



Impacts of Rhode Island's Primary Seat Belt Law

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Introduction:

Motor vehicle crashes are the leading cause of death for young people age 5 to 24 in Rhode Island and in the United States.¹ Seat belt use is the single most effective way to save lives and reduce injuries in crashes; reducing the risk of death and serious injury by 50%.² States that upgrade from a secondary to a primary seat belt law will increase seat belt usage rates and reduce motor vehicle fatalities.^{3,4,5}

A primary seat belt law enables a law enforcement officer to pull over and ticket a driver solely for not wearing a safety belt. Rhode Island enacted a primary seat belt law on June 30, 2011. Previously, Rhode Island had a secondary law, which allowed law enforcement officers to cite motorists for not buckling up only if they had been pulled over for another reason.

Over 30 states in the nation have a primary seat belt law. Every other state has a secondary law, with the exception of New Hampshire that has a law only for drivers and passengers under the age of 18 years old.⁶ Rhode Island represents a unique situation because the state's primary seat belt law was passed with a sunset clause, which means that the primary seat belt law will automatically expire on July 1st, 2013. The sunset clause was added to the law due to concerns of some legislators and their constituents of a potential increase in racial profiling.

In the fall of 2012, a team from the Rhode Island Department of Health (HEALTH) and the Rhode Island Department of Transportation (RIDOT) was selected to attend a policy evaluation training sponsored by the American Public Health Association to evaluate Rhode Island's primary seat belt law. This evaluation report is the outcome of the training session and the technical assistance that followed.

The evaluation analyzed the impact of the primary seat belt law in Rhode Island on multiple outcomes, including roadway fatalities, severity of motor vehicle injuries, and seat belt use rates. Data used in this analysis came from three sources: National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS), Rhode Island Department of Transportation Crash Data Management System (CDMS), and the National Occupant Protection Observational Survey. Data were available for two time periods—the 18 months prior to enactment of the primary seat belt law (Pre-implementation period: 01/01/2010-06/30/11) and the month the law was implemented and the subsequent 17 months (Post-implementation period: 07/01/11-12/31/12). Appendix I provides a brief description of each database.

It should be noted that while previous work has examined the relationship between a primary seat belt law and the outcomes examined in this study, the results of this report are specific to Rhode Island and relied on state-specific databases, selections of data, and dates.

National Data

A substantial body of research confirms that states with a primary seat belt law have higher rates of seat belt use and lower rates of motor vehicle fatalities, in comparison to states with a secondary law or no law.^{3,4,5} The safety impact of enacting and enforcing primary seat belt laws has been the focus of several research studies.

The National Highway Traffic Safety Administration estimates that primary laws are associated with a 10 to 12% increase in observed seat belt use rates; observed seat belt use averages 88.2% in primary enforcement states and 79.1% in secondary enforcement states.³ In 2001, the Community Guide reviewed the body of evidence and found that states with primary laws saw a median decrease of 8 percent in fatal injuries and a median increase of 14 percent of observed seat belt usage, in comparison to states with secondary laws.⁵

Since the release of the Community Guide, several states have implemented primary enforcement laws, and subsequent evaluations have shown declines in crash-related fatalities^{7,8} and increases in seat belt use.^{9,10,11,12} A 2004 study comparing 10 primary enforcement states to 14 secondary enforcement states found that the change from secondary to primary enforcement reduced motor vehicle death rates by an estimated 7 percent (after accounting for possible economic effects and other general time trends).⁷ More recently, in a 2012 study, the state of Minnesota confirmed the health benefits of a primary seat belt law. Since Minnesota passed their law in 2009, they have seen 68-92 fewer motor vehicle fatalities and an increased seatbelt usage rate from 87 percent to 93 percent.¹³

In addition to saving lives and increasing passenger safety, the economic cost saving associated with a primary seatbelt law are significant. In 2008, the National Highway Traffic Safety Administration (NHTSA) published a report stating that Rhode Island could expect a total of \$3 million in medical savings the first year after proper implementation of a primary seat belt law. These savings include: \$1.9 million for insurance companies, \$375,000 for the State Government, \$455,000 for the Federal Government, and \$400,000 in out-of-pocket expenses.¹⁴ These cost savings are based on the expectation that a well-enforced primary belt law will induce 40% of current non-users to wear seat belts.

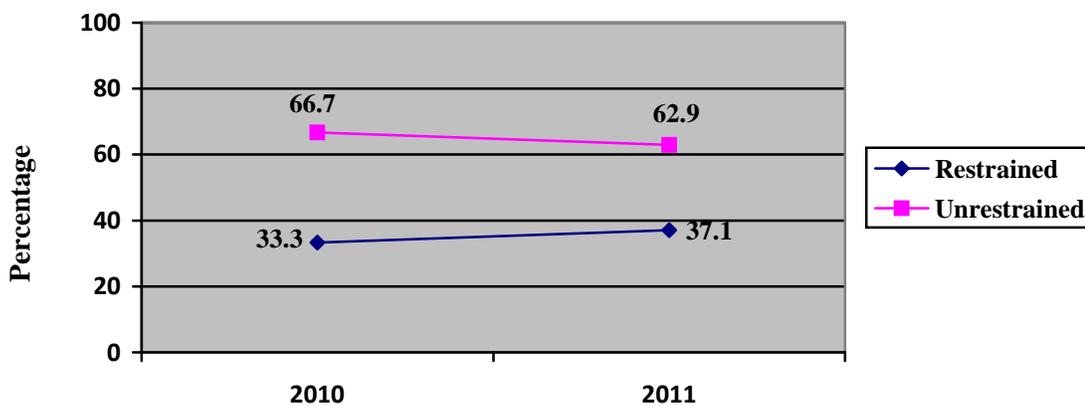
Based on the national data, upholding Rhode Island’s primary enforcement law is a clear strategy to save a significant numbers of lives and dollars, with apparently no negative effects.

Results

1. Have motor vehicle fatalities in Rhode Island decreased since the passage of the PBL?

Figure 1 shows trends in the percentage of Rhode Island motor vehicle fatalities by use of restraint.* In 2010, there were 39 fatal crashes. In a majority of cases, no restraint was used (67%). There were 37 fatal crashes in 2011, with a decline in the fatal crashes without restraints (62%). While this decline is modest, the decrease in motor vehicle fatalities where no restraint was used represents a -6% percentage change in motor vehicle deaths over a one year time period.† Although this trend is promising, we cannot make a conclusion about the impact of the primary belt law, as 2012 fatal crash data are not available at the time of this report.

Figure 1. Rhode Island motor vehicle fatalities by use of restraint, 2010 and 2011^{1,2}



# Fatal Crashes	2010	2011
Restrained	13	13
Unrestrained	26	22
Unknown	0	2
Total	39	37

¹Percentages shown in Figure 1 exclude cases where type of restraint was unknown.

²Data source: National Highway Safety Administration Traffic Safety Facts, 2010 -2011

* A restraint is defined as a lap or shoulder seatbelt or both for persons aged 13 and older and a forward or rear-facing booster car seat for children under age 13 depending on the child’s age, height and weight.

† A percentage change represents the relative change between an initial value (Time 1) and the new value (Time 2). It is calculated as Time 2 – Time 1 / Time 1.

2. Have the counts of injuries varied by level of severity pre and post passage of the PBL?

Table 1 shows crash outcomes by level of severity. Unlike the data shown in Figure 1, the numbers and percentages shown in Table 1 are based on all crash outcomes. In 2010, for example, there were 94,098 people involved in motor vehicle crashes. Information on the severity of the crash and whether a restraint was used at the time of the crash were not available for every incident. There are only modest differences in the percentage of motor vehicle crashes in each of five classifications (e.g., fatality, incapacitating) prior to and after passage of the primary seat belt law for Rhode Islanders ages 13 and older.[‡] In the six months prior to the passage of the primary seat belt law, less than 1% of crashes resulted in a fatality and 86.7% of crashes resulted in no injuries. A similar pattern was observed in the six months immediately following passage of the seat belt law.

Table 1. Crash outcomes for Rhode Islanders ages 13 and older^{1,2}

Period	Fatal	Incapacitating	Non-incapacitating/ Serious	Complains Pain/Minor	No injury	Unknown
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Pre-PBL						
Jan - June 2010	36 (0.1)	213 (0.5)	610 (1.5)	4,486 (10.8)	35,734 (86.1)	444 (1.1)
July - Dec 2010	29 (0.1)	245 (0.5)	725 (1.6)	5,047 (11.0)	39,493 (85.8)	511 (1.0)
Jan - June 2011	17 (0.04)	178 (0.4)	621 (1.5)	4,283 (10.2)	36,282 (86.7)	449 (1.2)
Post-PBL						
July - Dec 2011	38 (0.1)	255 (0.6)	670 (1.5)	4,807 (10.8)	38,083 (85.9)	465 (1.1)
Jan - June 2012	30 (0.1)	177 (0.5)	490 (1.3)	4,152 (11.0)	34,012 (86.5)	451 (1.1)
July - Dec 2012	26 (0.1)	210 (0.5)	561 (1.3)	4,669 (11.0)	36,746 (86.2)	419 (1.0)

¹Data source: Rhode Island Department of Transportation Crash Data Management System (CDMS) provided through the Online System for Crash Analysis and Reporting (OSCAR).

²Percentages may slightly exceed 100% due to rounding.

[‡] Table 1 and all subsequent tables exclude children younger than age 12. NHTSA recommends that children age 1 to 3 years should be in a rear-facing car seat until the child outgrows this type of car seat and is ready to travel in a forward-facing car seat with a harness. Children ages 8 to 12 years should use a booster seat until the child is big enough to fit in a seat belt properly. Because data do not provide the height/weight of child passengers in a car, it is not possible to know if a child younger than 13 years was properly restrained.

Figures 2 – 4 show the age-specific motor vehicle related injury rate per 1,000 Rhode Islanders by type of crash outcome for three age groups: 1) 13 to 29 years of age; 2) 30 to 59 years of age; and 3) 60 years of age and older.[§] These groups were selected for two reasons. First, each group captured different points in the life cycle, from teenagers to retirees. Second, the three groups had a sufficient sample size to calculate an age-specific motor vehicle injury rate for each of five crash outcomes—no injuries, minor injuries with pain, serious but not incapacitated, incapacitated and fatal.

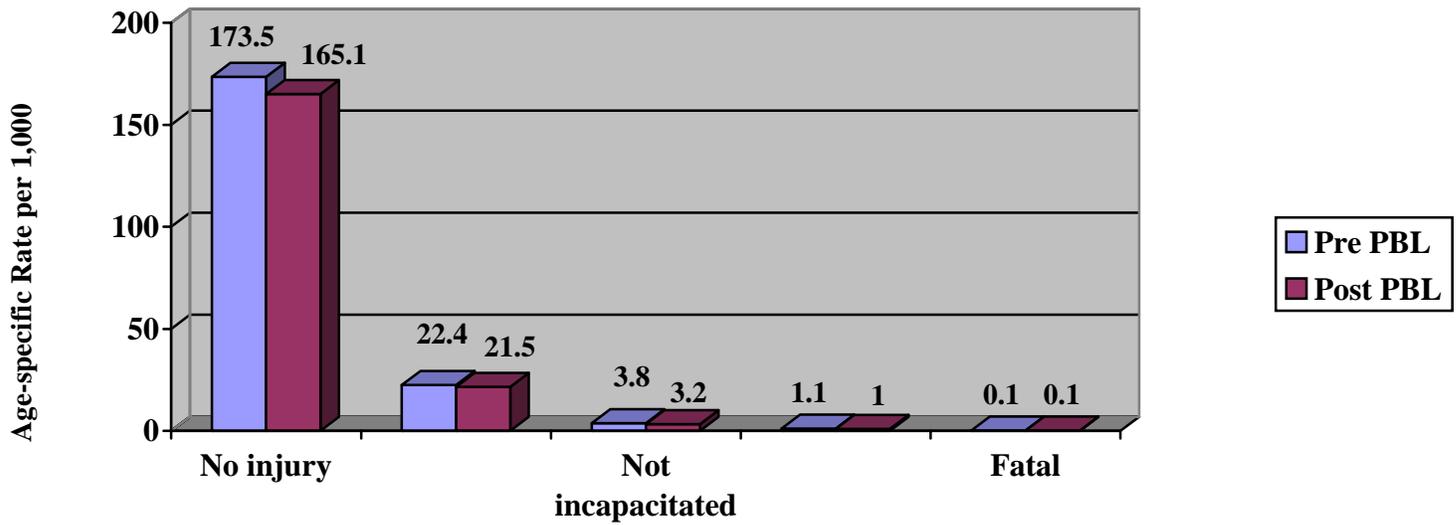
Figures 2 and 3 demonstrate that age-specific motor vehicle injury rates for different crash outcomes have slightly declined or remained stable for the 13-29 and 30-59 year old age groups. In the 13 to 29 year old age group, the age-specific motor vehicle injury rate was 173.5 per 1,000 in the pre-implementation period and 165.1 per 1,000 in the subsequent 18 months. In the 30 to 59 year old age group, the age-specific motor vehicle injury rate was 118.1 per 1,000 in the pre-implementation period and 114.8 per 1,000 in the succeeding 18 months.

For adults aged 60 and older, the motor vehicle-related injury rate for crashes that result in no injuries has increased since the passage of the primary seat belt law, from 781 per 1,000 in the pre-implementation period to 823 per 1,000 in the following 18 months. There has been no change in the motor vehicle injury rate for fatal crashes before and after the passage of Rhode Island's PBL (Figure 4).

With enforcement of a primary seatbelt law, it is expected that additional years of data will show that Rhode Island's severe crash outcomes will decrease (i.e. fatal and serious injuries) and less severe crash outcomes will increase (minor and no injury).

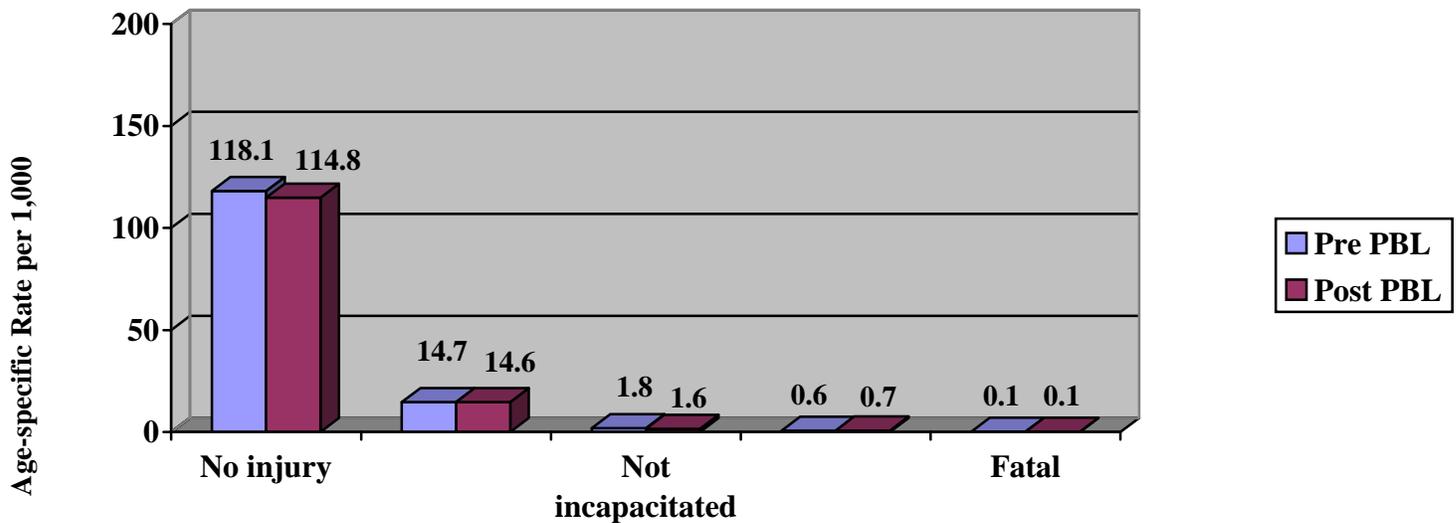
[§] An age-specific rate is the rate measured in a particular age group. The numerator and the denominator for this rate refer to the same age group, that is, both have the same age distribution.

Figure 2. Rhode Island's Motor Vehicle Injury Rate for 13 to 29 year olds, before and after implementation of the primary seat belt law (PBL)¹



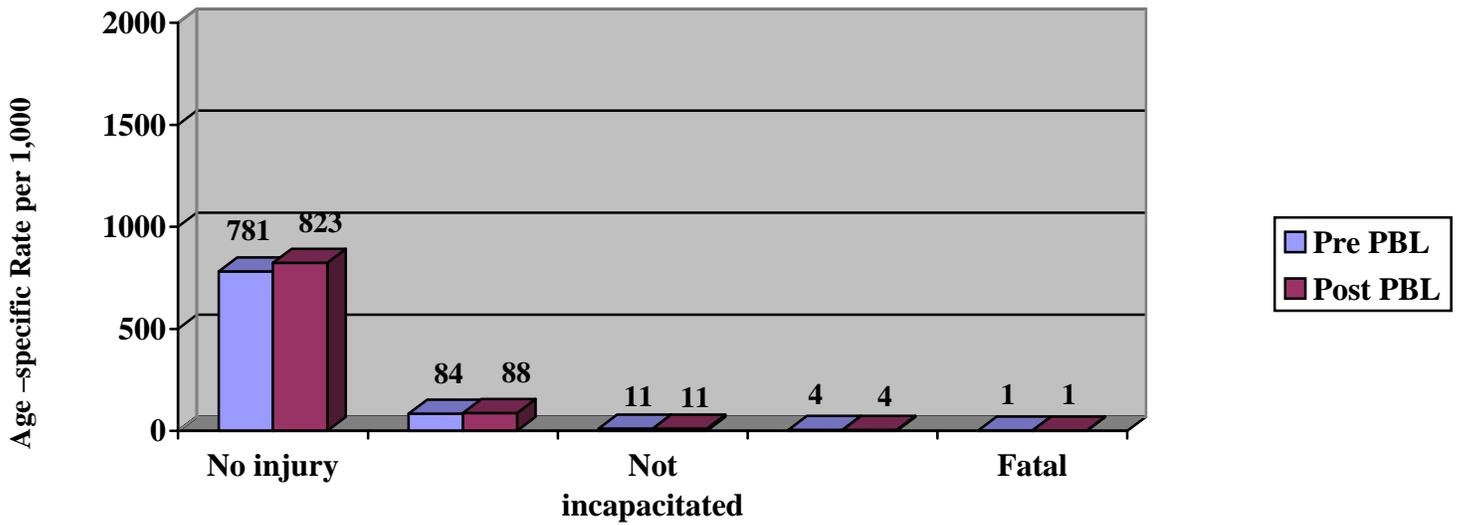
¹Data source: Rhode Island Department of Transportation Crash Data Management System (CDMS) provided through the Online System for Crash Analysis and Reporting (OSCAR).

Figure 3. Rhode Island's Motor Vehicle Injury Rate for 30 to 59 year olds, before and after implementation of the primary seat belt law (PBL)¹



¹Data source: Rhode Island Department of Transportation Crash Data Management System (CDMS) provided through the Online System for Crash Analysis and Reporting (OSCAR).

Figure 4. Rhode Island’s Motor Vehicle Injury Rate for adults 60 years and older, before and after implementation of the primary seat belt law (PBL)¹

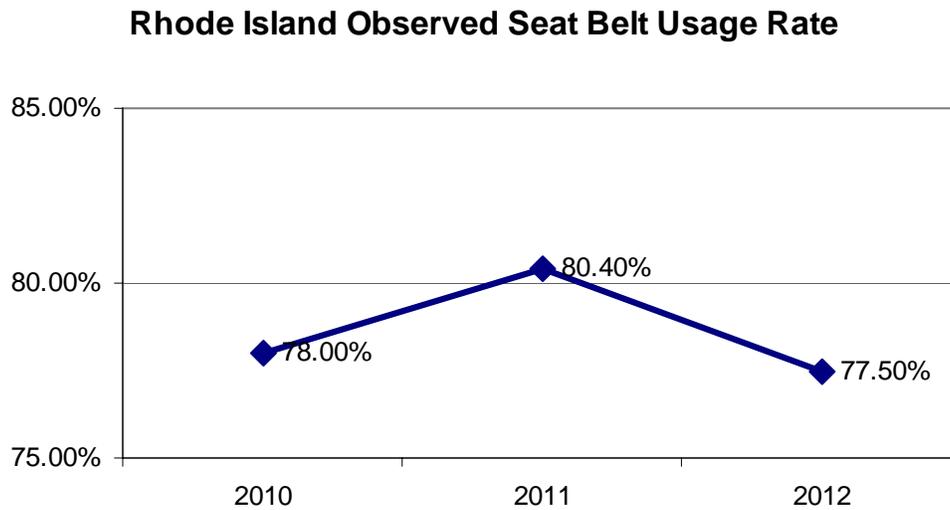


¹Data source: Rhode Island Department of Transportation Crash Data Management System (CDMS) provided through the Online System for Crash Analysis and Reporting (OSCAR).

3. Has the Rhode Island seat belt usage rate increased since the passage of the PBL?

The Rhode Island Office of Highway Safety measures annual seat belt use rates through an observational survey called the National Occupant Protection Observation Survey. A sample of vehicles is observed on various Rhode Island roadways and occupant seat belt use status is recorded. This method and results are reported to and certified by the National Highway Traffic Safety Administration (NHTSA). Rhode Island data show that from 2010 to 2011, the seatbelt usage rate went up slightly from 78 percent to 80 percent, but returned to the 2010 rate of about 78 percent in 2012 (Figure 5).

Figure 5: Observed seat belt usage 2010-2012



Data Source: National Occupant Protection Observation Survey (NOPOS)

4. In comparison to white motorists, are ‘perceived minority’ motorists arrested at lower rate after being stopped for a traffic violation and having their vehicle searched?

Racial profiling is often raised as an issue when states change their seat belt law from a secondary to primary offense. Several studies have investigated the evidence of differential enforcement and indicated that there is no change after an upgrade to a primary seat belt law.¹⁵ A recent September 2011 study, examined 13 states that upgraded to a primary seat belt law from 2000-2009.¹⁵ Pre- and post-citation data by race were available from four states. Consistent with previous research, all four states showed the percentage of tickets issue to minorities either stayed the same or decreased slightly from before to after the change in law. The study concluded that there was no evidence of racial profiling associated with changing the law from secondary to primary enforcement.¹⁵

Rhode Island began implementation of a statewide traffic stop data collection effort to track primary seat belt violations in October 2012. Each record identifies the perceived race of the driver and details the outcomes of the stop (citation, arrest, search, etc.). All Rhode Island police departments are collecting race data information and Northeastern University has been hired to analyze the data; however the results of the evaluation are not available at the time of this report.

Relevant Factors during the Evaluation Time Period

As with all evaluations, additional factors that may have influenced outcomes of public policies must be considered. During the study period, there were several activities that may have impacted the response to the primary seat belt law that should be taken into account.

Supporting Factors:

1. During both the pre-implementation period and implementation period of the study, The Department of Transportation's Office on Highway Safety sponsored awareness campaigns with the message:

“Click It Or Ticket.” See Appendix II for details on types of media, targeted demographics, and dates.

2. During both the pre-implementation period and implementation period of the study, The Department of Transportation's Office on Highway Safety sponsored dynamic messaging (digital, high-visibility signs on the state highways) with the message: “Click It Or Ticket.” See Appendix III for details on dates.

3. The Department of Transportation's Office of Highway Safety sponsored ‘over-time’ enforcement of the Primary Seatbelt Law during the implementation-period. This effort resulted in the following number of citations:

- September 2011: 1,360 citations
- November 2011: 996 citations
- March 2012: 3,743 citations
- May 2012: 3,995 citations
- September 2012: 1,425 citations
- November 2012: 984 citations

Contradicting Factors:

1. The primary seatbelt law was passed with an automatic, two-year, expiration date. This is unique to Rhode Island; therefore it is impossible to predict the impact of this provision. The sunset clause may have undermined the intended effects of the law by negatively affecting enforcement rates of law officers and compliance rates of the public.

2. At the time of this evaluation, limited years of data were available to determine the impact of the primary seat belt law on motor vehicle fatalities, severity of crash outcomes, seat belt use rates, and instances of racial profiling. As previously described, data were available for two time periods—the 18 months prior to enactment of the primary seat belt law and the 18 months after the law was enacted. Typically, before and after evaluations of new policies include more years of data. Given the short

time frame that the law has been in place, it is unlikely that Rhode Island has realized the complete impact of the policy. The data presented in this report are preliminary.

3. Prior to the passage of the PBL there was a system in place to collect race data in conjunction with other moving violations, but not due to primary seat belt violations. When the law passed, the Rhode Island Department of Transportation (RIDOT) committed to update all state and local police data collection systems to include PBL violations, collect race data on all state traffic stops, and publish a report on the findings. RIDOT also committed one million dollars to support minority education on the new law.

The implementation of these projects required more time and efforts than originally anticipated. The race data collection, transmittal, and analysis began in the fall of 2012 and are ongoing. Minority education began in the fall of 2012. At the time of this report, six community-based organizations are already working on this initiative with three agencies expected to begin new projects in the spring of 2013. The delay in these projects may have influenced the response of the public and of law enforcement to the primary seatbelt law.

4. After the bill was passed, standard enforcement occurred (see Supporting Factors #3); however in March 2012, law enforcement agencies implemented new enforcement tactics to increase the seatbelt use recommended by NHTSA (National Highway Traffic Safety Association). They included the use of artificial lighting and reduction of travel lanes. These efforts modeled the strategies used in Washington State, which has the highest seatbelt rate use in the country.¹⁶

The general public, the media, and the legislators in Rhode Island perceived these tactics as harsh and over the top. The RIDOT and the police departments responded to the public outcry by significantly scaling back the perceived aggressive enforcement techniques and returning to their standard enforcement strategies. A primary seat belt law will not be successful without regular enforcement.^{3, 17} Rhode Island's fluctuation in enforcement techniques in may have impacted public response to the law.

Conclusion

At this time, the impact of passing the primary seat belt law in Rhode Island is inconclusive in relation to roadway fatalities, severity of motor vehicle injuries, seat belt use rates, and instances of racial profiling. It is unclear how the consequences of the sunset provision, inconsistent enforcement, and limited data availability affected the results of this preliminary study. Given the consistency and strength of the national research, we can expect that Rhode Island will experience the safety benefits of

a primary seat belt law if the sunset clause is eliminated; however, more time is needed to observe a behavioral change.

A primary belt law, alone, will not ensure success. Several recent studies have confirmed that a primary law is only successful with high visibility enforcement.^{3,17} The National Centers for Disease Prevention and Control recommends a three-pronged approach to occupant protection. Their research substantiates that a primary seat belt law will increase seat belt use and save lives, but it must be supported by enhanced enforcement and publicity campaigns.² In fact, research has shown that enhanced enforcement programs increase seat belt use by a median of 16 percentage points.² Although must be aware of laws and fine changes before behavior change is likely.

A primary law and high visibility enforcement are essential to experience the benefits of increased usage rates, less fatalities, and cost savings.¹⁷ In conclusion, in order to realize the safety benefits of the primary belt law, the sunset clause should be eliminated and Rhode Island should invest in enforcement and awareness raising efforts to support the law.

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APPENDIX I.

Databases

National Highway Traffic Safety Administration Fatality Analysis Reporting System (FARS).

FARS is a census of fatal traffic crashes in the 50 States, the District of Columbia, and Puerto Rico. Crashes involving a motor vehicle traveling on a roadway that results in the fatality of at least one person (occupant of a vehicle or a non-occupant) within 30 days of the crash are included in this database (U.S. Department of Transportation). National Highway Traffic Safety Administration. Early Estimate of Motor Vehicle Traffic Fatalities in 2011. DOT HS 811 604. May 2012. Available online at: <http://www-nrd.nhtsa.dot.gov/Pubs/811604.pdf>

The Rhode Island Department of Transportation Crash Data Management System (CDMS).

All crash data for the state of Rhode Island is electronically collected from state and local police. Data are stored, processed and analyzed through the Online System for Crash Analysis and Reporting (OSCAR).

National Occupant Protection Survey (NOPUS).

This is the only nationwide probability-based observational survey of seat belt use in the U.S. The survey observes usage as it actually occurs at a random selection of roadway sites, and also provides the best tracking of the extent to which vehicle occupants in this country are buckling up. Observational data are collected for drivers, right-front passengers, and up to two passengers in the second row of seats. Data include seat belt usage and subjective assessments of age and race. The survey data are collected by sending trained observers to probabilistically sampled intersections controlled by stop signs or stoplights, where vehicle occupants are observed from the roadside. Data are collected between 7 am and 6 pm. Only stopped vehicles are observed. Adjustments are made to provide estimates of seat belt usage by front-seat occupants in transit on all types of roadways.

APPENDIX II.

Rhode Island Department of Transportation Media Outreach Campaigns

1. Types of media used:

- Television
- Radio
- Outdoor
- On-line
- Public transit vehicle
- Gas station pump toppers.

2. The target demographics:

- Primary: 18-34 year old males
- Secondary: Newly-arrived Hispanic Males between the ages of 18 and 34
- Tertiary: African-American Males between the ages of 13-34
- Males between the ages of 16-17.

3. Dates:

- May 2010-June 2010 (5/17-6/6/10)
- November 2010 (11/15-28/10)
- May 2011-June 2011 (5/16-6/12/11)
- November 2011 (11/21-27/11)
- March 2012 (3/4-17/12)
- May 2012 (5/14-28/12)
- September 2012 (9/10-9/23/12)
- November-December 2012 (11/19/12-12/16/12)

APPENDIX III.

Rhode Island Department of Transportation's Dynamic Messaging Campaigns

1. Dates:

- May 2010-June 2010 (5/17-6/6/10)
- November 2010 (11/15-28/10)
- May 2011-June 2011 (5/16-6/12/11)
- November 2011 (11/18-27/11)
- March 2012 (3/14-24/12)
- May 2012 (5/20 – 6/3/12)
- September 2012 (9/24-9/30/12)
- November 2012-(11/19-25/12)