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2017 Safety Belt Usage Survey in Kentucky

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2017 SAFETY BELT USAGE SURVEY IN KENTUCKY

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Kentucky Transportation Cabinet
Commonwealth of Kentucky

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August 2017

Commonwealth of Kentucky
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State: Kentucky

Calendar Year of Survey: 2017

Statewide Seat Belt Use Rate: 86.8

I hereby certify that:

• Mr. Greg Thomas, Secretary of Transportation has been designated by the Governor as the State's Highway Safety Representative (GR), and if applicable, the GR has delegated the authority to sign the certification in writing to Dr. Noelle Hunter, Executive Director; the Coordinator of the State Highway Safety Office.

• The reported Statewide seat belt use rate is based on a survey design that was approved by NHTSA, in writing, as conforming to the Uniform Criteria for State Observational Surveys of Seat Belt Use, 23 CFR Part 1340.

• The survey design has remained unchanged since the survey was approved by NHTSA.

• Dr. Ronald Langley, University of Kentucky Transportation Center; a qualified survey statistician, has reviewed the seat belt use rate reported above and information reported in Part B and has determined that they meet the Uniform Criteria for State Observational Surveys of Seat Belt Use, 23 CFR Part 1340.

Signed: Noelle Hunter Date: 8/26/17
Dr. Noelle Hunter, Executive Director

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TABLE OF CONTENTS

Page

1.0 Introduction and Background 1

2.0 Survey Methodology 2
- 2.1 Selection of Counties and Number of Sites in Each County 2
- 2.2 Assign Sites by Highway Type 5
- 2.3 Selection of Data Collection Sites 7
- 2.4 Data Collection Procedure 8
- 2.5 Usage Rate Calculations 10
- 2.6 Nonresponsive Judgment 12
- 2.7 Imputation 13
- 2.8 Standard Error Calculation 13

3.0 Survey Results 14

4.0 Conclusions and Recommendations 21

Appendix A. Data Collection Sites 23

Appendix B. Data Collection Form 31

Appendix C. Data Collection Site Map 35

Appendix D. Summary of Data (by Site) 39

Appendix E. Summary of Data (with sample weights) 45

Appendix F. Mini-Survey Data 53

1.0 INTRODUCTION AND BACKGROUND

The use of safety belts and child safety seats is a proven means of reducing injuries to motor vehicle occupants involved in traffic crashes. There have been various methods used in efforts to increase safety belt and safety seat usage. Past efforts have included public information campaigns, local and statewide legislation, and enforcement of the legislation.

The most recent safety belt legislation in Kentucky involved changing the requirement for the use of safety belts for all vehicle occupants from secondary to primary enforcement. A statewide law providing secondary enforcement was enacted in 1994, with the primary enforcement law passed in 2006. The first legislation in this area in Kentucky was a law enacted by the 1982 Kentucky General Assembly that required the use of a "child restraint system" for children 40 inches or less in height. Prior to the statewide safety belt law, there were local safety belt usage laws in several jurisdictions in Kentucky. The first local safety belt law, that became effective July 1990, was enacted by the Lexington-Fayette Urban County Government.

The first statewide observational surveys were conducted in Kentucky in 1982 and have been conducted annually to document safety belt and safety seat usage. Following the enactment of the statewide secondary law, safety belt usage among drivers increased each survey year, from four percent in 1982 to 58 percent in 1994. The rate has steadily climbed since 1994. Examples of the increasing rates are 60 percent in 2000, 66 percent in 2004, 73 percent in 2008, and 86 percent in 2014.

Statewide usage of child safety seats (CSS) or safety belts for children under four years of age increased from about 15 percent in 1982, before enactment of the mandatory child restraint law, to about 30 percent for 1984 through 1986. After a financial penalty was added to the law, this percentage increased to almost 50 percent in 1988. There has been a continued increase in usage, with rates of reaching 98 percent in recent years. However, while usage rates are very high, studies have found problems with the proper use of child safety seats.

The survey methodology used to collect data has been revised slightly a few times. For several years, the statewide belt use survey was based on 200 observation sites in 58 counties taken in the weeks immediately after completing the annual "Click It or Ticket" (CIOT) campaigns. Enforcement and publicity activities related to this campaign typically finish around Memorial Day. Mini-surveys (taken at 21 of the 200 statewide sites) were taken prior to the CIOT, in April, and during the enforcement phase of the CIOT. The relatively large number of sites scattered in so many counties made data collection time-consuming. The most recent survey design (prior to the current design used first for the 2013 survey) collected data at 160 sites in 18 counties.

The National Highway Traffic Safety Administration (NHTSA) has issued new Uniform Criteria for State Observational Surveys of Seat Belt Use. The final rule was published in Federal Register Volume 76, Number 63. The revised methodology is described in detail in the following

section of this report. This methodology was developed using the research team's experience of collecting safety belt usage rates over the past 30 years in Kentucky along with the guidelines contained in the final rule. The new methodology was implemented beginning with the 2013 statewide survey.

The objective of the survey summarized in this report was to establish a statewide safety belt usage rate in Kentucky for 2017. This rate can be compared to those determined from previous surveys. The 2017 statewide survey documents the continued increase in usage associated with the change in the law to allow primary enforcement and related education and enforcement.

2.0 SURVEY METHODOLOGY

2.1 SELECTION OF COUNTIES AND NUMBER OF SITES IN EACH COUNTY

- The number of highway fatalities was summarized for each of Kentucky's 120 counties for the five-year period of 2006 through 2010. The source of the data was Kentucky's crash database (Collision Report Analysis for Safer Highways (CRASH)). The county totals were sorted and those in the lowest 15th percentile were identified and excluded from consideration. The result was a sample of 75 counties that were considered as potential survey counties.

- The procedure used prior to 2013 involved collecting data in 18 counties at 160 sites. The past data collection has resulted in a standard error of approximately one percent. Based on past experience, the decision was made to sample 20 percent of the 75 counties, which required the identification of 15 counties for data collection.

- The method selected to ensure a geographically representative sample of counties across Kentucky was to randomly select a county in each of the 12 Transportation Cabinet highway districts. The districts have similar numbers of counties and provide a good distribution across the state. Three of the districts include the major urban areas in the state. Two counties were selected in each of these three urban districts, which resulted in the selection of a total of 15 counties.

- One county from each rural highway district and two counties from the three urban highway districts were randomly selected. The only exception to the random selection was the automatic selection of Jefferson and Fayette Counties (in two of the urban districts). This was done because these counties (which contain Louisville and Lexington) have much higher vehicle miles traveled than any other county. Any meaningful statewide sample must include these counties because they are largest urban centers in Kentucky.

- The objective was to identify 150 data collection sites in the 15 selected counties. Based on the results from past data collection, this number of sites would easily meet the 2.5 percentage point standard error criterion. Additional data would be collected if the standard error exceeded 2.5 percent.

- Past experience has shown that the number of vehicles observed varies dramatically by site (depending on the average daily traffic [ADT] at the site). At each site, it is expected that the number of observations would range from 50 to 1,500. Based on previous surveys, there would be no sites with zero observations and the total statewide sample size should be over 50,000. The number of sites selected in each county was based on the vehicle miles traveled (VMT) in each county. Six categories of VMT were determined, with the number of sites in a county varying from six to 22. The number of sites in each county is proportional to that county's VMT. The counties with the most sites are Jefferson (22 sites) and Fayette (16 sites) as they have a much higher VMT than other counties.

- Table 1 lists the counties selected. The numbers of fatalities and vehicle miles traveled are given for each county. The six groupings of counties (based on VMT) are shown, and the number of sites in each county noted.

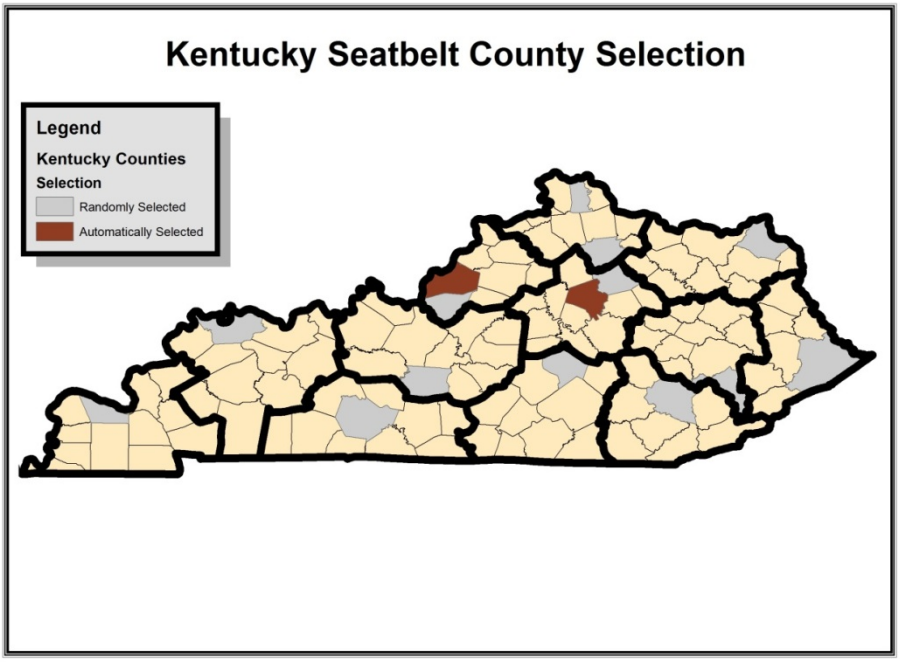
Table 1. Selected Counties

County	Number of Fatalities (2006-2010)	Percent of Statewide Fatalities	Highway District	VMT (x1,000)	Population	VMT Group	Number of Sites
Harrison	24	1.97	6	149,652	18,654	1	6
Clay	52	4.27	11	210,588	23,930	1	6
Bourbon	23	1.89	7	217,836	19,828	1	6
Lincoln	49	4.02	8	247,395	25,072	1	6
Perry	49	4.02	10	340,146	29,241	2	8
Greenup	29	2.38	9	348,777	37,388	2	8
Hart	48	3.94	4	423,369	18,561	2	8
Henderson	56	4.60	2	524,601	45,462	3	10
Pike	123	10.10	12	766,020	65,331	3	10
McCracken	70	5.75	1	792,502	65,109	3	10
Bullitt	55	4.52	5	930,991	75,028	3	10
Warren	95	7.80	3	1,347,271	105,862	4	12
Kenton	51	4.19	6	1,460,873	157,629	4	12
Fayette	127	10.43	7	2,855,813	282,114	5	16
Jefferson	367	30.13	5	6,539,839	713,877	6	22

- The following list sorts selected counties by highway district. The three urban districts have two counties each and the other nine districts have one county each.

District Number	County	Number of Sites
1	McCracken	10
2	Henderson	10
3	Warren	12
4	Hart	8
5	Bullitt	10
	Jefferson	22
6	Kenton	12
	Harrison	6
7	Bourbon	6
	Fayette	16
8	Lincoln	6
9	Greenup	8
10	Perry	8
11	Clay	6
12	Pike	10

- The following map shows the location of the districts and counties across the state.



2.2 ASSIGN SITES BY HIGHWAY TYPE

- After the counties and the total numbers of data collection sites in each county were determined, the next step was to assign the number of sites by highway type (in each county). The following three roadway types (road class stratum) were used:

    1. limited access
    2. arterials
    3. local

    The survey sites in each county were partitioned among the three highway types based on the VMT for each highway type in that county. In seven of the 15 counties, there were no roads in the "limited access" category. Therefore, since there was no VMT and no chance of selection, no road segments for this category were included for these seven counties.

- The numbers of sites were adjusted so that data were collected on at least one road in each road stratum class — as long as the county had a road in each class

- Using the criteria as noted, the following data (Table 2) present the number of sites by county and highway type. Of the 150 sites, there are 43 sites on limited access roadways, 67 sites on arterials and 40 sites on local roads.

    The number of sites in each of the three road classes was determined based on the vehicle miles traveled in each road class. The adjusted number was derived based on the distribution using vehicle miles traveled to ensure that the proper number of sites was provided in each county.

Table 2 **Number of Sites in each County by Roadway Class**

County	Sites Allocated	County VMT	Road Class Stratum	Road Class VMT	Number of Sites if Allocated by VMT	Adjusted Number of Sites	Adjusted Total
Jefferson	**22**	6,538,839,240	1	3,424,627,751	11.52	**11**	22
			2	2,665,785,337	8.97	**9**	
			3	448,426,153	1.51	**2**	
Fayette	**16**	2,855,812,630	1	1,019,472,164	5.71	**6**	16
			2	1,265,598,299	7.09	**7**	
			3	570,742,166	3.20	**3**	
Bourbon	**6**	217,836,350	1	0	0.00	**0**	6
			2	138,269,100	3.81	**4**	
			3	79,567,250	2.19	**2**	
Bullitt	**10**	930,990,570	1	494,107,859	5.31	**5**	10
			2	234,167,018	2.52	**3**	
			3	202,715,693	2.18	**2**	
Clay	**6**	210,587,750	1	0	0.00	**0**	6
			2	104,637,470	2.98	**3**	
			3	105,950,280	3.02	**3**	
Greenup	**8**	348,776,980	1	0	0.00	**0**	8
			2	216,940,991	4.98	**5**	
			3	131,835,989	3.02	**3**	
Harrison	**6**	149,652,490	1	0	0.00	**0**	6
			2	74,279,292	2.98	**3**	
			3	75,373,198	3.02	**3**	
Hart	**8**	423,368,750	1	276,205,327	5.22	**5**	8
			2	15,474,129	0.29	**1**	
			3	131,689,294	2.49	**2**	
Henderson	**10**	524,601,430	1	41,372,008	0.79	**1**	10
			2	342,108,540	6.52	**7**	
			3	141,120,881	2.69	**2**	
Kenton	**12**	1,460,873,030	1	829,034,625	6.81	**7**	12
			2	351,472,650	2.89	**3**	
			3	280,365,755	2.30	**2**	
Lincoln	**6**	247,394,860	1	0	0.00	**0**	6
			2	150,841,056	3.66	**4**	
			3	96,553,804	2.34	**2**	
McCracken	**10**	792,502,460	1	228,178,782	2.88	**3**	10
			2	340,918,903	4.30	**4**	
			3	223,404,774	2.82	**3**	
Perry	**8**	340,145,980	1	0	0.00	**0**	8
			2	169,095,048	3.98	**4**	
			3	171,050,932	4.02	**4**	
Pike	**10**	766,019,970	1	0	0.00	**0**	10
			2	452,117,144	5.90	**6**	
			3	313,902,826	4.10	**4**	
Warren	**12**	1,347,270,910	1	544,629,990	4.85	**5**	12
			2	456,725,567	4.07	**4**	
			3	345,915,353	3.08	**3**	
Totals	**150**	17,154,673,400	1	6,857,628,506	43.09	**43**	150
			2	6,978,430,544	64.93	**67**	
			3	3,318,614,350	41.98	**40**	
			-	17,154,673,400	150.00	**150**	

2.3 SELECTION OF DATA COLLECTION SITES

- After the counties and number of sites (by roadway type) in each county were selected, the next portion of the methodology involved: a) randomly selecting roadway segments in each roadway type and b) selecting specific sites within each segment. A file containing all roads in the state (including both state maintained and locally maintained) was used to randomly select roadway segments. The source of the road segment data was the Highway Performance Monitoring System (HPMS) file. This file is updated annually and contains data for all public roadways. No exclusions were made.

- The segments were divided into the three highway type categories as previously noted. Segments were randomly selected (by highway type). Segment length was factored into the selection process, with longer sections having a higher probability of selection than shorter sections. The number of randomly selected segments for each highway type category in each county was more than required (see Table 2) to compensate for segments where there were no appropriate data collection sites.

- The randomly selected segments were inspected either remotely, using online imagery, or through a site visit. The necessary numbers of data collection sites (shown in Table 2) were identified for each county and highway type (using the randomly selected segments). Site selection ensured that the observers could obtain data safely and effectively.

- Appendix A contains a list of the 150 data collection sites (and alternate sites). The county and road name or number are given along with a reference to locate the observation site. The highway where the data is to be collected is identified. The probability of selection for each site is provided.

- At least one alternative site was identified for each highway type in each county in the event data could not be obtained at one of the identified sites. If a site was temporarily unavailable, the data collection was rescheduled for a similar day and time. If a site was unavailable for a substantial period of time, the alternative site was used, with data collected at a similar day and time. To remain consistent, the alternate site would replace the discarded site in future surveys.

- The number of approaches (by direction of travel) and lanes on the approaches on the specified road were identified at each site. The approach and lane used to collect data were randomly selected.

- Data collectors were positioned at a location to ensure their safety while collecting data.

2.4 DATA COLLECTION PROCEDURE

- Observation times for the 150 sites were randomly assigned (with consideration of grouping sites in counties). Sites in relatively close proximity to one another were designated data collection clusters. The first site within each cluster was assigned a random day and time for completion. Next, all other sites within a cluster were assigned a random time on the same day to maximize efficiency (and minimize time and travel costs).

- Data were collected for one hour at each site with either one or two data collectors (depending on the number of directions of travel included). One hour was required if data were gathered by one data collector on one direction of travel, whereas ½ hour was needed if there were two data collectors on separate directions of travel. There is a reasonable assumption that, for sites where one observer is used, the observed vehicles in one direction on a specific route in one hour will equal the number of vehicles on both directions on that route in ½ hour. Sites requiring only one observer are low-volume roads or T-intersections. On roads with higher traffic volumes, an equal distribution of traffic flow in each direction cannot be assumed; therefore, two observers were used, with one observing each direction. The use of a variable observation period (as described) does not affect the probability of selection.

- Data collection was scheduled to occur between June 1 and July 31. Data collection guidelines stated that data would be collected between 7 am and 6 pm, with all days of the week eligible. The schedule included rush hour and non-rush hour observations. Start times were staggered to ensure the surveys captured a representative number of sites for each day of the week and time of day.

- Data were collected through direct observation. Appendix B contains the form used to collect and record data. Data were collected using paper forms. The form allows data collectors to record information such as the site number and the date and time of data collection. For drivers and front seat passengers the categories are:

    1. safety belt used (shoulder belt is in front of shoulder),
    2. safety belt not used (shoulder belt not in front of shoulder), and
    3. unknown (cannot be determined if belt is used).

  The presence or absence of a passenger in the right front seat is shown by comparing the total number of drivers and passengers in the sample size. Observation for any right seat passenger was obtained for all vehicles. The number of vehicles at a site with only a driver can be calculated by subtracting the total number of front seat passengers from the total number of vehicles observed. The ratio of the total number of recorded unknown values of

belt use to the total number of drivers and passengers observed must not exceed 10 percent. Additional data were collected if the nonresponse threshold was surpassed.

- The following vehicle types (both in-state and out-of-state vehicles) were included in the data collection:

    1. Passenger car (PC) (including commercial vehicles under 10,000 pounds)
    2. Pickup (PU)
    3. Van
    4. Sport utility vehicle (SUV)

    Separate data for motorcycles and bicycles were also collected to compare current data to past data for these categories.

- Before starting data collection, data collectors were provided training on the data collection procedure. The training included:

    1. An overview of the project
    2. Description of the data collection form and procedure
    3. Scheduling procedures
    4. Identification of survey sites (and alternatives)
    5. Data input.

    After the classroom portion of the training, the data collectors conducted trial surveys at locations representative of the three roadway types included in the survey. The trial survey results were evaluated to ensure that the data collectors provided consistent and accurate data.

- Times and locations were assigned, with data collected using the previously described form. Drivers received no indication that the data collectors were conducting a safety belt survey. For high volume locations, randomized selection was achieved by recording data for the next vehicle in view after recording the previous data. At low volume locations, data for the driver and outboard front seat passenger were obtained for all vehicles so there was no need for a random selection. For each vehicle, the usage for the driver and any outboard front seat passenger was noted. At intersections, data were collected for vehicles either stopped or moving slowly. At overpasses on limited access highways, an observation position was chosen to allow for an unobstructed view of the vehicle's front seat.

- The objective was that a quality control monitor would conduct random, unannounced visits and collect data at a minimum of 15 of the data collection sites. It was anticipated that there would be approximately four to six data collectors with a couple of quality control monitors. The objective was that data was compared for at least two sites for each data collector.

2.5 USAGE RATE CALCULATIONS

- The following paragraphs summarize the calculation used to estimate the statewide seat belt usage rate.

  Seat belt usage rates were calculated using formulas based on the proportion of the state's total VMT represented by the site. The seat belt usage rate calculations followed a four-step process.

  First, estimated rates were calculated for each of the road strata within each county. Observed usage rates for all of the sites within each stratum-county combination were combined through simple averaging, as shown in the following formula (1). (Since the sites' original probability of being included in the sample was proportional to their VMT, averaging their usage rates makes use of that sampling probability to reflect their different VMTs).

$$p_{i(j)k} = \sum_{l=1}^{n_{i(j)k}} p_{i(j)kl} / n_{i(j)k} \qquad (1)$$

  where *i(j)* = county *i* within category *j* (category 1 = the 2 certain-selection counties, Jefferson and Fayette Counties, and category 2 = the 13 random-selection counties); *k* = road functional class stratum; *l* = site within stratum and county; $n_{i(j)k}$ = number of sites within the stratum-county combination; and $p_{i(j)kl}$ = the observed seat belt use rate at site *i(j)kl* = $B_{i(j)kl}/O_{i(j)kl}$ (where $B_{i(j)kl}$ = total number of belted occupants (drivers and outboard front-seat passengers) observed at the site and $O_{i(j)kl}$ = total number of occupants (excluding unknown usage) whose belt use was observed at the site).

  Second, a county-by-county seat belt use rate, $p_{i(j)}$, was obtained by combining county-stratum seat belt use rates across strata within counties. These were weighted by the class's relative contribution to total county VMT:

$$p_{i(j)} = \frac{\sum_k VMT_{i(j)k}\, p_{i(j)k}}{\sum_k VMT_{i(j)k}} \qquad (2)$$

  where $VMT_{i(j)k}$ = VMT of all roads in stratum *k* in county *i(j)*, and $p_{i(j)k}$ = seat belt use rate for stratum *k* in county *i(j)*.

In the third step, category-weighted seat belt use rates were obtained by combining and weighting the rates from the sampled counties in each category by their VMT values and probabilities of being selected:

$$p_j = \frac{\sum_i VMT_{i(j)} W_{i(j)} p_{i(j)}}{\sum_i VMT_{i(j)} W_{i(j)}} \qquad (3)$$

where $VMT_{i(j)}$ = total VMT for county *i* in category *j* and $W_{i(j)}$ = the inverse of the probability of the county's selection: where j is one of the three following categories:

<u>One county randomly selected from district (j = 1)</u>

Highway Districts 1,2,3,4,8,9,10,11, and 12

$W_{i(1)} = \frac{\sum_{L=1}^{x_m} VMT_{L(1)}}{VMT_{i(1)}}$ where m = county i's district, x_m = the number of counties in District m, L is the Lth county in District m, $VMT_{L(1)}$ = the VMT in county L, $VMT_{i(1)}$ = the VMT in county i.

<u>One county randomly selected from district and one county certainly selected (j = 2)</u>

Highway Districts 5 and 7

$W_{i(2)} = \frac{\sum_{L=1}^{y_m} VMT_{L(2)}}{VMT_{i(2)}}$ where m = county i's district, y_m = the number of counties in district m excluding the certain county, L is the Lth county in district m, $VMT_{L(2)}$ = the VMT in county L, $VMT_{i(2)}$ = the VMT in county i.

Or for certainty counties:

$W_{i(2)} = 1$

<u>Two counties randomly selected from district (j = 3)</u>

Highway District 6 only

$W_{i(3)} = \frac{\sum_{L=1}^{11} VMT_{L(3)}}{2 \times VMT_{i(3)}}$ where L is the Lth county in District 6, $VMT_{L(3)}$ = the VMT in county L, $VMT_{i(3)}$ = the VMT in county i.

Finally, the statewide belt use proportion was calculated by combining the category proportions weighted by their proportion of statewide VMT:

$$p = \frac{\sum_{j=1}^{3} VMT_j \, p_j}{\sum_{j=1}^{3} VMT_j} \tag{4}$$

The result is a combination of the individual site seat belt usage rates weighted to reflect each site's importance in the total state VMT.

Estimates of subgroups of occupants, such as drivers or passengers and vehicle type (passenger car, pickup, etc.) were calculated using the same procedure.

2.6 NONRESPONSIVE JUDGEMENT

- Based on data collection protocol and past experience, including the provision for using alternate observation sites, road segments with non-zero eligible volume and zero observations conducted should not occur. 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, this site would be considered a non-responding site. The weight for a non-responding site was distributed over other sites in the same road type in the same PSU.

  Let:

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

  be the road segment selection probability, and

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

  be the road segment weight.

The non-responding site nonresponse adjustment factor:

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

would be multiplied to all weights of non-missing road segments in the same road type of the same county, and the missing road segments would be dropped from the analysis file. However, if there were no vehicles passing the site during the selected observation time (60 minutes) this was treated as an empty block at this site. Accordingly, the site would not be considered as a non-responding site and would not require non-response adjustment.

2.7 IMPUTATION

No imputation was done on missing data.

2.8 STANDARD ERROR CALCULATION

- The standard error of the overall seat belt use rate was calculated using the following procedure. Standard error of estimate values was estimated through a jackknife approach, based on the general formula:

$$\hat{\sigma}_{\hat{p}} = [\frac{n-1}{n}\sum_{i=1}^{n}(\hat{p}_i - \hat{p})^2]^{1/2} \qquad (5)$$

where $\hat{\sigma}_{\hat{p}}$ = standard deviation (standard error) of the estimated statewide seat belt use proportion $\hat{p}$ (equivalent to *p* in the notation of formulas 1-4); *n* = the number of sites (i.e., 150); and $\hat{p}_i$ = the estimated statewide belt use proportion with site *i* excluded from the calculation.

The relative error rate, i.e., $\hat{\sigma}_{\hat{p}} / \hat{p}$, was also calculated, as well as the 95% confidence interval, i.e., $\hat{p} \pm 1.96\hat{\sigma}_{\hat{p}}$. These values were reported for the overall statewide seatbelt use rate.

3.0 SURVEY RESULTS

- Table 3 summarizes usage rates for all front seat occupants (drivers and passengers) for the various types of highways and road classifications. The overall statewide usage rate in 2017, using the data collected at 150 sites and the described weighting procedure, was 86.8 percent. This was an increase from 86.5 percent in 2016. The 95 percent confidence interval is approximately 0.7 percent (86.1 to 87.5). Standard error is 0.3 percent.

- The sample size of all front seat occupants was approximately 82,480. The statewide rate for drivers was 87.2 percent with a rate of 85.2 percent for front seat passengers.

TABLE 3. USAGE RATE FOR FRONT-SEAT OCCUPANTS (BY ROAD CLASS)

	PERCENT USAGE BY TYPE		
ROAD CLASSIFICATION	DRIVERS	PASSENGERS	ALL
Limited Access	92.2	89.7	91.7
Arterials	87.7	85.8	87.4
Locals	80.5	80.5	80.5
All	87.2	85.2	86.8

- Appendices D and E provide summaries of the data collected (by site). For each site, the usage rate and sample size are given for all front seat occupants, drivers, and front seat passengers. The relative error and confidence interval are given for the "all front seat occupants" category. The percent unknown is given for each site. Also, the site type (original or alternate), date observed, and site sample weight are provided.

- Usage rates ranged from 59.7 percent (a rural, local location in Clay County) to 98.5 percent (a limited access road (interstate highway) in Warren County). There were 46 sites that had a usage rate of 90 percent or more, with 32 on a limited access road and 12 on an arterial and two on a local road. The highest rate found on a non-limited access road was 94.7 percent at a high-volume urban arterial in Fayette County.

- The highest unknown rate at any site was 8.3 percent. Only eleven sites had unknown usage rates exceeding five percent. Total nonresponse rate of seat belt use is 0.57 percent.

- A substantial difference in usage rate (for all front seat occupants) was noted when vehicle type and road class were considered (Table 4). The rate varied by vehicle type from a low of 78.8 percent for pickup trucks to 89.9 percent for SUVs.

- For each vehicle type, the lowest usage rate was on local roads, while the highest rate was on limited access highways.

- Examining usage rates according to road class revealed that rates ranged from 80.5 percent on local roads to 91.7 percent on limited access highways.

- The lowest usage was 69.2 percent for pickups on local roads.

- The highest usage rate was 93.5 percent for SUVs on limited access highways.

- For each road classification, the lowest usage rate was for pickups. For limited access roads, the only vehicle type with a usage rate less than 90 percent was pickups.

TABLE 4. USAGE RATE FOR FRONT-SEAT OCCUPANTS (BY ROAD CLASS AND VEHICLE TYPE)

	PERCENT USAGE BY VEHICLE TYPE				
ROAD CLASSIFICATION	PC	PU	VAN	SUV	ALL
Limited Access	92.3	85.4	91.8	93.5	91.7
Arterials	88.7	79.8	90.8	89.7	87.4
Locals	83.5	69.2	80.2	87.2	80.5
All	88.1	78.8	89.0	89.9	86.8

PC – passenger car
PU – pickup
VAN – van
SUV – sport utility vehicle

- Table 5 summarizes usage rate by county. The rate varied from a high of 91.0 percent in Fayette County to a low of 70.4 percent in Clay County. The rate exceeded 90 percent in two counties and was less than 80 percent in four counties.

- Perry County had the second lowest usage rate (73.6 percent), while Pike Country had the third lowest rate (74.9 percent). Each of the three counties located in the southeast portion of the state (Clay, Pike, and Perry Counties) had usage rates under 80 percent.

- From 2016 to 2017, usage rates increased in seven of the 15 counties. The largest increase in the usage rate (3.4 percent) occurred in Harrison County. The largest decrease was in Perry County (2.6 percent).

TABLE 5. USAGE RATE FOR FRONT-SEAT OCCUPANTS (BY COUNTY)

	PERCENT USAGE BY TYPE		
COUNTY	DRIVERS	PASSENGERS	ALL
Bourbon	81.6	76.6	80.6
Bullitt	88.2	88.5	88.2
Clay	70.1	71.9	70.4
Fayette	91.7	88.2	91.0
Greenup	81.7	83.1	82.0
Harrison	82.2	74.4	80.4
Hart	86.0	84.3	85.5
Henderson	85.9	84.6	85.8
Jefferson	90.6	87.9	90.1
Kenton	89.1	88.7	89.1
Lincoln	77.4	74.3	76.5
McCracken	89.3	88.0	88.9
Perry	72.8	76.0	73.6
Pike	74.5	75.3	74.7
Warren	87.8	88.4	87.9
All	87.2	85.2	86.8

- Usage rates by county and vehicle type are presented in Table 6. These rates ranged from a high of 93.6 percent for SUVs in Warren County to a low of 56.9 percent for pickup trucks in Clay County. The usage rate for pickup trucks was less than 70 percent in five counties.

TABLE 6. USAGE RATE FOR FRONT-SEAT OCCUPANTS (BY COUNTY AND VEHICLE TYPE)

	PERCENT USAGE BY VEHICLE TYPE				
COUNTY	PC	PU	VAN	SUV	ALL
Bourbon	82.6	72.9	81.5	85.6	80.6
Bullitt	88.4	81.5	90.9	91.9	88.2
Clay	74.6	56.9	84.8	78.5	70.4
Fayette	92.3	84.9	91.5	92.3	91.0
Greenup	84.7	74.2	80.7	87.7	82.0
Harrison	87.5	67.1	88.0	88.1	80.4
Hart	83.9	77.5	91.5	87.6	85.5
Henderson	87.7	76.3	88.5	92.0	85.8
Jefferson	90.8	82.9	89.8	92.5	90.1
Kenton	89.8	79.6	90.9	92.3	89.1
Lincoln	80.2	63.1	91.3	85.7	76.5
McCracken	90.0	83.8	92.9	89.7	88.9
Perry	75.0	66.3	83.6	75.9	73.6
Pike	81.1	60.9	83.7	76.9	74.7
Warren	89.8	79.7	83.1	93.6	87.9
All	88.1	78.8	89.0	89.9	86.8

- While the data collection procedure has changed several times, 2017 usage rates can still be compared to the statewide rates from past years (Table 7). Statewide rates have dramatically increased from four percent in 1982 to 87 percent in 2017. Increased usage over the years is related to a combination of changes in safety belt legislation and increased enforcement and education.

TABLE 7. TREND IN STATEWIDE USAGE RATES

	PERCENT USING SAFETY BELTS		
YEAR	ALL FRONT SEAT OCCUPANTS	DRIVERS	CHILDREN UNDER FOUR YEARS OF AGE*
1982	**	4	15
1983	**	6	24
1984	**	7	30
1985	9	9	29
1986	13	13	30
1988	20	21	48
1989	25	26	49
1990	33	32	57
1991	39	39	57
1992	40	41	62
1993	42	42	61
1994	58	58	72
1995	54	54	66
1996	55	55	79
1997	54	54	82
1998	54	54	80
1999	59	59	89
2000	60	60	87
2001	62	62	89
2002	62	62	93
2003	66	65	95
2004	66	66	96
2005	67	67	94
2006	67	68	94
2007	72	72	98
2008	73	74	98
2009	80	80	99
2010	80	81	96
2011	82	83	97
2012	84	84	98
2013	85	85	**
2014	86	87	**
2015	87	87	**
2016	87	87	**
2017	87	87	**

*Children using either safety seat or safety belt. Children seated in front or rear seat.
**Data not obtained.

- Survey locations have changed due to modifications of the data collection procedure (in 1990, 1999, 2009, and 2013). For the past several years, a mini-survey has been conducted with data collected at 21 sites (selected from the 200 sites for the survey first used prior to the change in sites made in 2009). The 21 sites represented seven road functional classifications and three regions of the state.

  This mini-survey was conducted in 2017 to enable a comparison of identical sites over an extended number of years. Appendix F contains the results for the mini-survey sites for the seven years of 2011 through 2017. The usage rate at the mini-survey locations in 2017 was 87.5 percent. This shows consistency with the official 2017 data: the statewide rate in 2017 for the mini-survey locations increased 0.3 percent compared to 2016 (which was the same as the increase found for the official survey). Usage rates increased at ten locations, decreased at nine locations, and two remained the same.

- Bicycle helmet use was observed during data collection. Only 51 bicyclists were observed during the survey, and just 15 used helmets (29.4 percent). The small sample size prevents drawing inferences about usage trends but does support the opinion that bicycle helmet usage rate continues to be very low.

- During the survey, data collectors observed helmet use by motorcyclists. The sample size was 754. Until repealed in 1998, Kentucky had a statewide law requiring the use of a helmet by a motorcyclist. Surveys before the law's repeal found a helmet usage rate exceeding 95 percent. The helmet usage rates for motorcyclists for 1999 through 2017 (after repeal of the mandatory helmet law) are given in Table 8. The average usage rate over the 19-year period following the repeal of mandatory helmet usage laws was 59 percent (with 60 percent in 2017). The usage rate over these years has ranged from a low of 50 percent in 2010 to a high of 70 percent in 2000.

- There has been a goal to achieve a statewide seatbelt usage rate of 90 percent. Reaching this percentage will be easier to attain on certain types of roads. This rate was obtained at 74 percent of limited access roadways sites, 18 percent of arterial locations, and only five percent of local road sites.

TABLE 8. TREND IN MOTORCYCLE HELMET USAGE

	PERCENT USING HELMET	
YEAR	SAMPLE SIZE	PERCENT USAGE
1999	452	65
2000	427	70
2001	395	56
2002	596	57
2003	512	56
2004	631	58
2005	918	59
2006	949	60
2007	897	56
2008	1,244	58
2009	537	64
2010	780	50
2011	699	52
2012	833	53
2013	487	57
2014	494	61
2015	605	62
2016	573	59
2017	754	60

4.0 CONCLUSIONS AND RECOMMENDATIONS

- The data show that the level of safety belt usage in 2017 (86.8 percent) improved from 2016 (86.5 percent) although there is no statistical change. The usage rate in 2017 is the highest since surveys began in 1982. The progressive increases in usage rates observed since 1982 can be related to the enactment and enforcement of safety belt laws along with increased education. However, the increase has only been three percent in the past five years. Large annual increases cannot be expected as the usage rate approaches 90 percent.

- The data support maintaining the education and enforcement efforts of the primary safety belt law. Safety belt usage varies by county and vehicle type. Focusing on this variability indicates locations where more emphasis would be beneficial.

- Data show the lowest usage rates are for pickups. The exemption for safety belt use for occupants of farm vehicles should be changed.

- Modifying the driver point system so that a driver receives points when they are cited for failure to use a safety belt should be considered. This could aid enforcement.

- Consideration should be given to increasing the dollar amount drivers are fined when cited for failure to wear a safety belt.

Appendix A.

Data Collection Sites

Appendix A- Table 1. Data Collection Sites

Site	County	Road Type	Road Surveyed	Reference	Section Length (mi)	Total Length (mi)	Probability of Selection
1	Bourbon	Arterial	US 27	Fords Mill Rd	1.335	61.22	0.0218
2	Bourbon	Arterial	US 460	US 27	0.941	61.22	0.0154
3	Bourbon	Arterial	US 460	US 68	12.402	61.22	0.2026
4	Bourbon	Arterial	US 68	4th Street	0.844	61.22	0.0138
5	Bourbon	Local Road	Castle Blvd	KY 1939	0.54	329.975	0.0016
6	Bourbon	Local Road	KY 1678	KY 57 (Briar Hill Rd)	7.63	329.975	0.0231
7	Bullitt	Arterial	KY 44	US 31EX	2.97	67.52	0.0440
8	Bullitt	Arterial	KY 61	KY 44	2.52	67.52	0.0373
9	Bullitt	Arterial	US 31E	KY 44	1.569	67.52	0.0232
10	Bullitt	Limited Access	I-65	KY 733 overpass	8.465	19.871	0.4260
11	Bullitt	Limited Access	I-65	KY 245 interchange	3.801	19.871	0.1913
12	Bullitt	Limited Access	I-65	KY 3219 overpass	3.801	19.871	0.1913
13	Bullitt	Limited Access	I-65	KY 61 overpass	7.606	19.871	0.3828
14	Bullitt	Limited Access	I-65	KY 1526 interchange	7.606	19.871	0.3828
15	Bullitt	Local Road	Armstrong Ln	KY 44	0.576	727.145	0.0008
16	Bullitt	Local Road	Smith Ln	Hillview Blvd	0.506	727.145	0.0007
17	Clay	Arterial	Hal Rogers Pkwy	KY 80 underpass	25.336	41.431	0.6115
18	Clay	Arterial	US 421	2nd Street	8.808	41.431	0.2126
19	Clay	Arterial	US 421	KY 638	1.997	41.431	0.0482
20	Clay	Local Road	KY 11	US 421	17.732	729.333	0.0243
21	Clay	Local Road	KY 638	KY 472	8.222	729.333	0.0113
22	Clay	Local Road	KY 1524	US 421	0.369	729.333	0.0005
23	Fayette	Arterial	Cooper Dr	Nicholasville Rd	0.078	155.491	0.0005
24	Fayette	Arterial	Man O War Blvd	Clays Mill Rd	4.4	155.491	0.0283
25	Fayette	Arterial	Man O War Blvd	Tates Creek Rd	4.4	155.491	0.0283
26	Fayette	Arterial	New Circle Rd	N. Broadway	1.58	155.491	0.0102
27	Fayette	Arterial	Russell Cave Rd	New Circle Rd	9.117	155.491	0.0586
28	Fayette	Arterial	Versailles Rd	Man O War Blvd.	1.516	155.491	0.0097
29	Fayette	Arterial	Winchester Rd	Elkhorn Dr	1.173	155.491	0.0075
30	Fayette	Limited Access	I-64	KY 859 interchange	7.71	49.024	0.1573
31	Fayette	Limited Access	I-64	Yarnallton Pk overpass	3.729	49.024	0.0761
32	Fayette	Limited Access	I-75	KY 353 overpass	7.016	49.024	0.1431
33	Fayette	Limited Access	I-75	KY 418 interchange	6.187	49.024	0.1262
34	Fayette	Limited Access	KY 4	Alumni Dr interchange	2.905	49.024	0.0593
35	Fayette	Limited Access	KY 4	Georgetown Rd interchange	2.085	49.024	0.0425

Appendix A- Table 1. Data Collection Sites (continued)

Site	County	Road Type	Road Surveyed	Reference	Section Length (mi)	Total Length (mi)	Probability of Selection
36	Fayette	Local Road	Alexandria Dr	Versailles Rd	2.776	1240.085	0.0022
37	Fayette	Local Road	Kenesaw Dr	Tates Creek Rd	0.575	1240.085	0.0005
38	Fayette	Local Road	Newtown Pk	Ironworks Rd	3.141	1240.085	0.0025
39	Greenup	Arterial	KY 10	US 23	11.582	66.893	0.1731
40	Greenup	Arterial	KY 67	US 23	7.53	66.893	0.1126
41	Greenup	Arterial	KY 693	KY 207 (Argillite Rd)	1.656	66.893	0.0248
42	Greenup	Arterial	US 23	KY 67	8.595	66.893	0.1285
43	Greenup	Arterial	US 23	KY 10	10.813	66.893	0.1616
44	Greenup	Local Road	KY 2	US 23	0.373	929.912	0.0004
45	Greenup	Local Road	KY 827	KY 7	5.647	929.912	0.0061
46	Greenup	Local Road	Pond Run Rd	KY 750	0.902	929.912	0.0010
47	Harrison	Arterial	KY 36	Locust St	15.309	47.165	0.3246
48	Harrison	Arterial	US 27	KY 32	1.067	47.165	0.0226
49	Harrison	Arterial	US 62	US 27	0.273	47.165	0.0058
50	Harrison	Local Road	KY 1054	KY 36	6.851	499.878	0.0137
51	Harrison	Local Road	KY 1842	KY 32	6.214	499.878	0.0124
52	Harrison	Local Road	KY 392	US 62	11.337	499.878	0.0227
53	Hart	Arterial	US 31W	KY 218	6.758	21.574	0.3132
54	Hart	Limited Access	I-65	KY 2746 overpass	20.666	20.665	1.0000
55	Hart	Limited Access	I-65	KY 218	20.666	20.665	1.0000
56	Hart	Limited Access	I-65	Rowletts Cave Springs Rd overpass	20.666	20.665	1.0000
57	Hart	Limited Access	I-65	KY 88 overpass	20.666	20.665	1.0000
58	Hart	Limited Access	I-65	KY 728 interchange	20.666	20.665	1.0000
59	Hart	Local Road	KY 728	US 31W	13.329	711.88	0.0187
60	Hart	Local Road	KY 88	US 31E	12.665	711.88	0.0178
61	Henderson	Arterial	KY 351	US 41A	1.817	98.715	0.0184
62	Henderson	Arterial	KY 425	US 60	2.429	98.715	0.0246
63	Henderson	Arterial	KY 425	US 41A	2.429	98.715	0.0246
64	Henderson	Arterial	US 41	Watson Ln	4.994	98.715	0.0506
65	Henderson	Arterial	US 41	KY 425	3.738	98.715	0.0379
66	Henderson	Arterial	US 41A	KY 136 (Sand Ln)	2.709	98.715	0.0274
67	Henderson	Arterial	US 60	KY 425	1.573	98.715	0.0159
68	Henderson	Limited Access	Breathitt Pkwy	KY 812 overpass	2.052	4.457	0.4604
69	Henderson	Local Road	Green River Rd.	US 60	0.073	752.948	0.0001
70	Henderson	Local Road	KY 416	KY 351	5.274	752.948	0.0070
71	Jefferson	Arterial	2nd Street	Broadway (US 150)	0.61	445.833	0.0014
72	Jefferson	Arterial	Bardstown Rd	Taylorsville Rd	3.768	445.833	0.0085
73	Jefferson	Arterial	Barret Ave	Broadway (US 150)	1.072	445.833	0.0024
74	Jefferson	Arterial	Bluegrass Pkwy	Hurstbourne Pkwy	0.13	445.833	0.0003
75	Jefferson	Arterial	Crittenden Dr	Central Ave	2.754	445.833	0.0062

Appendix A- Table 1. Data Collection Sites (continued)

Site	County	Road Type	Road Surveyed	Reference	Section Length (mi)	Total Length (mi)	Probability of Selection
76	Jefferson	Arterial	Newburg Rd	Trevilian Way	1.854	445.833	0.0042
77	Jefferson	Arterial	KY 841	National Turnpike	4.216	445.833	0.0095
78	Jefferson	Arterial	Phillips Ln	Fairgrounds Road	0.772	445.833	0.0017
79	Jefferson	Arterial	Shepherdsville Rd	Outer Loop (KY 1065)	0.689	445.833	0.0015
80	Jefferson	Limited Access	I-264	KY 1932 interchange	3.396	109.343	0.0311
81	Jefferson	Limited Access	I-64	Cannons Ln interchange	6.77	109.343	0.0619
82	Jefferson	Limited Access	I-264	US 42 interchange	2.192	109.343	0.0200
83	Jefferson	Limited Access	I-265	Smyra Parkway	9.64	109.343	0.0882
84	Jefferson	Limited Access	I-265	Preston Hwy interchange	2.159	109.343	0.0197
85	Jefferson	Limited Access	I-64	English Station Rd overpass	4.415	109.343	0.0404
86	Jefferson	Limited Access	I-65	Outer Loop interchange	1.143	109.343	0.0105
87	Jefferson	Limited Access	I-65	Fern Valley Rd interchange	3.272	109.343	0.0299
88	Jefferson	Limited Access	I-71	KY 1694 overpass	2.252	109.343	0.0206
89	Jefferson	Limited Access	I-71	Lime Kiln Ln overpass	4.097	109.343	0.0375
90	Jefferson	Limited Access	KY-841	US 42 overpass	1.575	109.343	0.0144
91	Jefferson	Local Road	McCawley Rd	Preston Highway	0.085	2977.538	0.0000
92	Jefferson	Local Road	W. Manslick Rd	3rd Street Rd	2.256	2977.538	0.0008
93	Kenton	Arterial	KY 17	Dudley Rd.	2.729	70.185	0.0389
94	Kenton	Arterial	KY 1829	KY 1303	2.895	70.185	0.0412
95	Kenton	Arterial	US 25	KY 236	2.29	70.185	0.0326
96	Kenton	Limited Access	I-275	KY 16 interchange	4.451	19.423	0.2292
97	Kenton	Limited Access	I-275	KY 1303 interchange	4.451	19.423	0.2292
98	Kenton	Limited Access	I-275	Hulbert Ave	1.75	19.423	0.0901
99	Kenton	Limited Access	I-75	Kyles Ln interchange	2.477	19.423	0.1275
100	Kenton	Limited Access	I-75	Buttermilk Pike interchange	2.98	19.423	0.1534
101	Kenton	Limited Access	I-75	Dixie Highway interchange	2.98	19.423	0.1534
102	Kenton	Limited Access	I-75	KY 236 interchange	1.038	19.423	0.0534
103	Kenton	Local Road	KY 2047	KY 16	2.587	920.539	0.0028
104	Kenton	Local Road	Marshall Rd	Taylor Mill Rd	2.497	920.539	0.0027
105	Lincoln	Arterial	US 150	US 27	8.473	51.441	0.1647

Appendix A- Table 1. Data Collection Sites (continued)

Site	County	Road Type	Road Surveyed	Reference	Section Length (mi)	Total Length (mi)	Probability of Selection
106	Lincoln	Arterial	US 150	Spring Valley Dr	0.125	51.441	0.0024
107	Lincoln	Arterial	US 27	KY 78	2.182	51.441	0.0424
108	Lincoln	Arterial	US 27	Lancaster St	2.182	51.441	0.0424
109	Lincoln	Local Road	Cordier Rd	US 150	0.421	633.961	0.0007
110	Lincoln	Local Road	KY 2750	US 150	0.974	633.961	0.0015
111	McCracken	Arterial	Jefferson St	N. 9th St	0.052	95.398	0.0005
112	McCracken	Arterial	KY 994	S. 21st St	0.748	95.398	0.0078
113	McCracken	Arterial	US 60	KY 996	7.118	95.398	0.0746
114	McCracken	Arterial	US 60	KY 284 (Bridge St)	3.258	95.398	0.0342
115	McCracken	Limited Access	I-24	US 62 interchange	6.707	17.319	0.3873
116	McCracken	Limited Access	I-24	US 68 interchange	5.235	17.319	0.3023
117	McCracken	Limited Access	I-24	KY 994 overpass	6.707	17.319	0.3873
118	McCracken	Local Road	KY 1288	US 45	3.294	760.039	0.0043
119	McCracken	Local Road	KY 1954	KY 348	3.04	760.039	0.0040
120	McCracken	Local Road	Highland Church Rd	US 62	1.632	760.039	0.0021
121	Perry	Arterial	Hal Rogers Pkwy	Morton Blvd.	6.474	41.192	0.1572
122	Perry	Arterial	KY 15	KY 451	5.007	41.192	0.1216
123	Perry	Arterial	KY 15	KY 80	9.211	41.192	0.2236
124	Perry	Arterial	KY 80	Justice Dr	6.74	41.192	0.1636
125	Perry	Local Road	KY 451	KY 28	0.823	738.756	0.0011
126	Perry	Local Road	KY 1096	Polly Hollow	5.42	738.756	0.0073
127	Perry	Local Road	KY 451	Main St	1.904	738.756	0.0026
128	Perry	Local Road	KY 1146	KY 476	10.527	738.756	0.0142
129	Pike	Arterial	KY 1426	KY 1460	0.738	118.625	0.0062
130	Pike	Arterial	KY 194	KY 632	13.683	118.625	0.1153
131	Pike	Arterial	US 119	US 23	2.672	118.625	0.0225
132	Pike	Arterial	US 119	KY 308	2.021	118.625	0.0170
133	Pike	Arterial	US 23	Julius Avenue	1.956	118.625	0.0165
134	Pike	Arterial	US 23	Island Creek Rd	1.956	118.625	0.0165
135	Pike	Local Road	KY 611	US 23	0.226	1226.433	0.0002
136	Pike	Local Road	KY 122	US 460	15.942	1226.433	0.0130
137	Pike	Local Road	KY 2016	US 23	3.247	1226.433	0.0026
138	Pike	Local Road	KY 610	KY 805	7.969	1226.433	0.0065
139	Warren	Arterial	KY 234	KY 880	2.347	82.267	0.0285
140	Warren	Arterial	KY 446	Corvette Dr	0.97	82.267	0.0118
141	Warren	Arterial	US 231	KY 880	1.413	82.267	0.0172
142	Warren	Arterial	US 31W	KY 1402	1.249	82.267	0.0152
143	Warren	Limited Access	I-65	KY 240 overpass	5.689	36.621	0.1553
144	Warren	Limited Access	I-65	US 231 interchange	1.43	36.621	0.0390

Appendix A- Table 1. Data Collection Sites (continued)

Site	County	Road Type	Road Surveyed	Reference	Section Length (mi)	Total Length (mi)	Probability of Selection
145	Warren	Limited Access	I-65	Bristow Road overpass	7.565	36.621	0.2066
146	Warren	Limited Access	I-65	KY 101 interchange	5.312	36.621	0.1451
147	Warren	Limited Access	Natcher Pkwy	US 231 interchange	5.003	36.621	0.1366
148	Warren	Local Road	KY 1297	KY 101	9.264	1318.503	0.0070
149	Warren	Local Road	KY 622	US 231	3.229	1318.503	0.0024
150	Warren	Local Road	KY 101	US 31W	0.568	1318.503	0.0004

Appendix A- Table 2. Alternate Data Collection Sites

Site	Road Class	County	Road Surveyed	Reference
151	Arterial	Bourbon	US 627 (Winchester Rd)	KY 57
152	Local Road	Bourbon	KY 57	US 627 (Winchester Rd)
153	Arterial	Bullitt	KY 61	KY 1526
154	Limited Access	Bullitt	I-65	KY 44 interchange
155	Local Road	Bullitt	KY 1531	KY 1319
156	Arterial	Clay	US 421	KY 638
157	Local Road	Clay	KY 472	Bray Creek Rd
158	Arterial	Fayette	Tates Creek Rd	Lansdowne Dr
159	Limited Access	Fayette	I-64	KY 1678 overpass
160	Local Road	Fayette	Alexandria Dr	US 421
161	Arterial	Greenup	US 23	Ferry St
162	Local Road	Greenup	KY 503 (Naples Rd)	KY 207 (Argillite Rd)
163	Arterial	Harrison	US 27 (Falmouth Rd)	KY 1032 (Berry-Kelat Rd)
164	Local Road	Harrison	KY 19	US 62
165	Arterial	Hart	US 31W	Union St
166	Limited Access	Hart	I-65	Rest Area
167	Local Road	Hart	KY 88	US 31W
168	Arterial	Henderson	US 41	Marywood Dr
169	Limited Access	Henderson	Breathitt Parkway	KY 2099 overpass
170	Local Road	Henderson	KY 812	KY 1078
171	Arterial	Jefferson	KY 146	Whipps Mill Rd
172	Limited Access	Jefferson	I-71	Zorn Ave interchange
173	Local Road	Jefferson	W Kentucky St	S 7th Street
174	Arterial	Kenton	KY 16	U Grand Ave
175	Limited Access	Kenton	I-275	US 25 interchange
176	Local Road	Kenton	Autumn Rd	Old Turkey Foot Rd
177	Arterial	Lincoln	US 27	Shopping Center Ent. (Stanford)
178	Local Road	Lincoln	KY 1770	US 150
179	Arterial	McCracken	KY 1286	US 62
180	Limited Access	McCracken	I-24	KY 787 overpass
181	Local Road	McCracken	Powers Rd	KY 131
182	Arterial	Perry	KY 15	KY 1095
183	Local Road	Perry	KY 1146	KY 80
184	Arterial	Pike	US 23	Island Creek Rd
185	Local Road	Pike	KY 468	KY 292
186	Arterial	Warren	US 68	US 231
187	Limited Access	Warren	Natcher Parkway	KY 884 overpass
188	Local Road	Warren	KY 263	KY 185

Appendix B.

Data Collection Form

SAFETY BELT DATA COLLECTION FORM

Date: _____ Starting Time: _____ Ending Time: _____ Int #: _____

Location: _____ Sheet #: _____

Observer: _____ Comment: _____

DRIVER USAGE

Vehicle	Safety Belt	None	Unknown
PC			
PU			
VAN			
SUV			

FRONT-SEAT OCCUPANT USAGE (OVER 3 YEARS OF AGE)

Vehicle	Safety Belt	None	Unknown
PC			
PU			
VAN			
SUV			

USAGE OF MOTORCYCLE HELMET

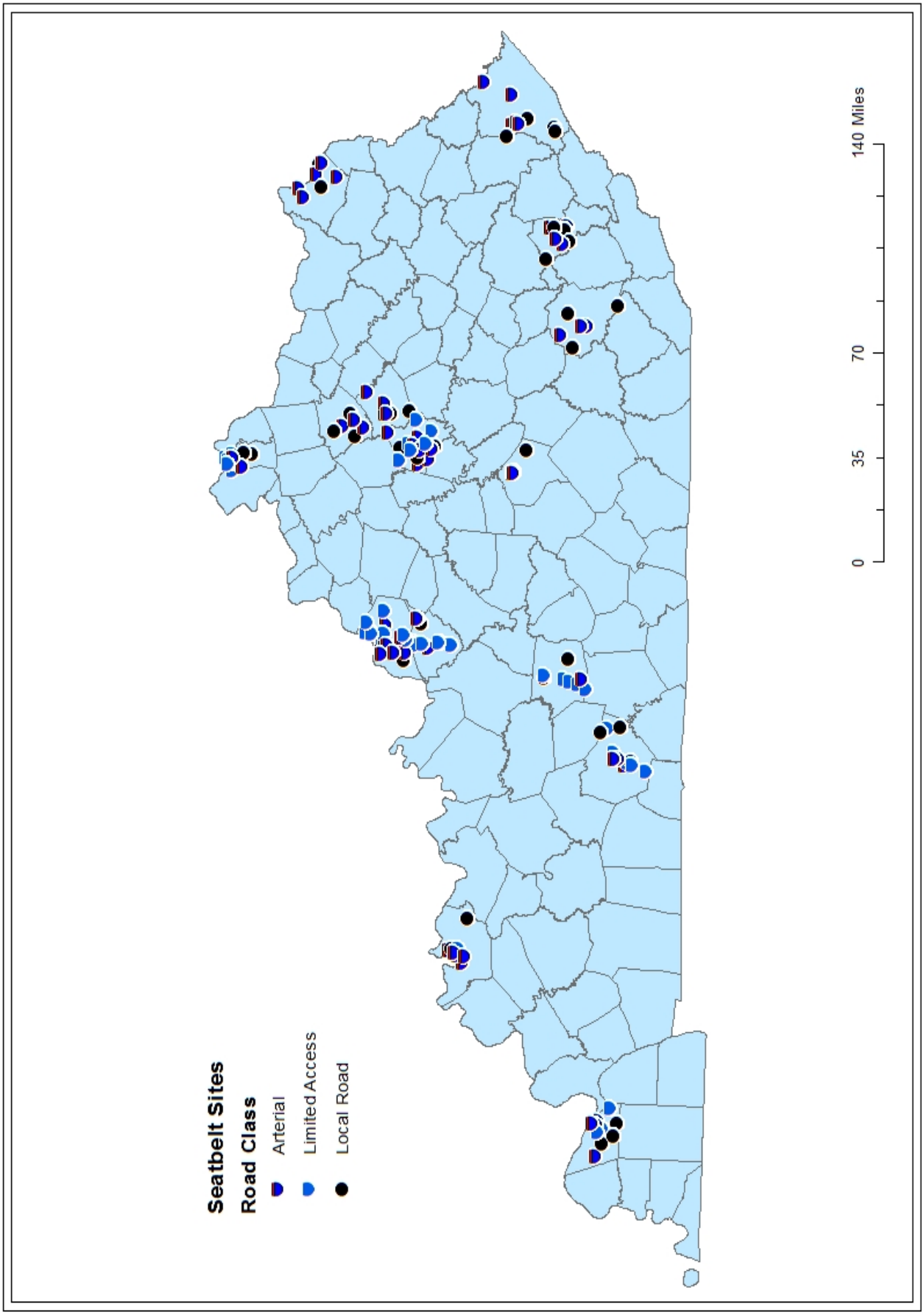
YES	NO

USAGE OF BICYCLE HELMET

YES	NO

Appendix C.

Data Collection Site Map


Seatbelt Sites
Road Class
Arterial
Limited Access
Local Road
0
35
70
140 Miles

Appendix D.

Summary of Data (by Site)

APPENDIX D. SUMMARY OF DATA

	ALL FRONT SEAT OCCUPANTS					CATEGORY			
						DRIVERS		FRONT SEAT PASSENGERS	
Location Number	Sample	Percent Usage	Relative Error*	Confidence Interval*	Percent Unknown	Sample	Percent Usage	Sample	Percent Usage
1	401	87.5	3.7	3.2	4.3	337	88.1	64	84.4
2	245	84.1	5.4	4.6	3.5	194	86.1	51	76.5
3	134	75.4	9.7	7.3	6.9	107	77.6	27	66.7
4	307	78.5	5.9	4.6	0.0	246	78.9	61	77.0
5	102	78.4	10.2	8.0	0.0	89	78.7	13	76.9
6	71	80.3	11.5	9.3	0.0	53	81.1	18	77.8
7	747	86.1	2.9	2.5	0.0	617	86.4	130	84.6
8	727	81.6	3.5	2.8	0.0	597	81.9	130	80.0
9	651	86.8	3.0	2.6	0.0	538	87.2	113	85.0
10	1266	90.0	1.8	1.6	0.0	899	89.5	367	91.3
11	1083	91.3	1.8	1.7	0.0	777	92.1	306	89.2
12	1219	92.0	1.7	1.5	0.0	896	92.2	323	91.3
13	1171	91.0	1.8	1.6	0.0	850	90.7	321	91.9
14	1411	89.1	1.8	1.6	0.0	1046	88.4	365	91.0
15	177	89.8	5.0	4.5	0.0	155	89.0	22	95.5
16	135	82.2	7.8	6.4	0.0	107	82.2	28	82.1
17	168	81.0	7.3	5.9	4.0	127	81.1	41	80.5
18	529	71.8	5.3	3.8	5.9	410	72.4	119	69.7
19	416	66.1	6.9	4.5	7.8	311	66.9	105	63.8
20	159	59.7	12.8	7.6	8.1	120	59.2	39	61.5
21	41	78.0	16.2	12.7	0.0	32	75.0	9	88.9
22	118	66.1	12.9	8.5	0.0	91	65.9	27	66.7
23	727	93.9	1.8	1.7	0.0	598	95.5	129	86.8
24	697	94.0	1.9	1.8	0.0	524	93.3	173	96.0
25	968	94.7	1.5	1.4	0.0	795	94.3	173	96.5
26	1183	87.8	2.1	1.9	0.0	899	88.0	284	87.3
27	498	90.6	2.8	2.6	0.0	401	91.8	97	85.6
28	1024	92.1	1.8	1.7	0.0	879	93.3	145	84.8
29	974	92.3	1.8	1.7	0.0	764	93.5	210	88.1
30	868	92.3	1.9	1.8	0.0	619	93.9	249	88.4
31	969	91.7	1.9	1.7	0.0	696	93.0	273	88.6
32	1133	93.6	1.5	1.4	0.0	775	94.7	358	91.1
33	1252	93.9	1.4	1.3	0.0	874	94.3	378	93.1
34	1112	90.3	1.9	1.7	0.0	854	91.3	258	86.8
35	798	88.1	2.6	2.2	0.0	616	90.7	182	79.1
36	483	83.9	3.9	3.3	0.0	389	85.9	94	75.5
37	255	87.1	4.7	4.1	2.3	211	86.7	44	88.6
38	368	89.9	3.4	3.1	0.0	301	88.7	67	95.5
39	203	85.2	5.7	4.9	0.0	160	83.1	43	93.0

APPENDIX D. SUMMARY OF DATA

	ALL FRONT SEAT OCCUPANTS					CATEGORY			
						DRIVERS		FRONT SEAT PASSENGERS	
Location Number	Sample	Percent Usage	Relative Error*	Confidence Interval*	Percent Unknown	Sample	Percent Usage	Sample	Percent Usage
40	112	84.8	7.8	6.6	0.0	90	84.4	22	86.4
41	359	81.9	4.9	4.0	0.0	280	82.5	79	79.7
42	338	81.7	5.1	4.1	0.0	299	81.9	39	79.5
43	361	86.7	4.0	3.5	0.3	292	86.0	69	89.9
44	273	79.1	6.1	4.8	0.0	216	79.2	57	78.9
45	50	74.0	16.4	12.2	0.0	34	73.5	16	75.0
46	292	82.9	5.2	4.3	0.0	223	83.0	69	82.6
47	193	85.0	5.9	5.0	3.5	143	86.0	50	82.0
48	318	84.0	4.8	4.0	0.0	258	85.7	60	76.7
49	186	82.3	6.7	5.5	3.6	151	83.4	35	77.1
50	85	80.0	10.6	8.5	2.3	68	79.4	17	82.4
51	44	70.5	19.1	13.5	0.0	33	75.8	11	54.5
52	101	81.2	9.4	7.6	1.0	78	83.3	23	73.9
53	361	80.1	5.1	4.1	4.5	267	78.7	94	84.0
54	571	92.8	2.3	2.1	5.9	411	92.7	160	93.1
55	812	90.4	2.2	2.0	0.4	565	91.0	247	89.1
56	904	94.8	1.5	1.4	4.4	573	94.8	331	94.9
57	757	93.1	1.9	1.8	2.9	507	92.9	250	93.6
58	747	88.8	2.6	2.3	0.8	556	89.6	191	86.4
59	130	73.1	10.4	7.6	0.0	95	74.7	35	68.6
60	68	72.1	14.8	10.7	4.2	48	72.9	20	70.0
61	403	87.1	3.8	3.3	0.5	342	87.4	61	85.2
62	231	86.1	5.2	4.5	0.0	218	86.7	13	76.9
63	219	88.6	4.8	4.2	0.0	186	88.2	33	90.9
64	867	89.3	2.3	2.1	0.0	703	88.8	164	91.5
65	289	86.5	4.6	3.9	0.0	242	86.0	47	89.4
66	557	85.3	3.4	2.9	0.5	463	86.4	94	79.8
67	730	88.8	2.6	2.3	0.0	596	89.1	134	87.3
68	663	91.3	2.4	2.2	0.0	510	92.9	153	85.6
69	167	80.8	7.4	6.0	0.0	141	81.6	26	76.9
70	30	80.0	17.9	14.3	3.2	23	78.3	7	85.7
71	484	84.1	3.9	3.3	0.0	400	84.3	84	83.3
72	695	88.1	2.7	2.4	0.0	579	89.6	116	80.2
73	565	86.9	3.2	2.8	0.0	483	87.2	82	85.4
74	577	92.4	2.3	2.2	3.7	508	92.7	69	89.9
75	816	85.4	2.8	2.4	0.0	624	85.3	192	85.9
76	660	89.5	2.6	2.3	0.0	555	91.7	105	78.1
77	635	89.9	2.6	2.3	0.2	501	89.6	134	91.0

APPENDIX D. SUMMARY OF DATA

	ALL FRONT SEAT OCCUPANTS					CATEGORY			
						DRIVERS		FRONT SEAT PASSENGERS	
Location Number	Sample	Percent Usage	Relative Error*	Confidence Interval*	Percent Unknown	Sample	Percent Usage	Sample	Percent Usage
78	471	90.9	2.9	2.6	0.0	353	89.8	118	94.1
79	729	91.1	2.3	2.1	0.0	571	90.7	158	92.4
80	1034	90.2	2.0	1.8	0.0	856	89.8	178	92.1
81	1100	91.5	1.8	1.7	0.0	865	91.9	235	89.8
82	1020	94.2	1.5	1.4	0.0	834	94.7	186	91.9
83	1308	93.7	1.4	1.3	0.0	1207	93.7	101	93.1
84	1114	93.4	1.6	1.5	0.0	949	94.6	165	86.1
85	1067	90.6	1.9	1.7	0.0	793	92.3	274	85.8
86	1749	91.0	1.5	1.3	0.0	1336	92.2	413	86.9
87	1467	91.5	1.6	1.4	0.0	1080	92.8	387	88.1
88	1065	93.2	1.6	1.5	0.0	819	93.2	246	93.5
89	1189	92.0	1.7	1.5	0.0	945	93.7	244	85.7
90	476	91.8	2.7	2.5	0.0	420	91.7	56	92.9
91	371	83.6	4.5	3.8	0.0	296	83.1	75	85.3
92	168	83.3	6.8	5.6	0.0	130	84.6	38	78.9
93	643	91.3	2.4	2.2	2.9	545	91.7	98	88.8
94	494	88.5	3.2	2.8	0.2	412	88.6	82	87.8
95	620	86.0	3.2	2.7	0.0	520	84.4	100	94.0
96	1340	89.5	1.8	1.6	0.0	1099	89.3	241	90.5
97	1276	89.7	1.9	1.7	0.0	1086	91.0	190	82.1
98	869	90.0	2.2	2.0	0.0	673	88.9	196	93.9
99	1334	88.7	1.9	1.7	0.0	1071	89.1	263	87.1
100	668	89.7	2.6	2.3	0.0	588	89.6	80	90.0
101	437	89.0	3.3	2.9	0.0	377	88.9	60	90.0
102	490	91.6	2.7	2.5	0.0	414	92.0	76	89.5
103	271	83.4	5.3	4.4	0.7	221	85.1	50	76.0
104	138	92.0	4.9	4.5	0.0	111	91.0	27	96.3
105	451	85.6	3.8	3.2	0.0	361	86.7	90	81.1
106	324	82.7	5.0	4.1	7.7	287	84.0	37	73.0
107	364	77.7	5.5	4.3	0.0	281	78.6	83	74.7
108	767	84.4	3.0	2.6	0.0	567	84.7	200	83.5
109	59	69.5	16.9	11.7	6.3	50	68.0	9	77.8
110	48	64.6	20.9	13.5	0.0	31	67.7	17	58.8
111	242	90.1	4.2	3.8	0.0	194	89.2	48	93.8
112	259	90.0	4.1	3.7	2.3	203	91.1	56	85.7
113	253	87.7	4.6	4.0	2.3	211	88.6	42	83.3
114	484	88.2	3.3	2.9	0.0	377	89.7	107	83.2
115	715	91.7	2.2	2.0	0.0	486	91.8	229	91.7
116	537	91.1	2.6	2.4	0.0	390	91.8	147	89.1

APPENDIX D. SUMMARY OF DATA

	ALL FRONT SEAT OCCUPANTS					CATEGORY			
						DRIVERS		FRONT SEAT PASSENGERS	
Location Number	Sample	Percent Usage	Relative Error*	Confidence Interval*	Percent Unknown	Sample	Percent Usage	Sample	Percent Usage
117	961	89.6	2.2	1.9	0.0	637	90.6	324	87.7
118	117	82.9	8.2	6.8	0.8	100	81.0	17	94.1
119	98	85.7	8.1	6.9	3.9	76	86.8	22	81.8
120	272	91.9	3.5	3.2	2.5	208	92.3	64	90.6
121	514	78.8	4.5	3.5	0.0	387	79.1	127	78.0
122	341	75.7	6.0	4.6	0.0	259	74.9	82	78.0
123	543	79.4	4.3	3.4	0.0	396	79.5	147	78.9
124	648	83.6	3.4	2.8	0.0	483	82.4	165	87.3
125	55	60.0	21.6	12.9	0.0	41	56.1	14	71.4
126	77	66.2	15.9	10.6	8.3	60	66.7	17	64.7
127	287	73.5	6.9	5.1	4.7	231	73.2	56	75.0
128	160	71.9	9.7	7.0	4.8	116	70.7	44	75.0
129	314	77.4	6.0	4.6	0.0	236	77.5	78	76.9
130	148	67.6	11.2	7.5	0.0	114	65.8	34	73.5
131	268	81.0	5.8	4.7	6.3	201	81.1	67	80.6
132	459	80.2	4.5	3.6	0.0	344	79.1	115	83.5
133	250	78.4	6.5	5.1	5.3	197	79.2	53	75.5
134	602	78.9	4.1	3.3	0.0	482	79.7	120	75.8
135	48	70.8	18.1	12.9	7.7	40	70.0	8	75.0
136	119	73.1	10.9	8.0	6.3	96	72.9	23	73.9
137	111	73.9	11.1	8.2	0.0	98	74.5	13	69.2
138	60	66.7	17.9	11.9	4.8	47	66.0	13	69.2
139	697	88.8	2.6	2.3	0.0	578	88.9	119	88.2
140	571	89.0	2.9	2.6	0.0	448	88.6	123	90.2
141	988	90.7	2.0	1.8	0.0	828	90.1	160	93.8
142	586	83.4	3.6	3.0	0.0	484	83.7	102	82.4
143	1789	98.5	0.6	0.6	0.0	505	98.4	1284	98.6
144	819	94.4	1.7	1.6	0.0	589	94.6	230	93.9
145	1048	94.8	1.4	1.3	0.0	680	95.1	368	94.0
146	816	91.8	2.1	1.9	0.9	606	90.9	210	94.3
147	133	85.7	6.9	5.9	0.0	100	85.0	33	87.9
148	52	71.2	17.3	12.3	0.0	38	73.7	14	64.3
149	405	84.7	4.1	3.5	0.0	315	84.8	90	84.4
150	273	83.5	5.3	4.4	0.0	200	81.0	73	90.4

Appendix E.

Summary of Data (with sample weights)

APPENDIX E. Summary of Data (with sample weights)

Site ID	Site Type	Date Observed	Site Sample Weight	Number of Drivers	Number of front seat Passengers	Number of Occupants belted	Number of Occupants unbelted	Number of Occupants with unknown belt use
1	Original	6/19/2017	0.02	337	64	351	50	8
2	Original	6/19/2017	0.02	194	51	206	39	4
3	Original	6/19/2017	0.02	107	27	101	33	0
4	Original	6/16/2017	0.02	246	61	241	66	3
5	Original	6/5/2017	0.02	89	13	80	22	0
6	Original	7/24/2017	0.02	53	18	57	14	0
7	Original	6/29/2017	0.10	617	130	643	104	6
8	Original	7/24/2017	0.10	597	130	593	134	28
9	Original	7/19/2017	0.10	538	113	565	86	13
10	Original	6/15/2017	0.13	899	367	1140	126	10
11	Original	6/29/2017	0.13	777	306	989	94	7
12	Original	6/29/2017	0.13	896	323	1121	98	16
13	Alternate	7/19/2017	0.13	850	321	1066	105	14
14	Original	6/15/2017	0.13	1046	365	1257	154	5
15	Original	7/19/2017	0.13	155	22	159	18	4
16	Original	7/19/2017	0.13	107	28	111	24	1
17	Original	7/13/2017	0.02	127	41	136	32	4
18	Original	7/13/2017	0.02	410	119	380	149	14
19	Original	7/13/2017	0.02	311	105	275	141	5
20	Original	7/26/2017	0.02	120	39	95	64	3
21	Original	7/5/2017	0.02	32	9	32	9	1
22	Original	7/13/2017	0.02	91	27	78	40	0
23	Original	6/7/2017	1.58	598	129	683	44	9
24	Original	6/14/2017	1.58	524	173	655	42	4
25	Original	6/7/2017	1.58	795	173	917	51	2
26	Original	6/14/2017	1.58	899	284	1039	144	11
27	Original	7/24/2017	1.58	401	97	451	47	16
28	Original	6/15/2017	1.58	879	145	943	81	2
29	Original	6/7/2017	1.58	764	210	899	75	1
30	Original	6/7/2017	1.49	619	249	801	67	5
31	Original	6/15/2017	1.49	696	273	889	80	0
32	Original	6/15/2017	1.49	775	358	1060	73	8
33	Original	6/15/2017	1.49	874	378	1176	76	27
34	Original	6/7/2017	1.49	854	258	1004	108	2
35	Original	6/15/2017	1.49	616	182	703	95	2
36	Original	6/14/2017	1.66	389	94	405	78	11
37	Original	7/3/2017	1.66	211	44	222	33	7

APPENDIX E. Summary of Data (with sample weights)

Site ID	Site Type	Date Observed	Site Sample Weight	Number of Drivers	Number of front seat Passengers	Number of Occupants belted	Number of Occupants unbelted	Number of Occupants with unknown belt use
38	Original	6/15/2017	1.66	301	67	331	37	0
39	Original	7/20/2017	0.03	160	43	173	30	0
40	Original	6/21/2017	0.03	90	22	95	17	0
41	Original	7/20/2017	0.03	280	79	294	65	0
42	Original	6/21/2017	0.03	299	39	276	62	0
43	Original	7/20/2017	0.03	292	69	313	48	1
44	Original	7/20/2017	0.03	216	57	216	57	0
45	Original	6/7/2017	0.03	34	16	37	13	0
46	Original	7/25/2017	0.03	223	69	242	50	0
47	Original	7/18/2017	0.01	143	50	164	29	7
48	Original	7/24/2017	0.01	258	60	267	51	0
49	Original	7/18/2017	0.01	151	35	153	33	7
50	Original	6/19/2017	0.01	68	17	68	17	2
51	Original	6/19/2017	0.01	33	11	31	13	0
52	Original	6/19/2017	0.01	78	23	82	19	1
53	Original	6/27/2017	0.01	267	94	289	72	17
54	Original	6/27/2017	0.04	411	160	530	41	36
55	Original	6/6/2017	0.04	565	247	734	78	3
56	Original	7/21/2017	0.04	573	331	857	47	42
57	Original	6/27/2017	0.04	507	250	705	52	23
58	Original	6/6/2017	0.04	556	191	663	84	6
59	Original	6/9/2017	0.05	95	35	95	35	0
60	Original	6/6/2017	0.05	48	20	49	19	3
61	Original	6/27/2017	0.04	342	61	351	52	2
62	Original	6/27/2017	0.04	218	13	199	32	0
63	Original	6/6/2017	0.04	186	33	194	25	0
64	Original	6/27/2017	0.04	703	164	774	93	0
65	Original	6/27/2017	0.04	242	47	250	39	0
66	Original	6/6/2017	0.04	463	94	475	82	3
67	Alternate	6/6/2017	0.04	596	134	648	82	0
68	Original	6/27/2017	0.03	510	153	605	58	0
69	Original	6/27/2017	0.05	141	26	135	32	0
70	Original	6/27/2017	0.05	23	7	24	6	1
71	Original	7/6/2017	4.31	400	84	407	77	0
72	Original	7/17/2017	4.31	579	116	612	83	0
73	Original	7/6/2017	4.31	483	82	491	74	0
74	Original	7/25/2017	4.31	508	69	533	44	22

APPENDIX E. Summary of Data (with sample weights)

Site ID	Site Type	Date Observed	Site Sample Weight	Number of Drivers	Number of front seat Passengers	Number of Occupants belted	Number of Occupants unbelted	Number of Occupants with unknown belt use
75	Original	7/24/2017	4.31	624	192	697	119	0
76	Original	7/6/2017	4.31	555	105	591	69	0
77	Original	6/26/2017	4.31	501	134	571	64	1
78	Original	6/26/2017	4.31	353	118	428	43	0
79	Original	6/26/2017	4.31	571	158	664	65	0
80	Original	7/17/2017	4.53	856	178	933	101	0
81	Original	7/17/2017	4.53	865	235	1006	94	0
82	Original	7/6/2017	4.53	834	186	961	59	0
83	Original	7/6/2017	4.53	1207	101	1225	83	0
84	Original	7/6/2017	4.53	949	165	1040	74	0
85	Original	6/8/2017	4.53	793	274	967	100	0
86	Original	6/26/2017	4.53	1336	413	1591	158	0
87	Original	6/26/2017	4.53	1080	387	1343	124	0
88	Original	6/8/2017	4.53	819	246	993	72	0
89	Original	7/11/2017	4.53	945	244	1094	95	0
90	Original	6/8/2017	4.53	420	56	437	39	0
91	Original	7/11/2017	3.26	296	75	310	61	0
92	Original	7/11/2017	3.26	130	38	140	28	0
93	Original	6/22/2017	0.20	545	98	587	56	19
94	Original	6/29/2017	0.20	412	82	437	57	1
95	Original	6/28/2017	0.20	520	100	533	87	0
96	Original	6/12/2017	0.20	1099	241	1199	141	0
97	Original	7/21/2017	0.20	1086	190	1144	132	0
98	Original	6/29/2017	0.20	673	196	782	87	0
99	Original	6/12/2017	0.20	1071	263	1183	151	0
100	Original	6/28/2017	0.20	588	80	599	69	0
101	Original	6/28/2017	0.20	377	60	389	48	0
102	Original	6/28/2017	0.20	414	76	449	41	0
103	Original	7/21/2017	0.23	221	50	226	45	2
104	Original	6/29/2017	0.23	111	27	127	11	0
105	Original	6/29/2017	0.02	361	90	386	65	0
106	Original	6/6/2017	0.02	287	37	268	56	27
107	Original	6/12/2017	0.02	281	83	283	81	0
108	Original	6/29/2017	0.02	567	200	647	120	0
109	Original	6/6/2017	0.03	50	9	41	18	4
110	Original	6/29/2017	0.03	31	17	31	17	0
111	Original	7/3/2017	0.09	194	48	218	24	0

APPENDIX E. Summary of Data (with sample weights)

Site ID	Site Type	Date Observed	Site Sample Weight	Number of Drivers	Number of front seat Passengers	Number of Occupants belted	Number of Occupants unbelted	Number of Occupants with unknown belt use
112	Original	7/19/2017	0.09	203	56	233	26	6
113	Original	6/22/2017	0.09	211	42	222	31	6
114	Original	6/22/2017	0.09	377	107	427	57	0
115	Original	6/22/2017	0.08	486	229	656	59	0
116	Original	6/22/2017	0.08	390	147	489	48	0
117	Original	7/3/2017	0.08	637	324	861	100	0
118	Original	7/3/2017	0.08	100	17	97	20	1
119	Original	7/19/2017	0.08	76	22	84	14	4
120	Original	7/17/2017	0.08	208	64	250	22	7
121	Original	7/5/2017	0.02	387	127	405	109	0
122	Original	7/5/2017	0.02	259	82	258	83	0
123	Original	7/5/2017	0.02	396	147	431	112	0
124	Original	7/5/2017	0.02	483	165	542	106	0
125	Original	7/5/2017	0.02	41	14	33	22	0
126	Original	7/17/2017	0.02	60	17	51	26	7
127	Original	7/17/2017	0.02	231	56	211	76	14
128	Original	7/17/2017	0.02	116	44	115	45	8
129	Original	7/6/2017	0.08	236	78	243	71	0
130	Original	7/13/2017	0.08	114	34	100	48	0
131	Original	7/28/2017	0.08	201	67	217	51	18
132	Original	7/6/2017	0.08	344	115	368	91	0
133	Original	7/28/2017	0.08	197	53	196	54	14
134	Original	7/6/2017	0.08	482	120	475	127	0
135	Original	7/18/2017	0.08	40	8	34	14	4
136	Original	7/28/2017	0.08	96	23	87	32	8
137	Original	7/13/2017	0.08	98	13	82	29	0
138	Original	7/18/2017	0.08	47	13	40	20	3
139	Original	6/28/2017	0.18	578	119	619	78	0
140	Original	6/28/2017	0.18	448	123	508	63	0
141	Original	6/28/2017	0.18	828	160	896	92	0
142	Original	6/20/2017	0.18	484	102	489	97	0
143	Original	6/28/2017	0.17	505	1284	1763	26	0
144	Original	6/28/2017	0.17	589	230	773	46	0
145	Original	7/10/2017	0.17	680	368	993	55	0
146	Original	7/27/2017	0.17	606	210	749	67	7
147	Original	7/27/2017	0.17	100	33	114	19	0
148	Original	6/20/2017	0.18	38	14	37	15	0

APPENDIX E. Summary of Data (with sample weights)

Site ID	Site Type	Date Observed	Site Sample Weight	Number of Drivers	Number of front seat Passengers	Number of Occupants belted	Number of Occupants unbelted	Number of Occupants with unknown belt use
149	Original	6/28/2017	0.18	315	90	343	62	0
150	Original	7/10/2017	0.18	200	73	228	45	0
			Totals	63444	19036	73124	9356	469

Appendix F.

Mini-Survey Data

APPENDIX F. Mini-Survey Data

Site	County	VMT%	Intersection Description	Town	2011	2012	2013	2014	2015	2016	2017
5	Barren	3.46	I-65 at Exit 53	Cave City	89	91	91	89	91	90	88
11	Meade	6.00	US 31W at KY 1638	Muldraugh	82	85	88	88	89	88	88
27	Grayson	6.95	KY 259 at US 62	Leitchfield	81	81	84	85	85	79	85
37	Logan	3.07	US 68 at US 79	Russellville	81	79	84	83	82	86	83
44	Hopkins	2.13	Pennyrile Parkway at Exit 44	Madisonville	87	87	87	91	91	95	91
54	Henderson	3.52	Us 41A at 5th St.	Henderson	83	84	85	85	88	80	88
63	Calloway	3.35	KY 1637 at 16th	Murray	79	82	82	85	88	88	85
76	Shelby	8.31	I-64 at Exit 28	Simpsonville	86	89	88	93	95	94	93
80	Woodford	1.92	US 60 at US 62	Versailles	89	84	94	93	89	93	88
88	Oldham	4.01	KY 146 at KY 329B	La Grange	89	89	88	90	92	92	94
98	Franklin	1.41	KY 2820 at US 127	Frankfort	75	80	87	87	79	73	84
110	Kenton	17.65	I-75 at Exit 186	Crescent Springs	88	88	91	92	92	93	93
121	Jefferson	8.71	US 31W at KY 841	Louisville	79	78	85	87	87	84	88
144	Boone	7.65	US 42 at US 25	Walton	84	87	86	87	88	91	88
154	Boyd	2.48	I-64 at Exit 185	Ashland	85	86	84	90	91	85	88
166	Lincoln	6.56	US 27 at US 150	Stanford	77	80	86	86	82	87	82
174	Carter	5.94	US 60 at KY 7	Grayson	72	78	80	81	81	80	83
180	Floyd	3.13	KY 680 at KY 122	Drift	60	60	70	71	68	63	66
188	Rowan	0.41	I-64 at Exit 137	Morehead	84	86	84	89	89	83	92
194	Laurel	1.89	US 25E at US 25	Corbin	79	79	79	81	85	82	83
200	Pulaski	1.45	KY 80 at KY 2296	Somerset	76	84	79	81	85	88	84
					82.2	83.4	85.8	87.4	87.6	87.2	87.5