



KENTUCKY TRANSPORTATION CENTER

**2007 SAFETY BELT USAGE SURVEY
IN KENTUCKY**



UNIVERSITY OF KENTUCKY
College of Engineering



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In all that we do.

**Research Report
KTC-07-24/KSP1-06-2F**

**2007 SAFETY BELT USAGE SURVEY
IN KENTUCKY**

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in cooperation with
Kentucky State Police
Commonwealth of Kentucky

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EXECUTIVE SUMMARY

The objective of this study was to establish 2007 safety belt and child safety seat usage rates in Kentucky. The 2007 survey continues to document the results after enactment of the original “secondary enforcement” statewide mandatory safety belt law in 1994 and the change to “primary enforcement” which was enacted in 2006. Data were collected at 200 randomly selected sites spread across Kentucky. Data from the individual sites were combined into a statewide percentage considering roadway functional classification, geographic region, and vehicle miles traveled.

The data show that the usage rate in 2007 (71.8 percent) increased several percentage points compared to 2006 (67.2 percent). Considering data taken after the original statewide law, this compares to 66.6 in 2005, 66.0 in 2004, 65.5 percent in 2003, 62.0 percent in 2002, 61.9 percent in 2001, 60 percent in 2000, 59 percent in 1999, 54 percent in 1998, 1997 and 1995, 55 percent in 1996, and 58 percent in 1994. The current usage is substantially above the 1993 level, prior to enactment of the original statewide law, of 42 percent.

The 2007 statewide usage rate for children under the age of four was determined to be 98.5 percent. This is the highest rate found for this age category.

The statewide law was changed in 2006 to allow primary enforcement. An educational period extended through December 2006 with warning citations given. Enforcement with fines started in January 2007. Enactment of the primary enforcement law, without education and enforcement, did not result in a substantial increase in usage. The significant increase in usage started when enforcement, with accompanying publicity and education, started in 2007.

1.0 INTRODUCTION AND BACKGROUND

The use of safety belts and child safety seats has been shown to be an effective means to reduce the injuries of motor-vehicle occupants involved in a traffic crash. There have been various methods used in an attempt to increase safety belt and safety seat usage. Past efforts have included public information campaigns, both local and statewide legislation, and enforcement of the legislation. Examples of statewide enforcement and education campaigns are the "Click It or Ticket" and "Buckle Up Kentucky: It's the Law & It's Enforced" campaigns conducted around Memorial Day in recent years. The most recent legislation in Kentucky in this area was changing the statewide legislation requiring the use of safety belts for all vehicle occupants from secondary to primary enforcement. A statewide law including secondary enforcement was passed in 1994 with the primary enforcement law passed in 2006. This law had an effective date of July 2006. However, the 2006 law included an educational period with warning citations through December 2006 with citations with fines starting in January 2007.

The first legislation in this area was a law enacted by the 1982 Kentucky General Assembly, requiring use of a "child restraint system" for children 40 inches or less in height. The 1988 Kentucky General Assembly strengthened this law by adding a fine. Next, prior to the statewide law, local safety belt usage laws were enacted in several jurisdictions in Kentucky. The first such local law, with an effective date of July 1990, was enacted by the Lexington-Fayette Urban County Government. Prior to the statewide law, the combined population of the counties and cities having a local ordinance represented approximately one-third of the statewide population. The original statewide law in 1994 replaced the various local ordinances.

Statewide observational surveys were first conducted in Kentucky in 1982 and have been conducted annually to document safety belt and safety seat usage. The safety belt usage rate for drivers increased each survey year from only 4 percent in 1982 to 58 percent in 1994 after enactment of the statewide law. The first decrease was in 1995 when usage decreased to 54 percent with the rate remaining fairly constant at 54 to 55 percent for 1996 through 1998. The rate then increased to 59 percent in 1999, 60 percent in 2000, 62 percent in 2001 and 2002, 65.5 percent in 2003, 66.0 percent in 2004, 66.7 percent in 2005, and 67.2 percent in 2006.

Statewide usage of child safety seats or safety belts for children under 4 years of age increased from about 15 percent in 1982, before enactment of the mandatory child restraint law, to 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 such as 72 percent in 1994, 82 percent in 1997, and 96 percent in 2004. However, while usage rates are very high, studies have found problems with the proper use of child safety seats.

The objective of the survey summarized in this report was to establish statewide safety belt and child safety seat usage rates in Kentucky for 2007. These rates can be compared to those determined from previous surveys.

The 2007 statewide survey also documented the change in usage associated with the change in the law to allow primary enforcement (enforcement with a penalty started in January 2007). The statewide survey data can also be compared to data taken before and during education and enforcement activities occurring around Memorial Day. Mini-surveys found the usage rate increased from a baseline of 73.0 percent in April 2007 to 76.2 percent during the enforcement portion of the “Buckle Up Kentucky: It’s the Law & It’s Enforced” campaign. Data collected for the statewide survey summarized in this report were taken in the weeks immediately after completion of the campaign’s enforcement and publicity activities.

2.0 PROCEDURE

2.1 DATA COLLECTION PROCEDURE

The original data collection procedure used in the surveys, which started in 1982, was first modified for the 1990 survey. The site selection procedure used for the first several surveys was changed to obtain a more representative statewide sample, as well as to use a procedure that would be comparable to surveys taken in other states. The data collection form was changed along with the site selection procedure. The procedure and data collection form remained the same for the 1990 through 1998 surveys. A modification starting with the 1999 survey was that the age and sex of the driver and front seat occupants were not classified. The type of vehicle was coded instead of the age and sex information.

The data collection form first used in the 1999 survey is shown in Figure 1. This form was used for the 2007 survey. Safety belt usage is recorded for drivers as well as front-seat passengers sitting in the outboard position. These occupant positions are equipped with the combination lap belt/shoulder harness type of safety belt which enables observations to be performed more easily than positions equipped only with a lap belt. The exception is for children under four years of age with data collected for both the front and rear seats.

The type of vehicle is coded for drivers and front seat passengers. Four categories of vehicles are used. These are: passenger car (PC), pickup (PU), van, and sports utility vehicle (SUV).

For drivers and front-seat passengers (over three years of age), usage is classified as either using a harness or belt or not using a restraint. For children one to three years of age, the categories include safety seat, booster seat, harness or belt, or no restraint. For children under one year of age, the categories are either safety seat or no restraint.

Two additional types of information are obtained. Starting with the 1993 survey, the use of motorcycle helmets was noted. The 1997 survey was the first in which the use of bicycle helmets was noted.

Each data collector is provided with a training period prior to beginning data collection. As part of the training, the data collectors review the guidelines and previous reports and collect trial sets of field data. The observers then collect data simultaneously at a sample of different types of locations. The data were then reviewed by the project manager before formal data collection was started.

The quality control of the data was the responsibility of the project manager. This included a review of completed data collection forms as the survey progressed to check for any problem areas or questionable data.

The following list of guidelines for data collection was given to each observer.

1. Include the driver so the number of vehicles included in the sample will be known.
2. Data are typically collected at intersections with each observer collecting data on only one approach at the intersection.
3. Include all vehicles on the approach at low-volume locations. When taking data on a multi-lane road, generally include only vehicles in the curb or near lane unless the traffic volume and roadway geometrics allow data to be collected in the next lane.
4. If traffic volume is too high to obtain data for all vehicles, record data for the next vehicle in view after recording the previous data.
5. Obtain a random sample of vehicles independent of whether the occupants are wearing a safety belt. Do not attempt to include all vehicles having an occupant wearing a safety belt at a location where all vehicles cannot be obtained.
6. Attempt to include data for children under four years of age for any vehicle in the sample in which such a child is a passenger.
7. Only include vehicles either stopped or moving slowly or from an observation point such that the occupants can be readily observed.
8. Excluding children under four years of age, collect data only for drivers and for passengers in the right-front seat (exclude the center front and rear seating positions).
9. Do not include old vehicles not equipped with a safety belt (typically those vehicles without a head rest).
10. Collect data during daylight hours on weekdays and weekends.

11. Collect two “observer hours” of data at each site. This could be two hours for one approach or one hour for two approaches if the route has two approaches at the intersection.
12. Begin and end data collection at a specified time not considering whether the occupants of the first vehicle are using a safety belt.
13. Collect data for specified types of passenger motor vehicles (cars, pickup trucks, vans, and sport utility vehicles). Data are not collected for combination trucks.
14. Collect data for both in-state and out-of-state vehicles.
15. If a problem such as weather or road construction prevents data from being collected on the assigned day and time for a specific location, a new day and time will be randomly selected by the project manager for data collection.
16. The time period in which data are collected at specific sites are randomly assigned to the data collectors by the project manager. Data are typically collected during weekdays with occasional data collected on a weekend.

Data collection was started after June 3 which was the end of the education and enforcement activities associated with the Memorial Day holiday, and continued through the first week of August. As noted, data were collected for two hours at each location. This consisted of either two hours for one observer or one hour using two observers on different approaches for the specified route. The decision was made to collect data for an equal time period for each location rather than attempt to collect a given sample size.

2.2 DATA COLLECTION LOCATIONS

Data for the surveys collected from 1982 through 1989 were conducted at 23 sites in 19 cities. The cities were selected so that they were distributed across the state. These cities were also selected to represent a range of population categories to account for social and economic factors. In order to be able to relate the survey results to data taken in other states and to include all types of roadways, it was necessary to expand the number of sites to include data in rural locations and for interstates. An initial change was made in 1990 and resulted in 100 sites. The distribution of the sites was based on vehicle miles traveled statewide for various categories of roads in counties with varying populations. The variables considered in the 1990 stratification process were the rural or urban designation of the road, the functional classification of the road, vehicle miles traveled, and the county population. However, a new sampling design plan was implemented in 1999 as part of a nationwide effort by the National Highway Traffic Safety Administration (NHTSA) to use a common methodology in all states to select observational sites.

As part of the sampling design plan started in 1999, the decision was made to collect data at 200 sites. It was also decided that data would typically be obtained at intersections. For interstates and parkways, data were generally taken at the intersection of a ramp with a cross road. The basis for collecting data at intersections was that it would increase accuracy since data would be collected for vehicles either stopped or moving slowly.

A computer file was used to select the locations. The file is the Highway Performance Monitoring System (HPMS). Characteristics of road segments for all state maintained roads are contained in this file. In order to assure that the sampling design used an acceptable methodology, the various decisions made in the process were made with consultation with NHTSA with the roadway segments containing the data collection sites selected by NHTSA.

Kentucky has 120 counties ranging in population from slightly over 2,000 to almost 700,000. The NHTSA guidelines allow exclusion from the survey coverage of the least populated units (counties in Kentucky) which represent 15 percent of the state's population. This exclusion reduced the number of counties in the sample from 120 to 65. All the road segments contained in the HPMS file in the counties representing 85 percent of the population were eligible for inclusion in the survey.

Road segments were stratified into three geographical regions based on highway district. There are 12 highway districts in Kentucky. Roadways in each of the three regions were divided into seven roadway functional classification groups. This resulted in 21 stratum from which the sample was selected. The geographical regions were:

- Region 1: Highway Districts 1 through 4 (represents the western portion of the state),
- Region 2: Highway Districts 5 through 7 (covers the north central area of the state which includes the major population centers of Louisville, Lexington, and northern Kentucky), and
- Region 3: Highway Districts 8 through 12 (includes the eastern and south central portion of the state)

There are 44 counties in Region 1, 31 in Region 2, and 45 in Region 3. The state's population is divided into 29 percent in Region 1, 46 percent in Region 2, and 25 percent in Region 3. For reporting purposes, Region 1 is referred to as the West, Region 2 as the North, and Region 3 as the East. The locations of these regions are shown in Figure 2.

The following seven functional classification categories were used:

1. rural interstate,
2. rural principal arterial,
3. rural minor arterial/major collector,
4. rural minor collector/local,
5. urban interstate/freeway,
6. urban principal arterial, and
7. urban minor arterial/collector/local.

Selections were made from roadway segments which contained either an interchange, an intersection with a stop sign, an intersection with a traffic signal, or a combination of these features. A segment could contain more than one intersection or interchange. If a segment had more than one intersection with a stop sign or signal or interchange, one intersection was randomly selected. For example, if a segment had three intersections with signals, a separate number of one, two, or three was randomly selected. The random number assigned the intersection to be selected for data collection (along the route as it was driven in its cardinal direction).

An equal probability selection (simple random sample) of the road segments was made within each of the 21 strata using the HPMS file as the source of the necessary road segment information. Following is the number of segments selected in each strata.

	<u>Region 1</u>	<u>Region 2</u>	<u>Region 3</u>	<u>All</u>
Rural Interstate	8	12	6	26
Rural Principal Arterial	12	6	12	30
Rural Minor Arterial/ Major Collector	12	10	12	34
Rural Minor Collector/Local	8	6	8	22
Urban Interstate/Freeway	6	20	2	28
Urban Principal Arterial	10	14	6	30
Urban Minor Arterial/ Collector/Local	10	14	6	30
All	66	82	52	200

For each selected road segment, information was printed from the HPMS file to be used to select a specific location for data collection. This information included the county, route, beginning and ending milepoint, the number of intersections or interchanges within the segment, and a counter showing which intersection or interchange to select if there was more than one within the segment.

A list of the 120 counties in Kentucky along with their population, the number of sites in each county, and their region in the state is given in Appendix A. A road segment was selected in 58 counties. The largest number of segments was 20 in Jefferson County. A list of the intersections or interchanges where data was collected within each of these segments is given in Table 1. For each site, the county, route, and intersecting route (or exit number for an interstate or parkway) are given. The nearest town to the data collection site is also listed along with the geographical region and functional classification. For interstates, data were typically collected at the intersection of the ramps and the intersecting road at interchanges. The exception was for some rural interchanges where there were very few exiting vehicles with data collected on the mainline at these locations.

The observation sites were randomly ordered to assist in the sequence of sites at which data were collected. When the data were collected, some of the sites were grouped based on geographical region to aid the efficiency of the data collection process.

2.3 SURVEY DATA ANALYSIS

As part of the summary of information from the HPMS file for each randomly selected roadway segment, the functional classification, region, and vehicle miles traveled for that segment were listed. The total vehicle miles for the road segments in each of the 21 stratum were also summarized and were used in the estimation process.

The survey data were input into an EXCEL spreadsheet to summarize the data and obtain the results. The results for each survey site were reviewed to determine if there were any possible problems with either the data collection or input. The computer results were checked manually if a potential problem was observed. A second set of data was collected if the data at a specific site was substantially inconsistent with other data.

Safety belt usage rates were determined for the driver and for all front-seat occupants. Rates were also obtained by vehicle type for both the driver and all front-seat occupants. For children under four years of age, usage rates were obtained for both front- and rear-seating positions, as well as for combined seating positions. Statewide rates were obtained, using an EXCEL spreadsheet analysis, by weighting the usage determined for each location by the vehicle miles traveled in the road segment.

Various usage rates were determined for each location. The rates were for drivers, front seat passengers, all front-seat occupants, and all children under four years of age (front and rear). The rate for each of the 21 stratum (based on region and functional classification categories) were determined by weighting the usage rate for each location by the proportion of the vehicle miles traveled at that location of the vehicle miles at all observational sites in the stratum.

A statewide rate was then determined using the usage rate determined for each stratum and the total vehicle miles traveled in that stratum (statewide for the counties representing 85 percent of the population). The statewide rate was the sum of the products of the usage rate for each stratum and the proportion of the vehicle miles traveled in that stratum of the total statewide vehicle miles.

A consultant was initially used to review the procedures necessary to conduct the various statistical tests. The variance, bound on the error of estimation (which is half of the 95 percent confidence interval), and relative error were calculated for the statewide usage rate for all front seat passengers. These data were also determined for each of the 21 strata, the three regions, and the seven functional classes. The software initially used in this analysis was Statistical Analysis Software (SAS) for Windows, version 8. An EXCEL spreadsheet analysis is currently used to obtain the necessary statistical tests. The relative error and confidence interval was also determined at each location for the usage rate found for all front seat occupants.

3.0 SURVEY RESULTS

Usage rates for all front seat occupants (drivers and passengers) for the various types of highways and regions of the state are summarized in Table 2. The overall statewide rate in 2007, using the data collected at 200 sites and the described weighting procedure, was 71.8 percent. The 95 percent confidence interval was 0.3 percent. The sample size of all front seat occupants was 115,524. The usage rate by region varied from 76.2 percent in Region 2 (north) to 62.8 percent in Region 3 (east) with 71.0 percent in Region 1 (west).

The highest rate by the functional classification of the highway was 80.5 percent for rural interstates with the lowest 62.6 percent for rural minor collector/local roads. The relative error and confidence interval for the usage rates found for all front seat occupants (by region and highway functional classification) are given in Appendix B.

Usage rates for drivers for the various types of highways and regions of the state are summarized in Table 3. The overall statewide rate for drivers in 2007 was 71.9 percent. Drivers accounted for 76 percent of front seat occupants so they dominated the percentage determined for all front seat occupants. Usage rates for front seat passengers was 71.2 percent (Table 4).

Usage rates for children under four years of age are given in Table 5. These rates are for children in both the front and the rear seats. The usage rate for children under one year of age (99.8 percent) was higher than that for children one to three years of age (98.1 percent). The usage rate for the combination of these categories, or children under four years of age, was 98.5 percent.

The sample size for children under four years of age was 1,038. This age category corresponds to the children for which the mandatory child restraint law would apply. The 2007 usage rate of 98.5 percent is the highest percentage found and compares to the previous high of

96.0 percent in 2004. This percentage was about 15 percent in 1982 before enactment of the child restraint law, increased to approximately 30 percent after enactment of the law having no penalty, and increased again to almost 50 percent in 1988 after the addition of a monetary penalty to the child restraint law.

The usage rate for children under four years of age was higher in the rear seat compared to the front seat. For children one to three years of age, the usage rate was 98 percent for the rear seat compared to 76 percent for the front seat. For children under one year old, the usage rate was 100 percent for the rear seat compared to 98 percent for the front seat. The large majority of children were sitting in the rear seat for both age groups (about 92 percent for one to three years of age and 94 percent for under one). The overall percentage of children in the rear seat of 93 percent in 2007 compares to 86 percent in 2006, 90 in 2004 and 2005, and 88 percent in 2003.

A summary of the data collected is given in Appendix C. For each of the 200 data sites, the usage rate and sample size are given for all front seat occupants, drivers, front-seat passengers, and children under four years of age (both front and rear seat). The relative error and confidence interval are given for the “all front seat occupant” category. Usage rates for front seat occupants ranged from 43 percent (a rural location in Harlan County) to 90 percent (an urban interstate location in Fayette County). There were only five sites which had a usage rate of under 50 percent with all at a rural location and three in the rural minor collector/local category. Four of the five locations were in the east region. There were 42 sites which had a usage rate of 80 percent or more with all except four being an interstate or parkway. The highest rate found on a non-interstate or parkway was 82 percent on an urban principal arterial road (US 68 at Ft. Harrod Drive in Fayette County).

While the data collection procedure changed in 1990 and 1999, the usage rate may still be compared to the statewide rates from past years (Table 6). The previous studies showed that statewide driver usage rates steadily increased from 4 percent in 1982 to 42 percent in 1993. However, the amount of the yearly increase had decreased over this time period. Only a three percentage point increase occurred in the two-year period from 1991 to 1993. The 58 percent usage in the 1994 survey showed that a dramatic increase occurred between the 1993 and 1994 data collection periods. This increase was directly related to the enactment of a statewide safety belt law. The 1995 survey showed that driver usage (54 percent) remained substantially higher than before enactment of the law, but there was a slight decrease in usage from the 1994 rate immediately after enactment of the law. This level continued through 1998, before an increase to 59 percent in 1999. The increase in usage continued with 60 percent in 2000, 61.9 percent in 2001, 62.0 in 2002, 65.5 percent in 2003, 66.0 in 2004, 66.7 percent in 2005, and 67.2 percent in 2006. The substantial increase in 2007 to 71.8 percent would be related to the change in July 2006 to a primary safety law (with enforcement with fines started in January 2007).

A substantial difference in usage rate (for all front seat occupants) was noted when vehicle type is considered (Table 7). The rate varied substantially from 78.1 for vans and 76.3 percent for sport utility vehicles to 60.1 percent for pickup trucks. The rate for passenger cars was 74.6 percent. It can be seen that use of safety belts is much lower in pickup trucks than any other

vehicle type, and pickup trucks made up about 24 percent of the sample. The largest portion of the sample was for passenger cars with 46 percent followed by 19 percent for sport utility vehicles and 11 percent for vans.

Helmet use by motorcyclists was also observed. Kentucky had a statewide law requiring the use of a helmet by a motorcyclist until it was repealed starting July 15, 1998. The results of surveys taken during the mandatory usage period had found a usage rate of over 95 percent. Data were taken in 1998 both before and after the effective date of the repeal. Prior to July 15, 1998 only 10 of the 240 observed motorcyclists were not wearing a helmet (giving a usage rate of 96 percent). After this date, 29 of 148 motorcyclists were observed not wearing a helmet giving a usage rate of 76 percent.

In 1999, only 164 of 452 motorcyclists were observed not wearing a helmet with a weighted usage rate of 65 percent. The weighted rate for 2000 was 70 percent with a sample size of 427. The weighted rate decreased to 56 percent in 2001 with a sample size of 395, 57 percent in 2002 with a sample size of 596, 56 percent in 2003 with a sample size of 512, 58 percent in 2004 with a sample size of 631, 59 percent in 2005 with a sample size of 918, and 60 percent in 2006 with a sample size of 949. Usage was very similar in 2007 with a usage rate of 56 percent with a sample size of 897. The usage rate was slightly higher in the west region of the state with 58 percent compared to 55 percent in the east and north regions.

Bicycle helmet use was observed for only 62 bicyclists in 2007 with 18 wearing a helmet (29 percent). This rate compared to 43 percent in 2006, 14 percent in 2005, 8 percent in 2004, 19 percent in 2003, 9 percent in 2002, 18 percent in 2001, 24 percent in 2000, and 12 percent in 2001. The very small sample size does not allow any conclusion about trends but does support the opinion that the usage rate has been very low.

4.0 SUMMARY

Observations were taken at 200 sites across Kentucky to obtain safety belt usage rates. The 2007 survey resulted in a sample size of 115,524 front seat occupants (including 88,248 drivers). The data collection procedure and site selection criteria were based on national criteria.

A “secondary enforcement” statewide safety belt law was passed in Kentucky in 1994 with a law allowing “primary enforcement” enacted in 2006. The 2006 law allowed fines starting in January 2007 with an education period from July through December 2006. The law applies to all vehicle occupants. Prior to the original 2004 statewide law, there were local ordinances passed in several cities and counties which covered approximately one-third of the statewide population. The data collected in 1994, after the effective date of the statewide law, showed that enactment of the statewide law had a dramatic effect on usage rates. The usage rate for front seat occupants increased from 42 percent in 1993 to 58 percent in 1994. It then decreased slightly to between 54 and 55 percent in 1995 through 1998. The usage rate of 58.6 percent in 1999 showed that the rate had increased to a level similar to that found immediately after enactment of the

statewide law. There was a small increase in usage to 59.8 percent in 2000 with a larger increase rate in 2001 to 61.9 percent. The rate stayed at 62.0 percent in 2002 before increasing to 65.5 percent in 2003, 66.0 in 2004, 66.7 percent in 2005, 67.2 percent in 2006, and 71.8 percent in 2007. The trend in usage rates from 1982 through 2007 is given in Table 6.

The usage rate was highest in the region of the state which included the largest population centers (Louisville, Lexington, and northern Kentucky). Usage was highest on interstates and lowest on local roads. When type of vehicle was considered, usage was highest for vans and sport utility vehicles and lowest for pickup trucks.

The statewide usage rate for children under the age of four (including both the front and rear seat) was determined to be 98.5 percent in 2007. This compares to 94.0 percent in 2006, 94.4 percent in 2005, 96.0 percent in 2004, 94.8 percent in 2003, 92.9 percent in 2002, 89 percent in 2001, and 87 percent in 2000. One reason for the very high usage for small children is that primary, rather than secondary, enforcement has applied for many years.

The motorcycle helmet law was repealed in 1998. There had been a very high compliance with the requirement to wear a helmet (over 95 percent), but the helmet usage percentage has decreased to 56 percent in 2007. This shows the large decrease in usage related to the repeal of the mandatory usage law. The percentage of a small sample of bicyclists observed wearing a safety helmet was low.

5.0 RECOMMENDATIONS

The data show that the level of safety belt usage in 2007 is the highest since the start of the surveys in 1982. The large increase in 2007 compared to 2006 (67.2 to 71.8 percent), can be related to enactment of the primary safety belt law (with fines issued starting in January 2007) and related education and enforcement activities.

The statewide usage rate of 71.8 percent (with 74.0 percent at the mini-survey portion of the statewide sample) decreased from 76.2 percent at the mini-survey locations during the “Buckle Up Kentucky: It’s the Law & It’s Enforced” enforcement campaign around Memorial Day. The data show that knowledge of an increased possibility of receiving a ticket is required for a certain segment of the driving population to increase their use of safety belts. The first step in obtaining a meaningful increase in safety belt use was achieved by changing the law from secondary to primary enforcement. The primary enforcement law must continue to be enforced with the associated fine (along with the necessary publicity) to provide an awareness to the public that the law is being enforced.

The survey data can be used to identify areas most in need of enforcement and education. Specifically, usage was lowest in the east region of the state. Also, usage was substantially lower for occupants of pickup trucks compared to other vehicle types.

The low usage rate for motorcycle helmets continues to show the results of the repeal of the mandatory helmet law. This corresponds to an increase in the number of injuries in motorcycle crashes. Consideration should be given to enactment of a motorcycle helmet law.

Figure 1. Data Collection Form

SAFETY BELT DATA COLLECTION FORM

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

Location: _____ Sheet #: _____

Observer: _____ Comment: _____

DRIVER USAGE

Vehicle	Harness or Belt	None
PC		
PU		
VAN		
SUV		

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

Vehicle	Harness or Belt	None
PC		
PU		
VAN		
SUV		

USAGE FOR CHILDREN (1-3 YEARS OF AGE)

Position	Safety Seat	Booster Seat	Harness or Belt	None
FRONT				
REAR				

USAGE FOR INFANTS (UNDER 1 YEAR OF AGE)

Position	Safety Seat	None
FRONT		
REAR		

USAGE OF MOTORCYCLE HELMET

YES	No

USAGE OF BICYCLE HELMET

YES	No

4/1998

Figure 2. Data Collection Location Regions

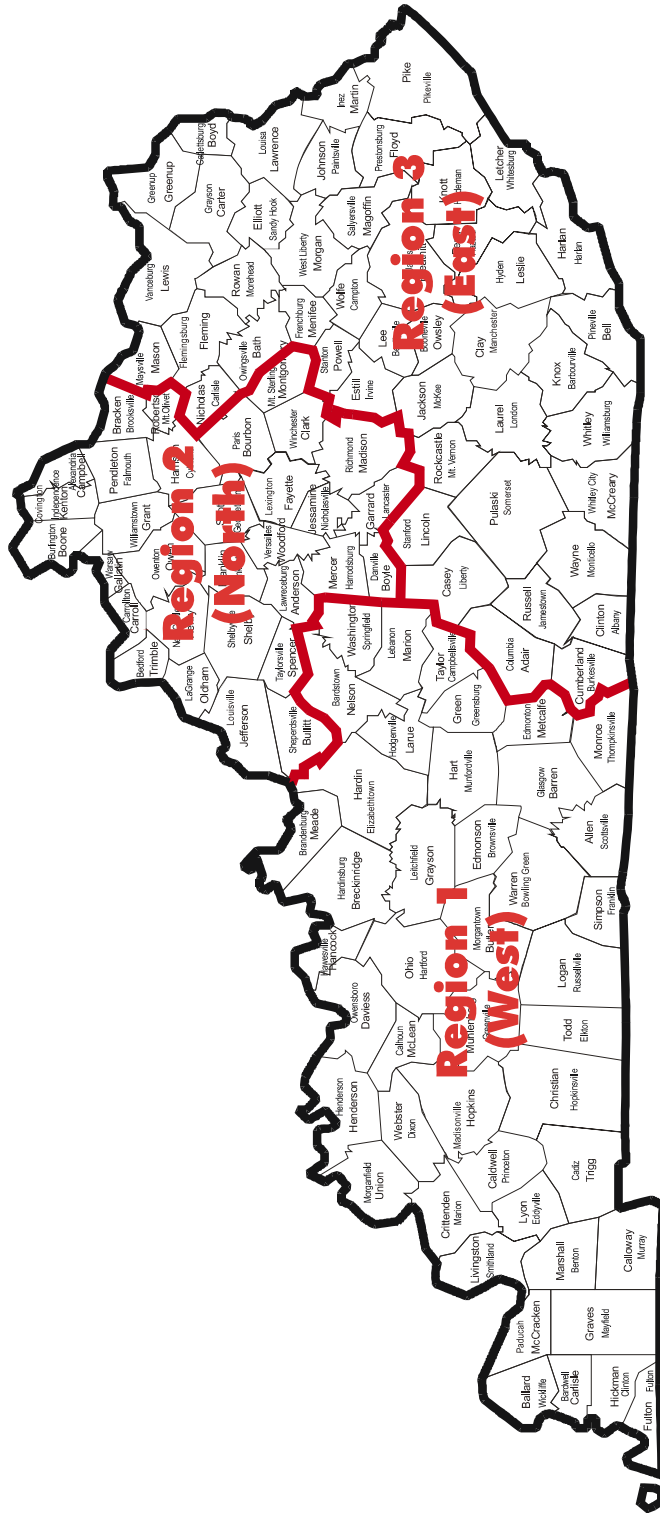


Table 1. SURVEY LOCATIONS

<u>Site Number</u>	<u>Region</u>	<u>Functional Classification</u>	<u>County</u>	<u>Intersection Description</u>	<u>Nearest Town</u>
1	West	Rural Interstate	Simpson	I-65 at Exit 6	Franklin
2	West	Rural Interstate	Christian	I-24 at Exit 73	Newstead
3	West	Rural Interstate	Barren	I-65 at Exit 48	Cave City
4	West	Rural Interstate	Hardin	I-65 at Exit 81	Sonora
5	West	Rural Interstate	Barren	I-65 at Exit 53	Cave City
6	West	Rural Interstate	Hardin	I-65 at Exit 102	Lebanon Junction
7	West	Rural Interstate	Marshall	I-24 at Exit 27	Lake City
8	West	Rural Interstate	Simpson	I-65 at Exit 2	Franklin
9	West	Rural Principal Arterial	Hardin	Bluegrass Parkway at I-65	Elizabethtown
10	West	Rural Principal Arterial	Marion	US 68 at KY 208	Lebanon
11	West	Rural Principal Arterial	Meade	US 31W at KY 1638	Muldraugh
12	West	Rural Principal Arterial	Warren	US 231 at KY 622	Bowling Green
13	West	Rural Principal Arterial	Hopkins	Western Kentucky Parkway at Exit 24	Dawson Springs
14	West	Rural Principal Arterial	Hopkins	Pennyrile Parkway at Exit 33	Nortonville
15	West	Rural Principal Arterial	Grayson	Western Kentucky Parkway at Exit 107	Leitchfield
16	West	Rural Principal Arterial	Marshall	Purchase Parkway at Exit 47	Draffenville
17	West	Rural Principal Arterial	Marshall	US 641 at KY 58	Benton
18	West	Rural Principal Arterial	Marshall	US 68 at US 641	Draffenville
19	West	Rural Principal Arterial	Graves	US 45 at KY 1276	Mayfield
20	West	Rural Principal Arterial	Marshall	US 641 at US 68	Draffenville
21	West	Rural Minor Arterial/Major Collector	Barren	US 31W at KY 70	Cave City
22	West	Rural Minor Arterial/Major Collector	Marion	KY 426 at US 68/KY 55	Lebanon
23	West	Rural Minor Arterial/Major Collector	Barren	US 31W at KY 90	Cave City
24	West	Rural Minor Arterial/Major Collector	McCracken	KY 286 at US 62	Bardwell
25	West	Rural Minor Arterial/Major Collector	McCracken	KY 305 at KY 358	Paducah
26	West	Rural Minor Arterial/Major Collector	Muhlenburg	KY 189 at US 62	Greenville
27	West	Rural Minor Arterial/Major Collector	Grayson	KY 259 at US 62	Leitchfield
28	West	Rural Minor Arterial/Major Collector	Muhlenburg	US 431 at KY 189	Central City
29	West	Rural Minor Arterial/Major Collector	Grayson	KY 259 at W. Lake	Leitchfield
30	West	Rural Minor Arterial/Major Collector	Breckinridge	KY 79 at KY 259	Harned
31	West	Rural Minor Arterial/Major Collector	Grayson	KY 79 at US 62	Caneyville
32	West	Rural Minor Arterial/Major Collector	Logan	US 431 at KY 663	Adairville
33	West	Rural Minor Collector/Local	Taylor	KY 3183 at KY 55	Campbellsville
34	West	Rural Minor Collector/Local	Logan	KY 1038 at KY 103	Auburn
35	West	Rural Minor Collector/Local	Henderson	KY 1299 at KY 425	Henderson
36	West	Rural Minor Collector/Local	Taylor	KY 527 at KY 3212	Campbellsville
37	West	Rural Minor Collector/Local	Logan	US 68 at US 79	Russellville
38	West	Rural Minor Collector/Local	Muhlenburg	US 62 at KY 181	Greenville
39	West	Rural Minor Collector/Local	Barren	KY 677 at KY 740	Three Springs
40	West	Rural Minor Collector/Local	Meade	KY 144 at KY 259	Rhodelia
41	West	Urban Interstate/Freeway	Hardin	Western Kentucky Parkway at US 31W	Elizabethtown
42	West	Urban Interstate/Freeway	Hardin	I-65 at Exit 94	Elizabethtown
43	West	Urban Interstate/Freeway	Christian	Pennyrile Parkway at Exit 8	Hopkinsville
44	West	Urban Interstate/Freeway	Hopkins	Pennyrile Parkway at Exit 44	Madisonville
45	West	Urban Interstate/Freeway	Daviess	US 60B at US 431	Owensboro
46	West	Urban Interstate/Freeway	Daviess	William Natcher Parkway at Exit 70	Owensboro
47	West	Urban Principal Arterial	McCracken	US 60 at I-24	Paducah
48	West	Urban Principal Arterial	Daviess	US 431 at 2nd Street	Owensboro
49	West	Urban Principal Arterial	Nelson	US 31E at KY 1430	Bardstown
50	West	Urban Principal Arterial	Barren	US 31E at US 68	Glasgow

Table 1. SURVEY LOCATIONS (continued)

<u>Site Number</u>	<u>Region</u>	<u>Functional Classification</u>	<u>County</u>	<u>Intersection Description</u>	<u>Nearest Town</u>
51	West	Urban Principal Arterial	McCracken	US 60/62 at Bridge Street	Paducah
52	West	Urban Principal Arterial	Warren	US 68/80 at KY 880	Bowling Green
53	West	Urban Principal Arterial	Warren	US 68/80 at Main Avenue	BowlingGreen
54	West	Urban Principal Arterial	Henderson	US 41A at 5th St.	Henderson
55	West	Urban Principal Arterial	Barren	US 31E at KY 90	Glasgow
56	West	Urban Principal Arterial	Hardin	US 31W at KY 1600	Elizabethtown
57	West	Urban Minor Arterial/Collector/Local	Hardin	KY 3005 at KY 1357	Elizabethtown
58	West	Urban Minor Arterial/Collector/Local	Barren	KY 63 at US 31EX	Glasgow
59	West	Urban Minor Arterial/Collector/Local	McCracken	KY 787 at US 62	Paducah
60	West	Urban Minor Arterial/Collector/Local	McCracken	KY 994 at Schneidman Road	Paducah
61	West	Urban Minor Arterial/Collector/Local	Logan	KY 3233 at US 79 & US 431 Truck Rte.	Russellville
62	West	Urban Minor Arterial/Collector/Local	Henderson	KY 136 at KY 285	Henderson
63	West	Urban Minor Arterial/Collector/Local	Calloway	KY 1327 at 16 th Street	Murray
64	West	Urban Minor Arterial/Collector/Local	McCracken	US 45X (Broadway) at N.13th Street	Paducah
65	West	Urban Minor Arterial/Collector/Local	McCracken	US 45 at Clay Avenue (6 th Street)	Paducah
66	West	Urban Minor Arterial/Collector/Local	McCracken	KY 994 at US 60/62	Paducah
67	North	Rural Interstate	Clark	I-64 at Rest Area	Winchester
68	North	Rural Interstate	Boone	I-75 at Exit 175	Richwood
69	North	Rural Interstate	Oldham	I-71 at Exit 22	LaGrange
70	North	Rural Interstate	Montgomery	I-64 at Exit 110	Mt. Sterling
71	North	Rural Interstate	Boone	I-75 at Exit 171	Walton
72	North	Rural Interstate	Boone	I-275 at Exit 11	Covington
73	North	Rural Interstate	Shelby	I-64 at Exit 43	Waddy
74	North	Rural Interstate	Franklin	I-64 at Exit 53	Frankfort
75	North	Rural Interstate	Bullitt	I-65 at Exit 117	Shepardsville
76	North	Rural Interstate	Shelby	I-64 at Exit 28	Simpsonville
77	North	Rural Interstate	Scott	I-64 at Exit 69	Georgetown
78	North	Rural Interstate	Oldham	I-71 at Exit 14	Brownsboro
79	North	Rural Principal Arterial	Boyle	US 150 at US 127 Bypass	Danville
80	North	Rural Principal Arterial	Woodford	US 60 at US 62	Versailles
81	North	Rural Principal Arterial	Scott	US 460 at US 62	Georgetown
82	North	Rural Principal Arterial	Woodford	Bluegrass Parkway at Exit 68	Versailles
83	North	Rural Principal Arterial	Jessamine	US 27 at US 27X	Nicholasville
84	North	Rural Principal Arterial	Bullitt	US 31E at KY 44	Mt. Washington
85	North	Rural Minor Arterial/Major Collector	Mercer	KY 33 at US 68	Pleasant Hill
86	North	Rural Minor Arterial/Major Collector	Oldham	KY 22 at KY 53	Ballardsville
87	North	Rural Minor Arterial/Major Collector	Boone	KY 14 at KY 16	Verona
88	North	Rural Minor Arterial/Major Collector	Oldham	KY 146 at KY 1817	Buckner
89	North	Rural Minor Arterial/Major Collector	Clark	KY 418 at KY 3371	Winchester
90	North	Rural Minor Arterial/Major Collector	Kenton	KY 536 at KY 177	Visalia
91	North	Rural Minor Arterial/Major Collector	Shelby	KY 44 at KY 53	Shelbyville
92	North	Rural Minor Arterial/Major Collector	Grant	KY 467 at KY 22	Dry Ridge
93	North	Rural Minor Arterial/Major Collector	Scott	KY 32 at US 25	Georgetown
94	North	Rural Minor Arterial/Major Collector	Jefferson	US 60 at Beckley Station Road	Louisville
95	North	Rural Minor Collector/Local	Montgomery	KY 646 at KY 11	Camargo
96	North	Rural Minor Collector/Local	Montgomery	KY 1991 at KY 537	Mt. Sterling
97	North	Rural Minor Collector/Local	Boyle	KY 1273 at US 150	Danville
98	North	Rural Minor Collector/Local	Franklin	KY 2820 at US 127	Frankfort
99	North	Rural Minor Collector/Local	Campbell	KY 735 at KY 9	Mentor
100	North	Rural Minor Collector/Local	Jessamine	KY 3433 at KY 29	Wilmore

Table 1. SURVEY LOCATIONS (continued)

<u>Site Number</u>	<u>Region</u>	<u>Functional Classification</u>	<u>County</u>	<u>Intersection Description</u>	<u>Nearest Town</u>
101	North	Urban Interstate/Freeway	Jefferson	I-264 at Exit 4	Louisville
102	North	Urban Interstate/Freeway	Jefferson	I-264 at Exit 16	Louisville
103	North	Urban Interstate/Freeway	Jefferson	I-64 at Exit 5B	Louisville
104	North	Urban Interstate/Freeway	Fayette	I-64 at Exit 87	Lexington
105	North	Urban Interstate/Freeway	Jefferson	I-265 at Exit 12	Louisville
106	North	Urban Interstate/Freeway	Campbell	I-275 at Exit 77	Wilder
107	North	Urban Interstate/Freeway	Fayette	I-75 at Exit 104	Lexington
108	North	Urban Interstate/Freeway	Jefferson	I-265 at Exit 27	Louisville
109	North	Urban Interstate/Freeway	Boone	I-75 at Exit 180	Erlanger
110	North	Urban Interstate/Freeway	Kenton	I-75 at Exit 186	Crescent Springs
111	North	Urban Interstate/Freeway	Jefferson	I-64 at Exit 17	Louisville
112	North	Urban Interstate/Freeway	Clark	I-64 at Exit 96	Winchester
113	North	Urban Interstate/Freeway	Fayette	I-75 at Exit 108	Lexington
114	North	Urban Interstate/Freeway	Campbell	I-471 at Exit 2	Ft. Thomas
115	North	Urban Interstate/Freeway	Jefferson	I-264 at Exit 22	Louisville
116	North	Urban Interstate/Freeway	Kenton	I-275 at Exit 83	Erlanger
117	North	Urban Interstate/Freeway	Jefferson	I-65 at Exit 127	Louisville
118	North	Urban Interstate/Freeway	Kenton	I-75 at Exit 184	Erlanger
119	North	Urban Interstate/Freeway	Boone	I-275 at Exit 7	Hebron
120	North	Urban Interstate/Freeway	Jefferson	I-264 at Exit 5	Louisville
121	North	Urban Principal Arterial	Jefferson	US 31W at KY 841	Louisville
122	North	Urban Principal Arterial	Jefferson	US 31E at First Street	Louisville
123	North	Urban Principal Arterial	Fayette	Euclid Ave. at Upper Street (US 27)	Lexington
124	North	Urban Principal Arterial	Campbell	US 27 at KY 8 (4th Street)	Newport
125	North	Urban Principal Arterial	Scott	US 460 B at US 460	Georgetown
126	North	Urban Principal Arterial	Fayette	US 68 at Ft. Harrod Drive	Lexington
127	North	Urban Principal Arterial	Jefferson	US 150 at 18th Street	Louisville
128	North	Urban Principal Arterial	Jefferson	KY 1934 at KY 2051	Louisville
129	North	Urban Principal Arterial	Jefferson	US 31E at Tyler Lane	Louisville
130	North	Urban Principal Arterial	Jefferson	US 31W at Garrs Lane	Louisville
131	North	Urban Principal Arterial	Jefferson	US 31W at Ashby Lane	Louisville
132	North	Urban Principal Arterial	Jefferson	US 150 at Clay Avenue	Louisville
133	North	Urban Principal Arterial	Kenton	KY 16 at West 34th Street	Covington
134	North	Urban Principal Arterial	Campbell	KY 1120 at US 27	Newport
135	North	Urban Minor Arterial/Collector/Local	Woodford	US 60X at US 60	Versailles
136	North	Urban Minor Arterial/Collector/Local	Jefferson	KY 1020 at I-264	Louisville
137	North	Urban Minor Arterial/Collector/Local	Boone	KY 237 at KY 18	Burlington
138	North	Urban Minor Arterial/Collector/Local	Scott	US 62 at US 460	Georgetown
139	North	Urban Minor Arterial/Collector/Local	Bullitt	US 31EX at KY 44	Mt. Washington
140	North	Urban Minor Arterial/Collector/Local	Kenton	KY 17 at KY 16	Latonia
141	North	Urban Minor Arterial/Collector/Local	Jessamine	US 27X at Orchard Drive	Nicholasville
142	North	Urban Minor Arterial/Collector/Local	Jefferson	KY 864 at Breckinridge Street	Louisville
143	North	Urban Minor Arterial/Collector/Local	Boone	KY 3076 at Minola Pike	Florence
144	North	Urban Minor Arterial/Collector/Local	Boone	US 42 at US 25	Florence
145	North	Urban Minor Arterial/Collector/Local	Scott	KY 620 at US 25	Georgetown
146	North	Urban Minor Arterial/Collector/Local	Scott	KY 2906 at US 460	Georgetown
147	North	Urban Minor Arterial/Collector/Local	Kenton	KY 3070 at KY 16	Independence
148	North	Urban Minor Arterial/Collector/Local	Clark	US 60 at KY 89	Winchester
149	East	Rural Interstate	Whitley	I-75 at Exit 25	Williamsburg
150	East	Rural Interstate	Rockcastle	I-75 at Exit 62	Mt. Vernon

Table 1. SURVEY LOCATIONS (continued)

<u>Site Number</u>	<u>Region</u>	<u>Functional Classification</u>	<u>County</u>	<u>Intersection Description</u>	<u>Nearest Town</u>
151	East	Rural Interstate	Carter	I-64 at Exit 156	Olive Hill
152	East	Rural Interstate	Carter	I-64 at Exit 172	Grayson
153	East	Rural Interstate	Boyd	I-64 at Exit 181	Ashland
154	East	Rural Interstate	Boyd	I-64 at Exit 185	Ashland
155	East	Rural Principal Arterial	Letcher	US 119 at KY 15	Whitesburg
156	East	Rural Principal Arterial	Bell	US 25E at KY 66	Pineville
157	East	Rural Principal Arterial	Greenup	KY 8 at US 23 Truck Route	South Portsmouth
158	East	Rural Principal Arterial	Breathitt	KY 15 at KY 30	Jackson
159	East	Rural Principal Arterial	Harlan	US 421 at KY 72	Harlan
160	East	Rural Principal Arterial	Martin	KY 645 at KY 40	Inez
161	East	Rural Principal Arterial	Pike	US 460 at KY 1460	Pikeville
162	East	Rural Principal Arterial	Letcher	KY 15 at KY 15X	Whitesburg
163	East	Rural Principal Arterial	Harlan	US 119 at US 421	Harlan
164	East	Rural Principal Arterial	Knox	US 25E at KY 225/3439	Barbourville
165	East	Rural Principal Arterial	Harlan	US 119 at KY 2179	Cumberland
166	East	Rural Principal Arterial	Lincoln	US 27 at US 150	Stanford
167	East	Rural Minor Arterial/Major Collector	Greenup	KY 2 at US 23	Greenup
168	East	Rural Minor Arterial/Major Collector	Johnson	KY 172 at KY 40	Staffordsville
169	East	Rural Minor Arterial/Major Collector	Carter	KY 174 at US 60	Olive Hill
170	East	Rural Minor Arterial/Major Collector	Bell	KY 190 at US 25E	Pineville
171	East	Rural Minor Arterial/Major Collector	Letcher	KY 7 at KY 931	Isom
172	East	Rural Minor Arterial/Major Collector	Letcher	KY 317 at KY 7	Whitesburg
173	East	Rural Minor Arterial/Major Collector	Breathitt	KY 476 at KY 15	Jackson
174	East	Rural Minor Arterial/Major Collector	Carter	US 60 at KY 7	Grayson
175	East	Rural Minor Arterial/Major Collector	Lincoln	KY 618 at KY 39	Crab Orchard
176	East	Rural Minor Arterial/Major Collector	Pulaski	KY 80 at KY 837	Nancy
177	East	Rural Minor Arterial/Major Collector	Floyd	KY 1426 at KY 979	Harold
178	East	Rural Minor Arterial/Major Collector	Laurel	KY 1193 at KY 192	Baldrock
179	East	Rural Minor Collector/Local	Johnson	KY 689 at KY 172	Paintsville
180	East	Rural Minor Collector/Local	Floyd	KY 680 at KY 122	McDowell
181	East	Rural Minor Collector/Local	Whitley	KY 1481 at 204	Williamsburg
182	East	Rural Minor Collector/Local	Johnson	KY 1107 at KY 302	Van Lear
183	East	Rural Minor Collector/Local	Whitley	KY 1595 at KY 92	Siler
184	East	Rural Minor Collector/Local	Adair	KY 531 at KY 80	Columbia
185	East	Rural Minor Collector/Local	Clay	KY 638 at US 421	Manchester
186	East	Rural Minor Collector/Local	Laurel	KY 1006 at KY 192	London
187	East	Urban Interstate/Freeway	Laurel	I-75 at Exit 38	London
188	East	Urban Interstate/Freeway	Rowan	I-64 at Exit 137	Morehead
189	East	Urban Principal Arterial	Perry	KY 15 at KY 15X	Hazard
190	East	Urban Principal Arterial	Greenup	US 23 at KY 693	Flatwoods
191	East	Urban Principal Arterial	Laurel	US 25E at I-75	Corbin
192	East	Urban Principal Arterial	Boyd	US 23 at Mall Road	Ashland
193	East	Urban Principal Arterial	Boyd	US 23 at US 60	Ashland
194	East	Urban Principal Arterial	Laurel	US 25E at US 25	Corbin
195	East	Urban Minor Arterial/Collector/Local	Perry	KY 451 at KY 15X	Hazard
196	East	Urban Minor Arterial/Collector/Local	Pike	KY 1460 at KY 1426	Pikeville
197	East	Urban Minor Arterial/Collector/Local	Laurel	US 25 at KY 80	London
198	East	Urban Minor Arterial/Collector/Local	Greenup	KY 750 at KY 207	Flatwoods
199	East	Urban Minor Arterial/Collector/Local	Whitley	US 25W at KY 296	Williamsburg
200	East	Urban Minor Arterial/Collector/Local	Pulaski	KY 80 at KY 2296	Somerset

TABLE 2. USAGE RATE FOR ALL FRONT SEAT OCCUPANTS

FUNCTIONAL CLASSIFICATION	PERCENT USAGE			
	REGION			ALL
	WEST	NORTH	EAST	
Rural Interstate	80.9	80.9	78.9	80.5
Rural Principal Arterial	75.9	78.7	59.1	68.6
Rural Minor Arterial/Major Collector	64.0	71.2	59.8	64.2
Rural Minor Collector/Local	63.1	62.8	62.0	62.6
Urban Interstate/Freeway	80.6	79.8	85.6	80.0
Urban Principal Arterial	70.6	70.6	62.1	69.5
Urban Minor Arterial/Collector/Local	67.7	73.8	61.1	70.7
All	71.0	76.2	62.8	71.8

TABLE 3. USAGE RATE FOR DRIVERS

FUNCTIONAL CLASSIFICATION	PERCENT USAGE			
	REGION			ALL
	WEST	NORTH	EAST	
Rural Interstate	78.9	80.6	78.1	79.8
Rural Principal Arterial	75.4	77.7	59.2	68.4
Rural Minor Arterial/Major Collector	64.9	71.2	60.3	64.8
Rural Minor Collector/Local	63.9	62.9	61.5	62.8
Urban Interstate/Freeway	80.9	80.2	85.8	80.4
Urban Principal Arterial	69.9	71.5	62.6	69.9
Urban Minor Arterial/Collector/Local	67.8	74.2	60.8	70.9
All	70.9	76.5	62.9	71.9

TABLE 4. USAGE RATE FOR ALL FRONT SEAT PASSENGERS

FUNCTIONAL CLASSIFICATION	PERCENT USAGE			
	REGION			
	WEST	NORTH	EAST	ALL
Rural Interstate	86.5	81.2	81.0	82.5
Rural Principal Arterial	77.5	81.5	58.6	69.5
Rural Minor Arterial/Major Collector	61.0	70.5	58.7	62.4
Rural Minor Collector/Local	60.0	62.2	63.9	62.0
Urban Interstate/Freeway	79.0	78.4	84.6	78.6
Urban Principal Arterial	73.9	67.4	61.0	68.2
Urban Minor Arterial/Collector/Local	66.9	72.1	61.3	69.4
All	71.1	75.0	62.8	71.2

TABLE 5. USAGE RATE FOR CHILDREN UNDER FOUR YEARS OF AGE (FRONT AND REAR)

FUNCTIONAL CLASSIFICATION	PERCENT USAGE			
	REGION			
	WEST	NORTH	EAST	ALL
Rural Interstate	100.0	100.0	100.0	100.0
Rural Principal Arterial	99.8	100.0	93.8	97.1
Rural Minor Arterial/Major Collector	94.2	98.3	99.9	97.2
Rural Minor Collector/Local	100.0	100.0	94.7	97.8
Urban Interstate/Freeway	100.0	99.0	100.0	99.1
Urban Principal Arterial	99.8	98.2	97.8	98.5
Urban Minor Arterial/Collector/Local	100.0	99.5	100.0	99.7
All	98.5	99.1	97.1	98.5

TABLE 6. 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

*Children using either safety seat or safety belt. Children seated in front or rear seat.

**Data not available.

TABLE 7. USAGE RATE BY TYPE OF VEHICLE (ALL FRONT SEAT OCCUPANTS)

FUNCTIONAL CLASSIFICATION	REGION			
	WEST	NORTH	EAST	ALL
Passengers Cars				
Rural Interstate	81.5	82.9	77.7	81.7
Rural Principal Arterial	79.3	81.8	61.7	71.7
Rural Minor Arterial/Major Collector	67.7	73.3	66.3	68.6
Rural Minor Collector/Local	66.4	65.4	65.3	65.8
Urban Interstate/Freeway	83.4	82.1	87.8	82.4
Urban Principal Arterial	75.2	72.9	64.6	72.4
Urban Minor Arterial/Collector/Local	71.1	76.5	62.8	73.4
All	74.2	78.6	66.1	74.6
Pickup Trucks				
Rural Interstate	67.4	66.2	71.8	67.5
Rural Principal Arterial	62.8	68.4	48.8	57.2
Rural Minor Arterial/Major Collector	55.2	59.1	49.1	54.0
Rural Minor Collector/Local	49.9	55.6	49.0	50.6
Urban Interstate/Freeway	69.2	68.2	69.0	68.3
Urban Principal Arterial	55.7	58.0	51.4	56.6
Urban Minor Arterial/Collector/Local	56.0	63.3	54.3	60.3
All	58.9	64.2	52.5	60.1
Vans				
Rural Interstate	91.1	88.1	86.6	88.6
Rural Principal Arterial	84.0	83.7	70.7	77.9
Rural Minor Arterial/Major Collector	72.0	80.0	68.7	72.8
Rural Minor Collector/Local	73.7	66.3	69.9	70.8
Urban Interstate/Freeway	85.3	82.2	87.5	82.6
Urban Principal Arterial	78.9	73.5	64.1	73.5
Urban Minor Arterial/Collector/Local	72.8	80.6	60.0	76.1
All	79.0	80.8	70.9	78.1
Sport Utility Vehicles				
Rural Interstate	85.6	87.0	84.1	86.2
Rural Principal Arterial	81.3	79.3	63.9	73.2
Rural Minor Arterial/Major Collector	68.1	76.5	66.8	69.6
Rural Minor Collector/Local	69.1	64.4	69.2	68.3
Urban Interstate/Freeway	86.7	83.4	93.4	84.0
Urban Principal Arterial	75.2	74.0	68.0	73.5
Urban Minor Arterial/Collector/Local	72.8	75.4	66.0	73.6
All	76.0	79.9	68.8	76.3

APPENDIX A

COUNTY POPULATIONS AND NUMBER OF DATA COLLECTION SITES

COUNTY	POPULATION*	NUMBER OF SITES	REGION**
Adair	17,244	1	3
Allen	17,800	0	1
Anderson	19,111	0	2
Ballard	8,286	0	1
Barren	38,033	8	1
Bath	11,085	0	3
Bell	30,060	2	3
Boone	85,991	9	2
Bourbon	19,360	0	2
Boyd	49,752	4	3
Boyle	27,697	2	2
Bracken	8,279	0	2
Breathitt	16,100	2	3
Breckinridge	18,648	1	1
Bullitt	61,236	3	2
Butler	13,010	0	1
Caldwell	13,060	0	1
Calloway	34,177	1	1
Campbell	88,616	5	2
Carlisle	5,351	0	1
Carroll	10,155	0	2
Carter	26,889	4	3
Casey	15,447	0	3
Christian	72,265	2	1
Clark	33,144	4	2
Clay	24,556	1	3
Clinton	9,634	0	3
Crittenden	9,384	0	1
Cumberland	7,147	0	3
Daviess	91,545	3	1
Edmonson	11,644	0	1
Elliott	6,748	0	3
Estill	15,307	0	3
Fayette	260,512	5	2
Fleming	13,792	0	3
Floyd	42,441	2	3
Franklin	47,687	2	2
Fulton	7,752	0	1
Gallatin	7,870	0	2
Garrard	14,792	0	2
Grant	22,384	1	2

COUNTY	POPULATION*	NUMBER OF SITES	REGION**
Graves	37,028	1	1
Grayson	24,053	4	1
Green	11,518	0	1
Greenup	36,891	4	3
Hancock	8,392	0	1
Hardin	94,174	7	1
Harlan	33,202	3	3
Harrison	17,983	0	2
Hart	17,445	0	1
Henderson	44,829	3	1
Henry	15,060	0	2
Hickman	5,262	0	1
Hopkins	46,519	3	1
Jackson	13,495	0	3
Jefferson	693,604	20	2
Jessamine	39,041	3	2
Johnson	23,445	3	3
Kenton	151,464	7	2
Knott	17,649	0	3
Knox	31,795	1	3
Larue	13,373	0	1
Laurel	52,715	6	3
Lawrence	15,569	0	3
Lee	7,916	0	3
Leslie	12,401	0	3
Letcher	25,277	4	3
Lewis	14,092	0	3
Lincoln	23,361	2	3
Livingston	9,804	0	1
Logan	26,573	4	1
Lyon	8,080	0	1
McCracken	65,514	9	1
McCreary	17,080	0	3
McLean	9,938	0	1
Madison	70,872	0	2
Magoffin	13,332	0	3
Marion	18,212	2	1
Marshall	30,125	5	1
Martin	12,578	1	3
Mason	16,800	0	3
Meade	26,349	2	1

COUNTY	POPULATION*	NUMBER OF SITES	REGION**
Menifee	6,556	0	3
Mercer	20,817	1	2
Metcalfe	10,037	0	1
Monroe	11,756	0	1
Montgomery	22,554	3	2
Morgan	13,948	0	3
Muhlenberg	31,839	3	1
Nelson	37,477	1	1
Nicholas	6,813	0	3
Ohio	22,916	0	1
Oldham	46,178	4	2
Owen	10,547	0	2
Owsley	4,858	0	3
Pendelton	14,390	0	2
Perry	29,390	2	3
Pike	68,736	2	3
Powell	13,237	0	3
Pulaski	56,217	2	3
Robertson	2,266	0	2
Rockcastle	16,582	1	3
Rowan	22,094	1	3
Russell	16,315	0	3
Scott	33,061	7	2
Shelby	33,337	3	2
Simpson	16,405	2	1
Spencer	11,766	0	2
Taylor	22,927	2	1
Todd	11,971	0	1
Trigg	12,597	0	1
Trimble	8,125	0	2
Union	15,637	0	1
Warren	92,522	3	1
Washington	10,916	0	1
Wayne	19,923	0	3
Webster	14,120	0	1
Whitley	35,865	4	3
Wolfe	7,065	0	3
Woodford	23,208	3	2
TOTALS	4,041,769	200	

* Based on 2000 census.

** Region 1 - West; Region 2 - North; Region 3 - East

APPENDIX B

RELATIVE ERROR AND CONFIDENCE INTERVAL FOR
USAGE FOR ALL FRONT SEAT PASSENGERS

TABLE B-1. RELATIVE ERROR FOR DATA FOR ALL FRONT SEAT OCCUPANTS

FUNCTIONAL CLASSIFICATION	RELATIVE ERROR*			
	REGION			ALL
	WEST	NORTH	EAST	
Rural Interstate	2.7	1.7	2.9	0.9
Rural Principal Arterial	1.9	3.3	2.6	1.0
Rural Minor Arterial/Major Collector	3.8	3.4	4.3	1.3
Rural Minor Collector/Local	3.7	5.3	3.9	2.0
Urban Interstate/Freeway	1.8	1.1	2.5	0.8
Urban Principal Arterial	2.6	1.5	2.7	0.9
Urban Minor Arterial/Collector/Local	2.6	2.0	3.2	1.0
All	0.7	0.5	1.1	0.4

* Percent (0.95 probability)

TABLE B-2. CONFIDENCE INTERVAL FOR DATA FOR ALL FRONT SEAT OCCUPANTS

FUNCTIONAL CLASSIFICATION	CONFIDENCE INTERVAL*			
	REGION			ALL
	WEST	NORTH	EAST	
Rural Interstate	2.2	1.4	2.3	0.7
Rural Principal Arterial	1.4	2.6	1.5	0.7
Rural Minor Arterial/Major Collector	2.4	2.4	2.6	0.9
Rural Minor Collector/Local	2.4	3.3	2.4	1.2
Urban Interstate/Freeway	1.4	0.9	2.2	0.6
Urban Principal Arterial	1.8	1.0	1.7	0.6
Urban Minor Arterial/Collector/Local	1.8	1.5	2.0	0.7
All	0.5	0.4	0.7	0.3

* Percentage with 0.95 probability.

APPENDIX C

SUMMARY OF DATA

TABLE C-1. SUMMARY OF DATA

Location Number	ALL FRONT SEAT OCCUPANTS				CATEGORY					
	Sample	Percent Usage	Relative Error*	Confidence Interval*	DRIVERS		FRONT SEAT PASSENGERS		UNDER FOUR (FRONT AND REAR)	
					Sample	Percent Usage	Sample	Percent Usage	Sample	Percent Usage
1	455	81	4.5	3.6	342	81	113	79	2	100
2	105	79	9.8	7.8	78	74	27	93	1	100
3	272	83	5.4	4.5	198	81	74	88	2	100
4	424	81	4.7	3.8	312	79	112	87	2	100
5	643	81	3.7	3.0	463	81	180	82	9	100
6	569	82	3.9	3.2	428	80	141	87	2	100
7	397	81	4.8	3.9	290	80	107	82	3	100
8	422	82	4.4	3.6	289	81	133	84	6	100
9	225	81	6.3	5.1	173	80	52	87	1	100
10	809	61	5.5	3.4	628	61	181	59	2	100
11	818	72	4.3	3.1	643	71	175	74	10	100
12	911	69	4.3	3.0	747	69	164	73	22	100
13	320	83	5.0	4.1	275	82	45	87	2	100
14	351	79	5.4	4.2	278	80	73	77	0	N/A
15	471	83	4.1	3.4	415	83	56	82	2	100
16	507	74	5.2	3.8	397	73	110	75	0	N/A
17	562	70	5.4	3.8	422	71	140	67	10	90
18	749	69	4.8	3.3	574	71	175	65	14	93
19	729	75	4.2	3.1	553	73	176	81	2	100
20	619	66	5.7	3.7	472	67	147	62	0	N/A
21	535	58	7.2	4.2	388	59	147	56	9	89
22	476	59	7.5	4.4	361	60	115	55	2	100
23	620	69	5.3	3.6	477	69	143	69	8	100
24	157	69	10.4	7.2	125	70	32	66	2	100
25	294	62	9.0	5.6	219	67	75	47	6	100
26	450	62	7.2	4.5	362	62	88	60	8	88
27	1,137	64	4.4	2.8	901	64	236	61	17	100
28	442	70	6.1	4.3	359	69	83	71	6	100
29	1,081	64	4.5	2.9	836	64	245	63	8	100
30	411	58	8.2	4.8	315	58	96	57	6	100
31	325	60	8.8	5.3	230	63	95	55	5	100
32	238	67	9.0	6.0	187	68	51	63	5	100
33	782	62	5.5	3.4	560	61	222	63	1	100
34	54	54	24.8	13.3	45	51	9	67	0	N/A
35	73	58	19.7	11.3	59	59	14	50	2	100
36	370	72	6.4	4.6	306	74	64	61	8	100
37	848	67	4.7	3.2	629	67	219	66	6	100
38	678	61	6.0	3.7	538	62	140	57	9	100
39	79	63	16.8	10.6	61	61	18	72	0	N/A
40	67	57	20.9	11.9	48	58	19	53	1	100
41	504	82	4.1	3.4	360	81	144	83	3	100
42	633	84	3.4	2.9	472	82	161	88	2	100
43	381	73	6.1	4.4	309	73	72	74	5	100
44	928	83	2.9	2.4	775	83	153	83	5	100
45	843	78	3.6	2.8	668	80	175	72	7	100
46	199	81	6.6	5.4	138	83	61	79	0	N/A
47	1,330	79	2.8	2.2	976	79	354	79	6	100
48	425	68	6.5	4.4	327	70	98	61	5	80
49	1,075	74	3.5	2.6	843	74	232	74	8	100
50	940	72	4.0	2.9	640	73	300	68	3	100

TABLE C-1. SUMMARY OF DATA (continued)

Location Number	ALL FRONT SEAT OCCUPANTS				CATEGORY					
	Sample	Percent Usage	Relative Error*	Confidence Interval*	DRIVERS		FRONT SEAT PASSENGERS		UNDER FOUR (FRONT AND REAR)	
					Sample	Percent Usage	Sample	Percent Usage	Sample	Percent Usage
51	941	69	4.3	3.0	722	69	219	68	3	100
52	580	64	6.0	3.9	477	65	103	60	2	100
53	1,118	71	3.7	2.7	840	72	278	69	8	100
54	1,041	69	4.1	2.8	845	68	196	74	4	100
55	893	72	4.1	2.9	582	73	311	69	3	100
56	900	78	3.5	2.7	675	76	225	83	2	100
57	876	72	4.1	3.0	681	72	195	73	17	100
58	456	64	6.8	4.4	326	65	130	63	2	100
59	97	64	14.9	9.6	74	66	23	57	1	100
60	481	64	6.8	4.3	384	65	97	58	4	100
61	330	63	8.3	5.2	239	61	91	67	2	100
62	409	58	8.3	4.8	336	59	73	55	5	100
63	528	68	5.9	4.0	427	69	101	61	2	100
64	363	74	6.1	4.5	279	73	84	76	3	100
65	460	65	6.8	4.4	358	66	102	58	2	100
66	442	66	6.7	4.4	349	67	93	60	7	100
67	581	80	4.0	3.2	404	79	177	84	2	100
68	835	81	3.3	2.6	634	82	201	79	8	100
69	603	82	3.7	3.1	455	82	148	82	8	100
70	674	78	4.1	3.1	489	78	185	77	7	100
71	526	82	4.0	3.3	362	80	164	85	0	N/A
72	170	82	7.0	5.7	121	80	49	88	1	100
73	193	76	7.9	6.0	150	78	43	70	3	100
74	566	78	4.4	3.4	431	78	135	78	4	100
75	567	77	4.5	3.5	416	77	151	77	2	100
76	531	83	3.8	3.2	426	83	105	85	2	100
77	416	84	4.1	3.5	340	85	76	83	2	100
78	468	81	4.4	3.5	358	80	110	85	11	100
79	1,045	75	3.5	2.6	811	75	234	76	11	100
80	635	77	4.3	3.3	478	76	157	79	9	100
81	309	69	7.5	5.2	246	68	63	71	4	100
82	277	82	5.5	4.5	207	81	70	86	3	100
83	867	80	3.4	2.7	668	81	199	75	6	100
84	835	72	4.2	3.0	682	71	153	77	15	100
85	155	72	9.9	7.1	108	69	47	77	1	100
86	233	70	8.5	5.9	191	68	42	76	2	100
87	290	70	7.6	5.3	223	69	67	73	2	100
88	709	75	4.2	3.2	549	78	160	66	10	100
89	62	66	17.8	11.8	50	68	12	58	0	N/A
90	169	61	12.1	7.4	133	62	36	56	5	40
91	200	65	10.2	6.6	168	67	32	56	2	100
92	497	64	6.5	4.2	361	64	136	65	1	100
93	310	67	7.9	5.2	252	67	58	66	16	100
94	1,017	81	3.0	2.4	873	82	144	75	8	100
95	345	60	8.6	5.2	238	63	107	54	2	100
96	121	47	18.9	8.9	101	48	20	45	0	N/A
97	103	68	13.3	9.0	87	69	16	63	1	100
98	212	69	8.9	6.2	168	70	44	66	3	100
99	81	69	14.5	10.1	67	70	14	64	1	100
100	340	63	8.1	5.1	244	62	96	66	2	100

TABLE C-1. SUMMARY OF DATA (continued)

Location Number	ALL FRONT SEAT OCCUPANTS				CATEGORY					
	Sample	Percent Usage	Relative Error*	Confidence Interval*	DRIVERS		FRONT SEAT PASSENGERS		UNDER FOUR (FRONT AND REAR)	
					Sample	Percent Usage	Sample	Percent Usage	Sample	Percent Usage
101	204	61	10.9	6.7	166	64	38	50	3	67
102	924	78	3.4	2.7	735	79	189	77	5	100
103	631	84	3.4	2.9	527	84	104	82	5	100
104	606	84	3.5	2.9	525	84	81	83	2	100
105	923	77	3.5	2.7	654	80	269	69	11	100
106	634	81	3.8	3.1	498	81	136	81	5	100
107	412	82	4.6	3.7	279	83	133	80	1	100
108	920	82	3.0	2.5	712	83	208	78	6	100
109	775	80	3.5	2.8	618	80	157	79	6	100
110	617	86	3.2	2.7	518	86	99	85	9	100
111	810	81	3.4	2.7	658	81	152	80	3	100
112	556	77	4.5	3.5	419	76	137	81	4	100
113	581	90	2.7	2.5	354	90	227	90	0	N/A
114	882	79	3.4	2.7	705	80	177	76	6	100
115	1,069	81	2.9	2.3	851	82	218	79	8	100
116	945	77	3.5	2.7	768	77	177	79	5	100
117	894	78	3.5	2.7	588	77	306	80	8	100
118	592	85	3.3	2.9	493	85	99	85	9	100
119	616	78	4.2	3.3	488	77	128	78	4	100
120	690	64	5.6	3.6	548	64	142	63	9	89
121	1,006	70	4.0	2.8	809	71	197	67	8	100
122	587	74	4.8	3.6	401	73	186	75	4	100
123	426	74	5.7	4.2	296	74	130	74	1	100
124	655	64	5.7	3.7	492	64	163	65	3	100
125	630	67	5.5	3.7	499	69	131	56	11	100
126	618	82	3.7	3.0	472	83	146	78	3	100
127	534	58	7.2	4.2	393	61	141	52	14	100
128	513	61	7.0	4.2	394	60	119	62	5	100
129	969	81	3.0	2.5	853	81	116	80	9	100
130	1,357	59	4.4	2.6	1,079	60	278	56	21	100
131	1,094	70	3.9	2.7	810	71	284	67	7	86
132	835	66	4.8	3.2	662	68	173	61	12	100
133	533	62	6.6	4.1	388	61	145	65	8	100
134	311	77	6.1	4.7	245	77	66	77	8	88
135	722	78	3.9	3.0	502	78	220	78	11	100
136	679	73	4.5	3.3	500	73	179	74	16	94
137	778	79	3.6	2.8	659	80	119	76	4	100
138	468	77	5.0	3.8	394	76	74	81	3	100
139	568	64	6.2	3.9	461	64	107	65	10	90
140	550	71	5.4	3.8	439	71	111	69	16	100
141	986	67	4.3	2.9	789	69	197	62	19	100
142	359	64	7.7	5.0	292	67	67	52	0	N/A
143	425	81	4.6	3.8	355	80	70	83	4	100
144	1,085	70	3.9	2.7	887	70	198	72	8	100
145	863	65	4.8	3.2	647	67	216	60	12	100
146	595	73	4.9	3.6	409	72	186	75	4	100
147	516	73	5.3	3.8	395	74	121	68	19	100
148	1,014	58	5.2	3.0	757	59	257	56	4	100
149	498	77	4.9	3.7	371	76	127	79	0	N/A
150	601	83	3.6	3.0	472	82	129	85	3	100

TABLE C-1. SUMMARY OF DATA (continued)

Location Number	ALL FRONT SEAT OCCUPANTS				CATEGORY					
	Sample	Percent Usage	Relative Error*	Confidence Interval*	DRIVERS		FRONT SEAT PASSENGERS		UNDER FOUR (FRONT AND REAR)	
					Sample	Percent Usage	Sample	Percent Usage	Sample	Percent Usage
151	316	84	4.9	4.1	210	82	106	86	1	100
152	541	76	4.7	3.6	408	75	133	80	3	100
153	411	83	4.4	3.6	285	82	126	84	1	100
154	518	81	4.2	3.4	404	81	114	78	3	100
155	605	60	6.4	3.9	438	60	167	61	7	100
156	978	66	4.5	3.0	702	64	276	69	4	100
157	618	72	5.0	3.6	439	70	179	75	5	100
158	512	58	7.4	4.3	396	58	116	57	3	100
159	562	55	7.5	4.1	390	56	172	54	6	100
160	509	57	7.5	4.3	394	55	115	65	2	100
161	966	69	4.2	2.9	688	70	278	66	21	90
162	529	66	6.1	4.0	394	68	135	60	1	100
163	715	57	6.4	3.6	522	56	193	57	17	94
164	1,120	63	4.4	2.8	837	63	283	65	5	100
165	398	43	11.3	4.9	281	44	117	41	13	77
166	927	70	4.2	2.9	728	71	199	69	4	100
167	232	69	8.6	6.0	181	68	51	73	3	67
168	381	64	7.5	4.8	278	65	103	60	8	100
169	245	55	11.3	6.2	188	55	57	54	4	100
170	216	69	9.0	6.2	157	69	59	66	0	N/A
171	198	55	12.7	6.9	134	56	64	52	0	N/A
172	120	58	15.1	8.8	93	59	27	56	0	N/A
173	109	59	15.7	9.2	88	57	21	67	0	N/A
174	910	63	5.0	3.1	709	63	201	65	4	100
175	108	48	19.6	9.4	78	51	30	40	2	100
176	205	60	11.2	6.7	155	60	50	60	2	100
177	426	60	7.8	4.7	348	60	78	56	6	100
178	94	68	13.8	9.4	60	67	34	71	1	100
179	100	59	16.3	9.6	83	59	17	59	0	N/A
180	489	60	7.2	4.3	355	59	134	62	7	86
181	75	49	22.9	11.3	56	52	19	42	0	N/A
182	208	63	10.3	6.5	153	61	55	69	1	100
183	100	58	16.7	9.7	84	55	16	75	0	N/A
184	147	44	18.2	8.0	108	44	39	46	1	100
185	246	56	11.1	6.2	174	57	72	53	7	86
186	803	65	5.1	3.3	626	65	177	66	7	100
187	908	86	2.6	2.3	749	86	159	85	9	100
188	675	79	3.8	3.0	521	79	154	79	2	100
189	1,374	56	4.7	2.6	988	57	386	54	6	100
190	691	67	5.2	3.5	501	70	190	61	5	100
191	728	68	5.0	3.4	535	67	193	69	7	86
192	1,648	76	2.7	2.1	1,187	75	461	79	8	88
193	1,397	77	2.8	2.2	1,022	77	375	78	8	88
194	1,056	69	4.0	2.8	822	68	234	71	4	100
195	962	53	6.0	3.2	717	53	245	51	6	100
196	591	59	6.7	4.0	443	57	148	64	1	100
197	996	60	5.1	3.0	748	62	248	54	3	100
198	554	64	6.3	4.0	446	66	108	54	5	100
199	935	62	5.0	3.1	615	61	320	64	1	100
200	726	72	4.5	3.3	528	70	198	76	2	100

* Percent (using 0.95 probability)

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