

Evaluation of a High-Visibility Seat Belt Enforcement Program on the Blue Ridge Parkway



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7. Authors K. R. Elliott, M. G. Solomon, D. F. Preusser				8. Performing Organization Report No.	
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16. Abstract The National Park Service (NPS) conducted a high-visibility enforcement (HVE) seat belt program on a 24-mile section of the Blue Ridge Parkway (BRP) known as the Roanoke Corridor, that carries both park and commuter traffic. Seat belts are required by all motor vehicle occupants on Federal property, including national parks, such as the BRP. Many of the Roanoke Corridor commuters are in a unique situation as they travel through secondary and primary seat belt enforcement jurisdictions on a daily basis, creating an opportunity to reach drivers while in a primary enforcement jurisdiction. For this HVE program, the NPS used low-cost media and stepped-up seat belt enforcement to encourage seat belt use on the BRP. Two program periods were evaluated (i.e., May 17 to 28 (coinciding with national <i>Click It or Ticket</i>) and October 18 to 29, 2010). The awareness survey conducted by the Virginia Department of Motor Vehicles in Roanoke indicated that Roanoke respondents were aware of the program enforcement activity, but did not show a significant increase in awareness of the seat belt laws in Virginia and on the BRP. While seat belt observations showed a significant increase in belt use on the BRP, no change was found in Roanoke. Possibly contributing to this result, only a small proportion of Roanoke respondents reported frequent BRP use, possibly limiting exposure to the program activity. Observed seat belt use on the BRP significantly increased from 82.5 to 91.8 and 82.5 to 90.1 percent for the May and October efforts, respectively. Observed belt use increased for drivers, passengers, males, females, and for all vehicle types from baseline to the end of the second wave. Generally, the groups with the lowest belt use before the program gained the most over the course of the two waves. There were no changes observed in the comparison area, Charlottesville, either in awareness or in observed seat belt use. Data limitations include minimal seat belt observation data, infrequent BRP use among Roanoke respondents, and low baselines. Nevertheless, the data show the NPS implemented a successful HVE program, marked by strong partnerships among participating enforcement and significant pre-to-post increases in observed seat belt use on the BRP.					
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EXECUTIVE SUMMARY

Throughout national parks across the United States there were 136 passenger vehicle fatalities from 2006 to 2010, among which only 50.7 percent were wearing seat belts when fatally injured. In one effort to reduce unrestrained fatalities in the Nation's parks, the National Highway Traffic Safety Administration (NHTSA) and the National Park Service (NPS) implemented a high-visibility enforcement (HVE) seat belt program on the Blue Ridge Parkway (BRP) in 2010. The program specifically focused on the Roanoke Corridor, a 24-mile stretch of the BRP east of Roanoke, Virginia, frequently traveled by commuters. As Federal land, the BRP is under primary seat belt enforcement jurisdiction. The program used seat belt enforcement, roadway signage, and earned media to raise awareness and observed seat belt use. While the program was conducted over three waves of activity, a formal evaluation was only conducted for two of the waves; therefore, this report only includes information specific to the two waves that were evaluated.

The formal evaluation examined the process and immediate outcome of the BRP HVE program, including documenting program media and enforcement activity and measuring changes in public awareness and observed seat belt use. Through strong partnerships, park rangers conducted stepped-up traffic enforcement activities on the Roanoke Corridor on weekdays when local commuters were most likely to be driving on the BRP. For the first program wave, 630 hours of saturation patrols resulted in 4 belt warnings and 104 citations. Enforcement hours increased to 1,016 for the second wave of program activity and resulted in 21 belt warnings and 56 citations.

The NPS placed low-cost signs at entrance ramps and on the roadsides of the Roanoke Corridor to increase driver awareness of the enforcement activity. The signs communicated to drivers that they were in a seat belt enforcement zone and that seat belts must be worn or they would get a ticket. Enforcement also placed magnetic strips on their vehicles to reinforce the message to motorists. The Virginia Department of Motor Vehicles (DMV) distributed paper-and-pencil driver awareness surveys in Roanoke (proxy for program area) and Charlottesville (comparison area) to measure changes in awareness of seat belt enforcement and seat belt laws, among other items. Surveys were administered one week prior and one week following the second wave of program activity. There was a significant increase in awareness of seat belt enforcement among Roanoke respondents; this coupled with no apparent change in awareness among respondents in the comparison area, suggest the change found in Roanoke was related to the program activity.

Only about half of the respondents were correct about the seat belt law on the BRP and in Roanoke, and this did not change significantly following the program activity, suggesting the program may not have spread awareness of the seat belt laws among Roanoke respondents. However, it is questionable if this represents awareness among frequent BRP drivers, as the majority of the Roanoke respondents reported infrequent use of the BRP.

Observed seat belt use on the Roanoke Corridor segment of the BRP increased significantly after both program waves, by 9.3 percentage points after the first wave and 7.6 after the second. Some of the largest increases in belt use were found for passengers, males, and pickup truck occupants, but these groups also had the lowest baseline levels before the program, providing a greater opportunity for improvement. There were no significant changes in observed seat belt use in the comparison area from before to after the second wave, suggesting the change observed on the BRP resulted from the program

activity. While there were significant increases observed on the BRP, seat belt use dropped back down to baseline in the months between the two waves (May to October, 2010). It is typical to see a ratcheting effect in the observation data, where the positive influence of the program is prolonged and belt use remains at a level higher than it was before the program. However, it is difficult to draw conclusions about the sustained effects of a program when there are only two waves of observation data. Even with this limitation, the significant pre-to-post program increases in observed seat belt use is a positive outcome.

In summary, while the evaluation limits our ability to draw strong conclusions, it appears the low-cost media and strong enforcement partnerships of the NPS program contributed to increases in awareness and observed seat belt use.

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I. BACKGROUND

There were 136 passenger vehicle fatalities in national parks from 2006 to 2010. Among these, only 50.7 percent were wearing seat belts when fatally injured.¹ In one effort to reduce the number of unrestrained motor vehicle fatalities in national parks, the National Highway Traffic Safety Administration (NHTSA) and the National Park Service (NPS) conducted a high-visibility enforcement (HVE) seat belt program to increase seat belt use on the Roanoke Corridor, a 24-mile stretch of the Blue Ridge Parkway (BRP) that sees frequent commuter traffic. Drivers who use the Roanoke Corridor to commute to and from Virginia are in a unique situation because they travel through primary and secondary seat belt enforcement areas on a regular basis.

The BRP is the longest of 4 national parkways owned and maintained by the NPS and carries 17 million visitors each year. The BRP is 469 miles long and has an average elevation of 3,000 feet with occasional dips to cross water gaps. The Parkway has some structural dangers, such as hazardous objects near the roadside, severe curves at high elevations, and low shoulders, creating more potential for danger overall, magnified when driving at higher speeds or without a seat belt. While the Parkway was intended to be slow-paced, allowing visitors to enjoy the scenery, motorists sometimes drive at speeds too fast for road conditions. Park rangers want visitors to enjoy the national park and return home safely, so there are countermeasures in place to increase safety, such as lower speed limits and a primary seat belt enforcement law.

Under 36 CFR 4.15, seat belts are required by all occupants in a motor vehicle in motion on Federal property, including the BRP. Federal law enforcement officers (e.g., park rangers) have primary seat belt enforcement authority on the BRP and can stop a vehicle for an observed seat belt violation alone.

Title 36: Parks, Forests, and Public Property

CHAPTER I: NATIONAL PARK SERVICE, DEPARTMENT OF THE INTERIOR PART 4: VEHICLES AND TRAFFIC SAFETY

4.15 - Safety belts.

(a) Each operator and passenger occupying any seating position of a motor vehicle in a park area will have the safety belt or child restraint system properly fastened at all times when the vehicle is in motion. The safety belt and child restraint system will conform to applicable United States Department of Transportation standards.

(b) This section does not apply to an occupant in a seat that was not originally equipped by the manufacturer with a safety belt nor does it apply to a person who can demonstrate that a medical condition prevents restraint by a safety belt or other occupant restraining device.

[62 FR 61633, Nov. 19, 1997]

Primary seat belt use laws, like 36 CFR 4.15, have been associated with the largest documented increases in seat belt usage in the United States. There is strong evidence that primary laws and HVE efforts are effective at quickly increasing seat belt use (Shults et al., 2004). To spread awareness and

¹ Fatality Analysis Reporting System, 2006–2010.

encourage seat belt use, HVE requires leadership, enhanced enforcement, and media focused on seat belt enforcement efforts (Williams & Wells, 2004).

The HVE program was planned for three waves of program activity over a 24-month period. The three program waves were planned for spring and fall 2010, and spring 2011. The two spring waves were scheduled to run concurrently with the national *Click It or Ticket* (CIOT) seat belt mobilizations to utilize the national advertising taking place at that time. NHTSA conducted an independent evaluation of the first two program waves, spring and fall 2010. This is a report on the evaluation methods and results pertaining to these two activity waves.

II. EVALUATION METHODS

A process and outcome evaluation was conducted to describe the Blue Ridge Parkway (BRP) program activity and to measure changes in public awareness and observed seat belt use resulting from the program.

Program Enforcement and Media Data

Park rangers provided information on the number of officer hours worked for each wave and the number of citations, arrests, and warnings reported for each wave. The National Park Service (NPS) provided program media information, including types of media used and placement and timing of media.

Driver Awareness Surveys - Roanoke and Charlottesville

The Virginia Department of Motor Vehicles (DMV) collected public awareness surveys at driver licensing offices in Roanoke (proxy program area)² and Charlottesville (comparison area) one week before and one week after the second program wave.³ Survey questions addressed recent exposure to seat belt messages, sources of information, perceived strictness of law enforcement, and knowledge of seat belt laws. The survey also included questions on participant demographics and frequency of travel on the BRP (see Appendix).

Observational Surveys of Seat Belt Use - Blue Ridge Parkway

Driver seat belt use on the BRP was observed before and after the first two program waves. Observations were conducted during hours when commuter use of the roadway would be highest (see Table 1). Observing both morning and evening rush hours made it more likely to capture actual commuters in the sample, rather than those just passing through the area.

Table 1. Parkway Seat Belt Observation Times

Site #	Parkway Site	Time
1	Parkway	7:10 a.m.
2	Parkway	8:08 a.m.
3	Parkway	11:27 a.m.
4	Ramp	2 p.m.
5	Ramp	3:16 p.m.
6	Parkway	4:25 p.m.
7	Ramp	4:25 p.m.
8	Ramp	5:25 p.m.
9	Ramp	7 p.m.
10	Ramp	8 p.m.
11	Parkway	8:55 p.m.

Seat belt observations were conducted on BRP ramps and on the main roadway, covering the stretch of the Parkway believed to be the primary passageway for Roanoke commuters (see Figure 1). Observation sites were in the same vicinity as the planned program enforcement activity. The baseline

² Roanoke acted as the proxy program area for the awareness surveys because administering the surveys on the BRP was not a feasible option at the time.

³ There was no awareness survey and only partial seat belt observations for the first program wave.

survey took place prior to the first wave (May 6 and 7, 2010) and the post survey was conducted the week immediately following (June 3 and 4, 2010). For the second program wave, seat belt observations were conducted the week before and the week following activity, October 7 and 8, and November 4 and 5, 2010, respectively.

Observational Surveys of Seat Belt Use - Charlottesville, Virginia

Charlottesville was chosen as the comparison site for this program because of similarities to Roanoke County in population size, number of licensed drivers, and number of crash fatalities. Observational surveys of belt use were conducted at eight different sites on a bypass roadway (Highway 29) around Charlottesville (see Figure 2). These surveys were conducted during morning and afternoon rush hours on October 5 and November 3, 2010, for the pre- and post-measurements, respectively.

Observational Surveys of Seat Belt Use - Roanoke, Virginia

Eight observational survey sites were positioned inside the Roanoke city limits for the second program wave (see Figure 3). These observations were conducted on October 6 and November 3, 2010, for the pre- and post-measurements. Data was collected specifically during the morning and afternoon rush hours.

Figure 1. Blue Ridge Parkway Observation Sites

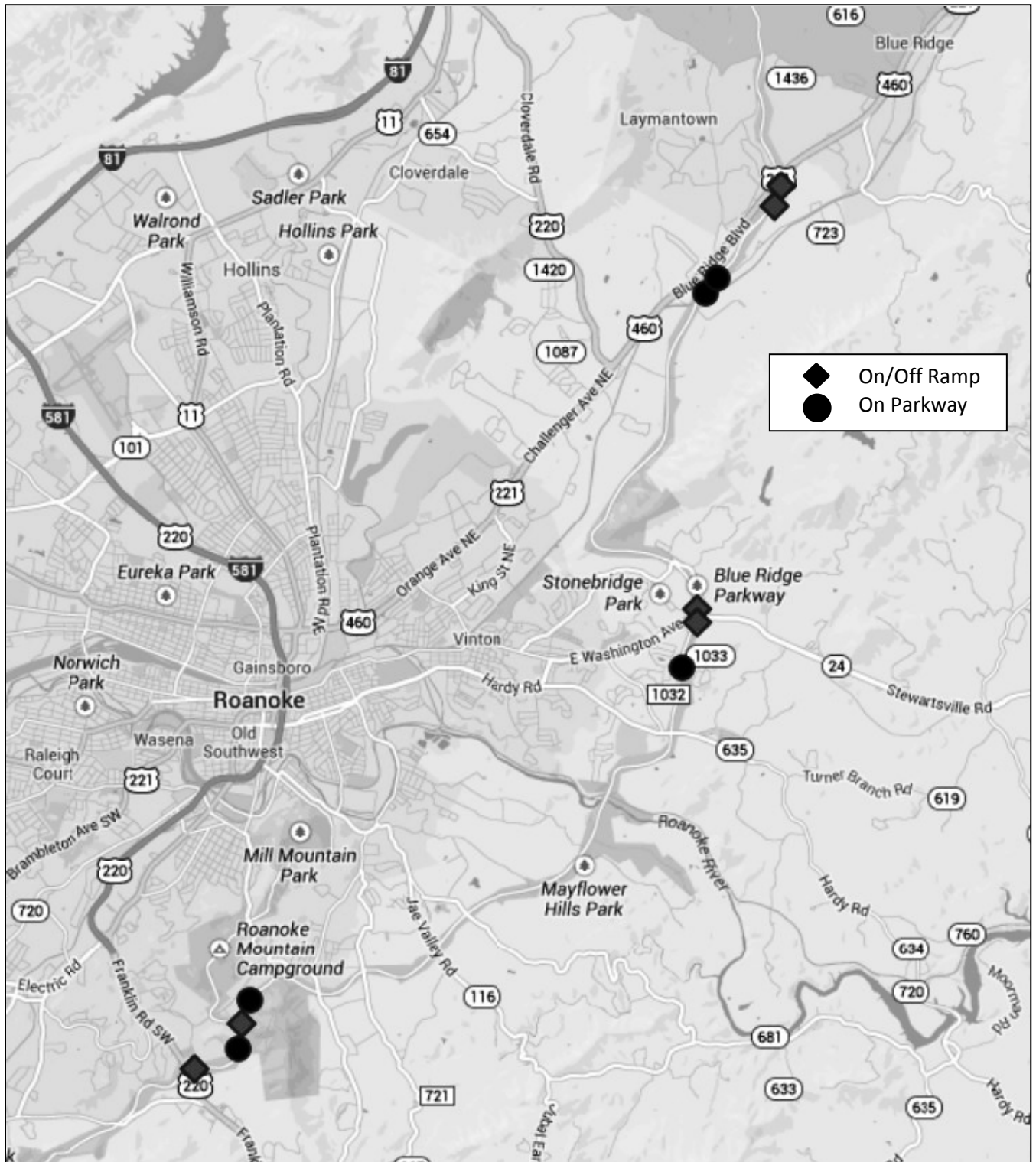


Figure 2. Charlottesville Observation Sites (Hwy. Bypass 29)

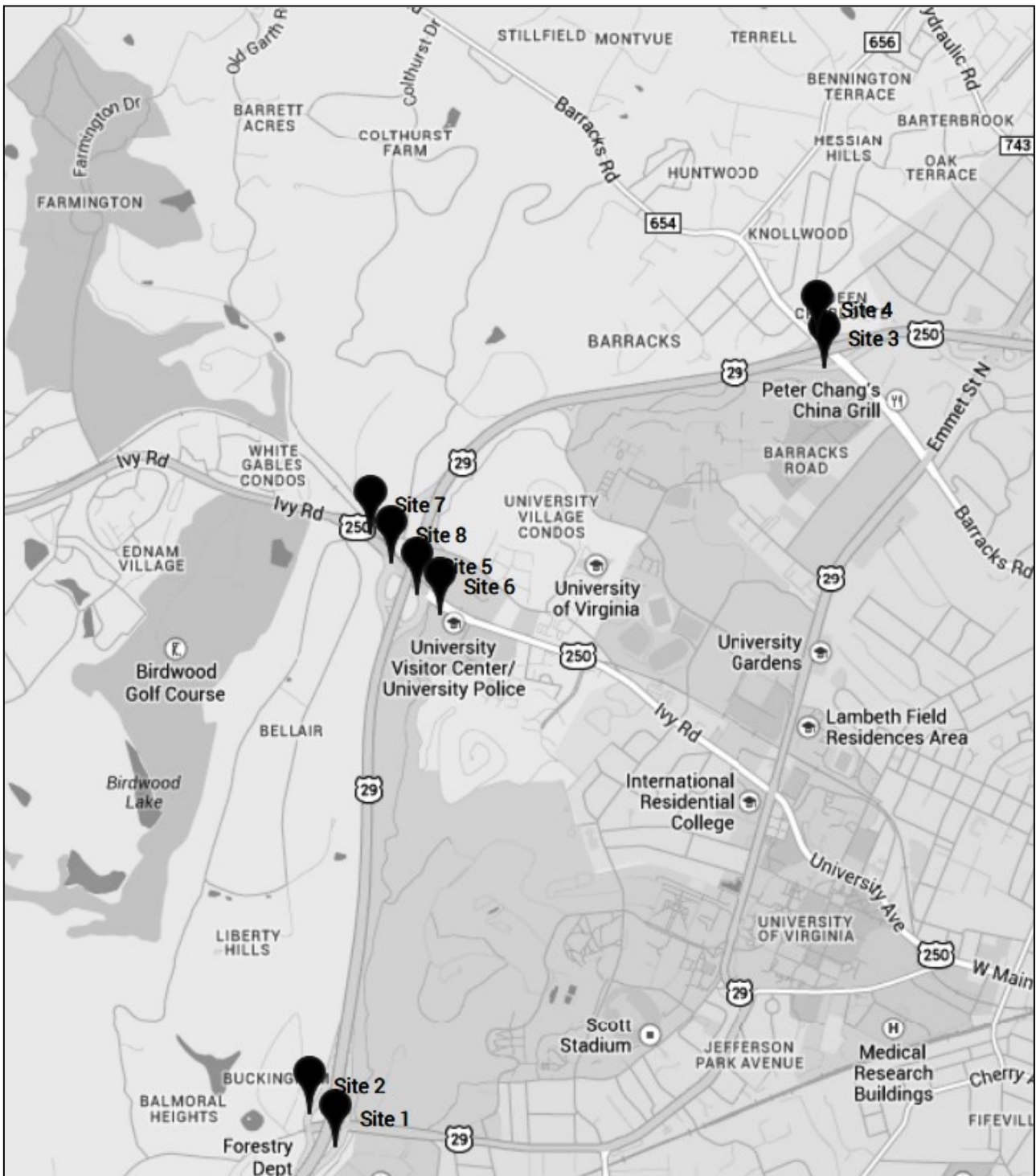
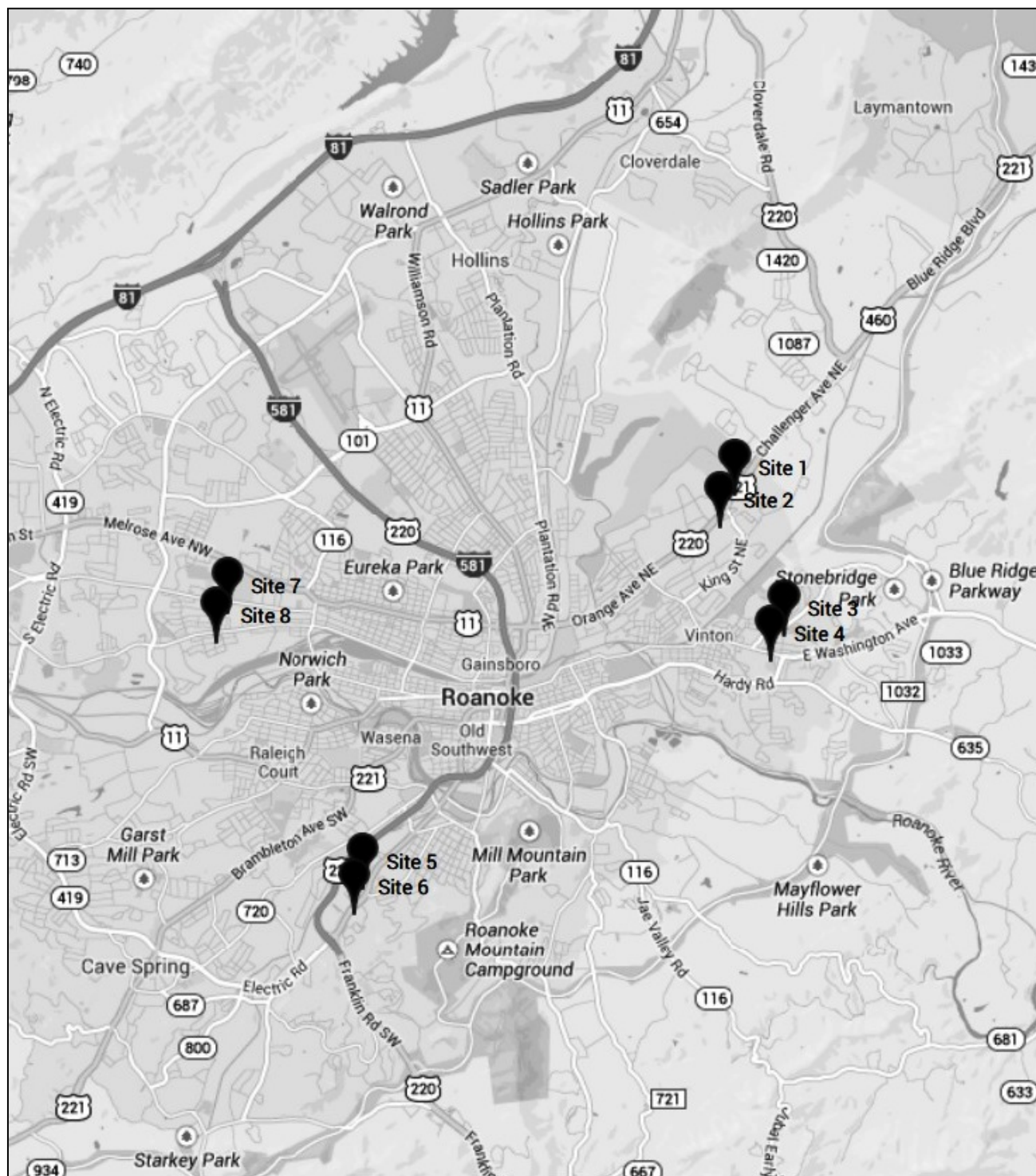


Figure 3. Roanoke Observation Sites



III. RESULTS

Program Enforcement

During the periods of high-visibility enforcement, the Roanoke Corridor was saturated with a traffic enforcement presence (between mileposts 86 to 110, see Figure 1). To have sufficient officers to saturate the area, officers came from other areas to help with the enforcement effort, including park rangers from additional National Park Service (NPS) areas and local and State police.⁴ Overtime funding was used to pay for some of the enforcement.

The 12-day saturation patrols occurred Monday through Friday from 6 a.m. to 8 p.m., when local commuters were most likely to be driving on the Parkway. Enforcement officers were instructed to verbally communicate safety messages to all drivers at traffic stops, particularly regarding seat belts, and to issue citations to non-compliant drivers. According to participating park rangers, at the time and location of this program, a seat belt citation had a \$50 fine and a \$25 processing fee, totaling \$75. Fines and processing fees may vary by location and point in time.

The first enforcement wave ran from May 17 to 28, 2010 (HVE1) and overlapped with the nationwide *Click It or Ticket* (CIOT) seat belt mobilization. This wave included park rangers from the Blue Ridge Parkway (BRP) and New River Gorge and officers from the Roanoke County Police Department. Park rangers and the Roanoke County police spent 630 hours conducting high-visibility enforcement (HVE) saturation patrols and focusing on all types of traffic violations, but emphasizing compliance with the seat belt law. For this activity period, enforcement reported 104 seat belt citations and 4 warnings (see Table 2).

The second enforcement wave ran from October 18 to 29, 2010 (HVE2) and involved park rangers from the BRP and officers from Roanoke County. This group of officers spent 1,016 hours conducting saturation patrols and reported 56 seat belt citations and 21 warnings.

Enforcement reported more seat belt violations than any other type of violation, with speeding being the second most common. Registration, license, and equipment violations were also reported. There were a small number of concealed weapon violations (4), disorderly conduct arrests (5), and open container violations (2). In addition, enforcement reported DWI arrests (4).

Officers reported using warnings widely. Nearly one-third of the contacts with motorists during the first wave and about one-half of the contacts for the second wave resulted in verbal or written warnings (see Table 2). Over both waves, officers reported more warnings than citations and arrests. The ratio of warnings to citations and arrests was smaller for seat belt violations than for speeding violations, across both waves, showing that relative to citations and arrests, enforcement reported more warnings for speeding violations than for seat belt violations.

⁴ While park rangers have primary law enforcement authority on federal land, the law enforcement officers from secondary law States do not. State law enforcement officers operate under "home rule," meaning they can only enforce the law specific to their home State.

Table 2. National Park Police Enforcement on the Blue Ridge Parkway

	HVE 1			HVE 2		
	Verbal & Written Warnings	Citations & Arrests	Totals ¹	Verbal & Written Warnings	Citations & Arrests	Totals ²
Enforcement Officer Hours			630			1,016
Seat Belt	4	104	108	21	56	77
Speeding	31	20	51	55	15	70
DWI		2	2		2	2
Open Container of Alcohol		1	1	2	1	3
License Revoked/Suspended	2	5	7		6	6
Invalid DL		2	2	2	1	3
Driving Wrong Way on a One-Way Road		1	1			0
Concealed Weapon		2	2		2	2
PCS		2	2		2	2
Disorderly Conduct	1	2	3		2	2
Vehicle Registration	1	6	7	4	3	7
Use of Park Roads by Commercial	6	3	9	11		11
Failure to Stop at Stop Sign	4	1	5	5		5
No State Vehicle Inspection Decal	1	1	2			0
Follow too Close	5		5	1		1
Traffic Control Devices	4		4			0
Travel Left of Center	1		1			0
Defective Lights	11		11	11		11
TOTAL	71	145	226	112	90	202

¹HVE 1 = May 17–May 28, 2010

²HVE 2 = October 18 -October 29, 2010

Program Media

The BRP program did not use paid media, such as paid TV, radio, or newspaper advertisements, and there was very little reported coverage in the local news. While no program-specific paid media was used, the first program wave occurred at the same time as the national *Click It or Ticket* (CIOT) program, so national paid media on seat belt enforcement potentially reached the program area during the first activity period.

The NPS provided local news outlets with a press release and radio script for the first program wave to bring attention to the enforcement effort (see Appendix). These media items mentioned the CIOT campaign, provided seat belt use statistics, encouraged occupants to buckle up, and warned those traveling the Parkway of the upcoming enforcement along the Roanoke Corridor. It is not known how many times these messages played on the air or if they received print space. There was no reported earned radio media for the second wave.

The program relied on roadway signage and the highly visible presence of enforcement officers on the roadway. Roadside signage was placed along the BRP where the enforcement was taking place to alert drivers to the belt enforcement effort. There were temporary signs, permanent metal signs, and magnetic message strips placed on police vehicles. The NPS placed temporary signs on exit and entrance ramps and affixed permanent metal signs to speed limit signs along the Roanoke Corridor (see Figure 4). When determining quantity and location of the signage, a challenge was to find a balance between having widely visible signage and a more subdued presentation consistent with the character of the Parkway. Officials overseeing the park, as well as the park's landscape architect, were consulted before putting up the signs.

Figure 4: Photographs of roadside signage



In addition to the roadway signage, narrow red and white magnetic strips with the message “*Seat Belt Enforcement – Click It or Ticket*” were attached to the rear of enforcement vehicles. Virtually all of the vehicles used in the program had magnetic strips, possibly increasing the chances for passing motorists to see the magnetic strips and associate the enforcement vehicle with the seat belt enforcement activities.

Driver License Office Awareness Survey

The Virginia Department of Motor Vehicles (DMV) in Roanoke (proxy program area) and Charlottesville (comparison area) collected paper-and-pencil driver awareness surveys one week prior and one week

following the second program wave. Table 3 features Roanoke and Charlottesville respondent demographics for both the pre- and post-measurements. The samples were similar across measurements, with nearly equal numbers of males and females and a similar age makeup. For vehicle type, the majority reported driving cars and the second most reported driving SUVs.

Table 3. Awareness Survey Sample Characteristics

	Roanoke		Charlottesville	
	Pre-HVE2	Post-HVE2	Pre-HVE2	Post-HVE2
Sex				
Male	397	413	404	301
Female	399	393	385	266
Age Category				
Under 21	90	57	71	49
21-25	98	98	89	83
26-39	191	215	220	171
40-49	178	188	153	105
50-59	134	129	118	85
60 Plus	107	119	141	70
Vehicle Type				
Car	423	409	408	304
Pickup	84	97	97	82
SUV	160	161	169	102
Minivan	39	46	51	23
Full van	13	20	7	7
Other	33	22	27	20
More than one checked	33	42	26	18

The survey collected information on reported frequency of BRP use, ranging from more than once a week, to a couple times a month, to less than once a month (see Table 4). More respondents reported less frequent Parkway use than more frequent use.

Table 4. Blue Ridge Parkway Usage

	Roanoke		Charlottesville	
	Pre-HVE2 (n=789)	Post-HVE2 (n =775)	Pre-HVE2 (n =675)	Post-HVE2 (n =497)
More than once a week	10.0%	8.4%	8.5%	8.4%
Couple times a month	13.2%	13.0%	10.8%	10.5%
Less than once a month	76.8%	78.6%	80.7%	81.1%

Awareness of Parkway Enforcement Effort

Respondents were asked if they had recently read, seen, or heard of seat belt enforcement on the BRP. At the end of the second wave, Roanoke respondents were more aware of the BRP seat belt

enforcement than the Charlottesville respondents (16.9% versus 9.4%). There was a statistically significant increase among Roanoke respondents ($p < .01$), but not among Charlottesville respondents. Respondents in the Charlottesville area were no more or less aware of BRP enforcement efforts from before to after the second program wave (see Table 5).

Table 5. Recently Read, Seen, or Heard About Enforcement on the Blue Ridge Parkway

	Pre-HVE2	Post-HVE2	Pct. Point Difference
Roanoke, VA	12.2% n =792	16.9% n =791	+4.7*
Charlottesville, VA	9.2% n =758	9.4% n =542	+0.2

*Statistically significant at $p < .01$

Table 6 breaks down awareness of enforcement by reported frequency of BRP use. As would be expected, Roanoke drivers who reported the most frequent BRP use (i.e., every week and a couple times per month) had read, seen, or heard about enforcement on the Parkway more than those who reported less frequent use; however, the increases were not significant (small sample sizes may have contributed). Those who reported less frequent Parkway use (i.e., less than once a month) showed a significant increase in awareness; however, the practical significance of this result is questionable because the actual increase was smaller than the increase among more frequent users (4.2 compared to 6.1 and 8). Possible contributors to the statistically significant increase found for less frequent BRP travelers include a large sample size and low baseline (often more susceptible to change). There were no statistically significant changes in reported awareness among respondents in Charlottesville.

Table 6. Read, Seen, or Heard About Seat Belt Enforcement on the Blue Ridge Parkway by Frequency of Parkway Use

	Roanoke			Charlottesville		
	Pre-HVE2	Post-HVE2	Pct. Point Diff.	Pre-HVE2	Post-HVE2	Pct. Point Diff.
Every Week	35.4% n =79	41.5% n =65	+6.1	24.6% n =57	25.6% n =39	+1.0
Couple Times a Month	16.0% n =104	24.0% n =100	+8.0	26.4% n =72	20.0% n =50	-6.4
Less Than Once a Month	8.7% n =598	12.9% n =596	+4.2*	5.9% n =540	7.3% n =399	+1.4

*Statistically significant at $p < .05$

Several survey questions asked respondents to identify their source of the information regarding the seat belt enforcement on the BRP. Consistent with the roadway signage used for the BRP program, weekly Parkway users reported receiving enforcement messages from “Signs on roadway” (see Table 7).

Table 7. Where did you read, see, or hear about seat belt enforcement on the Blue Ridge Parkway?

	Weekly Parkway Users		
	Pre-HVE 2 (n =79)	Post-HVE 2 (n =65)	Pct. Point Diff.
Other	1.3%	12.3%	+11.0
Signs on roadway	12.7%	15.4%	+2.7
Radio	8.9%	10.8%	+1.9
Enforcement	3.8%	4.6%	+0.8
Billboards	5.1%	4.6%	-0.5
Television	20.3%	13.8%	-6.5
Newspaper	12.7%	6.2%	-6.5

Perceived Strictness of Enforcement

Respondents were asked how strictly they thought the seat belt law was enforced, both in Virginia and on the BRP. There were no statistically significant pre-to-post changes in perception among individuals answering “Very Strictly” or “Somewhat Strictly” in either the total sample or the portion of respondents who reported traveling the BRP on a weekly basis (see Table 8). There was a statistically significant increase in perceived enforcement strictness among Roanoke respondents who reported traveling the BRP a couple times per month; however, this group had the lowest baseline. There was little change among Charlottesville respondents.

Table 8. Perceives “Somewhat/Very Strict” Seat Belt Law Enforcement by Frequency of BRP Use

	Roanoke			Charlottesville		
	Pre-HVE2	Post-HVE2	Pct. Point Diff.	Pre-HVE2	Post-HVE2	Pct. Point Diff.
Total Sample						
Virginia enforcement	64.1% n =800	63.8% n =804	-0.3	53.8% n =783	52.8% n = 559	-1.0
BRP enforcement	63.7% n =650	67.7% n =656	+4.0	56.2% n =536	56.5% n =397	+0.3
Weekly						
Virginia enforcement	78.5% n =79	72.3% n =65	-6.2	69.6% n =56	67.5% n =40	-2.1
BRP enforcement	77.0% n =74	74.6% n =63	-2.4	71.4% n =49	73.1% n =41	+1.7
Couple Times a Month						
Virginia enforcement	55.7% n =104	64.4% n =101	+8.7	58.9% n =73	55.8% n =52	-3.1
BRP enforcement	50.5% n =93	69.6% n =92	+19.1*	54.6% n =66	57.1% n =49	+2.5
Once a Month or Less						
Virginia enforcement	63.3% n =606	62.3% n =606	+1.0	50.5% n =541	48.9% n =403	-1.6
BRP enforcement	64.0% n =480	66.3% n =489	+2.3	54.0% n =400	54.4% n =294	+0.4

*Statistically significant at p<.01

Awareness of the Seat Belt Laws

The survey asked respondents to indicate what they thought to be true about seat belt laws in Virginia (secondary law State). In both Roanoke and Charlottesville, about half of respondents responded incorrectly, answering that Virginia State Police and local police can give a seat belt ticket whenever they see a seat belt violation. A similar proportion of the respondents selected the correct answer, that Virginia State Police and local police could give a seat belt ticket only if they stop a vehicle for some other violation first. A similar proportion of Charlottesville respondents were correct. No significant changes from before to after the program were found for Roanoke or Charlottesville respondents.

Survey participants were also asked to indicate what they thought to be true about seat belt laws on the BRP, which as Federal land is under primary enforcement. About half of respondents in both areas answered correctly, that park rangers can give seat belt tickets whenever they see people not wearing seat belts. About 40 percent of Roanoke respondents and 30 percent of Charlottesville respondents

were incorrect regarding the law on the BRP. There were no statistically significant changes from before to after the program (see Tables 9 and 10).

Table 9. Which of the following do you think is true regarding Virginia’s Seat Belt Law? (multiple answers)

	Roanoke			Charlottesville		
	Pre-HVE2 (n =800)	Post-HVE2 (n =808)	Pct. Point Diff.	Pre-HVE2 (n =794)	Post-HVE2 (n =568)	Pct. Point Diff.
Police can give you a seat belt warning if they only stop you for not wearing your seat belt (correct answer)	24.4%	23.0%	-1.4	24.9%	24.1%	-0.8
Police can give you a seat belt ticket only if they stop you for something else (correct answer)	51.3%	49.4%	-1.9	43.1%	41.4%	-1.7
Police can give you a seat belt ticket only if there has been an accident	9.6%	11.9%	+2.3	9.2%	8.3%	-0.9
Police can give you a seat belt ticket whenever they see you not wearing your seat belt	53.6%	58.3%	+4.7	59.4%	56.9%	-2.5

Table 10. Which of the following do you think is true on the Blue Ridge Parkway? (multiple answers)

	Roanoke, VA			Charlottesville, VA		
	Pre-HVE2 (n =800)	Post-HVE2 (n =808)	Pct. Point Diff.	Pre-HVE2 (n =794)	Post-HVE2 (n =568)	Pct. Point Diff.
Police can give you a seat belt warning if they only stop you for not wearing your seat belt (correct answer)	22.0%	20.7%	-1.3	20.9%	19.7%	-1.2
Police can give you a seat belt ticket only if they stop you for something else	42.0%	40.1%	-1.9	32.5%	30.3%	-2.2
Police can give you a seat belt ticket only if there has been an accident	10.5%	12.3%	+1.8	8.8%	9.2%	+0.4
Police can give you a seat belt ticket whenever they see you not wearing your seat belt (correct answer)	52.4%	54.0%	+1.6	49.6%	48.6%	-1.0

Seat Belt Observation Results: Blue Ridge Parkway

Seat belt observation surveys were conducted before and after the first two program waves, including over 5,000 front seat occupant observations. Sample characteristics among the BRP observations remained relatively consistent throughout the course of the study (see Table 11). Most observed vehicles had a single driver and no passengers (see Appendix for Charlottesville and Roanoke sample characteristics).

Table 11. Observations – Blue Ridge Parkway Sample Characteristics

	Pre-HVE1 (n=1,369)	Post-HVE1 (n=1,184)	Pre-HVE2 (n=1,393)	Post-HVE2 (n=1,142)
Driver	83.9% n=1,148	83.9% n=993	84.4% n=1,175	84.9% n=970
Passenger	16.1% n=221	16.1% n=191	15.6% n=218	15.1% n=172
*Male	51.6% n=706	53.1% n=627	48.0% n=669	50.5% n=577
*Female	48.4% n=662	46.9% n=554	52.0% n=724	49.5% n=565
Car	50.4% n=690	50.7% n=600	51.6% n=719	53.9% n=616
Pickup	20.1% n=275	20.5% n=243	15.3% n=213	15.4% n=176
SUV	22.9% n=313	22.6% n=268	24.6% n=342	22.8% n=260
Van	6.6% n=91	6.2% n=73	8.5% n=119	7.9% n=90
Parkway	54.1% n=741	50.8% n=602	54.8% n=763	47.5% n=543
Ramps	45.9% n=628	49.2% n=582	45.2% n=630	52.5% n=599

**Unknowns not included*

Observed seat belt use on the BRP increased 9.3 percentage-points from 82.5 to 91.8 from before to one week after the first program wave. Similarly, for the second program wave, observed use increased by 7.6 points from 82.5 (same baseline as first wave) to 90.1 (see Table 12).

Table 12. Observed Seat Belt Use on the Blue Ridge Parkway

	HVE1			HVE2			Pre-HVE1 to Post-HVE2 Point Diff.
	Pre N=1,369	Post N=1,184	Point Diff.	Pre N=1,393	Post N=1,142	Point Diff.	
Overall	82.5%	91.8%	+9.3 ^c	82.5%	90.1%	+7.6 ^c	+7.6 ^c
Driver	83.7%	91.6%	+7.9 ^c	82.5%	90.5%	+8.0 ^c	+6.8 ^c
Passenger	76.0%	92.7%	+16.7 ^c	82.6%	87.8%	+5.2 ^{ns}	+11.8 ^b
Male*	77.9%	91.1%	+13.2 ^c	79.5%	86.7%	+7.2 ^c	+8.8 ^c
Female*	87.3%	92.6%	+5.3 ^b	85.2%	93.6%	+8.4 ^c	+6.3 ^c
Car	84.9%	92.5%	+7.6 ^c	84.6%	91.7%	+7.1 ^c	+6.8 ^c
Pickup	73.8%	87.7%	+13.9 ^c	71.4%	81.3%	+9.9 ^a	+7.5 ^{ns}
SUV	84.0%	94.0%	+10.0 ^c	83.3%	91.2%	+7.9 ^b	+7.2 ^a
Van	84.6%	91.8%	+7.2 ^{ns}	87.4%	93.3%	+5.9 ^{ns}	+8.7 ^{ns}
Rush Hour	82.3%	91.4%	+9.1 ^c	82.2%	90.9%	+8.7 ^c	+8.6 ^c
Non-Rush Hour	83.0%	92.9%	+9.9 ^c	83.4%	87.8%	+4.4 ^c	+4.8 ^c
Parkway	83.7%	92.4%	+8.7 ^c	81.0%	89.3%	+8.3 ^b	+5.6 ^c
Ramps	81.1%	91.2%	+10.1 ^c	84.3%	90.8%	+6.5 ^c	+9.7 ^c

^a Statistically Significant at $p < 0.05$

^b Statistically Significant at $p < 0.01$

^c Statistically Significant at $p < 0.001$

^{ns} Not Statistically Significant

*Unknowns not included

Observed belt use increased for drivers, passengers, males, females, and for all vehicle types from baseline to the end of the second wave. Belt use increased the most among passengers (+11.8) and occupants on ramps (+9.7), possibly related the nature of the enforcement or commuter traffic patterns. Belt use increased more during rush hour (+8.6) when commuters were more likely to be on the BRP than during non-rush hour periods (+4.8). Observed belt use among pickup truck occupants had the lowest baseline out of all categories (73.8%) and showed the greatest increase among the vehicle categories after the first wave (+13.9). While this group continued to increase for the second wave (+9.9), observed use in pickup trucks was lower than the other vehicle categories after the second wave (81.3% versus 91.7%, 91.2%, and 93.3%, see Table 12 and Figure 5). Generally, the groups lagging most in observed seat belt usage gained the most over the course of the two waves, lessening the discrepancy among groups (see Appendix for complete observation data).

Figure 5. Observed Seat Belt Use by Vehicle Type on the Blue Ridge Parkway

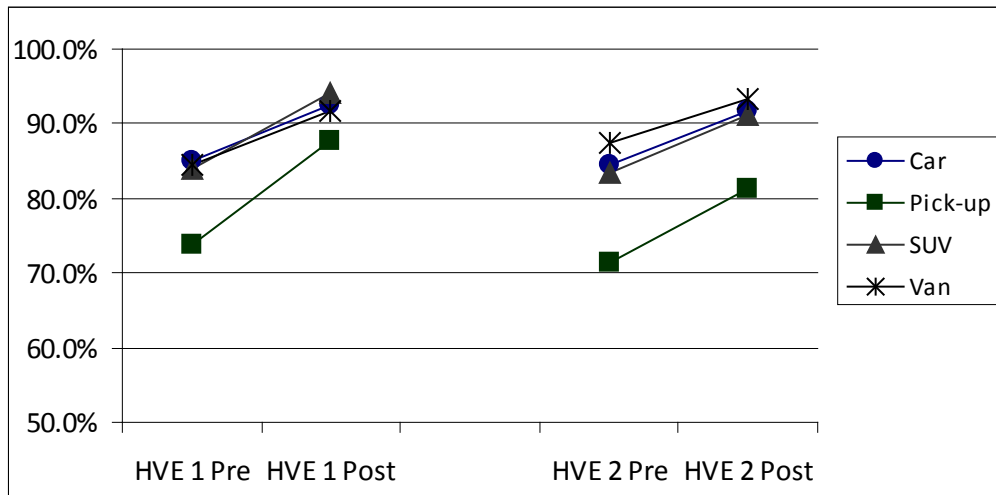


Table 13. Observed Seat Belt Use on the Blue Ridge Parkway for Drivers and Passengers by Gender

	HVE1			HVE2			Pre-HVE1 to Post-HVE2 Point Diff.
	Pre	Post	Point Diff.	Pre	Post	Point Diff.	
MALES							
Driver	79.8% N=625	91.1% N=563	+11.3	80.5% N=599	87.0% N=515	+6.5	+8.2
Passenger	63.0% N=81	90.6% N=64	+27.6	71.4% N=70	83.9% N=62	+12.5	+20.9
FEMALES							
Driver	88.3% N=522	92.3% N=427	+4.0	84.5% N=576	94.5% N=455	+10.0	+6.2
Passenger	83.6% N=140	93.7% N=127	+10.1	87.7% N=148	90.0% N=110	+2.3	+6.4

Male passengers showed the largest increase in belt use, but also had more room for improvement from baseline (63% to 83.9%) than male drivers and female drivers and passengers (see Table 13 and Figures 6 and 7). Overall female belt usage started higher and ended higher than the overall use rate, but showed a smaller increase than males (+6.3 versus +8.8, see Table 12).

Figure 6. Observed Seat Belt Use of Male Drivers and Male Passengers on the Blue Ridge Parkway

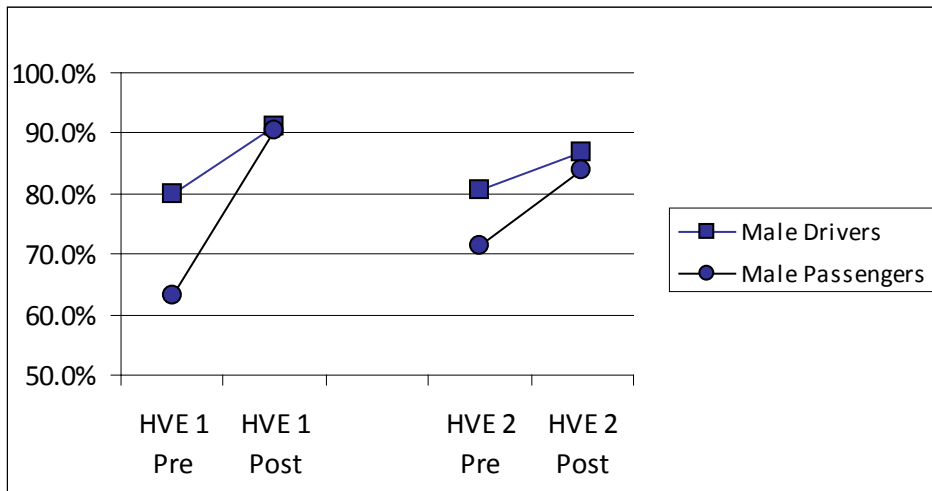
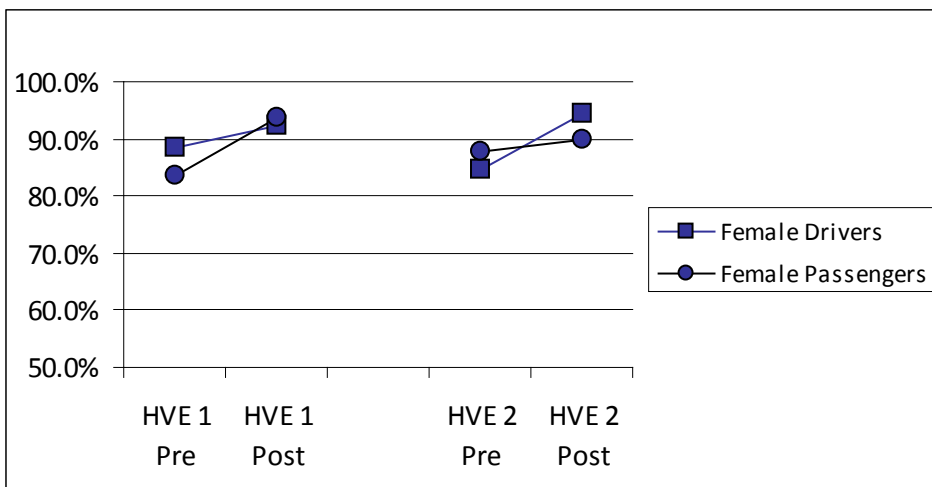


Figure 7. Observed Seat Belt Use of Female Drivers and Female Passengers on the Blue Ridge Parkway



Seat Belt Observation Results: Roanoke City

On Roanoke city streets during rush hour, there was a slight decrease in observed seat belt use (-2.5%) from 78.0 to 75.5 percent ($p<.05$) after the second wave, compared to an increase (+7.6) in observed belt use on the BRP ($p<.001$, see Table 14) after two waves of activity.

Seat Belt Observation Results: Charlottesville

Before the second wave of activity began, surveys showed seat belt use was higher on Highway 29 in Charlottesville than observed on the BRP (88.9% versus 82.5%). While there was no change in observed seat belt use on Highway 29, there was a change on the BRP, amounting in higher observed belt use on the BRP after the wave of program activity (see Table 14). Further analyses found no statistically significant improvements among particular groups in Charlottesville and Roanoke (see Tables 15 and 16).

Table 14. Total Observed Belt Use by Study Area

	HVE1				HVE2			
	Pre May 2010	Post June 2010	% Point Diff.	Stat. Sig.	Pre Oct. 2010	Post Nov. 2010	% Point Diff.	Stat. Sig.
Blue Ridge Parkway – Test	82.5%	91.8%	+9.3	$p<.001$	82.5%	90.1%	+7.6	$p<.001$
Roanoke – City Streets	--	--	--	--	78.0%	75.5%	-2.5	$p<.05$
Charlottesville – Comparison	--	--	--	--	88.9%	88.3%	-0.6	ns

^{ns} not significant

Table 15. Charlottesville Seat Belt Observation Survey Results

	Pre-HVE 2		Post-HVE2		% Point Difference
	Total Observed	% Using Seat Belt	Total Observed	% Using Seat Belt	
Driver	1,646	89.1%	1,700	88.8%	-0.3
Passenger	218	87.6%	190	83.7%	-3.9
Male	863	86.1%	859	84.2%	-1.9
Female	999	91.5%	1,031	91.8%	+0.3
Car	1,089	90.5%	1,109	89.9%	-0.6
Pickup	173	69.9%	167	70.7%	+0.8
SUV	482	91.5%	494	89.7%	-1.8
Van	120	91.7%	120	92.5%	+0.8

Table 16. Roanoke Seat Belt Observation Survey Results

	Pre-HVE 2		Post-HVE 2		
	Total Observed	% Using Seat Belt	Total Observed	% Using Seat Belt	% Point Difference
Driver	2,425	79.2%	2,124	77.2%	-2.0
Passenger	416	70.9%	359	65.2%	-4.7
Male	1,386	74.6%	1,232	69.2%	-5.4
Female	1,455	81.2%	1,251	81.6%	+0.4
Car	1,549	79.6%	1,393	76.2%	-3.4
Pickup	374	67.9%	356	65.7%	-2.2
SUV	699	79.8%	506	78.5%	-1.3
Van	219	77.6%	228	79.8%	+2.2

IV. DISCUSSION

The National Park Service (NPS) implemented high-visibility seat belt enforcement on a 24-mile portion of the Blue Ridge Parkway (BRP) known as the Roanoke Corridor. The program involved strong enforcement partnerships, with NPS park rangers and officers from other local agencies working together to create a stepped-up enforcement presence. The program used low-cost media and mainly involved roadway signs notifying drivers of the enforcement activity. While there were significant increases in awareness of enforcement among Roanoke respondents, the evaluation does not clearly show the link between the program media and increases in awareness, as the respondents may have been exposed to *Click It or Ticket* (CIOT) national media and most respondents reported traveling on the BRP less than once a month, decreasing their chances of being exposed to the roadway signage and enforcement activity.

This program activity was associated with an increase in observed seat belt use, increasing from 82.5% to 90.1% (pre wave 1 to post wave 2). Seat belt usage improved on the BRP ramps and main roadway, during commuter and non-commuter hours, and among those groups most in need for improvement, such as males and pickup truck occupants. However, these groups started at lower baseline levels, possibly contributing to the magnitude of their observed change, as lower levels are more susceptible to change. Nevertheless, observed belt use did not significantly change in the comparison area, Charlottesville, suggesting the program activity contributed to the changes observed on the BRP.

While observed seat belt use increased significantly after both waves of program activity, observed use dropped back down to the pre-program baseline level during the five-month period between the two waves (82.5 to 91.8 and 82.5 to 90.1 from May to October, 2010). Most ideally, observed belt use measured over multiple program waves would show a ratcheting effect, where seat belt use may drop back down, but not to pre-program levels. This ratcheting effect would indicate a prolonged program effect on seat belt use, where some newly buckled drivers would remain buckled after the program activity subsided. However, in this case, there are only two waves of observation data available, which greatly limits how much the data can say about sustained program effectiveness.

As opposed to belt use on the BRP, observed use among drivers on Roanoke city streets did not appear to change. The awareness survey results suggest this may have been related to program exposure. Most Roanoke respondents reported using the BRP less than once a month (i.e., average of 77.7%) and fewer reported more frequent use (i.e., average of 13.1% reported using the BRP a couple times a month and an average of 9.2% reported using the BRP more than once a week). While some drivers in Roanoke may have been exposed to the enforcement activity when commuting on the Roanoke Corridor, others may have had limited or no exposure to the actual enforcement activity, possibly contributing to not finding a change in seat belt use behavior in Roanoke. Evaluating programs on national park lands presents challenges, such as finding adequate ways to reach the people who frequent the area and have been exposed to the program. This is something that should be considered and addressed for future projects of this nature.

Interestingly, even with the absence of a behavioral change in Roanoke, there was a significant increase in awareness of the program enforcement among Roanoke respondents. It is important to consider how the Roanoke respondents were exposed to the program, given that most were not frequenting the BRP to see the roadway signs and enforcement activity. One possibility is that these respondents may have been exposed to the program through the press release, as 10.8 percent of Roanoke respondents reported learning about the program from the radio. The Roanoke respondents may have also been exposed to the national CIOT media during the first program wave.

There were no significant changes in awareness of the seat belt laws in Virginia or on the BRP. Only about half of the Roanoke respondents were aware of the laws both before and after the program. While the awareness survey data are limited because they mainly include infrequent BRP drivers, if this group of respondents reported an increase in awareness of the enforcement activity, one would expect to see a similar increase in awareness of the seat belt law. Outside speculation, the parameters of the evaluation limit making clear conclusions regarding this finding. However, examination of the press release reveals that while the enforcement effort is discussed, the primary seat belt law does not appear to be mentioned specifically (see Appendix). Perhaps future efforts of this nature could benefit from placing greater emphasis on the seat belt laws in the earned media materials.

V. CONCLUSIONS

While this evaluation is limited in drawing strong conclusions about program effectiveness, the results do suggest the program was associated with positive outcomes. The National Park Service (NPS) implemented a high-visibility seat belt enforcement program on the Blue Ridge Parkway (BRP), involving low-cost media and strong enforcement partnerships, activity associated with significant increases in observed seat belt use on the BRP.

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APPENDIX



PRESS RELEASE – HVE1

National Park Service
U.S. Department of the Interior

Blue Ridge Parkway
www.nps.gov/blri

199 Hemphill Knob Road
Asheville, NC 28803

Blue Ridge Parkway News Release

April 30, 2010

For Immediate Release

Contacts: Steve Stinnett, [redacted]; email: steve_stinnett@nps.gov

DON'T BE 'BLUE' THIS SPRING WHEN DRIVING THE BLUE RIDGE PARKWAY

Rangers to step up 'Click It or Ticket' Enforcement for Commuters and Sightseers Alike

Rangers and safety officials are warning all motorists on the Blue Ridge Parkway and in the Roanoke corridor to be sure and buckle up or face getting a ticket.

The campaign, part of Virginia's Click It or Ticket campaign, will be actively enforced throughout the Roanoke Corridor and the Blue Ridge Parkway by Virginia state police, Park Rangers and local officers, said Steve Stinnett, Chief Park Ranger of the Blue Ridge Parkway.

"Whether you're a tourist enjoying the Blue Ridge Parkway with your family, or a regular commuter heading to or from work, if you're not wearing a seat belt, you'll be getting a ticket," said Stinnett.

According to statistics compiled by the National Highway Traffic Safety Administration, almost 200 vehicle occupants died in crashes in America's National Parks from 2004-2008, and nearly one half of them (47 percent) were not wearing their seat belts.

Over the same five-year period, almost 50 vehicle occupants died in Roanoke County alone, and fully 65 percent were not wearing seat belts.

"Seat belts are the most important safety system in any vehicle," said Stinnett, but they won't help save your life unless you buckle up."

Regular seat belt use, night and day, is the single most effective way to protect yourself and your family in the event of a motor vehicle crash. NHTSA research shows that properly wearing lap and shoulder belts reduce the risk of fatal injury to front seat passengers by 45 percent and the risk of serious injury by 65 percent.

"So this May, remember to make sure everyone in your vehicle is buckled up. It just might save you from getting a ticket, not to mention saving your life," said Stinnett.

RADIO SCRIPT – HVE1

BLUE RIDGE PARK WAY - CLICK IT OR TICKET

Announcer: Good Morning to all you Roanoke Corridor drivers, Police are warning all motorists in and around the Blue Ridge Parkway to be sure and buckle up or face getting a ticket.

The campaign, part of Virginia's Click It or Ticket, will be actively enforced throughout the Roanoke Corridor and Blue Ridge Parkway, by park rangers, as well as state and local police.

"Whether you're a tourist enjoying the Blue Ridge Parkway, or a regular commuter heading to or from work, if you're not wearing a seat belt, you'll be getting a ticket."

FACT SHEET – HVE1

Fatalities in all U.S. National Parks, by restraint use

- From 2004-2008, a total of 190 passenger vehicle occupants died in vehicle crashes in all U.S. National Parks.
 - 90 of these multi-year passenger vehicle occupants (or 47%) were restrained.
 - 100 of these multi-year passenger vehicle occupants (or 53%) were unrestrained

Fatalities in Roanoke County, Virginia (Includes the city of Roanoke), by restraint use

- From 2004-2008, a total of 47 vehicle occupants died in Roanoke County.
 - 16 of these multi-year passenger vehicle occupants (35%) were wearing seat belts when they died.
 - 31 of these multi-year passenger vehicle occupants (65%) were not wearing seat belts when they died.

Fatalities in the State of Virginia, by restraint use

- From 2004-2008, a total 3,602 vehicle occupants died throughout the state
 - 1,355 of these multi-year passenger vehicle occupants (or 38%) were wearing seat belts when they died.
 - 2,247 of these multi-year passenger vehicle occupants (62%) were not wearing seat belts when they

Driver Licensing Office Survey

A number of Driver Licensing Offices in the State are participating in a study about seat belts in Virginia. Your answers to the following questions are voluntary and anonymous.

1. **Your sex:** Male Female

2. **Your age:** Under 21 21-25 26-39 40-49 50-59 60 Plus

3. **Your race:** White Black Asian Native American Other

4. **Are you of Spanish/Hispanic origin?** Yes No

5. **Your Zip Code:** _____

6. **What type of vehicle do you drive most often?**
 Passenger car Pickup SUV Mini-van Full-van Other

7. **How often do you use a seat belt?**
 Always Nearly always Sometimes Seldom Never

8. **Do you think the seat belt law in Virginia is enforced:**
 Very strictly Somewhat strictly Not very strictly Rarely Not at all Don't know

9. **What do you think the chances are of getting a ticket if you don't wear your seat belt?**
 Always Nearly always Sometimes Seldom Never

10. **Have you recently read, seen or heard anything about seat belts?**
 Yes No

 If yes, where did you see or hear about it? (check all that apply):
 Newspaper Radio TV Billboards Signs on roadway Police enforcement Other

11. **In the past month, have you read, seen or heard about police enforcement focused on seat belt use?**
 Yes No

12. **Which of the following do you think is true regarding Virginia State Police and local police (check all that apply):**
 Police can give you a seat belt warning if they only stop you for not wearing your seat belt
 Police can give you a seat belt ticket only if they stop you for something else
 Police can give you a seat belt ticket only if there has been an accident
 Police can give you a seat belt ticket whenever they see you not wearing your seat belt

13. **In the past month, have you read, seen or heard about seat belt enforcement on the Blue Ridge Parkway?**
 Yes No

 If yes, where did you see or hear about it? (check all that apply):
 Newspaper Radio TV Billboards Signs on roadway Police enforcement Other

14. **Do you think Blue Ridge Parkway Police enforce the seat belt law on the Blue Ridge Parkway:**
 Very strictly Somewhat strictly Not very strictly Rarely Not at all

15. **Which of the following do you think is true on the Blue Ridge Parkway (check all that apply):**
 Police can give you a seat belt warning if they only stop you for not wearing your seat belt
 Police can give you a seat belt ticket only if they stop you for something else
 Police can give you a seat belt ticket only if there has been an accident
 Police can give you a seat belt ticket whenever they see you not wearing your seat belt

16. **Which best describes your use of the Blue Ridge Parkway?**
 Several times per week About once a week Couple times per month
 Once a month or less

OBSERVATIONAL SURVEY DATA – BLUE RIDGE PARKWAY

Seat Belt Observation Survey Counts - Pre & Post-HVE1

PRE-HVE1

Site #	Ramp Site	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	No	7:10	165	28	193	85.5%
2	No	8:08	120	20	140	85.7%
3	No	11:27	78	12	90	86.7%
4	Yes	14:00	39	12	51	76.5%
5	Yes	15:16	74	22	96	77.1%
6	No	16:25	190	54	244	77.9%
7	Yes	16:25	40	11	51	78.4%
8	Yes	17:25	107	22	129	82.9%
9	Yes	7:00	182	39	221	82.4%
10	Yes	8:00	67	13	80	83.8%
11	No	8:55	67	7	74	90.5%
			1,129	240	1,369	82.5%

POST-HVE1

Site #	Ramp Site	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	No	7:23	171	15	186	91.9%
2	No	8:12	84	14	98	85.7%
3	No	11:40	75	4	79	94.9%
4	Yes	13:53	54	5	59	91.5%
5	Yes	15:02	61	11	72	84.7%
6	No	16:13	140	12	152	92.1%
7	Yes	16:13	40	6	46	87.0%
8	Yes	17:05	84	6	90	93.3%
9	Yes	7:00	227	17	244	93.0%
10	Yes	8:00	65	6	71	91.5%
11	No	8:50	86	1	87	98.9%
			1,087	97	1,184	91.8%

OBSERVATIONAL SURVEY DATA – BLUE RIDGE PARKWAY

Seat Belt Observation Survey Counts - Pre & Post-HVE1

PRE-HVE1

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	961	187	1,148	83.7%
Passenger	168	53	221	76.0%
Male	550	156	706	77.9%
Female	578	84	662	87.3%
Car	586	104	690	84.9%
Pickup	203	72	275	73.8%
SUV	263	50	313	84.0%
Van	77	14	91	84.6%
Parkway Road	620	121	741	83.7%
Ramps	509	119	628	81.1%

Unknowns not included

POST-HVE1

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	910	83	993	91.6%
Passenger	177	14	191	92.7%
Male	571	56	627	91.1%
Female	513	41	554	92.6%
Car	555	45	600	92.5%
Pickup	213	30	243	87.7%
SUV	252	16	268	94.0%
Van	67	6	73	91.8%
Parkway Road	556	46	602	92.4%
Ramps	531	51	582	91.2%

Unknowns not included

OBSERVATIONAL SURVEY DATA – BLUE RIDGE PARKWAY

Seat Belt Observation Survey Counts - Pre & Post-HVE2

PRE-HVE2

Site #	Ramp Site	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	No	7:10	144	47	191	75.4%
2	No	8:10	136	38	174	78.2%
3	No	11:27	89	14	103	86.4%
4	Yes	14:00	56	12	68	82.4%
5	Yes	15:16	78	20	98	79.6%
6	No	16:25	175	33	208	84.1%
7	Yes	16:25	49	9	58	84.5%
8	Yes	17:20	99	12	111	89.2%
9	Yes	7:00	191	35	226	84.5%
10	Yes	8:00	58	11	69	84.1%
11	No	8:50	74	13	87	85.1%
			1,149	244	1,393	82.5%

POST-HVE2

Site #	Ramp Site	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	No	7:47	128	12	140	91.4%
2	No	8:39	74	6	80	92.5%
3	No	11:30	68	16	84	81.0%
4	Yes	14:00	53	2	55	96.4%
5	Yes	14:50	69	6	75	92.0%
6	No	16:25	153	13	166	92.2%
7	Yes	16:25	40	1	41	97.6%
8	Yes	17:20	88	15	103	85.4%
9	Yes	7:27	260	23	283	91.9%
10	Yes	8:21	34	8	42	81.0%
11	No	9:07	62	11	73	84.9%
			1,029	113	1,142	90.1%

OBSERVATIONAL SURVEY DATA – BLUE RIDGE PARKWAY

Seat Belt Observation Survey Counts - Pre & Post-HVE2

PRE-HVE2

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	969	206	1,175	82.5%
Passenger	180	38	218	82.6%
Male	532	137	669	79.5%
Female	617	107	724	85.2%
Car	608	111	719	84.6%
Pickup	152	61	213	71.4%
SUV	285	57	342	83.3%
Van	104	15	119	87.4%
Parkway Road	618	145	763	81.0%
Ramps	531	99	630	84.3%

POST-HVE2

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	878	92	970	90.5%
Passenger	151	21	172	87.8%
Male	500	77	577	86.7%
Female	529	36	565	93.6%
Car	565	51	616	91.7%
Pickup	143	33	176	81.3%
SUV	237	23	260	91.2%
Van	84	6	90	93.3%
Parkway Road	484	58	542	89.3%
Ramps	545	55	600	90.8%

**OBSERVATIONAL SURVEY DATA – Blue Ridge Parkway
Driver and Passenger Belt Use by Gender**

	HVE1			HVE2			Pre-HVE1 to Post-HVE2 Point Diff.
	Pre	Post	Point Diff.	Pre	Post	Point Diff.	
MALES							
Driver	79.8% N=625	91.1% N=563	+11.3	80.5% N=599	87.0% N=515	+6.5	+8.2
Passenger	63.0% N=81	90.6% N=64	+27.6	71.4% N=70	83.9% N=62	+12.5	+20.9
FEMALES							
Driver	88.3% N=522	92.3% N=427	+4.0	84.5% N=576	94.5% N=455	+10.0	+6.2
Passenger	83.6% N=140	93.7% N=127	+10.1	87.7% N=148	90.0% N=110	+2.3	+6.4

OBSERVATIONAL SURVEY DATA – CHARLOTTESVILLE, VA

Seat Belt Observation Survey Counts - Pre & Post-HVE2

PRE-HVE2

Site #	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	7:10	368	35	403	91.3%
2	7:13	211	25	236	89.4%
3	8:16	246	20	266	92.5%
4	8:15	101	43	144	70.1%
5	16:20	166	19	185	89.7%
6	16:20	182	28	210	86.7%
7	17:16	288	25	313	92.0%
8	17:16	96	11	107	89.7%

POST-HVE2

Site #	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	7:20	387	25	412	93.9%
2	7:20	229	59	288	79.5%
3	8:17	212	31	243	87.2%
4	8:17	107	26	133	80.5%
5	16:06	165	12	177	93.2%
6	16:06	195	35	230	84.8%
7	17:02	332	28	360	92.2%
8	17:02	42	5	47	89.4%

OBSERVATIONAL SURVEY DATA – CHARLOTTESVILLE, VA

Seat Belt Observation Survey Counts - Pre & Post-HVE2

PRE-HVE2

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	1,467	179	1,646	89.1%
Passenger	191	27	218	87.6%
Male	743	120	863	86.1%
Female	914	85	999	91.5%
Car	986	103	1,089	90.5%
Pickup	121	52	173	69.9%
SUV	441	41	482	91.5%
Van	110	10	120	91.7%

POST-HVE2

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	1,510	190	1,700	88.8%
Passenger	159	31	190	83.7%
Male	723	136	859	84.2%
Female	946	85	1,031	91.8%
Car	997	112	1,109	89.9%
Pickup	118	49	167	70.7%
SUV	443	51	494	89.7%
Van	111	9	120	92.5%

OBSERVATIONAL SURVEY DATA – ROANOKE, VA

Seat Belt Observation Survey Counts - Pre & Post-HVE2

PRE-HVE2

Site #	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	7:00	184	45	229	80.3%
2	7:00	206	54	260	79.2%
3	8:02	182	43	225	80.9%
4	8:02	327	100	427	76.6%
5	16:00	333	54	387	86.0%
6	16:00	388	116	504	77.0%
7	17:00	305	125	430	70.9%
8	17:00	290	89	379	76.5%

POST-HVE2

Site #	Time	Belted	Unbelted	Total Observed	% Using a Seat Belt
1	7:26	225	70	295	76.3%
2	7:26	177	52	229	77.3%
3	8:25	141	56	197	71.6%
4	8:25	317	101	418	75.8%
5	16:00	158	41	199	79.4%
6	16:00	363	90	453	80.1%
7	17:05	292	105	397	73.6%
8	17:00	201	94	295	68.1%

OBSERVATIONAL SURVEY DATA – ROANOKE, VA

Seat Belt Observation Survey Counts - Pre & Post-HVE2

PRE-HVE2

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	1,920	505	2,425	79.2%
Passenger	295	121	416	70.9%
Male	1,034	352	1,386	74.6%
Female	1,181	274	1,455	81.2%
Car	1,233	316	1,549	79.6%
Pickup	254	120	374	67.9%
SUV	558	141	699	79.8%
Van	170	49	219	77.6%

POST-HVE2

	Belted	Unbelted	Total Observed	% Using a Seat Belt
Driver	1,640	484	2,124	77.2%
Passenger	234	125	359	65.2%
Male	853	379	1,232	69.2%
Female	1,021	230	1,251	81.6%
Car	1,061	332	1,393	76.2%
Pickup	234	122	356	65.7%
SUV	397	109	506	78.5%
Van	182	46	228	79.8%

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