Vermont 2015 Annual Seat Belt Use Survey

Final Report

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1 Introduction

The UMV TRC is contracted to conduct the seat belt observational surveys to evaluate use rates in Vermont after the annual Click-It-or-Ticket enforcement mobilizations in May of 2015 and 2016. This report was prepared pursuant to the "GHSP Annual Seat Belt Survey" scope of work for the contract with the Vermont Agency of Transportation (VTrans). The objective of the project is to continue the annual survey of seatbelt use in accordance with 23 CFR Part 1340 – *Uniform Criteria for State Observational Surveys of Seat Belt Use*. The purpose of this report is to document the activities which were completed under this contract.

In 2014, there were an estimated 44 fatalities in Vermont due to vehicle crashes, 46% were not wearing their seatbelts. This is reduction of 38% from 2013 which reported 70 fatalities in Vermont (DPS, 2015). The use of safety belts reduces both fatalities and injuries to drivers and passengers. Vermont's seat belt use rate has been increasing each year, from approximately 54% in 1992 to approximately 84% in 2014. (VCJR, 2008). Fatalities have also dropped from approximately 90 deaths in 1992 to 44 in 2014. (DPS, 2015). Seatbelt usage is thought to be a significant factor in reducing highway fatalities.

The Vermont Governor's Highway Safety Program exists to support safe driving on Vermont highways. By promoting awareness through education, along with enforcement, the GHSP strives for zero deaths on the road. The GHSP has been contracting seatbelt survey work to gauge usage on Vermont roads and compare the results over time. 2008 marked the tenth year that the GHSP used the current methodology which includes the survey matched with the awareness and enforcement program ("click it or ticket").(VCJR, 2008) Each survey presents an opportunity to reflect on the effectiveness of the awareness and enforcement efforts. Over the past twelve years, the seatbelt usage rate in Vermont has been around 85% with lower use in the more rural areas of the state. (GHSP, 2014)

The purpose of this study was to conduct the annual seat belt survey for 2015 at 82 roadside locations to determine the percentage of drivers and front-seat passengers who were using seat belts correctly. The field work for this survey was conducted during the months of June, July, and August in 2015, following the annual Click-It or Ticket campaign in May. The overall goals of this work were:

1. To develop and document an updated methodology for collecting roadside seat-belt observation data;
2. To summarize the data in a statewide estimate of seat-belt use and a standard error for that estimate.

2 Study Area and Survey Design

The study area and design for this survey follows the previous year's design as established by VTrans in accordance with 23 CFR Part 1340. Sampling requirements state that sites be selected to reflect areas that account for 85 percent of fatalities as well as road coverage from a NHTSA approved road inventory which then is based on probability sampling. Assignment of observation times and procedures were also followed under 23 CFR Part 1340 by working between 7:00am and 6:00pm during all days of the week at random. Drivers and passengers were recorded as wearing a seatbelt if the shoulder belt was in front of the person's shoulder. (23 CFR 1340, 2012)

Computation of estimates, including sampling weights, variance estimation, and standard error also followed the CFR 1340 guidelines.

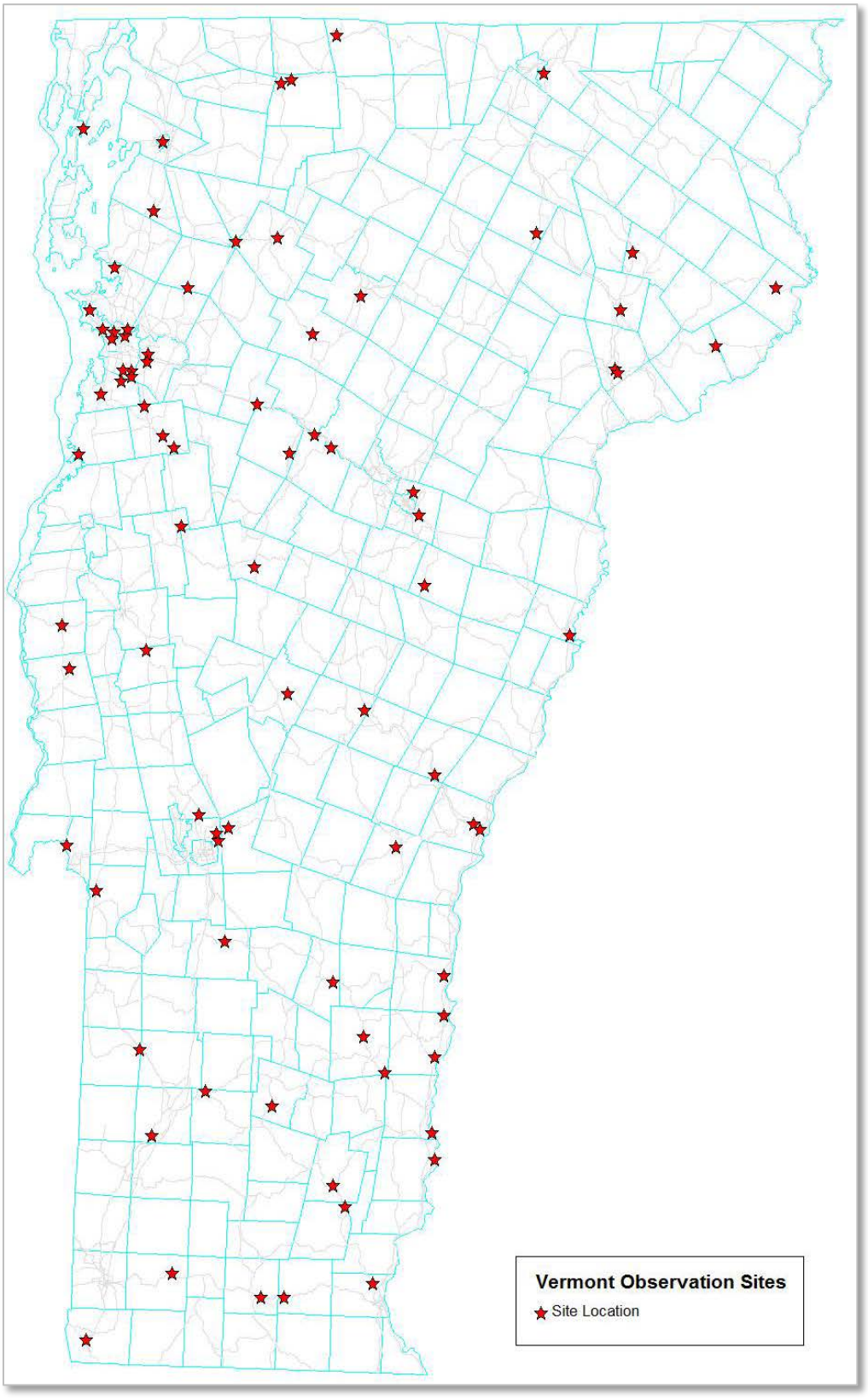
The survey has been stratified across two dimensions: geographically by county groups that have demonstrated policy and enforcement relevance, and further by roadway functional classification (FC). All of Vermont's counties were included in the site selection process and were grouped in the survey design as follows:

Table 1 County Group Description

County Group	Counties
BAD	Bennington, Addison (southwest)
CC	Chittenden
FGI	Franklin, Grand Isle (northwest)
NEK	Essex, Orleans, Caledonia (the "Northeast Kingdom")
Rut	Rutland (central-west)
WL	Washington, Lamoille (central)
WOW	Windsor, Windham, Orange (southeast)

The same 82 sites that had been used in the survey design for previous years were targeted for use in the 2015 survey, except that two of the sites could not be used because two of them did not provide usable data. Of these two, one could not be accessed due to construction and the other featured less than 10 vehicles in the 45-minute period of observation. For each of these sites, a back-up site was selected for substitution in the survey. A map of the final set of selected sites is provided in Figure 1.

Figure 1: Site Map



These 82 sites were designed to collect an adequate set of observations for the effective estimation of a statewide seat-belt use rate with a standard error that is under 2.5% and a “nonresponse rate”, or “couldn’t tell” rate that is under 10%, as dictated by the C23 CFR 1340. This design was expected to generate between 12,000 and 15,000 observations of drivers on Vermont roads and to meet the CFR requirement for standard error. Staff observed 89 sites in total, 7 of which were backup sites.

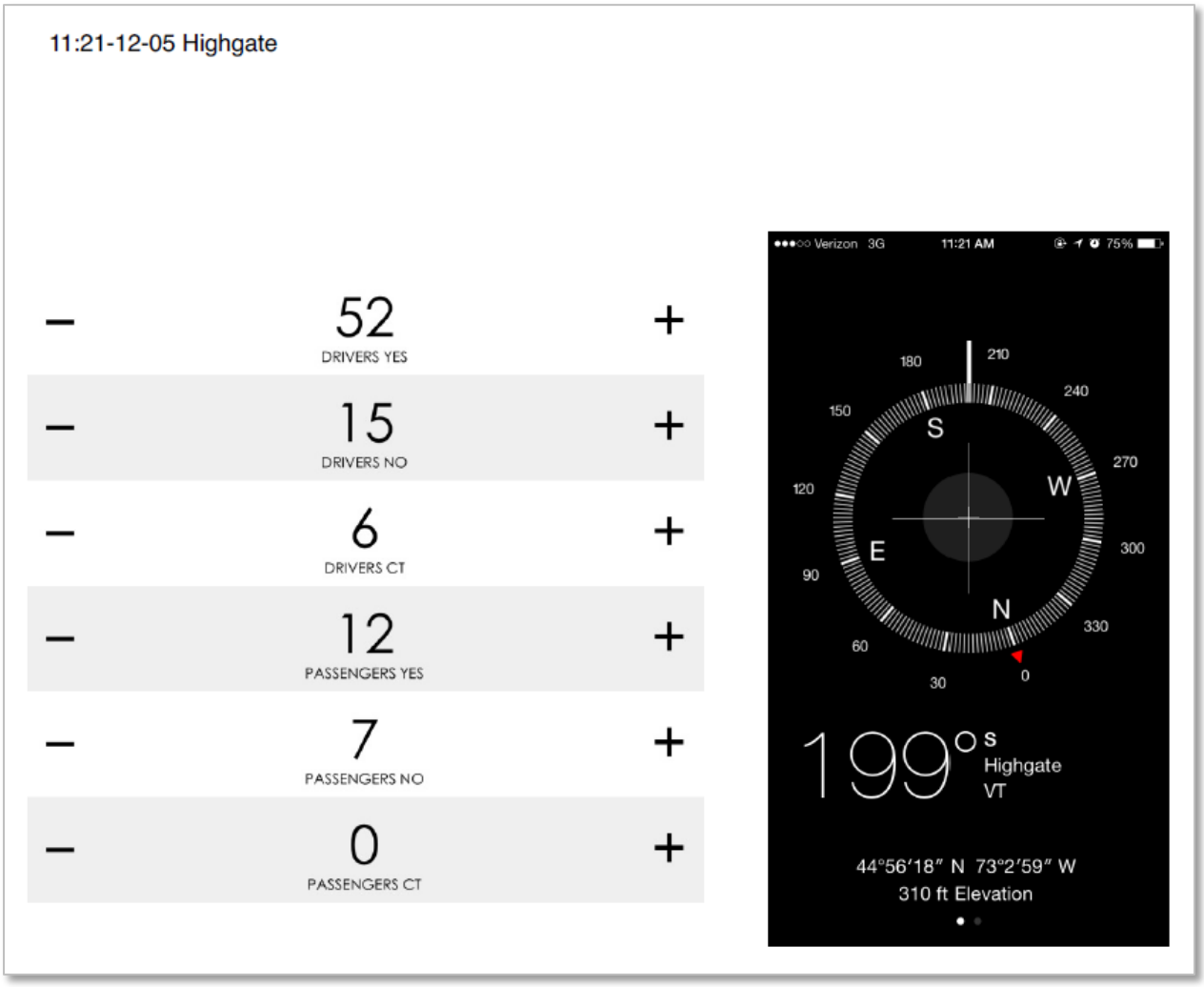
3 Methodology

3.1 Data Collection Method Development

A method collecting the observation data was first developed while staff were trained to make effective observations. Sites near the UVM TRC in Burlington were used for testing the roadside observation procedures before implementing the survey on a full scale. The goals of the method development were (1) to keep roadside observers safe, and (2) to contribute effective counts of seat-belt use rates.

Staff considered several different options on how to create the optimal counting procedure which would allow for maximum effectiveness and ease for the user. An iPad was chosen as the ideal tool as it would allow for easy data collection that could be saved for future reference. Three tally apps were considered - Fulcrom, Tally Pro, and Tally Counters. Staff decided to use Tally Counters as it allowed for multiple variables to be counted at the same time. The saving method was to take a screenshot at the end of the count to identify the site location and time. Screenshots (see Figure 2) were then sent to one staff person who then entered the data into an excel worksheet and kept the screenshots for any future use.

Figure 2: Example Screenshot



For each site, the following data was recorded:

- Name of observer
- Site ID
- Direction of travel being observed
- Start time and date
- End time and date

For each observation, the seat-belt use status of driver and front-seat passenger (if applicable) were recorded:

- Belted (if the shoulder belt is in front of the person's shoulder)

- Unbelted (if the shoulder belt is not in front of the person's shoulder)
- Unknown (if it cannot reasonably be determined whether the driver or passenger is belted)

Observations were conducted during randomly selected daylight hours on weekdays between 7 a.m. and 6 p.m. Data collection was conducted for 45 minutes at each site. Several challenges to data collection presented themselves over the course of the field work. While weather, especially rain, had the potential to impact staff's ability to collect data, it proved to be the sun that was the biggest obstacle to obtaining clear counts. Overall the most common challenges were as follows:

- Glare on windshields was the most difficult obstacle to seeing if a driver was wearing their seatbelt. Staff could sometimes move positions or observe in the opposite direction to avoid glare, but often times this did not solve the problem.
- Seats with a built-in seatbelt which was anchored into the seat rather than on the frame of the vehicle also created a difficult situation to see if the seatbelt was being used or not.
- Large vehicles were often times too high for staff to see inside. This included construction vehicles and large pick-up trucks.
- Clothing color that matched the color of the seatbelt was another challenging situation to make a clear observation. Paired with glare, this was especially difficult to be sure what was being observed.

3.2 Collection of Data

Staff observed drivers from the side of the road to record seat belt use by drivers and front seat passengers. An iPad was used with the app Tally Counters to mark Yes/No/Can't tell for both driver and passenger. Gendered counts were taken on 11 of the sites. Compass directions were also noted through various apps on staff member's smart phones to note the direction of traffic as well as latitude and longitude of the observation site. Screenshots were taken of the tally counts and saved for further analysis. Staff were instructed to observe one lane of traffic and to note which lane they were observing in the event of multiple lanes. Observations were made of all front seat occupants (driver and passenger) within a 45-minute time slot which was also noted on the tally sheet.

Previously identified backup sites were also observed to serve as additional information, if necessary. Only two sites proved to need a backup site as a replacement due to lack of vehicles to observe or construction obstacles.

A typical day of field work would be a driver and one or more staff accompanying them. If there were multiple staff available, the driver would drop off staff at a site, drop the next staff person off, then backtrack to pick up the first staff person. As travel time to sites grew throughout the timing of this project, two staff people were assigned to the majority of the field work.

Interstate sites were observed from the emergency turnaround nearest the proposed site, by senior staff, following the protocols required by an Interstate U-Turn Authorization permit (Appendix D). A separate staff person was responsible for the interstate sites as well as obtaining the permit to allow for the TRC vehicle to use the median.

3.3 Data Analysis

Under the stratified multistage sample design that was used to determine the 82 intended sites, the inclusion probability for each observation in the statewide sample is the product of the inclusion probabilities at each stage (NHTSA, 2011). A total of 8 stages were used in the sample design:

For the location of each observation site:

a. County Group

b. Functional Classification of the Roadway

c. Road Segment

For the specific observations at each site:

d. Time Segment Observed – weekend, weekday non-peak, weekday peak

e. Travel Direction Observed

f. Lanes Each Way Observed

g. Observation Rate

h. Front Seat Occupants Observed

Therefore, in order to calculate a weighted average of the observation rates at each site, inclusion probabilities corresponding to each of the stratification stages were needed.

The inclusion probabilities for the first 3 stages (a., b., and c.) are directly related to the selection of sites. Since the site locations were maintained from the original survey design for the Vermont, the combined inclusion probabilities to account for these three location-based stages was already known. These inclusion probabilities are include in the site-description table in Appendix A. These inclusion probabilities are based on the vehicle-miles of travel (VMT) represented by the specific site location divided by the total VMT in the stage-category being considered. The VMT represented by each specific site is also provided in Appendix A.

The inclusion probabilities for the Time Segment Observed stage corresponds to the probability of an observation being on a weekend, a non-peak hour of a weekday, or a peak-hour of a weekday. This inclusion probability is also based on the VMT represented by the specific site location divided by the total VMT in the stage-category being considered (weekend, weekday peak, or weekday non-peak).

The inclusion probabilities of the Travel Direction Observed stage corresponds to the probability of an observation being made in both travel directions at its site. Since all of the sites observed in this study were on roads with two-way traffic and only one of those directions was observed, the inclusion probabilities for all of the sites for Travel Direction Observed were 0.5. This value indicates that, for every site, one of two possible travel directions was observed.

The inclusion probabilities of the Lanes Each Way Observed stage corresponds to the probability of an observation being made for all of the travel lanes in each direction at a site. Since all of the sites observed in this study included observation of all travel lanes in the direction being observed, the inclusion probabilities for all of the sites for Lanes Each Way Observed were 1.0.

The inclusion probabilities of the Observation Rate stage corresponds to the probability of an observation being made for each vehicle that passes. Therefore, these inclusion probabilities correspond to the success rate of observations for the site, or the inverse of the non-response rate. This value was calculated by dividing the number of vehicle where a successful observation was made (Belted or Unbelted) divided by the total number of vehicles that passed during the observation period (Belted or Unbelted + Couldn't Tell).

The inclusion probabilities of the Front Seat Occupants Observed stage correspond to the probability of an observation being made for all of the front-row occupants of a vehicle (driver and passenger) at a site. Since all of the sites observed in this study included observation of all front seat occupants for the site being observed, the inclusion probabilities for all of the sites for Front Seat Occupants Observed were 1.0.

From these inclusion probabilities, a sample weight was calculated for each site, by taking the inverse of the product of all its inclusion probabilities. These sample weights were then used to find a statewide average seat-belt usage rate by taking a weighted average of the raw usage rates for each site. (23 CFR 1340, 2012)

4 Results and Conclusion

During our field work, a total of 18,440 observations of seat belt use were made at 87 sites. Observations from 5 of the sites were not used, since they were being reserved as back-up in case one or more of the primary sites' data was deemed unusable. Two of the back-up sites were used in place of 2 primary sites, one of which was inaccessible due to construction activity and the other of which did not have any observations during the 45-minute period when observation was attempted.

14,803 individual vehicles were observed, so the average vehicle occupancy of each observed vehicle was 1.25.

The official certificate of the measured statewide seat-belt usage rate is provided in Appendix C. The overall weighted statewide safety belt use rate for Vermont was calculated to be 85.0% (Table 2) and the standard error rate was calculated to 0.254%.

Table 2: Overall Usage Rates

Front-Seat Occupant	Raw Average Observation Rate	Weighted Average Seat Belt Use Rate
Driver Only	88.9%	86.2%
Passenger Only	78.2%	83.7%
Both	88.1%	**85.0%**

As seen in the table, the observation rate of the passenger was significantly lower than that of the driver. This difference was expected because observing staff were directed to prioritize observation of the driver, so observation positions and angle were chosen to optimize viewing of the driver, which compromised the ability to discern the seat belt status of the passenger. More surprising was the lower rate of seat belt use amongst passengers as compared to drivers. A modest increase in the weighted average seat belt use rate for passengers can have a significant overall impact on the total statewide seat belt use rate.

A summary of the sample weights and the raw usage rates in the data set is provided in Table 3.

Table 3: Sample Weights and Raw Usage Rates

	Min	Max	Mean	Standard Deviation
Observation Rates	62%	100%	88%	8%
Sample Weights	8	17,813	155	1,984
Raw Usage Rates (Driver)	68%	100%	86%	6%
Raw Usage Rates (Pass.)	57%	100%	87%	9%

For a site-by-site overview of seatbelt usage rates, please see Appendix B.

5 Future Improvements to the Methodology

With the potential of using cameras in the future, TRC staff believe that improved safety, reduction of missed observations, and larger sample size are the initial improvements that would be made to the survey. Video cameras could provide insight to changes based on seasonality, construction, and a longer range of observation time. Missed observations may be remedied by glare reduction based on the elevated nature of the camera.

6 References

WSU, 2014. *2014 Annual Direct Observation Survey of Safety Belt and Cell Phone Use.* Prepared for the Office of Highway Safety Planning by the Wayne State University Transportation Research Group, September 2014.

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23 CFR 1340, 2012. *Uniform Criteria for State Observational Surveys of Seat Belt Use*. Title 23, Chapter III, Part 1340 of the Code of Federal Regulations, April 1, 2012.

DPS, 2015. *Traffic Crash Fatalities*. Vermont State Police Department of Public Safety. http://vsp.vermont.gov/trafficsafety/fatalities Accessed 10/28/2015.

Appendix A: Observation Sites

Heading Legend:

CG = County Group

FCG = Functional Class Group

SID = Observation Site ID Number (internal to study)

TRCID = Observation Site ID Observed by the UVM TRC

S = Site Status – Primary (P) or Back-up (B)

DVMT = Daily VMT represented

Route = VTrans Highway Designation of Roadway

FC = Functional Classification of Roadway

CntSta = Nearest Continuous Traffic Count Collection Station

AADT = Annual Average Daily Traffic

Cty/Town = Vermont City or Town

$\boldsymbol{\pi_{ifr}}$ **=** Probability that a segment is included in its County Group, Functional Classification Group, and Segment Group

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SID	TRCID	CG	FCG	S	DVMT	Route	FC	CntSta	AADT	Cty/Twn	π *i/F*
1106	TRC01	CC	Art	P	3779.1	TH-4	14	D156	15300	Burlington	0.0645
1111	TRC02	CC	Art	P	13242.2	TH-9	12	D001	14600	Burlington	0.2261
1207	TRC03	CC	Col	P	1156.4	TH-13	17	D447	11800	Burlington	0.0189
1103	TRC04	CC	Art	P	1337.6	TH-3	16	D331	6400	S. Burlington	0.0229
1110	TRC05	CC	Art	P	5241.5	VT-116	14	D525	5500	S. Burlington	0.0894
1206	TRC06	CC	Col	P	1380	TH-6	17	D524	5000	S. Burlington	0.0225
1121	TRC07	CC	Art	B	4769	US-2	14	SOBR57	19000	S. Burlington	
1201	TRC08	CC	Col	P	2056	TH-10	17	SOBR40	4000	S. Burlington	0.0336
6104	TRC09	WL	Art	P	22599.27	V015-	6	NA	5700	Cambridge	0.1055
6107	TRC10	WL	Art	P	6884.58	V104-	6	NA	3500	Cambridge	0.0321
3202	TRC11	FGI	Col	P	402.84	VT-207	7	F155	3100	HIGHGATE	0.0152
6102	TRC12	WL	Art	P	6818.15	U302-	14	NA	6800	BARRE TOWN	0.0319
6201	TRC13	WL	Col	P	1091.08	S6104	17	W239	2000	BARRE TOWN	0.0065
1102	TRC14	CC	Art	P	42508.5	I-89	1	W089	25500	BOLTON	0.7258
6101	TRC15	WL	Art	P	23381.63	V100-	6	W364	3800	DUXBURY	0.1091
6121	TRC16	WL	Art	B	13573.51	V014-	6	W114	4400	E MONTPELIER	
6122	TRC17	WL	Art	B	1839.85	U002-	16	W184	10600	MONTPELIER	
6105	TRC18	WL	Art	P	115783.3	I089-	1	W034	23100	MIDDLESEX	0.5405
6203	TRC19	WL	Col	P	1798.96	U002-	7	W145	3800	MIDDLESEX	0.0107
6221	TRC20	WL	Col	B	8465.26	V064-	7	W357	3400	NORTHFIELD	
6202	TRC21	WL	Col	P	32377.86	V108-	7	L130	8400	STOWE	0.1929
1107	TRC22	CC	Art	P	5332.8	US-2	16	D019	10100	COLCHESTER	0.091
1105	TRC23	CC	Art	P	5292	TH-1	16	COLC19	14000	COLCHESTER	0.0904
1112	TRC24	CC	Art	P	3427.6	VT-15	14	COLC13	20900	COLCHESTER	0.0585
1108	TRC25	CC	Art	P	1487.5	I-89	11	D423	8500	WILLISTON	0.0254
1203	TRC26	CC	Col	P	2254.2	TH-5	19	SHEL01	3400	SHELBURNE	0.0368
1113	TRC27	CC	Art	P	7581.6	VT-116	6	D296	10400	HINESBURG	0.1295
1109	TRC28	CC	Art	P	2179.3	VT-116	6	D127	3700	HINESBURG	0.0372
1101	TRC29	CC	Art	P	8905.6	US-7	14	D243	18400	SHELBURNE	0.1521
1205	TRC30	CC	Col	P	3705.6	TH-5	7	D360	1600	HINESBURG	0.0606
1222	TRC31	CC	Col	B	2533.1	TH-9	17	D089	7300	COLCHESTER	
1204	TRC32	CC	Col	P	437.36	TH-4	9	D370	770	CHARLOTTE	0.0071
2201	TRC33	BAd	Col	P	2736.64	V017-	7	A015	1600	BRISTOL	0.0146
6103	TRC34	WL	Art	P	38339.62	V100-	6	L179	8700	MORRISTOWN	0.179
1202	TRC35	CC	Col	P	4897.2	VT-128	7	D309	2100	WESTFORD	0.08
3101	TRC36	FGI	Art	P	8207.14	VT-104A	6	F047	4700	GEORGIA	0.0344
2101	TRC37	BAd	Art	P	2047.71	V022A	6	A113	4500	BRIDPORT	0.0104
2203	TRC38	BAd	Col	P	6244.78	V074-	7	A154	1900	SHOREHAM	0.0332
2106	TRC39	BAd	Art	P	14919.19	U007-	2	A107	7900	SALISBURY	0.0761
6106	TRC40	WL	Art	P	2683.46	V100-	6	W008	1300	WARREN	0.0125

SID	TRCID	CG	FCG	S	DVMT	Route	FC	CntSta	AADT	Cty/Twn	π i/f
4122	TRC41	NEK	Art	B	30556.88	I091-	1	P002	5600	BARTON	
7109	TRC42	WOW	Art	P	47228.82	I091-	1	N002	7700	FAIRLEE	0.2214
7104	TRC43	WOW	Art	P	78002.4	I089-	1	Y085	23300	HARTFORD	0.3659
7114	TRC44	WOW	Art	P	123938.2	I089-	1	Y001	14200	RANDOLPH	0.5813
7121	TRC45	WOW	Art	B	165516.7	I089-	1	Y086	17400	SHARON	
7112	TRC46	WOW	Art	P	115602.6	I091-	1	Y075	11900	Weathersfield	0.5422
7206	TRC47	WOW	Col	P	3951.62	U005-	7	Y223	10400	HARTFORD	0.0216
7201	TRC48	WOW	Col	P	7989.94	V014-	7	Y003	1600	SHARON	0.0437
3103	TRC49	FGI	Art	P	11314.12	US-2	6	G102	2900	N HERO	0.0475
3201	TRC50	FGI	Col	P	773.69	TH12	9	F165	1500	St Albans Town	0.0036
3203	TRC51	FGI	Col	P	1337.34	US-7	7	F149	4500	SWANTON	0.1157
3102	TRC52	FGI	Art	P	13554.86	VT-105	6	NA	6400	ENOSBURG	0.0569
5104	TRC53	Rut	Art	P	6123.76	V022A	6	NA	4900	FAIR HAVEN	0.0285
5103	TRC54	Rut	Art	P	13631.66	U004-	14	R081	12900	Rutland Town	0.0633
5102	TRC55	Rut	Art	P	8740.01	V030-	6	R126	2800	POULTNEY	0.0406
5202	TRC56	Rut	Col	P	372.94	S3216	17	R472	1200	Rutland Town	0.0023
5101	TRC57	Rut	Art	P	24260.56	U004-	2	R112	11200	MENDON	0.1126
5105	TRC58	Rut	Art	P	25188.96	U007-	2	R102	9000	PITTSFORD	0.117
5201	TRC59	Rut	Col	P	5418.6	V140-	7	R316	910	WALLINGFORD	0.0328
2105	TRC60	BAd	Art	P	9207.11	V030-	6	B121	2500	RUPERT	0.047
2102	TRC61	BAd	Art	P	17477.74	V011-	6	B114	6900	WINHALL	0.0891
2202	TRC62	BAd	Col	P	12555.08	V007A	7	B103	4900	MANCHESTER	0.0668
2104	TRC63	BAd	Art	P	12972.2	V009-	2	B130	3500	WOODFORD	0.0662
2103	TRC64	BAd	Art	P	17562.09	U007-	2	B112	6100	POWNAL	0.0896
7204	TRC65	WOW	Col	P	1619.86	S0176	7	Y300	1300	ROCHESTER	0.0089
7116	TRC66	WOW	Art	P	7387.48	U004-	2	Y116	8600	WOODSTOCK	0.0347
7101	TRC67	WOW	Art	P	12405.95	V103-	2	Y062	9000	LUDLOW	0.0582
7111	TRC68	WOW	Art	P	15536.04	V103-	2	Y161	4600	CHESTER	0.0728
7107	TRC69	WOW	Art	P	2927.84	V103-	2	Y427	5200	CHESTER	0.0138
7108	TRC70	WOW	Art	P	3832.13	V100-	6	NA	2500	Londonderry	0.0179
7113	TRC71	WOW	Art	P	9161.57	V011-	6	Y133	9000	SPRINGFIELD	0.043
7203	TRC72	WOW	Col	P	2110.94	S0117	7	X153	6700	Bellows Falls	0.0115
7102	TRC73	WOW	Art	P	2834.58	U005-	6	NA	4300	WESTMINSTER	0.0133
7103	TRC74	WOW	Art	P	16967.39	V030-	6	X124	3800	TOWNSHEND	0.0795
7105	TRC75	WOW	Art	P	8813.42	V030-	6	NA	5200	NEWFANE	0.0413
7110	TRC76	WOW	Art	P	10410.02	V009-	2	X133	5700	WILMINGTON	0.0488
7115	TRC77	WOW	Art	P	17794.03	V009-	2	X134	4800	MARLBORO	0.0835
7106	TRC78	WOW	Art	P	17323.13	V030-	16	X130	6300	BRATTLEBORO	0.0813
7202	TRC79	WOW	Col	P	10500.47	V131-	7	Y177	5400	Weathersfield	0.0574
4104	TRC80	NEK	Art	P	2505.44	V191-	6	NA	3300	DERBY	0.0125

SID	TRCID	CG	FCG	S	DVMT	Route	FC	CntSta	AADT	Cty/Twn	π i/f
4102	TRC81	NEK	Art	P	4244.76	V016-	6	P022	1600	GLOVER	0.0212
4202	TRC82	NEK	Col	P	5151.43	U005-	7	C101	2700	BURKE	0.0283
4203	TRC83	NEK	Col	P	627.2	S0277	7	E144/EZAF	160	GUILDHALL	0.0035
4201	TRC84	NEK	Col	P	14437.15	U005-	7	C146/CYA	14300	LYNDON	0.0794
4101	TRC85	NEK	Art	P	1746.48	U005-	16	C165	5600	ST JOHNSBURY	0.0087
4103	TRC86	NEK	Art	P	2843.25	U002-	14	C160	8600	ST JOHNSBURY	0.0142
7205	TRC87	WOW	Col	P	4614.11	V110-	7	N127	860	WASHINGTON	0.0252
4105	TRC88	NEK	Art	P	3602.66	U002-	2	E007	2600	CONCORD	0.018
1104		CC	Art	P	3187.25	US-2	14	WILL12	11590	WILLISTON	0.0545
1122		CC	Art	B	4009.6	VT-2A	16	D135	17900	WILLISTON	
1221		CC	Col	B	2356.2	TH-3	8	RICH27	1100	RICHMOND	
2121		BAd	Art	B	9233.89	V116-	6	A122	3600	STARKSBORO	
2122		BAd	Art	B	5226.61	S1006	16	B142	10800	BENNINGTON	
2221		BAd	Col	B	9356.12	S0199	7	A326	3000	MONKTON	
3121		FGI	Art	B	8574.82	V105-	6	NA	6400	SHELDON	
3221		FGI	Col	B	5679.23	S0280	7	NA	3000	FAIRFAX	
4121		NEK	Art	B	3193.94	V100-	6	NA	1500	LOWELL	
4221		NEK	Col	B	13007.81	U005-	7	C102	4900	LYNDON	
5121		Rut	Art	B	2423.34	B004-	16	R225	8500	RUTLAND CITY	
5122		Rut	Art	B	4860.3	U007-	2	R502	19200	Rutland Town	
5221		Rut	Col	B	947.49	V073-	7	NA	2100	BRANDON	
7122		WOW	Art	B	10698.66	V103-	2	Y160	5200	CAVENDISH	
7221		WOW	Col	B	197.86	S0126	7	X047	130	WINDHAM	
7222		WOW	Col	B	627.01	S0152	7	NA	580	WINDSOR	

Appendix B: Seatbelt Use Rate by Site

TRC ID	City or Town	Raw Use Rate (driver)	Raw Use Rate (passenger)	Sample Weight (w)
TRC01	BURLINGTON	84%	79%	63
TRC02	BURLINGTON	91%	93%	9
TRC03	BURLINGTON	91%	87%	222
TRC04	SO. BURLINGTON	90%	84%	93
TRC05	SO. BURLINGTON	95%	100%	29
TRC06	SO. BURLINGTON	95%	95%	95
TRC08	SO. BURLINGTON	89%	93%	66
TRC09	CAMBRIDGE	87%	93%	21
TRC10	CAMBRIDGE	87%	83%	78
TRC11	HIGHGATE	78%	63%	141
TRC12	BARRE TOWN	75%	89%	138
TRC13	BARRE TOWN	80%	80%	319
TRC14	BOLTON	97%	98%	9
TRC15	DUXBURY	88%	85%	21
TRC18	MIDDLESEX	95%	96%	12
TRC19	MIDDLESEX	89%	84%	205
TRC21	STOWE	87%	87%	11
TRC22	COLCHESTER	88%	88%	26
TRC23	COLCHESTER	86%	88%	24
TRC24	COLCHESTER	90%	92%	73
TRC25	WILLISTON	93%	85%	98
TRC26	SHELBURNE	93%	93%	55
TRC27	HINESBURG	94%	84%	18
TRC28	HINESBURG	81%	85%	67
TRC29	SHELBURNE	91%	95%	13
TRC30	HINESBURG	88%	100%	39
TRC32	CHARLOTTE	96%	92%	282
TRC33	BRISTOL	100%	100%	140
TRC34	MORRISTOWN	82%	87%	12
TRC35	WESTFORD	95%	100%	28
TRC36	GEORGIA	78%	89%	62
TRC37	BRIDPORT	87%	91%	201
TRC38	SHOREHAM	83%	90%	67
TRC39	SALISBURY	86%	80%	31
TRC40	WARREN	82%	91%	176
TRC42	FAIRLEE	82%	88%	20
TRC43	HARTFORD	87%	94%	13
TRC44	RANDOLPH	90%	96%	9

TRC ID	City or Town	Raw Use Rate (driver)	Raw Use Rate (passenger)	Sample Weight (w)
TRC46	WEATHERSFIELD	86%	90%	8
TRC47	HARTFORD	88%	90%	190
TRC48	SHARON	88%	100%	59
TRC49	N HERO	93%	100%	51
TRC50	St Albans Town	82%	80%	630
TRC51	SWANTON	84%	92%	22
TRC52	ENOSBURG	69%	60%	43
TRC53	FAIR HAVEN	93%	91%	73
TRC54	RUTLAND TOWN	84%	93%	69
TRC55	POULTNEY	88%	95%	58
TRC56	RUTLAND TOWN	87%	83%	17,813
TRC57	MENDON	87%	90%	20
TRC58	PITTSFORD	91%	85%	22
TRC59	WALLINGFORD	85%	88%	61
TRC60	RUPERT	84%	92%	46
TRC61	WINHALL	90%	91%	57
TRC62	MANCHESTER	91%	74%	37
TRC63	WOODFORD	93%	100%	39
TRC64	POWNAL	77%	88%	58
TRC65	ROCHESTER	87%	91%	229
TRC66	WOODSTOCK	85%	80%	59
TRC67	LUDLOW	83%	79%	36
TRC68	CHESTER	91%	100%	34
TRC69	CHESTER	91%	75%	188
TRC70	LONDONDERRY	70%	57%	116
TRC71	SPRINGFIELD	86%	93%	124
TRC72	BELLOWS FALLS	68%	65%	191
TRC73	WESTMINSTER	77%	84%	171
TRC74	TOWNSHEND	86%	88%	27
TRC75	NEWFANE	85%	82%	56
TRC76	WILMINGTON	89%	95%	59
TRC77	MARLBORO	82%	83%	48
TRC78	BRATTLEBORO	90%	85%	27
TRC79	WEATHERSFIELD	88%	85%	42
TRC80	DERBY	86%	82%	177
TRC81	GLOVER	79%	73%	112
TRC82	BURKE	84%	86%	89
TRC84	LYNDON	77%	72%	25
TRC85	ST JOHNSBURY	80%	78%	257
TRC86	ST JOHNSBURY	75%	82%	142
TRC87	WASHINGTON	82%	100%	93

TRC ID	City or Town	Raw Use Rate (driver)	Raw Use Rate (passenger)	Sample Weight (w)
TRC88	CONCORD	91%	77%	147

Appendix C: Certificate of Rate/Standard Error

APPENDIX TO PART 1340

STATE SEAT BELT USE SURVEY REPORTING FORM

PART A: To be completed by the Governor's Highway Safety Representative (GR) or if applicable, the Coordinator of the State Highway Safety Office.

State: Vermont Calendar Year of Survey: 2015

Statewide Seat Belt Use Rate: 85%

I hereby certify that:

- **Chris Cole, Secretary of the Agency of Transportation** has been designated by the Governor as the State's Highway Safety Representative (GR), and if applicable, the GR has delegated the authority to sign the certification in writing to NA, the Coordinator of the State Highway Safety Office.
- The reported Statewide seat belt use rate is based on a survey design that was approved by NHTSA, in writing, as conforming to the Uniform Criteria for State Observational Surveys of Seat Belt Use, 23 CFR Part 1340.
- The survey design has remained unchanged since the survey was approved by NHTSA.
- Jim Sullivan, a qualified survey statistician, has reviewed the seat belt use rate reported above and information reported in Part B and has determined that they meet the Uniform Criteria for State Observational Surveys of Seat Belt Use, 23 CFR Part 1340 .

Signature

10/2/15
Date

Chris Cole, Secretary, Agency of Transportation

PART B

Data Collected at Observation Sites

Site ID	Site Type[1]	Date Observed	Sample Weight	Number of Drivers	Number of Front Passengers	Number of Occupants[2] Belted	Number of Occupants Unbelted	Number of Occupants With Unknown Belt Use
Total								

Standard Error of Statewide Belt Use Rate[3]: 0.3 %

Nonresponse Rate, as provided in § 1340.9(f)

Nonresponse rate for the survey variable seat belt use: 13.4 %

[1] Identify if the observation site is an original observation site or an alternate observation site.

[2] Occupants refer to both drivers and passengers.

[3] The standard error may not exceed 2.5 percent.

Appendix D: Interstate U-Turn Authorization Permit

CERTIFICATE

James Sullivan and Jacob Leopold
UVM Transportation Research Center
University of Vermont

Vermont Agency of Transportation

INTERSTATE U-TURN AUTHORIZATION

The Bearer of this Certificate, as a representative of the University of Vermont, is hereby authorized to utilize the U-Turns on Interstate 89/91, during the execution of their duties while conducting research for the Governor's Highway Safety Alliance as follows:

I-89	I-91
Northbound, MM 1.2	Northbound, MM 158.8
Southbound, MM 61.	Northbound, MM 93.4
Northbound, MM 25.2	Northbound, MM 45.2

Anticipated timeframe for this research work is **July 8 to July 31, 2015**. If the work is not completed by that date, this Certificate will remain in effect until the work is completed.

Persons using the U-Turns shall abide by the following, and the Guidelines for the Proper use of U-Turns on Limited Access Highways on the reverse side of this Certificate:

1. Have this authorization in his/her possession.
2. Use the U-Turn with the utmost caution.
3. Use a flashing amber light located on the roof of the vehicle.
4. Yield to all Interstate-through traffic.
5. U-Turns will not be utilized during inclement weather or fog conditions.

Failure to comply with any of the above shall be grounds for revoking this authorization.

Kevin L. Marshia 7/1/15

Kevin Marshia, P. E. Date
Acting Chief Engineer
Highway Division
Vermont Agency of Transportation
1 National Life Drive
Montpelier, VT 05633-5001

VTrans Working to Get You There

c: State Police, Lt. Garry Scott and Sgt. Eric Albright
Montpelier Project Files

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