U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

NHTSA

DOT HS 812 474

April 2018

Evaluation of Nighttime Seat Belt Enforcement Demonstration Program And Identification of Characteristics of Unbelted High-Risk Drivers

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Suggested APA Format Citation:

Retting, R., Ballou, M., Sexton, T., Miller, R., Rothenberg, H., Kerns, T., & Johnson, A. (2018, April). *Evaluation of nighttime seat belt enforcement demonstration program and identification of characteristics of unbelted high-risk drivers* (Report No. DOT HS 812 474). Washington, DC: National Highway Traffic Safety Administration.

1. Report No. DOT HS 812 474	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Evaluation of Nighttime Seat Belt Enforcement Demonstration Program and Identifation of Characteristics of Unbelted High-Risk Drivers		5. Report Date April 2018	
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9. Performing Organization Name and Address M. Davis and Company, Inc. 3000 Market Street, Suite 202 Philadelphia, PA 19104		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-10-R-00347	
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration 1200 New Jersey Avenue SE. Washington, DC 20590		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes Carole S. Guzzetta served as the NHTSA Contracting Officer's Representative for this study.			
16. Abstract: The present study evaluated the effectiveness of a high-visibility nighttime seat belt enforcement program conducted in Maryland by measuring changes in day and night self-reported and observed seat belt use and crash outcomes. To better understand the characteristics of unbelted drivers, the study compared the driving records of motorists who received seat belt citations during the enforcement crackdown with drivers who were not cited for failing to use seat belts. Statistically significant pre-post increases in nighttime seat belt use in the program area were observed for three of the five activity waves. Analysis of driver records found clear evidence that drivers cited for seat belt violations had poorer driving records than those who were not cited for seat belt violations. Some of the differences were substantial. For example, drivers cited for seat belt infractions were nearly eight times more likely than those not cited to have prior seat belt violations on their driver records. Analysis of crash data for the program area found significant declines in the proportion of occupants involved in injury crashes that were unbelted, both at night and during the day. For fatal crashes, nonsignificant declines were observed in the proportion of occupants that were unbelted at night, as well as the proportion of occupants that were unbelted during the day and night combined.			
17. Key Words Seat belts, high visibility enforcement	18. Distribution Statement		
19. Security Classif. (of this report) Unclassified	20. Security Classif.(of this page) Unclassified	21. No. of Pages 47	22. Price

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EXECUTIVE SUMMARY

This study evaluated the effectiveness of a high-visibility nighttime seat belt enforcement program in Maryland by measuring changes in day and night self-reported and observed seat belt use, driver awareness of the nighttime enforcement effort, and crash outcomes. To better understand the characteristics of unbelted drivers, the study compared the driving records of motorists who received seat belt citations during the enforcement crackdown with drivers who were not cited for failing to use seat belts. Five waves of enforcement were conducted in the program communities over a 3-year period (2011 to 2013), during which approximately 6,800 police officer hours were logged and 5,683 seat belt citations were issued for the five waves combined. The law enforcement activity was accompanied by both paid and earned public outreach efforts. The outreach campaign for Waves 1 to 4 (there was no paid media for Wave 5) allocated a total of just over $1 million in contracted media buys, yielding a total of more than 80 million impressions.

The public awareness and attitude assessments conducted by Maryland indicated significant pre- to post increases in the proportions of drivers who said they had recently read, seen, or heard about nighttime seat belt enforcement, as well as in the percentage of respondents who said they had recently noticed increased enforcement of seat belts at night. With the exception of Wave 4, there was no indication that increased public awareness of the nighttime seat belt enforcement activity led to increases in self-reported use of seat belts.

Statistically significant pre-post increases in nighttime seat belt use in the program area were observed for three of the five activity waves. Yet, there was little to no indication that belt use rates were lower at night versus the daytime, or that belt use rates declined late at night versus earlier in the evening.

Analysis of driver records found clear evidence that drivers cited for seat belt violations had poorer driving records than those who were not cited for seat belt violations. Some of the differences were substantial. There were some indications that drivers cited later at night were more likely than those cited earlier in the evening to have prior alcohol citations and driver-related offenses.

Analysis of crash data for the program area found significant declines in the proportion of occupants involved in injury crashes who were unbelted, both at night and during the day. For fatal crashes, nonsignificant declines were observed in the proportion of occupants who were unbelted at night, as well as the proportion of occupants who were unbelted during the day and night combined. Similar declines were not observed in the comparison area.

This study provides strong evidence that unbelted drivers are far more likely than the general population of drivers to have prior traffic citations. The study also demonstrates that high visibility seat belt enforcement can help increase seat belt use rates, and lead to significant declines in the proportion of injury crashes that involve unbelted occupants.

INTRODUCTION

Fatal and serious injury crashes occur disproportionately at night. Nationwide, about half of all traffic fatalities occur at night, although only about one quarter of travel occurs after dark (Federal Highway Administration, 2012). Many factors contribute to the elevated risk of severe nighttime crashes, including intoxication, fatigue, and decreased driver visibility. Research by NHTSA (2007) suggests that lower rates of seat belt use at night may be another factor; a summary of nighttime belt use studies showed a significant gap between observed day and night belt use. Furthermore, there is a lower rate of belt use at night among those fatally injured. NHTSA examined the difference in day and night seat belt use among fatally injured passenger vehicle occupants (Tison, Williams, & Chaudhary, 2010). In each of 10 years reviewed, reported seat belt use among fatally injured occupants was lower at night (9 p.m. to 4 a.m.) than during the day. On average, nighttime use was 18 percentage points lower than daytime belt use.

Due to the relatively high overall rate of seat belt use, unbelted drivers represent a small minority – nationally less than 15 percent – of the general driving population, based on daytime observations. These non-compliers are likely to distinguish themselves not only by their observed patterns of belt use, but by their driving records. A recent study in Washington State (Thomas, Blomberg, & Van Dyk, 2010) found that drivers who were observed unbelted at night had consistently more traffic violations than belted nighttime drivers. They also had more traffic violations than daytime belted and unbelted drivers.

High-visibility short-duration seat belt law enforcement programs, such as *Click It or Ticket*, have proven to be the most effective countermeasure to date for increasing seat belt use (Goodwin, Thomas, Hall, & Tucker, 2011), but have not been used as much at night. An evaluation of programs to enforce seat belt laws at night in North Carolina and West Virginia found significant increases in nighttime seat belt use (Solomon, Chaffe, & Preusser, 2009).

A principal research objective of this study was to evaluate the effectiveness of a high-visibility nighttime seat belt enforcement program. Evaluation measures included pre- and post-intervention changes in observed daytime and nighttime seat belt use, driver awareness of the nighttime enforcement effort, and changes in nighttime injuries and fatalities. In addition, the project aimed to assess characteristics of high-risk drivers by examining the driver records of motorists who received seat belt citations over the course of the project. Comparisons were made with drivers who were not cited for seat belt infractions. This study and the associated State nighttime seat belt mobilization build on prior NHTSA-sponsored research and mobilization efforts that targeted nighttime seat belt use.

METHODS

1. Police Mobilization Enforcement and Citation Data

Under a cooperative agreement with NHTSA, Maryland conducted high-visibility nighttime seat belt enforcement crackdowns throughout the Washington-Baltimore metro area. The project called for a total of five high-visibility enforcement (HVE) mobilization waves beginning in May 2011. The activity dates are shown in Table 1.

Table 1: HVE Activity Periods

Wave 1	May 2011
Wave 2	May 2012
Wave 3	November 2012
Wave 4	May 2013
Wave 5	November 2013

The original project schedule called for Maryland to conduct the Wave 2 mobilization during November 2011, but that activity phase was postponed until May 2012 due to challenges in securing media support services.

Table 2 indicates the law enforcement agencies that conducted nighttime seat belt enforcement activities during the five crackdown periods. For a variety of reasons, some agencies did not participate in all waves.

Table 2: Law Enforcement Agencies that Participated in Five HVE Activity Waves

Jurisdiction	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Annapolis Police Department	✓	✓	✓	✓	✓
Anne Arundel County Police Department	✓	✓	✓	✓	✓
Baltimore City Police Department	✓	✓		✓	✓
Baltimore County Police Department	✓	✓	✓	✓	✓
Howard County Police Department	✓	✓	✓	✓	✓
Maryland Transportation Authority Police	✓	✓			
Montgomery County Police Department	✓	✓	✓	✓	✓
Prince George's County Police Department	✓	✓	✓	✓	✓

The HVE activity consisted primarily of officer teams working with spotters and channelization techniques to observe violations with traffic moving at relatively low speeds. Agencies used a standardized law enforcement activity data template and worked with the Maryland Highway Safety Office to obtain the following data elements for each wave of law enforcement activity.

- Number of deployments
- Number of officer hours worked
- Seat belt citations
- DUI citations
- Speeding citations
- Suspended license citations
- Uninsured motorists citations
- Stolen vehicles recovered
- Fugitives captured
- Drug arrests
- Other actions

In addition to reporting the numbers of citations, arrests, and other law enforcement actions, the hourly rates based on the reported numbers of officer hours worked were also computed.

The participating law enforcement agencies were permitted to use any enforcement strategy(s) they felt appropriate for the task of enforcing nighttime seat belt violations. These generally fell into the following three categories.

- **Channelization**: Using select locations where the roadway naturally reduces in the number of lanes; and/or artificially reducing lanes via signs, barriers, and cones. Vehicles are not stopped for screening. Observed violators are directed to stop in a safe area for processing.
- **Saturation/Roving Patrols**:
  - Saturation Patrols - Concentrated enforcement within an identified, limited patrol area.
  - Roving Patrols - Mobile enforcement within a more broadly defined patrol area.
- **Spotters**: Uniformed or plain-clothes officers are located at points on a roadway or at an intersection/commercial driveway in advance of the enforcement area. The spotter may be in a vehicle or on foot. Chase vehicles are typically used to stop violators, though in one downtown area, the spotters actually initiated the enforcement from the curbside on foot.

Saturation and Roving patrols were grouped together as the research team was unable to clearly categorize each type from the after action reports submitted by the law enforcement agencies.

2. Paid and Earned Media Activity

The Maryland nighttime seat belt enforcement program used paid and earned media to increase public awareness of the seat belt enforcement activity. Maryland's media support contractors provided information regarding the types of media messages prepared for each mobilization, and the estimated exposure of these messages. During Wave 1 the media support contractor was Integrated Designs; during Waves 2, 3, and 4 the contractor was the McAndrew Company. Maryland did not employ a media contractor during Wave 5 due to procurement issues. Maryland conducted only earned media activities during Wave 5.

The campaign messages emphasized Maryland's intensified nighttime seat belt enforcement efforts and used radio spots, cable television spots, outdoor advertising, and Internet messages. Examples of media ads and press releases are shown in Appendix A. Not all forms of media were used during each wave. Maryland allocated over $1 Million for media activities as shown in Table 3.

Table 3: Funding Allocated for Media Activities

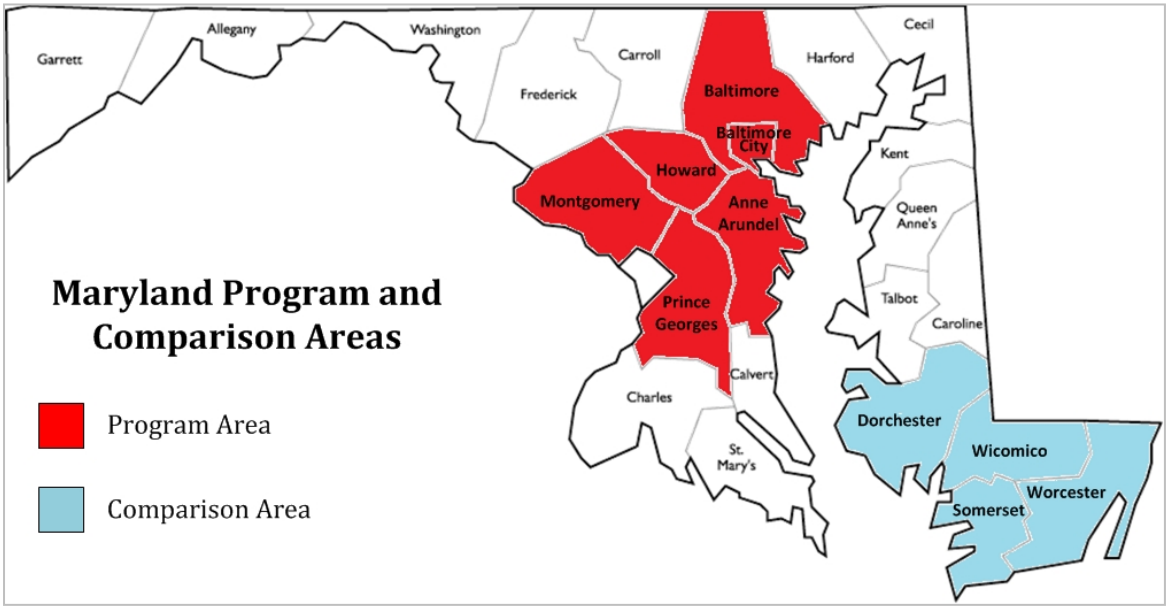
Wave	$ Allocated
Wave 1	$375,000
Wave 2	$338,008
Wave 3	$89,917
Wave 4	$228,360
Wave 5	$0
Total	$1,031,285

A principal measure to gauge public exposure to campaign media messages is the estimated number of impressions. Industry practice for estimating this measure of exposure involves calculating impressions for spots actually aired and invoiced via A.C. Nielsen and The Arbitron Company (nationally-syndicated ratings-data research companies).

3. Measures of Public Awareness and Attitudes

Maryland officials conducted pre- and post-intervention assessments to measure changes in public awareness of nighttime seat belt enforcement in both the program and comparison areas. The program area was comprised of Annapolis, Anne Arundel County, Baltimore City, Baltimore County, Howard County, Montgomery County, and Prince George's County. The comparison area was centered around Wicomico County on Maryland's Eastern Shore, including the city of Salisbury (Figure 1). These areas are in different media markets.

Figure 1: Maryland Program and Comparison Areas



Maryland conducted public awareness assessments about two weeks before and two weeks after Waves 1, 2, 3, and 4 mobilizations. Assessments were not conducted during Wave 5 due to funding issues. Maryland administered a one-page assessment instrument at selected Motor Vehicle Administration offices and provided the data for analysis. The instrument was translated into Spanish, which was printed on the backside of the English version. Training for data collectors was provided as needed. The public awareness assessment relied on a convenience sampling method and, as such, will lead to an unknowable level of bias. While one can argue that the bias will largely cancel when pre- and post-Intervention differences are computed, this argument relies on the untestable assumption that the direction and size of each systematic error will be the same in both surveys.

A target of at least 600 completed assessment forms across all data collection sites was established for each pre and post- data collection period. The total number of completed forms received was ultimately dependent on the level of personnel hours committed by Maryland to collect the data, as well as the visitor traffic and duration of time the assessments were made available to the public.

The public awareness assessment (see Appendix B) was designed to measure the respondents' awareness of nighttime seat belt enforcement; any recent changes in their belt use or safety behaviors; their perception of the intensity of seat belt enforcement; their perceived likelihood of being stopped and cited if they violate seat belt laws; the source of their knowledge of seat belt enforcement; and their recall of specific safety messages. The assessment also requested age, gender, and the type of vehicle they most often drive.

MVA offices located in geographically diverse sections of the program activity area administered the public awareness assessments during Waves 1 to 4 (Table 4). The Glen Burnie site was dropped following the first activity wave.

Table 4: MVA Offices That Collected Public Awareness Data

	MVA Office	Jurisdiction	Wave 1	Wave 2	Wave 3	Wave 4
Program Area	Baltimore City	Baltimore City	✓	✓	✓	✓
	Beltsville	Baltimore County	✓	✓	✓	✓
	Gaithersburg	Montgomery County	✓	✓	✓	✓
	Glen Burnie	Anne Arundel County	✓			
	Largo	Prince George's County	✓	✓	✓	✓
Comparison Area	Salisbury	Wicomico County	✓	✓	✓	✓

As a supplement to the public awareness assessment administered at MVA offices, Maryland officials also collected public awareness data using the official MVA website for Waves 1, 2, and 3. For approximately two weeks during the pre-intervention periods and two weeks during the post-intervention periods, there was a link to the assessment form on the MVA home page. No incentives were offered for individuals to participate. Due to minimal numbers of responses, the Internet data collection was discontinued in Wave 4.

For analysis of the assessment data, chi-square tests of independence were used to determine if the pattern of results observed in the pre-intervention period was significantly different from the pattern of results observed post-intervention. Chi-square tests compare the observed pattern of results in the sample to a pattern that would be expected if the pre- and post-intervention groups were identical in the population. All tests were conducted using the 0.05 significance level.

4. Observational Studies of Seat Belt Use

Seat belt use was observed before and after the HVE activities at 20 program sites located in six Maryland jurisdictions (Table 5). These locations were selected from among Maryland's official seat belt observation sites. Additional seat belt observations were conducted at 12 locations on Maryland's Eastern Shore, which was the region designated as the comparison area for this study (Table 6). Comparison communities, which are situated in a different media market than the program area, include Cambridge, Ocean City, Princess Anne, and Salisbury on Maryland's Eastern Shore. The initial study design called for the collection of observational data at 20 comparison sites, but the defined comparison area provided insufficient opportunity to identify 20 suitable sites. To increase the number of comparison observations, data were collected twice (both during the day and at night) for two of the comparison sites during each measurement period, yielding an effective equivalent of 14 comparison sites.

Table 5: Seat Belt Observation Sites in Program Area

Seat Belt Observation Sites: Washington-Baltimore Metro Area	
Anne Arundel	Forest Drive, Route 665 & Spa Dr/Route 387
	MD 214: Central Ave East of Pike Ridge Road
	Route 3 Crain Highway at Cronson Blvd, Crofton
Baltimore City	41st Street at Falls Road
	Eastern Ave at Ponca Street
	Bel Air Road at Frankford Ave/Fowler Avenue
Baltimore County	US 40 at Coleridge Road
	Necker Ave across from Route 1, Bel Air Road
	MD 26 (Liberty Road) at Offut Road, Randallstown
	MD 41: Perring Pkwy at Oakleigh Road
Howard County	US 1 at MD 175
	CO 75: Centennial Lane at MD 108/Clarksville Pike
	US 1 and Montgomery Rd (Elkridge)
Montgomery County	Summit Ave at Knowles Ave
	Colesville Road at Georgia Ave
	MD 187: Georgetown Rd at St. Elmo Ave
	Georgia Ave at Dennis Ave
Prince George's County	US 1: Baltimore Ave s/o MD 410
	MD 197: Collington Road s/o Mitchelville Road
	Sandy Spring Road at Sweitzer Lane

Table 6: Seat Belt Observation Sites in Comparison Area

Seat Belt Observation Sites: Maryland Eastern Shore	
Cambridge	Ocean Gateway across from Crusader Road
	Washington and Race Streets
Ocean City	Ocean Gateway (Route 50) and Route 528
	Ocean Gateway and Stephen Decatur Hwy
Princess Anne	Ocean Hwy (Route 13) and Mt Vernon Road
	Somerset Ave and W Post Office Road
Salisbury	Ocean Gateway (Route 50) and Hobbs Road
	Ocean Gateway (Route 50) and Nanticoke Road [1]
	Ocean Hwy (Route 13) and Naylor Mill Road
	Ocean Hwy and E. Main Street
	Route 513 and Division Street (Roundabout)
	W. College Ave. and E. Shore Drive [1]

[1] Data collected at these sites twice (both day and night) during each pre and post period

The study design called for the measurement of daytime and nighttime seat belt use rates over the course of the project at the program sites on a total of 10 occasions, corresponding with periods immediately before and after the five nighttime seat belt mobilizations (Spring 2011, Spring 2012, Fall 2012, Spring 2013, and Fall 2013). At the comparison sites, daytime and nighttime seat belt use rates were measured on eight occasions:

- Pre- and Post- for Wave 1 (Spring 2011)
- Pre- only for Wave 2 (Spring 2012)
- Pre- and Post- for Wave 3 (Fall 2012)
- Pre- only for Wave 4 (Spring 2013)
- Pre- and Post- for Wave 5 (Fall 2013)

Trained data collectors wearing reflective vests recorded shoulder belt use for drivers and adult front seat passengers traveling in passenger vehicles. Commercial vehicles and government vehicles were excluded. Nighttime observations were assisted by the use of portable halogen work lights positioned on the roadside and aimed perpendicular to the direction of travel. As a quality control measure, at each site in the program and comparison areas the same observer collected data during both the day and at night, and during both the pre and post periods (within wave).

All data were collected on weekdays.

- The duration of each daytime data collection session was one hour. The earliest daytime data collection session began at 11 am; the latest began at 5:30 p.m.
- The duration of each nighttime data collection session was 1½ hours. A longer duration was selected for the nighttime data collection sessions due to the lower traffic volumes at night. Observers typically collected data at two sites per evening, with the first deployment typically beginning around 8 p.m., and the second deployment typically beginning around 10:30 p.m.

5. Characteristics of Unbelted Drivers

Driver Records

To assess characteristics of unbelted drivers, the University of Maryland National Study Center queried the Maryland District Court database to determine all motor vehicle drivers who were issued a seat belt citation in Maryland during the five activity waves (May 2012, May 2012, November 2012, May 2013, and November 2013).

- For the primary analysis, citation time was used to determine whether the violation occurred during the day (6 a.m. to 5:59 p.m.) or at night (6 p.m. to 5:59 a.m.).
- A second level of analysis disaggregated nighttime citations into three sub-categories: Early Evening (6 p.m. - 8:59 p.m.); Night (9 p.m. to 12:59 a.m.); and Overnight (1 a.m. - 5:59 a.m.).

Because military time was not used on citations, the AM/PM box had to be completed in order for the citation to be included in the study. Fewer than two percent of the citations were missing the AM/PM designation.

The driver license file provided by the Maryland MVA was merged with the citation data to provide a different comparison group for each wave. The citation file only comprised those offenders who received a seat belt citation during a wave from one of the participating law enforcement agencies. The comparison file was taken from the MVA license file that included all currently licensed drivers (as of 2012 license file) who had not received a seat belt

citation in Maryland during 2009-2013. License numbers of drivers issued a belt use violation were removed from the license file (persons who received both a night and day time citation were classified into the nighttime citation group). The remaining data set consisting of drivers who were not issued a seat belt citation was randomly sampled to provide a similar size comparison group.

The final study groups included the following numbers of drivers:

Table 7: Number of Drivers Included in the Analysis of Driver Records

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Drivers with no belt citations	38,339	38,234	38,297	38,451	38,381
Drivers with daytime belt citations	12,956	12,416	3,772	12,462	2,521
Drivers with nighttime belt citations	3,639	3,742	1,159	3,512	1,280
Total drivers with daytime and nighttime citations	16,595	16,158	4,931	15,974	3,801

Each group was compared with the total citation database for the most recent four calendar years (based on the year of the enforcement wave) to determine if the persons in each of the study groups had received citations during those years for the following violations:

- Alcohol
- No/Improper belt use
- Speeding
- Negligent/Reckless driving
- Driver license restrictions

The citation groups were also compared with drivers involved in a reported motor vehicle crash during the same time period (2007-2012).

6. Crash Data

Electronic crash data files for January 2008 to December 2013 were provided by Maryland for analysis. Crash data were provided for the project's six program-area counties (Anne Arundel County, Baltimore City, Baltimore County, Howard County, Montgomery County, and Prince George's County) and for four comparison counties in which seat belt observations were conducted during the course of the study (Dorchester County, Somerset County, Wicomico County, and Worcester County).

The Maryland crash report formatting includes five levels of injury severity (no injury; possible injury; non-incapacitating injury; incapacitating injury; and fatal injury). For this analysis, nonfatal injury crashes were defined as either resulting in non-incapacitating injury or incapacitating injury (possible injury cases were excluded). The data files also include a field to indicate the type of safety equipment used (none; lap belt only; shoulder belt only; shoulder/lap belt; child/youth restraint; air bag only; air bag & belt; and several motorcycle/moped-specific equipment codes). "Unbelted Crashes" were defined as those coded with either safety equipment = 01 (none) or 31 (airbag only). Motorcycles/mopeds were excluded from the data set.

Daytime crashes were defined as those coded as occurring during the hours of 6 a.m. to 5:59 p.m., and nighttime crashes were defined as those occurring during the hours of 6 p.m. to 5:59 a.m. The "pre" period for the crash analysis was defined as 2008-2010, prior to the start of project activity in 2011. Although the first activity wave occurred in May 2011, a second wave originally scheduled for November 2011 was postponed to 2012. Because only

limited HVE activity took place in 2011, the "post" period for the crash analysis was defined as January 2012 – December 2013 during which four of the five activity waves took place.

A one-tailed z-test was used to compare the probability that an injured or killed vehicle occupant was unbelted before the HVE activity with the same probability after the HVE activity. A one-tailed test was used because the intent was to test for evidence that the probability was smaller after the intervention, rather than simply changed. For the analysis a significance level (α) equal to 0.05 was selected. It was not possible to compute crash rates per vehicle miles traveled due to the unavailability of exposure data.

RESULTS

1. Police Mobilization Enforcement and Citation Findings

Tables 8 and 9 provide a summary of the number of nighttime seat belt enforcement deployments conducted by the participating law enforcement agencies and the number of officer hours associated with those deployments. A deployment was defined as an enforcement detail to which a group of officers was assigned.

For all waves combined a total of 6,807 officer hours were logged during 274 nighttime seat belt deployments directly in support of the NHTSA/Maryland cooperative agreement.

The number of deployments ranged from 17 for the MdTA to 56 in Howard County; the number of officer hours ranged from 272 in Annapolis to 1,706 in Prince George's County.

Table 8: Number of Law Enforcement Deployments

Jurisdiction	Number of Law Enforcement Deployments					
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	TOTAL
Anne Arundel County	10	10	4	4	6	34
Annapolis	3	3	4	6	3	19
Baltimore County	7	6	8	10	6	37
Baltimore City	5	11	-	11	8	35
Howard County	13	16	10	8	9	56
Montgomery County	10	10	7	10	5	42
MdTA	6	11	-	-	-	17
Prince George's County	9	5	8	6	6	34
Total	**63**	**72**	**41**	**55**	**43**	**274**

Table 9: Number of Officer Hours[1]

Jurisdiction	Number of Officer Hours					
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	TOTAL
Anne Arundel County	134	133	49	90	88	493
Annapolis	37	35	59	90	52	272
Baltimore County	181	165	145	173	168	832
Baltimore City	133	192	-	202	82	609
Howard County	390	230	164	188	175	1,146
Montgomery County	280	104	168	314	501	1,367
MdTA	152	231	-	-	-	383
Prince George's County	431	334	571	193	177	1,706
Total	**1,737**	**1,423**	**1,155**	**1,249**	**1,243**	**6,807**

[1] Rounded to the nearest whole number

Tables 10 through 15 provide the numbers and types of citations and law enforcement actions associated with the nighttime seat belt deployments, and the rate per officer hour.

For all waves combined, a total of 10,473 citations and other law enforcement actions (including arrests, warnings, and equipment repair orders) were reported during the 274 nighttime seat belt deployments. The number of total citations and other law enforcement actions per hour was 1.54.

- For the eight participating jurisdictions, the number of total citations and other law enforcement actions ranged from 501 for the Maryland Transportation Authority Police (MdTA) to 3,013 in Prince George's County.
- The number of total citations and other law enforcement actions per hour ranged from 0.8 in Howard County to 2.36 in Annapolis.
- The number of seat belt citations ranged from 235 in Anne Arundel County to 1,245 in Prince George's County.

For all waves combined, seat belt citations accounted for about half of the total number of law enforcement actions, indicating that participating police agencies were focused on seat belt enforcement during the waves.

Table 10: Wave 1 Law Enforcement Activity

	Seat Belt Citations		DUI Citations		Speeding Citations		Suspended License		Uninsured Motorists		Stolen Vehicles Recovered		Fugitives Captured		Drug Arrests		Other Actions[1]		Total	
	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour
Anne Arundel	74	0.55	1	0.01	1	0.01	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	76	0.57
Annapolis	96	2.63	2	0.05	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	98	2.68
Baltimore Co	258	1.43	0	0.00	0	0.00	2	0.01	1	0.01	0	0.00	0	0.00	2	0.01	141	0.78	404	2.23
Baltimore City	56	0.42	1	0.01	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	57	0.43
Howard	175	0.45	2	0.01	0	0.00	2	0.01	0	0.00	0	0.00	0	0.00	0	0.00	15	0.04	194	0.50
Montgomery	174	0.62	5	0.02	2	0.01	9	0.03	2	0.01	0	0.00	0	0.00	8	0.03	136	0.49	336	1.20
MdTA	111	0.73	1	0.01	3	0.02	3	0.02	1	0.01	0	0.00	0	0.00	0	0.00	56	0.37	175	1.15
Pr George's	417	0.97	0	0.00	42	0.10	20	0.05	8	0.02	0	0.00	1	0.00	3	0.01	244	0.57	735	1.71
Total	1,361	0.78	12	0.01	48	0.03	36	0.02	12	0.01	0	0.00	1	0.001	13	0.01	592	0.34	2,075	1.19

[1] includes warnings, other types of citations, and other types of arrests

Table 11: Wave 2 Law Enforcement Activity

	Seat Belt Citations		DUI Citations		Speeding Citations		Suspended License		Uninsured Motorists		Stolen Vehicles Recovered		Fugitives Captured		Drug Arrests		Other Actions[1]		Total	
	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour
Anne Arundel	121	0.91	1	0.01	3	0.02	12	0.09	2	0.02	0	0.00	1	0.01	0	0.00	131	0.98	271	2.04
Annapolis	82	2.38	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.06	0	0.00	84	2.43
Baltimore Co	237	1.44	0	0.00	0	0.00	7	0.04	0	0.00	0	0.00	0	0.00	0	0.00	63	0.38	307	1.86
Baltimore City	371	1.93	0	0.00	0	0.00	20	0.10	0	0.00	0	0.00	0	0.00	3	0.02	0	0.00	394	2.05
Howard	193	0.84	1	0.004	0	0.00	5	0.02	0	0.00	0	0.00	0	0.00	3	0.01	21	0.09	223	0.97
Montgomery	123	1.18	4	0.04	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	127	1.22
MdTA	125	0.54	2	0.01	9	0.04	4	0.02	0	0.00	0	0.00	1	0.00	1	0.00	184	0.80	326	1.41
Pr George's	286	0.86	4	0.01	1	0.00	18	0.05	6	0.02	0	0.00	3	0.01	1	0.00	194	0.58	513	1.54
Total	1,538	1.08	12	0.01	13	0.01	66	0.05	8	0.01	0	0.00	5	0.004	10	0.01	593	0.42	2,245	1.58

[1] includes warnings, other types of citations, and other types of arrests

Table 12: Wave 3 Law Enforcement Activity

	Seat Belt Citations		DUI Citations		Speeding Citations		Suspended License		Uninsured Motorists		Stolen Vehicles Recovered		Fugitives Captured		Drug Arrests		Other Actions[1]		Total	
	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour
Anne Arundel	17	0.35	1	0.02	1	0.02	1	0.02	0	0.00	0	0.00	0	0.00	3	0.06	27	0.56	50	1.03
Annapolis	125	2.12	0	0.00	0	0.00	6	0.10	0	0.00	0	0.00	0	0.00	0	0.00	21	0.36	152	2.58
Baltimore Co	223	1.55	0	0.00	0	0.00	8	0.06	0	0.00	0	0.00	0	0.00	2	0.01	89	0.62	322	2.24
Baltimore City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Howard	168	1.03	0	0.00	0	0.00	3	0.02	0	0.00	0	0.00	0	0.00	0	0.00	32	0.20	203	1.24
Montgomery	121	0.72	5	0.03	4	0.02	11	0.07	0	0.00	0	0.00	0	0.00	9	0.05	152	0.90	302	1.80
MdTA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr George's	213	0.37	5	0.01	80	0.14	30	0.05	19	0.03	1	0.00	1	0.00	3	0.01	412	0.72	764	1.34
Total	867	0.75	11	0.01	85	0.07	59	0.05	19	0.02	1	0.00	1	0.00	17	0.01	733	0.64	1,793	1.55

[1] includes warnings, other types of citations, and other types of arrests

Table 13: Wave 4 Law Enforcement Activity

	Seat Belt Citations		DUI Citations		Speeding Citations		Suspended License		Uninsured Motorists		Stolen Vehicles Recovered		Fugitives Captured		Drug Arrests		Other Actions[1]		Total	
	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour
Anne Arundel	6	0.07	0	0.00	1	0.01	0	0.00	0	0.00	0	0.00	0	0.00	3	0.03	2	0.02	12	0.13
Annapolis	199	2.22	0	0.00	0	0.00	0	0.00	1	0.01	0	0.00	0	0.00	0	0.00	29	0.32	229	2.56
Baltimore Co	201	1.15	1	0.01	0	0.00	2	0.01	0	0.00	0	0.00	0	0.00	0	0.00	196	1.12	400	2.29
Baltimore City	193	2.68	0	0.00	0	0.00	2	0.03	0	0.00	0	0.00	0	0.00	8	0.11	14	0.19	217	3.01
Howard	178	0.93	1	0.01	0	0.00	3	0.02	0	0.00	0	0.00	0	0.00	1	0.01	42	0.22	225	1.17
Montgomery	297	0.98	9	0.03	0	0.00	4	0.01	0	0.00	0	0.00	4	0.01	17	0.06	395	1.30	726	2.39
MdTA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr George's	234	0.77	1	0.00	2	0.01	7	0.02	2	0.01	0	0.00	0	0.00	2	0.01	412	1.36	660	2.18
Total	1,308	1.07	12	0.01	3	0.00	18	0.01	3	0.00	0	0.00	4	0.00	31	0.03	1,090	0.89	2,469	2.02

[1] includes warnings, other types of citations, and other types of arrests

Table 14: Wave 5 Law Enforcement Activity

	Seat Belt Citations		DUI Citations		Speeding Citations		Suspended License		Uninsured Motorists		Stolen Vehicles Recovered		Fugitives Captured		Drug Arrests		Other Actions[1]		Total	
	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour
Anne Arundel	17	0.19	0	0.00	3	0.03	10	0.11	3	0.03	0	0.00	0	0.00	0	0.00	103	1.17	136	1.55
Annapolis	44	0.85	0	0.00	0	0.00	1	0.02	0	0.00	0	0.00	0	0.00	1	0.02	33	0.63	79	1.52
Baltimore Co	184	1.10	0	0.00	0	0.00	6	0.04	0	0.00	0	0.00	0	0.00	1	0.01	182	1.08	373	2.22
Baltimore City	92	1.12	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	92	1.12
Howard	62	0.35	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	10	0.06	72	0.41
Montgomery	115	0.23	29	0.06	0	0.00	3	0.01	0	0.00	0	0.00	5	0.01	42	0.08	604	1.21	798	1.59
MdTA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr George's	95	0.54	0	0.00	10	0.06	4	0.02	3	0.02	0	0.00	4	0.02	1	0.01	224	1.27	341	1.93
Total	609	0.49	29	0.02	13	0.01	24	0.02	6	0.00	0	0.00	9	0.01	45	0.04	1,156	0.93	1,891	1.52

[1] includes warnings, other types of citations, and other types of arrests

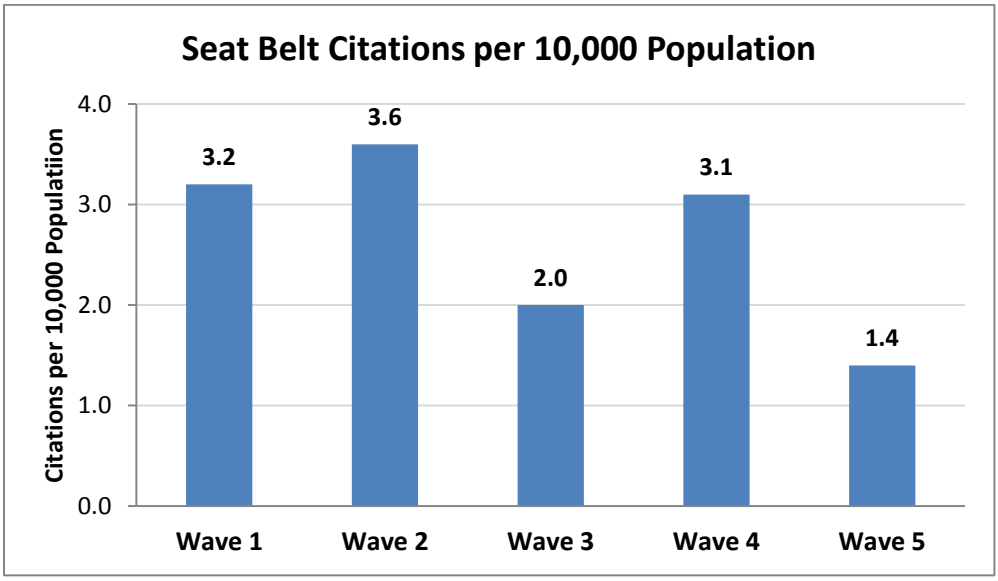
Table 15: Total Law Enforcement Activity (Waves 1 to 5)

	Seat Belt Citations		DUI Citations		Speeding Citations		Suspended License		Uninsured Motorists		Stolen Vehicles Recovered		Fugitives Captured		Drug Arrests		Other Actions[1]		Total	
	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour	#	per hour
Anne Arundel	235	0.48	3	0.01	9	0.02	23	0.05	5	0.01	0	0.00	1	0.002	6	0.01	263	0.53	545	1.11
Annapolis	546	2.01	2	0.01	0	0.00	7	0.03	1	0.004	0	0.00	0	0.00	3	0.01	83	0.31	642	2.36
Baltimore Co	1,103	1.33	1	0.001	0	0.00	25	0.03	1	0.001	0	0.00	0	0.00	5	0.01	671	0.81	1,806	2.17
Baltimore City	712	1.17	1	0.002	0	0.00	22	0.04	0	0.00	0	0.00	0	0.00	11	0.02	14	0.02	760	1.25
Howard	776	0.68	4	0.00	0	0.00	13	0.01	0	0.00	0	0.00	0	0.00	4	0.00	120	0.10	917	0.80
Montgomery	830	0.61	52	0.04	6	0.004	27	0.02	2	0.001	0	0.00	9	0.01	76	0.06	1,287	0.94	2,289	1.67
MdTA	236	0.62	3	0.01	12	0.03	7	0.02	1	0.003	0	0.00	1	0.003	1	0.003	240	0.63	501	1.31
Pr George's	1,245	0.73	10	0.01	135	0.08	79	0.05	38	0.02	1	0.001	9	0.01	10	0.01	1,486	0.87	3,013	1.77
Total	5,683	0.83	76	0.01	162	0.02	203	0.03	48	0.01	1	0.00	20	0.00	116	0.02	4,164	0.61	10,473	1.54

[1] includes warnings, other types of citations, and other types of arrests

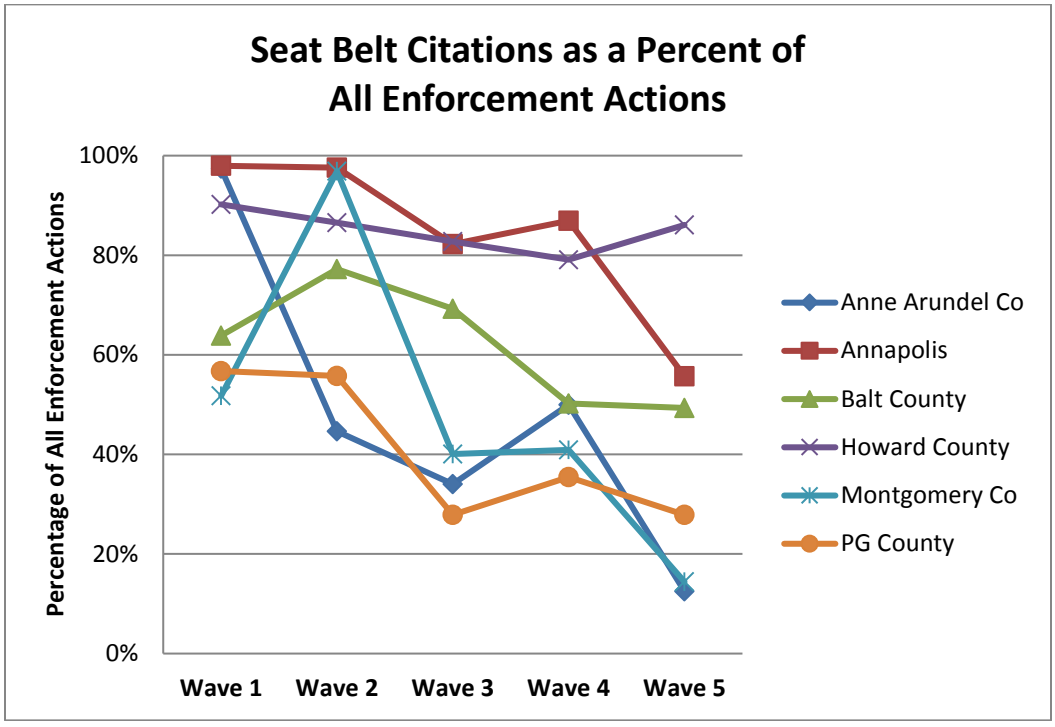
Figure 2 provides the number of seat belt citations issued per 10,000 population for the five activity waves based on 2013 population estimates.

Figure 2: Seat Belt Citations per 10,000 Population



Over the course of the five waves, seat belt citations declined as a proportion of total law enforcement actions. For all agencies combined, the percentage of seat belt citations declined from 66 percent during Wave 1 to 32 percent during Wave 5. Figure 3 illustrates the data for individual law enforcement agencies that participated in all five activity waves.

Figure 3: Seat Belt Citations as a Percentage of All Enforcement Actions



Enforcement Strategies

As illustrated in Figure 4, most of the law enforcement agencies selected a Channelization strategy. Debrief interviews indicated that Channelization was viewed as the most productive strategy. Law enforcement agencies using Saturation/Roving patrols as a primary strategy reported this strategy was most often selected because their agencies were not permitted by management to use either of the other two strategies. Seat belt checkpoints are not legally permitted in Maryland as an enforcement strategy.

Figure 4: Number of Officer Hours by Enforcement Strategy

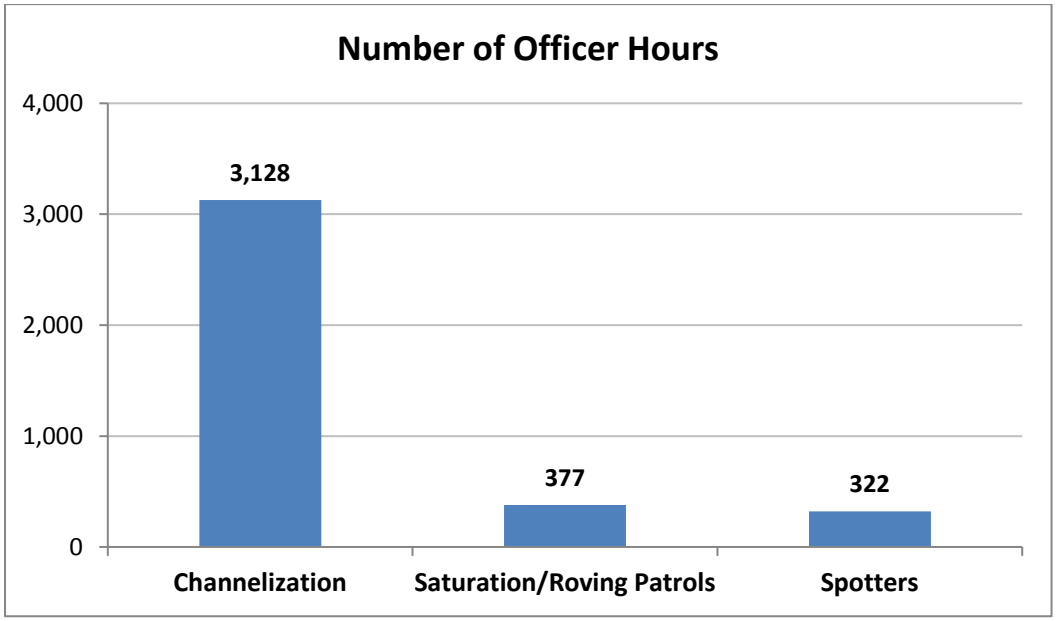
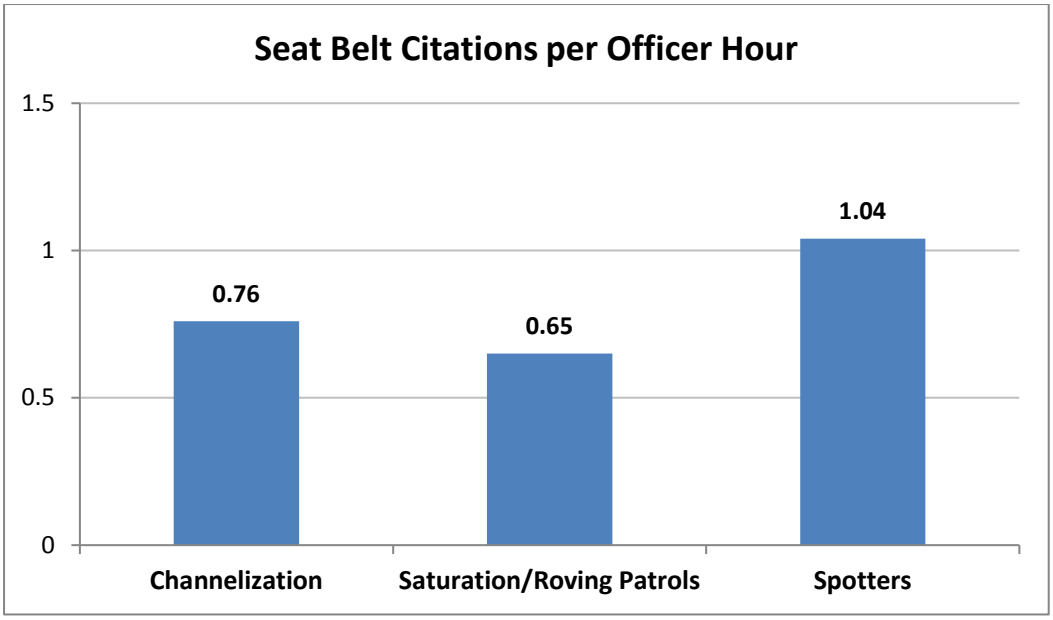


Figure 5 illustrates the average number of seat belt violations issued per officer hour for each of the three strategies used. On a per-officer hour basis, Spotters produced more seat belt citations than the other strategies.

Figure 5: Number of Seat Belt Citations per Officer Hour



2. Paid and Earned Media Activity

Wave 1 (May 2011)

During Wave 1, radio announcements were broadcast in the Baltimore, Frederick, and Washington DC media markets; cable television announcements were broadcast in the Baltimore, Hagerstown, and Washington DC media markets. During Wave 1 of media activity, a total (paid and earned) of 5,466 radio spots and 2,066 cable television spots were broadcast, as summarized in Tables 16 and 17.

Table 16: Wave 1 Radio Spots

Radio Media Market	# of Contracted Spots	# of Earned Media Spots	Contracted Amount	Estimated Value of Earned Media
Baltimore	2,291	491	$ 123,294	$ 169,275
Wash DC	1,921	538	$ 149,424	$ 78,200
Frederick	225	0	$ 8,211	0
Total	4,437	1,029	$ 280,929	$ 247,475

Table 17: Wave 1 Cable Television Spots

Cable TV Media Market	# of Contracted Spots	# of Earned Media Spots	Contracted Amount	Estimated Value of Earned Media
Baltimore	540	77	$ 17,285	$ 2,465
Wash DC	224	277	$ 50,996	$ 9,163
Hagerstown	669	279	$ 2,637	$ 1,099
Total	1,433	633	$ 70,918	$ 12,727

The estimated number of impressions associated with the Wave 1 radio and cable television campaign messages were 7,418,000 and 4,500,000, respectively.

Wave 1 media activity for the Maryland NTSBE program also used Internet announcements. Targeted ads were run on three Internet service providers in the Baltimore and Washington DC media markets at a total cost of $18,060. The Wave 1 internet spots achieved an estimated 1,916,214 impressions. Table 18 provides a summary of the costs and specific digital elements associated with the May 2011 Maryland NTSBE campaign.

Table 18: Wave 1 Internet Ads

Internet Service Provider	Cost	Digital Elements
CBS Baltimore	$5,000	• Two push down ads a week on the homepage of cbsbaltimore.com
Clear Channel Baltimore	$5,750	• 300 :30 Streaming commercials • 500,000 Impressions for run of site banners and pre-roll video (WZFT, WCAO, WPOC, WQSR) • 16 Homepage Takeovers with Floating Ads (2 per week on each station: WZFT, WCAO, WPOC, WQSR)
Clear Channel DC	$7,310	• 5x 24 Homepage takeovers with floating ads to run across any of the 5 DC stations (includes wallpaper) • 625,000 shared impressions for run of site banners on all DC sites-160x600, 234x60, 728x90, 300x250 & :15 Pre Roll (WASH, WITH, WWDC, WBIG) • WASH Rewards custom survey- Listeners on WASH acquire loyalty points for prizes on washfm.com. These pages generate over 750,000 page views a month. Listeners fill out a custom survey about Click it or Ticket.
Total	$18,060	

Wave 2 (May 2012)

During Wave 2, a total of 1,455 radio spots and 3,089 cable television spots were broadcast, as summarized in Tables 19 and 20:

Table 19: Wave 2 Radio Spots

Radio Media Market	# of Contracted Spots	# of Earned Media Spots	Contracted Amount	Estimated Value of Earned Media
Baltimore	438	150	$65,367	$36,450
Wash DC	401	365	$108,855	$59,625
Hagerstown	63	38	$13,275	$3,420
Total	902	553	$187,497	$99,495

Table 20: Wave 2 Cable TV Spots

Cable TV Media Market	# of Contracted Spots	# of Earned Media Spots	Contracted Amount	Estimated Value of Earned Media
Baltimore	417	116	$26,550	$15,660
Wash DC	1,509	192	$39,825	$25,920
Hagerstown	731	124	$15,930	$3,348
Total	2,657	432	$82,305	$44,928

The estimated number of impressions in the Wave 2 radio and cable television campaign messages were 9,568,000 and 7,868,527, respectively.

The media strategy included internet and outdoor messaging:

- Geo-targeted sites in Baltimore/Montgomery County/Prince George's County targeted to men 18 to 34, including Facebook, WIYY.com, Patch.com, and InterClick (local network including sports, gaming, gear, cars and music sites). The internet spots achieved an estimated 1,495,000 impressions. The cost for the Wave 2 internet media buy was $28,763.
- Outdoor advertising displays were placed at seven locations, and "pump toppers" were placed at 95 locations along the I-95 corridor between Baltimore and Washington DC. The cost for the Wave 2 outdoor messaging was $31,574.

Maryland's media support contractor reported the following estimated dollar value of earned media elements:

- Print and online coverage: $4,017
- Broadcast coverage: $22,171
- Print and online articles: $6,500

Wave 3 (November 2012)

During Wave 3, a total of 1,615 radio spots were broadcast in the Baltimore and Washington DC media markets, as summarized in Table 21. Cable television was not used during Wave 3. The estimated number of radio impressions was 20,032,332.

Table 21: Wave 3 Radio Spots

Radio Media Market	# of Contracted Spots	# of Earned Media Spots	Contracted Amount	Estimated Value of Earned Media
Baltimore	611	288	$29,294	$38,880
Wash DC	596	120	$60,623	$32,400
Total	1,207	408	$89,917	$71,280

Wave 4 (May 2013)

During Wave 4 of media activity, a total of 2,689 radio spots and 1,162 cable television spots were broadcast in the Baltimore and Washington DC media markets, as summarized in Tables 22 and 23. The estimated numbers of impressions associated with the Wave 4 radio and cable television campaign messages were 28,892,020 and 2,785,000, respectively.

Table 22: Wave 4 Radio Spots

Radio Media Market	# of Contracted Spots	# of Earned Media Spots	Contracted Amount	Estimated Value of Earned Media
Baltimore	821	446	$38,500	$46,465
Wash DC	1,168	254	$75,000	$52,020
Total	1,989	700	$113,500	$98,485

Table 23: Wave 4 Cable TV Spot

Cable TV Media Market	# of Contracted Spots	# of Earned Media Spots	Contracted Amount	Estimated Value of Earned Media
Baltimore	151	-	$17, 985	$0
Montgomery/ PG County	1,011	-	$33,000	$0
Total	1,162	-	$64,385	$0

Wave 4 media activity for the Maryland NTSBE program also included the use of Internet announcements. Targeted ads were run using three Internet service providers in the Baltimore and Washington DC media markets at a total cost of $25,500. The Wave 4 internet spots achieved an estimated 792,621 impressions. Table 24 provides a summary of the costs and specific digital elements associated with the Wave 4 Maryland NTSBE campaign.

Table 24: Wave 4 Internet Ads

Internet Service Provider	Cost	Digital Elements
BaltimoreSun.com	$4,500	Half page ad – 300 x 600
WashingtonPost.com	$16,000	Floating ad – 336 x 850 Skyscraper – 336 x 850
wbaltv.com	$5,000	½ page expandable

The Wave 4 media strategy included outdoor messaging:

- Gas Pump Toppers placed at 95 gas stations along the I-95 corridor between Baltimore and Washington, DC at a cost of $19,475.
- Digital Billboards messages displayed in the Baltimore market at a cost of $5,500.

The total contracted amount for all media buys during Wave 4 was $228,360.

Maryland's media support contractor reported the following earned media elements:

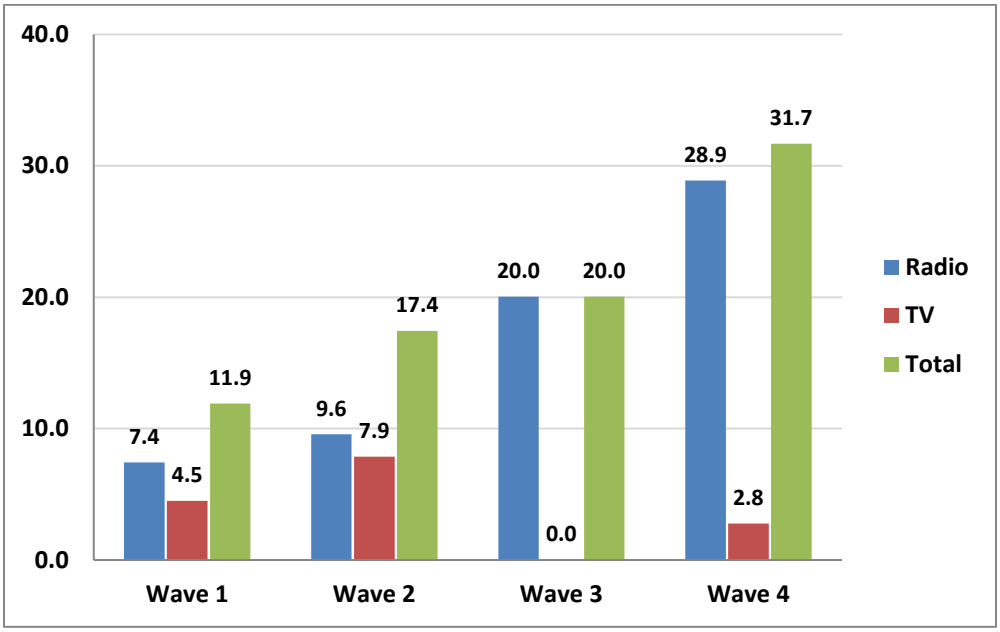
> *On Friday, May 10, 2013, the Montgomery County Police Department conducted high-visibility nighttime seat belt enforcement at the intersection of I-270 and Route 124 in Gaithersburg to kick off the statewide, month-long Click It or Ticket campaign. Rockville and Gaithersburg Police also joined in NINJA (Nighttime Injury Enforcement) efforts that evening at five additional locations along I-270 and I-495.*

Wave 5 (November 2013)

The Wave 5 media activity was limited to earned media because the Maryland Highway Safety Office had no media contractor for Wave 5.

Figure 6 summarizes the estimated number of impressions for Waves 1 – 4.

Figure 6: Estimated Numbers of Impressions from Paid and Earned Media (Millions)



3. Measures of Public Awareness and Attitudes

Table 25 provides the number of completed public awareness assessments for Waves 1 to 4. On the whole, the numbers of pre and post assessments was pretty well balanced across the sites.

Table 25: Number of Completed Assessments Collected During the First Four Waves

	Wave 1		Wave 2		Wave 3		Wave 4	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Baltimore City	41	46	87	99	96	102	96	112
Beltsville	68	72	125	81	109	87	101	117
Gaithersburg	119	35	97	102	119	116	100	101
Glen Burnie	21	17	-	-	-	-	-	-
Largo	74	81	106	104	104	113	98	117
Internet, Program area	57	11	8	7	2	0	0	0
Sub Total, Program area	380	262	423	393	430	418	395	447
Salisbury	44	255	213	216	234	218	199	220
Internet, Comparison area	0	3	-	-	-	-	-	-
Sub Total, Comparison area	44	258	213	216	234	218	199	220
Grand Total	424	520	636	609	664	636	594	667

Tables 26 through 28 provide data and analysis results for three key public assessment questions:

- Question 13: *Have you recently noticed increased enforcement of the seat belt law at night?*
- Question 14: *Have you recently read, seen or heard anything about nighttime seat belt enforcement?*
- Question 9: *Have you increased your seat belt use recently?*

The variables analyzed in each of the following tables (26 through 28) are categorical (as opposed to numeric) in nature. Chi-square tests were conducted to compare the proportions of responses within each program or comparison area, within each wave. The Chi-square distribution is not symmetrical, therefore, one-tailed tests were not considered appropriate for the following comparisons.

In the program area, there were significant increases in self-reported awareness of nighttime seat belt enforcement (Question #13) during Waves 1 and 2. These waves were conducted during May, concurrent with NHTSA's annual Click It or Ticket campaign. There was no change during Wave 3, and a significant decrease during Wave 4. In the comparison area, drivers also reported a significant increase in public awareness of seat belt enforcement during Wave 1, but not during the other three waves.

Table 26: Question 13 -- Have you recently noticed increased enforcement of the seat belt law at night?

Df = 1	Wave 1		Wave 2		Wave 3		Wave 4	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Program Area								
Yes	**16.6%**	**35.9%**	**18.7%**	**38.2%**	13.4%	10.8%	**28.1%**	**12.8%**
No	380	262	390	272	58	45	111	57
p-value	**<0.0001**		**<0.0001**		0.225		**<0.0001**	
Chi-square	31.26		31.16		1.47		30.585	
Comparison Area								
Yes	**2.3%**	**17.1%**	11.7%	12.5%	11.9%	10.6%	31.2%	26.4%
No	44	258	213	216	28	23	62	58
p-value	**0.0109**		0.8087		0.635		0.279	
Chi-square	6.48		0.06		0.226		1.174	

Bold indicates statistically significant at 5% level

In the program area there were significant increases during all four waves in the percentage of drivers who reported recently reading, seeing or hearing anything about nighttime seat belt enforcement (Question #14). In the Comparison area there were similar increases during Waves 2 and 4, but not during Waves 1 and 3.

Table 27 Question 14 -- Have you recently read, seen or heard anything about nighttime seat belt enforcement?

Df = 1	Wave 1		Wave 2		Wave 3		Wave 4	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Program Area								
Yes	**30.8%**	**40.5%**	**15.3%**	**50.3%**	**17.7%**	**28.9%**	**35.2%**	**42.3%**
N	380	262	419	392	76	121	139	189
p-value	**0.0114**		**<0.0001**		**0.0001**		**0.040**	
Chi-square	6.39		113.55		15.10		6.435	
Comparison Area								
Yes	15.9%	23.6%	**6.1%**	**25.5%**	13.2%	11.0%	**20.1%**	**45.0%**
N	44	258	213	216	31	24	40	99
p-value	0.2563		**<0.0001**		0.467		**<0.001**	
Chi-square	1.29		30.14		0.529		29.221	

Bold indicates statistically significant at 5% level

In the program area there were no changes in the percentage of drivers who reported recently increasing their seat belt use (Question #9) during Waves 1, 2, and 3, whereas a significant decrease was observed during Wave 4. In the comparison area there were no significant pre/post changes during any of the four study waves.

Table 28: Question 9 -- Have you increased your seat belt use recently?

Df = 1	Wave 1		Wave 2		Wave 3		Wave 4	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Program Area								
Yes	23.6%	23.6%	15.4%	14.8%	8.8%	8.6%	**19.0%**	**10.1%**
N	377	258	422	392	38	36	75	45
p-value	0.9916		0.8091		0.908		**<0.001**	
Chi-square	0.00		0.06		0.013		13.557	
Comparison Area								
Yes	6.8%	14.6%	7.5%	9.3%	10.6%	7.3%	8.6%	6.4%
N	44	253	213	215	25	16	17	14
p-value	0.1615		0.5046		0.216		0.401	
Chi-square	1.96		0.45		1.53		0.704	

Bold indicates statistically significant at 5% level

Respondents were asked, compared to daytime, how often they wore seat belts at night (more, less, or the same) (Table 29). The data were consolidated to highlight pre/post changes, if any, on respondents indicating they either wore seat belts MORE/THE SAME at night compared to day, or wore seat belts LESS at night compared to day.

During the first two waves in both the program and comparison areas, at least 94.1% of drivers reported wearing seat belts either more or the same at night compared to daytime (Question 8), and this percentage remained high for all for all four waves. In Wave 3 in the comparison area, there was a significant increase in the percentage of drivers who reported wearing their seat belts either more or the same at night compared to daytime, jumping from 96 to 99 percent.

Table 29: Question 8 -- Compared to daytime, how often do you wear your seat belt at night?

	Wave 1				Wave 2				Wave 3				Wave 4			
	Pre		Post		Pre		Post		Pre		Post		Pre		Post	
Program Area																
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
More/Same	360	94.7%	250	95.4%	399	94.1%	375	95.9%	425	98.8%	408	97.6%	380	96.2%	434	97.3%
Less	20	5.3%	12	4.6%	25	5.9%	16	4.1%	5	1.2%	10	2.4%	15	3.8%	12	2.7%
p-value	0.8239				0.2419				.174				.363			
Chi-square	0.39				2.84				1.844				.826			
Comparison Area																
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
More/Same	43	97.7%	251	97.3%	211	99.5%	211	98.1%	225	**95.6%**	216	**99.1%**	192	96.5%	216	98.2
Less	1	2.3%	7	2.7%	1	0.5%	4	1.9%	9	3.8%	2	0.9%	7	3.5%	4	1.8%
p-value	0.6594				0.0588				**.043**				.277			
Chi-square	0.83				5.67				4.077				1.180			

Bold indicates statistically significant at 5% level

4. Observed Seat Belt Use

Figures 7 and 8, and Table 30 provide the percentage of front-seat occupants that were observed belted in the program area before and after the five activity waves. Belt use rates were virtually identical by day or night.

Figure 7: Percent Seat Belt Use Observed in Program Area: Daytime

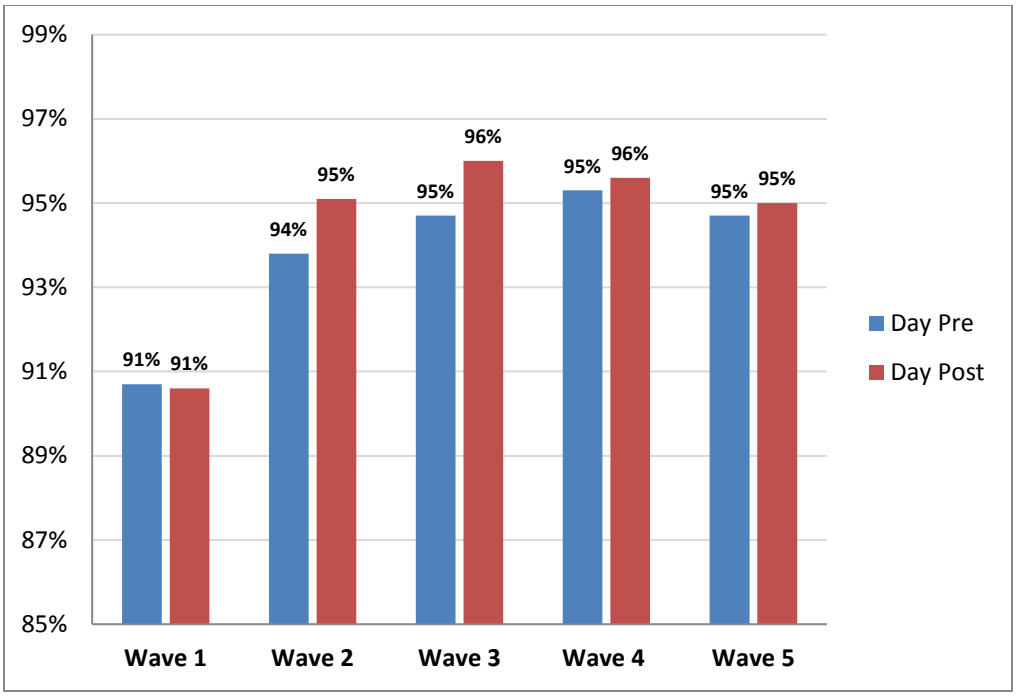


Figure 8: Percent Seat Belt Use Observed in Program Area: Nighttime

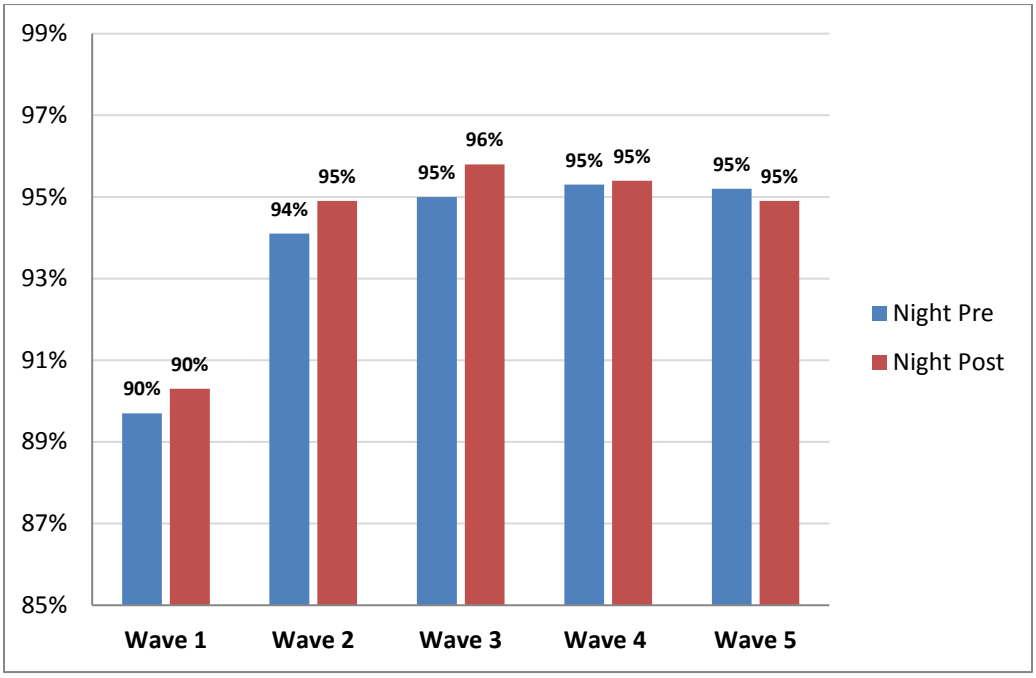


Table 30: Wave 1-5 Seat Belt Observation Results in Program Area

Program Sites								
	Day				Night			
	# Occupants Observed		% Belted		# Occupants Observed		% Belted	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Wave 1	26,583	28,298	90.7%	90.6%	23,086	23,248	89.7%	90.3%
Wave 2	14,750	15,735	93.8%	95.1%	8,675	10,746	94.1%	94.9%
Wave 3	16,819	17,558	94.7%	96.0%	9,749	10,530	95.0%	95.8%
Wave 4	17,635	17,016	95.3%	95.6%	11,912	13,359	95.3%	95.4%
Wave 5	17,255	13,636	94.7%	95.0%	11,049	9,716	95.2%	94.9%

Table 31 provides the percentage of front-seat occupants that were observed belted in the comparison area before and after the five activity waves.

Table 31: Wave 1-5 Seat Belt Observation Results in Comparison Area

Comparison Sites								
	Day				Night			
	# Occupants Observed		% Belted		# Occupants Observed		% Belted	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Wave 1	17,074	18,808	88.5%	86.1%	8,897	12,848	87.3%	83.2%
Wave 2	8,618	-	93.5%	-	4,720	-	93.7%	-
Wave 3	9,219	9,475	94.0%	94.7%	4,485	4,719	94.3%	95.3%
Wave 4	9,510	-	95.3%	-	5,060	-	95.0%	-
Wave 5	7,445	9,371	94.7%	95.6%	3,871	4,858	95.1%	95.5%

Pre- and Post-Intervention within Program Sites

Table 32 provides results of one-tailed tests of pre- and post-intervention levels of observed belt use in the program area. One-tailed tests were used because the intent is to test for evidence that the intervention increased, rather than simply changed, seat belt use in the program sites.

For Waves 2 and 3, there were significant pre-post increases in daytime seat belt use.

For Waves 1, 2, and 3 there were some small but statistically significant pre-post increases in nighttime seat belt use:

Wave 1: Within the program area, seat belt use during the day was unchanged (one-tailed P-value = 0.5639) and at night it increased slightly from 89.67% to 90.30% (one-tailed P-value = 0.0120).

Wave 2: Within the program area during the day, belt use increased from 93.80% to 95.09% (one-tailed P-value < 0.00005); at night belt use increased from 94.14% to 94.85% (one-tailed P-value = 0.0165).

Wave 3: Within the program area during the day, belt use increased from 94.74% to 95.99% (one-tailed P-value < 0.00005); at night belt use increased from 94.97% to 95.82% (one-tailed P-value = 0.0020).

Wave 4: Within the program area during the day, belt use increased from 95.33% to 95.63% (one-tailed P-value 0.0892); at night belt use increased from 95.34% to 95.43% (one-tailed P-value = 0.3625). Neither was significant.

Wave 5: Within the program area during the day, belt use increased from 94.67% to 95.01% (one-tailed P-value 0.0871); at night belt use decreased from 95.17% to 94.86% (one-tailed P-value = 0.8417). Neither was significant.

Table 32: Wave 1-5 Pre- and Post-Intervention within Program Sites

		% Belted Pre	% Belted Post	Increase	P-value
Wave 1	Day	90.66%	90.62%	-0.04%	0.5639
	Night	89.67%	90.30%	**0.63%**	0.0120
Wave 2	Day	93.80%	95.09%	**1.29%**	< 0.00005
	Night	94.14%	94.85%	**0.71%**	0.0165
Wave 3	Day	94.74%	95.99%	**1.25%**	< 0.00005
	Night	94.97%	95.82%	**0.85%**	0.0020
Wave 4	Day	95.33%	95.63%	0.30%	0.0892
	Night	95.34%	95.43%	0.09%	0.3625
Wave 5	Day	94.67%	95.01%	0.34%	0.0871
	Night	95.17%	94.86%	-0.31%	0.8417

Bold indicates statistically significant at 5% level

Increases in Belt Use for Program Sites Relative to Increases for Comparison Sites

To evaluate the effect of the intervention, it is important to compare the change in the program area with the change in the comparison area. This could only be done for Waves 1, 3, and 5 when both pre and post data were collected in the comparison area. One-tailed tests were performed because the intent is to test for evidence that the intervention increased, rather than simply changed, seat belt use in the program sites more than might be associated with a background trend or any other common cause. Table 33 provides results of statistical tests for observed increases in program sites relative to increases in comparison sites.

Table 33: Increases in Belt Use at Program Sites Relative to Increases at Comparison Sites

		(A) Change in Program Area	(B) Change in Comparison Area	Difference (A-B)	P-value
Wave 1	Day	−0.04%	−2.38%	**2.34%**	< 0.00005
	Night	0.63%	−4.12%	**4.75%**	< 0.00005
Wave 3	Day	1.25%	0.70%	0.55%	0.0878
	Night	0.85%	1.05%	−0.20%	0.6420
Wave 5	Day	0.34%	0.87%	−0.52%	0.8946
	Night	−0.30%	0.45%	−0.75%	0.9149

Bold indicates statistically significant at 5% level

Wave 1 (May 2011)

- In the daytime, the difference between the change in the Program area (−0.04%) and the change in the comparison area (−2.38%) equals 2.34%, which is statistically significant (P-value < 0.00005).

- At night, the difference between the change in the program area (0.63%) and the change in the comparison area (−4.12%) equals 4.75%, which is statistically significant (P-value < 0.00005).

Wave 3 (November 2012)

- In the daytime, the increase in seat belt use in the program area was 1.25% while that in the comparison area was 0.70%. The increase of 0.55% is not statistically significant (P-value = 0.0878 in a one-tailed test).
- At night, the increase in seat belt use in the program area was 0.85% while that in the comparison area was 1.05%. The increase of −0.20% (a negative increase is a decrease) is not statistically significant (P-value = 0.6420 in a one-tailed test).

Wave 5 (November 2013)

- In the daytime, the increase in seat belt use in the program area was 0.34% while that in the comparison area was 0.87%. The increase of −0.52% (a negative increase is a decrease) is not statistically significant (P-value = 0.8946 in a one-tailed test).
- At night, the increase in seat belt use in the program area was -.30% while that in the comparison area was 0.45%. The increase of −0.75% (a negative increase is a decrease) is not statistically significant (P-value = 0.9149 in a one-tailed test).

It is unclear why seat belt use rates declined in the comparison area during the Wave 1 post-intervention period. The decline was especially large at night. It is possible that seasonal population changes which may include numbers of motorists from different regions may have influenced these findings.

Appendix C provides the percentage of front seat occupants that were belted in the program area by jurisdiction during the five sets of pre-post study periods.

Belt Use During Early Evening Versus Later in the Evening

To examine potential differences in belt use rates for observations conducted later in the evening versus those recorded earlier in the evening, observational data from the program area were combined for all five waves (pre and post) and divided into two time periods that ranged from 8 p.m. to 10:30 p.m., and from 10:30 p.m. to 12:40 a.m. Due to reduced traffic volumes later at night, fewer observations were made during the 10:30 p.m. – 12:40 a.m. time period. Belt use was high regardless of time with very little difference between time periods.

Table 34: Wave 1-5 Seat Belt Observations in Program Area by Observation Period Start Time

Observation Period	# Belted	# Unbelted	% Belted
8 p.m. – 10:30 p.m.	85,283	6,062	93.4%
10:30 p.m. – 12:40 a.m.	25,479	2,016	92.7%

5. Characteristics of Unbelted Drivers

Driver Records

Table 35 compares the driver records for drivers who received seat belt citations during the Wave 1 to 5 activity periods to a comparison group comprised of a random sample of Maryland drivers who did not receive seat belt citations during the activity waves.

Drivers who were issued a seat belt citation either during the day or at night were more likely to have one or more prior citations, and one or more crashes, on their driver records than were drivers in the comparison group. Some of the differences were substantial. All differences between unbelted drivers and the comparison group were significant at the 0.05 level based on one-tailed Z tests.

Drivers cited for seat belt violations at night had poorer driving records than those cited during the day. The differences were significant at the 0.05 level for speeding citations, negligent/reckless citations, driver license related offenses, and prior crashes. These differences, however, were minor compared with the differences between drivers who received seat belt citations (day or night) and the comparison group of drivers who did not receive seat belt citations during the activity waves.

Table 35: Percentage of Drivers with One or More Previous Citation or Crash for Most Recent Four Calendar Years, Waves 1 to 5

Seat Belt Citation Status	N	Seat Belt Citations	Speeding Citations	Alcohol Citations	Negligent Reckless	License Related	Crashes
Daytime Unbelted[1]	44,127	32.0%	33.0%	4.1%	3.8%	9.2%	21.0%
Nighttime Unbelted[2]	13,332	30.3%	36.0%	4.3%	4.3%	11.1%	24.4%
Day & Night Unbelted	57,459	31.6%	33.7%	4.2%	3.9%	9.7%	21.8%
Comparison Group (no seat belt citations during waves 1-5)	191,702	6.3%	12.9%	1.3%	1.1%	2.2%	11.2%

[1] 6 a.m. – 6 p.m. [2] 6 p.m. – 6 a.m.

Table 36 provides a breakdown of the nighttime hours for seat belt citation issuance into three sub-categories.

- "Early Evening Unbelted"
- "Night Unbelted"
- "Overnight Unbelted"

All differences between unbelted drivers (regardless of time of night) and the comparison group were significant at the 0.05 level based on one-tailed Z tests.

Based on the disaggregation of nighttime hours there were some indications that drivers cited later in the evening were more likely than those cited earlier in the evening to have prior alcohol citations and driver license-related offenses. These differences were significant at the 0.05 level.

Table 36: Percentage of Drivers with One or More Previous Citation or Crash for Most Recent Four Calendar Years, Waves 1 to 5

Seat Belt Citation Status	N	Seat Belt Citations	Speeding Citations	Alcohol Citations	Negligent Reckless	License Related	Crashes
Early Evening Unbelted[1]	7,086	31.7%	33.0%	3.9%	4.2%	10.4%	24.0%
Nighttime Unbelted[2]	5,254	28.7%	36.0%	4.8%	4.2%	11.5%	24.6%
Overnight Unbelted[3]	992	28.3%	33.7%	4.9%	5.5%	14.3%	25.7%
Comparison Group (No Seat Belt Citations)	191,702	6.3%	12.9%	1.3%	1.1%	2.2%	11.2%

[1] 6:00 p.m. – 8:59 p.m. [2] 9:00 p.m. – 12:59 a.m. [3] 1:00 a.m. – 5:59 a.m.

6. Crash Data

Reducing unbelted occupant injury and fatal crashes was the ultimate objective of the nighttime seat belt enforcement activity. Table 37 provides a summary of the injury and fatality crash data for the program area. The "pre" period for the preliminary crash analysis was defined as 2008-2010 (3 years), prior to the start of project activity in 2011; the "post" period was defined as January 2012 – December 2013 (2 years). For injury crashes, there were significant declines (at the 95% level) in the proportion of occupants who were unbelted, both at night and during the day. For fatal crashes, there were nonsignificant declines in the proportion of occupants who were unbelted at night, as well as the proportion of occupants that were unbelted during the day and night combined (but not during daytime only). On a national level for the same pre-post time periods there were somewhat similar reductions in the proportion of unbelted occupants in fatal crashes.

Analysis of the same categories of crash data and time periods for the comparison area showed no significant declines in the proportions of occupants involved in both nighttime fatal and nighttime injury crashes that were unbelted (Table 38). The sample sizes were considerably smaller in the comparison area than in the program area.

Table 37: Analysis of Fatal and Injury Crashes in Program Area

		Unbelted Occupants[1]	Belted Occupants	Total	Proportion Unbelted	p value
Day[2]: Injury crashes	Pre	2077	20,316	22,393	9.3%	**0.000**
	Post	918	10,452	11,370	8.1%	
Day: Fatal crashes	Pre	89	159	248	35.9%	0.655
	Post	46	75	121	38.0%	
Night[3]: Injury crashes	Pre	1,832	10,964	12,796	14.3%	**0.001**
	Post	836	5,761	6,597	12.7%	
Night: Fatal crashes	Pre	166	133	299	55.5%	0.075
	Post	73	78	151	48.3%	
Day & Night Injury crashes	Pre	3,909	31,280	35,189	11.1%	**0.000**
	Post	1,754	16,213	17,967	9.8%	
Day & Night Fatal crashes	Pre	255	292	547	46.6%	0.219
	Post	119	153	272	43.8%	

[1] Defined as those coded with safety equipment =01 (none) or 31 (airbag only), and with motorcycles/mopeds excluded from data set

[2] 6 a.m. – 6 p.m. [3] 6 p.m. – 6 a.m.

Bold indicates statistically significant at 5% level

Table 38: Analysis of Fatal and Injury Crashes in Comparison Area

		Unbelted Occupants[1]	Belted Occupants	Total	Proportion Unbelted	p value
Day[2]: Injury crashes	Pre	140	1,506	1,646	8.5%	**0.024**
	Post	59	872	931	6.3%	
Day: Fatal crashes	Pre	13	22	35	37.1%	0.248
	Post	5	13	18	27.8%	
Night[3]: Injury crashes	Pre	147	731	878	16.7%	0.620
	Post	73	346	419	17.4%	
Night: Fatal crashes	Pre	17	14	31	54.8%	0.557
	Post	8	6	14	57.1%	
Day & Night Injury crashes	Pre	287	2,237	2,524	11.4%	0.064
	Post	132	1,218	1,350	9.8%	
Day & Night Fatal crashes	Pre	30	36	66	45.5%	0.326
	Post	13	19	32	40.6%	

[1] Defined as those coded with safety equipment =01 (none) or 31 (air bag only), and with motorcycles/mopeds excluded from data set

[2] 6 a.m. – 6 p.m. [3] 6 p.m. – 6 a.m.

Bold indicates statistically significant at 5% level

CONCLUSIONS

Maryland's nighttime seat belt enforcement program was associated with substantial law enforcement activity and law enforcement actions. For Waves 1 to 5 combined, approximately 6,800 police officer hours were logged and 5,683 seat belt citations were issued. For all activity waves combined, seat belt citations accounted for about half of the total number of law enforcement actions. Channelization was the predominant enforcement strategy used.

The law enforcement activity was accompanied by robust public outreach efforts during several activity waves. The campaign allocated a total of just over $1 million in contracted media buys for Waves 1 to 4 combined, yielding a total of more than 80 million impressions. Additional publicity was generated from earned media.

The assessment of public awareness and attitudes conducted by Maryland indicated significant pre-post increases in the proportions of drivers who said they had recently read, seen, or heard about nighttime seat belt enforcement, as well as in the percentage of respondents who said they had recently noticed increased enforcement of seat belts at night. These results indicate the HVE campaign was effective in raising public awareness of the targeted nighttime seat belt enforcement. There was, however, no indication that increased public awareness of the nighttime seat belt enforcement activity led to increases in self-reported use of seat belts, with the exception of Wave 4.

More than 95 percentage of drivers said there was no difference in their seat belt use at night compared to the daytime. This finding is consistent with the study's field observations of seat belt use, which showed nearly identical levels of seat belt use during the day and at night.

The analysis of driver records found clear evidence that drivers cited for nighttime seat belt violations had poorer driving records than drivers who were not cited for seat belt violations. Some of the differences were substantial. For example, drivers cited for seat belt infractions were nearly eight times more likely than drivers not cited for seat belt infractions to have prior seat belt violations on their driver records. Drivers cited at night had poorer driving records than those cited during the day, including more prior speeding citations, negligent/reckless citations, driver license related offenses, and crashes.

In the program area there were significant declines in the proportion of occupants involved in injury crashes who were unbelted, both at night and during the day. For fatal crashes, there were nonsignificant declines in the proportion of occupants who were unbelted at night, and who were unbelted during the day and night combined. In the comparison area, similar declines were not found.

DISCUSSION

Seat belts are highly effective in reducing injuries, including serious and fatal injuries, to vehicle occupants involved in motor vehicle crashes (e.g., Evans 1986; Robertson, 1976; NCSA, 2014). Increased compliance with seat belt use laws is desirable to minimize the risk of crash injuries and deaths, and to reduce the severity of occupant injuries. The present study demonstrates that high visibility seat belt enforcement can help increase seat belt use rates, and reduce the risk of injury crashes involving unbelted occupants. Larger increases in belt use, however, may be progressively more difficult to attain due to the already high belt use rates (approximately 95%) in the program communities. Highly focused police traffic enforcement accompanied by a targeted public outreach campaign can increase the number of drivers who report reading, seeing, or hearing about nighttime seat belt enforcement. Such increases in self-reported exposure are likely to encourage seat belt use among drivers and passengers who do not consistently use seat belts at night.

The finding that drivers cited for seat belt violations had poorer driving records than those not cited may reinforce the need and justification to focus traffic law enforcement resources on the high-risk group of unbelted drivers. Similar results have been found for red light runners (Retting & Williams\, 1996) and speeders (Williams, Kyrychenko, & Retting, 2006). The lack of a pronounced difference between the driver records of those cited for seat belt violations during the day versus night may simply be indicative of core characteristics of those who do not comply with traffic laws that are obeyed by the overwhelming majority of the general driving population, especially in States with high belt use rates.

There were relatively small (about 1 percentage point) but statistically significant pre-post increases in observed nighttime seat belt use in the program area for three of the five activity waves. This is no easy accomplishment in a State with relatively high baseline belt use rates. Observed seat belt use was virtually identical day and night. Seat belt use rates were similar during early evening and late night hours.

The finding of nearly identical levels of seat belt use during the day and at night is similar to results found in a previous nighttime seat belt study conducted in Washington State (Thomas, Blomberg, & Van Dyk, 2010).

The finding of significant declines in the proportion of unbelted occupants involved in injury crashes suggests that positive safety outcomes were associated with the HVE approach undertaken by NHTSA and Maryland. Because seat belt use can reduce the severity of injuries sustained by occupants in crashes (an outcome measure not assessed in

this study), it is possible that the severity of injuries declined as a result of the decline in the proportion of unbelted occupants.

The decline in the proportion of total law enforcement actions that were issued for seat belt citations (66 percent during Wave 1 versus 32 percent for Wave 5) raises concerns that over time, law enforcement agencies participating in long-term HVE campaigns might lose some of their focus on the targeted traffic violations.

Wave 3 was the only study period for which the pre-post intervention differences in awareness of nighttime seat belt enforcement were not statistically significant in the program area. And Wave 3 had a substantially lower expenditure of paid media funds than the other study waves, providing some suggestion there could be a relationship between the level of media activity and public awareness.

LIMITATIONS

The nighttime observations in this study, which were typically conducted between 8 p.m. and midnight, found the rates of seat belt use were virtually identical day and night. It is possible that observations made well after Midnight would reveal lower levels of nighttime seat belt use.

The public awareness assessment relied on a convenience sampling method and, as such, will lead to an unknowable level of bias. While one can argue that the bias will largely cancel when pre- and post-Intervention differences are computed, this argument relies on the untestable assumption that the direction and size of each systematic error will be the same in both surveys.

There was some evidence that increased awareness of nighttime seat belt enforcement carried over to the study's designated comparison area. Statewide participation in NHTSA's *Click It or Ticket* campaign could be a factor. While this leakage is difficult to prevent in a small state like Maryland, it introduces some complications for the data analysis and attests to the ability of attention-grabbing media messages and highly visible police enforcement to transcend geographic boundaries. The leakage may also suggest limits in the ability to confine media activity to designated media markets. Internet radio, for example, may override the ability to confine radio messages to a single media market. It is important to recognize that any unintended influence of media coverage in the program sites on occupants in the comparison sites would diminish the apparent effect of the intervention. This could possibly lead to a Type II error in which investigators conclude that the evidence does not support the claim that the intervention increases seat belt use when, in fact, it does.

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Appendix A: EXAMPLES OF MEDIA ADS AND PRESS RELEASES

Example of 15 Second Radio Ad:

Cops are cracking down on seat belt enforcement, especially at night. Take two seconds to buckle up and make sure everyone in your car is buckled too. It's not about the police writing seat belt tickets - it's about saving lives. *Click It or Ticket* - Every Ride, Every Time - Day ***And*** Night. **Choose Safety For Life Dot.Com**

FOR IMMEDIATE RELEASE
May 24, 2012

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Greater Risk = Greater Reason to Buckle Up in Baltimore

Maryland Police Crack Down On Seat Belt Safety At Night

Baltimore, M.D. – An alarming number of Maryland drivers are failing to buckle up at night as compared to daytime, according to a new analysis of traffic fatalities. Fifty-two percent of Maryland's nighttime passenger vehicle fatality victims were not wearing seat belts during the past five years of data, while 34 percent of daytime victims were unbelted.

Correcting this disparity is the focus of this month's *Click It or Ticket* campaign. The Maryland State Police, Baltimore City, Baltimore County Police and other Maryland law enforcement agencies are buckling down on nighttime seat belt use. The nighttime focus is a pilot program sponsored by the National Highway Traffic Safety Administration (NHTSA). Police are conducting high visibility enforcement after dark and anyone not wearing a seat belt should expect to pay a fine.

"Nearly 40 percent of Maryland's passenger vehicle occupant fatalities occur during nighttime hours, half of which weren't wearing their seat belts," said Baltimore County Police Chief James Johnson. "With greater risk at night, there's greater reason to wear your seat belt. Unfortunately, there are still too many people who don't buckle up."

Last year, Maryland's overall seat belt compliance rate was 94 percent, beating the national average of 84 percent. Based on the statewide population of 5,828,000, that remaining six percent equals nearly 350,000 people who are unbelted, risking their lives each time they hit the road.

"Seat belts save lives, plain and simple," remarked MVA Administrator John Kuo. "When used properly, seat belts reduce the risk of fatal injury to front-seat passenger car occupants by 45 percent and the risk of critical injury by 50 percent. Wearing your seat belt costs nothing, but not wearing it could cost you everything. The reward outweighs the risk every time."

Last year, Maryland police issued 76,594 seat belt citations – that's the equivalent of one in four people who don't wear their seat belt getting caught. Maryland is a primary-seat-belt-law-enforcing state, meaning officers can stop and ticket drivers and passengers just for not using their seat belts. Police are also hoping that nighttime seat belt enforcement will lead to additional criminal enforcement, as it is not uncommon to detect other law-breaking during those hours when criminal activity tends to increase.

Maryland's *Click It or Ticket* high-visibility enforcement efforts began at the beginning of May and will continue through the first weekend in June. The NHTSA pilot program, however, will continue through May 2013.

About *Click It or Ticket*

Every year during the Memorial Day holiday period, law enforcement agencies join forces day and night, from coast-to-coast, in an enforcement blitz encouraging citizens to buckle up. Sponsored by NHTSA, *Click It or Ticket* is the most successful seat belt enforcement campaign in history, helping to raise national seat belt use. The mobilization is supported by national and local paid advertising and earned media campaigns aimed at raising awareness throughout the nation. To learn more, please visit Maryland State Highway Administration's Occupant Protection Facts

Appendix B: MARYLAND'S PUBLIC AWARENESS ASSESSMENT INSTRUMENT

The Maryland Motor Vehicle Administration is committed to improving driver safety and regularly supports research with this goal. The Maryland Highway Safety Office is studying the use of seatbelts at nighttime and is asking MVA customers to assist in this survey for the study.

Your answers to the following questions are voluntary and anonymous. Thank you for your time and participation.

1. Your sex: ☐ Male ☐ Female **2. Your Zip Code:** _____

3. Your age: ☐ Under 18 ☐ 18-20 ☐ 21-25 ☐ 26-34 ☐ 35-49 ☐ 50-59 ☐ 60 Plus

4. When you pass a driver stopped by the police in the daytime, what do you think the stop was for? (Check 1 only)

☐ Speeding ☐ Seat Belt Violation ☐ Drunk Driving ☐ Reckless Driving ☐ Registration Violation ☐ Other_____

5. When you pass a driver stopped by the police at night, what do you think the stop was for? (Check 1 only)

☐ Speeding ☐ Seat Belt Violation ☐ Drunk Driving ☐ Reckless Driving ☐ Registration Violation ☐ Other_____

6. What type of vehicle do you drive most often? (Check 1 only)

☐ Passenger car ☐ Pick-up truck ☐ Semi truck ☐ SUV ☐ Mini-van ☐ Full-van ☐ Other

7. About how many miles did you drive last year... (Please give your best estimate)

During the day? _____ miles **At night? _____ miles**

8. Compared to daytime, how often do you wear your seat belt at night? ☐ More ☐ Less ☐ The same

If more or less, Why? _____

9. Have you increased your seat belt use recently? ☐ Yes ☐ No **If yes, Why?** _____

10. How often do you use seat belts when you drive or ride in a car, van, SUV or pick-up...

During the day? ☐ Always ☐ Nearly always ☐ Sometimes ☐ Seldom ☐ Never

At night? ☐ Always ☐ Nearly always ☐ Sometimes ☐ Seldom ☐ Never

11. How strictly do you think the police enforce the Maryland seat belt law...

During the day? ☐ Very strictly ☐ Somewhat strictly ☐ Not very strictly ☐ Rarely ☐ Not at all

At night? ☐ Very strictly ☐ Somewhat strictly ☐ Not very strictly ☐ Rarely ☐ Not at all

12. Have you ever been stopped by the police for not wearing a seat belt... (Check all that apply)

During the day? ☐ Yes, I got a ticket ☐ Yes, I got a warning ☐ No

At night? ☐ Yes, I got a ticket ☐ Yes, I got a warning ☐ No

13. Have you recently noticed increased enforcement of the seat belt law at night?

☐ Yes, I got a ticket ☐ Yes, I got a warning ☐ Yes, I noticed but wasn't stopped ☐ No

14. Have you recently read, seen or heard anything about nighttime seat belt enforcement? ☐ Yes ☐ No

If yes, where did you see or hear about it? (Check all that apply)

☐ Newspaper ☐ Radio ☐ TV ☐ Road sign ☐ Brochure ☐ Police ☐ Billboard ☐ Poster ☐ Internet ☐ Other

If yes, what did it say? _____

15. How often do you think you would get a ticket in Maryland if you did not wear your seat belt while driving...

During the day? ☐ Always ☐ Nearly always ☐ Sometimes ☐Seldom ☐ Never

At night? ☐ Always ☐ Nearly always ☐ Sometimes ☐ Seldom ☐ Never

16. If you were to drink too much to drive safely, what percentage of the time would you be stopped by the police for drunk driving...

During the day? ☐ 100% ☐ 75% ☐ 50% ☐ 25% ☐ 10% ☐ Less than 10% ☐ 0%

At night? ☐ 100% ☐ 75% ☐ 50% ☐ 25% ☐ 10% ☐ Less than 10% ☐ 0%

17. Do you work for any of the following Maryland State government agencies? (Check all that apply)

☐ Maryland Department of General Services (DGS)
☐ Maryland Department of Aging (MDOA)
☐ Maryland State Department of Education (MSDE)
☐ Maryland Department of the Environment (MDE)
☐ Maryland Department of Transportation (MDOT)
☐ Maryland State Lottery Agency (MSLA)
☐ Maryland State Police (DMSP)
☐ Other_____
☐ None

Appendix C: OBSERVED SEAT BELT USE IN PROGRAM AREA BY JURISDICTION

Observed Seat Belt Use by Jurisdiction

		Pre		Post	
		Day	Night	Day	Night
Anne Arundel County	Wave 1	93.5%	90.4%	91.7%	91.3%
	Wave 2	94.4%	95.0%	94.7%	94.5%
	Wave 3	94.1%	93.7%	95.0%	95.5%
	Wave 4	95.1%	94.8%	95.0%	95.4%
	Wave 5	95.0%	95.5%	94.4%	94.2%
Baltimore City	Wave 1	86.3%	86.3%	85.8%	84.3%
	Wave 2	93.0%	93.8%	93.9%	92.4%
	Wave 3	93.0%	94.6%	94.9%	95.0%
	Wave 4	94.0%	93.2%	94.8%	93.9%
	Wave 5	93.2%	93.3%	93.8%	94.3%
Baltimore County	Wave 1	89.5%	86.3%	89.4%	88.6%
	Wave 2	93.8%	94.4%	94.7%	94.4%
	Wave 3	93.9%	95.1%	96.2%	96.3%
	Wave 4	95.1%	95.2%	95.5%	94.5%
	Wave 5	89.5%	86.3%	89.4%	88.6%
Howard County	Wave 1	93.5%	90.5%	91.6%	91.4%
	Wave 2	94.2%	93.7%	96.7%	96.8%
	Wave 3	96.8%	97.7%	97.4%	97.4%
	Wave 4	96.7%	97.0%	96.2%	96.5%
	Wave 5	95.4%	96.2%	96.5%	96.0%
Montgomery County	Wave 1	91.9%	90.6%	92.1%	91.4%
	Wave 2	93.2%	94.3%	95.3%	96.1%
	Wave 3	95.2%	94.9%	96.5%	95.8%
	Wave 4	96.0%	95.9%	96.3%	96.4%
	Wave 5	95.3%	96.6%	95.5%	95.5%
Prince George's County	Wave 1	88.3%	90.8%	91.1%	91.1%
	Wave 2	94.6%	94.0%	94.6%	94.5%
	Wave 3	95.2%	93.7%	95.4%	94.3%
	Wave 4	94.7%	95.2%	95.4%	95.7%
	Wave 5	94.0%	94.5%	94.8%	94.0%

DOT HS 812 474
April 2018

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

13289-042018-v3a