Research Report
KTC-94-19

# 1994 SAFETY BELT USAGE SURVEY AND EVALUATION OF EFFECTIVENESS IN KENTUCKY

by

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September 1994

Technical Report Documentation Page

| 1. Report No. | 2. Government Accession No. | 3. Recipient's Catalog No. |
|---|---|---|
| KTC-94-19 | | |

| 4. Title and Subtitle | 5. Report Date |
|---|---|
| 1994 Safety Belt Usage Survey and Evaluation of Effectiveness in Kentucky | September 1994 |
| | 6. Performing Organization Code |
| 7. Author(s) | 8. Performing Organization Report No. |
| Kenneth R. Agent | |
| 9. Performing Organization Name and Address | 10. Work Unit No. (TRAIS) |
| Kentucky Transportation Center<br>College of Engineering<br>University of Kentucky<br>Lexington, KY 40506-0281 | 11. Contract or Grant No.<br>OP-94-08 |
| | 13. Type of Report and Period Covered |
| 12. Sponsoring Agency Name and Address<br>Kentucky State Police, Highway Safety Standards Branch<br>919 Versailles Road<br>Frankfort, KY 40601 | Final |
| | 14. Sponsoring Agency Code |

15. Supplementary Notes

16. Abstract

The objective of this study was to establish 1994 safety belt and child safety seat usage rates in Kentucky. The 1994 survey documents the results from enacting a statewide mandatory safety belt law. Data were collected at 100 sites and combined based on vehicle miles travelled for a given type of highway, rural or urban location, and county population category. Also included in this report is an analysis of accident records evaluating the effectiveness of safety belts.

The data show that enactment of the statewide law had a dramatic effect on usage rates. The usage rate for drivers increased from 42 percent in 1993 to 58 percent in 1994. While the usage rate for drivers had increased for the past several years, the amount of the increase was decreasing prior to enactment of the statewide law.

The statewide usage rate for children under the age of four was determined to be 72 percent. This represents an increase from the 61 percent usage determined in the 1993 survey.

Benefits in the reduction of injuries for occupants involved in police-reported accidents wearing a safety belt or in a safety seat were shown through the analysis of accident records. For example, a 56 percent reduction in fatal or incapacitating injuries was determined for drivers wearing a safety belt compared to those who were not restrained.

| 17. Key Words | 18. Distribution Statement |
|---|---|
| Safety Belt<br>Child Safety Seat<br>Accident Severity | Unlimited with approval of<br>Kentucky State Police |

| 19. Security Classif. (of this report) | 20. Security Classif. (of this page) | 21. No. of Pages | 22. Price |
|---|---|---|---|
| Unclassified | Unclassified | 41 | |

Form DOT 1700.7 (8-72) Reproduction of completed page authorized

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# INTRODUCTION

The use of safety belts and child safety seats is an effective means of reducing injuries to motor-vehicle occupants involved in a traffic accident. There have been various types of efforts used to increase safety belt and safety seat usage. Past efforts have included public information campaigns and both local and statewide legislation. The most recent legislation in this area was statewide legislation requiring the use of safety belts. This law was passed in 1994 with an effective date in July 1994.

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 the child restraint law to include a $50 fine for violation of the law. Also, prior to the statewide law, local safety belt usage laws were enacted in several local jurisdictions in Kentucky. The first such local law, with an effective date of July 1990, was enacted by the Lexington-Fayette Urban County Government. The second local law, with an effective date of July 1991, was enacted by the city of Louisville. Jefferson County later adopted such a law. Other cities and one county which had local safety belt ordinances prior to the statewide legislation included Murray, Bowling Green, Kenton County, Corbin, Bardstown, and Midway. 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 statewide law replaced the various local ordinances.

Statewide observational surveys were first conducted in Kentucky in 1982 with data collected in 19 cities across the state. These surveys have been conducted annually since 1982 (with the exception of 1987) to document safety belt and safety seat usage in Kentucky (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11). The number of sites was increased in 1990 in order to obtain a more representative statewide sample (8).

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 about 30 percent in 1984 and stayed at this level in 1985 and 1986. After a penalty was added to the law, this percentage increased to almost 50 percent in 1988 and 1989 and to 57 percent in 1990 and 1991. The 1993 survey indicated a usage rate of 61 percent. Safety belt usage for the driver has increased each year of the survey. The statewide driver safety belt usage rate was only 4 percent in 1982 compared to 42 percent in 1993.

The objective of the survey summarized in this report is to establish statewide 1994 safety belt and child safety seat usage rates in Kentucky. These rates may be compared to those determined from previous surveys. The 1994

survey documents the results from enacting a statewide mandatory safety belt law. Another objective of this study was to analyze accident data to evaluate the effectiveness of safety belts in reducing injuries to occupants of motor vehicles involved in traffic accidents.

## PROCEDURE

### DATA COLLECTION PROCEDURE

The data collection procedure used in the surveys was modified starting with the 1990 survey. The procedure used in the 1990 through 1993 surveys was again used in the 1994 survey. The procedure used for the first several surveys was changed in order 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 data collection form used in the survey is shown in Figure 1. Safety belt usage was recorded for drivers and front-seat passengers sitting in the outboard position. These positions are equipped with a combination lap belt/shoulder harness which enables observations to be performed more easily. The exception was for children under four years of age for which data were collected for all positions in the front and the rear seats. Drivers were classified into three age categories and were classified by sex. Passengers were classified into several age categories. For drivers and front-seat passengers (over three years of age), usage was classified as either using a harness or belt or no restraint. For children one to three years of age, the categories included safety seat, booster seat, harness or belt, or no restraint. For children under one year of age, the categories were either safety seat or no restraint. When a safety seat was used, an attempt was made to determine if there was an obvious misuse.

Two additional types of information were obtained. This information was collected first in the 1993 survey. Use of motorcycle helmets was noted. Also, usage was determined for minority drivers.

The following list of guidelines for data collection was given to each observer, and each data collector went through a training period.

1. Always include the driver so the number of vehicles included in the sample will be known.

2. Include all vehicles 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.

3. Collect data on only one approach at the intersection.

4. If traffic volume is too heavy to collect data for all vehicles, record data for the next vehicle in view after recording data for the prior vehicle.

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 so slowly that occupants can be readily observed.

8. Excluding children under four years of age, collect data only for drivers and passengers in the right-front seat (exclude the center front and rear seating positions).

9. Do not include old passenger cars not equipped with a safety belt (those without a head rest).

10. Collect data during daylight hours on weekdays and weekends.

11. Collect data for four hours at each site.

12. Begin and end data collection at a specified time not considering whether the occupants are using a safety belt.

13. Collect data for cars, vans, and light trucks.

14. Do not include a vehicle in the count when use by the driver cannot be determined.

As noted, data were collected for four hours at each location. The decision was made to collect data for an equal time period for each location rather than attempt to collect a given sample size.

Data collection was started on July 18, 1994 so that all data were collected after the effective date of the statewide law. Data were collected first at locations in cities which already had a local ordinance.

## 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 would be 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. The distribution of the sites was based on vehicle miles travelled statewide for various categories of roads in counties of varying populations. The variables considered were the rural or urban designation of the road, the functional classification of the road, and the county population. This was done so that roads would be stratified to assure a proper representation of urban and rural areas and different road types. The percentages of vehicle miles travelled on various types of highways in counties within given population ranges are given in Table 1. These percentages represent the proportion of vehicle miles driven on roadways having the given characteristics of the total vehicle miles driven statewide. The data apply to roads for which a traffic volume was available (which is the state-maintained highway system of slightly over 27,000 miles). Local county and city roadways would not be included. The data shown in Table 1 were obtained using 1990 data. There would be little change in the distribution from year to year so the same percentages have continued to be used. This would allow the same locations to be used each year.

The decision was made to take survey data at 100 sites. The number of sites for any type of highway and county population category was equal to the percentage of vehicle miles travelled for the given type of highway and county population. For example, eight percent of all vehicle miles travelled was on rural arterial highways in counties having a population between 10,000 and 25,000 so eight sites were selected on highways meeting this criterion. A computer file was used to prepare a randomly selected list of sections of roadway for each of the categories given in Table 1. This list was used as a source for selecting sites. Data had been collected at 23 sites since 1982, and it was felt that it would be beneficial to maintain an historical record at these sites. Therefore, these sites were maintained. A list of the observation sites is presented in Table 2, and the 23 original sites are identified with an asterisk. Many of the other sites were obtained from the randomly selected list of highway sections.

The sites had to be selected at a location where traffic would stop. A list of all locations having a traffic signal was obtained and used in the selection of sites. Except for some interstate locations, all the sites are at an intersection. Most of the intersections are controlled by a traffic signal. The sites selected to obtain data for interstates were either at an exit ramp or at a rest area. This would be the only exception to the sites being at a typical intersection. Data at an exit

ramp were taken for traffic exiting the interstate at the intersection between the ramp and intersecting roadway. Another variable which was considered was the geographical location of the sites. Sites were selected to assure that they were distributed across the state. Sites were selected in 62 of the 120 counties. The largest number in any one county was eight in Jefferson County. For each category, the county, location (road and intersecting road), and city (nearest city for rural locations) are given in Table 2.

## SURVEY DATA ANALYSIS

Safety belt usage rates were obtained for the driver and for all front-seat occupants. Rates were also obtained by driver age and sex and by age of the front-seat occupant. Statewide rates were obtained by weighting the usage determined for a given type of highway and county population by the percentage of vehicle miles given in Table 1 and combining the percentages from the various categories. Confidence intervals for the statewide usage rates were calculated.

For children under four years of age, rates were obtained for both front and rear seating positions as well for combined seating positions. Rates were separated into safety seat, booster seat, and harness or belt.

The 1994 usage rates for the 19 cities previously surveyed were compared to results determined in prior years. The rates for the various types of highway and county population categories were compared. Rates were also compared by region of the state.

## ACCIDENT ANALYSIS

The computer files containing all reported accidents in Kentucky (for the years 1989 through 1993) were analyzed to determine the effectiveness of wearing safety belts or riding in a safety seat. The percent reductions in injuries were computed, and statistical tests were conducted to determine if the reductions were significant. This type of analysis was performed for drivers, children age three and under, and front-and rear-seat passengers. The effectiveness of safety belts was related to several factors such as seating position, type of vehicle, and speed limit. The potential annual reduction in traffic accident fatalities and serious injuries and the accident savings from an increase in driver safety belt usage were estimated.

# RESULTS

## SURVEY DATA ANALYSIS

Driver usage rates for the various types of highways and county population categories are summarized in Table 3. The overall statewide rate in 1994 after the start of the statewide safety belt law, using the data collected at 100 sites and the weighting procedure described, was 58 percent. The sample size was 99,955 drivers. The confidence limits for a probability of 0.99 would be plus or minus 0.4 percent (12). For a given type of highway (excluding rural interstates), the usage rate was higher for counties having larger populations. In several instances, there were large fluctuations in usage rates at survey sites within the same location and population category.

While the data collection procedure changed in 1990, the usage rate may still be compared to the statewide rates from past years. The previous studies showed that driver usage rates statewide had steadily increased from 4.2 percent in 1982 to 42 percent in 1993. However, the rate of the increase had decreased. There was only a three percentage point increase in the two-year period from 1991 to 1993. The 1994 survey shows that a dramatic increase occurred between the 1993 and 1994 data collection periods. This increase would be directly related to the enactment of a statewide safety belt law. The increase in the driver usage rate in 1994 compared to 1993 was determined to be statistically significant (probability of 0.99) (13). The 16 percentage point increase from 1993 to 1994 was the largest increase since the surveys were started in 1982. It represents a 38 percent increase in usage. The second largest increase was seven percentage points from 1990 to 1991.

Usage rates for front-seat passengers for the various types of highways and county population categories are summarized in Tables 4 through 7 for the different age categories. Usage for children in the four to five years of age category was 52 percent plus or minus about 3 percent. This compares to 37 percent for the 1993 survey, and this increase was statistically significant. For children in the 6 to 12 years of age category, the usage rate was 58 percent plus or minus about 2 percent. This compares to 41 percent in 1993, and this increase was statistically significant. For the 13 to 19 years of age category, the usage rate was 55 percent plus or minus about 2 percent. This was an increase from 37 percent in 1993, and this increase was statistically significant. For the category of over 19 years of age, the usage rate was 57 percent plus or minus about one percent. This was an increase from 40 percent in 1993 with this increase statistically significant.

Usage rates for children one through three years of age are given in Table 8 while rates for children under one year of age are given in Table 9. These rates are for children in both the front and the rear seats. The usage rate for children under one year of age (83 percent with a confidence limit of about three percent) was higher than that for children one to three years of age (68 percent with a confidence limit of about two percent). The usage rate for the combination of these categories, or children under four years of age, was 72 percent with confidence limits for a probability of 0.99 percent of about two percent. The sample size for children under four years of age was 3,872. This age category corresponds to the children for which the mandatory child restraint law would apply. This usage rate of 72 percent compares to 57 percent in 1990 and 1991, 62 percent in 1991, and 61 percent in 1992. This percentage was about 15 percent in 1982 before enactment of the child restraint law and 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 dollar 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 79 percent for the rear seat compared to 55 percent for the front seat. For children under one year old, the usage rate was 87 percent for the rear seat compared to 78 percent for the front seat. There was a higher percentage of children one to three years of age observed in the rear seat (58 percent) while the number in the front and rear seats was closer for children under one year old (54 percent in the rear seat).

Safety belt usage rates for drivers and front-seat passengers, by type of highway, are presented in Table 10. The highest usage rates were on interstates (both rural and urban). This would be related in part to the longer trip lengths and higher speeds on interstates and the tendency of drivers to use safety belts more often for this type of travel. The lowest usage rates were on rural, non-interstate highways with the lowest rate on rural, local highways. This is the only category with a usage rate of under 50 percent. There was substantial variation between highway types. For drivers, the percentage using a safety belt varied from 45 percent on rural, local highways to 70 percent on rural interstates. For front-seat passengers, the percentage for those using a safety belt varied from 44 percent on rural, local highways to 67 percent on rural interstates. For children under four years of age, the percentage using a safety seat or safety belt varied from 56 percent on rural, local highways to 84 percent on urban interstates.

There was a variation in usage by the age and sex of the driver (Table 11). Females had a substantially higher usage rate than males. The category of over 50 years of age had a slightly higher usage rate than either the 31 to 50 or 16 to 30 years of age categories.

The highest usage rate for front-seat passengers was for the under four years of age category (Table 12). This would be expected since the mandatory child restraint law has applied to this age category for several years. The usage rate for the other age categories were similar as that for drivers. The four to five years of age category had the lowest usage rate.

The change in usage of safety belts by drivers in the 19 cities in which data have been collected since 1982 is presented in Table 13. The usage rate was higher in 1994 than in 1993 in all of the 19 cities. The smallest increases were in the three cities (Louisville, Lexington, and Covington) where there was a local ordinance prior to enactment of the statewide law. There was an average increase of 26 percentage points at the remaining 16 cities where there was no local ordinance prior to the statewide law. The increase in usage at these 16 cities ranged from 10 percentage points at Newport to 42 percentage points in Madisonville. This increase at Madisonville represented an increase of 150 percent in the usage rate. Considering all 19 cities, the usage rate ranged from 70 percent in Lexington and Madisonville to 39 percent in Newport. Using the procedure followed in the original surveys where data were taken only at sites in these 19 cities results in a statewide usage rate of 59 percent. This rate is almost identical to that determined using the revised procedure in which data are collected at 100 sites.

The effect of the statewide law can be seen by comparing the usage rate for drivers in 1993 and 1994 at the 100 data collection sites. The usage rate for drivers increased at 99 of the sites. The only decrease was from 73 to 69 percent at an urban interstate location in Jefferson County. There was an increase of over 40 percentage points at two locations (Madisonville and Corydon). There was an increase of between 30 and 39 percentage points at 11 locations with another 27 locations having an increase of between 20 and 29 percentage points. The increase was between 10 and 19 percentage points at 37 locations with another 22 lcoations having an increase of between 1 and 9 percentage points.

Considering all 100 sites, there was an average increase of 17 percentage points in the usage rates for drivers. The average increase was 6 percentage points at 23 sites at locations where there was a local ordinance existing in 1993 compared to an increase of 21 percentage points at the 77 sites at locations where the statewide law was the first law relating to use of a safety belt.

The change in usage of safety seats or belts by children under four years of age in these 19 cities is presented in Table 14. The usage rate was higher in 1994 than in 1993 at 16 of the 19 cities. The small sample sizes could result in substantial variations in usage rates. The usage rates ranged from over 90 percent in Frankfort to slightly over 50 percent in Lawrenceburg. Using the procedure followed in the original surveys in which data were taken only at sites

in these 19 cities results in a statewide usage rate of 74 percent. This rate was within two percentage points of that determined using the revised procedure in which data are collected at 100 sites.

A summary of the data collected is given in the Appendix. For each of the 100 data sites, the usage rate and sample size are given for drivers, front-seat passengers (by age category for over four years of age), and children in the one to three years of age and under one year old age categories (both front and rear seat).

Obvious improper usage of safety seats had been estimated in previous surveys. However, improper usage could only be determined when there was a very obvious problem. Since the improper usage percentages were very low compared to studies dealing specifically with this subject, improper usage data were not obtained in this survey.

Helmet use by motorcyclists was noted during the survey. Kentucky has a statewide law requiring the use of a helmet by motorcyclists. The results confirm the expected high usage. All of the 294 observed motorcyclists were wearing a helmet.

Usage for minority drivers was obtained with a sample size of approximately 2,400 drivers. The same procedure used for all drivers was utilized to obtain a statewide usage rate. The statewide usage rate for minority drivers was determined to be 59.5 percent compared to 58.1 percent for all drivers. This shows there was no substantial difference in usage rates for minority drivers.

## ACCIDENT ANALYSIS

The number and percentage of all drivers involved in police-reported accidents sustaining a given injury as a function of safety belt usage are summarized in Table 15 (based on 1989 through 1993 accident data). By comparing the percentages, the percent reduction associated with safety belt usage could be calculated. The largest reduction was for a fatal injury (83 percent reduction) with the reduction decreasing for less severe injuries. For comparison, the reduction was 16 percent for the "possible injury" category. The reductions in the percentage of each of the types of injuries were determined to be statistically significant (probability of 0.99). In severe accidents, use of a safety belt would lessen, but not eliminate, the injury. This resulted in the smaller reductions in the less severe injury classifications. There was a 56 percent reduction in a driver sustaining a fatal or severe injury in a traffic accident when a safety belt was worn compared to not wearing a safety belt. This agrees with other research studies which report that lap and shoulder safety belts, when used, reduce the risk of fatal or serious occupant injuries by between 40 and 55 percent (14).

The effectiveness of safety belts in reducing driver injuries was related to several variables. In Table 16, the percentage of drivers sustaining either a fatal or severe injury who were wearing or not wearing a safety belt was related to type of vehicle, type of accident, and speed limit. There were reductions in the percentage of fatal or severe injuries for drivers of passenger cars, single-unit trucks, and combination trucks. The reduction was slightly higher for drivers of trucks. The severity of injuries to drivers of passenger cars was higher than for drivers of trucks. Safety belts also reduced the percentage for fatally or severely injured in various types of accidents. The types of accidents were chosen to represent the extremes of accidents in terms of severity. Reductions were noted for the relatively low severity rear-end accidents as well as the more severe fixed object, head-on, and "overturned" accidents. Safety belts also were determined to be effective in reducing fatal or severe injuries for accidents occurring on either 35-mph local streets or 55-mph high speed roadways.

The number and percentage of children age three and under sustaining a given injury as a function of using a safety seat or safety belt are summarized in Table 17. There were substantial reductions, higher for the most severe injury types, associated with using either a safety seat or safety belt. The reductions were fairly similar for use of either the safety seat or safety belt. The reductions for all injury categories, except fatalities, were statistically significant (probability of 0.99). Of 44 fatalities, 18 involved children not using a safety seat or safety belt. The percent reductions were generally higher than that for drivers (as given in Table 15). There was a 71 percent reduction in the chance of a child less than age four, involved in a traffic accident, sustaining a fatal or severe injury when a safety seat was used compared to not using any restraining device. Also, as shown in Table 18, the reductions in injuries applied to both the rear-and front-seating positions. The data in Table 18 show that accident severity was less in the rear than in the front seat.

The number and percentage of occupants other than drivers sustaining a given injury as a function of safety belt usage are listed in Table 19. As with drivers, there was a large reduction in the percent injured (all reductions were statistically significant with a probability of 0.99). Overall, these percent reductions were generally slightly higher than that for drivers. The chance of a vehicle occupant, other than the driver, sustaining a fatal or severe injury in a traffic accident was reduced by 56 percent if a safety belt was worn compared to not wearing a safety belt.

The accident severities associated with using a lap belt and/or shoulder harness for occupants other than the driver (by seating position in the front or rear seat) are listed in Table 20. Only a lap belt was available in the rear seat in the majority of vehicles involved in accidents in the time period studied. The use of a shoulder harness and/or lap belt in the front seat or a lap belt in the rear

reduced injuries dramatically (all reductions were statistically significant with a probability of 0.99). Accident severity was less in the rear seat and the percent reduction in injuries was generally greater in the rear seat than the front seat. The use of primarily a lap belt in the rear seat has been effective with a reduction in fatal or incapacitating injuries of 65 percent. This finding should not be interpreted to suggest that it would not be preferable to have a combination lap belt/shoulder harness in the rear seat.

The potential annual reductions in traffic accident fatalities and accident savings from an increase in driver safety belt usage are presented in Table 21. The reduction in fatalities and associated accident cost savings were calculated using the reduction factors listed in Table 15, accident data for the years of 1989 through 1993, the 42 percent usage rate determined from the 1993 observational survey, and accident cost estimates recommended by the Federal Highway Administration (15).

## SUMMARY

A statewide safety belt law was passed in Kentucky in 1994. The law applies to all vehicle occupants. Prior to the statewide law, there were local ordinances passed in several cities and counties which covered approximately one-third of the statwide population. All of the 1994 survey data were taken after the effective date of the statewide law. The methodology used to obtain statewide safety belt usage rates in 1994 was the same as that used for the surveys taken in 1990 through 1993.

The data show that enactment of the statewide law had a dramatic effect on usage rates. The usage rate for drivers increased from 42 percent in 1993 to 58 percent in 1994. While the usage rate for drivers had increased for the past several years, the amount of the increase was decreasing prior to enactment of the statewide law. (Table 22). With the exception of rural interstates, the rate was generally higher in urban compared to rural areas. The lowest rates were on local roadways in rural counties.

The statewide usage rates for front-seat passengers were also obtained. Considering all passengers, the usage rate was 57 percent. Usage varied with age with the highest usage for the under four years of age category and the lowest usage for the 4 to 5 years of age category, followed by the 13 to 19 years of age category.

Kentucky had a statewide law requiring children under 40 inches in height to be placed in a child restraint prior to the law applying to all occupants. The statewide usage rate for children under the age of four (including both the front and rear seat) was determined to be 72 percent. This represents an increase from

the 61 percent usage determined in the 1993 survey. It appears that the new law had a positive effect on the usage rate for children under four years of age.

A usage rate was determined for minority drivers. The data show there was no difference in usage for minority drivers, compared to all drivers. The compliance of motorcyclists with the requirement to wear a helmet was confirmed. All observed motorcyclists were wearing their helmet.

The significant benefits, based upon the reduction of injuries, for occupants involved in a police-reported accident wearing a safety belt or in a safety seat were shown through the analysis of accident records. For example, one finding was that there was a 56-percent reduction in fatal or incapacitating injuries for drivers wearing a safety belt compared to those who were not. The benefit, in terms of the reduction in injuries, from wearing a safety belt in either the front or rear seat was documented. The potential savings in fatalities, serious injuries, and accident costs which could be obtained from an increase in the use of safety belts was shown. For example, an increase in the driver usage rate up to 70 percent usage would result in a potential annual reduction of 169 fatalities and an annual accident savings from the reduction in fatalities and serious injuries of about 297 million dollars.

## RECOMMENDATIONS

The data show that enactment of the statewide safety belt law resulted in a dramatic increase in usage rates. However, results from other states show that the statewide usage rate of 58 percent for drivers can be increased. Public information and education concerning the law and the reasons to wear safety belts should continue. Also, enforcement of the law along with public information about this enforcement and resulting citations should be increased. The survey data can be used to identify areas in need of additional enforcement and education.

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Figure 1. Data Collection Form.

SAFETY BELT DATA COLLECTION FORM

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

Location:_____ Sheet No.:_____

Observer:_____ Comment:_____

**DRIVER USAGE**

| Age & Sex | Harness or Belt | None |
|---|---|---|
| 16-30 M | | |
| 31-50 M | | |
| > 50 M | | |
| 16-30 F | | |
| 31-50 F | | |
| >50 F | | |
| MINORITY | | |

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

| Age | Harness or belt | None |
|---|---|---|
| 4-5 | | |
| 6-12 | | |
| 13-19 | | |
| Over 19 | | |

**USAGE FOR CHILDREN 1-3 YEARS OF AGE**

| | Safety seat | Safety seat (Improper) | Booster seat | Harness or Belt | None |
|---|---|---|---|---|---|
| Front | | | | | |
| Rear | | | | | |

**USAGE FOR INFANTS (UNDER 1 YEAR OF AGE)**

| | Safety Seat | Safety seat(Improper) | None |
|---|---|---|---|
| Front | | | |
| Rear | | | |

Helmet Y-
N-

TABLE 1. DISTRIBUTION OF VEHICLE MILES TRAVELED BY TYPE OF HIGHWAY AND COUNTY POPULATION

| TYPE OF HIGHWAY | COUNTY POPULATION | PERCENTAGE OF ALL VEHICLE MILES |
|---|---|---|
| Rural Interstate | Over 100,000 | 1.04 |
| | 50,001-100,000 | 2.78 |
| | 25,001-50,000 | 4.96 |
| | 10,000-25,000 | 5.19 |
| | Under 10,000 | 1.32 |
| Rural Arterial | Over 50,000 | 3.14 |
| | 25,001-50,000 | 7.36 |
| | 10,000-25,000 | 8.12 |
| | Under 10,000 | 1.93 |
| Rural Collector | Over 100,000 | 0.65 |
| | 50,001-100,000 | 3.19 |
| | 25,001-50,000 | 7.70 |
| | 10,000-25,000 | 9.72 |
| | Under 10,000 | 2.28 |
| Rural Local | Over 50,000 | 0.74 |
| | 25,000-50,000 | 1.74 |
| | Under 25,000 | 3.74 |
| Urban Interstate | Over 100,000 | 8.32 |
| | 50,000-100,000 | 1.49 |
| | Under 50,000 | 1.06 |
| Urban Arterial | Over 100,000 | 10.23 |
| | 25,000-100,000 | 9.52 |
| | Under 25,000 | 1.79 |
| Urban Collector or Local | All | 1.99 |

TABLE 2. STATEWIDE SURVEY LOCATIONS

| TYPE LOCATION | COUNTY POPULATION | SURVEY SITE |
|---|---|---|
| Rural Interstate | Over 100,000 | Fayette, I 64 at KY 859, Lexington |
| | 50,001-100,000 | Boyd, I 64 at US 23, Catlettsburg<br>Christian, I 24 at US 41A, Hopkinsville<br>Hardin, I 65 at rest area, Sonora |
| | 25,001-50,000 | Barren, I 64 at KY 70, Cave City<br>Boone, I 75 at rest area, Florence<br>Clark, I 64 at KY 627, Winchester<br>Franklin, I 64 at US 60, Frankfort<br>Laurel, I 75 at KY 80, London |
| | 10,000-25,000 | Henry, I 71 at KY 153, Sligo<br>Rockcastle, I 75 at US 25, Mt. Vernon<br>Scott, I 75 at rest area, Georgetown<br>Shelby, I 64 at KY 53, Shelbyville<br>Woodford, I 64 at KY 341, Midway |
| | Under 10,000 | Trigg, I 24 at US 68, Cadiz |
| Rural Arterial | Over 50,000 | Pike, US 460 at KY 122, Shelbiana<br>Daviess, US 60 at KY 144, Owensboro<br>Hardin, US 31W at KY 835, West Point |
| | 25,001-50,000 | Perry, KY 15X at KY 476, Hazard*<br>Knox, US 25E at KY 225, Barbourville<br>Harlan, US 119 at KY 179, Cumberland<br>Floyd, KY 80 at US 23, Allen<br>Bullitt, US 31E at KY 44, Mt. Washington<br>Carter, KY 1 at I 64, Grayson<br>Laurel, US 25 at KY 80, London |
| | 10,000-25,000 | Mason, US 62 at KY 11, Maysville*<br>Clay, US 421 at KY 80, Manchester<br>Bourbon, US 68 at 5th St., Millersburg<br>Casey, US 127 at KY 70, Liberty<br>Meade, US 31W at KY 1638, Muldraugh<br>Lincoln, US 127 at KY 78, Hustonville<br>Russell, US 127 at KY 80, Russell Springs<br>Washington, US 150 at KY 55, Springfield |
| | Under 10,000 | Cumberland, KY 90 at KY 61, Burkesville<br>Ballard, US 60 at KY 358, LaCenter |

TABLE 2. STATEWIDE SURVEY LOCATIONS (continued)

| TYPE LOCATION | COUNTY POPULATION | SURVEY SITE |
|---|---|---|
| Rural Collector | Over 100,000 | Fayette, KY 418 at I 75, Lexington |
| | 50,001-100,000 | Christian, US 41 at KY 1682, Hopkinsville<br>McCracken, US 62 at US 68, Paducah<br>Madison, KY 52 at KY 876, Richmond |
| | 25,001-50,000 | Barren, KY 255 at US 31W, Park City<br>Nelson, US 62 at KY 48, Bloomfield<br>Boone, KY 18 at KY 237, Burlington<br>Oldham, KY 146 at KY 393, Buckner<br>Knox, KY 11 at US 25E, Barbourville<br>Henderson, KY 145 at US 60, Corydon<br>Boyle, US 68 at US 150, Perryville<br>Greenup, KY 1 at US 23, Greenup |
| | 10,000-25,000 | Caldwell, KY 139 at Jefferson, Princeton*<br>Grayson, US 62 at KY 259, Leitchfield<br>Allen, US 231 at US 31E, Scottsville<br>Bath, US 60 at KY 36, Owingsville<br>Larue, KY 84 at KY 61, Hodgenville<br>Scott, US 62 at I 75, Georgetown<br>Anderson, US 127 at US 127B, Lawrenceburg<br>Breathitt, KY 30 at KY 15, Jackson<br>Webster, US 41 at KY 56, Sebree<br>Garrard, KY 39 at US 27, Lancaster |
| | Under 10,000 | Carroll, US 42 at Highland, Carrollton*<br>Elliott, KY 32 at KY 7, Sandy Hook |
| Rural Local | Over 50,000 | McCracken, KY 1286 at US 62, Paducah |
| | 25,000-50,000 | Harlan, KY 840 at US 119, Loyall<br>Greenup, KY 7 at US 23, South Shore |
| | Under 25,000 | Lewis, KY 10 at KY 57, Tollesboro<br>Simpson, KY 73 at KY 100, Franklin<br>Adair, KY 2290 at KY 55, Columbia<br>Taylor, KY 208 at US 68, Campbellsville |
| Urban Interstate | Over 100,000 | Kenton, I 275 at KY 17, Covington<br>Kenton, I 75 at KY 371, Cresent Springs<br>Fayette, I 75 at US 68, Lexington<br>Jefferson, I 64 at KY 1747, Louisville |

TABLE 2. STATEWIDE SURVEY LOCATIONS (continued)

| TYPE LOCATION | COUNTY POPULATION | SURVEY SITE |
|---|---|---|
| Urban Interstate | Over 100,000 | Jefferson, I 64 at KY 1631, Louisville |
| | | Jefferson, I 264 at US 31E, Louisville |
| | | Jefferson, I 264 at US 42, Louisville |
| | | Jefferson, I 264 at US 60, Louisville |
| | 50,000-100,000 | Warren, I 65 at US 231, Bowling Green |
| | Under 50,000 | Boone, I 71 at KY 14, Verona |
| Urban Arterial | Over 100,000 | Jefferson, US 31W at Gagel, Louisville* |
| | | Jefferson, KY 1447 at Hubbards, Louisville* |
| | | Jefferson, KY 1703 at Trevillian Way, Louisville* |
| | | Fayette, US 27 at KY 1683, Lexington* |
| | | Fayette, Reynolds at Lansdowne, Lexington* |
| | | Fayette, KY 4 at KY 353, Lexington* |
| | | Kenton, US 25 at KY 236, Covington |
| | | Kenton, KY 8 at KY 17, Covington |
| | | Kenton, KY 16 at KY 177, Covington |
| | | Fayette, US 25 at Fontaine, Lexington |
| | 25,000-100,000 | Campbell, US 27 at Carothers, Newport* |
| | | Christian, US 41 at Ninth, Hopkinsville* |
| | | Hopkins, US 41A at KY 70, Madisonville* |
| | | Pulaski, US 27 at KY 80, Somerset* |
| | | Franklin, US 60 at Sunset, Frankfort* |
| | | Henderson, US 41A at First, Henderson* |
| | | Nelson, US 31E at Beall, Bardstown |
| | | Barren, US 68 at Race, Glasgow* |
| | | Clark, US 60 at KY 1958, Winchester* |
| | | Warren, US 31W at US 231, Bowling Green |
| | Under 25,000 | Anderson, US 62 at US 127, Lawrenceburg* |
| | | Rowan, US 60 at KY 32, Morehead* |
| Urban Collector or Local | All | Hardin, Poplar at Sycamore, Elizabethtown* |
| | | Kenton, KY 1072 at Highland, Covington* |

* Original data collection site.

TABLE 3. DRIVER USAGE RATES

| TYPE OF HIGHWAY | COUNTY POPULATION | USAGE RATE (PERCENT) | SAMPLE SIZE |
|---|---|---|---|
| Rural Interstate | Over 100,000 | 76 | 174 |
| | 50,001-100,000 | 72 | 1,334 |
| | 25,001-50,000 | 68 | 2,877 |
| | 10,000-25,000 | 69 | 1,804 |
| | Under 10,000 | 82 | 191 |
| Rural Arterial | Over 50,000 | 62 | 3,728 |
| | 25,001-50,000 | 54 | 7,506 |
| | 10,000-25,000 | 54 | 8,561 |
| | Under 10,000 | 44 | 1,485 |
| Rural Collector | Over 100,000 | 67 | 1,247 |
| | 50,001-100,000 | 58 | 3,318 |
| | 25,001-50,000 | 51 | 6,324 |
| | 10,000-25,000 | 49 | 8,368 |
| | Under 10,000 | 48 | 2,446 |
| Rural Local | Over 50,000 | 67 | 601 |
| | 25,000-50,000 | 44 | 978 |
| | Under 25,000 | 40 | 2,534 |
| Urban Interstate | Over 100,000 | 68 | 9,566 |
| | 50,000-100,000 | 71 | 1,036 |
| | Under 50,000 | 49 | 224 |
| Urban Arterial | Over 100,000 | 63 | 13,928 |
| | 25,000-100,000 | 59 | 15,740 |
| | Under 25,000 | 52 | 2,994 |
| Urban Collector or Local | All | 59 | 2,991 |
| ALL | All | 58 | 99,955 |

TABLE 4. FRONT-SEAT PASSENGER (AGE 4-5 YEARS) USAGE RATES

| TYPE OF HIGHWAY | COUNTY POPULATION | USAGE RATE (PERCENT) | SAMPLE SIZE |
|---|---|---|---|
| Rural Interstate | Over 100,000 | 50 | 2 |
| | 50,001-100,000 | 67 | 15 |
| | 25,001-50,000 | 53 | 34 |
| | 10,000-25,000 | 80 | 20 |
| | Under 10,000 | 100 | 1 |
| Rural Arterial | Over 50,000 | 49 | 51 |
| | 25,001-50,000 | 48 | 123 |
| | 10,000-25,000 | 40 | 150 |
| | Under 10,000 | 26 | 23 |
| Rural Collector | Over 100,000 | 72 | 18 |
| | 50,001-100,000 | 66 | 41 |
| | 25,001-50,000 | 53 | 101 |
| | 10,000-25,000 | 34 | 102 |
| | Under 10,000 | 32 | 56 |
| Rural Local | Over 50,000 | 57 | 14 |
| | 25,000-50,000 | 38 | 24 |
| | Under 25,000 | 22 | 45 |
| Urban Interstate | Over 100,000 | 57 | 134 |
| | 50,000-100,000 | 50 | 12 |
| | Under 50,000 | 67 | 3 |
| Urban Arterial | Over 100,000 | 64 | 232 |
| | 25,000-100,000 | 57 | 176 |
| | Under 25,000 | 47 | 43 |
| Urban Collector or Local | All | 54 | 57 |
| ALL | All | 52 | 1,477 |

TABLE 5. FRONT-SEAT PASSENGER (AGE 6-12 YEARS) USAGE RATES

| TYPE OF HIGHWAY | COUNTY POPULATION | USAGE RATE (PERCENT) | SAMPLE SIZE |
|---|---|---|---|
| Rural Interstate | Over 100,000 | 100 | 8 |
| | 50,001-100,000 | 74 | 34 |
| | 25,001-50,000 | 62 | 73 |
| | 10,000-25,000 | 71 | 49 |
| | Under 10,000 | 100 | 2 |
| Rural Arterial | Over 50,000 | 60 | 111 |
| | 25,001-50,000 | 59 | 236 |
| | 10,000-25,000 | 43 | 249 |
| | Under 10,000 | 30 | 40 |
| Rural Collector | Over 100,000 | 50 | 22 |
| | 50,001-100,000 | 58 | 77 |
| | 25,001-50,000 | 52 | 188 |
| | 10,000-25,000 | 44 | 190 |
| | Under 10,000 | 48 | 85 |
| Rural Local | Over 50,000 | 91 | 11 |
| | 25,000-50,000 | 42 | 38 |
| | Under 25,000 | 47 | 114 |
| Urban Interstate | Over 100,000 | 70 | 219 |
| | 50,000-100,000 | 55 | 29 |
| | Under 50,000 | 56 | 9 |
| Urban Arterial | Over 100,000 | 65 | 342 |
| | 25,000-100,000 | 57 | 371 |
| | Under 25,000 | 54 | 126 |
| Urban Collector or Local | All | 65 | 108 |
| ALL | All | 58 | 2,731 |

TABLE 6. FRONT-SEAT PASSENGER (AGE 13-19 YEARS) USAGE RATES

| TYPE OF HIGHWAY | COUNTY POPULATION | USAGE RATE (PERCENT) | SAMPLE SIZE |
|---|---|---|---|
| Rural Interstate | Over 100,000 | 50 | 10 |
| | 50,001-100,000 | 64 | 81 |
| | 25,001-50,000 | 59 | 120 |
| | 10,000-25,000 | 73 | 88 |
| | Under 10,000 | 56 | 16 |
| Rural Arterial | Over 50,000 | 62 | 245 |
| | 25,001-50,000 | 50 | 485 |
| | 10,000-25,000 | 53 | 495 |
| | Under 10,000 | 38 | 130 |
| Rural Collector | Over 100,000 | 50 | 32 |
| | 50,001-100,000 | 58 | 148 |
| | 25,001-50,000 | 52 | 333 |
| | 10,000-25,000 | 45 | 416 |
| | Under 10,000 | 46 | 145 |
| Rural Local | Over 50,000 | 71 | 34 |
| | 25,000-50,000 | 46 | 63 |
| | Under 25,000 | 40 | 205 |
| Urban Interstate | Over 100,000 | 65 | 398 |
| | 50,000-100,000 | 64 | 55 |
| | Under 50,000 | 50 | 8 |
| Urban Arterial | Over 100,000 | 61 | 583 |
| | 25,000-100,000 | 51 | 770 |
| | Under 25,000 | 54 | 203 |
| Urban Collector or Local | All | 55 | 243 |
| ALL | All | 55 | 5,306 |

TABLE 7. FRONT-SEAT PASSENGER (OVER 19 YEARS OF AGE) USAGE RATES

| TYPE OF HIGHWAY | COUNTY POPULATION | USAGE RATE (PERCENT) | SAMPLE SIZE |
|---|---|---|---|
| Rural Interstate | Over 100,000 | 65 | 49 |
| | 50,001-100,000 | 67 | 552 |
| | 25,001-50,000 | 65 | 988 |
| | 10,000-25,000 | 68 | 603 |
| | Under 10,000 | 76 | 89 |
| Rural Arterial | Over 50,000 | 64 | 960 |
| | 25,001-50,000 | 55 | 1,980 |
| | 10,000-25,000 | 54 | 2,295 |
| | Under 10,000 | 48 | 396 |
| Rural Collector | Over 100,000 | 58 | 314 |
| | 50,001-100,000 | 56 | 721 |
| | 25,001-50,000 | 51 | 1,426 |
| | 10,000-25,000 | 48 | 2,124 |
| | Under 10,000 | 50 | 430 |
| Rural Local | Over 50,000 | 59 | 115 |
| | 25,000-50,000 | 46 | 288 |
| | Under 25,000 | 40 | 574 |
| Urban Interstate | Over 100,000 | 64 | 1,717 |
| | 50,000-100,000 | 74 | 371 |
| | Under 50,000 | 44 | 73 |
| Urban Arterial | Over 100,000 | 60 | 2,981 |
| | 25,000-100,000 | 58 | 3,362 |
| | Under 25,000 | 52 | 703 |
| Urban Collector or Local | All | 59 | 806 |
| ALL | All | 57 | 23,917 |

TABLE 8. USAGE RATES FOR CHILDREN 1-3 YEARS OF AGE (FRONT AND REAR)

| TYPE OF HIGHWAY | COUNTY POPULATION | USAGE RATE (PERCENT) | SAMPLE SIZE |
|---|---|---|---|
| Rural Interstate | Over 100,000 | 67 | 3 |
| | 50,001-100,000 | 80 | 30 |
| | 25,001-50,000 | 78 | 103 |
| | 10,000-25,000 | 80 | 60 |
| | Under 10,000 | 80 | 5 |
| Rural Arterial | Over 50,000 | 64 | 83 |
| | 25,001-50,000 | 65 | 229 |
| | 10,000-25,000 | 55 | 221 |
| | Under 10,000 | 48 | 44 |
| Rural Collector | Over 100,000 | 94 | 32 |
| | 50,001-100,000 | 78 | 94 |
| | 25,001-50,000 | 70 | 178 |
| | 10,000-25,000 | 58 | 297 |
| | Under 10,000 | 50 | 54 |
| Rural Local | Over 50,000 | 100 | 16 |
| | 25,000-50,000 | 55 | 29 |
| | Under 25,000 | 48 | 90 |
| Urban Interstate | Over 100,000 | 88 | 231 |
| | 50,000-100,000 | 68 | 53 |
| | Under 50,000 | 50 | 6 |
| Urban Arterial | Over 100,000 | 72 | 436 |
| | 25,000-100,000 | 72 | 512 |
| | Under 25,000 | 62 | 118 |
| Urban Collector or Local | All | 67 | 100 |
| ALL | All | 68 | 3,024 |

TABLE 9. USAGE RATES FOR CHILDREN UNDER 1 YEAR OF AGE (FRONT AND REAR)

| TYPE OF HIGHWAY | COUNTY POPULATION | USAGE RATE (PERCENT) | SAMPLE SIZE |
|---|---|---|---|
| Rural Interstate | Over 100,000 | 100 | 2 |
| | 50,001-100,000 | 85 | 13 |
| | 25,001-50,000 | 91 | 21 |
| | 10,000-25,000 | 100 | 12 |
| | Under 10,000 | 100 | 5 |
| Rural Arterial | Over 50,000 | 85 | 27 |
| | 25,001-50,000 | 71 | 66 |
| | 10,000-25,000 | 75 | 72 |
| | Under 10,000 | 62 | 16 |
| Rural Collector | Over 100,000 | 82 | 11 |
| | 50,001-100,000 | 92 | 25 |
| | 25,001-50,000 | 84 | 49 |
| | 10,000-25,000 | 74 | 77 |
| | Under 10,000 | 85 | 33 |
| Rural Local | Over 50,000 | 89 | 9 |
| | 25,000-50,000 | 100 | 5 |
| | Under 25,000 | 55 | 20 |
| Urban Interstate | Over 100,000 | 93 | 43 |
| | 50,000-100,000 | 67 | 15 |
| | Under 50,000 | 100 | 2 |
| Urban Arterial | Over 100,000 | 91 | 154 |
| | 25,000-100,000 | 83 | 99 |
| | Under 25,000 | 71 | 28 |
| Urban Collector or Local | All | 82 | 44 |
| ALL | All | 83 | 848 |

TABLE 10. USAGE RATES FOR DRIVERS AND PASSENGERS BY TYPE OF HIGHWAY

| TYPE OF HIGHWAY | PERCENT USAGE | | |
|---|---|---|---|
| | DRIVERS | FRONT-SEAT PASSENGERS | CHILDREN UNDER FOUR YEARS OF AGE |
| Rural Interstate | 70 | 67 | 79 |
| Rural Arterial | 55 | 54 | 59 |
| Rural Collector | 52 | 51 | 65 |
| Rural Local | 45 | 44 | 56 |
| Urban Interstate | 67 | 66 | 84 |
| Urban Arterial | 60 | 59 | 71 |
| Urban Collector or Local | 59 | 59 | 67 |
| ALL | 58 | 57 | 72 |

TABLE 11. STATEWIDE USAGE RATE BY AGE AND SEX OF DRIVER

| CATEGORY | USAGE RATE (PERCENT) |
|---|---|
| Male | 52 |
| Female | 68 |
| 16-30 Years of Age | 55 |
| 31-50 Years of Age | 59 |
| Over 50 Years of Age | 61 |

TABLE 12. STATEWIDE USAGE RATE FOR FRONT SEAT PASSENGERS BY AGE CATEGORY

| CATEGORY | USAGE RATE (PERCENT) |
|---|---|
| Under 4 | 60 |
| 4 - 5 | 52 |
| 6 - 12 | 58 |
| 13 - 19 | 55 |
| Over 19 | 57 |

TABLE 13. CHANGE IN USAGE OF SAFETY BELTS BY DRIVERS IN ORIGINAL STATEWIDE SURVEY CITIES

| | PERCENT USING SAFETY BELTS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CITY | 1982 | 1983 | 1984 | 1985 | 1986 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 |
| Louisville | 6 | 12 | 13 | 14 | 16 | 25 | 28 | 38 | 70 | 66 | 60 | 66 |
| Lexington | 8 | 10 | 10 | 17 | 24 | 31 | 42 | 80 | 69 | 61 | 65 | 70 |
| Covington | 8 | 9 | 12 | 16 | 22 | 28 | 32 | 39 | 37 | 51 | 58 | 59 |
| Hopkinsville | 3 | 3 | 4 | 6 | 10 | 20 | 21 | 24 | 27 | 30 | 27 | 63 |
| Frankfort | 5 | 7 | 7 | 11 | 14 | 19 | 24 | 38 | 38 | 46 | 44 | 63 |
| Henderson | 3 | 5 | 7 | 9 | 11 | 20 | 22 | 29 | 29 | 29 | 32 | 62 |
| Newport | 5 | 6 | 5 | 6 | 9 | 20 | 26 | 35 | 34 | 34 | 29 | 39 |
| Madisonville | 2 | 3 | 5 | 8 | 12 | 20 | 22 | 26 | 26 | 27 | 28 | 70 |
| Elizabethtown | 3 | 4 | 5 | 8 | 14 | 20 | 26 | 31 | 34 | 39 | 34 | 60 |
| Winchester | 2 | 3 | 6 | 9 | 12 | 25 | 33 | 37 | 35 | 38 | 32 | 59 |
| Glasgow | 3 | 3 | 3 | 5 | 6 | 12 | 15 | 19 | 27 | 29 | 26 | 53 |
| Somerset | 2 | 4 | 6 | 7 | 9 | 19 | 26 | 21 | 29 | 28 | 28 | 59 |
| Maysville | 2 | 3 | 6 | 6 | 13 | 19 | 25 | 29 | 34 | 33 | 34 | 54 |
| Morehead | 3 | 3 | 3 | 5 | 7 | 12 | 15 | 22 | 23 | 26 | 28 | 59 |
| Princeton | 2 | 2 | 2 | 3 | 6 | 12 | 15 | 17 | 19 | 20 | 21 | 54 |
| Bardstown | 4 | 4 | 6 | 7 | 13 | 19 | 21 | 23 | 30 | 40 | 45 | 58 |
| Hazard | 4 | 3 | 4 | 6 | 5 | 10 | 12 | 15 | 19 | 19 | 29 | 52 |
| Lawrenceburg | 1 | 2 | 3 | 6 | 5 | 9 | 15 | 19 | 22 | 24 | 23 | 43 |
| Carrollton | 3 | 5 | 5 | 7 | 10 | 16 | 19 | 35 | 34 | 30 | 31 | 51 |

TABLE 14. CHANGE IN USAGE OF SAFETY SEATS OR BELTS BY CHILDREN UNDER FOUR YEARS OF AGE IN ORIGINAL STATEWIDE SURVEY CITIES

| | PERCENT USING SAFETY SEATS OR BELTS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CITY | 1982 | 1983 | 1984 | 1985 | 1986 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 |
| Louisville | 22 | 36 | 49 | 42 | 40 | 68 | 65 | 80 | 86 | 87 | 83 | 88 |
| Lexington | 32 | 46 | 50 | 44 | 46 | 78 | 78 | 91 | 90 | 87 | 81 | 83 |
| Covington | 22 | 39 | 49 | 47 | 50 | 59 | 53 | 66 | 67 | 72 | 84 | 74 |
| Hopkinsville | 12 | 19 | 19 | 20 | 21 | 33 | 38 | 40 | 51 | 54 | 56 | 76 |
| Frankfort | 15 | 26 | 30 | 27 | 30 | 43 | 43 | 57 | 72 | 72 | 62 | 97 |
| Henderson | 14 | 18 | 26 | 30 | 31 | 36 | 42 | 53 | 53 | 58 | 58 | 78 |
| Newport | 11 | 27 | 20 | 22 | 22 | 60 | 60 | 57 | 75 | 57 | 46 | 63 |
| Madisonville | 12 | 18 | 29 | 35 | 38 | 52 | 51 | 54 | 60 | 57 | 59 | 86 |
| Elizabethtown | 11 | 27 | 34 | 30 | 32 | 41 | 42 | 51 | 46 | 63 | 71 | 69 |
| Winchester | 12 | 14 | 33 | 29 | 26 | 56 | 68 | 51 | 53 | 58 | 64 | 74 |
| Glasgow | 14 | 17 | 20 | 18 | 21 | 36 | 38 | 39 | 47 | 50 | 36 | 67 |
| Somerset | 7 | 23 | 24 | 22 | 26 | 48 | 47 | 48 | 62 | 54 | 61 | 60 |
| Maysville | 12 | 18 | 17 | 19 | 25 | 31 | 34 | 36 | 55 | 58 | 62 | 70 |
| Morehead | 10 | 14 | 13 | 15 | 14 | 25 | 27 | 35 | 51 | 61 | 62 | 72 |
| Princeton | 10 | 12 | 12 | 16 | 20 | 33 | 41 | 52 | 52 | 53 | 60 | 71 |
| Bardstown | 20 | 21 | 31 | 31 | 31 | 41 | 39 | 42 | 76 | 67 | 75 | 84 |
| Hazard | 7 | 10 | 9 | 11 | 13 | 19 | 20 | 25 | 34 | 50 | 40 | 65 |
| Lawrenceburg | 7 | 6 | 22 | 23 | 20 | 32 | 29 | 35 | 77 | 65 | 41 | 52 |
| Carrollton | 6 | 10 | 16 | 22 | 19 | 26 | 28 | 31 | 45 | 62 | 43 | 62 |

TABLE 15. ACCIDENT SEVERITY VERSUS SAFETY BELT USAGE (ALL DRIVERS)*

| TYPE OF INJURY | NOT WEARING SAFETY BELT | | WEARING SAFETY BELT | | PERCENT REDUCTION |
|---|---|---|---|---|---|
| | NUMBER | PERCENT | NUMBER | PERCENT | |
| Fatal | 2,005 | 0.38 | 370 | 0.06 | 83** |
| Incapacitating | 19,305 | 3.68 | 9,943 | 1.72 | 53** |
| Non-Incapacitating | 33,135 | 6.32 | 22,247 | 3.84 | 39** |
| Possible Injury | 37,194 | 7.10 | 34,363 | 5.93 | 16** |
| Fatal or Incapacitating | 21,310 | 4.07 | 10.313 | 1.78 | 56** |

* Based on 1989 through 1993 accident data. Total sample size for not wearing a safety belt was 524,022 compared to 579,629 for wearing a safety belt.

** Statistically significant reduction (probability of 0.99).

TABLE 16. ACCIDENT SEVERITY VERSUS SAFETY BELT USAGE BY TYPE OF VEHICLE, SPEED LIMIT, AND TYPE OF ACCIDENT (ALL DRIVERS)*

| VARIABLE | CATEGORY | PERCENT SUSTAINING FATAL OR SEVERE INJURY | | PERCENT REDUCTION |
|---|---|---|---|---|
| | | NOT WEARING SAFETY BELT | WEARING SAFETY BELT | |
| Type of Vehicle | Passenger Car | 4.60 | 2.25 | 51 |
| | Single-Unit Truck | 2.65 | 1.18 | 56 |
| | Combination Truck | 2.81 | 1.32 | 53 |
| Type of Accident (Non-Intersection) | Rear End | 1.97 | 1.41 | 29 |
| | Fixed Object | 15.85 | 6.41 | 60 |
| | Head-On | 21.99 | 16.12 | 27 |
| | Overturned | 19.44 | 7.98 | 59 |
| Speed Limit (mph) | 35 | 2.91 | 1.29 | 56 |
| | 45 | 4.20 | 1.82 | 57 |
| | 55 | 9.05 | 3.92 | 57 |

* Based on 1989 through 1993 accident data.

TABLE 17. ACCIDENT SEVERITY VERSUS SAFETY SEAT AND BELT USAGE (CHILDREN AGE THREE AND UNDER)*

| TYPE OF INJURY | NOT USING SAFETY SEAT OR BELT | | USING SAFETY SEAT | | USING SAFETY BELT | | PERCENT REDUCTION | |
|---|---|---|---|---|---|---|---|---|
| | NUMBER | PERCENT | NUMBER | PERCENT | NUMBER | PERCENT | SAFETY SEAT | SAFETY BELT |
| Fatal | 18 | 0.10 | 20 | 0.09 | 6 | 0.03 | 11 | 70 |
| Incapacitating | 470 | 2.57 | 158 | 0.68 | 200 | 0.97 | 73** | 62** |
| Non-Incapacitating | 1,053 | 5.75 | 647 | 2.80 | 529 | 2.56 | 51** | 55** |
| Possible Injury | 1,523 | 8.31 | 1,050 | 4.55 | 1,157 | 5.61 | 45** | 33** |
| Fatal or Incapacitating | 488 | 2.66 | 178 | 0.77 | 206 | 1.00 | 71** | 63** |

* Based on 1989 through 1993 accident data. Total sample sizes were 18,319 for not using a safety seat or belt, 23,093 for using a safety seat, and 16,951 for using a safety belt.

** Statistically significant reduction (probability of 0.99).

TABLE 18. ACCIDENT SEVERITY VERSUS SAFETY SEAT AND BELT USAGE BY SEATING POSITION (CHILDREN AGE THREE AND UNDER)*

| SEATING POSITION | TYPE OF INJURY | NOT USING SAFETY SEAT OR BELT | | USING SAFETY SEAT OR BELT | | PERCENT REDUCTION |
|---|---|---|---|---|---|---|
| | | NUMBER | PERCENT | NUMBER | PERCENT | |
| Front | Fatal | 14 | 0.11 | 9 | 0.05 | 55 |
| | Incapacitating | 344 | 2.73 | 177 | 0.99 | 64** |
| | Non-Incapacitating | 773 | 6.12 | 599 | 3.36 | 45** |
| | Possible Injury | 1,143 | 9.06 | 1,070 | 5.99 | 34** |
| | Fatal or Incapacitating | 358 | 2.84 | 186 | 1.04 | 63** |
| Rear | Fatal | 4 | 0.07 | 17 | 0.08 | -13 |
| | Incapacitating | 126 | 2.21 | 137 | 0.64 | 71** |
| | Non-Incapacitating | 280 | 4.91 | 482 | 2.25 | 54** |
| | Possible Injury | 380 | 6.67 | 875 | 4.09 | 39** |
| | Fatal or Incapacitating | 130 | 2.28 | 154 | 0.72 | 68** |

* Based on 1989 through 1993 accident data. Total sample sizes were 12,622 and 5,697 for not using a safety seat or belt in the front and rear seats, respectively, and 17,833 and 20,877 for using either a safety seat or belt in the front and rear seats, respectively.

** Statistically significant reduction (probability of 0.99).

TABLE 19. ACCIDENT SEVERITY VERSUS SAFETY BELT OR SEAT USAGE (OCCUPANTS OTHER THAN DRIVERS)*

| TYPE OF INJURY | NOT USING LAP BELT OR SHOULDER HARNESS NUMBER | NOT USING LAP BELT OR SHOULDER HARNESS PERCENT | USING LAP BELT AND/OR SHOULDER HARNESS NUMBER | USING LAP BELT AND/OR SHOULDER HARNESS PERCENT | PERCENT REDUCTION |
|---|---|---|---|---|---|
| Fatal | 904 | 0.32 | 174 | 0.08 | 76** |
| Incapacitating | 11,802 | 4.23 | 4,221 | 1.90 | 55** |
| Non-Incapacitating | 23,041 | 8.26 | 10,182 | 4.59 | 44** |
| Possible Injury | 25,076 | 8.99 | 15,925 | 7.19 | 20** |
| Fatal or Incapacitating | 12,706 | 4.55 | 4,395 | 1.98 | 56** |

* Based on 1989 through 1993 accident data. Total sample sizes were 279,072 not using a safety belt or seat compared to 221,626 using a safety belt.

** Statistically significant reduction (probability of 0.99).

TABLE 20. ACCIDENT SEVERITY VERSUS SAFETY BELT USAGE (OCCUPANTS OTHER THAN DRIVERS)*

| SEATING POSITION | TYPE OF INJURY | NOT USING LAP BELT OR SHOULDER HARNESS NUMBER | NOT USING LAP BELT OR SHOULDER HARNESS PERCENT | USING LAP BELT AND/OR SHOULDER HARNESS NUMBER | USING LAP BELT AND/OR SHOULDER HARNESS PERCENT | PERCENT REDUCTION |
|---|---|---|---|---|---|---|
| Front | Fatal | 697 | 0.35 | 142 | 0.09 | 73*** |
| | Incapacitating | 8,983 | 4.48 | 3,354 | 2.18 | 51*** |
| | Non-Incapacitating | 17,185 | 8.57 | 7,643 | 4.96 | 42*** |
| | Possible Injury | 18,945 | 9.44 | 12,220 | 7.92 | 16*** |
| | Fatal or Incapacitating | 9,680 | 4.83 | 3,496 | 2.27 | 53*** |
| Rear** | Fatal | 207 | 0.26 | 32 | 0.05 | 82*** |
| | Incapacitating | 2,819 | 3.59 | 867 | 1.29 | 64*** |
| | Non-Incapacitating | 5,856 | 7.46 | 2,539 | 3.77 | 50*** |
| | Possible Injury | 6,131 | 7.81 | 3,705 | 5.50 | 30*** |
| | Fatal or Incapacitating | 3,026 | 3.86 | 899 | 1.33 | 65*** |

* Based on 1989 through 1993 accident data. Total sample sizes were 200,617 and 78,455 for not using a safety belt in the front seat and rear seat, respectively, and 154,204 and 67,422 for using a safety belt in the front and rear seat, respectively.

** Lap belts only primarily used in rear seats.

*** Statistically significant reduction (probability of 0.99).

TABLE 21. POTENTIAL ANNUAL REDUCTION IN TRAFFIC ACCIDENT FATALITIES AND ACCIDENT SAVINGS FROM INCREASE IN DRIVER SAFETY BELT USAGE*

| DRIVER USAGE RATE (PERCENT) | POTENTIAL ANNUAL REDUCTION IN NUMBER OF | | ANNUAL ACCIDENT SAVINGS SAVINGS MILLION $ FROM REDUCTION IN | | |
|---|---|---|---|---|---|
| | FATALITIES | SERIOUS INJURIES** | FATALITIES | SERIOUS INJURIES | TOTAL |
| 50 | 48 | 319 | 72.0 | 12.4 | 84.4 |
| 60 | 109 | 718 | 163.5 | 28.0 | 191.5 |
| 70 | 169 | 1,117 | 253.5 | 43.6 | 297.1 |
| 80 | 230 | 1,515 | 345.0 | 59.1 | 404.1 |
| 90 | 291 | 1,914 | 436.5 | 74.6 | 511.1 |
| 100 | 351 | 2,313 | 526.5 | 90.2 | 616.7 |

* Based on increase from the 42 usage rate determined in the 1993 survey, the percent reductions listed in Table 15, and accident cost estimates recommended by the Federal Highway Administration (15). These costs are $1,500,000 for a fatality and $39,000 for an incapacitating injury.

** Serious injuries were defined as those listed as incapacitating on the accident report.

TABLE 22. STATEWIDE USAGE RATES

| YEAR | PERCENT USING SAFETY BELTS | |
|---|---|---|
| | DRIVERS | CHILDREN UNDER FOUR YEARS OF AGE* |
| 1982 | 4 | 15 |
| 1983 | 6 | 24 |
| 1984 | 7 | 30 |
| 1985 | 9 | 29 |
| 1986 | 13 | 30 |
| 1988 | 21 | 48 |
| 1989 | 26 | 49 |
| 1990 | 32 | 57 |
| 1991 | 39 | 57 |
| 1992 | 41 | 62 |
| 1993 | 42 | 61 |
| 1994 | 58 | 72 |

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

# APPENDIX

# SUMMARY OF DATA

LIST OF SURVEY LOCATIONS

1 Fayette, I64 at KY 859
2 Boyd, I64 at US 23
3 Christian,I24 at US 41A,Hopkinsville
4 Hardin, I65 at rest area, Sonora
5 Barren, I65 at KY 70, Cave City
6 Boone, I75 at rest area, Florence
7 Clark, I64 at KY 627, Winchester
8 Franklin, I64 at US 60, Frankfort
9 Laurel, I75 at KY 80, London
10 Henry, I71 at KY 153, Sligo
11 Rockcastle, I75 at US 25, Mt. Vernon
12 Scott, I75 at rest area, Georgetown
13 Shelby, I64 at KY 53, Shelbyville
14 Woodford, I64 at KY 341, Midway
15 Trigg, I24 at US 68, Cadiz
16 Pike, US 460 at KY 122, Shelbiana
17 Daviess, US 60 at KY 144, Owensboro
18 Hardin, US 31W at KY 835, West Point
19 Perry, KY 15X at KY 476, Hazard
20 Knox, US 25E at KY 225, Barbourville
21 Harlan, US 119 at KY 179, Cumberland
22 Floyd, KY 80 at US 23, Allen
23 Bullitt, US 31E at KY 44, Mt. Washington
24 Carter, KY 1 at I64, Grayson
25 Laurel, US 25 at KY 80, London
26 Mason, US 62 at KY 11, Maysville
27 Clay, US 421 at KY 80, Manchester
28 Bourbon,US68 at 5th St., Millersburg
29 Casey, US 127 at KY 70, Liberty
30 Meade, US 31W at KY 1638, Muldraugh
31 Lincoln, US127 at KY 78, Hustonville
32 Russell,US127 at KY80,Russell Sprgs.
33 Washington,US 150 at KY 55, Springfield
34 Cumberland, KY 90 at KY 61, Burkesville
35 Ballard, US 60 at KY 358, LaCenter
36 Fayette, KY 418 at I75, Lexington
37 Christian, US 41 at KY 1682, Hopkinsville
38 McCracken, US 62 at KY 68, Paducah
39 Madison, KY 52 at KY 876, Richmond
40 Barren, KY 255 at US 31W, Park City
41 Nelson, US 62 at KY 48, Bloomfield
42 Boone, KY 18 at KY 237, Burlington
43 Oldham, KY 146 at KY 393, Buckner
44 Knox, KY 11 at US 25E, Barbourville
45 Henderson, KY 145 at US 60, Corydon
46 Boyle, US 68 at US 150, Perryville
47 Greenup, KY 1 at US 23, Greenup
48 Caldwell,KY 139 at Jefferson, Princeton
49 Grayson, US 62 at KY 259, Leitchfield
50 Allen, US 231 at US 31E, Scottsville
51 Bath, US 60 at KY36, Owingsville
52 Larue, KY 84 at KY 61, Hodgenville
53 Scott, US 62 at I75, Georgetown
54 Anderson, US 127 at US 127B, Lawrenceburg
55 Breathitt, KY 30 at KY 15, Jackson
56 Webster, US 41 at KY 56, Sebree
57 Garrard, KY 39 at US 27, Lancaster
58 Carroll, US 42 at Highland, Carrollton
59 Elliott, KY 32 at KY 7, Sandy Hook
60 McCracken, KY 1286 at US 62, Paducah
61 Harlan, KY 840 at US 119, Loyall
62 Greenup, KY 7 at US 23, South Shore
63 Lewis, KY 10 at KY 57, Tollesboro
64 Simpson, KY 73 at KY 100, Franklin
65 Adair, KY 55 at KY 80, Columbia
66 Taylor, KY 208 at US 68, Campbellsville
67 Kenton, I275 at KY 17, Covington
68 Kenton,I75 at KY 371, Crescent Springs
69 Fayette, I75 at US 68, Lexington
70 Jefferson, I64 at KY 1747, Louisville
71 Jefferson, I65 at KY 1631, Louisville
72 Jefferson, I264 at US 31E, Louisville
73 Jefferson, I264 at US 42, Louisville
74 Jefferson, I264 at US 60, Louisville
75 Warren, I65 at US 231, Bowling Green
76 Boone, I71 at KY 14, Verona
77 Jefferson, US 31W at Gagel, Louisville
78 Jefferson,KY 1447 at Hubbards, Louisville
79 Jefferson,KY 1703 at Trevillian,Louisville
80 Fayette, US 27 at KY 1683, Lexington
81 Fayette, Reynolds at Lansdowne, Lexington
82 Fayette, KY 4 at KY 353, Lexington
83 Kenton, US 25 at KY 236, Covington
84 Kenton, KY 8 at KY 17, Covington
85 Kenton, KY 16 at KY 177, Covington
86 Fayette, US 25 at Fontaine, Lexington
87 Campbell, US 27 at Carothers, Newport
88 Christian, US 41 at 9th, Hopkinsville
89 Hopkins, US 41A at KY 70, Madisonville
90 Pulaski, US 27 at KY 80, Somerset
91 Franklin, US 60 at Sunset, Frankfort
92 Henderson, US 41A at First St., Henderson
93 Nelson, US 31E at Beall, Bardstown
94 Barren, US 68 at Race St., Glasgow
95 Clark, US 60 at KY 1958, Winchester
96 Warren, US 31W at US 231, Bowling Green
97 Anderson, US 62 at US 127, Lawrenceburg
98 Rowan, US 60 at KY 32, Morehead
99 Hardin, Poplar at Sycamore, Elizabethtown
100 Kenton, KY 1072 at Highland, Covington

TABLE A-1. SUMMARY OF DATA

| LOCATION NUMBER | DRIVERS | | FRONT-SEAT PASSENGERS | | | | | | | | FRONT AND REAR | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 4-5 Years | | 6-12 Years | | 13-19 Years | | OVER 19 Years | | UNDER 4 Years | | 1-3 Years | | UNDER 1 Year | |
| | SAMPLE | USAGE* | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE |
| 1 | 174 | 76 | 2 | 50 | 8 | 100 | 10 | 50 | 49 | 65 | 3 | 67 | 3 | 67 | 2 | 100 |
| 2 | 574 | 67 | 5 | 80 | 10 | 80 | 35 | 51 | 175 | 56 | 6 | 83 | 9 | 78 | 5 | 100 |
| 3 | 459 | 76 | 7 | 86 | 17 | 76 | 31 | 77 | 194 | 70 | 6 | 83 | 8 | 100 | 6 | 67 |
| 4 | 301 | 75 | 3 | 0 | 7 | 57 | 15 | 67 | 183 | 73 | 5 | 60 | 13 | 69 | 2 | 100 |
| 5 | 592 | 67 | 6 | 50 | 15 | 60 | 46 | 52 | 327 | 70 | 14 | 57 | 34 | 76 | 8 | 88 |
| 6 | 420 | 75 | 7 | 57 | 9 | 67 | 14 | 71 | 165 | 70 | 10 | 60 | 27 | 85 | 7 | 86 |
| 7 | 567 | 57 | 7 | 43 | 15 | 60 | 18 | 61 | 140 | 57 | 8 | 38 | 18 | 67 | 2 | 100 |
| 8 | 615 | 73 | 1 | 100 | 13 | 85 | 10 | 80 | 126 | 66 | 5 | 60 | 13 | 77 | 2 | 100 |
| 9 | 683 | 66 | 13 | 54 | 21 | 48 | 32 | 66 | 230 | 60 | 4 | 50 | 11 | 82 | 2 | 100 |
| 10 | 318 | 61 | 3 | 100 | 13 | 46 | 20 | 65 | 101 | 61 | 7 | 71 | 13 | 77 | 2 | 100 |
| 11 | 477 | 70 | 2 | 100 | 19 | 89 | 29 | 79 | 230 | 72 | 10 | 50 | 16 | 63 | 4 | 100 |
| 12 | 335 | 72 | 2 | 50 | 6 | 50 | 6 | 83 | 122 | 71 | 5 | 80 | 16 | 88 | 3 | 100 |
| 13 | 402 | 66 | 8 | 75 | 7 | 86 | 23 | 70 | 87 | 68 | 1 | 100 | 6 | 100 | 1 | 100 |
| 14 | 272 | 78 | 5 | 80 | 4 | 75 | 10 | 70 | 63 | 62 | 6 | 83 | 9 | 89 | 2 | 100 |
| 15 | 191 | 82 | 1 | 100 | 2 | 100 | 16 | 56 | 89 | 76 | 2 | 100 | 5 | 80 | 5 | 100 |
| 16 | 824 | 54 | 19 | 37 | 20 | 55 | 67 | 55 | 243 | 53 | 11 | 64 | 11 | 55 | 9 | 100 |
| 17 | 1,365 | 58 | 13 | 62 | 44 | 61 | 110 | 60 | 246 | 56 | 20 | 60 | 41 | 59 | 11 | 73 |
| 18 | 1,539 | 69 | 19 | 53 | 47 | 62 | 68 | 72 | 471 | 73 | 14 | 57 | 31 | 74 | 7 | 86 |
| 19 | 1,435 | 52 | 12 | 42 | 20 | 35 | 54 | 28 | 427 | 50 | 25 | 36 | 49 | 63 | 11 | 73 |
| 20 | 1,104 | 55 | 17 | 53 | 49 | 57 | 95 | 57 | 338 | 60 | 28 | 50 | 43 | 67 | 19 | 53 |
| 21 | 598 | 46 | 8 | 38 | 5 | 40 | 25 | 44 | 142 | 45 | 13 | 15 | 23 | 48 | 2 | 50 |
| 22 | 843 | 66 | 14 | 57 | 25 | 52 | 68 | 53 | 251 | 63 | 9 | 67 | 14 | 79 | 3 | 100 |
| 23 | 947 | 55 | 18 | 39 | 49 | 65 | 57 | 54 | 164 | 62 | 33 | 64 | 51 | 75 | 14 | 100 |
| 24 | 965 | 50 | 20 | 60 | 9 | 56 | 49 | 47 | 262 | 49 | 16 | 69 | 14 | 64 | 5 | 100 |
| 25 | 1,614 | 53 | 34 | 44 | 79 | 66 | 137 | 53 | 396 | 56 | 26 | 42 | 35 | 54 | 12 | 50 |
| 26 | 1,514 | 54 | 25 | 32 | 34 | 50 | 70 | 46 | 391 | 54 | 23 | 57 | 34 | 65 | 10 | 90 |
| 27 | 1,088 | 45 | 22 | 27 | 39 | 33 | 52 | 71 | 320 | 42 | 18 | 28 | 23 | 35 | 7 | 71 |
| 28 | 1,088 | 51 | 7 | 71 | 25 | 32 | 28 | 46 | 285 | 56 | 15 | 60 | 33 | 52 | 3 | 100 |
| 29 | 780 | 45 | 19 | 26 | 25 | 28 | 73 | 40 | 194 | 47 | 26 | 35 | 33 | 33 | 14 | 57 |
| 30 | 1,603 | 67 | 23 | 52 | 33 | 64 | 87 | 61 | 465 | 67 | 19 | 68 | 35 | 74 | 15 | 80 |
| 31 | 386 | 65 | 7 | 57 | 14 | 57 | 26 | 62 | 145 | 65 | 9 | 78 | 12 | 83 | 6 | 67 |
| 32 | 880 | 48 | 21 | 38 | 46 | 46 | 78 | 51 | 238 | 50 | 18 | 39 | 34 | 44 | 9 | 56 |
| 33 | 1,222 | 54 | 26 | 46 | 33 | 36 | 81 | 53 | 257 | 50 | 8 | 75 | 17 | 71 | 8 | 100 |
| 34 | 684 | 38 | 13 | 31 | 30 | 30 | 61 | 36 | 176 | 41 | 20 | 15 | 29 | 34 | 8 | 38 |
| 35 | 801 | 48 | 10 | 20 | 10 | 30 | 69 | 41 | 220 | 54 | 10 | 60 | 15 | 73 | 8 | 88 |
| 36 | 1,247 | 67 | 18 | 72 | 22 | 50 | 32 | 50 | 314 | 58 | 11 | 100 | 32 | 94 | 11 | 82 |
| 37 | 851 | 58 | 11 | 91 | 18 | 56 | 47 | 55 | 176 | 57 | 13 | 85 | 18 | 83 | 16 | 94 |
| 38 | 894 | 59 | 16 | 56 | 15 | 47 | 54 | 54 | 232 | 59 | 15 | 47 | 13 | 38 | 4 | 75 |
| 39 | 1,573 | 58 | 14 | 57 | 44 | 64 | 47 | 66 | 313 | 53 | 30 | 67 | 63 | 84 | 5 | 100 |
| 40 | 431 | 52 | 4 | 75 | 10 | 40 | 24 | 46 | 167 | 56 | 7 | 57 | 22 | 77 | 3 | 100 |
| 41 | 415 | 40 | 5 | 80 | 23 | 43 | 19 | 26 | 84 | 49 | 6 | 33 | 7 | 57 | 2 | 50 |
| 42 | 1,597 | 49 | 16 | 63 | 20 | 50 | 44 | 61 | 253 | 51 | 21 | 71 | 39 | 79 | 10 | 90 |
| 43 | 1,123 | 56 | 22 | 68 | 49 | 67 | 85 | 59 | 167 | 50 | 20 | 65 | 44 | 73 | 8 | 75 |
| 44 | 925 | 52 | 13 | 38 | 15 | 33 | 46 | 39 | 295 | 52 | 16 | 56 | 21 | 67 | 11 | 91 |
| 45 | 330 | 65 | 5 | 40 | 10 | 60 | 15 | 53 | 73 | 67 | 5 | 80 | 9 | 56 | 3 | 67 |
| 46 | 759 | 57 | 10 | 50 | 13 | 46 | 39 | 59 | 177 | 59 | 11 | 64 | 18 | 61 | 9 | 89 |
| 47 | 744 | 43 | 26 | 38 | 48 | 48 | 61 | 49 | 210 | 36 | 12 | 42 | 18 | 61 | 3 | 67 |
| 48 | 1,187 | 54 | 8 | 63 | 28 | 54 | 67 | 45 | 183 | 46 | 18 | 50 | 29 | 69 | 5 | 80 |
| 49 | 1,407 | 47 | 16 | 19 | 22 | 41 | 27 | 59 | 408 | 45 | 16 | 56 | 41 | 68 | 12 | 100 |
| 50 | 671 | 46 | 8 | 50 | 13 | 62 | 52 | 48 | 183 | 46 | 9 | 56 | 11 | 27 | 3 | 100 |
| 51 | 979 | 39 | 15 | 47 | 53 | 32 | 80 | 33 | 217 | 44 | 28 | 46 | 52 | 48 | 13 | 77 |
| 52 | 277 | 46 | 12 | 17 | 6 | 50 | 19 | 47 | 101 | 39 | 10 | 50 | 15 | 53 | 1 | 100 |
| 53 | 815 | 66 | 4 | 75 | 7 | 71 | 17 | 76 | 246 | 70 | 15 | 80 | 30 | 87 | 5 | 100 |
| 54 | 868 | 57 | 6 | 33 | 11 | 55 | 25 | 60 | 283 | 63 | 16 | 63 | 30 | 80 | 5 | 80 |
| 55 | 705 | 38 | 8 | 25 | 8 | 25 | 22 | 18 | 231 | 34 | 25 | 24 | 43 | 40 | 5 | 100 |
| 56 | 730 | 48 | 16 | 19 | 24 | 38 | 53 | 38 | 113 | 42 | 22 | 23 | 27 | 30 | 20 | 40 |
| 57 | 729 | 43 | 9 | 44 | 18 | 56 | 54 | 52 | 159 | 41 | 10 | 60 | 19 | 63 | 8 | 63 |
| 58 | 1,798 | 51 | 33 | 42 | 65 | 52 | 78 | 51 | 267 | 58 | 40 | 55 | 45 | 51 | 24 | 83 |
| 59 | 648 | 40 | 23 | 17 | 20 | 35 | 67 | 39 | 163 | 37 | 11 | 45 | 9 | 44 | 9 | 89 |
| 60 | 601 | 67 | 14 | 57 | 11 | 91 | 34 | 71 | 115 | 59 | 9 | 89 | 16 | 100 | 9 | 89 |
| 61 | 345 | 53 | 5 | 40 | 6 | 33 | 16 | 50 | 121 | 50 | 7 | 43 | 17 | 53 | 2 | 100 |
| 62 | 633 | 39 | 19 | 37 | 32 | 44 | 47 | 45 | 167 | 43 | 6 | 33 | 12 | 58 | 3 | 100 |
| 63 | 312 | 35 | 5 | 20 | 9 | 33 | 20 | 30 | 73 | 34 | 3 | 33 | 4 | 25 | 1 | 100 |

TABLE A-1. SUMMARY OF DATA (continued)

| | | | FRONT-SEAT PASSENGERS | | | | | | | | FRONT AND REAR | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DRIVERS | | 4-5 Years | | 6-12 Years | | 13-19 Years | | OVER 19 Years | | UNDER 4 Years | | 1-3 Years | | UNDER 1 Year | |
| LOCATION NUMBER | SAMPLE | USAGE* | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE | SAMPLE | USAGE |
| 64 | 210 | 42 | 3 | 33 | 2 | 0 | 12 | 58 | 39 | 36 | 5 | 40 | 5 | 40 | 2 | 100 |
| 65 | 1,723 | 40 | 31 | 23 | 86 | 49 | 145 | 39 | 401 | 42 | 39 | 31 | 76 | 49 | 15 | 47 |
| 66 | 289 | 45 | 6 | 17 | 17 | 53 | 28 | 46 | 61 | 38 | 4 | 75 | 5 | 60 | 2 | 50 |
| 67 | 1,288 | 57 | 20 | 65 | 40 | 60 | 72 | 63 | 284 | 56 | 25 | 76 | 53 | 75 | 10 | 100 |
| 68 | 1,311 | 60 | 17 | 59 | 29 | 69 | 78 | 59 | 288 | 67 | 10 | 100 | 19 | 95 | 6 | 100 |
| 69 | 694 | 76 | 11 | 36 | 14 | 86 | 36 | 64 | 189 | 64 | 4 | 50 | 11 | 82 | 2 | 50 |
| 70 | 1,394 | 73 | 17 | 59 | 37 | 68 | 29 | 72 | 253 | 72 | 23 | 78 | 35 | 89 | 3 | 67 |
| 71 | 1,323 | 63 | 20 | 45 | 16 | 25 | 59 | 59 | 171 | 57 | 20 | 85 | 23 | 91 | 9 | 89 |
| 72 | 988 | 71 | 19 | 58 | 20 | 95 | 26 | 85 | 183 | 66 | 8 | 100 | 18 | 100 | 1 | 100 |
| 73 | 1,430 | 69 | 13 | 62 | 20 | 75 | 52 | 52 | 133 | 59 | 22 | 86 | 39 | 92 | 9 | 100 |
| 74 | 1,138 | 76 | 17 | 65 | 43 | 79 | 46 | 85 | 216 | 70 | 19 | 89 | 33 | 94 | 3 | 100 |
| 75 | 1,036 | 71 | 12 | 50 | 29 | 55 | 55 | 64 | 371 | 74 | 22 | 59 | 53 | 68 | 15 | 67 |
| 76 | 224 | 49 | 3 | 67 | 9 | 56 | 8 | 50 | 73 | 44 | 3 | 33 | 6 | 50 | 2 | 100 |
| 77 | 1,761 | 59 | 23 | 70 | 33 | 82 | 68 | 69 | 302 | 66 | 24 | 71 | 27 | 59 | 18 | 100 |
| 78 | 1,591 | 70 | 25 | 96 | 61 | 72 | 86 | 59 | 210 | 64 | 16 | 94 | 34 | 97 | 21 | 100 |
| 79 | 1,490 | 71 | 15 | 60 | 27 | 93 | 56 | 75 | 290 | 67 | 6 | 100 | 13 | 92 | 0 | NA |
| 80 | 1,787 | 73 | 39 | 77 | 38 | 74 | 101 | 71 | 387 | 76 | 28 | 89 | 38 | 84 | 24 | 96 |
| 81 | 609 | 68 | 21 | 76 | 17 | 88 | 11 | 64 | 87 | 57 | 25 | 96 | 38 | 97 | 17 | 100 |
| 82 | 1,391 | 65 | 26 | 58 | 35 | 69 | 65 | 57 | 380 | 62 | 29 | 66 | 65 | 68 | 11 | 73 |
| 83 | 1,442 | 58 | 21 | 62 | 33 | 52 | 34 | 59 | 384 | 56 | 34 | 74 | 62 | 76 | 16 | 100 |
| 84 | 1,558 | 46 | 19 | 32 | 44 | 36 | 79 | 39 | 301 | 49 | 33 | 33 | 62 | 44 | 18 | 50 |
| 85 | 1,173 | 46 | 28 | 36 | 34 | 41 | 50 | 48 | 406 | 45 | 30 | 57 | 64 | 64 | 13 | 100 |
| 86 | 1,126 | 69 | 15 | 60 | 20 | 60 | 33 | 73 | 234 | 60 | 19 | 84 | 33 | 82 | 16 | 94 |
| 87 | 1,596 | 39 | 28 | 32 | 62 | 37 | 73 | 27 | 324 | 44 | 41 | 49 | 85 | 60 | 9 | 89 |
| 88 | 1,745 | 63 | 10 | 80 | 41 | 66 | 67 | 52 | 285 | 55 | 23 | 74 | 42 | 76 | 9 | 78 |
| 89 | 1,880 | 70 | 15 | 73 | 38 | 76 | 72 | 65 | 313 | 64 | 20 | 75 | 62 | 87 | 4 | 75 |
| 90 | 1,276 | 59 | 23 | 35 | 44 | 55 | 139 | 56 | 481 | 62 | 19 | 47 | 56 | 61 | 17 | 59 |
| 91 | 1,551 | 63 | 19 | 47 | 19 | 58 | 73 | 58 | 345 | 61 | 6 | 83 | 20 | 95 | 11 | 100 |
| 92 | 1,540 | 62 | 13 | 69 | 22 | 59 | 48 | 42 | 277 | 59 | 20 | 75 | 54 | 76 | 4 | 100 |
| 93 | 1,565 | 58 | 40 | 73 | 73 | 59 | 83 | 53 | 288 | 63 | 39 | 82 | 56 | 80 | 21 | 95 |
| 94 | 1,308 | 53 | 16 | 63 | 37 | 51 | 60 | 58 | 323 | 53 | 19 | 47 | 48 | 63 | 6 | 100 |
| 95 | 1,355 | 51 | 5 | 40 | 10 | 60 | 28 | 36 | 250 | 55 | 17 | 65 | 33 | 73 | 3 | 100 |
| 96 | 1,924 | 63 | 7 | 71 | 25 | 68 | 127 | 50 | 476 | 62 | 34 | 65 | 56 | 73 | 15 | 67 |
| 97 | 1,404 | 43 | 22 | 41 | 45 | 40 | 52 | 44 | 268 | 43 | 24 | 67 | 50 | 48 | 10 | 70 |
| 98 | 1,590 | 59 | 21 | 52 | 81 | 62 | 151 | 57 | 435 | 58 | 34 | 62 | 68 | 72 | 18 | 72 |
| 99 | 1,218 | 60 | 30 | 50 | 49 | 65 | 105 | 56 | 312 | 53 | 32 | 66 | 46 | 61 | 25 | 84 |
| 100 | 1,773 | 59 | 27 | 59 | 59 | 64 | 138 | 54 | 494 | 63 | 22 | 64 | 54 | 72 | 19 | 79 |