2019
Seat Belt Use in Virginia

Final Report


Prepared for:

Virginia Department of Motor Vehicles' Highway Safety Office

By:

Bryan E. Porter, Ph.D.*
The Graduate School & Psychology

Norou Diawara, Ph.D.
Mathematics & Statistics

Jennika K. Jenkins
Psychology

Old Dominion University
Norfolk, Virginia 23529-0267

With Special Acknowledgement to:

Collectors from the Behavioral Psychology Research & Analysis Team
Old Dominion University

***For Further Information:**
757-683-3259
bporter@odu.edu

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Summary

This report documents procedures to produce the 2019 seat belt use rate for Virginia. The procedures were developed as a result of the federally-mandated "re-design" based on the final rule for 23 CFR Part 1340: Uniform Criteria for State Observational Surveys of Seat Belt Use. The rule was published in the *Federal Register* Vol. 76 No. 63, April 1, 2011, Rules and Regulations, pp. 18042 – 18059. Virginia's plan was approved by the National Highway Traffic Safety Administration in February 2017 after working closely with federal personnel to ensure compliance with the law. This plan is in place for 2017 – 2021.

The report provides significant details about sampling, procedures, and analyses. In brief:

(1) The 2019 weighted seat belt use rate, calculated with the methodology and sample approved by NHTSA in 2017, was **<u>85.4%</u>.**

(2) The 95% confidence interval for the seat belt use rate was between 84.3% and 86.6%.

(3) The error rate was 0.58%, well below the maximum 2.5% allowed by code.

(4) The "miss rate" or rate of "unknown" belt use observations (i.e., seeing an individual occupant but not knowing whether he or she was buckled up) was 7.9%, below the maximum 10% allowed by code.

(5) These seat belt use rate results were based on a weighted survey design sample of 16,629 vehicles providing driver and/or passenger belt use observations.

Additional analyses of individual occupant, vehicle, and area differences are included in the report. Readers desiring more information are encouraged to contact the lead author (contact information on the title page).

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1.0 Introduction

On April 1, 2011, the National Highway Traffic Safety Administration (NHTSA) issued new Uniform Criteria for State Observational Surveys of Seat Belt Use. The final rule was published in Federal Register Vol. 76 No. 63, Rules and Regulations, pp. 18042 – 18059. The survey plan presented below represents Virginia's required response to re-design its survey for 2017 – 2021 to follow its first approved survey which ran 2012 - 2016. The re-designed survey meets the requirement of a study and data collection protocol for an annual state survey to estimate passenger vehicle occupant restraint use. This plan is fully compliant with the Uniform Criteria and was used to complete Virginia's 2019 seat belt survey.

2.0 Study Design

Virginia is composed of 95 county aggregates (an aggregate is a county and independent cities included in one geographical area), 56 of which account for 86.3 percent of the passenger vehicle crash-related fatalities according to Virginia Department of Motor Vehicles' data averages for the period 2011 - 2015[1]. We used these 56 counties as the eligible pool from which to sample counties for inclusion in the survey. We chose 15 of these 56 for observation (see below for selection procedures).

Using 2015 TIGER data developed by the U.S. Census Bureau, NHTSA provided to states a listing of road segments for each county/city jurisdiction. These have been identified by road functional classification (S1100: Interstate/Primary, S1200: Arterial/Secondary, and S1400: Local). Local roads (S1400s) were excluded from county areas in non-Metropolitan Statistical Areas as allowed by the federal rule. In addition, the listings include segment length as determined by TIGER. This descriptive information allowed for stratification of road segments, and we employed a systematic probability proportional to size (PPS) sample to select the road segments to be used as observation sites.

All passenger vehicles with a gross vehicle weight up to 10,000 pounds are included in the survey. This includes small commercial vehicles. The target population is all drivers and right front seat passengers (excluding children harnessed in child safety seats) of these vehicles who travel on public roads between the hours of 0700 and 1800. The observation period for each selected road segment is 50 minutes (10 additional minutes are used for site setup, background data recording such as estimated traffic volume, and organizational paperwork and check-ins with on-call supervisors as needed; the total time at the sites is 60 minutes to allow efficient collection schedules and travel routes within a given day). Fifty minutes of belt-use collection is sufficient based on past experiences with similar state projects.

Data collection is conducted by single observers who receive two days of classroom and field training. Quality Control (QC) Monitors make unannounced visits to scheduled data collection

[1] Data from the FARS system provided by NHTSA to do a county analysis did not include 2015 when the sample was created. Also, Virginia historically aggregates cities and counties that are geographically contiguous for programming and understanding regional traffic safety concerns; data provided by NHTSA treated cities and counties separately, which was less accurate for historical purposes, and inconsistent with how the first design was created. More on this aggregation follows in a later section.

locations to ensure that data are being collected according to the research protocol. Further, each day has an "on-call supervisor" who handles collector check-ins, questions, replacement site decisions, and so forth. Our plan also describes methods to be used when scheduled data collection sites are not available due to temporary or permanent circumstances.

The approaches to data weighting and belt use estimation and variance estimation comply with the Uniform Criteria and stipulate procedures to be followed when data quality goals (e.g. item response rates) are not met.

3.0 Sample Design

The research design conforms to the requirements of the Uniform Criteria and generates annual estimates of occupant restraint use for adults and children using booster seats in the front seats of passenger vehicles. The selected approach includes a stratified systematic PPS sample of data collection sites as described below.

In Virginia, there are separate county jurisdictions and city jurisdictions. The first step was to aggregate independent cities with the most appropriate county. Treating cities and their surrounding counties as units makes sense in the Commonwealth from historical considerations, travel issues, and planning. All data for each area were then aggregated in kind. For example, Bristol City and Washington County were aggregated into what was called the Washington County Aggregate. Treating Bristol City as a separate entity for sampling from Washington County does not make sense given how those two jurisdictions work together and are geographically linked.

The design team also created three county aggregates where they did not exist, but did so again because of geography, history, and how the areas work together. It also did this so that these aggregates would only enter the final sample once each at most, which allowed other areas of the Commonwealth better odds of being selected for observation. The South Hampton Roads cities of Norfolk, Virginia Beach, Chesapeake, Portsmouth, and Suffolk were combined into the Southeast Aggregate. The Peninsula cities of Williamsburg, Poquoson, Hampton, and Newport News were combined with York County into the York County Aggregate. And the counties of Accomack and Northampton were combined into the Eastern Shore Aggregate.

Fatalities were the key measure of eligibility based on the revised Uniform Criteria. The federal rule stated that, at minimum, counties producing 85% of the state's roadway fatalities must be considered eligible. States were given leeway in how many years' data would be used to make this assessment (3 – 5), with Virginia choosing a 5-year average. To determine eligibility, Virginia county aggregates were ranked by their 5-year average fatalities based on Virginia Department of Motor Vehicles' fatality data (recall Footnote 1). Table 1 gives the ranked aggregates and their average 5-year fatals. Shaded counties are those that were marked as "eligible for selection." Note that these eligible counties contributed 86.3% of the average fatalities, a higher cut-off than required by the rule. The team made this decision because the last eligible counties on the list tied on the 5-year average, so it allowed all counties with that last value to be included as eligible.

Table 1. Virginia Average Passenger Vehicle Crash-Related Fatalities by County 2011 - 2015*

No.	County	Including Cities/ Counties if Combined	5-year Fatal avg.	Pct of Fatals	Cumulative Pct
1	Southeast Aggregate	Chesapeake, Norfolk, Portsmouth, Suffolk, Virginia Beach	74.0	0.099	0.099
2	Fairfax County	Alexandria, Fairfax, Manassas Park[2], Falls Church	43.2	0.058	0.157
3	Henrico County	Richmond	31.8	0.043	0.200
4	York County Aggregate	Hampton, Newport News, Poquoson, Williamsburg	27.0	0.036	0.236
5	Chesterfield County	Colonial Heights	25.0	0.033	0.269
6	Prince William County	Manassas	17.6	0.024	0.293
7	Pittsylvania County	Danville	17.0	0.023	0.316
8	Roanoke County	Roanoke, Salem	15.0	0.020	0.336
9	Rockingham County	Harrisonburg	14.8	0.020	0.355
10	Albemarle County	Charlottesville	14.8	0.020	0.375
11	Henry County	Martinsville	14.2	0.019	0.394
12	Spotsylvania County	Fredericksburg	14.0	0.019	0.413
13	Hanover County		13.8	0.018	0.432
14	Augusta County	Staunton, Waynesboro	13.4	0.018	0.450
15	Loudoun County		13.0	0.017	0.467
16	Frederick County	Winchester	12.8	0.017	0.484
17	Fauquier County		12.4	0.017	0.501
18	Campbell County	Lynchburg	11.4	0.015	0.516
19	Prince George County	Hopewell, Petersburg	11.4	0.015	0.531
20	Bedford County	Bedford	11.0	0.015	0.546
21	Stafford County		10.4	0.014	0.560
22	Eastern Shore	Accomack County, Northampton County	10.2	0.014	0.574
23	Franklin County		10.2	0.014	0.587
24	Washington County	Bristol	9.0	0.012	0.599
25	Brunswick County		8.2	0.011	0.610
26	Mecklenburg County		8.2	0.011	0.621
27	Carroll County	Galax	7.8	0.010	0.632

[2] Manassas Park is listed here within Fairfax County because it was included in the Fairfax aggregate for sample selection, but it is technically in Prince William County. This inaccuracy has a negligible impact on findings. Crashes and road lengths were added to Fairfax for sampling, but in the end no sites from Manassas Park were sampled, and therefore no data are collected from Manassas Park during this 5-year period.

28	Montgomery County	Radford	7.8	0.010	0.642
29	Caroline County		7.8	0.010	0.653
30	Culpeper County		7.8	0.010	0.663
31	Wythe County		7.4	0.010	0.673
32	Halifax County		7.2	0.010	0.683
33	Rockbridge County	Buena Vista, Lexington	7.0	0.009	0.692
34	Louisa County		6.6	0.009	0.701
35	Botetourt County		6.4	0.009	0.709
36	Dinwiddie County		6.4	0.009	0.718
37	Buchanan County		6.2	0.008	0.726
38	Amherst County		6.0	0.008	0.734
39	Russell County		6.0	0.008	0.742
40	Shenandoah County		6.0	0.008	0.750
41	King George County		5.8	0.008	0.758
42	Wise County	Norton	5.6	0.008	0.766
43	James City County		5.6	0.008	0.773
44	Lee County		5.4	0.007	0.780
45	New Kent County		5.4	0.007	0.788
46	Orange County		5.4	0.007	0.795
47	Powhatan County		5.4	0.007	0.802
48	Warren County		5.4	0.007	0.809
49	Southampton County	Franklin	5.2	0.007	0.816
50	Prince Edward County		5.2	0.007	0.823
51	Gloucester County		5.0	0.007	0.830
52	Goochland County		5.0	0.007	0.837
53	Nelson County		5.0	0.007	0.843
54	Patrick County		5.0	0.007	0.850
55	Pulaski County		5.0	0.007	0.857
56	Tazewell County		5.0	0.007	0.863
57	Isle of Wight County		4.8	0.006	0.870
58	Arlington County		4.4	0.006	0.876
59	Smyth County		4.4	0.006	0.882
60	Alleghany County	Covington	4.2	0.006	0.887
61	Buckingham County		4.2	0.006	0.893
62	Nottoway County		4.2	0.006	0.898
63	Fluvanna County		4.0	0.005	0.904
64	Giles County		4.0	0.005	0.909
65	Amelia County		3.8	0.005	0.914
66	Charlotte County		3.8	0.005	0.919
67	Greensville County	Emporia	3.6	0.005	0.924
68	Scott County		3.6	0.005	0.929

69	Westmoreland County	3.2	0.004	0.933
70	Page County	3.0	0.004	0.937
71	Appomattox County	2.8	0.004	0.941
72	King William County	2.8	0.004	0.945
73	Dickenson County	2.6	0.003	0.948
74	Essex County	2.6	0.003	0.952
75	Floyd County	2.6	0.003	0.955
76	Sussex County	2.6	0.003	0.959
77	Charles City County	2.4	0.003	0.962
78	Clarke County	2.4	0.003	0.965
79	Lancaster County	2.4	0.003	0.968
80	Lunenburg County	2.2	0.003	0.971
81	King and Queen County	2.0	0.003	0.974
82	Madison County	2.0	0.003	0.977
83	Cumberland County	1.8	0.002	0.979
84	Mathews County	1.8	0.002	0.982
85	Northumberland County	1.8	0.002	0.984
86	Grayson County	1.6	0.002	0.986
87	Greene County	1.6	0.002	0.988
88	Bath County	1.4	0.002	0.990
89	Bland County	1.4	0.002	0.992
90	Craig County	1.4	0.002	0.994
91	Middlesex County	1.4	0.002	0.996
92	Rappahannock County	1.0	0.001	0.997
93	Richmond County	1.0	0.001	0.998
94	Surry County	0.8	0.001	0.999
95	Highland County	0.4	0.001	1.000
	Virginia Average 5-year Fatal Count:	746.6		

* Data are from fatalities recorded in the Virginia Department of Motor Vehicles' database for 2011 – 2015. Shaded counties were eligible for selection.

3.1 Sample Size and Precision

A standard error of less than 2.5% on the seat belt use estimate is required by the Final Rule. Since 2012 when the revised federal code for this survey was implemented, Virginia's Annual Seat Belt Use Study's standard errors have been below this threshold with more than 10,000 vehicles observed each year. These observed sizes were obtained from 15 county aggregates and 8 – 16 road segments per county (136 segments overall). Therefore, because the current design also includes 15 county aggregates and 136 road segments, it is expected to yield annually a comparable vehicle sample, and the precision objective should be achieved. In the event the precision objective is not met, additional observations would be made starting with sites having the fewest observations, and new data would be added to existing valid data until the desired precision is achieved. In 2019, the precision objective was met.

3.2 County Selection

Data

Vehicle Miles Traveled (VMT) in millions was used to weight the probability of counties being sampled. Specifically, the team used a 5-year average VMT, obtained from the Virginia Department of Transportation database (2011-2015), as our "measure of size" in a "probability proportion to size" (PPS) sampling procedure. Simple random sampling (SRS) could have been used, but that method could result in all counties coming from one region of the Commonwealth. This was not desirable. Instead, PPS was deemed more desirable, with PPS strata sampling chosen. The strata had approximately the same size definitions (see the following section).

County Ranking and Sampling

To ensure the team included a representative range of VMTs across Virginia, counties were grouped into high, medium, and low VMT strata. The High VMT stratum was formed of counties with at least 1001 million miles traveled on average each year. The Low VMT stratum was formed of counties with fewer than 501 million miles average. The medium stratum was categorized between those two groups. This categorization, which was deemed reasonable, produced 19 "high", 19 "medium", and 18 "low" counties, a good balance of VMT clusters across the Commonwealth. Then, within each VMT strata, five counties were selected via PPS with average VMT as the weighting factor. This produced a group of 15 counties for consideration.

Within each stratum, counties were selected with probability proportional to size with the MOS being the average VMT from 2011 to 2015. Let $g = 1,2, \dots G = 3$ be the first stage strata, VMT_{gc} be the average VMT for county c in stratum g, and $VMT_g = \sum_{all\ c\ in\ g} VMT_{gc}$ be the total average VMT for all counties in first stage stratum g. Then PSU inclusion probability is: $\pi_{gc} = n_g VMT_{gc}/VMT_g$; here n_g is the PSU sample size for first stage stratum g that was allocated. If a county was selected with certainty (i.e., its MOS was equal to or exceeded VMT_g/n_g), it was set aside as a certainty selection and the probabilities of selection were recalculated for the remaining counties in the stratum. This was repeated and the certainty selections were identified successively until no county's MOS was equal to or exceeded the recalculated VMT_g/n_g.

The selection was completed using different seeds in the SAS® package (SAS® institute Inc., Cary NC, USA) version 9.3 software system.

Table 2 shows the average 5-year VMTs, VMT Strata, and probability of selection for each of the resulting 15 county aggregates sampled for observations.

Table 2. Selected County, Measure of Size (VMT Strata), and Probability of Selection

County	Average 5-Yr VMT (millions)	VMT Group (Stratum)	Probability of Selection
Fairfax	10,820.28	High	0.994841257
Southeast Aggregate	8,659.46	High	0.796170673
York County Aggregate	3,841.70	High	0.353214661
Prince William	3594.08	High	0.330447752
Stafford County	1548.93	High	0.142411847
Pittsylvania	975.04	Medium	0.377368988
Wythe	741.55	Medium	0.286999348
Bedford	667.28	Medium	0.258256861
Goochland	611.64	Medium	0.236720099
Franklin	555.90	Medium	0.215149109
Wise	458.76	Low	0.385790861
Amherst	348.91	Low	0.293409106
Orange	291.75	Low	0.245345858
Buchanan	225.31	Low	0.189475138
Lee	206.92	Low	0.174009578

Note: VMT data are from 2011 – 2015.

3.3 Road Segment Selection

Virginia employed the 2015 Census TIGER data for the selection of road segments (provided by NHTSA). Virginia also exercised the exclusion option allowed by the federal rule to remove local roads in counties that were not within Metropolitan Statistical Areas (MSAs). The team excluded without exception any road segment that was not coded S1100 (primary), S1200 (secondary), or S1400 (local) from any county selected.

Road segments within each county were first stratified by functional classification group (Interstate/Primary, Arterial/Secondary, and Local) and segment length (Short, Medium, and Long). The Short, Medium, and Long classifications were based on segment length within county and functional classification group. Road segments were selected with PPS using length as the MOS. Road segments selected with certainty were identified using procedures similar to those described in Section 3.2 for counties. For each county, a PPS sample of 6 primary, 12 secondary, and 6 local segments were chosen. Then, within those samples segments were randomly ordered using SRS. The first two segments in the primary list, first four in the secondary, and first two in the local groups were chosen as the locations for observation. The remaining segments were held for reserve, with the order of their use determined by their order from the SRS outcome. The exception to this procedure was to double the segments chosen for two county aggregates: Fairfax and Southeast. The team doubled their selected and reserve segments because these two county areas had more than double the average VMT of other counties.

When a county did not have any segment classified as S1100 (and not all counties had interstate/primary segments), then the assigned number of segments to that stratum was re-allocated across the other segment types. For example, if a county had no S1100 segments, the two segments needed for that stratum were re-allocated so that 5, instead of 4, S1200 segments were sampled and 3, instead of 2, S1400 segments were selected.

For counties without S1400 roads (after removal for being in a non-Metropolitan Statistical Area), the number of segments required was re-allocated to other strata available. One of the 2 needed S1400 segments was allocated to the S1100 stratum, and the second to the S1200 stratum. For counties that only had S1200 segments eligible for observation after applying the exclusion option for non-MSAs, all needed segments were S1200s.

More detail about the segment selection is given in Section 5.2.

Appendix B presents the selected road segments within each county and their probabilities of selection. Table 3 provides the number of segments by stratum for each county area, and the total number of each segment type selected for each county. The procedure produced 136 segments to observe.

3.4 Reserve Sample

In the event that an original road segment was permanently unavailable, a reserve road segment would be used. The reserve road segment sample consists of two additional road segments per original road segment selected, resulting in a reserve sample of 272 road segments (136 segments for observation x 2 reserves for each = 272 total reserve sites). These reserve segments were identified and selected using the procedures described above. Thus, replacement locations are considered selected with PPS using road segment length as MOS by the same approach as the primary locations, with the only difference being the SRS that determined order of selection: primary or reserve/alternate. For the purposes of data weighting, the reserve road segment inherits all probabilities of selection and weighting components up to and including the road segment stage of selection from the original road segment actually selected. Probabilites and weights for any subsequent stages of selection (e.g., the sampling of vehicles; actual segment lengths) would be determined by the reserve road segment itself. (Note that additional reserve sites would be sampled if, after initial segment screening prior to data collection, the collection team discovers that the first selected locations are not viable and it has to move far down in the reserve list; in all cases the team would have reserve samples ready to use in case of any unforeseen circumstance, and such reserve sites would be chosen via the procedures above).

In preparing for 2017 - 2021 plan, we indeed needed to resample select counties' road types as the reserves were eliminated due to allowable exclusions. (This is one reason we scout all sites *a priori* to data collection to ensure we have viable locations prior to collections, and viable reserves for future years). In some cases we needed to use sites from the second sampling of locations, and this created a need to adjust weighting of those locations. We followed the mathematical suggestion provided by Thompson's 2012 "Sampling" textbook in reference to the multistage selection probability.[3]

In the sampling selection at the first stage, there were three counties whose sampled S1400 road segments did not provide sufficient locations for collections, and required additional sampling. Those three counties were Bedford, Fairfax, and the York Aggregate. A resampling at the second stage was performed, removing the locations that were selected in the first sampling stage. The selection probabilities were adjusted the following way per Thompson (2012). If $\pi_1$represents the highest selection in the first stage, then consider the selection probability in the second stage as π_2, and then the adjusted selection probability is given as:

$$\pi = 1 - (1 - \pi_1)(1 - \pi_2).$$

Doing so, we still kept the eligible locations in stage 1 selection, avoided duplications, and compensated for needing a second stage sampling.[4]

4.0 Data Collection

4.1 Site Selection

Road segments were mapped according to their latitude and longitude. The selected road segment was identified by an intersection or interchange that occurred within or just beyond the segment. If no intersection or interchange occurred within the segment, then any point on that road was used for observation assuming it was (a) as close to the chosen segment as possible, (b) within the boundaries of two intersecting roads, *and* (c) a safe place to park and observe. Data collection sites were deterministically selected such that traffic was moving during the observation period. Therefore, sites were assigned to locations in the segment which were at least 50 yards from any controlled intersections for the observed direction of travel. For interstate highways or other limited access segments, data collection occurred on a ramp carrying traffic that was exiting the roadway. The observed direction of travel was randomly assigned *a priori* for each road segment. However, if advance scouting of each segment determined that the randomly chosen direction could not be safely observed due to lack of shoulder space or lack of other protective road space for the observer, and if such safety could not be found up- and downstream on the road segment or in its adjacent segments as close to the sampled segment as possible before a major intersection that would divert the segment's traffic, then the team collected data in the other direction of traffic at the segment if such safety conditions were met there. It is standard for field research to protect observers exposed to roadside traffic for liability reasons. Further, traffic moving in the opposite direction from the direction originally chosen by random procedures was expected to be more representative of the segment than abandoning the segment altogether for an alternate location. For some interstate locations, there was nowhere to

[3] *Sampling*, by Steven K. Thompson, 2012, Wiley Series in Probability and Statistics, third edition. ISBN-13: 978-0470402313.

[4] A second stage sampling was needed to obtain sufficient reserve locations for Bedford, Fairfax and York Counties at the S1400 level. Three second-level sites are used: BED4007, FAI40013 and YC4009, respectively. These are also listed in the Appendix and noted. The adjustment to selection probabilities follows the procedures provided above.

Table 3 - Roadway Functional Strata by County, Road Segments Population (N), Length in Miles, and Number of Segments Selected (n)

County		Roadway Functional Strata: Interstate/Primary (S1100)	Arterial/Secondary (S1200)	Local[5] (S1400)	Total
Amherst	N	0	1,270	8,826	10,096
	Length	0	158.00	1176.76	1,334.76
	N	0	5	3	8
Bedford[4]	N	2[6]	2,030	18,572	20,604
	Length	.18	218.60	2,103.82	2,322.52
	N	2	4	2	8
Buchanan	N	0	693	NA	693
	Length	0	82.71	NA	82.71
	N	0	8	NA	8
Fairfax	N	1,294	5,307	60,194	66,795
	Length	161.12	460.64	4,401.45	5,023.21
	N	4	8	4	16
Franklin	N	0	1,371	19,934	21,305
	Length	0	137.72	2,300.35	2,438.07
	N	0	5	3	8
Goochland	N	148	727	4,822	5,697
	Length	48.06	99.37	759.73	907.16
	N	2	4	2	8
Lee	N	0	1,582	NA	1,582
	Length	0	169.91	NA	169.91
	N	0	8	NA	8
Orange	N	0	686	NA	686
	Length	0	99.60	NA	99.60
	N	0	8	NA	8
Pittsylvania	N	0	3,006	NA	3,006
	Length	0	325.25	NA	325.25
	N	0	8	NA	8
Prince William	N	311	1,963	29,862	32,136
	Length	60.29	186.86	2,451.57	2,698.72
	N	2	4	2	8
Southeast Agg.	N	1,043	8,996	76,734	86,773
	Length	155.50	761.38	6,343.32	7,260.20
	N	4	8	4	16
Stafford	N	122	665	8,912	9,699
	Length	31.15	68.31	1,039.02	1,138.48
	N	2	4	2	8
Wise	N	0	1,372	NA	1,372
	Length	0	173.69	NA	173.69
	N	0	8	NA	8
Wythe	N	305	1,075	NA	1,380
	Length	86.94	82.81	NA	169.75
	N	3	5	NA	8
York County Agg.	N	469	3,919	31,272	35,660
	Length	89.82	291.03	2,388.10	2,768.95
	N	2	4	2	8

[5] Local roads (S1400s) excluded from county aggregates not identified as part of Metropolitan Statistical Area.
[6] There were no S1100 reserve locations. If one or both of these sites were untenable, replacements would be pulled from S1200 (first) then S1400 (second), using the first replacement chosen through the sampling process described elsewhere. An ANOVA test showed that there were no significant differences in road segment length between S1100s and either S1200s or S1400s, giving support to this replacement plan (road segment length is an important weight used in the analyses). Indeed, one of the S1100s was not viable; a S1200 was selected as its replacement giving Bedford 1 S1100, 5 S1200, and 2 S1400 sites actually observed. NHTSA representatives were consulted prior to the plan's deployment.

stand in a way to ensure the segment was observed at a unique exit ramp (e.g., segments on HOV lanes), creating logistic and safety issues to get those segments. These locations were abandoned for alternates. The locations of the data collection sites were described on Site Assignment Sheets for each county and maps that were developed to aid the Data Collectors and QC Monitors in travelling to the assigned locations.

4.2 Training

The project team recruited and hired seven Data Collectors. It recruited and hired seven QC Monitors, some of whom were also Data Collectors, in addition to the Project Director who acted as QC. Each QC Monitor was available to check work of any Data Collector; their assignments were randomly determined (to a site in county) and then coordinated to be travel efficient. For example, a QC monitor may have been randomly assigned to visit Site A unannounced, but then visit Site B immediately thereafter because it is nearby and travel efficient.

Data Collectors and QC Monitors were recruited by the Project Director from students or non-students depending on resources and local/regional partnerships. Preference was given to individuals who had experience in field data collection. They must also have been able to stand for long periods of time, work outdoors, and successfully complete the training program. Law enforcement personnel were not used.

Data Collector and QC Monitor training was conducted in May before data collections began in June. It included lecture, classroom, and field exercises. The syllabus is shown as Figure 1.

At the conclusion of the training, Data Collectors and QC Monitors were given a quiz to ensure that they understand the survey terminology, the data collection protocols, and reporting requirements.

QC Monitors were given additional training focused on their specific duties. These included conducting unannounced site visits to each Data Collector and reviewing the field protocol during the visit. QC Monitors were also available during the survey to respond to questions and offer assistance to Data Collectors as needed. As mentioned above, it was possible that a QC Monitor acted as a Data Collector at some points of the collection period, *however* a Data Collector did not also act as Quality Monitor simultaneously for a given location.

In addition, there was an "on-call supervisor" assigned to each collection day. This individual could have been any of the QC Monitors not in the field that day. The on-call supervisor received check-ins from collectors, and made decisions to resolve weather and reserve site questions as relevant. Collectors checked in regularly with the on-call supervisor to ensure that schedules were met and assigned sites were being observed when they were expected to be. These procedures were an augmentation to basic QC Monitor activities.

4.3 Observation Periods and Quality Control

All seat belt use observations were conducted during weekdays and weekends between 0700 and 1800. Available time slots were as follows: 0700 – 0830; 0830 – 1000; 1000 – 1130; 1130 – 1300; 1300 – 1430; 1430 – 1600; 1600 – 1730. Collections were considered part of the time slot in which most of the observation time occurred, which is why 30 extra minutes per time slot and 30 extra minutes at the end of the day were provided to account for any delays in data collector arrivals to an assigned location. If the collector could not collect more than half of the assigned collection time within the time assigned to a site, then that site was considered "missed" and was rescheduled.

The schedule included rush hour (before 0930 and after 1530) and non-rush hour observations. Data collection of belt use was conducted for 50 minutes at each site with an additional 10 minutes per site for situation variables to be recorded, such as location characteristics and volume estimates. Fifty minutes historically had provided more than sufficient observations for reliable estimates in Virginia. At most, a data collector had 4 sites scheduled each day. Start times were staggered to ensure that a representative number of weekday/weekend/ rush hour/non-rush hour sites were included.

Figure 1 – Training Syllabus

Day 1

Welcome and distribution of equipment

Survey overview

Data collection techniques
- Definitions of belt/booster seat use, passenger vehicles
- Observation protocol
- Weekday/weekend/rush hour/non-rush hour
- Weather conditions
- Duration at each site

Scheduling and rescheduling
- Site Assignment Sheet
- Daylight
- Temporary impediments such as weather
- Permanent impediments at data collection sites

Site locations
- Locating assigned sites
- Interstate ramps and surface streets Direction of travel/number of observed lanes Non-intersection requirement
- Alternate site selection

Day 2

Data collection forms
- Cover sheet
- Recording observations
- Recording alternate site information

In-field data-to-home-office reporting; rules for returning datasheets to the Project Director

Safety and security

Timesheet and expense reports

Field practice at ramps and surface streets

Note that sufficient room was built into the schedule to allow for inclement weather. For example, it was not uncommon that rain strong enough to dampen the datasheets occurred. At that point, collectors were told to remove themselves to shelter and wait up to 15 minutes for the weather to clear before resuming their collections. If the weather did clear, they continued collections to obtain at least 50 minutes of observation. However, if the weather did not clear, they worked with the "on call" supervisor assigned that day to determine if additional waiting was possible without jeopardizing the remainder of the day (and be able to collect the remaining sites within their assigned time periods). If they had to move on to the next site, then the location was rescheduled. However, if at least half (i.e., 26 minutes or more) of data collection occurred before the decision was made to move on to the next site due to weather, then that location was considered complete and no rescheduling occurred. Eight sites were lost for rain-related weather in 2019, but were made up during a following week on the same day of week and time of day per protocol. In addition, one site was lost due to traffic back-ups preventing the collector from reaching the site with enough time to complete the minimum minutes of observation. That site, too, was made up during a following week on the same day of week and time.

Maps showing the location of all observation sites in a county and Site Assignment Sheets were provided to the Data Collectors and QC Monitors. These indicated the observed road name, the crossroad included within the road segment (or nearest crossroad), assigned date, assigned time, and direction of travel assigned. Sites within relatively close geographic proximity were assigned as data collection clusters.

The first site within each cluster was assigned a random day and time for completion, and this site became an "anchor site" around which the three others in the cluster were organized (each cluster had four sites). Specifically, other sites within a cluster were assigned to the same day in order to minimize travel costs and to time periods judiciously given travel time demands. Note that if the first site was randomly chosen to be observed late in the day, the route organized to collect data in the cluster may have "wrapped around" to the morning hours, such that the full day was used. For example, if Site 1 was assigned to a start time of 1600, Site 2 was assigned to an earlier time that same day, continuing on to the other sites in the cluster. It was possible therefore, that Site 1 may be the last site observed in that actual day of collection depending on what time slot was assigned. It is also possible that time slots may not have been continuous (every 90 minutes) if data collectors had a significant distance to travel to the next site. Travel resources were managed to accomplish the demands of this design while being sensitive to avoiding unnecessary costs. Time was allotted in the schedule, too, to allow data collectors to obtain lunch among their collection commitments.

Data Collection

All passenger vehicles, including commercial vehicles weighing less than 10,000 pounds, were eligible for observation. The data collection cover sheet and observation form are given in Appendix C. The cover sheet was designed to allow for documentation of descriptive site information, including: date, site location, site number, alternate site data, assigned traffic flow, number of lanes available and observed, start and end times for observations, and weather conditions. This cover form was completed by the Data Collector at each site.

The observation form was used to record seat belt use by drivers and front seat passengers. Other variables of interest were recorded that have meaning to Virginia evaluations, again to use resources efficiently. These variables included vehicle type, driver gender, and handheld mobile phone use, but these variables were not included in calculating Virginia's overall seat-belt use rate. Additional observation forms could be used when more than 50 vehicles were observed at a site, which was the maximum number that could be recorded per datasheet single page. The forms were labeled 1 of 2, and 2 of 2, etc.

The data collector observed as many lanes of traffic as s/he could comfortably monitor while attempting to collect complete data from vehicles chosen for belt use observations. To be specific, for most sites we know from experience data collectors could observe all lanes and choose a vehicle passing a fixed point, record observed data on the sheet, and look up to find the next vehicle crossing that fixed point and to be selected for the second observation, etc. If collectors were at a location that had a free-flowing volume, making it uncomfortable to observe/monitor all lanes, then they had the choice to record an even amount of time for each lane up to the 50 minutes of the observation interval. The datasheet in Appendix C showed collectors how much time to observe each lane of traffic given the number of lanes. Clearly not every vehicle could be observed at every site if the volume was too high or cars were following too closely. But, these procedures produced sufficient *n*-size to obtain a reliable seat-belt estimate. Only one direction of traffic was observed at any given site. This direction was pre-determined (see Section 4.1).

Observations were made of all drivers and right front seat occupants. This included children riding in booster seats. *The only right front seat occupants excluded from this study were child passengers who were traveling in child seats with harness straps*. The basic codes in Table 4 were used to record seat belt use. These codes are those included in the datasheet shown in Appendix C.

Table 4 - Seat Belt Use Codes and Definitions

Code	Meaning	Definition
Y	Yes, belted	The shoulder belt is in front of the person's shoulder. Marked as "Y" on the datasheet.
N	No, unbelted	The shoulder belt is not in front of the person's shoulder. Marked as "N" on the datasheet.
U	Unknown	It cannot reasonably be determined whether the driver or right front passenger is belted. Marked as "U" on the datasheet.
NP	No passenger	There is no right front passenger present. Marked as "NP" on the datasheet in a special column. This is to ensure no confusion between missing data and the notation that there were no data for the passenger to be recorded.

According to the codes and data procedures above, a right front passenger, restrained in a car seat with harnesses would be coded as NP because collectors did not observe/record child-seat-harnessed children in this study. Children in booster seats designed for use with regular seat belts, who were in the outboard passenger seat, were passengers for observation.

Alternate Sites and Rescheduling

When a site was temporarily unavailable due to a crash, or inclement weather, data collection was rescheduled for the same time of day and same day of week in the immediate future. In the event that the site was permanently unworkable once collections began, then an alternate site, selected as part of the reserve sample, was used as a permanent replacement (this happened twice in 2019[7]). The alternates for each site were clearly identified and listed on the Site Assignment Sheet. Data Collectors were to pick the first alternative listed as it was chosen randomly to be the first alternate. If the selected reserve was also permanently unworkable, then the Data Collector was to use the next listed reserve site, and so forth. However, all such decisions to move to a reserve site would have been made with the on-call supervisor, with that supervisor having the final authority on the use of a reserve location. Note: All alternate sites were vetted and screened *before* collections began; the team knew which reserve locations could be used for permanent reasons if they arose. In fact, as noted in the Appendices, some sites were deemed unusable before collections and alternate sites were chosen to be the new permanent sites; those latter sites became the "original" sites to be used.

[7] One location in Stafford County (STA1002) underwent construction in 2018, and in 2019 the new design rendered safe standing on the exit ramp impossible. The data collector (with multiple years of experience) and the Project Director made the call to visit the first alternate site (STA1004), which had also undergone construction that rendered it unsafe to stand and collect. The second alternate (STA1005) was workable, and data were collected at that location: STA1005 will be visited immediately in 2020, and if it is untenable then the 3rd alternate will be visited, etc. In addition to Stafford, a site in Fairfax (FAI1002) was likewise under construction in 2019, creating the need to use its first alternative (FAI10010). In 2020, the original site will be revisited to check whether it can be used; if not, the alternate will be used and then if necessary promoted to the primary location for 2021.

Quality Control Procedures

Each year the team plans to have the QC Monitor make unannounced visits to at least one data collection site within each county aggregate. There are 15 county/aggregates, giving 15 sites for the unannounced visits. This size exceeds the requirement of 5% sites being chosen at random (minimum required = 6.8 or 7 sites). However, in 2019, a QC Monitor did not visit two of the 15 counties due to scheduling restraints. This meant we did 13 random visits, still nearly double that required by code. However, we also spent time at second sites after the surprise visits to ensure collectors were working well and to collect data to ensure primary collectors were seeing what we trained them to see (another 13 sites were monitored in this latter manner).

During the surprise visits, the QC Monitor first evaluated the Data Collector’s performance from a distance (if possible), and then worked alongside the Data Collector. The QC Monitor ensured that the Data Collector was following all survey protocol including: being on time at assigned sites, completing the cover sheet and observation forms, and making accurate observations of seat belt use. The QC Monitor prepared a site visit report highlighting any problems with data collection site locations and Data Collector performance. The Project Director was responsible for reviewing these reports and making decisions regarding any findings of concern.

In the event it was discovered that a Data Collector had falsified data, the Data Collector would have been removed from the project. Another Data Collector would have replaced him/her, returned to the falsified site, and collected new data. Further, new Data Collectors would have revisited all sites proven to be or suspected to be falsified and recollect all data. No such falsification was discovered in 2019.

At the end of each day, the Data Collector reported to the “on call” supervisor for the day the number of sites completed, and the total number of data sheets collected. They did this via email, text, or phone call. Previous experience assured the ability of collectors to do this reporting remotely and then return the datasheets safely to the Project Director within 24 hours of returning to home base. The Project Director and his staff reviewed the forms. If the rate of overall seat-belt use unknowns exceeded 10% for any site (potentially leading to an overall nonresponse rate of 10% or more), then the Project Director began preliminary plans to return to that site to collect data for an additional period. However, if the overall unknown belt use rate for the full project did not exceed 10%, then these return plans would not be implemented (the rule only requires the unknown rate be less than 10% for the entire collection protocol). Collectors would have returned to sites with the highest unknown rates for belt use for an additional observation period, and continued this procedure until the overall unknown rate for belt use for the full project fell below 10%. In 2019, these extra procedures were unnecessary; the unknown rate was 7.9%.

5.0 Imputation, Estimation and Variance Estimation

5.0 Imputation

No imputation was performed on missing data.

5.1 Sampling Weights and Statistical Design

The following is a summary of the notations used in this section.

<u>PSU level:</u>

For this level, g subscript was used for primary sampling units (PSU) strata of VMT as a measure of size: g goes from 1 to 3, for Low, Medium and High classes of VMT aggregated from years 2011 to 2016. A simple test was performed to show that there were exactly significant differences among the strata. The authors used PPS design for each stratum. Stratified sampling leads to estimates with smaller standard errors compared to a simple random sampling.

There are 15 counties selected,

- c is used for county PSU, c goes from 1 to 15.
- h is for road segment strata or road type. We have 3 levels of road segments.
- i is for road segment name: that is the category and the name of the road.
- (h, i) are nested within (g, c). Such subscripts will be our variable identifier.

Because additional information is available, it was used to create a second stage sample by drawing segment roads from the first stage sampling of the counties.

<u>SSU level with road site</u>:

- j represents the time segment, time of day, and the day of the week.
- k is for the road site direction. It has 4 levels: N, W, S, E
- l for lane within road site type stratum and county
- m represents the index for the number of vehicles
- n represents the number of front seat occupants
- L is for the road segment length in the g, c, h, i combination, we call it L_{gchi}. This is available in the data set. But we will discretize it in 3 levels also for the selection of the road types. So we will think of L_{gchi} as the segment length in the g, c, h, i combination.

The sum of the road length over all the road segment names ii and road segment strata h, is denoted as L_{gc}. So $L_{gc} = \sum_{hi \in gc} L_{gchi}$. And $L_g = \sum_{c \in g} L_{gc}$.

The indices j, k, l, m, n are nested within the index class g, c, h, i, and $Y_{gchiklmn}$ is the observed number of seat belts used (drivers and outboard front-seat passengers) from the

- segment road of length L_{gchi} described by its level,
- kth road site direction,
- lth lane,
- mth vehicle, and
- nth number of front seat occupants.

$Y_{gchiklmn}$ takes values 0 or 1 or 2, because we cannot have more than 2 persons sitting in the front seat of a vehicle or truck who are eligible for observation and wearing seat belts. So, $Y_{gchiklmn}$ is an indicator of the observed front-seat occupant (driver/passenger seat belt use status), that is:

$$Y_{gc\square ijklmn} = \begin{cases} 2, \text{ if 2 persons are using the belts,} \\ 1, \text{ if 1 person is using the belt,} \\ 0, \text{ otherwise.} \end{cases}$$

And $N_{gchiklmn}$ can be thought as the number of occupants (drivers and outboard front-seat passengers) whose belt use was observed from ith road name, hth segment type, cth county and gth strata, and takes values 1 or 2, and is always greater or equal to $Y_{gchiklmn}$.

The second sampling units (SSU) were obtained using road segment lengths, and in a PPS scheme. The goal was to select from each road type. Because there were at most 3 road types, the design included all available road types in the county selected, and a PPS based on each road type was applied on each county, after adjustment of the road segment length L as MOS. This was accounted by classifying the road segment length into three class categories: Short, Medium, and Long classes. This classification is effective since the strata were relatively homogeneous in their sample sizes, and the clusters were based on the quantiles of the road segment length data.

For county aggregates in Metropolitan Statistical Areas, samples of sizes (6, 12, 6) from each primary, secondary, and local segment class respectively, after adjustment for the three segment length classes of low, medium, and high, were selected, and through a random mechanism were assigned numbers to represent the order in which the segments would be chosen for observation. The first two ordered segments in the primary road type, first 4 in the secondary, and first two in the local were selected as the main segments to observe. The remaining segments in each road type will be used for replacements. However, for the Southeast and Fairfax counties, instead of samples of sizes (6, 12, 6) pulled to determine segments to observe, samples of sizes (12, 24, 12) were pulled to result in 4 primary, 8 secondary, and 4 local segments chosen for observation, with the remainder being replacements.

For county aggregates not in MSAs, and for whom local roads (S1400s) were excluded by federal rule allowance, the same procedures were used to pull segments from primary (S1100) and secondary (S1200) strata, with the allotment for local roads re-allocated across these other road types. Therefore, for such counties that had S1100 and S1200 road types the samples were (9, 15) with 3 primary (S1100) and 5 secondary (S1200) being selected as locations to observe, with the remainder as reserve/alternates.

For any county without primary roads (S1100s), selection procedures distributed selected segment allocations across remaining road strata. Specifically, if a county had no primary roads then a sample of (15, 9) was selected from which 5 secondary (S1200) and 3 local (S1400) segments were sampled for observation with the remainder being alternates. If such a county had only secondary roads because the local roads were excluded in the non-MSA provision, then all sampled segments came from the secondary segment strata; the sample was (24) with 8 being chosen for observation and remainder being alternates.

The sum of all $Y_{gchiklmn}$ over all the k, l, m, n within the g, c, h, i combination is called n_{gchi}. So n_{gchi} can be thought as the number of belted occupants from ith road name, hth segment type, cth county and gth strata.

And N_{gchi} can be thought as the number of occupants (drivers and outboard front-seat passengers) from ith road name, hth segment type, cth county and gth strata, that is:

$$N_{gc\square i} = \sum\nolimits_{klmn \in gc\square i} N_{gc\square iklmn}.$$

In all, the following notations reflect all levels, strata, and weights to be considered in this design, from the choice of counties and road segments through to the calculations of the seat-belt use rate.

p	L	n	N
p_g	L_g		N_g
p_{gc}	L_{gc}	n_{gc}	
p_{gch}	L_{gch}	n_{gch}	
p_{gchi}	L_{gchi}	n_{gchi}	N_{gchi}

For example, L_{gchi} is the average of road segment lengths in g^{th} strata, c^{th} county, h^{th} road type and i^{th} road segment. And L_g is the average of road segment lengths in g^{th} strata, that is the average of road lenghts L_{gc} for all c counties in g^{th} PSU cluster for all observed roadways.

Under this stratified multistage sample design, the inclusion probability for each selected road segment is the product of selection probabilities at two stages: $\pi_{gc}$for county, $\pi_{hi|gc}$ for road segment. So the overall road segment inclusion probability is:

$$\pi_{gchi} = \pi_{gc}\pi_{hi|gc}.$$

The sampling weight (design weight) for county gc is then:

$$w_{gc} = \frac{1}{\pi_{gc}}.$$

The sampling weight (design weight) for road segment $hi|gc$ is:

$$w_{hi|gc} = \frac{1}{\pi_{hi|gc}}.$$

The overall sampling weight (design weight) for a given road segment hi is:

$$w_{gchi} = \frac{1}{\pi_{gchi}}.$$

5.2 Nonresponse Adjustment

Given the data collection protocol described in this plan, including the provision for the use of alternate observation sites, road segments with non-zero eligible volume and yet zero observations conducted should be a rare event. Nevertheless, if eligible vehicles passed an eligible site or an alternate eligible site during the observation time but no usable data were collected for some reason, then this site would have been considered as a “non-responding site.” To compensate for the nonresponses, a nonresponse adjustment weight would be built in. The weight for a non-responding site would be distributed over other sites in the same road type in the same PSU.

The nonresponding site nonresponse adjustment factor:

$$f_{gch} = \frac{\sum_{all\ i} w_{gchi}}{\sum_{responding\ i} w_{gchi}}$$

is obtained by dividing all sampling weights of non-missing road segments and all responding weights in the same road type of the same county. However, if there were no vehicles passing the site during the selected observation time (50 minutes) then this is simply an empty block at this site and this site was not be considered as a non-responding site, and will not require nonresponse adjustment. There were no non-responding sites in 2019.

5.3 Estimators

<u>Seat Belt Use Rate Estimators</u>

Seat belt use rates were calculated using formulas based on the proportion of the state’s road segment length L (excluding roads types that are not S1100, S1200, or S1400) of a particular site. Seat belt use rate calculations followed a four-step process.

1. First, estimated rates were calculated for each of the three road type strata within each county. The observed use rates for all of the sites within each stratum-county combination were combined by simple averaging, as shown below. Because the sites’ original probability of inclusion in the sample was proportional to their county’s VMTs, averaging their use rates makes use of that sampling probability to reflect their different VMTs.

   We assume that the observed vehicles at segment road type i, have same equal probability, then the seat belt use rate for the i^{th} road segment and the h^{th} road type stratum, in c^{th}

county nested within g^{th} PSU cluster, denoted as p_{gchi} is expressed as:

Formula 1:

$$p_{gchi} = \sum_{klmn \in gchi} Y_{gchiklmn}/N_{gchi} = \frac{n_{gchi}}{N_{gchi}},$$

where i^{th} road segment in h^{th} road segment strata or road type, c^{th} county PSU and in the g^{th} PSU stratum and county,

N_{gchi} = number of occupants (drivers and outboard front-seat passengers) from ith road name, hth segment type, cth county and gth strata.

2. Second, a county-by-county seat belt use rate, p_{gc}, was obtained by combining county-stratum seat belt use rates across strata within counties, weighted by the stratum's relative contribution to average county road segment length used as MOS:

Formula 2:

$$p_{gc} = \frac{\sum_{hi \in gc} w_{hi|gc} L_{gchi} p_{gchi}}{\sum_{hi \in gc} w_{hi|gc} L_{gchi}},$$

where L_{gchi} is the average of all road segment lengths in all k^{th} directions, in all l^{th} lanes for the m^{th} vehicle nested c^{th} county nested within g^{th} VMT cluster, respectively[8].

3. In the third step, weighted seat belt use rates for each VMT cluster were obtained by combining and weighting the rates from the sampled counties in each VMT cluster by their VMT average length values and probabilities of being selected:

Formula 3:

$$p_g = \frac{\sum_i w_{gc} L_{gc} p_{gc}}{\sum_i w_{gc} L_{gc}},$$

where L_{gc} = the average length for c^{th} county in g^{th} PSU cluster for all three road types.

4. Finally, the statewide belt use rate was calculated by combining the cluster proportions weighted by their proportion of statewide road length L:

[8] The weight used in Formula 2 in section 5.4 reflects the nonresponse adjustment in section 5.3.

Formula 4:

$$p = \frac{\sum_{g=1}^{3} L_g \; p_g}{\sum_{g=1}^{3} L_g},$$

where L_g is the average of road segment lengths L_{gc} for all c counties in g^{th} PSU cluster for all observed roadways.

The result of Formula 4 is a weighted combination of the individual site seat belt use rates. This estimator captures traffic volume and vehicle miles traveled through design weights (which will include nonresponse adjustment factors as described in section 5.3, if any) at various stages and it does not require knowledge of road segment specific VMT.

5.4 Variance Estimation

Standard error of estimate values is based on the total number of sites as $n = 136$, estimated through a jackknife approach (calculated with SAS® 9.3 software), based on the general formula:

$$\hat{\sigma}_{\hat{p}} = \left[\frac{(n-1)}{n} \sum_{i=1}^{n} (\hat{p}_{(i)} - \hat{p})^2\right]^{1/2},$$

- where $\hat{\sigma}_{\hat{p}}$ = standard deviation (standard error) of $\hat{p}$ the estimated statewide seat belt use proportion (equivalent to p in the notation of formula 4, the overall weighted statewide belt use rate),

- n = the number of sites, i.e., 136,

- and $\hat{p}_{(i)}$ = the estimated statewide belt use proportion with site i excluded from the calculation.

The 95% confidence interval for p is then obtained by adding and subtracting the estimate with the margin of error $1.96\hat{\sigma}_{\hat{p}}$, that is: $\hat{p} \pm 1.96\hat{\sigma}_{\hat{p}}$.

These values are reported for the overall statewide seat belt use rate.

These values are reported for the overall statewide seat belt use rate. In 2019, there were 136 sites (all of them) with non-zero observations; therefore n = 136 were available for variance estimation.

6.0 Results

6.1 Overall Weighted State Rate

Overall, a weighted survey design sample of 16,629 vehicles from 136 of the 136 sites provided known driver and/or front, outboard passenger belt use observations. In raw frequencies, there were 20,485 occupants for whom belt use was known out of the sample of 22,244; of these 17,674 were belted. The “miss rate” or rate of “unknown” belt use (i.e., seeing an occupant but not knowing whether he or she was buckled up) was only 7.9%, below the maximum 10% allowed by the new federal code.

The 2019 weighted seat belt use rate, calculated with the approved methodology and sample, was 85.4%. The unweighted use rate was 86.3% (the ratio between the raw number of known belted occupants and the raw number of total occupants with known belt use). The latter number does not account for the stratified random sampling used to choose the counties and road segments (VMT levels, segment lengths, selection probabilities) under NHTSA approved guidelines.

Hence the reportable number is 85.4%. This rate, and all others for Virginia calculated since the 1980s, are given in Figure 2 (next page). *However, note that the estimates for pre-2012, 2012 – 2016, and 2017 - 2019 were calculated with different guidelines and sampling strategies, meaning a direct comparison among the three-time periods is to be cautiously undertaken.*

The 95% confidence interval for the seat belt use rate was between 84.3% and 86.6%. The error rate was 0.58%, well below the maximum 2.5% allowed by code.

6.2 Additional Data Comparisons—Descriptives

The following sections provide descriptive data to help further understand differences among the observed occupants. These data are not mandated by federal code, but historically have provided useful information to different groups interested in learning more about seat belt use patterns in Virginia. The data are meant only to guide readers about patterns for comparison to past and future reports.

Each of these additional comparisons represented weighted data as well. Figure 3 shows the comparisons among the 15 selected counties segregated by VMT group by road segment lengths. In general, the high VMT group had higher belt use rates.

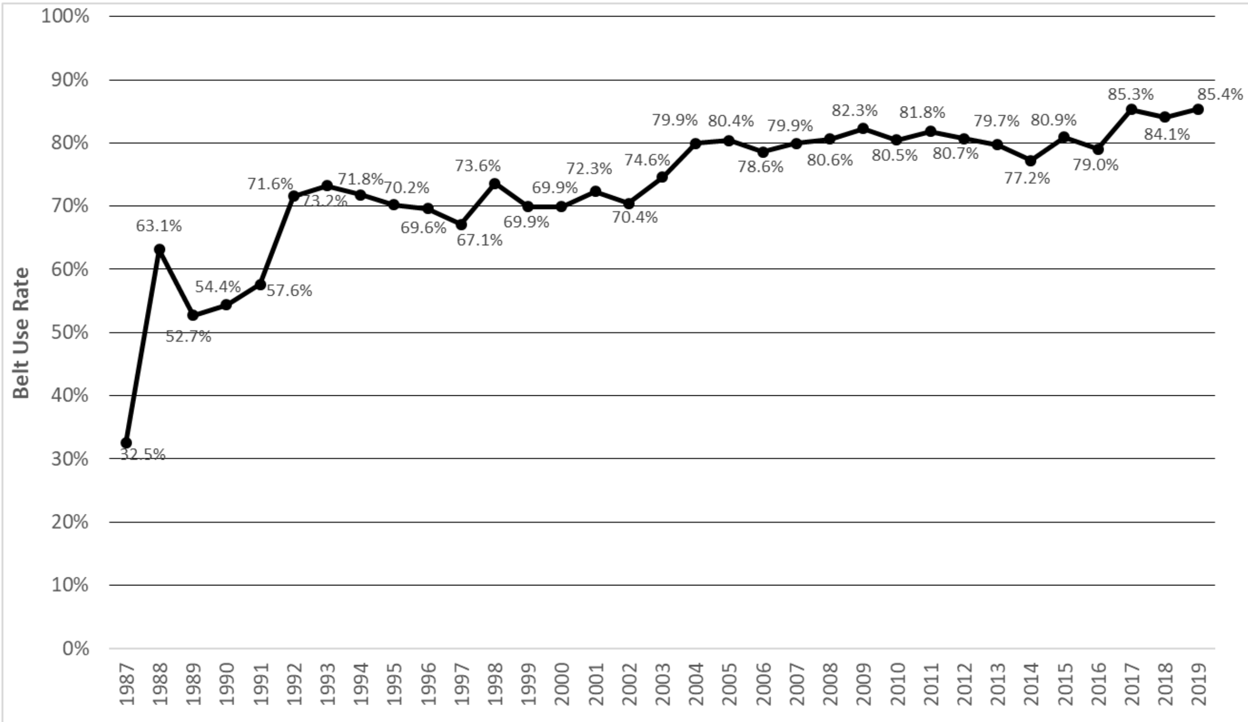

Figure 2. The historical trend of Virginia's seat belt use rate (see text for interpretation).

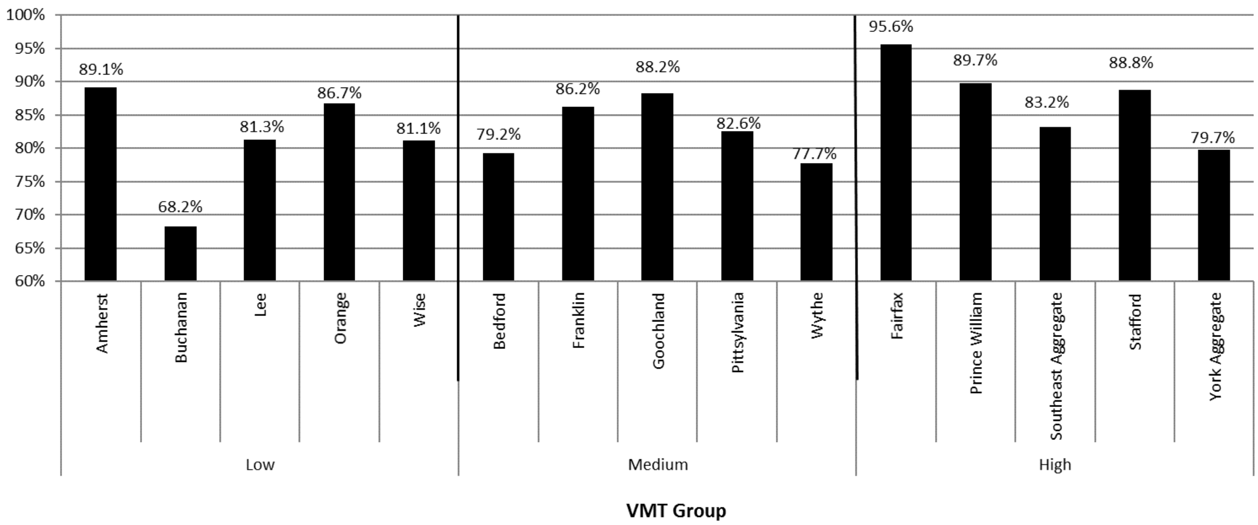

Figure 3. Belt use rates by VMT grouping weighted by road segment lengths for each selected county.

The remaining descriptive data are at the individual person level (e.g., gender differences in belt use). These data were weighted by the inverse of the county selection probability only. We made this choice deliberately as the descriptives now present individual variables which did not contribute to the sampling design (e.g., gender, vehicle types). However, these data may still be related to particular counties (by culture, politics, education, economy, etc.) and therefore the county weight was judged to be an appropriate adjustment. Note, the following analyses were conducted with SPSS 25 and Excel software and should be treated as exploratory in nature.

First, we compared drivers and passengers by gender as well as by VMT grouping. Figure 4 provides the data. It was clear that women, regardless of seating position used their seat belts at higher levels than men. Further, belt use rates for both occupant positions increased as the VMT levels increased (across VMT groupings).

Another interesting comparison involves the role of road type. Figure 5 displays male vs. female differences again by the three road types in this project. We found women had higher use than men across all road types.

Finally, we inspected differences among vehicle types. Recall that we observed cars, pickup trucks, SUVs, vans, and mini-vans. Figure 6 shows findings for vehicle type across VMT groupings. Pickup and van occupants (with vans being more of the commercial vehicles compared to minivans mostly used by family occupants) used belts less often than other vehicle occupants.

Similarly, vehicle types had use rate differences when considering the two major road types of interstate/expressways and secondary/arterials (Figure 7). Local roads are not considered here because the sample sizes among vehicle types can be too low compared to sizes observed for the other two road types to render appropriate estimates. Interstate/primary roads had higher use across vehicle types; pickup and van occupants had lower use rates overall.

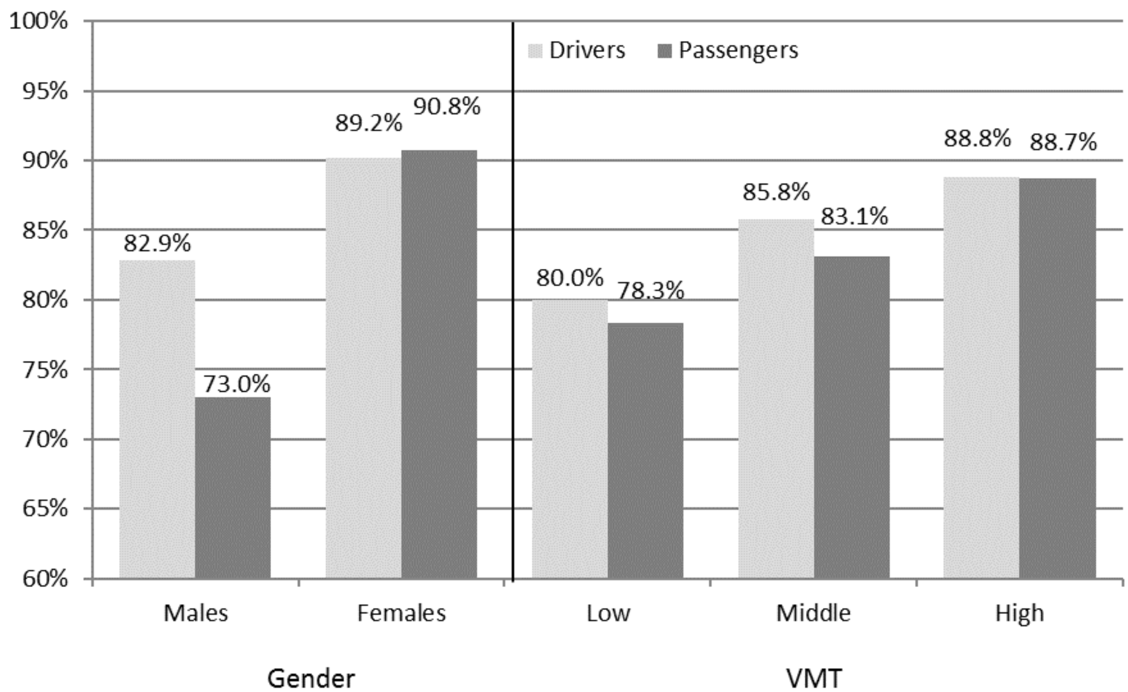

Figure 4. Belt use rate comparison between drivers and passengers by gender and by VMT.

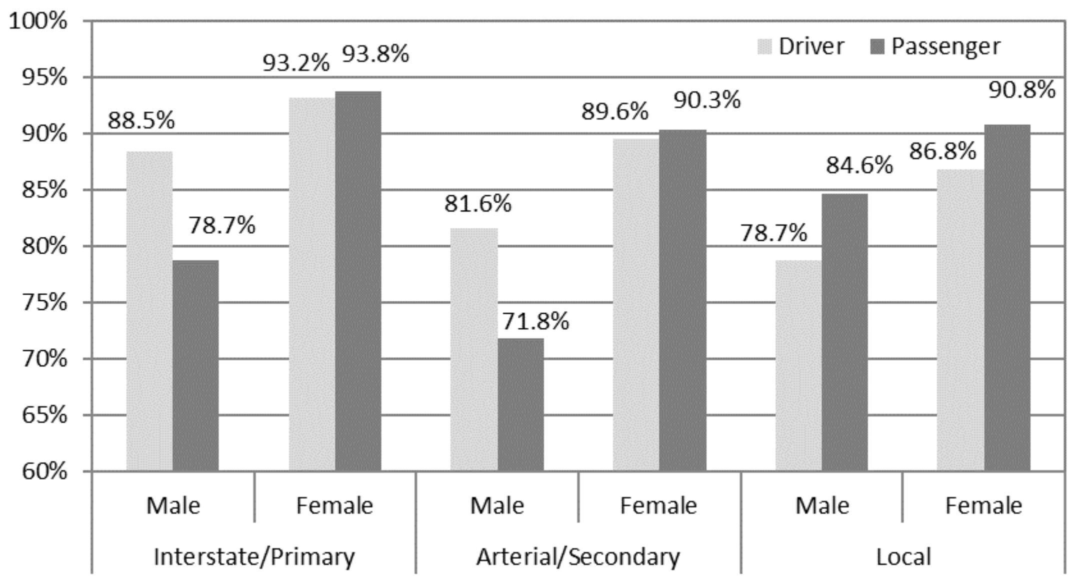

Figure 5. Belt use by gender at the three sampled road types (local to be interpreted cautiously due to lower sample sizes).

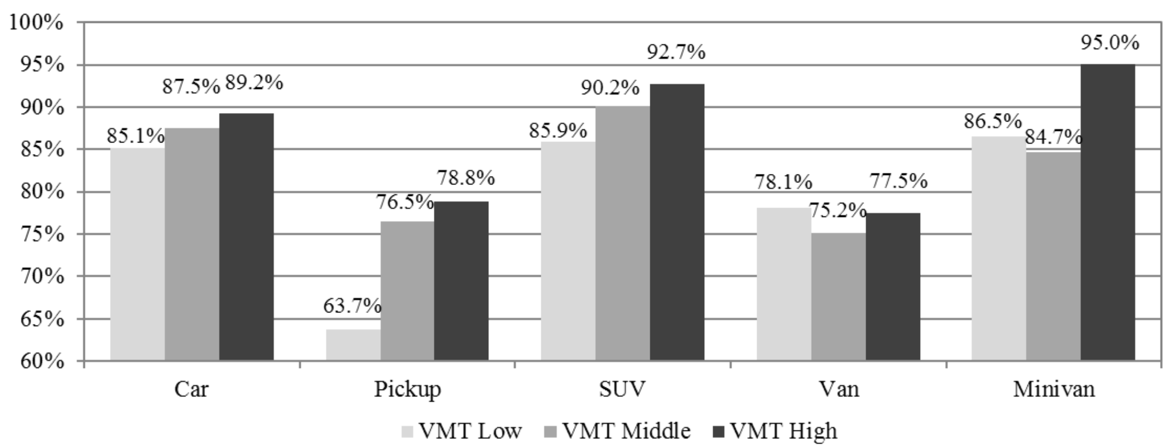

Figure 6. Belt use by vehicle type across VMT groups.

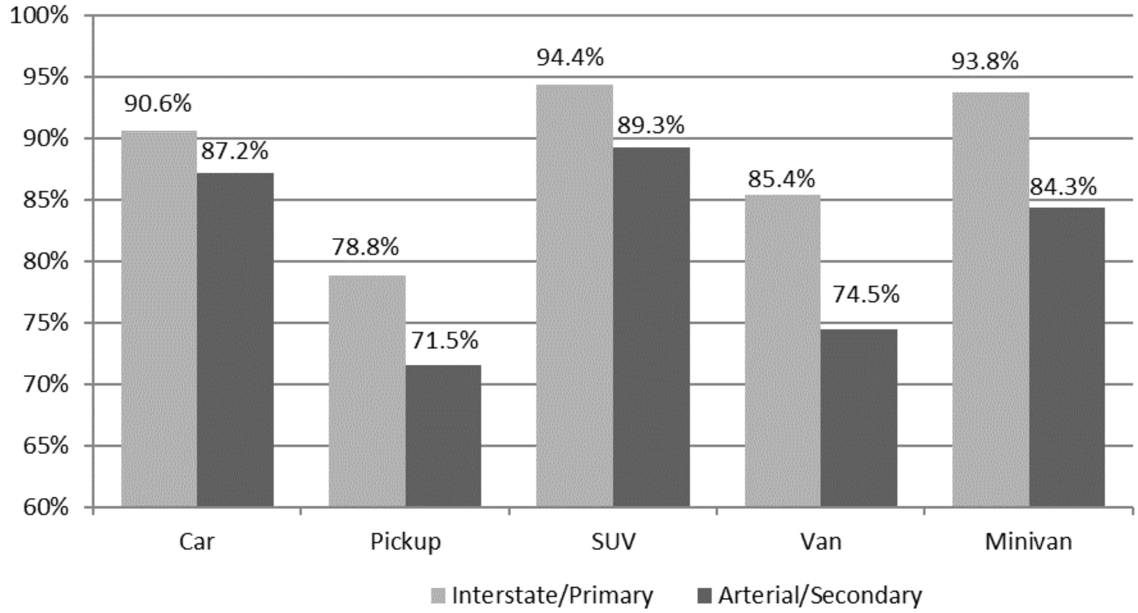

Figure 7. Belt use by vehicle type for two observed road types (note: local roads not included because of low sample sizes limiting reliable comparisons).

7.0 Discussion

This was the third year of the current 5-year sampling plan required by the revised Uniform Criteria approved by the National Highway Traffic Safety Administration. In 2019, more than 16,000 vehicles were observed. We met the requirements of small measurement error and small unknown belt use recordings.

The 2019 belt use rate was 85.4%, the highest recorded in Virginia. The pattern of users and non-users remains mostly consistent. Female belt use remained higher than that for men. Pickup and van occupants continued to have lower belt use rates than rates for occupants in cars, SUVs, and minivans. Counties in high VMT areas had higher observed rates, whereas low VMT counties had the lowest observed rates. And, primary roads had more use than other types. However, this year's record-setting rate appeared to be the result of higher than usual belt use by men, drivers in lower VMT areas, and perhaps to some extent drivers of pickup truck and vans (compared to previous years' surveys). Similarly, increased belt use rates along arterial/secondary roads seemed to contribute to observed belt use record.

Appendix A: Brief Notes on Calculating the Virginia Seat Belt Use Rate (2017 - 2021)

The federally-approved protocol for calculating a point estimate of belt use requires the inclusion of the probability of selected location or their inverse called weights. Weights are required in this case to accurately represent the data disparities. For example, when sampling from any population, one must take into account the fact that there may be important differences that could affect the data and therefore should be taken into account. VMT differences are one example, and these differences could be stratified before a sample is taken to ensure that we do not over- or under-sample different levels of VMTs. Using VMTs then to stratify a sample and apply a VMT-based weight, as one example, allows us to reduce bias and error in the parameter estimate of belt use. While unweighted use rates (overall, collapsed across counties) can be useful indicators of belt use, they do not account for sampling designs. By not accounting for sampling designs, unweighted rates can be misleading indicators of belt use. As in previous years, a weight based on the inverse of the selection probabilities has been included.

Virginia's sampling design is a multiple step process, and therefore has multiple weights. In the next sections, this plan is outlined.

The federal rule requires the use of raw fatalities for sampling state areas to observe (aggregated over a time period; VA uses 5 years). Specifically, counties/cities making up the top 85% of the fatalities must be considered eligible for sampling.

Eligible counties were then categorized by high, medium, and low VMTs based on state data provided by Richmond. These VMTs represent our primary sampling unit (PSU) used for weighting. Five counties from each VMT stratum were sampled, and each county had a "probability of selection." This probability of selection was an important component of the weighting design.

Within each sampled county, 8 to 16 road segments were chosen. Eight segments were chosen from 13 counties, whereas 16 were chosen from Fairfax County and the Southeast Cities (the latter were aggregated to form a "county" for historical purposes) given their VMTs. The segments were roughly divided among three road types: primary/interstate; arterial/secondary; and local, and were probabilistically sampled based on segment lengths. They represent our secondary sampling units (SSU). The road types themselves have their probability of selection or weights. However, length of road segment is also used along as an adjustment factor. In fact, road segment is used as another strata with long, medium, and short classes. Data on segments and lengths were provided by NHTSA.

The weighted state rate is calculated in the following manner:

For each location, a score is first calculated for each vehicle observed: driver and/or passenger belted (0 to 2 maximum) and the total number of occupants recorded in that vehicle (0 to 2 maximum). An overall rate is then calculated for the location.

A county score is then calculated by aggregating the county's locations together and weighting by length of road segments observed.

A VMT strata score is then calculated. To do this, counties within each VMT cluster (high, medium, and low) are aggregated together, weighting for selection probability, average VMT, and probabilities of selection.

The final, weighted state rate is calculated by combining the VMT clusters weighted within each cluster and its proportion of road segment length.

Appendix B-1: List of Sampled Road Segments by County

Key for Unique Information (beyond that understood from segment datasets and general selection information):

Bold: Segments selected to be primary sites; non-bold: reserve. *Italics* sites selected as primary, but not viable per exclusion criteria.[9] The main and reserve samples were selected simultaneously, and are reflected in "selection probability" and "order sort" probability, respectively. The exception to this is noted by sites and selection probabilities that are <u>underlined</u>; these were pulled in additional samples required because the first pull did not generate sufficient observable locations.[10]

Class: Stratification by road segment length (lower, average, upper); used in PPS to wchoose segments within counties (see text).

Order Sort: Randomly generated rank to determine order that segments would be chosen; order generated within each road type.

Road Segment MOS/PSU information:
Each segment came from a County, the PSU, with the MOS based on the average 5-year VMT split into three categories (see Table 2 for selection probabilities for County). The segments were sampled with Segment Length (Miles) as the MOS. The Segment selection probability, below, is based on segment length.

COUNTY	SITE_NO.	TYPE	TLID	ROAD NAME	LATITUDE	LONGITUDE	CLASS	SEG LENGTH (MILES)	SELECTION PROBABILITY	ORDER SORT
Amherst	**AMH2001**	**S1200**	**638976325**	**State Rte 210**	**37.4143**	**-79.10811421**	**upper**	**0.362953704**	**0.018630486**	**0.03190685**
Amherst	**AMH2002**	**S1200**	**613136788**	**Elon Rd**	**37.4676525**	**-79.137056**	**lower**	**0.026626779**	**0.018588336**	**0.23110997**
Amherst	**AMH2003**	**S1200**	**159126300**	**Lexington Tpke**	**37.6112989**	**-79.07832311**	**lower**	**0.037295691**	**0.026036376**	**0.23116184**
Amherst	**AMH2004**	**S1200**	**159128544**	**S Main St**	**37.5824439**	**-79.05594535**	**avera**	**0.101502114**	**0.009497938**	**0.28252432**
Amherst	**AMH2005**	**S1200**	**159126083**	**S Amherst Hwy**	**37.4481715**	**-79.1201025**	**lower**	**0.027418003**	**0.019140695**	**0.35537302**

[9] Exclusion criteria are provided by the federal code governing sample selection; examples include private roads and cul-de-sacs, among others.
[10] These selection probabilities are adjusted at the road type S1400 as $5.84*10^{-4}$, $4.24*10^{-4}$, and $3.74*10^{-4}$ for the sites Bed4007, Fai40013 and YC4009, respectively. Note: these counties do not have listed alternate sites for S1400s in this document. Other counties below that do not have alternatives are those requiring most of the first samples to be used to obtain sufficient primary sites. Additional alternates for counties in need have been selected and are available to interested readers with the adjusted selection probabilities.

Amherst	AMH2006	S1200	159131908	S Amherst Hwy	37.5403058	-79.09064728	avera	0.075647825	0.007078654	0.41639933
Amherst	*AMH2007*	*S1200*	*159119705*	*Blue Ridge Pkwy*	*37.6745027*	*-79.33388743*	*upper*	*0.369145491*	*0.018948312*	*0.48561859*
Amherst	AMH2008	S1200	639276257	Elon Rd	37.4801421	-79.15687703	upper	0.255712706	0.013125784	0.52098807
Amherst	AMH2009	S1200	224879167	Patrick Henry Hwy	37.7019885	-79.0276865	avera	0.063835702	0.005973349	0.56167857
Amherst	AMH20010	S1200	159106759	N Amherst Hwy	37.5958356	-79.03271593	avera	0.164849224	0.015425567	0.61638655
Amherst	AMH20011	S1200	159134226	S Amherst Hwy	37.5244615	-79.1133792	lower	0.030986469	0.021631865	0.65633899
Amherst	AMH20012	S1200	639274227	US Hwy 29	37.5286651	-79.06528897	upper	0.566342594	0.029070479	0.75373913
Amherst	AMH20013	S1200	638974087	US Hwy 29	37.5526565	-79.0664465	lower	0.028601537	0.019966928	0.87978175
Amherst	AMH20014	S1200	159119772	Lexington Tpke	37.7200327	-79.2477812	upper	0.386762766	0.01985261	0.90566897
Amherst	AMH20015	S1200	159117312	S Amherst Hwy	37.4621385	-79.1190485	avera	0.120985217	0.011321045	0.98891928
Amherst	*AMH4001*	*S1400*	*159113628*	*Two Fold Way*	*37.4204948*	*-79.09899802*	*lower*	*0.022509173*	*0.001630896*	*0.11848629*
Amherst	**AMH4002**	**S1400**	**159122475**	**Glenway Dr**	**37.5890874**	**-79.04162902**	**lower**	**0.034413976**	**0.002493455**	**0.14493015**
Amherst	**AMH4003**	**S1400**	**159129683**		**37.5463883**	**-78.90819735**	**avera**	**0.145491889**	**0.001077455**	**0.1556684**
Amherst	*AMH4004*	*S1400*	*639276406*	*Hartless Rd*	*37.6697846*	*-79.03394548*	*upper*	*0.432977418*	*0.001778733*	*0.28182424*
Amherst	**AMH4005**	**S1400**	**159112778**	**Glade Rd**	**37.4612527**	**-79.07545027**	**avera**	**0.135174685**	**0.00100105**	**0.31912469**
Amherst	*AMH4006*	*S1400*	*641114138*		*37.6028895*	*-79.2756359*	*upper*	*0.377568555*	*0.001551105*	*0.34773976*
Amherst	AMH4007	S1400	159123073	Randolph St	37.424746	-79.08555294	upper	0.283020066	0.001162687	0.57348275
Amherst	AMH4008	S1400	159128965	Sweet Hills Dr	37.5300725	-79.053789	lower	0.021788158	0.001578655	0.61105632
Amherst	AMH4009	S1400	159116080	S Hillcrest Dr	37.4191692	-79.09952931	avera	0.089410324	0.000662137	0.86196332
Bedford	**BED1001**	**S1100**	**640742131**	**Grove St**	**37.3335624**	**-79.51667046**	**lower**	**0.025108643**	**1**	**NA**
Bedford	*BED1002*	*S1100*	*640742134*	*Ole Dominion Blvd*	*37.3357599*	*-79.49602256*	*avera*	*0.061638025*	*1*	*NA*
Bedford	**BED2001**	**S1200**	**228436027**	**Blue Ridge Pkwy**	**37.4170345**	**-79.77105433**	**upper**	**1.966508699**	**0.06375286**	**0.03190685**
Bedford	**BED2002**	**S1200**	**228447015**	**Glenwood Dr**	**37.2137984**	**-79.43464391**	**lower**	**0.028705833**	**0.011641308**	**0.23110997**
Bedford	**BED2003**	**S1200**	**228467467**	**E Lynchburg Salem Tpke**	**37.310924**	**-79.3985219**	**upper**	**0.330938606**	**0.010728802**	**0.23116184**
Bedford	**BED2004**	**S1200**	**62709442**	**US Hwy 460**	**37.3236284**	**-79.53142746**	**avera**	**0.107597538**	**0.005042159**	**0.28252432**
Bedford	**BED2005**	**S1200**	**228439094**	**Stewartsville Rd**	**37.2514505**	**-79.699696**	**lower**	**0.030392041**	**0.01232513**	**0.35537302**
Bedford	BED2006	S1200	228462870	W Lynchburg Salem Tpke	37.3955231	-79.7753061	avera	0.079736073	0.003736535	0.41639933
Bedford	BED2007	S1200	228467374	Blue Ridge Pkwy	37.5622874	-79.41341387	upper	0.989115364	0.03206644	0.52098807
Bedford	BED2008	S1200	640020942	W Main St	37.3349881	-79.52547998	avera	0.064871292	0.003039952	0.56167857
Bedford	BED2009	S1200	228464014	W Lynchburg Salem Tpke	37.395956	-79.7493275	lower	0.007617786	0.003089302	0.61638655

Bedford	BED20010	S1200	62709505	Peaks St	37.3541151	-79.53384492	upper	0.234897769	0.007615224	0.65633899
Bedford	BED20011	S1200	62662736	W Lynchburg Salem Tpke	37.3733425	-79.701865	lower	0.032158878	0.01304165	0.87978175
Bedford	BED20012	S1200	228445418	Big Island Hwy	37.4708708	-79.45220312	avera	0.127748276	0.005986449	0.98891928
Bedford	*BED4001*	*S1400*	*62673596*	*River Falls Rd*	*37.2579535*	*-79.40137187*	*upper*	*0.270650595*	*0.000430428*	*0.11848629*
Bedford	*BED4002*	*S1400*	*228447060*	*Bow Ln*	*37.4428953*	*-79.47941445*	*upper*	*0.497528864*	*0.000791243*	*0.14493015*
Bedford	*BED4003*	*S1400*	*228443229*	*Happy Acres Dr*	*37.1578088*	*-79.68095658*	*lower*	*0.010964805*	*0.000256609*	*0.1556684*
Bedford	*BED4004*	*S1400*	*228450246*		*37.417565*	*-79.73894823*	*avera*	*0.138449552*	*0.000363969*	*0.31912469*
Bedford	*BED4005*	*S1400*	*228445267*	*Cove Creek Farm Rd*	*37.4796363*	*-79.30648103*	*lower*	*0.031130282*	*0.000728541*	*0.61105632*
Bedford	**BED4006**	**S1400**	**62708686**	**Helm St**	**37.3255242**	**-79.51543849**	**avera**	**0.093603747**	**0.000246074**	**0.86196332**
Bedford	**BED4007**	**S1400**	**62673187**	**Tolers Ferry Rd.**	**37.11128249**	**-79.5704253**	**upper**	**0.366987254**	**0.000583993**	**0.118486287**
Buchanan	**BUC2001**	**S1200**	**74074054**	**State Rte 83**	**37.23234**	**-82.09957102**	**avera**	**0.017392701**	**0.076405575**	**0.03190685**
Buchanan	**BUC2002**	**S1200**	**74077406**	**Riverside Dr**	**37.1627705**	**-81.88653094**	**upper**	**0.380177807**	**0.061612109**	**0.0396225**
Buchanan	**BUC2003**	**S1200**	**74075717**	**Helen Henderson Hwy**	**37.0830086**	**-82.08023395**	**upper**	**0.300048414**	**0.048626235**	**0.19359015**
Buchanan	**BUC2004**	**S1200**	**74094954**	**US Hwy 460**	**37.1546686**	**-81.87691251**	**avera**	**0.139415915**	**0.03538261**	**0.23110997**
Buchanan	**BUC2005**	**S1200**	**74077168**	**Riverside Dr**	**37.2054171**	**-81.97536847**	**avera**	**0.010465672**	**0.04597536**	**0.23116184**
Buchanan	**BUC2006**	**S1200**	**74068516**	**Slate Creek Rd**	**37.3094977**	**-81.96515678**	**avera**	**0.084563987**	**0.021461643**	**0.28252432**
Buchanan	**BUC2007**	**S1200**	**74088587**	**Riverside Dr**	**37.1678553**	**-81.90203047**	**avera**	**0.16579376**	**0.042077089**	**0.35537302**
Buchanan	**BUC2008**	**S1200**	**74055917**	**Bike Rte 76**	**37.0933791**	**-82.12880863**	**upper**	**0.244450098**	**0.0396159**	**0.36011246**
Buchanan	BUC2009	S1200	74077234	Riverside Dr	37.1889943	-81.9517493	avera	0.062393041	0.015834839	0.41639933
Buchanan	BUC20010	S1200	636662957	Riverside Dr	37.2862708	-82.12164991	upper	0.531787863	0.086182231	0.47711633
Buchanan	BUC20011	S1200	74068957	Bike Rte 76	37.1090897	-82.15509272	upper	0.201219966	0.032609969	0.47869487
Buchanan	BUC20012	S1200	74058579	Riverside Dr	37.1688909	-81.89436942	avera	0.019685046	0.086475771	0.48561859
Buchanan	BUC20013	S1200	74051813	Riverside Dr	37.3097145	-82.142642	avera	0.013478764	0.059211778	0.52098807
Buchanan	BUC20014	S1200	74053511	Riverside Dr	37.2777098	-82.09986255	avera	0.049526553	0.012569431	0.56167857
Buchanan	BUC20015	S1200	74077295	Riverside Dr	37.1772712	-81.9461799	upper	0.242202656	0.039251677	0.57836555
Buchanan	BUC20016	S1200	74052269	Riverside Dr	37.3551431	-82.19189574	avera	0.132946177	0.033740644	0.61638655
Buchanan	BUC20017	S1200	74075718	Helen Henderson Hwy	37.0843895	-82.0824475	lower	0.005073726	0.022288716	0.65633899
Buchanan	BUC20018	S1200	74081189	Helen Henderson Hwy	37.0741675	-82.05738456	upper	0.26442734	0.042853438	0.71992244
Buchanan	BUC20019	S1200	74074612	Lovers Gap Rd	37.2189472	-82.10839374	avera	0.019764926	0.086826684	0.75373913
Buchanan	BUC20020	S1200	74052634	Riverside Dr	37.3549016	-82.19054468	avera	0.023949375	0.105208832	0.80517307

Buchanan	BUC20021	S1200	641113023	Riverside Dr	37.3134633	-82.14164077	upper	0.501399258	0.081257414	0.80579271
Buchanan	BUC20022	S1200	74092667	Riverside Dr	37.1801489	-81.9452476	avera	0.168928672	0.042872704	0.87978175
Buchanan	BUC20023	S1200	74054769	Riverside Dr	37.2354723	-82.04775463	avera	0.019707486	0.086574351	0.90566897
Buchanan	BUC20024	S1200	640963910	Lovers Gap Rd	37.2210936	-82.14655385	avera	0.097045882	0.024629445	0.98891928
Fairfax	**FAI1001**	**S1100**	**76058263**	**I- 95**	**38.7933235**	**-77.1534825**	**lower**	**0.004202882**	**0.002923546**	**0.11006642**
Fairfax	**FAI1002**	**S1100**	**618606286**	**I- 66**	**38.87736**	**-77.2752345**	**avera**	**0.022407082**	**0.015586481**	**0.11948539**
Fairfax	*FAI1003*	*S1100*	*641379974*	*I- 395*	*38.7932355*	*-77.173542*	*avera*	*0.075915116*	*0.016550555*	*0.27892363*
Fairfax	*FAI1004*	*S1100*	*215937207*	*I- 95*	*38.7950135*	*-77.144831*	*avera*	*0.028727194*	*0.019982783*	*0.36105045*
Fairfax	*FAI1005*	*S1100*	*215935364*	*I- 395*	*38.79182*	*-77.1751495*	*lower*	*0.01353391*	*0.009414257*	*0.36951578*
Fairfax	*FAI1006*	*S1100*	*619915918*	*I- 95*	*38.8027414*	*-77.10680076*	*upper*	*0.134894233*	*0.003937823*	*0.38503435*
Fairfax	*FAI1007*	*S1100*	*75978202*	*I- 66*	*38.8928685*	*-77.2076815*	*avera*	*0.071722749*	*0.01563656*	*0.40091431*
Fairfax	**FAI1008**	**S1100**	**76062245**	**I- 66**	**38.864775**	**-77.332146**	**avera**	**0.079851029**	**0.017408639**	**0.45462595**
Fairfax	**FAI1009**	**S1100**	**638085763**	**I- 395**	**38.8159832**	**-77.13763602**	**avera**	**0.053061321**	**0.011568109**	**0.48203775**
Fairfax	FAI10010	S1100	634169002	I- 66	38.865758	-77.3253415	upper	0.355272276	0.010371083	0.90695158
Fairfax	FAI10011	S1100	638089700	I- 495	38.8388074	-77.21915352	upper	0.202862207	0.005921939	0.93639148
Fairfax	FAI10012	S1100	641096085	I- 95	38.8004736	-77.07660104	upper	0.116361069	0.003396804	0.96867874
Fairfax	**FAI2001**	**S1200**	**76032720**	**Columbia Pike**	**38.838299**	**-77.15416**	**avera**	**0.022352807**	**0.007538061**	**0.03190685**
Fairfax	**FAI2002**	**S1200**	**76042013**	**Ox Rd**	**38.6890951**	**-77.25717277**	**upper**	**0.260634131**	**0.006463562**	**0.0396225**
Fairfax	**FAI2003**	**S1200**	**215924856**	**Leesburg Pike**	**39.0038745**	**-77.351563**	**upper**	**0.208810202**	**0.005178361**	**0.19359015**
Fairfax	**FAI2004**	**S1200**	**76062061**	**Fairfax County Pkwy**	**38.8583434**	**-77.38826794**	**avera**	**0.077720166**	**0.005438541**	**0.23110997**
Fairfax	**FAI2005**	**S1200**	**76134853**	**Hillwood Ave**	**38.8733463**	**-77.15823858**	**avera**	**0.014036657**	**0.004733597**	**0.23116184**
Fairfax	**FAI2006**	**S1200**	**624433709**	**Leesburg Pike**	**38.9474889**	**-77.25963607**	**avera**	**0.053758446**	**0.003761797**	**0.28252432**
Fairfax	**FAI2007**	**S1200**	**638080358**	**Ox Rd**	**38.7846795**	**-77.32725857**	**avera**	**0.09234517**	**0.006461939**	**0.35537302**
Fairfax	**FAI2008**	**S1200**	**638159569**	**Fairfax County Pkwy**	**38.9223868**	**-77.39595974**	**upper**	**0.151161616**	**0.003748713**	**0.36011246**
Fairfax	FAI2009	S1200	640095496	Chain Bridge Rd	38.8425263	-77.30896924	avera	0.044132107	0.003088185	0.41639933
Fairfax	*FAI20010*	*S1200*	*215975791*	*Dulles Access Rd*	*38.9431977*	*-77.28771058*	*upper*	*0.544081993*	*0.01349289*	*0.47711633*
Fairfax	*FAI20011*	*S1200*	*215949747*	*Dulles Access Rd*	*38.9480429*	*-77.30518672*	*upper*	*0.118319681*	*0.002934253*	*0.47869487*
Fairfax	FAI20012	S1200	76036464	Centreville Rd	38.8133035	-77.4470745	avera	0.025728346	0.008676398	0.48561859
Fairfax	FAI20013	S1200	638159285	Dulles Access Rd	38.9533065	-77.373943	avera	0.017500547	0.005901728	0.52098807
Fairfax	FAI20014	S1200	76028001	Dranesville Rd	39.004225	-77.37479662	avera	0.040062845	0.002803435	0.56167857
Fairfax	FAI20015	S1200	215942337	Arlington Blvd	38.8658496	-77.21103183	upper	0.150752033	0.003738555	0.57836555

Fairfax	FAI20016	S1200	215969027	Leesburg Pike	38.9121422	-77.22101953	avera	0.07647614	0.005351489	0.61638655
Fairfax	FAI20017	S1200	76048522	Georgetown Pike	38.965042	-77.234502	lower	0.006370334	0.002148275	0.65633899
Fairfax	FAI20018	S1200	638162611	Fairfax County Pkwy	38.8323393	-77.37004734	upper	0.174992373	0.004339701	0.71992244
Fairfax	FAI20019	S1200	638159844	Fairfax County Pkwy	38.854177	-77.3883165	avera	0.025908919	0.008737293	0.75373913
Fairfax	FAI20020	S1200	634957353	Main St	38.8421225	-77.279747	avera	0.028045895	0.009457947	0.80517307
Fairfax	FAI20021	S1200	76045304	Gunston Rd	38.6652777	-77.16732888	upper	0.437323104	0.010845337	0.80579271
Fairfax	FAI20022	S1200	619957090	Leesburg Pike	39.0002735	-77.344511	avera	0.093161663	0.006519074	0.87978175
Fairfax	FAI20023	S1200	624113420	Lee Hwy	38.87291	-77.247343	avera	0.025750754	0.008683954	0.90566897
Fairfax	FAI20024	S1200	75963164	Dolley Madison Blvd	38.937832	-77.1832965	avera	0.058805324	0.004114957	0.98891928
Fairfax	**FAI4001**	**S1400**	**618786251**	**Arrowhead Park Dr**	**38.8436314**	**-77.4069204**	**lower**	**0.005955321**	**9.54E-05**	**0.11848629**
Fairfax	*FAI4002*	*S1400*	*75957788*	*Citation Ct*	*38.933691*	*-77.365087*	*avera*	*0.019039042*	*0.000305062*	*0.14493015*
Fairfax	*FAI4003*	*S1400*	*76044237*	*Chieftain Cir*	*38.8072615*	*-77.16245866*	*avera*	*0.07289419*	*0.000161986*	*0.1556684*
Fairfax	*FAI4004*	*S1400*	*75973602*	*Summer Oak Way*	*38.7983126*	*-77.31046978*	*upper*	*0.100897155*	*0.000171608*	*0.28182424*
Fairfax	*FAI4005*	*S1400*	*215951740*	*Saigon Rd*	*38.9517101*	*-77.20317506*	*avera*	*0.06910262*	*0.000153561*	*0.31912469*
Fairfax	*FAI4006*	*S1400*	*641087351*	*Lyndam Hill Cir*	*38.711915*	*-77.1924755*	*avera*	*0.029141848*	*0.000466939*	*0.34773976*
Fairfax	*FAI4007*	*S1400*	*624898442*	*Abert Dr*	*38.719414*	*-77.14316556*	*avera*	*0.025185871*	*0.000403552*	*0.57348275*
Fairfax	**FAI4008**	**S1400**	**75964523**	**Brynwood Pl**	**38.9082329**	**-77.40045348**	**avera**	**0.076981527**	**0.000171069**	**0.61105632**
Fairfax	*FAI4009*	*S1400*	*75957622*	*Arnsley Ct*	*38.9334951*	*-77.37959606*	*upper*	*0.130976042*	*0.000222767*	*0.66003464*
Fairfax	*FAI40010*	*S1400*	*215924226*	*Young Ave*	*38.9840781*	*-77.38601644*	*upper*	*0.106181981*	*0.000180597*	*0.67197279*
Fairfax	**FAI40011**	**S1400**	**215924939**	**Seneca Rd**	**39.0046394**	**-77.34243295**	**upper**	**0.190241108**	**0.000323567**	**0.77179495**
Fairfax	*FAI40012*	*S1400*	*76014515*	*Belmont Ridge Ct*	*38.940831*	*-77.32810288*	*avera*	*0.051044949*	*0.000113433*	*0.86196332*
Fairfax	**FAI40013**	**S1400**	**642144331**	**Valestra Cir**	**38.90265576**	**-77.32054913**	**avera**	**0.026473628**	**0.000424321**	**0.118486287**
Franklin	**FRA2001**	**S1200**	**56406502**	**Booker T Washington Hwy**	**37.0646055**	**-79.8275471**	**upper**	**0.291245369**	**0.019552909**	**0.03190685**
Franklin	**FRA2002**	**S1200**	**56405968**	**Jubal Early Hwy**	**37.2092746**	**-79.88230261**	**lower**	**0.025887972**	**0.017182753**	**0.23110997**
Franklin	**FRA2003**	**S1200**	**56400578**	**Colonial Tpke**	**36.9941347**	**-79.70768763**	**lower**	**0.035461878**	**0.023537289**	**0.23116184**
Franklin	**FRA2004**	**S1200**	**56408597**	**Colonial Tpke**	**37.0198386**	**-79.81309128**	**avera**	**0.093637592**	**0.008403657**	**0.28252432**
Franklin	**FRA2005**	**S1200**	**56373626**	**Jubal Early Hwy**	**37.1354045**	**-79.85940013**	**lower**	**0.026820972**	**0.017802017**	**0.35537302**
Franklin	FRA2006	S1200	56429508	Colonial Tpke	36.984299	-79.6356175	avera	0.070347005	0.006313406	0.41639933
Franklin	FRA2007	S1200	56431443	Blue Ridge Pkwy	37.0379112	-80.11144534	upper	0.292032326	0.019605741	0.48561859
Franklin	FRA2008	S1200	56408098	Booker T Washington Hwy	37.0573096	-79.83675324	upper	0.212643844	0.014275955	0.52098807

Franklin	FRA2009	S1200	640182658	Franklin St	36.9202537	-80.05886342	avera	0.059820516	0.005368689	0.56167857
Franklin	FRA20010	S1200	617445055	Booker T Washington Hwy	37.120141	-79.7221095	avera	0.146696911	0.013165551	0.61638655
Franklin	FRA20011	S1200	56411959	Virgil H Goode Hwy	37.1297915	-79.96740026	lower	0.029368409	0.01949284	0.65633899
Franklin	FRA20012	S1200	56391879	Colonial Tpke	36.9976099	-79.77089692	upper	0.421998646	0.028331098	0.75373913
Franklin	FRA20013	S1200	56402696	Booker T Washington Hwy	37.1266278	-79.76255452	lower	0.02774931	0.018418188	0.87978175
Franklin	FRA20014	S1200	56381394	Franklin St	36.9233175	-80.00046115	upper	0.301513786	0.020242284	0.90566897
Franklin	FRA20015	S1200	56412054	Colonial Tpke	37.018904	-79.81701091	avera	0.108235759	0.009713793	0.98891928
Franklin	**FRA4001**	**S1400**	**56386884**	**King Richard Rd**	**36.9155645**	**-80.023911**	**lower**	**0.021835233**	**0.000702275**	**0.11848629**
Franklin	**FRA4002**	**S1400**	**56411760**	**Dry Hill Rd**	**36.923897**	**-80.1242395**	**lower**	**0.032574484**	**0.001047675**	**0.14493015**
Franklin	*FRA4003*	*S1400*	*56409887*	*Butterfly Ln*	*36.91497*	*-79.96174829*	*avera*	*0.128372361*	*0.000469474*	*0.1556684*
Franklin	**FRA4004**	**S1400**	**641535526**	**Ivy Ln**	**37.0314915**	**-79.70801473**	**upper**	**0.345698911**	**0.00074786**	**0.28182424**
Franklin	FRA4005	S1400	56384392	Coopers Mountain Rd	36.8214804	-79.83657279	avera	0.120395244	0.000440301	0.31912469
Franklin	*FRA4006*	*S1400*	*56406429*	*Clark Rd*	*36.9435431*	*-79.88244867*	*upper*	*0.30828748*	*0.000666927*	*0.34773976*
Franklin	*FRA4007*	*S1400*	*56399253*		*36.8911692*	*-79.9136381*	*upper*	*0.2441212*	*0.000528114*	*0.57348275*
Franklin	FRA4008	S1400	641466071	Diamond Ave Exd	37.001408	-79.905057	lower	0.021083383	0.000678093	0.61105632
Franklin	*FRA4009*	*S1400*	*56421339*		*36.8673266*	*-79.71842647*	*avera*	*0.079684379*	*0.000291416*	*0.86196332*
Goochland	**GOO1001**	**S1100**	**618558947**	**I- 64**	**37.6702867**	**-77.64729813**	**upper**	**0.22118744**	**0.010570736**	**0.11006642**
Goochland	**GOO1002**	**S1100**	**73824004**	**I- 64**	**37.672097**	**-77.6491965**	**lower**	**0.004511948**	**0.45585499**	**0.27892363**
Goochland	GOO1003	S1100	73814614	I- 64	37.8181008	-77.94635728	upper	0.790983923	0.037801795	0.36951578
Goochland	GOO1004	S1100	73821045	I- 64	37.7093043	-77.77689778	avera	0.186530646	0.060271002	0.40091431
Goochland	GOO1005	S1100	618559159	I- 64	37.672355	-77.65071448	lower	0.00819825	0.828292626	0.45462595
Goochland	GOO1006	S1100	73818019	I- 64	37.7549641	-77.85425209	avera	0.138869807	0.044871031	0.48203775
Goochland	**GOO2001**	**S1200**	**636712071**	**Broad Street Rd**	**37.8683504**	**-78.02481705**	**upper**	**0.820505279**	**0.066069282**	**0.03190685**
Goochland	**GOO2002**	**S1200**	**73807524**	**Broad Street Rd**	**37.6675665**	**-77.6713005**	**lower**	**0.018900972**	**0.066113619**	**0.23110997**
Goochland	**GOO2003**	**S1200**	**640199822**	**River Rd W**	**37.6024162**	**-77.71868969**	**upper**	**0.427315561**	**0.034408593**	**0.23116184**
Goochland	**GOO2004**	**S1200**	**626992456**	**River Rd W**	**37.6665324**	**-77.87841138**	**avera**	**0.140759813**	**0.011595767**	**0.28252432**
Goochland	GOO2005	S1200	622531066	W Broad St	37.6620545	-77.646231	lower	0.01956489	0.068435937	0.35537302
Goochland	GOO2006	S1200	641163925	River Rd W	37.698448	-77.9037075	avera	0.103126077	0.008495507	0.41639933
Goochland	GOO2007	S1200	73820882	River Rd W	37.7089904	-77.9579267	upper	0.673927997	0.054266487	0.52098807
Goochland	GOO2008	S1200	638488646	State Rte 288	37.6378847	-77.66393965	avera	0.08207958	0.0067617	0.56167857

Goochland	*GOO2009*	*S1200*	*106672854*	*W Broad St*	*37.6625215*	*-77.647974*	*lower*	*0.005497087*	*0.019228234*	*0.61638655*
Goochland	GOO20010	S1200	73803539	Broad Street Rd	37.8927416	-78.05197189	upper	0.330321473	0.026598369	0.65633899
Goochland	GOO20011	S1200	73812356	Broad Street Rd	37.8637525	-78.019694	lower	0.020711725	0.072447443	0.87978175
Goochland	GOO20012	S1200	73823118	Cartersville Rd	37.6725707	-78.08598021	avera	0.17067636	0.014060286	0.98891928
Goochland	**GOO4001**	**S1400**	**640199529**	**Seay Rd**	**37.7047173**	**-77.73126399**	**upper**	**0.365301362**	**0.001668881**	**0.11848629**
Goochland	*GOO4002*	*S1400*	*73805577*		*37.6479582*	*-77.9693828*	*upper*	*0.643038121*	*0.002937723*	*0.14493015*
Goochland	*GOO4003*	*S1400*	*210330907*	*S Lower Tuckahoe Rd*	*37.5751185*	*-77.641927*	*lower*	*0.007434051*	*0.002636691*	*0.1556684*
Goochland	**GOO4004**	**S1400**	**73806324**	**Landis Rd**	**37.7039958**	**-77.76253047**	**avera**	**0.192122947**	**0.001214761**	**0.31912469**
Goochland	GOO4005	S1400	73803838	Lowry Rd	37.7762064	-78.11192388	lower	0.019228464	0.006819906	0.61105632
Goochland	GOO4006	S1400	73808376		37.6364931	-77.75190146	avera	0.127662724	0.00080719	0.86196332
Lee	**LEE2001**	**S1200**	**639568490**	**Wilderness Rd**	**36.7163184**	**-82.94956591**	**lower**	**0.023231214**	**0.031516837**	**0.03190685**
Lee	**LEE2002**	**S1200**	**636651350**	**Old Zion Rd**	**36.7658203**	**-83.02600451**	**upper**	**0.374051913**	**0.029542404**	**0.0396225**
Lee	**LEE2003**	**S1200**	**641151554**	**Trail of the Lonesome Pine Rd**	**36.8137041**	**-82.82861623**	**upper**	**0.269585584**	**0.021291713**	**0.19359015**
Lee	**LEE2004**	**S1200**	**79111401**	**Wilderness Rd**	**36.6452277**	**-83.41651944**	**avera**	**0.116636655**	**0.014877435**	**0.23110997**
Lee	**LEE2005**	**S1200**	**613142617**	**Trail of the Lonesome Pine Rd**	**36.773104**	**-82.9703335**	**lower**	**0.015537579**	**0.021079198**	**0.23116184**
Lee	**LEE2006**	**S1200**	**79105463**	**Daniel Boone Trl**	**36.6299645**	**-83.457453**	**avera**	**0.071719326**	**0.009148064**	**0.28252432**
Lee	**LEE2007**	**S1200**	**635740791**	**Daniel Boone Trl**	**36.6875476**	**-83.3209099**	**avera**	**0.147383379**	**0.018799292**	**0.35537302**
Lee	**LEE2008**	**S1200**	**79108893**	**Wilderness Rd**	**36.7174958**	**-82.91987281**	**upper**	**0.203141436**	**0.016043993**	**0.36011246**
Lee	LEE2009	S1200	79110427	US Hwy 421	36.7645442	-83.08210338	avera	0.055632857	0.007096176	0.41639933
Lee	LEE20010	S1200	79123799	Wilderness Rd	36.6793414	-83.35793723	upper	0.681169265	0.053798354	0.47711633
Lee	LEE20011	S1200	79108017	Wilderness Rd	36.7195982	-82.93185711	upper	0.172214415	0.013601395	0.47869487
Lee	LEE20012	S1200	79128555	Wilderness Rd	36.6480565	-83.4114715	lower	0.025960096	0.035218999	0.48561859
Lee	LEE20013	S1200	79111933	Wilderness Rd	36.6813795	-83.152863	lower	0.019183159	0.026025007	0.52098807
Lee	LEE20014	S1200	613142060	Trail of the Lonesome Pine Rd	36.7911065	-82.852543	avera	0.046858406	0.005976962	0.56167857
Lee	LEE20015	S1200	639075751	US Hwy 23	36.7916344	-82.81175009	upper	0.202161165	0.015966572	0.57836555
Lee	LEE20016	S1200	79115743	Daniel Boone Trl	36.7088929	-82.90865983	avera	0.113201474	0.014439265	0.61638655
Lee	LEE20017	S1200	79111471	Daniel Boone Trl	36.635543	-83.4342505	lower	0.006093741	0.008267129	0.65633899
Lee	LEE20018	S1200	641168062	Trail of the Lonesome Pine Rd	36.770673	-82.96321135	upper	0.230830431	0.018230854	0.71992244
Lee	LEE20019	S1200	79110453	Liberty St	36.7562035	-83.031154	lower	0.026326067	0.035715498	0.75373913

Lee	LEE20020	S1200	79106602	US Hwy 23	36.7842135	-82.817685	lower	0.028646035	0.038862903	0.80517307
Lee	LEE20021	S1200	639567982	US Hwy 23	36.7642217	-82.82175545	upper	0.62654266	0.049483977	0.80579271
Lee	LEE20022	S1200	79095646	Daniel Boone Trl	36.6957324	-83.27592469	avera	0.149162261	0.019026195	0.87978175
Lee	LEE20023	S1200	79117889	Wilderness Rd	36.7037417	-82.97972918	lower	0.025989288	0.035258604	0.90566897
Lee	LEE20024	S1200	79093817	Saint Charles Rd	36.7782048	-83.05889414	avera	0.082626802	0.010539353	0.98891928
Orange	**ORA2001**	**S1200**	**29887611**	**Zachary Taylor Hwy**	**38.3033175**	**-77.956217**	**lower**	**0.042837466**	**0.059669152**	**0.03190685**
Orange	**ORA2002**	**S1200**	**29893313**	**Germanna Hwy**	**38.3407743**	**-77.74132977**	**upper**	**0.419404978**	**0.059573428**	**0.0396225**
Orange	**ORA2003**	**S1200**	**29893039**	**Constitution Hwy**	**38.3136214**	**-77.77186659**	**upper**	**0.36275702**	**0.051526998**	**0.19359015**
Orange	**ORA2004**	**S1200**	**29889177**	**Spotswood Trl**	**38.1837675**	**-78.29349596**	**avera**	**0.163743981**	**0.034895605**	**0.23110997**
Orange	**ORA2005**	**S1200**	**29884689**	**Constitution Hwy**	**38.2582325**	**-78.001646**	**lower**	**0.030412442**	**0.042362091**	**0.23116184**
Orange	**ORA2006**	**S1200**	**29879552**	**Caroline St**	**38.236914**	**-78.11161157**	**avera**	**0.109614447**	**0.023360019**	**0.28252432**
Orange	**ORA2007**	**S1200**	**29891561**	**Zachary Taylor Hwy**	**38.3200295**	**-77.95593454**	**avera**	**0.202730458**	**0.043204043**	**0.35537302**
Orange	**ORA2008**	**S1200**	**29878573**	**Constitution Hwy**	**38.2237762**	**-78.21711261**	**upper**	**0.298230903**	**0.042361532**	**0.36011246**
Orange	ORA2009	S1200	29902465	James Madison Hwy	38.2218587	-78.1245782	avera	0.084162486	0.017935932	0.41639933
Orange	ORA20010	S1200	641044702	Constitution Hwy	38.2242937	-78.18449069	upper	0.636443474	0.090402169	0.47711633
Orange	ORA20011	S1200	29888110	Constitution Hwy	38.24134	-78.13471135	upper	0.245473236	0.034867689	0.47869487
Orange	ORA20012	S1200	29888805	Constitution Hwy	38.3257648	-77.72854815	lower	0.047536685	0.066214787	0.48561859
Orange	ORA20013	S1200	29892573	James Madison Hwy	38.1921174	-78.13690352	lower	0.036889742	0.051384451	0.52098807
Orange	ORA20014	S1200	29878358	Blue Ridge Tpke	38.1637978	-78.20283115	avera	0.075585862	0.016108161	0.56167857
Orange	ORA20015	S1200	29892291	Germanna Hwy	38.330286	-77.73372115	upper	0.295856331	0.042024241	0.57836555
Orange	ORA20016	S1200	29893293	Constitution Hwy	38.2436697	-78.07216274	avera	0.162369915	0.034602777	0.61638655
Orange	ORA20017	S1200	29892632	Spotswood Trl	38.1800583	-78.29029305	lower	0.011427218	0.015917198	0.65633899
Orange	ORA20018	S1200	29890602	Zachary Taylor Hwy	38.1556	-77.92847596	upper	0.321637207	0.045686227	0.71992244
Orange	ORA20019	S1200	29889130	Blue Ridge Tpke	38.2018493	-78.21725087	lower	0.048192103	0.067127732	0.75373913
Orange	ORA20020	S1200	29897721	Spotswood Trl	38.1456526	-78.20174596	lower	0.051303101	0.071461103	0.80517307
Orange	ORA20021	S1200	613320626	Germanna Hwy	38.3415827	-77.74200695	upper	0.536693573	0.076233421	0.80579271
Orange	ORA20022	S1200	29893784	Zachary Taylor Hwy	38.209943	-77.94495458	avera	0.203408524	0.043348546	0.87978175
Orange	ORA20023	S1200	29897264	Germanna Hwy	38.3571863	-77.75764559	lower	0.048016301	0.066882853	0.90566897
Orange	ORA20024	S1200	29898539	Constitution Hwy	38.2691925	-77.936459	avera	0.119753422	0.025520743	0.98891928
Pittsylvania	**PIT2001**	**S1200**	**56666990**	**Memorial Dr**	**36.5924221**	**-79.39979996**	**lower**	**0.033378697**	**0.014382406**	**0.03190685**
Pittsylvania	**PIT2002**	**S1200**	**56628668**	**W Gretna Rd**	**36.9450919**	**-79.48446513**	**upper**	**0.333944563**	**0.015283052**	**0.0396225**

Pittsylvania	PIT2003	S1200	639776771	Memorial Dr	36.5799591	-79.42776684	upper	0.284294841	0.013010821	0.19359015
Pittsylvania	PIT2004	S1200	56648651	S Boston Hwy	36.5809515	-79.3035235	avera	0.120399878	0.007303737	0.23110997
Pittsylvania	PIT2005	S1200	56665770	Westover Dr	36.604767	-79.509079	lower	0.022908524	0.009870957	0.23116184
Pittsylvania	PIT2006	S1200	56631708	US Hwy 29	36.7617505	-79.389487	avera	0.079049801	0.004795345	0.28252432
Pittsylvania	PIT2007	S1200	56640334	US Hwy 29	36.7901144	-79.39377952	avera	0.150188031	0.009110756	0.35537302
Pittsylvania	PIT2008	S1200	56601586	Martinsville Hwy	36.6365663	-79.66548545	upper	0.211139589	0.009662853	0.36011246
Pittsylvania	PIT2009	S1200	56601975	Franklin Tpke	36.7331118	-79.55810004	avera	0.064002731	0.003882555	0.41639933
Pittsylvania	PIT20010	S1200	56654252	US Hwy 29	37.0901779	-79.33238513	upper	0.810379504	0.03708721	0.47711633
Pittsylvania	PIT20011	S1200	56668862	Central Blvd	36.5994246	-79.41653482	upper	0.17852501	0.008170239	0.47869487
Pittsylvania	PIT20012	S1200	56630344	E Gretna Rd	36.970134	-79.120175	lower	0.036517855	0.015735024	0.48561859
Pittsylvania	PIT20013	S1200	56647988	Martinsville Hwy	36.624093	-79.625192	lower	0.027952299	0.012044248	0.52098807
Pittsylvania	PIT20014	S1200	56666483	Riverside Dr	36.5930527	-79.41457663	avera	0.057736707	0.003502443	0.56167857
Pittsylvania	PIT20015	S1200	56631537	Callands Rd	36.8363615	-79.44273006	upper	0.210844689	0.009649357	0.57836555
Pittsylvania	PIT20016	S1200	56668671	Memorial Dr	36.5879674	-79.41186904	avera	0.117582793	0.007132846	0.61638655
Pittsylvania	PIT20017	S1200	226676300	Martinsville Hwy	36.604158	-79.5195755	lower	0.009281276	0.00399917	0.65633899
Pittsylvania	PIT20018	S1200	56628348	W Gretna Rd	36.9540874	-79.39314496	upper	0.235554453	0.010780205	0.71992244
Pittsylvania	PIT20019	S1200	56589041	Franklin Tpke	36.626662	-79.3881645	lower	0.037000484	0.015942982	0.75373913
Pittsylvania	PIT20020	S1200	56631573	Main St	36.8279612	-79.39780939	lower	0.039997869	0.017234513	0.80517307
Pittsylvania	PIT20021	S1200	56640625	Callands Rd	36.7897389	-79.6322809	upper	0.622485284	0.028488187	0.80579271
Pittsylvania	PIT20022	S1200	56598387	Main St	36.831985	-79.39640875	avera	0.152488389	0.009250301	0.87978175
Pittsylvania	PIT20023	S1200	56665044	S Boston Rd	36.580998	-79.3171625	lower	0.03653679	0.015743183	0.90566897
Pittsylvania	PIT20024	S1200	613148594	Danville Expy	36.5456175	-79.43854515	avera	0.086175711	0.00522762	0.98891928
Prince	PR1001	S1100	207154534	I- 95	38.5939562	-77.31580556	upper	0.35041009	0.012659327	0.11006642
Prince	PR1002	S1100	207169922	I- 95	38.5800205	-77.323149	lower	0.005937401	0.023255326	0.27892363
Prince	PR1003	S1100	207176374	I- 95	38.66864	-77.26690931	upper	0.720703849	0.026036995	0.36951578
Prince	PR1004	S1100	207174223	I- 66	38.8218437	-77.67885354	avera	0.097861387	0.044312523	0.40091431
Prince	PR1005	S1100	207148462	I- 66	38.8178125	-77.6400205	lower	0.012652902	0.04955828	0.45462595
Prince	PR1006	S1100	207176990	I- 95	38.6696118	-77.25978465	avera	0.076332375	0.034563991	0.48203775

Prince	PR2001	S1200	207141465	Prince William Pkwy	38.7605793	-77.5314893	upper	0.898776193	0.028764506	0.03190685
Prince	PR2002	S1200	76529628	Prince William Pkwy	38.681209	-77.35995	lower	0.012118881	0.019641619	0.23110997
Prince	PR2003	S1200	207159052	Lee Hwy	38.8039154	-77.58179377	upper	0.274591829	0.008788059	0.23116184
Prince	PR2004	S1200	207177401	James Madison Hwy	38.8381635	-77.63477118	avera	0.077290945	0.005203746	0.28252432
Prince	PR2005	S1200	619935094	Main St	38.553493	-77.33334	lower	0.01261957	0.020453109	0.35537302
Prince	PR2006	S1200	207171330	James Madison Hwy	38.8196302	-77.63750768	avera	0.053866666	0.003626666	0.41639933
Prince	PR2007	S1200	207166925	Dumfries Rd	38.7136805	-77.45861933	upper	0.531240853	0.017001875	0.52098807
Prince	PR2008	S1200	207174419	Prince William Pkwy	38.7669795	-77.5349795	avera	0.0442043	0.002976131	0.56167857
Prince	PR2009	S1200	207154816	Sudley Rd	38.852267	-77.5615665	lower	0.005344159	0.008661521	0.61638655
Prince	PR20010	S1200	207152786	Main St	38.554894	-77.33394369	upper	0.192104759	0.006148136	0.65633899
Prince	PR20011	S1200	207179591	Prince William Pkwy	38.709858	-77.409973	lower	0.013104946	0.021239779	0.87978175
Prince	PR20012	S1200	76510150	Jefferson Davis Hwy	38.551427	-77.3335675	avera	0.091378602	0.006152222	0.98891928
Prince	PR4001	S1400	76507780	Carrageen Dr	38.6612978	-77.40386283	upper	0.185325789	0.000270445	0.11848629
Prince	PR4002	S1400	635411970	Vandor Ln	38.8022353	-77.51789401	upper	0.36465177	0.000532135	0.14493015
Prince	PR4003	S1400	207169584		38.540206	-77.32656	lower	0.006698438	0.000488282	0.1556684
Prince	PR4004	S1400	207164958	Sudley Manor Dr	38.7911273	-77.48446135	avera	0.097691488	0.000185441	0.31912469
Prince	PR4005	S1400	76513942	Flowerree Ln	38.733696	-77.4723735	lower	0.013011647	0.000948483	0.61105632
Prince	PR4006	S1400	634507164	Smoketown Rd	38.6523735	-77.303645	avera	0.063536806	0.000120608	0.86196332
Southeast	SE1001	S1100	613347996	I- 664	36.893481	-76.426665	lower	0.005069974	0.004487068	0.11006642
Southeast	SE1002	S1100	121771408	I- 464	36.7780965	-76.281336	avera	0.021470107	0.019001641	0.11948539
Southeast	SE1003	S1100	638977323	I- 64	36.9172658	-76.26765271	avera	0.081952484	0.023130838	0.27892363
Southeast	SE1004	S1100	638976348	I- 64	36.844786	-76.1963925	avera	0.030377714	0.02688512	0.36105045
Southeast	SE1005	S1100	122151432	I- 264	36.8448535	-76.267721	lower	0.012703793	0.011243209	0.36951578
Southeast	SE1006	S1100	639820800	I- 64	36.9487291	-76.26599051	upper	0.15460124	0.004520389	0.38503435

Southeast	*SE1007*	*S1100*	*122152928*	*I- 264*	*36.8389166*	*-76.28713475*	*avera*	*0.076631031*	*0.021628874*	*0.40091431*
Southeast	SE1008	S1100	122144660	I- 64	36.9185777	-76.26958818	avera	0.085269269	0.02406699	0.45462595
Southeast	*SE1009*	*S1100*	*122203501*	*I- 264*	*36.8321185*	*-76.29496*	*avera*	*0.057265944*	*0.016163137*	*0.48203775*
Southeast	SE10010	S1100	640420875	I- 264	36.7871907	-76.40296169	upper	0.384300827	0.01123658	0.90695158
Southeast	SE10011	S1100	613354605	I- 464	36.7650019	-76.26922452	upper	0.233178288	0.006817905	0.93639148
Southeast	SE10012	S1100	639822477	I- 64	36.8841785	-76.22234649	upper	0.125102389	0.003657872	0.96867874
Southeast	**SE2001**	**S1200**	**635302741**	**W Little Creek Rd**	**36.916146**	**-76.292505**	**avera**	**0.025586808**	**0.004793576**	**0.03190685**
Southeast	**SE2002**	**S1200**	**613340815**	**Great Brg Byp**	**36.6102857**	**-76.20618982**	**upper**	**0.293555744**	**0.004989485**	**0.0396225**
Southeast	**SE2003**	**S1200**	**122269364**	**N Great Neck Rd**	**36.85795**	**-76.0476135**	**upper**	**0.207750663**	**0.00353108**	**0.19359015**
Southeast	**SE2004**	**S1200**	**122147991**	**E Ocean View Ave**	**36.9299196**	**-76.19221458**	**avera**	**0.077212698**	**0.002490748**	**0.23110997**
Southeast	**SE2005**	**S1200**	**122304953**	**Pembroke Blvd**	**36.862316**	**-76.132287**	**avera**	**0.016109344**	**0.003018015**	**0.23116184**
Southeast	**SE2006**	**S1200**	**122131543**	**Hampton Blvd**	**36.8915962**	**-76.30400604**	**avera**	**0.053831723**	**0.001736518**	**0.28252432**
Southeast	**SE2007**	**S1200**	**122241413**	**Nansemond Pkwy**	**36.7689569**	**-76.52938813**	**avera**	**0.094961644**	**0.003063298**	**0.35537302**
Southeast	**SE2008**	**S1200**	**122268634**	**Lynnhaven Pkwy**	**36.7954913**	**-76.09084839**	**upper**	**0.148471772**	**0.002523533**	**0.36011246**
Southeast	SE2009	S1200	122244789	Bridge Rd	36.8650952	-76.43540561	avera	0.047783603	0.001541416	0.41639933
Southeast	SE20010	S1200	641612751	George Washington Hwy S	36.6074302	-76.37937317	upper	1.076296526	0.018293512	0.47711633
Southeast	SE20011	S1200	122198660	High St W	36.8607869	-76.39657874	upper	0.113781332	0.00193391	0.47869487
Southeast	SE20012	S1200	122303383	Virginia Beach Blvd	36.8521455	-76.172077	avera	0.028666185	0.005370484	0.48561859
Southeast	SE20013	S1200	122226352	W Constance Rd	36.734116	-76.596344	avera	0.020505707	0.003841654	0.52098807
Southeast	SE20014	S1200	613586538	Lynnhaven Pkwy	36.7960154	-76.11501332	avera	0.043886091	0.001415689	0.56167857
Southeast	SE20015	S1200	613589791	Shore Dr	36.9123285	-76.18954639	upper	0.148184496	0.002518651	0.57836555
Southeast	SE20016	S1200	122299984	N Great Neck Rd	36.8972597	-76.06314843	avera	0.075287296	0.002428638	0.61638655
Southeast	SE20017	S1200	122201989	Frederick Blvd	36.8107215	-76.316506	lower	0.007625351	0.001428576	0.65633899
Southeast	SE20018	S1200	121799627	Great Bridge Blvd	36.7651194	-76.28229884	upper	0.172055855	0.002924386	0.71992244
Southeast	SE20019	S1200	122231411	Nansemond Pkwy	36.758324	-76.536549	avera	0.028953722	0.005424353	0.75373913
Southeast	SE20020	S1200	613587047	Shore Dr	36.9113598	-76.07153032	avera	0.031449298	0.005891888	0.80517307
Southeast	SE20021	S1200	613338397	Great Brg Byp	36.7487157	-76.25998238	upper	0.739115285	0.012562537	0.80579271
Southeast	SE20022	S1200	122302776	Laskin Rd	36.8500352	-76.02633792	avera	0.096111924	0.003100404	0.87978175
Southeast	SE20023	S1200	121770304	Wilson Rd	36.8253185	-76.268419	avera	0.0286927	0.005375452	0.90566897
Southeast	SE20024	S1200	613586282	Providence Rd	36.8112565	-76.21741	avera	0.058532864	0.001888169	0.98891928

Southeast	SE4001	S1400	122237851	Great Fork Rd	36.5856605	-76.670177	lower	0.006834537	7.56E-05	0.11848629
Southeast	SE4002	S1400	122128377	Jacob St	36.8435945	-76.26518505	avera	0.021749537	0.000240614	0.14493015
Southeast	SE4003	S1400	122261900	80th St	36.905055	-75.99192	avera	0.073423895	0.000125544	0.1556684
Southeast	SE4004	S1400	121789201	Still-Harbor Cir	36.7646026	-76.22321843	upper	0.104941206	0.000115245	0.28182424
Southeast	SE4005	S1400	122309036		36.783729	-76.08062668	avera	0.069555001	0.000118929	0.31912469
Southeast	SE4006	S1400	122296442	Halter Dr	36.7883677	-76.15262329	avera	0.032051893	0.000354589	0.34773976
Southeast	SE4007	S1400	122283512	Essex Pond Quay	36.8120115	-76.10707724	avera	0.027786601	0.000307402	0.57348275
Southeast	SE4008	S1400	122261495		36.9281243	-76.02348954	avera	0.077762466	0.000132962	0.61105632
Southeast	SE4009	S1400	122257247	Air Rail Ave	36.8997452	-76.18633193	upper	0.144728431	0.000158939	0.66003464
Southeast	SE40010	S1400	122264028	Baxter Rd	36.8258005	-76.146185	upper	0.11178053	0.000122756	0.67197279
Southeast	SE40011	S1400	121791597	Saddlehorn Dr	36.6950512	-76.10500229	upper	0.24280472	0.000266645	0.77179495
Southeast	SE40012	S1400	122192451	Loudoun Ave	36.8272	-76.3430215	avera	0.051887327	8.87E-05	0.86196332
Stafford	STA1001	S1100	25569761	I- 95	38.4345447	-77.41649333	upper	0.43435972	0.030168376	0.11006642
Stafford	STA1002	S1100	25571142	I- 95	38.3273195	-77.5016315	lower	0.005013219	0.067146071	0.27892363
Stafford	STA1003	S1100	615457223	I- 95	38.4919301	-77.38664124	upper	1.020007946	0.070844468	0.36951578
Stafford	STA1004	S1100	615454740	I- 95	38.4508898	-77.4087133	avera	0.138633132	0.125914891	0.40091431
Stafford	STA1005	S1100	635808099	I- 95	38.3259491	-77.50139014	lower	0.018874818	0.252805635	0.45462595
Stafford	STA1006	S1100	25576205	I- 95	38.381639	-77.452246	avera	0.094457812	0.085792227	0.48203775
Stafford	STA2001	S1200	636653529	Kings Hwy	38.2550867	-77.37836448	upper	0.627910241	0.063937985	0.03190685
Stafford	STA2002	S1200	638880177	Warrenton Rd	38.37369	-77.5316605	lower	0.015650619	0.055246328	0.23110997
Stafford	STA2003	S1200	635808337	Warrenton Rd	38.4048403	-77.57992175	upper	0.302619631	0.030814738	0.23116184
Stafford	STA2004	S1200	636655765	Jefferson Davis Hwy	38.5070346	-77.37256665	avera	0.103874324	0.014897554	0.28252432
Stafford	STA2005	S1200	638662118	Warrenton Rd	38.361211	-77.5203205	lower	0.016071621	0.056732453	0.35537302
Stafford	STA2006	S1200	25556913	White Oak Rd	38.3106795	-77.43862593	avera	0.067642327	0.009701196	0.41639933
Stafford	STA2007	S1200	635809454	Warrenton Rd	38.3987483	-77.56049289	upper	0.421666893	0.042936919	0.52098807
Stafford	STA2008	S1200	636653019	Cambridge St	38.3236587	-77.46863496	avera	0.05423177	0.007777868	0.56167857
Stafford	STA2009	S1200	25578934	Warrenton Rd	38.3646475	-77.5217565	lower	0.007042336	0.024859285	0.61638655
Stafford	STA20010	S1200	25582290	Warrenton Rd	38.4004048	-77.56598997	upper	0.234337991	0.023861848	0.65633899
Stafford	STA20011	S1200	25571389	Warrenton Rd	38.333572	-77.479891	lower	0.016983567	0.059951601	0.87978175
Stafford	STA20012	S1200	636822789	Kings Hwy	38.2705558	-77.42031508	avera	0.125291729	0.017969217	0.98891928
Stafford	STA4001	S1400	636655896	Holly Corner Rd	38.3519888	-77.5859956	upper	0.274333461	0.000913473	0.11848629

Stafford	**STA4002**	**S1400**	**635808840**	**Stableside Ln**	**38.2868596**	**-77.37778941**	**upper**	**0.531921398**	**0.001771188**	**0.14493015**
Stafford	STA4003	S1400	25572121	Ferry Rd	38.296793	-77.4465665	lower	0.007243451	0.001595655	0.1556684
Stafford	STA4004	S1400	632545602	Running Brook Ct	38.3732197	-77.32789094	avera	0.138740182	0.000646347	0.31912469
Stafford	STA4005	S1400	25576609	Brooke Rd	38.3781355	-77.356652	lower	0.016748963	0.003689618	0.61105632
Stafford	STA4006	S1400	25557057	Jefferson St	38.2947786	-77.43487119	avera	0.088649171	0.000412989	0.86196332
Wise	**WIS2001**	**S1200**	**641467079**	**Dungannon Rd**	**36.9299631**	**-82.45700313**	**avera**	**0.022729735**	**0.036017194**	**0.03190685**
Wise	**WIS2002**	**S1200**	**225725104**	**Norton Coeburn Rd**	**36.9347953**	**-82.54371784**	**upper**	**0.447185309**	**0.027875833**	**0.0396225**
Wise	**WIS2003**	**S1200**	**83457528**	**Orby Cantrell Hwy**	**37.0688079**	**-82.60045073**	**upper**	**0.347574692**	**0.021666486**	**0.19359015**
Wise	**WIS2004**	**S1200**	**83467626**	**Laurel Ave**	**36.9583266**	**-82.47132124**	**avera**	**0.098449649**	**0.019541054**	**0.23110997**
Wise	**WIS2005**	**S1200**	**225719919**	**Orby Cantrell Hwy**	**37.143085**	**-82.621357**	**avera**	**0.014436222**	**0.022875419**	**0.23116184**
Wise	**WIS2006**	**S1200**	**83472775**	**Kentucky Ave SE**	**36.942024**	**-82.5924085**	**avera**	**0.06054492**	**0.012017428**	**0.28252432**
Wise	**WIS2007**	**S1200**	**83437671**	**N Inman St**	**36.9090204**	**-82.7982549**	**avera**	**0.122785372**	**0.024371398**	**0.35537302**
Wise	**WIS2008**	**S1200**	**225719703**	**Orby Cantrell Hwy**	**37.0455211**	**-82.60025143**	**upper**	**0.229918468**	**0.014332244**	**0.36011246**
Wise	WIS2009	S1200	83448053	Orby Cantrell Hwy	37.0000089	-82.59310779	avera	0.047159097	0.009360505	0.41639933
Wise	WIS20010	S1200	83437321	Callahan Ave	36.9326155	-82.79762563	upper	1.064079292	0.06633066	0.47711633
Wise	WIS20011	S1200	83468723	Cranes Nest Rd	37.0509612	-82.49526467	upper	0.162012088	0.010099218	0.47869487
Wise	WIS20012	S1200	83437604	Callahan Ave	36.9251152	-82.79787406	avera	0.025553681	0.040491977	0.48561859
Wise	*WIS20013*	*S1200*	*83453094*	*E Main St*	*36.906222*	*-82.7815775*	*avera*	*0.017982382*	*0.028494611*	*0.52098807*
Wise	WIS20014	S1200	225716426	Kent Junction Rd	36.9211537	-82.74820963	avera	0.040497424	0.008038245	0.56167857
Wise	WIS20015	S1200	83452234	Orby Cantrell Hwy	37.1549341	-82.6308987	upper	0.227640854	0.014190266	0.57836555
Wise	*WIS20016*	*S1200*	*613926228*	*US Hwy 58 Alt*	*36.9407812*	*-82.46380965*	*avera*	*0.094658692*	*0.018788595*	*0.61638655*
Wise	WIS20017	S1200	83467828	Bull Run Rd	36.929981	-82.382378	lower	0.006694586	0.01060814	0.65633899
Wise	WIS20018	S1200	83473052	Norton Coeburn Rd	36.9392575	-82.6061288	upper	0.283731088	0.017686718	0.71992244
Wise	WIS20019	S1200	613150452	Orby Cantrell Hwy	36.9427711	-82.6134743	avera	0.026051147	0.041280254	0.75373913
Wise	WIS20020	S1200	83473214	Orby Cantrell Hwy	36.9389028	-82.61337767	avera	0.027560186	0.043671454	0.80517307
Wise	WIS20021	S1200	225728547	State Rte 361	37.1140587	-82.54266619	upper	0.923656812	0.057577256	0.80579271
Wise	WIS20022	S1200	83468169	Cranes Nest Rd	36.9780277	-82.47417669	avera	0.123792652	0.024571331	0.87978175
Wise	WIS20023	S1200	225720369	US Hwy 58 Alt	36.9431293	-82.41947763	avera	0.025612727	0.04058554	0.90566897
Wise	WIS20024	S1200	83450868	Laurel Ave	36.951003	-82.47105469	avera	0.067736779	0.013444924	0.98891928
Wythe	*WYT1001*	*S1100*	*47651907*	*I- 77*	*36.9458465*	*-80.9489035*	*avera*	*0.012956939*	*0.055103455*	*0.11006642*
Wythe	**WYT1002**	**S1100**	**47666702**	**I- 77**	**36.9985803**	**-81.08593107**	**upper**	**0.437295696**	**0.016070476**	**0.11948539**

Wythe	WYT1003	S1100	47663240	I- 81	36.9676785	-80.849794	avera	0.119388135	0.077839822	0.27892363
Wythe	WYT1004	S1100	47662941	I- 81	36.913678	-81.28315598	upper	0.584894851	0.021494697	0.36105045
Wythe	WYT1005	S1100	47669774	I- 77	36.9449531	-80.95329475	avera	0.024166659	0.102776315	0.36951578
Wythe	WYT1006	S1100	47666880	I- 77	36.9458538	-81.0468663	avera	0.110459486	0.072018436	0.40091431
Wythe	WYT1007	S1100	47651964	I- 81	36.9468452	-80.89985445	lower	0.011789687	0.050139353	0.45462595
Wythe	WYT1008	S1100	47641093	I- 77	36.947679	-81.05182714	avera	0.076747874	0.050038816	0.48203775
Wythe	WYT1009	S1100	47669782	I- 81	36.9574447	-81.10748758	upper	0.657610077	0.024166958	0.96867874
Wythe	WYT2001	S1200	47658436	W Lee Hwy	36.9294444	-81.18473588	upper	0.24956983	0.032970739	0.03190685
Wythe	WYT2002	S1200	47657355	W Lee Hwy	36.901469	-81.31782	avera	0.021141323	0.020487991	0.23110997
Wythe	WYT2003	S1200	47656402	Wysor Hwy	36.9241468	-80.79795427	avera	0.030075934	0.029146496	0.23116184
Wythe	WYT2004	S1200	47644031	Sheffey School Rd	36.8855349	-80.99120395	avera	0.076097305	0.009558885	0.28252432
Wythe	WYT2005	S1200	47657434	Grayson Tpke	36.9066245	-81.1082495	avera	0.022344886	0.02165436	0.35537302
Wythe	WYT2006	S1200	47668258	W Lee Hwy	36.9421325	-81.14639059	avera	0.057539627	0.007227781	0.41639933
Wythe	WYT2007	S1200	47652415	Fort Chiswell Rd	36.9219739	-80.93437267	upper	0.251333723	0.033203767	0.48561859
Wythe	WYT2008	S1200	636652115	Fort Chiswell Rd	36.9033734	-80.91936501	upper	0.19469111	0.025720696	0.52098807
Wythe	WYT2009	S1200	47645434	Wysor Hwy	36.9003995	-80.7948295	avera	0.04875338	0.006124106	0.56167857
Wythe	WYT20010	S1200	47643371	E Main St	36.9516592	-81.07031617	avera	0.122773497	0.015422067	0.61638655
Wythe	WYT20011	S1200	47638594	State Rte 100	36.918565	-80.8057745	avera	0.025708483	0.024914012	0.65633899
Wythe	WYT20012	S1200	47652134	Fort Chiswell Rd	36.8890401	-80.90680318	upper	0.46172394	0.060998476	0.75373913
Wythe	WYT20013	S1200	47656363	Wysor Hwy	36.8981755	-80.7921705	avera	0.024084073	0.023339801	0.87978175
Wythe	WYT20014	S1200	47659258	Fort Chiswell Rd	36.8771893	-80.88761392	upper	0.256227569	0.033850294	0.90566897
Wythe	WYT20015	S1200	47652036	Fort Chiswell Rd	36.936802	-80.9442685	avera	0.08933481	0.0112217	0.98891928
York	YC1001	S1100	639791849	I- 664	36.9702104	-76.41724231	upper	0.376094544	0.009159609	0.11006642
York	YC1002	S1100	223122166	I- 64	37.2609965	-76.64828	lower	0.009008519	0.010866545	0.27892363
York	YC1003	S1100	639794272	I- 64	37.1553932	-76.53836645	upper	1.027219527	0.025017458	0.36951578
York	YC1004	S1100	103816587	I- 64	37.0885105	-76.458455	avera	0.088344244	0.029257638	0.40091431
York	YC1005	S1100	239687893	I- 64	37.02017	-76.3280695	avera	0.024825609	0.029945945	0.45462595
York	YC1006	S1100	103805323	I- 64	37.0334387	-76.38330188	avera	0.065803023	0.02179249	0.48203775
York	YC2001	S1200	638661489	George Washington Memorial Hwy	37.208838	-76.51091774	upper	0.985410666	0.024551887	0.03190685
York	YC2002	S1200	103760701	N Mallory St	37.036163	-76.3004565	avera	0.026011878	0.005969453	0.23110997

York	**YC2003**	**S1200**	**103820961**	**Jefferson Ave**	**37.092686**	**-76.486467**	**upper**	**0.215442676**	**0.005367838**	**0.23116184**
York	**YC2004**	**S1200**	**103746512**	**Victoria Blvd**	**36.9964868**	**-76.39399698**	**avera**	**0.068836957**	**0.002435558**	**0.28252432**
York	YC2005	S1200	239687157	W Mercury Blvd	37.027536	-76.428305	avera	0.02701248	0.00619908	0.35537302
York	YC2006	S1200	223115758	George Washington Memorial Hwy	37.1342835	-76.4576845	avera	0.054119501	0.001914831	0.41639933
York	YC2007	S1200	103771696	State Rte 132	37.2919753	-76.69276338	upper	0.426566574	0.010628071	0.52098807
York	YC2008	S1200	103824053	Jefferson Ave	37.0264937	-76.44889927	avera	0.048913878	0.001730648	0.56167857
York	YC2009	S1200	103821314	Jefferson Ave	37.109933	-76.4974155	lower	0.007692676	0.001765388	0.61638655
York	*YC20010*	*S1200*	*639736598*	*State Rte 199*	*37.3516959*	*-76.7342223*	*upper*	*0.158762557*	*0.00395563*	*0.65633899*
York	YC20011	S1200	223119989	State Rte 199	37.3526585	-76.7313775	avera	0.028161938	0.006462869	0.87978175
York	YC20012	S1200	635294983	Pocahontas Trl	37.2366529	-76.63391531	avera	0.081808874	0.002894524	0.98891928
York	**YC4001**	**S1400**	**103746690**	**20th St**	**36.9813013**	**-76.40922993**	**upper**	**0.167058758**	**0.000251381**	**0.11848629**
York	*YC4002*	*S1400*	*103796239*	*E Rochambeau Dr*	*37.3419804*	*-76.74422242*	*upper*	*0.354394143*	*0.000533272*	*0.14493015*
York	*YC4003*	*S1400*	*103810746*		*37.037932*	*-76.327961*	*lower*	*0.010388742*	*0.000150234*	*0.1556684*
York	*YC4004*	*S1400*	*103800452*	*Valentine Ct*	*37.0616717*	*-76.44618164*	*avera*	*0.088552486*	*0.000192366*	*0.31912469*
York	*YC4005*	*S1400*	*103821472*	*Susan Constant Dr*	*37.1414557*	*-76.55159374*	*avera*	*0.027831744*	*0.00040248*	*0.61105632*
York	*YC4006*	*S1400*	*103758686*	*Bridge St*	*37.0194474*	*-76.345264*	*avera*	*0.062138682*	*0.000134987*	*0.86196332*
York	*YC4007*	*S1400*	*103823894*		*37.00073428*	*-76.41220373*	*upper*	*.233466779*	---	---
York	*YC4008*	*S1400*	*225656496*	*Brigstock Cir.*	*37.08288832*	*-76.47076355*	*upper*	*.249833184*	---	---
York	**YC4009**	**S1400**	**103759416**		**37.065229**	**-76.3288625**	**avera**	**0.016556269**	**0.000374444**	**0.155668397**

Appendix B-2: List of Viable Observation Road Segments by County

Key for Unique Information (beyond that understood from segment datasets and general selection information):
Bold: Segments selected to be primary sites AND observed; non-bold: reserve sites. Note: this list contains <u>only</u> those sites that can be observed per the selection process. Appendix B-1 is the comprehensive list of all sampled location, viable or not.

COUNTY	SITE_NO.	TYPE	TLID	ROAD NAME	PARKING LATITUDE	PARKING LONGITUDE
Amherst	**AMH2001**	**S1200**	**638976325**	**State Rte 210**	37.41539	-79.11067
Amherst	**AMH2002**	**S1200**	**613136788**	**Elon Rd**	37.46671	-79.13572
Amherst	**AMH2003**	**S1200**	**159126300**	**Lexington Tpke**	37.61117	-79.07817
Amherst	**AMH2004**	**S1200**	**159128544**	**S Main St**	37.57525	-79.05710
Amherst	**AMH2005**	**S1200**	**159126083**	**S Amherst Hwy**	37.45089	-79.12078
Amherst	AMH2006	S1200	159131908	S Amherst Hwy	37.53960	-79.09106
Amherst	AMH2008	S1200	639276257	Elon Rd	37.47630	-79.15395
Amherst	AMH2009	S1200	224879167	Patrick Henry Hwy	37.70479	-79.02579
Amherst	AMH20010	S1200	159106759	N Amherst Hwy	37.59739	-79.03345
Amherst	AMH20011	S1200	159134226	S Amherst Hwy	37.52713	-79.10815
Amherst	AMH20012	S1200	639274227	US Hwy 29	37.46301	-79.08595
Amherst	AMH20013	S1200	638974087	US Hwy 29	37.55846	-79.06361
Amherst	AMH20014	S1200	159119772	Lexington Tpke	37.72304	-79.24911
Amherst	AMH20015	S1200	159117312	S Amherst Hwy	37.46075	-79.11918
Amherst	**AMH4002**	**S1400**	**159122475**	**Glenway Dr**	37.58772	-79.03890
Amherst	**AMH4003**	**S1400**	**159129683**		37.54910	-78.91945
Amherst	AMH4005	S1400	159112778	Glade Rd	37.46116	-79.06973
Amherst	AMH4007	S1400	159123073	Randolph St	37.42622	-79.08745
Amherst	AMH4008	S1400	159128965	Sweet Hills Dr	37.53284	-79.05534
Amherst	AMH4009	S1400	159116080	S Hillcrest Dr	37.41843	-79.09927
Bedford	**BED1001**	**S1100**	**640742131**	**Grove St**	**37.33339**	**-79.51684**

Bedford	**BED2001**	**S1200**	**228436027**	**Blue Ridge Pkwy**	**37.42458**	**-79.75719**
Bedford	**BED2002**	**S1200**	**228447015**	**Glenwood Dr**	**37.21397**	**-79.43506**
Bedford	**BED2003**	**S1200**	**228467467**	**E Lynchburg Salem Tpke**	**37.30851**	**-79.39294**
Bedford	**BED2004**	**S1200**	**62709442**	**US Hwy 460**	**37.33533**	**-79.54332**
Bedford	**BED2005**	**S1200**	**228439094**	**Stewartsville Rd**	**37.25129**	**-79.69843**
Bedford	BED2006	S1200	228462870	W Lynchburg Salem Tpke	37.39591	-79.77227
Bedford	BED2007	S1200	228467374	Blue Ridge Pkwy	37.55883	-79.42773
Bedford	BED2008	S1200	640020942	W Main St	37.33515	-79.52606
Bedford	BED2009	S1200	228464014	W Lynchburg Salem Tpke	37.39634	-79.74983
Bedford	BED20010	S1200	62709505	Peaks St	37.35623	-79.53663
Bedford	BED20011	S1200	62662736	W Lynchburg Salem Tpke	37.37189	-79.69977
Bedford	BED20012	S1200	228445418	Big Island Hwy	37.46911	-79.45266
Bedford	**BED4006**	**S1400**	**62708686**	**Helm St**	**37.32584**	**-79.51612**
Bedford	**BED4007**	**S1400**	**62673187**	**Tolers Ferry Rd.**	**37.11303**	**-79.57106**
Buchanan	**BUC2001**	**S1200**	**74074054**	**State Rte 83**	**37.22950**	**-82.09997**
Buchanan	**BUC2002**	**S1200**	**74077406**	**Riverside Dr**	**37.15832**	**-81.87849**
Buchanan	**BUC2003**	**S1200**	**74075717**	**Helen Henderson Hwy**	**37.08461**	**-82.08317**
Buchanan	**BUC2004**	**S1200**	**74094954**	**US Hwy 460**	**37.15527**	**-81.87717**
Buchanan	**BUC2005**	**S1200**	**74077168**	**Riverside Dr**	**37.20464**	**-81.97242**
Buchanan	**BUC2006**	**S1200**	**74068516**	**Slate Creek Rd**	**37.31128**	**-81.95975**
Buchanan	**BUC2007**	**S1200**	**74088587**	**Riverside Dr**	**37.16795**	**-81.90265**
Buchanan	**BUC2008**	**S1200**	**74055917**	**Bike Rte 76**	**37.09347**	**-82.12891**
Buchanan	BUC2009	S1200	74077234	Riverside Dr	37.19178	-81.95261
Buchanan	BUC20010	S1200	636662957	Riverside Dr	37.28661	-82.12352
Buchanan	BUC20011	S1200	74068957	Bike Rte 76	37.10991	-82.15656
Buchanan	BUC20012	S1200	74058579	Riverside Dr	37.16889	-81.89449
Buchanan	BUC20013	S1200	74051813	Riverside Dr	37.30972	-82.14266
Buchanan	BUC20014	S1200	74053511	Riverside Dr	37.27733	-82.09974
Buchanan	BUC20015	S1200	74077295	Riverside Dr	37.18149	-81.94531
Buchanan	BUC20016	S1200	74052269	Riverside Dr	37.35422	-82.18932
Buchanan	BUC20017	S1200	74075718	Helen Henderson Hwy	37.08461	-82.08317

Buchanan	BUC20018	S1200	74081189	Helen Henderson Hwy	37.07383	-82.05650
Buchanan	BUC20019	S1200	74074612	Lovers Gap Rd	37.21468	-82.11205
Buchanan	BUC20020	S1200	74052634	Riverside Dr	37.35422	-82.18932
Buchanan	BUC20021	S1200	641113023	Riverside Dr	37.30969	-82.14264
Buchanan	BUC20022	S1200	74092667	Riverside Dr	37.17522	-81.94639
Buchanan	BUC20023	S1200	74054769	Riverside Dr	37.23430	-82.04372
Buchanan	BUC20024	S1200	640963910	Lovers Gap Rd	37.22076	-82.14787
Fairfax	**FAI1001**	**S1100**	**76058263**	**I- 95**	**38.79517**	**-77.13895**
Fairfax	**FAI1002**	**S1100**	**618606286**	**I- 66**	**38.87030**	**-77.30592**
Fairfax	**FAI1008**	**S1100**	**76062245**	**I- 66**	**38.86364**	**-77.34848**
Fairfax	**FAI1009**	**S1100**	**638085763**	**I- 395**	**38.81574**	**-77.139731**
Fairfax	FAI10010	S1100	634169002	I- 66	38.86643	-77.31033
Fairfax	FAI10011	S1100	638089700	I- 495	38.83677	-77.21880
Fairfax	FAI10012	S1100	641096085	I- 95	38.80169	-77.07763
Fairfax	**FAI2001**	**S1200**	**76032720**	**Columbia Pike**	**38.83770**	**-77.15549**
Fairfax	**FAI2002**	**S1200**	**76042013**	**Ox Rd**	**38.69358**	**-77.25571**
Fairfax	**FAI2003**	**S1200**	**215924856**	**Leesburg Pike**	**39.005751**	**-77.354438**
Fairfax	**FAI2004**	**S1200**	**76062061**	**Fairfax County Pkwy**	**38.85650**	**-77.38888**
Fairfax	**FAI2005**	**S1200**	**76134853**	**Hillwood Ave**	**38.873562**	**-77.159116**
Fairfax	**FAI2006**	**S1200**	**624433709**	**Leesburg Pike**	**38.94688**	**-77.25900**
Fairfax	**FAI2007**	**S1200**	**638080358**	**Ox Rd**	**38.78222**	**-77.32749**
Fairfax	**FAI2008**	**S1200**	**638159569**	**Fairfax County Pkwy**	**38.92297**	**-77.39560**
Fairfax	FAI2009	S1200	640095496	Chain Bridge Rd	38.84197	-77.30927
Fairfax	FAI20012	S1200	76036464	Centreville Rd	38.81332	-77.44665
Fairfax	FAI20013	S1200	638159285	Dulles Access Rd	38.95900	-77.44493
Fairfax	FAI20014	S1200	76028001	Dranesville Rd	39.00388	-77.37466
Fairfax	FAI20015	S1200	215942337	Arlington Blvd	38.86584	-77.21133
Fairfax	FAI20016	S1200	215969027	Leesburg Pike	38.91193	-77.22126
Fairfax	FAI20017	S1200	76048522	Georgetown Pike	38.96358	-77.23101
Fairfax	FAI20018	S1200	638162611	Fairfax County Pkwy	38.83294	-77.37068
Fairfax	FAI20019	S1200	638159844	Fairfax County Pkwy	38.85432	-77.38837

Fairfax	FAI20020	S1200	634957353	Main St	38.84165	-77.28102
Fairfax	FAI20021	S1200	76045304	Gunston Rd	38.66540	-77.16747
Fairfax	FAI20022	S1200	619957090	Leesburg Pike	39.00020	-77.34378
Fairfax	FAI20023	S1200	624113420	Lee Hwy	38.87322	-77.24759
Fairfax	FAI20024	S1200	75963164	Dolley Madison Blvd	38.93750	-77.18369
Fairfax	**FAI4001**	**S1400**	**618786251**	**Arrowhead Park Dr**	**38.84465**	**-77.40588**
Fairfax	**FAI4008**	**S1400**	**75964523**	**Brynwood Pl**	**38.90849**	**-77.40060**
Fairfax	**FAI40011**	**S1400**	**215924939**	**Seneca Rd**	**39.00326**	**-77.34277**
Fairfax	**FAI40013**	**S1400**	**642144331**	**Valestra Cir.**	**38.90266**	**-77.32056**
Franklin	**FRA2001**	**S1200**	**56406502**	**Booker T Washington Hwy**	**37.06245**	**-79.82841**
Franklin	**FRA2002**	**S1200**	**56405968**	**Jubal Early Hwy**	**37.20888**	**-79.88219**
Franklin	**FRA2003**	**S1200**	**56400578**	**Colonial Tpke**	**36.99336**	**-79.71397**
Franklin	**FRA2004**	**S1200**	**56408597**	**Colonial Tpke**	**37.02010**	**-79.81224**
Franklin	**FRA2005**	**S1200**	**56373626**	**Jubal Early Hwy**	**37.13370**	**-79.85561**
Franklin	FRA2006	S1200	56429508	Colonial Tpke	36.98427	-79.63637
Franklin	FRA2007	S1200	56431443	Blue Ridge Pkwy	37.03603	-80.10981
Franklin	FRA2008	S1200	56408098	Booker T Washington Hwy	37.05317	-79.84113
Franklin	FRA2009	S1200	640182658	Franklin St	36.91779	-80.06322
Franklin	FRA20010	S1200	617445055	Booker T Washington Hwy	37.12040	-79.72210
Franklin	FRA20011	S1200	56411959	Virgil H Goode Hwy	37.13065	-79.96889
Franklin	FRA20012	S1200	56391879	Colonial Tpke	36.99598	-79.77052
Franklin	FRA20013	S1200	56402696	Booker T Washington Hwy	37.12620	-79.76345
Franklin	FRA20014	S1200	56381394	Franklin St	36.92311	-80.00095
Franklin	FRA20015	S1200	56412054	Colonial Tpke	37.01922	-79.81533
Franklin	**FRA4001**	**S1400**	**56386884**	**King Richard Rd**	**36.91556**	**-80.02388**
Franklin	**FRA4002**	**S1400**	**56411760**	**Dry Hill Rd**	**36.91732**	**-80.12637**
Franklin	**FRA4004**	**S1400**	**641535526**	**Ivy Ln**	**37.03150**	**-79.70808**
Franklin	FRA4005	S1400	56384392	Coopers Mountain Rd	36.82225	-79.83571
Franklin	FRA4008	S1400	641466071	Diamond Ave Exd	37.00116	-79.90488
Goochland	**GOO1001**	**S1100**	**618558947**	**I- 64**	**37.67153**	**-77.65241**
Goochland	**GOO1002**	**S1100**	**73824004**	**I- 64**	**37.67089**	**-77.64575**

Goochland	GOO1003	S1100	73814614	I- 64	37.84287	-77.97970
Goochland	GOO1004	S1100	73821045	I- 64	37.71065	-77.78046
Goochland	GOO1005	S1100	618559159	I- 64	37.68250	-77.66609
Goochland	GOO1006	S1100	73818019	I- 64	37.78221	-77.88609
Goochland	**GOO2001**	**S1200**	**636712071**	**Broad Street Rd**	**37.86373**	**-78.01954**
Goochland	**GOO2002**	**S1200**	**73807524**	**Broad Street Rd**	**37.66758**	**-77.67227**
Goochland	**GOO2003**	**S1200**	**640199822**	**River Rd W**	**37.60055**	**-77.71528**
Goochland	**GOO2004**	**S1200**	**626992456**	**River Rd W**	**37.66839**	**-77.88136**
Goochland	GOO2005	S1200	622531066	W Broad St	37.65895	-77.63452
Goochland	GOO2006	S1200	641163925	River Rd W	37.69889	-77.90878
Goochland	GOO2007	S1200	73820882	River Rd W	37.70898	-77.95817
Goochland	GOO2008	S1200	638488646	State Rte 288	37.66243	-77.65345
Goochland	GOO20010	S1200	73803539	Broad Street Rd	37.88799	-78.04678
Goochland	GOO20011	S1200	73812356	Broad Street Rd	37.86373	-78.01954
Goochland	GOO20012	S1200	73823118	Cartersville Rd	37.67464	-78.08488
Goochland	**GOO4001**	**S1400**	**640199529**	**Seay Rd**	**37.70366**	**-77.72826**
Goochland	**GOO4004**	**S1400**	**73806324**	**Landis Rd**	**37.70446**	**-77.76418**
Goochland	GOO4005	S1400	73803838	Lowry Rd	37.77732	-78.11069
Goochland	GOO4006	S1400	73808376		37.63855	-77.75239
Lee	**LEE2001**	**S1200**	**639568490**	**Wilderness Rd**	**36.71693**	**-82.94869**
Lee	**LEE2002**	**S1200**	**636651350**	**Old Zion Rd**	**36.76574**	**-83.02685**
Lee	**LEE2003**	**S1200**	**641151554**	**Trail of the Lonesome Pine Rd**	**36.81777**	**-82.82590**
Lee	**LEE2004**	**S1200**	**79111401**	**Wilderness Rd**	**36.64777**	**-83.41193**
Lee	**LEE2005**	**S1200**	**613142617**	**Trail of the Lonesome Pine Rd**	**36.77042**	**-82.96538**
Lee	**LEE2006**	**S1200**	**79105463**	**Daniel Boone Trl**	**36.62994**	**-83.45760**
Lee	**LEE2007**	**S1200**	**635740791**	**Daniel Boone Trl**	**36.68830**	**-83.31812**
Lee	**LEE2008**	**S1200**	**79108893**	**Wilderness Rd**	**36.71639**	**-82.92389**
Lee	LEE2009	S1200	79110427	US Hwy 421	36.76455	-83.08192
Lee	LEE20010	S1200	79123799	Wilderness Rd	36.67929	-83.35614
Lee	LEE20011	S1200	79108017	Wilderness Rd	36.71798	-82.93074
Lee	LEE20012	S1200	79128555	Wilderness Rd	36.64777	-83.41193

Lee	LEE20013	S1200	79111933	Wilderness Rd	36.68109	-83.15439
Lee	LEE20014	S1200	613142060	Trail of the Lonesome Pine Rd	36.79121	-82.85239
Lee	LEE20015	S1200	639075751	US Hwy 23	36.78806	-82.81514
Lee	LEE20016	S1200	79115743	Daniel Boone Trl	36.70900	-82.90874
Lee	LEE20017	S1200	79111471	Daniel Boone Trl	36.63541	-83.43406
Lee	LEE20018	S1200	641168062	Trail of the Lonesome Pine Rd	36.77229	-82.96850
Lee	LEE20019	S1200	79110453	Liberty St	36.75699	-83.02991
Lee	LEE20020	S1200	79106602	US Hwy 23	36.78381	-82.81794
Lee	LEE20021	S1200	639567982	US Hwy 23	36.76648	-82.82274
Lee	LEE20022	S1200	79095646	Daniel Boone Trl	36.69613	-83.27224
Lee	LEE20023	S1200	79117889	Wilderness Rd	36.70360	-82.98055
Lee	LEE20024	S1200	79093817	Saint Charles Rd	36.78522	-83.05487
Orange	**ORA2001**	**S1200**	**29887611**	**Zachary Taylor Hwy**	**38.29823**	**-77.95664**
Orange	**ORA2002**	**S1200**	**29893313**	**Germanna Hwy**	**38.34161**	**-77.74145**
Orange	**ORA2003**	**S1200**	**29893039**	**Constitution Hwy**	**38.31432**	**-77.76955**
Orange	**ORA2004**	**S1200**	**29889177**	**Spotswood Trl**	**38.17507**	**-78.28569**
Orange	**ORA2005**	**S1200**	**29884689**	**Constitution Hwy**	**38.25799**	**-77.99879**
Orange	**ORA2006**	**S1200**	**29879552**	**Caroline St**	**38.23585**	**-78.11151**
Orange	**ORA2007**	**S1200**	**29891561**	**Zachary Taylor Hwy**	**38.29823**	**-77.95664**
Orange	**ORA2008**	**S1200**	**29878573**	**Constitution Hwy**	**38.22378**	**-78.21938**
Orange	ORA2009	S1200	29902465	James Madison Hwy	38.224697	-78.122262
Orange	ORA20010	S1200	641044702	Constitution Hwy	38.22879	-78.17644
Orange	ORA20011	S1200	29888110	Constitution Hwy	38.23920	-78.14973
Orange	ORA20012	S1200	29888805	Constitution Hwy	38.32220	-77.73404
Orange	ORA20013	S1200	29892573	James Madison Hwy	38.18329	-78.14461
Orange	ORA20014	S1200	29878358	Blue Ridge Tpke	38.20890	-78.21796
Orange	ORA20015	S1200	29892291	Germanna Hwy	38.32684	-77.72993
Orange	ORA20016	S1200	29893293	Constitution Hwy	38.24356	-78.09298
Orange	ORA20017	S1200	29892632	Spotswood Trl	38.17507	-78.28569
Orange	ORA20018	S1200	29890602	Zachary Taylor Hwy	38.15849	-77.92991
Orange	ORA20019	S1200	29889130	Blue Ridge Tpke	38.20890	-78.21796

Orange	ORA20020	S1200	29897721	Spotswood Trl	38.14451	-78.19378
Orange	ORA20021	S1200	613320626	Germanna Hwy	38.34142	-77.74216
Orange	ORA20022	S1200	29893784	Zachary Taylor Hwy	38.21195	-77.94527
Orange	ORA20023	S1200	29897264	Germanna Hwy	38.35927	-77.76191
Orange	ORA20024	S1200	29898539	Constitution Hwy	38.26949	-77.92793
Pittsylvania	**PIT2001**	**S1200**	**56666990**	**Memorial Dr**	**36.59208**	**-79.39989**
Pittsylvania	**PIT2002**	**S1200**	**56628668**	**W Gretna Rd**	**36.94347**	**-79.49387**
Pittsylvania	**PIT2003**	**S1200**	**639776771**	**Memorial Dr**	**36.58362**	**-79.42046**
Pittsylvania	**PIT2004**	**S1200**	**56648651**	**S Boston Hwy**	**36.58076**	**-79.30535**
Pittsylvania	**PIT2005**	**S1200**	**56665770**	**Westover Dr**	**36.60479**	**-79.50520**
Pittsylvania	**PIT2006**	**S1200**	**56631708**	**US Hwy 29**	**36.76360**	**-79.38948**
Pittsylvania	**PIT2007**	**S1200**	**56640334**	**US Hwy 29**	**36.79119**	**-79.39373**
Pittsylvania	**PIT2008**	**S1200**	**56601586**	**Martinsville Hwy**	**36.63683**	**-79.66714**
Pittsylvania	PIT2009	S1200	56601975	Franklin Tpke	36.73184	-79.56121
Pittsylvania	PIT20010	S1200	56654252	US Hwy 29	37.07982	-79.33559
Pittsylvania	PIT20011	S1200	56668862	Central Blvd	36.60173	-79.41386
Pittsylvania	PIT20012	S1200	56630344	E Gretna Rd	36.96964	-79.12079
Pittsylvania	PIT20013	S1200	56647988	Martinsville Hwy	36.62473	-79.62936
Pittsylvania	PIT20014	S1200	56666483	Riverside Dr	36.59306	-79.41495
Pittsylvania	PIT20015	S1200	56631537	Callands Rd	36.83737	-79.44440
Pittsylvania	PIT20016	S1200	56668671	Memorial Dr	36.59002	-79.40868
Pittsylvania	PIT20017	S1200	226676300	Martinsville Hwy	36.60464	-79.52276
Pittsylvania	PIT20018	S1200	56628348	W Gretna Rd	36.95411	79.39599
Pittsylvania	PIT20019	S1200	56589041	Franklin Tpke	36.62713	-79.38889
Pittsylvania	PIT20020	S1200	56631573	Main St	36.82755	-79.39803
Pittsylvania	PIT20021	S1200	56640625	Callands Rd	36.79169	-79.63056
Pittsylvania	PIT20022	S1200	56598387	Main St	36.83174	-79.39655
Pittsylvania	PIT20023	S1200	56665044	S Boston Rd	36.58111	-79.31805
Pittsylvania	PIT20024	S1200	613148594	Danville Expy	36.54505	-79.44147
Prince William	**PR1001**	**S1100**	**207154534**	**I- 95**	**38.62578**	**-77.29174**

Prince William	**PR1004**	**S1100**	**207174223**	**I- 66**	**38.85051**	**-77.78799**
Prince William	PR1006	S1100	207176990	I- 95	38.66020	-77.27815
Prince William	**PR2001**	**S1200**	**207141465**	**Prince William Pkwy**	**38.75631**	**-77.52878**
Prince William	**PR2002**	**S1200**	**76529628**	**Prince William Pkwy**	**38.68219**	**-77.36275**
Prince William	**PR2003**	**S1200**	**207159052**	**Lee Hwy**	**38.80327**	**-77.58427**
Prince William	**PR2004**	**S1200**	**207177401**	**James Madison Hwy**	**38.82860**	**-77.63391**
Prince William	PR2005	S1200	619935094	Main St	38.55546	-77.33460
Prince William	PR2007	S1200	207166925	Dumfries Rd	38.71367	-77.45835
Prince William	PR2008	S1200	207174419	Prince William Pkwy	38.76868	-77.53609
Prince William	PR2009	S1200	207154816	Sudley Rd	38.85417	-77.56866
Prince William	PR20011	S1200	207179591	Prince William Pkwy	38.71220	-77.41256
Prince William	PR20012	S1200	76510150	Jefferson Davis Hwy	38.54911	-77.33401
Prince William	**PR4003**	**S1400**	**207169584**		**38.53784**	**-77.32452**
Prince William	**PR4004**	**S1400**	**207164958**	**Sudley Manor Dr**	**38.79126**	**-77.48373**
Prince William	PR4005	S1400	76513942	Flowerree Ln	38.73367	-77.47274
Prince William	PR4006	S1400	634507164	Smoketown Rd	38.65252	-77.30360
Southeast	**SE1001**	**S1100**	**613347996**	**I- 664**	**36.97152**	**-76.41763**
Southeast	**SE1002**	**S1100**	**121771408**	**I- 464**	**36.77562**	**-76.27995**
Southeast	**SE1004**	**S1100**	**638976348**	**I- 64**	**36.80970**	**-76.19630**
Southeast	**SE1005**	**S1100**	**122151432**	**I- 264**	**36.84515**	**-76.25340**
Southeast	SE1006	S1100	639820800	I- 64	36.920316	-76.271165
Southeast	SE1008	S1100	122144660	I- 64	36.90334	-76.25686
Southeast	SE10010	S1100	640420875	I- 264	36.78761	-76.41512
Southeast	SE10011	S1100	613354605	I- 464	36.77378	-76.27502
Southeast	SE10012	S1100	639822477	I- 64	36.88214	-76.21812

Southeast	**SE2001**	**S1200**	**635302741**	**W Little Creek Rd**	**36.91607**	**-76.29292**
Southeast	**SE2002**	**S1200**	**613340815**	**Great Brg Byp**	**36.58627**	**-76.19916**
Southeast	**SE2003**	**S1200**	**122269364**	**N Great Neck Rd**	**36.85649**	**-76.04826**
Southeast	**SE2004**	**S1200**	**122147991**	**E Ocean View Ave**	**36.92980**	**-76.19167**
Southeast	**SE2005**	**S1200**	**122304953**	**Pembroke Blvd**	**36.86239**	**-76.13035**
Southeast	**SE2006**	**S1200**	**122131543**	**Hampton Blvd**	**36.89202**	**-76.30356**
Southeast	**SE2007**	**S1200**	**122241413**	**Nansemond Pkwy**	**36.76743**	**-76.53105**
Southeast	**SE2008**	**S1200**	**122268634**	**Lynnhaven Pkwy**	**36.79535**	**-76.09148**
Southeast	SE2009	S1200	122244789	Bridge Rd	36.86488	-76.43638
Southeast	SE20010	S1200	641612751	George Washington Hwy S	36.61419	-76.37507
Southeast	SE20011	S1200	122198660	High St W	36.86063	-76.39633
Southeast	SE20012	S1200	122303383	Virginia Beach Blvd	36.85307	-76.17365
Southeast	SE20013	S1200	122226352	W Constance Rd	36.73394	-76.59652
Southeast	SE20014	S1200	613586538	Lynnhaven Pkwy	36.79567	-76.11532
Southeast	SE20015	S1200	613589791	Shore Dr	36.913146	-76.190652
Southeast	SE20016	S1200	122299984	N Great Neck Rd	36.89637	-76.06194
Southeast	SE20017	S1200	122201989	Frederick Blvd	36.81190	-76.31728
Southeast	SE20018	S1200	121799627	Great Bridge Blvd	36.76506	-76.28222
Southeast	SE20019	S1200	122231411	Nansemond Pkwy	36.75846	-76.53616
Southeast	SE20020	S1200	613587047	Shore Dr	36.91135	-76.07266
Southeast	SE20021	S1200	613338397	Great Brg Byp	36.73629	-76.24520
Southeast	SE20022	S1200	122302776	Laskin Rd	36.85013	-76.02631
Southeast	SE20023	S1200	121770304	Wilson Rd	36.82539	-76.26839
Southeast	SE20024	S1200	613586282	Providence Rd	36.81152	-76.21600
Southeast	**SE4001**	**S1400**	**122237851**	**Great Fork Rd**	**36.58568**	**-76.67028**
Southeast	**SE40010**	**S1400**	**122264028**	**Baxter Rd**	**36.82456**	**-76.14877**
Southeast	**SE40011**	**S1400**	**121791597**	**Saddlehorn Dr**	**36.69500**	**-76.10508**
Southeast	**SE40012**	**S1400**	**122192451**	**Loudoun Ave**	**36.82723**	**-76.34303**
Stafford	**STA1002**	**S1100**	**25571142**	**I- 95**	**38.29822**	**-77.50714**
Stafford	**STA1003**	**S1100**	**615457223**	**I- 95**	**38.46751**	**-77.40755**
Stafford	STA1004	S1100	615454740	I- 95	38.42226	-77.42371

Stafford	STA1005	S1100	635808099	I- 95	38.37160	-77.45995
Stafford	STA1006	S1100	25576205	I- 95	38.42078	-77.42162
Stafford	**STA2001**	**S1200**	**636653529**	**Kings Hwy**	**38.25711**	**-77.38941**
Stafford	**STA2002**	**S1200**	**638880177**	**Warrenton Rd**	**38.37570**	**-77.53364**
Stafford	**STA2003**	**S1200**	**635808337**	**Warrenton Rd**	**38.40160**	**-77.57192**
Stafford	**STA2004**	**S1200**	**636655765**	**Jefferson Davis Hwy**	**38.50636**	**-77.37324**
Stafford	STA2006	S1200	25556913	White Oak Rd	38.31135	-77.43624
Stafford	STA2007	S1200	635809454	Warrenton Rd	38.39225	-77.55310
Stafford	STA2008	S1200	636653019	Cambridge St	38.32361	-77.46902
Stafford	STA2009	S1200	25578934	Warrenton Rd	38.37016	-77.52746
Stafford	STA20010	S1200	25582290	Warrenton Rd	38.39225	-77.55310
Stafford	STA20011	S1200	25571389	Warrenton Rd	38.33520	-77.48109
Stafford	STA20012	S1200	636822789	Kings Hwy	38.26901	-77.41985
Stafford	**STA4001**	**S1400**	**636655896**	**Holly Corner Rd**	**38.35176**	**-77.58601**
Stafford	**STA4002**	**S1400**	**635808840**	**Stableside Ln**	**38.28716**	**-77.37782**
Stafford	STA4003	S1400	25572121	Ferry Rd	38.29610	-77.43735
Stafford	STA4004	S1400	632545602	Running Brook Ct	38.37579	-77.33004
Stafford	STA4005	S1400	25576609	Brooke Rd	38.37797	-77.35646
Stafford	STA4006	S1400	25557057	Jefferson St	38.29494	-77.43656
Wise	**WIS2001**	**S1200**	**641467079**	**Dungannon Rd**	**36.93062**	**-82.45741**
Wise	**WIS2002**	**S1200**	**225725104**	**Norton Coeburn Rd**	**36.93479**	**-82.54562**
Wise	**WIS2003**	**S1200**	**83457528**	**Orby Cantrell Hwy**	**37.06287**	**-82.60058**
Wise	**WIS2004**	**S1200**	**83467626**	**Laurel Ave**	**36.95800**	**-82.47127**
Wise	**WIS2005**	**S1200**	**225719919**	**Orby Cantrell Hwy**	**37.14195**	**-82.62204**
Wise	**WIS2006**	**S1200**	**83472775**	**Kentucky Ave SE**	**36.94215**	**-82.59219**
Wise	**WIS2007**	**S1200**	**83437671**	**N Inman St**	**36.90877**	**-82.79687**
Wise	**WIS2008**	**S1200**	**225719703**	**Orby Cantrell Hwy**	**37.04149**	**-82.60000**
Wise	WIS2009	S1200	83448053	Orby Cantrell Hwy	37.00021	-82.59338
Wise	WIS20010	S1200	83437321	Callahan Ave	36.93217	-82.79723
Wise	WIS20011	S1200	83468723	Cranes Nest Rd	37.05014	-82.49525
Wise	WIS20012	S1200	83437604	Callahan Ave	36.92556	-82.79816

Wise	WIS20014	S1200	225716426	Kent Junction Rd	36.91792	-82.75152
Wise	WIS20015	S1200	83452234	Orby Cantrell Hwy	37.15490	-82.63322
Wise	WIS20017	S1200	83467828	Bull Run Rd	36.92430	-82.37865
Wise	WIS20018	S1200	83473052	Norton Coeburn Rd	36.93933	-82.60568
Wise	WIS20019	S1200	613150452	Orby Cantrell Hwy	36.93816	-82.61625
Wise	WIS20020	S1200	83473214	Orby Cantrell Hwy	36.93767	-82.61494
Wise	WIS20021	S1200	225728547	State Rte 361	37.12061	-82.53996
Wise	WIS20022	S1200	83468169	Cranes Nest Rd	36.98492	-82.47638
Wise	WIS20023	S1200	225720369	US Hwy 58 Alt	36.94439	-82.42307
Wise	WIS20024	S1200	83450868	Laurel Ave	36.95043	-82.47112
Wythe	**WYT1002**	**S1100**	**47666702**	**I- 77**	**36.97080**	**-81.06770**
Wythe	**WYT1003**	**S1100**	**47663240**	**I- 81**	**36.99231**	**-80.79434**
Wythe	**WYT1004**	**S1100**	**47662941**	**I- 81**	**36.91545**	**-81.27380**
Wythe	WYT1005	S1100	47669774	I- 77	36.94516	-80.94967
Wythe	WYT1009	S1100	47669782	I- 81	36.95931	-81.09998
Wythe	**WYT2001**	**S1200**	**47658436**	**W Lee Hwy**	**36.93047**	**-81.18162**
Wythe	**WYT2002**	**S1200**	**47657355**	**W Lee Hwy**	**36.90299**	**-81.31200**
Wythe	**WYT2003**	**S1200**	**47656402**	**Wysor Hwy**	**36.93117**	**-80.79997**
Wythe	**WYT2004**	**S1200**	**47644031**	**Sheffey School Rd**	**36.88255**	**-80.98961**
Wythe	**WYT2005**	**S1200**	**47657434**	**Grayson Tpke**	**36.90798**	**-81.10577**
Wythe	WYT2006	S1200	47668258	W Lee Hwy	36.94089	-81.14927
Wythe	WYT2007	S1200	47652415	Fort Chiswell Rd	36.92338	-80.93502
Wythe	WYT2008	S1200	636652115	Fort Chiswell Rd	36.90677	-80.92509
Wythe	WYT2009	S1200	47645434	Wysor Hwy	36.90204	-80.79880
Wythe	WYT20010	S1200	47643371	E Main St	36.95162	-81.07036
Wythe	WYT20011	S1200	47638594	State Rte 100	36.92010	-80.80293
Wythe	WYT20012	S1200	47652134	Fort Chiswell Rd	36.88820	-80.90644
Wythe	WYT20013	S1200	47656363	Wysor Hwy	36.89446	-80.79092
Wythe	WYT20014	S1200	47659258	Fort Chiswell Rd	36.87600	-80.87897
Wythe	WYT20015	S1200	47652036	Fort Chiswell Rd	36.93804	-80.94400
York	**YC1002**	**S1100**	**223122166**	**I- 64**	**37.30326**	**-76.68186**

York	**YC1003**	**S1100**	**639794272**	**I- 64**	**37.11634**	**-76.50504**
York	YC1004	S1100	103816587	I- 64	37.08662	-76.45864
York	YC1005	S1100	239687893	I- 64	37.02325	-76.32854
York	YC1006	S1100	103805323	I- 64	37.04010	-76.39226
York	**YC2001**	**S1200**	**638661489**	**George Washington Memorial Hwy**	**37.20229**	**-76.49821**
York	**YC2002**	**S1200**	**103760701**	**N Mallory St**	**37.03554**	**-76.30099**
York	**YC2003**	**S1200**	**103820961**	**Jefferson Ave**	**37.09389**	**-76.48746**
York	**YC2004**	**S1200**	**103746512**	**Victoria Blvd**	**36.99521**	**-76.39535**
York	YC2005	S1200	239687157	W Mercury Blvd	37.02757	-76.42899
York	YC2006	S1200	223115758	George Washington Memorial Hwy	37.13496	-76.45717
York	YC2007	S1200	103771696	State Rte 132	37.29501	-76.68851
York	YC2008	S1200	103824053	Jefferson Ave	37.02683	-76.44895
York	YC2009	S1200	103821314	Jefferson Ave	37.11071	-76.49771
York	YC20011	S1200	223119989	State Rte 199	37.21123	-76.44023
York	YC20012	S1200	635294983	Pocahontas Trl	37.24029	-76.64949
York	**YC4001**	**S1400**	**103746690**	**20th St**	**36.98136**	**-76.40919**
York	**YC4009**	**S1400**	**103759416**		**37.06560**	**-76.32853**

Appendix B-3: Data Collected at Observation Sites

SITE ID	SITE TYPE (AT SAMPLING[11])	DATE OBSERVED	WEIGHT[12]	NUMBER OF DRIVERS	NUMBER OF FRONT PASSENGERS	NUMBER OF OCCUPANTS BELTED	NUMBER OF OCCUPANTS UNBELTED	NUMBER OF OCCUPANTS WITH UNKNOWN BELT USE
AMH2001	Original	6/10/19	3.408210514	119	25	115	19	10
AMH2002	Original	6/10/19	3.408210514	113	19	98	22	12
AMH2003	Original	6/6/19	3.408210514	64	15	52	10	17
AMH2004	Original	6/6/19	3.408210514	138	44	142	26	14
AMH2005	Original	6/10/19	3.408210514	335	88	336	84	3
AMH4002	Original	6/6/19	3.408210514	14	6	14	5	1
AMH4003	Original	6/6/19	3.408210514	2	1	2	1	0
AMH4005	Original	6/10/19	3.408210514	22	6	25	0	3
BED1001	Original	6/3/19	3.872113973	45	8	38	13	2
BED2001	Original	6/3/19	3.872113973	5	1	6	0	0
BED2002	Original	6/10/19	3.872113973	63	12	64	10	1
BED2003	Original	6/10/19	3.872113973	233	47	243	28	9
BED2004	Original	6/3/19	3.872113973	26	11	24	9	4
BED2005	Original	6/10/19	3.872113973	142	35	150	24	3
BED4006	Original	6/3/19	3.872113973	2	0	2	0	0
BED4007	Original	6/10/19	3.872113973	41	2	33	10	0
BUC2001	Original	6/15/19	5.277737283	102	45	89	41	17
BUC2002	Original	6/12/19	5.277737283	123	48	91	36	44
BUC2003	Original	6/15/19	5.277737283	28	14	26	14	2
BUC2004	Original	6/12/19	5.277737283	127	18	71	51	23
BUC2005	Original	6/12/19	5.277737283	102	17	69	27	23
BUC2006	Original	6/15/19	5.277737283	20	4	12	7	5
BUC2007	Original	6/12/19	5.277737283	128	38	110	29	27
BUC2008	Original	6/15/19	5.277737283	31	14	19	18	8
FAI1001	Original	6/8/19	1.005185494	293	113	316	21	69
FAI1008	Original	6/12/19	1.005185494	402	32	385	26	23
FAI1009	Original	6/8/19	1.005185494	281	78	264	21	74
FAI10010	Alternate	6/19/19	1.005185494	111	13	109	15	0
FAI2001	Original	6/8/19	1.005185494	234	90	261	24	39
FAI2002	Original	6/23/19	1.005185494	275	99	350	20	4
FAI2003	Original	6/9/19	1.005185494	378	134	464	21	27
FAI2004	Original	6/9/19	1.005185494	241	90	258	15	58
FAI2005	Original	6/23/19	1.005185494	191	80	246	22	3
FAI2006	Original	6/23/19	1.005185494	398	171	518	15	36
FAI2007	Original	6/23/19	1.005185494	291	112	367	33	3
FAI2008	Original	6/12/19	1.005185494	321	67	359	25	4
FAI4001	Original	6/9/19	1.005185494	18	3	21	0	0
FAI4008	Original	6/12/19	1.005185494	7	1	8	0	0
FAI40011	Original	6/23/19	1.005185494	131	47	164	7	7

[11] "At Sampling" = sampling and confirmation that the site was viable either as primary (Original) or alternate. All sites listed here are those selected as primary and viable, except where noted (two sites).
[12] Inverse of county selection probability.

FAI40013	Original	6/8/19	1.005185494	12	0	10	1	1
FRA2001	Original	6/4/19	4.647939304	77	19	81	6	9
FRA2002	Original	6/4/19	4.647939304	101	21	105	8	9
FRA2003	Original	6/9/19	4.647939304	85	31	97	16	3
FRA2004	Original	6/9/19	4.647939304	162	74	204	29	3
FRA2005	Original	6/4/19	4.647939304	114	26	94	16	30
FRA4001	Original	6/9/19	4.647939304	6	2	5	3	0
FRA4002	Original	6/9/19	4.647939304	2	0	0	2	0
FRA4004	Original	6/4/19	4.647939304	4	2	5	1	0
GOO1001	Original	6/6/19	4.224398368	223	37	232	24	4
GOO1002	Original	6/6/19	4.224398368	408	28	403	15	18
GOO2001	Original	6/8/19	4.224398368	49	22	51	11	9
GOO2002	Original	6/6/19	4.224398368	203	47	197	38	15
GOO2003	Original	6/6/19	4.224398368	98	26	100	6	18
GOO2004	Original	6/8/19	4.224398368	75	34	82	18	9
GOO4001	Original	6/8/19	4.224398368	3	3	6	0	0
GOO4004	Original	6/8/19	4.224398368	1	0	0	1	0
LEE2001	Original	6/9/19	5.746810098	58	26	58	23	3
LEE2002	Original	6/16/19	5.746810098	80	40	101	16	3
LEE2003	Original	6/9/19	5.746810098	38	10	38	8	2
LEE2004	Original	6/16/19	5.746810098	90	55	109	35	1
LEE2005	Original	6/9/19	5.746810098	54	20	56	13	5
LEE2006	Original	6/16/19	5.746810098	12	7	10	9	0
LEE2007	Original	6/16/19	5.746810098	81	34	87	15	13
LEE2008	Original	6/9/19	5.746810098	45	6	38	8	5
ORA2001	Original	6/6/19	4.075878876	116	33	123	12	14
ORA2002	Original	6/6/19	4.075878876	272	62	272	23	39
ORA2003	Original	6/6/19	4.075878876	192	50	193	31	18
ORA2004	Original	6/5/19	4.075878876	115	22	94	25	18
ORA2005	Original	6/6/19	4.075878876	173	46	165	28	26
ORA2006	Original	6/5/19	4.075878876	204	61	206	44	15
ORA2007	Original	6/5/19	4.075878876	71	17	57	19	12
ORA2008	Original	6/5/19	4.075878876	65	22	70	9	8
PIT2001	Original	6/7/19	2.649926284	216	57	167	88	18
PIT2002	Original	6/15/19	2.649926284	48	22	55	14	1
PIT2003	Original	6/7/19	2.649926284	155	32	132	28	27
PIT2004	Original	6/8/19	2.649926284	214	111	226	70	29
PIT2005	Original	6/7/19	2.649926284	36	10	33	9	4
PIT2006	Original	6/15/19	2.649926284	293	111	354	46	4
PIT2007	Original	6/15/19	2.649926284	214	84	252	45	1
PIT2008	Original	6/7/19	2.649926284	215	33	177	36	35
PR1001	Original	6/4/19	3.026197013	235	29	231	22	11
PR1004	Original	6/5/19	3.026197013	58	10	53	8	7
PR2001	Original	6/5/19	3.026197013	379	59	371	37	30
PR2002	Original	6/4/19	3.026197013	209	38	192	25	30
PR2003	Original	6/5/19	3.026197013	112	17	109	7	13
PR2004	Original	6/5/19	3.026197013	276	67	285	30	28
PR4003	Original	6/4/19	3.026197013	156	29	145	31	9
PR4004	Original	6/4/19	3.026197013	35	7	38	4	0
SE1001	Original	6/7/19	1.256012101	22	5	19	8	0
SE1002	Original	6/10/19	1.256012101	154	25	135	37	7

SE1004	Original	6/10/19	1.256012101	158	14	140	26	6
SE1005	Original	6/4/19	1.256012101	119	21	101	32	7
SE2001	Original	6/4/19	1.256012101	196	29	158	57	10
SE2002	Original	6/10/19	1.256012101	191	39	209	10	11
SE2003	Original	6/7/19	1.256012101	331	14	292	37	16
SE2004	Original	6/4/19	1.256012101	247	49	242	47	7
SE2005	Original	6/7/19	1.256012101	94	21	89	26	0
SE2006	Original	6/4/19	1.256012101	169	34	156	27	20
SE2007	Original	6/9/19	1.256012101	85	21	56	23	27
SE2008	Original	6/7/19	1.256012101	208	44	202	38	12
SE4001	Original	6/9/19	1.256012101	28	12	26	10	4
SE40010	Original	6/7/19	1.256012101	194	35	182	39	8
SE40011	Original	6/10/19	1.256012101	4	1	5	0	0
SE40012	Original	6/9/19	1.256012101	2	1	1	2	0
STA1003	Original	6/6/19	7.021887723	327	64	319	41	31
STA1005	Alternate	6/11/19	7.021887723	115	22	120	17	0
STA2001	Original	6/11/19	7.021887723	254	52	279	25	2
STA2002	Original	6/6/19	7.021887723	300	92	319	44	29
STA2003	Original	6/6/19	7.021887723	264	41	222	47	36
STA2004	Original	6/6/19	7.021887723	215	54	224	22	23
STA4001	Original	6/11/19	7.021887723	8	0	7	1	0
STA4002	Original	6/11/19	7.021887723	1	0	1	0	0
WIS2001	Original	6/13/19	2.592077991	81	15	52	32	12
WIS2002	Original	6/13/19	2.592077991	141	33	125	36	13
WIS2003	Original	6/16/19	2.592077991	51	14	45	14	6
WIS2004	Original	6/13/19	2.592077991	64	16	40	33	7
WIS2005	Original	6/16/19	2.592077991	70	41	86	6	19
WIS2006	Original	6/16/19	2.592077991	20	5	11	12	2
WIS2007	Original	6/13/19	2.592077991	27	13	22	18	0
WIS2008	Original	6/16/19	2.592077991	175	98	208	18	47
WYT1002	Original	6/4/19	3.484328473	71	22	84	8	1
WYT1003	Original	6/4/19	3.484328473	5	1	4	2	0
WYT1004	Original	6/11/19	3.484328473	50	14	34	21	9
WYT2001	Original	6/11/19	3.484328473	78	25	69	24	10
WYT2002	Original	6/11/19	3.484328473	62	10	48	15	9
WYT2003	Original	6/4/19	3.484328473	71	21	73	19	0
WYT2004	Original	6/4/19	3.484328473	11	2	11	2	0
WYT2005	Original	6/11/19	3.484328473	68	27	61	22	12
YC1002	Original	6/8/19	2.83113956	152	50	138	23	41
YC1003	Original	6/8/19	2.83113956	223	97	248	6	66
YC2001	Original	6/8/19	2.83113956	206	33	139	25	75
YC2002	Original	6/3/19	2.83113956	113	14	101	16	10
YC2003	Original	6/8/19	2.83113956	282	111	347	30	16
YC2004	Original	6/3/19	2.83113956	114	28	94	34	14
YC4001	Original	6/3/19	2.83113956	10	3	4	9	0
YC4009	Original	6/3/19	2.83113956	45	1	36	8	2
TOTALS	**136 (of 136)**		**459.0483252**	**17,613**	**4,631**	**17,674**	**2,811**	**1,759**

Appendix C: Virginia Seat Belt Observation Forms – Cover Sheet

Date: ______________

Site Identification:

Site Location: ____

Site Number:______________________________

Alternate Site Information:

Is this an alternate site? **No** **Yes**
(Circle one)

If yes, please provide a reason for using an alternate site from the reserve list:

____

Site Description:

Assigned traffic flow: North South East West

Number of lanes observed: ____________

Total number of lanes in this direction: ____________

Weather Conditions: Clear Light Fog Light Rain

Site Start and End Time:

Start time for observations:______________am/pm

End time for observations:_______________am/pm
(Total observation period MUST last exactly 50 minutes)

State Summer Safety Belt Observation Form

Observer:______________________________ Primary or Secondary: _____________
Date: __________________________ Start Time: _______________________
Day of Week: ___________________ End Time: _______________________

Site Number: __________ Site: ____
Observed From: ____

Number of Lanes – ________________
Notes: ____

Total Observation = 50 minutes

Observation Times per Lane if Congested

1 lane = 50 minutes 3 lanes = 16.5 minutes each
2 lanes =25 minutes each 4 lanes = 12.5 minutes each

Volume 1:_______________________ Volume 2: ___________________

	Lane	Vehicle Type	Driver		Passenger			Driver	Weather
		C Car T Truck S SUV V Van M Mini-Van	Gender	Belt Use	Gender	Belt Use	Not Pres	Cell Use	1 Clear/Sunny 2 Light Rain 3 Cloudy 4 Fog 5 Clear but Wet
1		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
2		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
3		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
4		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
5		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
6		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
7		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
8		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
9		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
10		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
11		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
12		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
13		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
14		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
15		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
16		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
17		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
18		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
19		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
20		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	

	Lane	Vehicle Type	Driver		Passenger			Driver	Weather
		C Car T Truck S SUV V Van M Mini-Van	Gender	Belt Use	Gender	Belt Use	Not Pres	Cell Use	1 Clear/Sunny 2 Light Rain 3 Cloudy 4 Fog 5 Clear but Wet
21		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
22		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
23		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
24		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
25		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
26		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
27		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
28		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
29		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
30		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
31		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
32		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
33		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
34		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
35		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
36		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
37		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
38		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
39		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
40		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
41		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
42		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
43		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
44		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
45		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
46		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
47		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
48		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
49		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	
50		C T S V M	M F	Y N U	M F	Y N U	NP	Y N	

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