage differently.

- The level and history of seat belt use in each region may be a factor in the effectiveness of additional enforcement. If the last 15 years of survey data are used different patterns emerge in the four regions. Figures 4.3 to 4.6 illustrate the seat belt studied over the last 15 years with a trend line. For instance, seat belt usage in Region 6 had been on an upward slope. This may explain why Region 6 had a significant increase in seat belt use although no enhanced enforcement and no paid media was used.

Figure 4.3

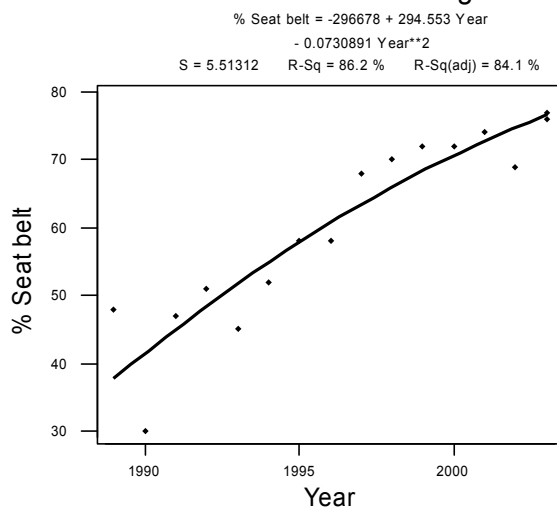
Seat Belt Use for Region 6



Region 7 has generally been on an upward slope in the past as well.

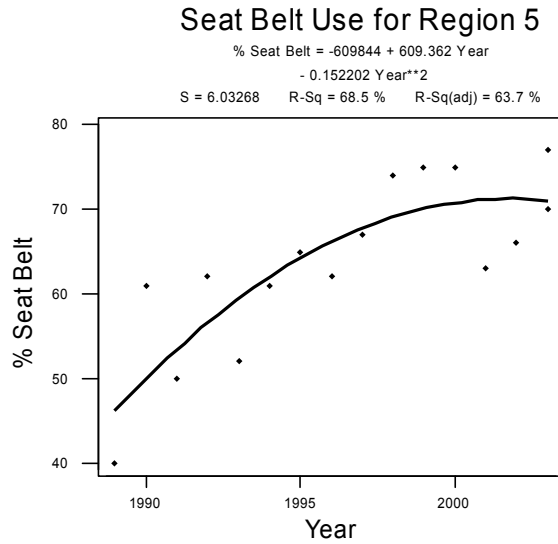
Figure 4.4

Seat Belt Use for Region 7



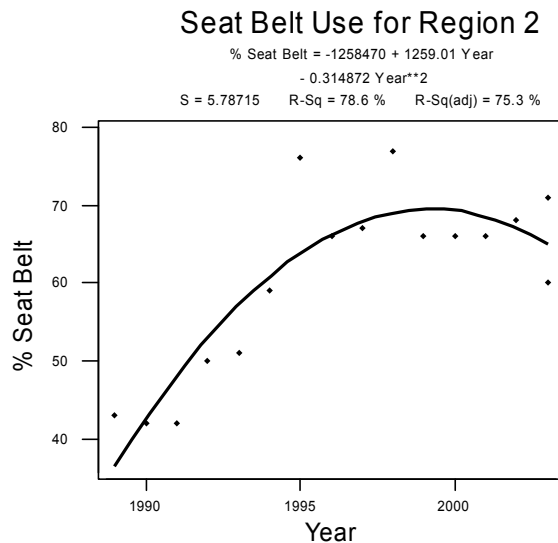
Regions 5 and 2 have less promising trends. The enhanced enforcement in 2003 in Region 5 brought the region back to the high level of seat belt use from 1998 to 2000.

Figure 4.5



Region 2 shows the most disappointing results. While this region made great progress in seat belt use from 1989 to 1995, it fell back to relatively low levels. Enhanced enforcement along with a strong media campaign could enable the region to obtain levels of 76% seat belt use reached in 1995.

Figure 4.6



B. Telephone Tracking Surveys

This poll was developed and conducted by Southern Media & Opinion Research, Incorporated, for the Louisiana Highway Safety Commission in conjunction with the Section 157 Third Year Innovative Program and Statewide Initiative. The poll was designed to address Louisiana drivers' opinions on highway safety issues with particular reference to safety restraint use in four substate regions (Alexandria and vicinity, Baton Rouge and vicinity, Lake Charles and vicinity, and Shreveport and vicinity). The poll, which is referred to as the post-treatment poll, replicates in part earlier polls conducted in October 2002 (the baseline poll) and in January 2003 (the midpoint or interim poll).

Interviews were conducted by telephone with 1,600 self-professed, licensed Louisiana drivers in the four substate regions from Monday, June 16, through Tuesday, June 24, 2003. The sample design provided for comparable levels of precision by conducting an equal number (400) of interviews within each of the four substate regions. The overall margin of error for the statistics obtained from the survey data for each region (sample size of 400) is not greater than plus or minus 5.0% at the 95% level of confidence. The regions included in the survey and the parishes comprising those regions are:

Region 6: Alexandria and vicinity: Avoyelles, Catahoula, Concordia, Grant, LaSalle, Rapides and Vernon Parishes:

Region 2: Baton Rouge and vicinity: Ascension, Assumption, East Baton Rouge, East Feliciana, Iberville, Livingston, Pointe Coupee, St. Helena, St. James, West Baton Rouge and West Feliciana Parishes;

Region 5: Lake Charles and vicinity: Allen, Beauregard, Calcasieu, Cameron and Jefferson Davis Parishes;

Region 7: Shreveport and vicinity: Bienville, Bossier, Caddo, Claiborne, DeSoto, Natchitoches, Red River, Sabine and Webster Parishes.

The primary sample was drawn from a sample frame of telephoned Louisiana voter households using an interval sample design. Quotas were imposed to ensure

nominal participation of male drivers. A statistical weighting procedure was employed to adjust the samples to the actual driving age population based on sex.

Table 6 gives a summary of the survey results for 2002 and January and May 2003. Three questions are highlighted: (1) Respondents who “strongly agree” with a statement that police in their community are writing more tickets, (2) respondents who profess to recall having heard or seen about seat belts recently, (3) respondents who profess to wear seat belts all the time. The last block of rows on Table 4.4 reports the observed seat belt use.

Table 4.4: Summary of Survey Results

		Respondents strongly agreeing that police write more tickets				
	Enforcement	Media	2002	2003J	2003M	Difference 2002 – May 2003
Baton Rouge	Not Enhanced	Paid	15.2%	14.3%	15.7%	0.5%
Lake Charles	Enhanced	Earned	26.5%	36.4%	36.2%	9.7%
Alexandria	Not Enhanced	Earned	25.3%	22.2%	28.7%	3.4%
Shreveport	Enhanced	Paid	19.2%	29.8%	34.2%	15.0%
		Respondents saying they have heard or seen about seat belts				
Baton Rouge	Not Enhanced	Paid	42.4%	49.7%	67.2%	24.8%
Lake Charles	Enhanced	Earned	39.1%	71.8%	74.7%	35.6%
Alexandria	Not Enhanced	Earned	44.5%	52.1%	66.6%	22.1%
Shreveport	Enhanced	Paid	43.8%	67.8%	78.0%	34.2%
		Respondents saying that they wear seat belts all the time				
Baton Rouge	Not Enhanced	Paid	76.6%	76.0%	82.4%	5.8%
Lake Charles	Enhanced	Earned	76.0%	78.9%	79.9%	3.9%
Alexandria	Not Enhanced	Earned	60.5%	71.0%	69.6%	9.1%
Shreveport	Enhanced	Paid	76.9%	79.7%	81.4%	4.5%
		Observed Seat Belts Use				
Baton Rouge	Not Enhanced	Paid	69.5%	63.2%	69.6%	0.1%
Lake Charles	Enhanced	Earned	66.9%	70.6%	77.1%	10.2%
Alexandria	Not Enhanced	Earned	70.5%	76.4%	78.2%	7.7%
Shreveport	Enhanced	Paid	70.7%	77.0%	74.2%	3.5%

The results of Table 4.4 show that the perception that police write more tickets is most affected by enhanced enforcement and less by the type of media. The increase from 2002 to May of 2003 was 9.7% in Lake Charles and 15% in Shreveport compared to 0.5% in Baton Rouge and 3.4% in Alexandria where no additional enforcement was

used. Table 4.4 also shows that earned and paid media have on the average the same effect of getting the message out. For both media types, the increase in the percentage of respondents saying that they have heard or seen about seat belts recently ranges from low 20% to the mid 30% levels. Shreveport (34.2%) had an about 10% higher increase in respondents saying that they have heard or seen about seat belts recently than Baton Rouge (24.8%).

A correlation analysis between perception and actual seat belt use shows that there is a significant ($p=0.047$) correlation ($r=0.58$) between the observed percentage of seat belt use and the percentage of respondents strongly agreeing that police are writing more tickets. There is also a significant ($p=0.059$) correlation between the observed percentage of seat belt use and the percentage who recall having heard about seat belts recently ($r=0.56$). There is no significant ($p=0.87$) correlation between the percentage of respondents saying that they wear seat belts all the time and observed seat belt use percentage ($r=-0.05$). There is also significant ($p=0.02$) correlation ($r=0.66$) between the percentage of “having heard about seat belts” and the percentage “strongly agreeing” that police are writing more tickets. The two variables “police writing tickets” and “having heard” about seat belts can be used to predict actual seat belt use. Each variable explains about one third of the variation in seat belt use. Combining the two variables does not increase prediction because of the correlation between the two independent variables.

C. Injury Percentages

Overtime for police officers, designated exclusively for seat belt enforcement, should lead to an increase in seat belt enforcement. Public information and education, combined with the seat belt enforcement effort, should yield a higher propensity for drivers and occupants to wear seat belts while driving. Though these efforts do not directly impact the number of observed crashes, the increased seat belt usage should lead to a reduction in the percentages of injuries and fatalities in these crashes.

Several factors make the analysis of traffic crash data difficult:

1. Louisiana law does not require passengers in the back seat of vehicles to wear seat belts. In addition, observational surveys only observed front seat usage. Therefore, using all occupant injuries and fatality data may conflict with the fact that back-seat occupants may or may not wear a seat belt.

2. In most cases, there is knowledge of the seat belt usage for fatality occupants in motor crashes; the seat belt usage in injury and property-damage-only crashes remains unknown to a large extent. Although we may expect an increase in observed seat belt usage in fatal crashes as seat belt usage by all drivers increases, other factors, such as alcohol and speed, may confound this correlation. Changes in these risk factors will affect the observed percentage of seat belt use in fatal crashes. Although we expect the total number of fatalities to decline as seat belt use increases, the variation in fatality data from month to month may be masking any change which has occurred due to increased seat belt use. The average standard deviation of the rate of fatalities in parishes has been about 3 in the last three years. This means that the range of normal variation in driver fatalities in parishes from year to year is about 18. If seat belt usage were to increase by 1%, given the above risk and assuming that other factors remain unchanged, we would expect a reduction of 8 driver fatalities in Louisiana as a whole. Analyzing the treatment effect in a number of selected parishes may thus result in a reduction well within the normal variation. Hence, it will be difficult to detect any change in fatalities on a parish level or group of parishes unless the change in seat belt use is very large.

3. It is impossible to calculate the percentage of injured occupants for Louisiana crashes because the total number of occupants in property-damage-only crashes is not available.

For the above-mentioned reasons, the measure we will use is the percentage of injured and fatally injured drivers in crashes. We make the assumption that wearing or not wearing a seat belt does not affect the risk of being in a crash.

Figure 4.7 displays percentages of severe injured drivers versus the number of drivers not wearing seat belts by month (1999-2003) in the four regions. The graph indicates that there is correlation between not wearing a seat belt and being severely injured in a crash. Figure 4.8 shows the percentage of severe injuries by month in the four regions. While there is a trend pointing to a reduced percentage of severe injuries, there is no evidence that 2003 had a lower injury percentage than 2002. This may be because of incomplete crash data for 2003 at this point. A more complete analysis will follow when crash the data for 2003 is complete.

Figure 4.7: Percentage of Severe Injuries versus Number of Drivers not Wearing Seat Belts

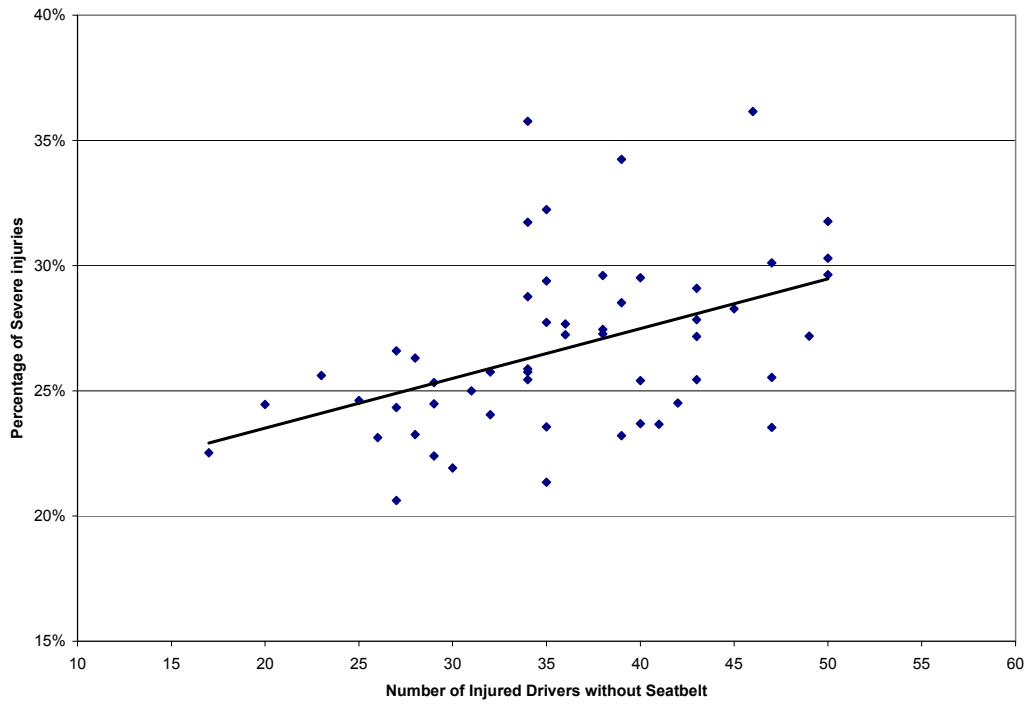


Figure 4.8: Percentage of Severe Injuries versus Month

