

Research Report
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1986 SAFETY BELT AND CHILD SAFETY
SEAT USAGE RATES IN KENTUCKY

by

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September 1986

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16. Abstract <p>The objective of the survey summarized in this report is to establish 1986 safety belt and child safety seat usage rates in Kentucky to compare to those determined from previous surveys. Also included in this report is an analysis of accident records evaluating the effectiveness of safety belts.</p> <p>Statewide usage rates in the 19 cities previously surveyed in 1982, 1983, 1984, and 1985 showed that driver safety belt usage increased in 1986 while child safety seat and safety belt usage remained at the 1984 and 1985 levels. The statewide usage rate of safety belts by drivers was 13.0 percent in 1986 compared to 9.2 percent in 1985, 6.9 percent in 1984, 5.8 percent in 1983, and 4.2 percent in 1982. The percentage of children in either a safety seat or belt was 30.2 percent in 1986 compared to 29.1 percent in 1985, 30.3 percent in 1984, 24.2 percent in 1983, and 15.4 percent in 1982. Usage rates for front-seat passengers in 1986 were higher than those determined in 1985 for each age category.</p> <p>Benefits in the reduction of injuries for occupants wearing a safety belt or in a safety seat were shown through the analysis of accident records. For example, a 41 percent reduction in fatal or incapacitating injuries was determined for drivers wearing a safety belt compared to those who were not restrained.</p>					
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in cooperation with
Kentucky State Police
Commonwealth of Kentucky

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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. However, usage of these restraint systems has remained low. In an attempt to increase usage of child safety seats, a law was enacted by the 1982 Kentucky General Assembly requiring use of a "child restraint system" for children 40 inches or less in height. Surveys were conducted before and after the law became effective (1, 2). Those surveys revealed that the statewide usage of child safety seats or safety belts for children under 4 years of age increased from 15.4 percent in 1982 to 24.2 percent in 1983. Those same surveys indicated a statewide driver safety belt usage rate of 5.8 percent in 1983 compared to 4.2 percent in 1982. A survey conducted in 1984 indicated that the statewide usage of child safety seats and safety belts had increased to 30.3 percent while driver safety belt usage had increased to 6.9 percent (3). The 1985 survey revealed that the statewide usage of child safety seats and safety belts had stabilized at 29.1 percent while driver safety belt usage had increased to 9.2 percent (4). The increased usage of child safety seats may be attributed to both enactment of the mandatory usage law and to increased public information, which also may have contributed to the increase in safety belt usage. The objective of the survey summarized in this report is to establish 1986 safety belt and child safety seat usage rates in Kentucky to compare to that determined from previous surveys. Also included in this report is an analysis of accident records evaluating the effectiveness of safety belts.

PROCEDURE

DATA COLLECTION PLAN

The basic data collection plan used in the previous surveys (1, 2, 3, and 4) was used in this study. The data collection form, shown in Figure 1, allowed for usage to be recorded for drivers and passengers. In the first surveys, usage was recorded for children under 4 years old and for drivers. The data collection form was later organized to allow usage to be tabulated for both front- and rear-seat passengers. However, accurate data could not be easily obtained for rear-seat passengers since only a lap belt was available in the large majority of automobiles. Usage could easily be determined for the front-seat passengers since, as for the driver, belt usage involves both the lap belt and shoulder harness. This would not include passengers riding in the middle, front-seat position. As shown in Figure 1, the passengers were classified by age into four categories. The age categories used in the first surveys for the driver were not used in this survey. The procedure involved collecting data by observations only. This allowed data to be collected by one person.

An explanation of information collected is given in Figure 2. The data sheet was divided into three sections. General information (Section 1) described when and where data were collected. The section pertaining to cars containing children under 4 years of age (Section 2) included basic information concerning type of safety seat used and, when used, the

brand and whether it was used properly. Information also was obtained for the driver of any vehicle containing a child under 4 years of age. That information consisted of the driver's age category, sex, and safety belt usage. Section 3 of the data sheet contained safety belt usage information for drivers of other vehicles (those without a child under 4 years of age) and for other vehicle passengers, classified by age.

Child safety seat usage was obtained only for children under 4 years of age. Kentucky's law requires the use of child safety seats for children 40 inches in height or less. Since no interviews were conducted, a judgment concerning age or height had to be made, and the decision was made to use 4 years of age as the cutoff. Using this procedure, it also would be possible to relate survey results to traffic accident data, which report age of occupant. Children were further classified as being less than 1 year old or from 1 through 3 years old. In this report, children less than 1 year of age will be referred to as "infants", and children from 1 through 3 years of age will be termed "toddlers".

This was the fifth year of data collection for the statewide survey cities, and each year's data have been collected at the same sites in most cities. Sites were located either at traffic signals or four-way stops. Some general instructions were followed during data collection. Manuals providing suggestions for data collection procedures were reviewed when developing the data collection plan. A summary of some of the major instructions follows:

1. Data will be collected by observation.
2. Data will be obtained at intersections having either a traffic signal or four-way stop control. Observers will stand on the curb or at the edge of the roadway and observe stopped cars. Data also may be included for cars as they begin moving through a signalized intersection if the car is moving slowly enough to allow accurate observations. Only passenger cars, station wagons, and mini-vans are to be included. Kentucky's law only addresses passenger vehicles, and specifically excludes recreational vehicles and trucks of more than 1 ton.
3. All data should be collected during daylight hours at various times throughout the day.
4. Priority will be given to any car containing a child under 4 years old. Driver and front-seat passenger safety belt information for other cars will be collected when time permits.
5. Observers shall use their best judgment in estimating age. However, they shall not guess on child safety seat usage. When the type of safety seat cannot be determined, it should be left blank.
6. Proper or improper usage, along with the reason for improper usage, should be determined whenever possible, even when the type of child safety seat cannot be determined. (Note: The reasons for improper usage were those that could be identified quickly by observation. Such errors as improper routing of the belt through the seat could not be identified).

DATA COLLECTION LOCATIONS

Data were collected in the 19 cities used to estimate "statewide" usage in the previous surveys. The "statewide" survey cities and the

child safety seat survey size in each city are given in Table 1. The sample had to be distributed across the state and be representative of a range of populations to account for social and economic factors. The sample distribution was based on county population categories. From the 1980 census, the number of children under 5 years of age in each county was used to distribute the sample. This was the youngest age category available in census data. The sample size was determined so that the relative error of the observed proportion (percent using child safety seats) would be within acceptable bounds for a given probability (5). This resulted in a statewide sample size of 5,000 for child safety seats. The sample of drivers' safety belt usage was much higher as was the sample of front-seat passengers.

IDENTIFICATION OF CHILD SAFETY SEATS

A list of various child safety seats examined while preparing for the survey is presented in Table 2. The manufacturer and seat name are shown as well as a description of the type of protection afforded and the age range for which the restraint is to be used. Usage requirements for each safety seat had to be known to determine whether the seat was used properly. For example, when a tether was required but not used, the safety seat would be classified as improperly used. As part of the training process, a notebook containing photographs and literature describing the various seats was prepared. That notebook was used for review before and during the data collection process.

SURVEY DATA ANALYSIS

The child safety seat data were entered into a computer file. That allowed summaries and cross tabulations to be performed rapidly for any of the recorded data. Safety belt usage data for drivers of vehicles not containing children under 4 years of age and for front-seat passengers were summarized manually.

Statewide usage rates for drivers and front-seat passengers wearing safety belts and for children under 4 in either a safety seat or belt were determined. To calculate these statewide rates, the percentages of the state population in various population categories were used. Data were obtained in cities having a wide range in population; this procedure allowed the effect of population on usage rates to be taken into account.

The 1986 usage rates for each city were tabulated as well as the change in usage compared to that determined in the 1982, 1983, 1984, and 1985 surveys. The usage determined for the various types of child safety seats was summarized along with the reasons for and extent of improper usage for the various seats. Also, various factors affecting child safety seat and driver safety belt usage were analyzed.

ACCIDENT ANALYSIS

The computer files containing all reported traffic accidents in Kentucky were analysed to determine the effectiveness of wearing safety belts or riding in a safety seat. The effectiveness of safety belts was

related to several factors such as seating position, type of vehicle, and speed limit.

RESULTS

STATEWIDE USAGE RATES

Statewide usage rates determined for the 1985 survey for child safety seats and driver safety belt usage are given in Tables 3 and 4, respectively. The rates were calculated using data from the 19 cities previously surveyed in 1982, 1983, 1984, and 1985. The statewide percentage was derived using the percentages of the state's population in the respective population categories.

Statewide, the 1986 survey indicated that 23.7 percent of children under 4 years of age were in child safety seats. That percentage was 14.4 percent in 1982 before implementation of the child restraint law and increased to 22.7 percent in 1983 and to 27.3 percent in 1984 before decreasing to 22.7 in 1985. The percentage of children using a safety belt was 6.5 percent in 1986 compared to 6.4 percent in 1985, 3.0 percent in 1984, 1.5 percent in 1984, and 1.0 percent in 1982. The percentage of children in either a safety seat or belt was 30.2 percent in 1986 compared to 29.1 percent in 1985, 30.3 percent in 1984, 24.2 percent in 1983, and 15.4 percent in 1982. These data show that, while the 1982 law resulted in an increase in usage, the usage rate has stabilized at approximately 30 percent since 1984. There was no statistical difference between the 29.1 percent usage in 1985 and the 30.2 percent usage in 1986.

For a sample size of 5,000, a probability of 0.99, and a proportion of 23.7 percent, a bound on the relative error of the proportion was calculated to be 6.5 percent (5). This means there is an absolute error of 1.5 percent; therefore, the confidence limits of statewide child safety seat usage in 1986 were 22.2 to 25.2 percent. Using the same procedure, the confidence limits of the usage of either a safety seat or belt were 28.5 to 31.9 percent.

The percentage of child safety seats properly used was 78 percent, which is very close to the 76 percent determined in 1985. This compares to 44 percent in 1982, 50 percent in 1983, and 56 percent in 1984.

Statewide, the 1986 survey indicated that 13.0 percent of drivers were using a safety belt. The percentage has increased steadily from 4.2 percent in 1982, 5.8 percent in 1983, 6.9 percent in 1984, and 9.2 percent in 1985. For a sample size of 71,254, a probability of 0.99, and a proportion of 13.0 percent, the bound on relative error of the proportion is 2.5 percent (5). This yields an absolute error of 0.3 percent; therefore, the confidence limits of statewide driver safety belt usage were 12.7 to 13.3 percent.

As noted previously, the 1986 data collection procedure included obtaining safety belt usage data for front-seat passengers (in addition to the children under 4 years of age who were included in the other surveys). These data are summarized in Table 5 for the 19 cities used to determine

statewide rates. It may be seen that there is a large reduction in usage for children in the 4 to 5 years of age category (16.9 percent) compared to the under 4 years of age category, (30.2 percent) which is affected by the usage law. Usage remained about the same for the 6 to 12 years category (15.6 percent) compared to the 4 and 5 years category. Usage dropped substantially to 8.9 percent for teenage passengers but increased to 11.7 percent for passengers over 19 years of age. The usage rates determined for front-seat passengers in 1986 were higher than that determined in 1985 for each age category.

GENERAL SUMMARY OF SURVEY

Following is a summary of data by city and by type of safety seat as well as an analysis of factors affecting usage.

1986 Usage Rates

Safety belt usage rates of drivers, by city, as determined from the 1986 survey are given in Table 6. The total sample size for the 19 cities was 71,254. As noted in previous surveys, usage was greater in the larger cities. Usage rates varied from 24.4 percent in Lexington to 5.1 percent in Lawrenceburg. Cities having the next highest usage rates were Covington (21.7 percent) and Louisville (16.0 percent). The cities having the next lowest rates were Hazard (5.3 percent) and Glasgow and Princeton, both with 6.0 percent.

Usages of child safety seats and safety belts (children under 4 years of age), by city, as determined from the 1986 survey are given in Table 7. As with driver safety belt usage rates, those rates were higher in the larger cities. The "percent using any restraint" varied from 49.5 percent in Covington to 13.4 percent in Hazard. The other two cities having high usage rates were Lexington (46.2 percent) and Louisville (40.4 percent). The only other cities with a usage rate under 20 percent were Morehead (14.2 percent), Carrollton (18.8 percent), and Lawrenceburg (19.6 percent).

Another 153 children (3.1 percent) were in a vehicle having a child safety seat that was not in use. Many children who were not in a safety seat or belt were in especially dangerous positions. About 23 percent of the children were observed to be standing in the seat while approximately 19 percent were observed sitting on adults' laps. These percentages are close to those determined from previous surveys.

A summary of usage rates (from the 1986 survey) of safety belts by front-seat passengers by city is shown in Table 8. While the sample sizes for some categories in some cities are low, the data generally confirm the statewide statistics given previously. The largest sample sizes were for the "over 19 years of age" category and usage rates for this category varied from highs of 22.6 percent in Bardstown and 22.1 percent in Lexington to low rates of 4.6 percent in Hazard and 5.1 percent in Princeton.

Trends in Usage Rates by City

The change in the usage of safety belts by drivers in the 19 statewide survey cities is summarized in Table 9. The usage rate was higher in 1986 than in 1985 in 17 of the 19 cities. The rates were slightly lower in Hazard and Lawrenceburg. Usage rates are given for the 5-year period of 1982 through 1986. In 13 of the 19 cities, the rates have increased each year. From 1982 to 1986, the usage rates had more than doubled in all but one city (Newport), and the rates had more than tripled in 11 of the 19 cities.

The change in usage of child safety seats or belts by children under 4 years of age in the survey cities is shown in Table 10. The usage rates in 1986 were higher than those determined in 1985 in 14 of the 19 cities. In all 19 cities, the usage rates in 1986 were higher than those in 1982. The rate increased each year in only three cities. From 1982 to 1986, the usage rates had more than doubled in 11 of the 19 cities and more than tripled in two cities (Madisonville and Somerset).

Summary by Type of Safety Seat

Usage of various types of child safety seats is summarized in Table 11. For each safety seat, the number observed as well as the percentage properly used are listed. Data are presented for all children, infants only, and toddlers only. Observers were trained to identify specific seats and their proper usage. The seat used was identified in all but a few instances.

The Questor Kantwet One-Step was the single most frequently noted safety seat of all models observed, as was the case in the 1984 and 1985 surveys. The Strolee Wee Care had been the most frequently observed in the 1982 and 1983 surveys. Questor Kantwet also had the highest number of safety seats noted of any single manufacturer. The second most commonly observed seat was the older model Strolee Wee Care, which requires a tether. Other commonly observed seats distributed by Questor Kantwet included the Bobby-Mac and the Dyn-O-Mite infant seat. Seats distributed by Century and Cosco/Peterson also were observed frequently. The most common Century model was the Century 100 and the most common Cosco/Peterson model was the Safe-T-Seat. Several other seats, as noted in Table 11, were observed frequently.

Proper usage varied substantially for the various safety seats. Of the most common safety seats, the Strolee had the lowest proper-usage percentage. This is related to the requirement to use a tether in the toddler position in the model most commonly used. Proper-usage percentages for the other major manufacturers were similar. The major reasons for improper usage are summarized in Table 12. The major reasons for improper usage were failure to harness the child into the seat and failure to tether the seat as required (this is related to the Strolee safety seat). An improper usage problem related to infants was facing the infant forward rather than in the proper rear-facing position. Another problem noted was not using a shield that was required (this is related to the Bobby Mac safety seat).

As given in Table 3, the proper usage in 1986 was 78 percent. This is almost identical to the 76 percent revealed in the 1985 survey, but it is substantially higher than that determined in the first three surveys. This increase would be partially related to the decreased use of seats that have low proper-usage percentages. Specifically, more of the newer model Strolee seats, which do not require a tether, are being used. Also, fewer of the "old type" seats, which were made by more than one manufacturer, in which the child was rarely harnessed are in use. Manufacturers have attempted to make the newer models of safety seats easier to use and to provide clear and concise instructions for proper usage that would decrease improper usage. It also should be noted that improper usage identified in the survey was limited to the types that could be easily noted as a vehicle passed slowly by the observer. Other types of improper usage, such as improper routing of the safety belt, were not included. While some of the increase in proper usage may be attributed to the data collection process, the results show that proper usage has increased from that determined from the first surveys.

Factors Affecting Usage

Several other factors, shown in Table 13, were noted as being related to child safety seat usage. Those relationships were similar to those observed in previous surveys. Usage was directly related to age of the child, with the usage rate for infants about twice that for toddlers. Usage was also much higher for children in the rear seat when compared to children in the front seat. Driver age and sex also were related, with usage higher when a female was driving and much lower when an older person was driving. The data did not show any relationship between number of children in the car and usage. Previous surveys indicated a reduction in usage when there were more than two small children in a car.

Usage also was much higher for children when the driver was wearing a safety belt. Almost all children (83 percent) riding in a vehicle in which the driver was wearing a safety belt were also either in a safety seat or belt.

ACCIDENT ANALYSIS

The percentage of all drivers sustaining a given injury as a function of safety belt usage is summarized in Table 14. By comparing the percentages, the percent reduction associated with safety belt usage could be calculated. The largest reduction was for a fatal injury (73 percent reduction) with the reduction decreasing for less severe injuries. In severe accidents, use of a safety belt would lessen, but not eliminate, the injury. This resulted in the slight increase in the "possible injury" category. There was a 41 percent reduction in a driver sustaining a fatal or severe injury if a safety belt was worn compared to not wearing a safety belt.

The effectiveness of safety belts in reducing driver injuries was related to several variables. In Table 15, 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 significant reductions in percent fatal or severe injuries for drivers of passenger cars, single-unit trucks, and combination trucks. The reduction was highest for drivers of single-unit trucks. Safety belts also reduced the percentage fatally or severely injured in both rear-end and head-on accidents. These types of accidents were chosen to represent the two extremes of accidents in terms of severity. Safety belts were more effective in the less severe rear-end 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 percentage of children age 3 and under sustaining a given injury as a function of using a safety seat or safety belt is summarized in Table 16. There were substantial reductions, higher for the most severe injury types, associated with both safety seats and safety belts. The percent reductions were higher than that for drivers. There was a 60 percent reduction in the chance of a child less than age 3 sustaining a fatal or severe injury if a safety seat was used compared to not using any restraining device. Also, as shown in Table 17, the reductions in injuries were higher for a rear seating position compared to a front seating position.

The percentage of occupants other than drivers sustaining a given injury as a function of safety belt usage is given in Table 18. Again, there was a large reduction in the percent injured. These percent reductions were higher than that for drivers. There was a 61 percent reduction in a vehicle occupant, other than the driver, sustaining a fatal or severe injury if a safety belt was worn compared to not wearing a safety belt.

The accident severity associated with using a lap belt and/or shoulder harness for occupants other than the driver (by seating position) is given in Table 19. The use of a shoulder harness and/or lap belt in the front seat or a lap belt in the rear both reduced injuries dramatically. Accident severity was less in the rear seat and the percent reduction in injuries was greater in the rear seat than the front seat. The use of a lap belt in the rear seat has been effective since its use was associated with a reduction in fatal or incapacitating injuries of 77 percent.

The potential annual reductions in traffic accident fatalities and accident savings from an increase in driver safety belt usage are presented in Table 20. The reduction in fatalities and associated accident cost savings were calculated using the reduction factors listed in Table 14, accident data for the years of 1981 through 1985, the 13.0 percent usage rate determined from the 1986 observational survey, and 1984 National Safety Council accident cost estimates.

SUMMARY

Statewide usage rates in the 19 cities previously surveyed in 1982, 1983, 1984, and 1985 showed that driver safety belt usage increased in

1986 while child safety seat and safety belt usage remained at the 1984 and 1985 levels. The statewide usage rate of safety belts by drivers was 13.0 percent in 1986 compared to 9.2 percent in 1985, 6.9 percent in 1984, 5.8 percent in 1983, and 4.2 percent in 1982. The percentage of children in either a safety seat or belt was 30.2 percent in 1986 compared to 29.1 percent in 1985, 30.3 percent in 1984, 24.2 percent in 1983, and 15.4 percent in 1982. Usage rates for front-seat passengers in 1986 were higher than that in 1985 for each age category.

The benefits, based on the reduction of injuries, for occupants wearing a safety belt or in a safety seat were shown through the analyses of accident records. For example, one finding was that there was a 41 percent reduction in fatal or incapacitating injuries for drivers wearing a safety belt compared to those who were not.

RECOMMENDATIONS

While driver safety belt usage has been increasing in the past few years, usage has remained very low with a statewide rate of 13 percent. While public information has resulted in increases, no dramatic increases have occurred. A method which has been shown to result in a dramatic increase in safety belt usage is enactment of a mandatory safety belt law. Similar laws have been enacted in numerous other states and such a law was proposed in the 1986 Kentucky General Assembly but did not pass. An analysis of Kentucky accident records has shown the reduction in accident severity associated with safety belt usage. The potential annual reductions in traffic accident fatalities and accident savings from an increase in driver safety belt usage also has been estimated. For example, a driver usage rate of 50 percent would result in a potential annual reduction of 119 fatalities and an annual accident savings from the reduction in fatalities and injuries of about 43 million dollars.

The fact that the use of child safety seats and safety belts for children under the age of four has not increased since 1984 points out the inadequacy of Kentucky's current child restraint law. It appears the increase in safety seat and belt usage that may be expected as a result of the current law has peaked at a level of only about 30 percent. This is directly related to the weaknesses of the current law. A major weakness is the lack of any penalty provision. The existing law should be modified and strengthened in accordance with recommendations presented in a previous report (2). The modifications include adding a penalty, having the law apply to children under the age of 6, and allowing the substitution of safety belts for safety seats for older children. The low usage rate determined for 4 and 5 year olds in this study shows the need for the law to apply to children under 6 years of age.

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Figure 2. Data Collection Coding Instructions.*

1. General Information
 - DATE --- Date of Data Collection
 - TIME --- Time Data Sheet Started
 - CITY --- City Where Data Collected
 - LOCATION --- Intersection Where Data Collected

 - COMMENTS --- Relevant Comments Concerning Data
2. Data for Cars Containing Children under Four:
 - NO. CH. --- Number of Children under Four in Vehicle
Record Once for Each Vehicle
 - AGE --- Check Best Estimate of Child's Age
 - RESTRAINT --- Check Appropriate Code
 - N --- None
 - B --- Harness and Belt
 - SS --- Child Restraint (Safety Seat)
 - CHILD SAFETY SEAT
 - TYPE --- Brand and Model (e.g., Kantwet One-Step)
 - P-I --- Check Whether Properly (P) or Improperly (I) Used
 - REASON --- If Improperly Used, Give Explanation (e.g., Not Tethered)
 - SS --- Safety Seat in Vehicle Not in Use
 - POSITION --- Check One in Two Categories
 1. F --- Front Seat
 - R --- Rear Seat
 - C --- Cargo Area
 - Do Not Check Following Category if Child Restraint Used
 2. S --- Seated in a Normal Manner
 - L --- Held in Lap
 - ST --- Standing in Seat
 - O --- Other (e.g., Standing or Sitting on Front Edge of Seat)
 - DRIVER --- Check One in Three Categories
 1. N --- No Restraint
 - B --- Safety Belt
 2. M --- Male
 - F --- Female
 3. Y --- Young (16 - 30 Years)
 - M --- Middle (31-50 Years)
 - O --- Older (51 or More)
3. Data for Drivers and Passengers of Other Vehicles
 - For Each Driver, Determine Safety Belt Usage and Place a Mark in the Appropriate Category. For Each Passenger, Determine Safety Belt Usage and Place a Mark in the Appropriate Age Category. Put Maximum of Ten Marks in a Given Space.

* When data have been recorded for ten children or for 160 drivers, it will be necessary to start a new sheet.

TABLE 1. DISTRIBUTION OF SAMPLE USED TO ESTIMATE "STATEWIDE"
USAGE OF CHILD SAFETY SEATS

COUNTY POPULATION CATEGORY (NUMBER OF CHILDREN UNDER 5 YEARS OLD)	PERCENTAGE OF STATEWIDE TOTAL	SAMPLE SIZE	SURVEY COUNTIES	SURVEY CITIES
10,000 or more	26.6	1,330	Fayette Jefferson Kenton	Lexington Louisville Covington
5,000-9,999	14.0	700	Campbell Christian Hardin	Newport Hopkinsville Elizabethtown
2,500-4,999	23.3	1,165	Franklin Henderson Hopkins Perry Pulaski	Frankfort Henderson Madisonville Hazard Somerset
1,000-2,499	26.0	1,300	Barren Clark Mason Nelson Rowan	Glasgow Winchester Maysville Bardstown Morehead
Under 1,000	10.1	505	Anderson Caldwell Carroll	Lawrenceburg Princeton Carrollton

TABLE 2. LISTING OF AVAILABLE CHILD SAFETY SEATS*

MANUFACTURER	MODEL	DESCRIPTION
Cosco/Peterson	Safe-T-Shield	Convertible; three-point harness for infants; shield only for toddlers
	Safe-T-Seat	Convertible; five-point harness
	Safe and Easy	Convertible; five-point harness
	Safe and Snug	Convertible; combination shield and harness system
	Safe-T-Mate	Convertible; combination shield and harness system
	First Ride	Infants only; Y-harness
	Travel Hi-Lo	Children to 65 lbs; lap and shoulder belt in front seat, belt and tethered body harness in rear
	Deluxe Travel Hi-Lo	Children to 65 lbs; backrest and three-point harness
	Commuter	Convertible; combination shield and harness system
	Explorer	Toddlers and children; swing away shield
Century	Century 100	Convertible; five-point harness
	Century 200	Convertible; combination shield and harness system
	Century 300	Convertible; five-point harness with armrest
	Century 400XL	Convertible; combination shield and harness (modified inertial reel system)
	Infant Love Seat	Infants only; Y-harness
	Child Love Seat	Toddlers only; five-point harness, tether required
	Safe-T-Rider	Toddlers and children to 10 years; lap and shoulder belt in front seat, lap belt and tethered body harness in rear seat
	Commander	Children to 65 lbs.; full shield
Strolee	Trav-1-guard	Convertible; five-point harness with armrest
	Wee Care 599	Convertible; five-point harness with armrest; tether required
	Wee Care 618	Convertible; five-point harness with armrest
	Wee Care 612	Convertible; five-point harness
	Wee Care Booster Seat 602	Children to 70 lbs; auto lap and shoulder belt in front seat, auto lap belt with tethered harness in rear seat
	Wee Care Booster Seat 605	Children to 70 lbs; full shield

* Convertible restraints can be used by infants and toddlers, infants in a rear-facing position, and toddlers in a forward-facing position. Tethers, where required, are for toddler position only.

TABLE 2. LISTING OF AVAILABLE CHILD SAFETY SEATS* (continued)

MANUFACTURER	MODEL	DESCRIPTION
Evenflo (Questor)	Dyn-O-Mite	Infants only; Y-harness
	One-Step	Convertible; combination shield and harness system
	Care Seat	Convertible; five-point harness
	Safe Guard	Toddlers only; five-point harness
	Evenflo 7	Convertible; combination shield and harness system
	Britax Handicapped	Toddlers and children; five-point harness
	Bobby Mac Champion	Convertible; five-point harness for infant, add shield for toddler
	Bobby Mac Deluxe II	Convertible; three-point harness for infant, add swing-down shield for toddler
	Bobby Mac Super	Convertible; five-point harness, tether required
International	Bobby Mac Wings	Toddler and children; full shield
	Bobby Mac Lite	Toddlers only; requires shield
	Astroseat (9300A)	Convertible; five-point harness with armrest
	Astroseat (9100A)	Convertible; five-point harness
	Astroseat 6000	Children to 55 lbs; used with adult three-point belt system or adult lap belt with harness
Kolcraft	Hi-Rider	Convertible; five-point harness, optional shield
	Hi-Rider XL	Convertible; five-point harness with armrest
	Quikstep	Convertible; combination shield and harness system
	Tot-Rider	Toddlers and children to 10 yrs; lap and shoulder belt in front seat, lap belt and tethered body harness in rear
	Tot-Rider XL	Toddlers and children to 10 yrs; lap and shoulder belt in front seat, harness system in rear
	Tot-Rider Quikstep	Toddlers and children; full shield
	Redi-Rider	Convertible; combination shield and harness system
	Rock'n Ride	Infants only; Y-harness
Ford	Flip 'n Go	Toddlers and children; full shield
	Tot Guard	Toddlers only; shield only
General Motors	Infant Carrier	Infants only; three-point harness
	Infant Love Seat	Infants only; Y-harness
	Child Love Seat	Toddlers only; five-point harness, tether required

* Convertible restraints can be used by infants and toddlers, infants in a rear-facing position, and toddlers in a forward-facing position. Tethers, where required, are for toddler position only.

TABLE 2. LISTINGS OF AVAILABLE CHILD SAFETY SEATS* (Continued)

MANUFACTURER	MODEL	DESCRIPTION
Welsh	Travel Tot	Convertible five-point harness with shield
Collier-Keyworth	Safe and Sound	Convertible; combination shield and harness system
	Roundtripper	Convertible; combination shield and harness system
	Co-Pilot	Toddlers and children; full protective shield
	Cuddle Shuttle Voyager	Infants only; Y-harness Toddlers and children; full shield
Pride Trimble	Pride Ride (820)	Convertible; five-point harness
	Pride Ride (830)	Convertible; five-point harness with armrest
	Autoboosters	Toddlers and children; lap and shoulder belt in front seat
Graco	Little Traveler (315)	Convertible; five-point harness with armrest
	Little Traveler (310)	Convertible; five-point harness
	Snug Seat	Infants only
	GT1000	Convertible
Nissan/Datsun	Nissan	Convertible; combination shield and harness (inertial reel) system
Rupert	E-Z-On Vest	Toddlers and children; auto harness system, tether required
Fisher-Price	Fisher-Price	Convertible; combination shield (body pad) and harness (inertial reel) system
Gerry	Guardian	Convertible; combination shield (body pad) and harness (inertial reel) system
Volvo	Child Cushion	Children; use only with lap/shoulder belt

*Convertible restraints can be used by infants and toddlers, infants in a rear-facing position, and toddlers in a forward-facing position. Tethers, where required, are for toddler position only.

TABLE 3. 1986 "STATEWIDE" CHILD SAFETY SEAT USAGE RATES

COUNTY POPULATION CATEGORY (NUMBER OF CHILDREN UNDER 4 YEARS OLD)	SAMPLE SIZE	NUMBER USING CHILD SAFETY SEAT	PERCENT USING CHILD SAFETY SEAT	PERCENT OF CHILD SAFETY SEATS USED PROPERLY	NUMBER USING SAFETY BELT	PERCENT USING SAFETY BELT	PERCENT USING ANY RESTRAINT
10,000 or more	1,330	467	35.1	81	125	9.4	44.5
5,000-9,999	700	128	18.3	80	53	7.6	25.9
2,500-4,999	1,165	264	22.7	76	61	5.2	27.9
1,000-2,499	1,300	247	19.0	75	68	5.2	24.2
Under 1,000	505	81	16.0	64	18	3.6	19.6
All	5,000	1,187	23.7	78	325	6.5	30.2

TABLE 4. 1986 "STATEWIDE" DRIVER SAFETY BELT USAGE RATES

COUNTY POPULATION CATEGORY (NUMBER OF LICENSED DRIVERS)	NUMBER OF COUNTIES IN CATEGORY	PERCENTAGE OF STATEWIDE DRIVING POPULATION	SURVEY COUNTIES	SURVEY CITIES	SAMPLE SIZE	PERCENT DRIVERS USING SAFETY BELTS	PERCENT USAGE FOR CATEGORY
Over 75,000	3	30.0	Jefferson	Louisville	10,633	16.0	19.8
			Fayette	Lexington	7,846	24.4	
			Kenton	Covington	2,637	21.7	
30,001-75,000	9	17.0	Campbell	Newport	3,394	8.9	11.0
			Hardin	Elizabethtown	2,794	14.0	
			Christian	Hopkinsville	2,203	10.4	
20,001-30,000	13	14.6	Hopkins	Madisonville	2,376	11.9	11.3
			Henderson	Henderson	2,559	11.1	
			Franklin	Frankfort	7,272	14.1	
			Pulaski	Somerset	3,214	9.0	
			Barren	Glasgow	2,469	6.0	
10,001-20,000	32	20.0	Clark	Winchester	5,126	11.7	11.1
			Nelson	Bardstow	3,740	13.0	
			Perry	Hazard	2,924	5.3	
			Mason	Maysville	3,209	13.1	
Under 10,001	63	18.4	Rowan	Morehead	3,762	7.2	7.0
			Caldwell	Princeton	2,219	6.0	
			Anderson	Lawrenceburg	1,480	5.1	
			Carroll	Carrollton	1,450	10.0	

TABLE 5. 1986 "STATEWIDE" FRONT SEAT PASSENGER SAFETY BELT USAGE RATES

COUNTY POPULATION CATEGORY (NUMBER OF LICENSED DRIVERS)	PASSENGER AGE CATEGORY							
	4-5 YEARS		6-12 YEARS		13-19 YEARS		OVER 19 YEARS	
	SAMPLE SIZE	PERCENT USAGE FOR CATEGORY	SAMPLE SIZE	PERCENT USAGE FOR CATEGORY	SAMPLE SIZE	PERCENT USAGE FOR CATEGORY	SAMPLE SIZE	PERCENT USAGE FOR CATEGORY
Over 75,000	227	27.8	575	23.5	1,007	16.0	3,976	16.4
30,001-75,000	117	11.1	251	12.4	466	5.6	1,798	9.4
20,001-30,000	168	16.1	481	13.7	988	8.9	3,809	9.6
10,001-20,000	215	14.9	392	14.0	558	5.0	3,036	12.9
Under 10,000	123	7.3	262	8.8	620	4.7	2,132	6.6
All	850	16.9	1,961	15.6	3,699	8.9	14,751	11.7

TABLE 6. 1986 USAGE RATES OF SAFETY BELTS BY DRIVERS BY CITY

CITY	POPULATION	SAMPLE SIZE	NUMBER USING SAFETY BELT	PERCENT USING SAFETY BELT
Louisville	298,451	10,633	1,700	16.0
Lexington	204,165	7,846	1,912	24.4
Covington	49,585	2,637	573	21.7
Hopkinsville	27,318	2,203	229	10.4
Frankfort	25,973	7,272	1,023	14.1
Henderson	24,834	2,559	284	11.1
Newport	21,587	3,394	302	8.9
Madisonville	16,979	2,376	282	11.9
Elizabethtown	15,380	2,741	384	14.0
Winchester	15,216	5,126	602	11.7
Glasgow	12,958	2,469	147	6.0
Somerset	10,649	3,214	288	9.0
Maysville	7,983	3,209	421	13.1
Morehead	7,789	3,762	269	7.2
Princeton	7,073	2,219	134	6.0
Bardstown	6,155	3,740	486	13.0
Hazard	5,371	2,924	155	5.3
Lawrenceburg	5,167	1,480	76	5.1
Carrollton	3,967	1,450	145	10.0

TABLE 7. 1986 USAGE RATES, BY CITY, FOR CHILD SAFETY SEATS AND SAFETY BELTS (CHILDREN UNDER 4 YEARS OF AGE)

CITY	POPULATION	SAMPLE SIZE	NUMBER USING CHILD SAFETY SEAT	PERCENT USING CHILD SAFETY SEAT	PERCENT OF CHILD SAFETY SEATS USED PROPERLY	NUMBER CHILDREN USING SAFETY BELT	PERCENT CHILDREN USING SAFETY BELT	PERCENT CHILDREN USING ANY RESTRAINT
Louisville	298,451	546	182	33.3	84	39	7.1	40.4
Lexington	204,165	507	190	37.5	78	44	8.7	46.2
Covington	49,585	277	95	34.3	81	42	15.2	49.5
Hopkinsville	27,318	178	24	13.5	71	14	7.9	21.3
Frankfort	25,973	293	76	25.9	75	12	4.9	30.0
Henderson	24,834	200	49	24.5	82	13	6.5	31.0
Newport	21,587	237	35	14.8	77	18	7.6	22.4
Madisonville	16,979	201	58	28.9	74	19	9.5	38.3
Elizabethtown	15,380	285	69	24.2	84	21	7.4	31.6
Winchester	15,216	353	76	21.5	78	16	4.5	26.1
Glasgow	12,958	151	30	19.9	63	2	1.3	21.2
Somerset	10,649	270	61	22.6	79	10	3.7	26.3
Maysville	7,983	280	50	17.9	72	19	6.8	24.6
Morehead	7,789	226	29	12.8	76	3	1.3	14.2
Princeton	7,073	171	31	18.1	71	4	2.3	20.5
Bardstown	6,155	290	62	21.4	81	28	9.7	31.0
Hazard	5,371	201	20	10.0	60	7	3.5	13.4
Lawrenceburg	5,167	158	28	17.7	57	3	1.9	19.6
Carrollton	3,967	176	22	12.5	64	11	6.2	18.8

TABLE 8. 1985 USAGE RATES OF SAFETY BELTS BY FRONT SEAT PASSENGERS BY CITY

		AGE CATEGORY (YEARS)											
		4-5			6-12			13-19			OVER 19		
CITY	POPULATION	SAMPLE SIZE	NUMBER USING SAFETY BELT		NUMBER USING SAFETY BELT		NUMBER USING SAFETY BELT		NUMBER USING SAFETY BELT		NUMBER USING SAFETY BELT		
			SAFETY BELT	PERCENT USING SAFETY BELT	SAFETY BELT	PERCENT USING SAFETY BELT	SAFETY BELT	PERCENT USING SAFETY BELT	SAFETY BELT	PERCENT USING SAFETY BELT	SAFETY BELT	PERCENT USING SAFETY BELT	
Louisville	298,694	81	20	24.7	319	61	19.1	595	88	14.8	2,278	305	13.4
Lexington	204,165	109	32	29.4	234	71	30.3	371	70	18.9	1,202	266	22.1
Covington	49,585	37	11	29.7	22	3	13.6	101	13	12.9	496	82	16.5
Hopkinsville	27,318	30	6	20.0	68	8	11.8	158	11	7.0	394	34	8.6
Frankfort	25,973	34	7	20.6	149	25	20.2	417	48	11.5	1,575	176	11.2
Henderson	24,834	49	8	16.3	90	6	6.7	200	11	5.5	397	39	9.8
Newport	21,587	55	3	5.8	101	10	11.0	219	10	4.6	919	57	7.0
Madisonville	16,979	50	9	18.0	95	14	14.7	149	12	8.0	417	27	6.5
Elizabethtown	15,380	32	4	12.5	82	13	14.6	89	5	5.6	485	78	16.1
Winchester	15,216	82	7	8.5	135	20	14.8	179	10	5.6	809	131	16.2
Glasgow	12,958	21	2	9.5	97	9	9.3	122	11	9.0	651	25	3.8
Somerset	10,649	14	1	7.1	50	12	24.0	100	6	6.0	769	100	13.0
Maysville	7,983	44	7	15.9	72	13	18.1	84	8	9.5	692	103	14.9
Morehead	7,789	24	4	16.7	108	15	13.9	261	14	5.4	1,027	61	5.9
Princeton	7,073	40	3	7.5	73	4	5.5	180	10	5.6	509	26	5.1
Bardstown	6,155	69	16	23.2	107	17	15.9	98	5	5.4	496	112	22.6
Hazard	5,371	20	2	10.0	78	5	6.8	197	5	2.5	1,039	46	4.6
Lawrenceburg	5,167	29	1	3.4	46	3	6.5	117	5	4.3	360	29	8.1
Carrollton	3,967	30	1	3.3	35	1	2.9	62	0	0.0	236	24	10.2

TABLE 9. CHANGE IN USAGE OF SAFETY BELTS BY DRIVERS IN STATEWIDE SURVEY CITIES

CITY	PERCENT USING SAFETY BELTS				
	1982	1983	1984	1985	1986
Louisville	6.2	11.9	13.1	13.5	16.0
Lexington	8.2	10.1	9.8	17.3	24.4
Covington	8.2	9.3	12.5	16.2	21.7
Hopkinsville	2.6	3.0	4.5	5.6	10.4
Frankfort	4.8	7.1	7.4	11.4	14.1
Henderson	3.1	4.6	7.0	9.0	11.1
Newport	4.7	6.4	5.4	5.8	8.9
Madisonville	1.9	2.8	4.8	7.5	11.9
Elizabethtown	2.6	3.5	5.0	8.3	14.0
Winchester	2.3	2.9	5.6	8.9	11.7
Glasgow	2.9	2.8	2.5	4.8	6.0
Somerset	2.4	3.6	5.6	6.8	9.0
Maysville	1.5	3.3	5.5	5.7	13.1
Morehead	2.9	3.2	3.1	5.1	7.2
Princeton	1.6	1.7	2.4	3.1	6.0
Bardstown	3.5	4.1	5.9	7.1	13.0
Hazard	4.4	2.7	4.2	5.9	5.3
Lawrenceburg	0.8	2.3	3.2	5.6	5.1
Carrollton	2.6	4.9	5.2	7.3	10.0

TABLE 10. CHANGE IN USAGE OF SAFETY SEATS OR BELTS BY CHILDREN UNDER 4 YEARS OF AGE IN SURVEY CITIES

CITY	PERCENT USING SAFETY SEATS OR BELTS				
	1982	1983	1984	1985	1896
Louisville	21.6	36.3	49.1	41.6	40.4
Lexington	32.1	45.8	50.0	44.4	46.2
Covington	22.4	38.6	49.1	46.9	49.5
Hopkinsville	11.8	19.1	19.1	20.2	21.3
Frankfort	15.4	25.9	30.0	27.3	30.0
Henderson	13.5	18.5	26.0	30.0	31.0
Newport	11.0	27.4	20.3	21.9	22.4
Madisonville	12.4	18.4	29.4	35.3	38.3
Elizabethtown	11.2	26.7	33.7	30.2	31.6
Winchester	12.5	13.9	33.4	28.6	26.1
Glasgow	13.9	16.6	20.5	18.5	21.2
Somerset	7.4	23.3	23.7	21.9	26.3
Maysville	11.8	18.2	17.1	18.6	24.6
Morehead	10.2	14.1	12.8	14.6	14.2
Princeton	9.9	11.7	12.3	16.4	20.5
Bardstown	19.7	21.0	31.0	30.7	31.0
Hazard	7.0	9.5	9.0	10.9	13.4
Lawrenceburg	7.0	6.3	22.2	23.4	19.6
Carrollton	6.3	10.2	15.9	21.6	18.8

TABLE 11. USAGE OF VARIOUS TYPES OF CHILD SAFETY SEATS

CHILD SAFETY SEAT	ALL CHILDREN		INFANTS ONLY		TODDLERS ONLY	
	NUMBER OBSERVED	PERCENT PROPERLY USED	NUMBER OBSERVED	PERCENT PROPERLY USED	NUMBER OBSERVED	PERCENT PROPERLY USED
Questor Kantwet	453	84	177	78	276	88
One-Step	255	92	56	91	199	92
Bobby-Mac	122	70	46	61	76	75
Dyn-O-Mite	73	79	73	79	0	DNA**
Care Seat	3	67	2	100	1	100
Century	183	88	58	86	125	89
100	21	86	5	100	16	81
300	13	77	1	100	12	75
200	11	82	2	100	9	78
Unclassified	138	90	50	84	88	93
Strolee Wee Care	165	36	42	57	123	29
Tether	134	25	33	48	101	18
No Tether	31	84	9	89	22	82
Cosco/Peterson	159	82	68	84	91	81
Safe-T-Seat	72	83	33	82	39	85
Safe and Snug	34	68	13	77	21	62
Safe-T-Shield	17	88	3	100	14	86
First Ride	16	88	16	88	0	DNA
Commuter	13	100	3	100	10	100
Safe and Easy	7	86	0	DNA	7	86
International Astroseat	66	88	29	79	37	96
Booster Seat (with shield)	61	97	0	DNA	61	97
Collier Keyworth	23	91	8	88	15	93
Safe and Sound	19	95	4	100	15	93
Cuddle Shuttle	4	75	4	75	0	DNA
Fischer-Price	19	95	9	100	10	90
Old Type*	16	19	2	0	14	21
Child Love Seat	6	17	0	DNA	6	17
Booster Seat (no shield)	6	33	0	DNA	6	33
Infant Love Seat	6	81	6	81	0	DNA
Kolcraft	6	50	3	33	3	67
Rock N Ride	3	67	3	67	0	DNA
Unclassified	3	33	0	DNA	3	67
Gerry Guardian	5	100	2	100	3	100
Nissan	2	100	0	DNA	2	100
Graco	1	100	0	DNA	1	100
Pride Trimble	1	100	0	DNA	1	100

*Seat not currently available. Has armrest and separate headrest.
Made by more than one manufacturer.

**DNA - Does Not Apply.

TABLE 12. MAJOR REASONS FOR IMPROPER USAGE

REASON	NUMBER WITH GIVEN REASON
Child Not Harnessed as Required	106
Infant Facing Forward	42
Restraint Not Tethered as Required	104
Shield Not Used as Required	23
Restraint Not Belted to Car	5

TABLE 13. VARIOUS FACTORS AFFECTING CHILD SAFETY SEAT USAGE

VARIABLE	CATEGORY	SAMPLE SIZE	PERCENT USING SAFETY SEATS OR BELTS
Age (Years)	Less Than 1	798	51
	1-3	4,200	26
Child's Location	Front	2,319	22
	Rear	2,576	39
Driver Sex	M	1,436	24
	F	3,558	33
Driver Age	Y*	1,961	30
	M	2,683	32
	O	350	16
Driver Restrained	Yes	854	83
	No	4,143	19
Number of Children Under 4 in Car	1	4,100	30
	2	800	30
	3 or More	98	30

*Y -- 16-30 years
M -- 31-50 years
O -- 51 years or older

TABLE 14. ACCIDENT SEVERITY VERSUS SAFETY BELT USAGE (ALL DRIVERS)*

TYPE OF INJURY	PERCENT SUSTAINING A GIVEN INJURY		
	NOT WEARING SAFETY BELT	WEARING SAFETY BELT	PERCENT REDUCTION
Fatal	0.22	0.06	73
Incapacitating	2.44	1.50	39
Non-Incapacitating	4.70	3.88	17
Possible	4.84	5.12	-6
Fatal or Incapacitating	2.66	1.56	41

* Based on 1981 through 1985 accident data.

TABLE 15. ACCIDENT SEVERITY VERSUS SAFETY BELT USAGE BY TYPE OF VEHICLE, SPEED LIMIT, AND TYPE OF ACCIDENT (DRIVERS)

VARIABLE	CATEGORY	PERCENT SUSTAINING FATAL OR SEVERE INJURY		
		NOT WEARING SAFETY BELT	WEARING SAFETY BELT	PERCENT REDUCTION
Type of Vehicle*	Passenger Car	2.73	1.61	41
	Single-Unit Truck	1.62	0.66	59
	Combination Truck	2.65	1.72	35
Type of Accident** (Non-Intersection)	Rear End	1.33	0.64	52
	Opposite-Direction	2.92	2.14	27
	Sideswipe			
	Head-On	11.25	9.69	14
Speed Limit** (mph)	35	1.87	1.22	35
	45	2.55	1.35	47
	55	6.32	3.32	47

* Based on 1981 through 1985 accident data.

** Based on 1985 accident data.

TABLE 16. ACCIDENT SEVERITY VERSUS SAFETY SEAT AND BELT USAGE
(CHILDREN AGE THREE AND UNDER)*

TYPE OF INJURY	PERCENT SUSTAINING A GIVEN INJURY			PERCENT REDUCTION	
	NOT USING SAFETY SEAT OR BELT	USING SAFETY SEAT	USING SAFETY BELT	SAFETY SEAT	SAFETY BELT
	Fatal	0.18	0.06	0.08	67
Incapacitating	1.55	0.63	0.50	59	68
Non-Incapacitating	5.29	2.90	3.09	45	42
Possible	6.07	4.28	3.93	29	35
Fatal or Incapacitating	1.73	0.69	0.58	60	66

* Based on 1981 through 1985 accident data.

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

SEATING POSITION	TYPE OF INJURY	PERCENT SUSTAINING A GIVEN INJURY		
		NOT USING SAFETY SEAT OR BELT	USING SAFETY SEAT OR BELT	PERCENT REDUCTION
Front	Fatal	0.20	0.09	55
	Incapacitating	1.63	0.69	58
	Non-Incapacitating	5.84	3.56	39
	Possible	6.79	4.78	30
	Fatal or Incapacitating	1.83	0.78	57
Rear	Fatal	0.14	0.04	71
	Incapacitating	1.37	0.41	70
	Non-Incapacitating	4.04	2.37	41
	Possible	4.46	3.66	18
	Fatal or Incapacitating	1.51	0.45	70

* Based on 1981 through 1985 accident data.

TABLE 18. ACCIDENT SEVERITY VERSUS SAFETY BELT OR SEAT USAGE
(OCCUPANTS OTHER THAN DRIVERS)*

TYPE OF INJURY	PERCENT SUSTAINING A GIVEN INJURY		
	NOT USING SAFETY BELT OR SEAT	USING SAFETY BELT OR SEAT	PERCENT REDUCTION
Fatal	0.19	0.02	89
Incapacitating	3.12	1.28	59
Non-Incapacitating	6.26	4.16	34
Possible	7.03	6.02	14
Fatal or Incapacitating	3.31	1.30	61

* Based on 1985 accident data.

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

SEATING POSITION	TYPE OF INJURY	PERCENT SUSTAINING A GIVEN INJURY		
		NOT USING LAP BELT OR SHOULDER HARNESSES	USING LAP BELT AND/OR SHOULDER HARNESSES	PERCENT REDUCTION
Front	Fatal	0.21	0.04	81
	Incapacitating	3.33	1.72	48
	Non-Incapacitating	6.51	4.59	29
	Possible	7.47	7.46	0
	Fatal or Incapacitating	3.54	1.76	50
Rear**	Fatal	0.18	0.00	100
	Incapacitating	2.54	0.63	75
	Non-Incapacitating	5.51	4.45	19
	Possible	5.71	3.70	35
	Fatal or Incapacitating	2.72	0.63	77

*Based on 1985 accident data.

**Lap belts only used in rear seat.

TABLE 20. POTENTIAL ANNUAL REDUCTION IN TRAFFIC ACCIDENT FATALITIES AND ACCIDENT SAVINGS FROM INCREASE IN DRIVER SAFETY BELT USAGE*

DRIVER USAGE RATE	POTENTIAL ANNUAL REDUCTION IN NUMBER OF FATALITIES	ANNUAL ACCIDENT SAVINGS FROM REDUCTION IN FATALITIES (MILLIONS \$)	ANNUAL ACCIDENT SAVINGS FROM REDUCTION IN FATALITIES AND SERIOUS INJURIES (MILLIONS \$)
20	22	4.8	8.1
30	55	12.1	19.9
40	87	19.1	31.6
50	119	26.2	43.2
60	151	33.2	54.9
70	183	40.3	66.5
80	215	47.3	78.2
90	247	54.3	89.8
100	279	61.4	101.4

*Based on increase from the 13.0 usage rate found in the 1986 survey, the percent reductions given in Table 14, and 1984 National Safety Council accident cost estimates.